

Developing an Airport Performance-Measurement System

DETAILS

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP REPORT 19

**Developing an Airport
Performance-Measurement System**

INFRASTRUCTURE MANAGEMENT GROUP, INC.
Bethesda, MD

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). The ACRP carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. It is modeled after the successful National Cooperative Highway Research Program and Transit Cooperative Research Program. The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration. The ACRP provides a forum where airport operators can cooperatively address common operational problems.

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), and the Air Transport Association (ATA) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

The ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Research problem statements for the ACRP are solicited periodically but may be submitted to the TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

Once selected, each ACRP project is assigned to an expert panel, appointed by the TRB. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

Primary emphasis is placed on disseminating ACRP results to the intended end-users of the research: airport operating agencies, service providers, and suppliers. The ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties, and industry associations may arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by airport-industry practitioners.

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The members of the technical panel selected to monitor this project and to review this report were chosen for their special competencies and with regard for appropriate balance. The report was reviewed by the technical panel and accepted for publication according to procedures established and overseen by the Transportation Research Board and approved by the Governing Board of the National Research Council.

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FOREWORD

By **Michael R. Salamone**
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ACRP Report 19: Developing an Airport Performance-Measurement System provides guidance on how to develop and implement an effective performance-measurement system for airports and will be of interest to a variety of airport stakeholders—airport board members, directors, department leaders, and other employees—as well as aviation regulatory agencies, industry associations, and airport planning professionals and consultants. An electronic workbook, provided with the report as *CRP-CD-79*, includes tools to help users complete the step-by-step process for developing an airport performance-measurement system that is presented in *ACRP Report 19*.

Airports operate in a complicated environment and have varying degrees of control over the services that customers expect. The introduction of commercial and private models of airport ownership has changed the scope and significance of performance measurement for airport management, regulators, and stakeholders. Technological tools, such as computerized dashboards and business intelligence software, have made tracking organizational performance easier and more productive. At the same time, academic and industry research in the field has increased. Despite this growth, public agencies in general, and airports in particular, have generally been slower to adopt performance-measurement programs than private organizations. While a handful of industry innovators have pulled best practices from the private sector, many airports do not yet have a systematic, goal-oriented performance-measurement program.

Under ACRP Project 01-06, Infrastructure Management Group, Inc., was asked to collect and present the most current knowledge and practices from throughout the airport industry related to performance measurement. This report presents the theoretical underpinnings of performance measurement, provides an airport-specific five-step process for developing and implementing an airport performance-measurement system, introduces some of the current and emerging technology available to assist airports in the performance-measurement process, and presents case studies on selected airport performance-measurement systems.

Readers of this report are encouraged to also examine *ACRP Report 20: Strategic Planning in the Airport Industry*, which provides guidance on airport strategic planning, a topic closely related to performance measurement.



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Introduction to the Guidebook

Chapter 1 of *ACRP Report 19: Developing an Airport Performance Measurement System* is intended to describe the functionality of the guidebook as it pertains to end users. This chapter introduces the user to the purpose, context, intended audience, organization, and relevant media that will be referenced throughout the guidebook.

Performance measurement has gained momentum among various industries in both public and private sectors. Because performance measurement is a relatively new business management tool, many different terms and definitions have been circulating that refer to *performance measures*. While public- and private-sector organizations have attempted to differentiate among the terms, this can confuse employees' and stakeholders' understanding of performance terminology and frameworks. The terms “metrics,” “measure,” and “indicator” are commonly used as synonyms. They all are defined as “a standard of measurement” or “an indicator for quantitative comparison.” In addition, “key performance indicator,” often referred to as KPI, is a widely used term that was popularized in the 1990s by David Norton and Robert Kaplan, creators of the Balanced Scorecard methodology. This term is commonly used to indicate the most critical strategic metrics. KPIs are used as a select subset of a wider group of measures and are usually tracked through corporate scorecards or other business intelligence tools. The term “key performance area,” or KPA, is not as widely used as KPI, but is well understood as the grouping or area used to organize performance measures. Examples of KPAs can include leadership development, customer service, safety, or other strategic groups.

For standardization purposes, this guidebook will use the most common term, “performance measure,” or simply “measure,” to indicate all quantitative and qualitative standards used by airports to monitor performance and as a synonym for various other terms such as “metric,” “indicator,” etc. The term KPI will be used in conjunction with end-outcome measure to describe the overarching indicator of performance. Also, the guidebook forgoes the use of the term KPA and uses instead the term “area of performance measurement” to refer to the groupings of performance measures based on the field of operations in the organization.

Purpose of the Guidebook

The purpose of this guidebook is to provide a user-friendly tool that airports can use to develop a sound, enterprisewide, performance-measurement system that will genuinely improve how each airport meets the needs of its customers, its community, and all the other stakeholders who benefit from the services of a well-run airport. The guidebook will also allow airports that already have a performance-measurement system to rate its effectiveness and make any necessary adjustments. It is intended that this guidebook will

- Assist airport management in understanding the practical benefits of a performance-measurement system,

- Guide the development and implementation of the most appropriate performance-measurement system,
- Identify methods to help airports discern how well they are meeting their customer and stakeholder expectations, and
- Provide examples of key performance indicators and how to incorporate them into a system.

Performance-measurement systems resulting from this guidebook will also assist with the alignment of strategic elements and enhance the decision-making process to improve service and efficiency in airports across the country. In summary, *ACRP Report 19: Developing an Airport Performance-Measurement System* will provide a dynamic tool to airport executives interested in improving the efficiency and productivity of their airport by providing a basis on which to initiate and maintain a successful program. Importantly, this report will also serve as a basis for further discussion at meetings and conferences within the industry that will introduce performance measurement to many airports that do not currently have a program.

Applicable Context for this Guidebook

The perspectives, priorities, and performance-measurement methodologies contained in this guidebook are a reflection of the U.S. airport industry as it existed at the time of the research effort, 2008 to 2009. The guidebook and its suggested techniques assume an environment in which airports are independent of national control and are typically owned and operated by local municipalities or regional/state authorities. The guidebook also takes into account the introduction of commercial and private models of airport ownership—a concept that has changed the scope and significance of performance measurement for airport management, regulators and stakeholders.

While this guidebook focuses on the tendencies of the domestic U.S. airport industry, the methodologies described are applicable to airports operating under varying structures and organizational frameworks. North American airports with operational structures similar to those of the United States (e.g., Greater Toronto Airports Authority) are also represented in the guidebook.

Intended Audience for the Guidebook

The guidebook offers a dynamic tool to airport executives by providing a basis on which to initiate and carry out a successful program. The audience for this product will be executives at airports of all sizes. For airport executives new to performance measurement, the guidebook will provide a theoretical foundation for performance measurement, information on the critical importance of a robust program, and how to develop buy-in from staff and board members. The guidebook will also provide the steps necessary to implement a performance-measurement program. For airports with experience with performance measurement, the guidebook will serve as a resource to improve the program, connect metrics with strategic elements, and introduce technology to improve efficiency and optimize results. Overall, the guidebook will assist airports in using performance measurement to proactively adjust current processes and practices for improved services.

This guidebook is intended to assist in the process of developing a performance-measurement system at large, medium, and small airports and provides facilitating tools and techniques for airport executives, policymakers, and aviation professionals. In addition, the guidebook reflects the range of resources available to airports. Smaller airports may be interested primarily in performance-measurement methodologies that they can implement quickly and easily, while airports with more staff and funding may wish to understand the theory and underpinnings of

performance measurement and develop customized programs that link to their mission and strategic initiatives.

By including prescribed tools, the guidebook will be useful to airports at all levels of sophistication regarding performance measurement. Programs initiated with the use of the guidebook could range from those in which a handful of key performance indicators are tracked by the airport director to those in which a comprehensive, web-based tool is used daily by airport executives to monitor progress toward pre-set strategic goals.

Guidebook Organization

The guidebook is organized to be a practical and user-friendly reference tool that can assist users with multiple parts of the performance-measurement system process, including research, implementation, and strategy setting. The guidebook provides information appropriate to specific steps in the process of developing an airport performance-measurement system and provides stand-alone methodologies and techniques for varying components of a performance-measurement system. The guidebook is organized into three parts, with each part providing insight on, and instructions for, developing and implementing a comprehensive performance-measurement system.

Part I, “Introduction to Performance-Measurement Systems,” provides a general introduction to performance-measurement systems, background information on the purpose of this guidebook, and a look at the theory and current practices of performance-measurement systems. Part I includes two chapters:

- Chapter 1: Introduction to the Guidebook
- Chapter 2: Theory and Practice of Effective Performance-Measurement Processes

Part II, “Building a Performance-Measurement System,” describes the performance-measurement system development and implementation process step by step and explains what is involved in executing it, and what the results should look like. Examples and case studies are included to depict the development and implementation process through industry best practices. Finally, Part II addresses software-based reporting and current and emerging technology to assist in the performance-measurement process. Part II is divided into an introduction and six chapters:

- Chapter 1: Prepare to Plan and Measure (Step 1)
- Chapter 2: Plan to Achieve Results (Step 2)
- Chapter 3. Create the Reporting Structure (Step 3)
- Chapter 4. Act and Measure (Step 4)
- Chapter 5. Manage Performance Measurement (Step 5)
- Chapter 6. Current and Emerging Technology for the Performance-Measurement Process

Part III, “Field Research on Performance Measurement,” presents airport case studies from the United States and Canada that are focused on performance-measurement practices and provide information on development and implementation processes, challenges, and successes. In addition, Part III references external sources that can be used by airports to leverage their performance-measurement practices. Part III is divided into two chapters:

- Chapter 1. Airport Case Studies on Performance-Measurement Systems
- Chapter 2. Regional, State, and Federal Applications of Performance-Measurement Systems

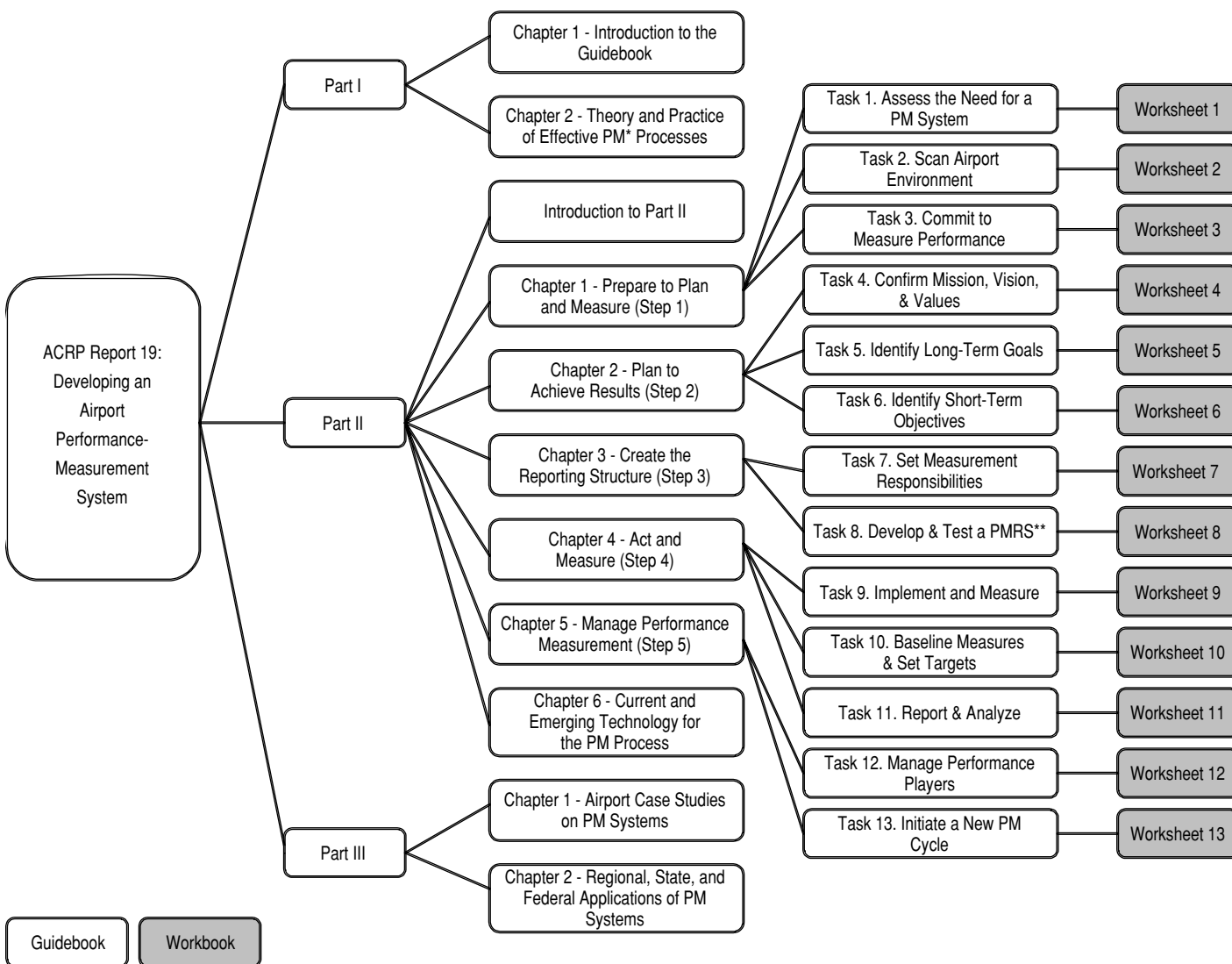
Appendix A includes definitions and a glossary of acronyms. Appendix B provides a compendium of key performance areas and indicators. Appendix C includes author acknowledgments.

Affixed to the inside back cover of the guidebook is *CRP-CD-79: Workbook for ACRP Report 19*, which contains worksheets to assist the reader in developing a performance-measurement system through a step-by-step process. Periodically, the guidebook directs readers to worksheets relevant to the topic under discussion. The worksheets were designed with fill-out fields so that the user can revisit and edit them as needed. At the end of each worksheet is the Performance-Measurement Assessment Tool, a set of questions to help identify sensitive areas in need of improvement as the development process progresses. A Quick Instruction Guide that presents a summary of the steps involved in the development and implementation of a performance-measurement system is also available on *CRP-CD-79*.

A chart detailing the organization of the guidebook and workbook is given in Exhibit I-1.1.

In addition to guiding readers to relevant worksheets in *CRP-CD-79: Workbook for ACRP Report 19*, the guidebook includes elements that supplement the main text such as case studies,

Exhibit I-1.1. Organization of the guidebook and workbook.



Source: Infrastructure Management Group, 2009
 *PM = Performance Measurement
 **PMRS = Performance-Measurement Reporting System

hints, and warnings. These elements, as well as references to the worksheets, are labeled in the guidebook with icons. In the worksheets, questions accompany the Performance-Measurement Assessment Tool, and these are also labeled with an icon. The following legend presents each icon and a brief description of the element it represents.



Case studies illustrate hands-on experience with performance-measurement practices from a representative sample of airports of all sizes scattered throughout the United States and Canada. Relevant excerpts from representative cases have been cited to aid readers as they build an airport performance-measurement system in a step-by-step process.



Hints serve as advice to secure the success of proposed processes by identifying advantages and disadvantages and recommending action items. They also introduce airport managers to applications, techniques, and methodologies accepted practicewide to assist with the development and implementation steps of the performance-measurement system.



Questions accompany the Performance-Measurement Assessment Tool at the end of each worksheet.



Warnings increase awareness of situations that might arise during the development of the performance-measurement system and could potentially impact its development process.



Worksheets are intended to guide the reader in drafting a proposed performance-measurement system. They also provide readers with the means to conduct a comprehensive analysis of current performance-measurement practices at their airport.



CHAPTER 2

Theory and Practice of Effective Performance- Measurement Processes

The basic and most relevant theory about performance measurement that airport managers interested in performance-measurement systems should know is summarized in the following pages. The goal is to assist readers in better understanding the applicability and concepts introduced during the development and implementation phase of a performance-measurement system.

What Is a Performance-Measurement System?

Performance measurement can be defined in the strictest terms as “measurement on a regular basis of the results (outcomes) and efficiency of processes, services or programs.”¹ However performance measurement in today’s economy has become a much more strategic, comprehensive, and high-level process than is revealed in this basic definition. For public- and private-sector organizations, regular measurement of progress toward specified and measurable outcomes is a vital component of any effort at managing for results. In the service-oriented airport environment, specifically, performance measurement also plays a critical role in improving the customer-oriented processes that focus on maximizing benefits and minimizing negative consequences for airport users.

Measurement connects strategic planning to activities. Planning without measurement limits the airport’s ability to execute strategy.

Strategic planning and performance measurement should be seen as “two sides of the same coin.” A strong plan cannot be written without performance measures in mind, and a strong measurement system cannot be designed without referencing the organizational strategy. Because performance measures should track and measure the key strategies leading to the right goals and objectives, it is important to link these two concepts and two processes throughout the organization. By putting strategic planning and performance measurement together and giving joint authority over both processes to the same group, airports can gain the most benefit from both areas.

A business planner’s and an executive’s definition of performance measurement will center on the connective role it plays between the strategic planning process and the hard work of execution, resource allocation, budgeting, and evaluation. Measurement captures the quantitative and qualitative progress of the strategies, initiatives, products, and services that position the organization to achieve its goals and make definitive progress towards a defined vision. As is stated in *ACRP Report 20: Strategic Planning in the Airport Industry*, “development of a vision for how the organization will look in the future and definition of the steps and actions that must be executed to achieve the organization’s vision”² are the centerpiece of business strategy and improvement. However, without a concrete and objective performance-measurement process, this work, while interesting, cannot provide the information to validate or reorient business operations. Just as strategic planning examines today’s reality and plans for the future, performance measurement establishes current baselines for the most important issues, sets long- and short-term targets, and

begins measuring progress. In this perspective, performance measurement and strategic planning are complementary and echo each other; airport managers should understand both processes in this mutually reinforcing construct.

Performance measurement can be defined and observed based on the entity or organization that owns the process. While research has shown that some large airports independently develop their own performance measures to understand and manage their processes and results, other airports may measure discrete activities and results in alignment with larger transportation, business development, or infrastructure outcomes that encompass the airport as well as other aspects of a larger structure.

At a minimum, effective performance-measurement programs do the following:

- Measure only areas that fall inside the airport's mission area;
- Measure activities, products, services, and outcomes that move the airport toward its strategic goals;
- Measure areas that have been identified as environmental, business, structural, or other barriers to success;
- Measure an inclusive set of short- and long-term, leading and lagging, and operationally diverse indicators; and
- Inform management decisions by linking strategic planning to budgeting, resource planning, and other areas of managerial importance.

The Airport Performance-Measurement System Framework

Over the years, airport privatization and commercialization outside North America has brought a new perception of an airport as an independent private entity, requiring changes in airport management. Investors in privatized airports require returns on their investments as well as accountability for performance. Such demand from executive boards has propelled airport management to view airports as businesses rather than as venues that facilitate airline and passenger activity. Airport management has become more aggressive in pursuing innovative ways to generate revenue, introducing performance-measurement programs and other initiatives to improve organization efficiency and increase revenue. A growing recognition of airports as business entities has encouraged airport management to adopt best practices from the private sector and various non-aviation industries. Performance-measurement frameworks, such as the Balanced Scorecard, have become increasingly popular. In addition, airports have become interested in assessing their performance against others.

Today, there is a growing use of performance measures, in one form or another, in most airports in the United States and internationally. Referred to as benchmarking, or simply financial and operational data, performance measures are being put in place and used in the daily operations of airports of all sizes. From general aviation (GA) to large hub airports, the need and relevance of monitoring performance have been manifested. Most commonly, financial and operational data are being tracked due to FAA requirements. Those airports that have not implemented a formal performance-measurement system acknowledge the relevance of a fully engaged performance-measurement system and its de facto value as data warehousing for transferability purposes. However, executives at medium size hubs or larger airports, where operations and resource management are more complex, perceive the need to implement a performance-measurement system. Common factors that prevent GA and small airports, with exemptions, from developing and implementing a formal performance-measurement system are time constraints, reduced personnel, prevalence of urgent matters over all other matters, and an organizational structure that does not seem to need to share data interdepartmentally.

Performance measures are being utilized to understand, manage, and maximize airport revenue.

Airports of all sizes have a need for performance measures, but the types and quantity of those measures varies.

The complexity of the performance-measurement system implemented by airports correlates with airport size. GA airports, for instance, focus on four to five key measures that are submitted to the city/town or authority on a regular basis to monitor goal achievement. In general, these measures include operational costs (including fuel sales), revenues, and percentage of occupancy through land and terminal leases. Focus on revenues, however, is secondary to monitoring costs since the interest in not losing money outweighs increasing gross revenue from an overall financial perspective. However, GA airports also monitor measures directly related to operations that are not necessarily reported to airport owners; these include measures that are not directly under the airport's control, but impact operations. As airport operations grow, the number of measures also increases and the performance-measurement system is approached in a more formal and documented fashion.

While all airports are using data in some manner, only a relatively small number have fully developed performance management systems.

A few airports in the United States have implemented a fully documented and well-developed performance-measurement system. Although the hurdles they confront in breaking into an almost new practice in the industry are great, they are already experiencing the benefits of a performance-measurement system not only in improved performance, but also in increased revenues. It is expected that this trend of improving efficiencies will continue in the airport industry at an accelerated pace. Adopting new management approaches and technologies is increasingly important to maximizing revenues while satisfying stakeholder needs. Airports in the United States are quickly learning from best practices in other industries and abroad and will benefit in the short term from others' experiences by minimizing the learning curve. Importantly, there's an understanding at managerial levels of the relevance of performance measures and interest in adopting them as a system to improve performance.

Cascading goals and alignment from the senior level down to all employees helps ensure execution and furthers staff engagement levels.

Measuring and managing performance is crucial to airport success. Performance measurement is not just about identifying and tracking some numbers; it is ultimately about managing to achieve results. Performance measurement is a cyclical process that starts with identifying the ultimate outcomes an airport wants to achieve, such as safety, customer service, and financial success. Airports need to define the broad goals they want to achieve and then identify the measures they will use to indicate success. Setting enterprisewide targets for success, airports will define the level of achievement desired on each measure and the desired timeframe within which achievement should occur. Airports will then develop supporting goals, metrics, and targets for each measure: the intermediate outcomes (e.g., for safety, runway incursions and runway condition), products and services, activities, and, ultimately, budgets and individual contributions that each part of the airport organization will provide in order to achieve the airport's ultimate goals and targets. These goals and measures cascade down throughout the airport organization so that each and every office—each director, manager, and employee—knows what they are expected to accomplish in support of the airport's goals. Airport executives and employees then execute the plans and programs, evaluate the results (usually at the end of each year), and then use that information to begin a new performance cycle.

A common issue is establishing performance targets too early in the process, without first establishing a baseline of current performance.

The best performance-measurement system becomes ingrained in the airport's corporate culture. Leaders manage and hold themselves and their employees accountable for achieving results. People from the top of the airport organization to the bottom understand and buy into the airport's goals, the airport's definition of success, and what they expect to contribute to that success. They participate in achieving the airport's goals, and then they help evaluate performance and set new goals for the next performance cycle.

Performance measurement is also the basis for benchmarking or comparing performance. Good performance goals identify a baseline (normally, where the airport is when planning begins) and a target to be achieved by a specific time. The first comparison, then, is to see how far the airport has come from its original baseline level toward its target level.

Good performance metrics can then be used to benchmark either within the airport or with the performance of other airports. Most airports have good financial and efficiency metrics. Having a common set of metrics within the airport allows teams or crews to compare their performance and efficiency with similar teams and learn what the best teams are doing to make a difference. Having metrics that are used commonly by airports across the country allows airports to benchmark their performance with similar airports across the country and, once again, talk to and learn lessons from the airports with best practices. Nonetheless, benchmarking should be approached with caution due to the unique characteristics of airports that directly impact performance measures.

Relevance of Measuring Performance

Since the 1954 publication of Peter Drucker's *The Practice of Management*³, performance measurement has become an established business improvement process. While Drucker's work focused on the private sector, the introduction of Kaplan and Norton's Balanced Scorecard⁴ process in 1992 and the Government Performance and Results Act (GPRA) in 1993 spurred an enhanced understanding and customization of performance measurement in all levels of government, business, and non-profit management.

Performance measurement for airports consists of more than measuring the most basic financial, safety, security, traffic, and passenger information. A fully functioning performance-measurement framework will allow airports to match both short- and long-term plans with an appropriate set of key indicators and allow for the most critical step, managing for results and improved performance. Individual airlines, airports, communities, and executives differ on vision, strategies, strengths, weaknesses, opportunities, threats, and areas of focus. Strategic planning reflects these differences, and performance measures should highlight these differences as well, maintaining a focus on where departments, managers, employees, and partners should direct their attention and resources.

It is unlikely that the performance measures adopted by any specific airport will mirror another in exact detail. In fact, while benchmarking efficiency and operational performance against similar organizations is a positive attribute of any performance system, this should not be confused with the exact duplication of another entities' entire framework. For leadership and management, thoroughly understanding one's own strategy and future goals in developing key performance measures is fundamentally more important than simply measuring general indicators against another airport. In the end, benchmarking against an organization's own, earlier performance is the most important comparison available.

Another airport element in beginning the performance discussion is the competing or non-aligned priorities of various airport stakeholders. While organizations ultimately value shareholder value or financial performance over all other performance indicators, a diverse group of stakeholders in the airport community may struggle to find common key measures and acceptable targets. In addition, important in understanding performance measurement is seeing that all indicators have intended and often unintended consequences. Setting performance goals in one area may impede or disturb performance in another part of the organization. Understanding these connections and developing a pilot process to observe both intended and unintended results is a key to this management practice. As stakeholders' roles, perspectives, and intentions are all different, stakeholders often seek to influence strategic planning and performance measurement for competing ends.

The proper performance measures allow management to understand where to move resources in order to gain the most return on investment.

Benchmarking performance against others, while beneficial, needs to be approached cautiously due to the many varying and unique circumstances for individual airports.

Organizations often see unintended consequences from performance measures, as changes in one area affect other departments.

For instance, while concerned neighbors may seek to measure noise and flight levels, dependent businesses may seek out high airplane and passenger traffic. Both groups' concerns have to be factored into any airport planning discussion. The key performance measures will likewise need to reflect both groups' needs and concerns and reflect their differences in indicator selection and target setting. In a similar vein, airports and their stakeholders do not live in consistent and stable environments; changes in the economy, security setting, fuel pricing, and other variables must be factored into a dynamic measurement environment.

Among all the reasons that airports pursue the implementation of performance-measurement practices, the following three core reasons have been identified across the board:

1. Demonstrate compliance with regulatory requirements,
2. Drive performance to improve business practices and achieve goals and outcomes, and
3. Transform the management culture by assigning ownership and accountability within the management team and throughout all levels of the organization.

Core processes in performance-measurement strategies at airports have been identified as the following:

- **Strategy Execution.** Setting strategies is only useful for an organization if strategy execution and effectiveness can be measured against goals and targets.
- **Communication and Engagement.** External stakeholders and customers and internal audiences of employees and partners increasingly expect performance to be a key part of communication and messaging. Engagement, support, and constructive partnerships all depend on a higher level of performance management, metrics, and performance reporting.
- **Performance-Based Budgeting.** Resource allocation and prioritization are often considered the leading rationales for enhanced performance information. While budgeting is traditionally seen as linked to employees and activities, it is still largely disconnected from outcome-based metrics in airports around the country.
- **Innovation and Optimization.** Outcome-based performance metrics focus efforts on actual results and remove the emphasis on traditional work and the traditional processes of operation. Innovation at all levels of the organization is encouraged through results-based performance frameworks.

Benefits of Performance-Measurement Systems

The benefits of performance measurement are seen through the use of an organization's performance maturity. As Debra Hoffman, Field Engineering Specialist and Member of the National Institute of Standards and Technology (NIST) Modernization Forum, explained in the *AMR Research Newsletter*, "Performance measurement maturity determines a company's ability to continuously improve, and is a key determinant of its future performance."⁵

Performance-measurement maturity can be determined by answering the following questions:

- Is my organization *learning* from our indicators?
- Is measurement a tool we use to *interact* with our customers, employees, stakeholders and partners?
- Are we developing the right measures to integrate performance *cross-functionally* across the entire airport?
- Are we focusing on *results-oriented* measures in the select areas that will truly make a difference in our success?
- Does airport *leadership* accept measurement as a primary tool for decision-making?
- Are employees and others comfortable with the performance *environment* and free to share objective information honestly and openly?

In achieving performance maturity, the measures themselves are just the first step; moving forward requires addressing the contextual environment surrounding the process and the airport. The organizations seeing the most benefits from this process have taken performance out of individual departments and adopted an integrated, top-down framework. In addition, they have removed the natural reluctance to report on the most important and sometimes underperforming areas. While no organization is ever going to enjoy reporting or discussing all data in the most honest and open way, this is an integral aspect to creating the interaction and dialogue presented throughout this guidebook.

Ultimately, the benefits of performance measurement can be seen when quantitative data are added to qualitative information to inform discussions, create a positive atmosphere of transformation, and ensure successful airport operations for years to come.

While many organizations enjoy illustrating what they already do well, the most vital measures focus on the most urgent or poorly performing areas.

Characteristics of an Effective Performance-Measurement System

The unique nature of every organization's strategy and performance measures caution against a broad-brush approach to defining a successful system. However, in the 50 years of work since management by objectives began to popularize a quantitative methodology for improving performance, the following common characteristics for all types of organizations, including airports, have become evident:

- Measurement is a tool for enhanced communication.
- Performance measurement improves problem solving.
- Regular formalized reviews create a time and space for course correction.

Beyond these individual characteristics, which are described below, one strong theme has emerged from the growing evidence. That theme is that strategic planning, while a critical cyclical event, is useless if it isn't tracked, measured, and translated into action. While it is true that the quality of strategies varies widely, what matters more than the quality of the strategy is implementation. There is a tendency not to implement strategies, and implementation, more than the quality of the strategy, is what separates successful and unsuccessful organizations. Successful measurement and management of a few simple strategies trumps a brilliant strategic-planning process that can't be measured.

Why are implementation and execution so difficult? As airports and others have discovered, there are two main factors that jeopardize the success of a performance-measurement system. The first one is related to resistance to change and how well organizations can approach change management. It is not until all levels of staff understand what is in the performance-measurement system for them that the system will be accepted. The second factor that can jeopardize success is if strategies and related initiatives do not follow a planned script. This can occur when the process isn't well defined or tracked. This soft or undefined process stems from missing leading and lagging measures in a performance-measurement logic model or from making faulty assumptions about a cause-and-effect relationship between measures and activities. The execution phase can force management and teams to translate a less-than-specific understanding of airport strategy into a much more detailed description of how it will all happen: who will take on which tasks in what sequence, how long those tasks will take, how much they will cost, and how they will affect subsequent activities.

The three core themes that run through all performance-measurement recommendations (see above) can assist airports in taking the important step from strategic planning to performance management. Further discussion of how these themes might be applied specifically to performance management at airports is provided below:

Measurement Is a Tool for Enhanced Communication

It's difficult to convey every gradation of a strategic plan throughout a diverse and complex airport structure. Distill goals and strategies down to the core points, specify the message to individual departments and employees, and then focus on communicating those.

At Minneapolis–St. Paul International Airport, for instance, senior staff members from each department meet with the executive director once a week to update him and other department leaders on trends, current and expected performance deviations, and any issues and concerns. These meetings are crucial in ensuring smooth vertical and horizontal communication, as the division directors become aware of issues in other operational areas that may later affect their divisions. These meetings turn data and strategy into practical, useful action plans at the operational level. In other airports, such as Tampa International Airport, the Planning and Development Division meets biweekly with the Development Committee (IT, Finance, and Operations) to monitor time and expenditures and discuss opportunities and challenges in capital investment projects under way. At Dayton International Airport, management also meets biweekly to discuss strategies and tactics with the participation of the Finance, Safety, Engineering, and Operations departments, the Director of Aviation, and the Deputy Director of Aviation.

Numbers alone do not speak to people. Numbers and qualitative information—including lessons learned, mistakes made, powerful stories, and best practices—are what characterize effective performance measurement. Perhaps most importantly, performance indicators set clear goals for all airport employees and partners. As many people have said, “What gets measured, gets done.” However, numbers alone do not engage employees or provide the impetus to take the extra step every day in order to improve the organization's performance.

Organizational communication is greatly enhanced through improved performance measurement. Key performance measures can make planning issues more tangible and give employees a better understanding of both what is expected and what challenges they will face. Private and public organizations that utilize measurement effectively have begun to develop outcome measures that better uncover implications and priorities for all of their departments. Employees and managers can then react to these priorities and make the appropriate daily resource- and task-based decisions. This type of real-world data use helps clear up vague generalities and bridges the gap between simply accepting a strategy and actually taking action.

“What gets measured, gets done” remains true, which only reemphasizes how important it is to choose the right measures.

Performance Measurement Improves Problem Solving

An important use of organizational measures is the creation and testing of hypotheses in the strategic plan. Strategies often assume connections exist among resources, activities, products, services, and results, but only real data can prove or disprove the existence of these connections. While some managers use qualitative information and deeper questioning to discover the story behind the data, others are more comfortable disaggregating data and deploying charts and graphics to help visualize trends.

An unexpected and unwanted measurement effect can, unfortunately, move an organization away from problem solving if the measurement effect is unanticipated. In this situation, “counting” has been substituted for results-oriented measurement, and insignificant indicators have taken the place of meaningful conversation and action. As important as it is to track indicators and harness trend analysis, this should never be seen as a way to actually solve problems. It is important to avoid overreliance on quantitative data because it can end up inhibiting meaningful conversation on performance. The emphasis on data collection and table population frequently threatens to turn the entire process into a compliance exercise, enabling teams to withdraw from understanding why strategies are not producing desired results.

Counting does not equal performance measurement. We can count almost anything, but few of these measures hold strategic importance for the airport.

Contextual and cultural barriers, particularly a purely negative connotation associated with measurement, can become a barrier to honesty in analysis and dialogue. Where measurement leads to better execution, it's the ability to face reality that appears to make the difference. Ultimately, it's the role of leadership to ensure that measurement is not a compliance or a counting exercise but the beginning of deeper and more meaningful questioning and discussion. The numbers themselves are only the beginning of the story.

Regular Formalized Reviews Create a Time and Space for Course Correction

Strategic planning and measurement are often seen as infrequent or cyclical activities. In fact, executing a plan that isn't frequently reviewed is close to impossible. With the tactical and "crisis to crisis" environment surrounding many businesses, it is easy to understand why leadership has a hard time meeting regularly to reflect and analyze strategic performance. Without a firm meeting structure and schedule, there is little external impetus to stay on top of managing and analyzing through key performance measures.

The consideration of qualified personnel and available resources should be at the top of the agenda at regular review sessions, as these are the management levers in any logic model or strategy map. Typically, employee competencies, skills, and development are key to strategy execution in organizations. However, if an airport is convinced that the right people are in the right roles, but indicators continue to show a lack of execution, other resource issues need examination. Do the skilled individuals have what they need to get the job done?

Although executive teams are increasingly committed to regular and even daily scorecard or dashboard reviews, they may still miss the rest of the narrative regarding how resources are applied and how the business environment is shifting. To bridge the gap between the high-level metrics and the tough decisions that must be made at the initiative level, managers who excel in execution rely on dashboard tools or summary documents to track resources and objectives.

While quarterly reviews have been increasingly popular in organizations utilizing enterprisewide indicators, the specific tool that works best for an individual airport will depend on its size, complexity, and culture. The goal is to balance executives' busy schedules with thoroughness and a full understanding of key issues. Dashboards help move this process along, providing a clear picture of the primary strategies and activities, as well as the key indicators that are impacting each of them. Finally, dashboards and regular meetings reinforce accountability, giving better visibility into actual progress, and enabling more responsive management action.

Measuring and displaying data without regular discussion, analysis, or dialogue will not lead an airport to improve performance.

Organizations using standardized measures and quarterly performance reviews report less time spent explaining problems and more time spent solving them.

The Eight Characteristics of Effective Performance Measurement

There are characteristics of effective measurement in addition to the three large themes discussed above. These characteristics, organized into eight groups, work as a step-by-step model. Many organizations implement the first four to six groups, but only the highest performing organizations fully implement all eight. The eight groups are listed below:

1. **Defining and Aligning with Enterprise Strategies.** Successful performance-measurement systems are built on a solid strategic foundation in which three strategic components are clearly defined: mission, vision, and values. Based on an environmental assessment, specific strategies should be adopted to achieve organizational results. This requires structural alignment with enterprisewide outcome measures. Finally, performance measures should be clearly communicated to employees for greater transparency.
2. **Developing Meaningful Performance Measures.** Selected performance measures should be reliable and report not only on end outcomes, but also on intermediate outcomes. Process

- measures, such as efficiency, cycle time, and other output and activity data provide the backbone of any successful performance-measurement system. As such, they should be effective. In addition, goals and measures should be supported by internal and external stakeholders.
3. **Increasing Data Availability.** The data that will be measured should be identified for accessibility and validation purposes. Making data accessible may mean that the information has to be standardized, normalized, and usable for benchmarking and other purposes. However, data availability is different than worthwhile information. Data should have strategic value for measuring end-outcome goals.
 4. **Maximizing Data Integrity.** Data should be collected, managed, and analyzed in a uniform and consistent manner. To ensure data quality, it is recommended that data be validated and verified through sampling or independent means.
 5. **Enhancing Performance Reporting.** Internal reporting should be available to frontline managers and senior decision-makers on a real-time basis so as to contribute to the decision-making process. Therefore, reports should be comprehensive and include measures, analysis, trends, and suggestions for improvement.
 6. **Improving Evaluation and Analysis.** Process measures, benchmarks, and service levels are evaluated in cycles of 1 to 2 years. Outcome and strategy measures, on the other hand, are evaluated in cycles of 2 to 5 years to validate cause-effect relationships.
 7. **Achieving Performance Integration.** Integration should be achieved internally and externally. Internal integration relates to support services—human resources, information technology, finance, and so forth—that contribute to the management and documentation of performance. External integration refers to the performance contributions of multiple organizations in a joint measurement area to be tracked and compared.
 8. **Effectively Driving Decision-Making.** Performance measures should provide sufficient information to adopt budgets and make investment decisions.

Strategic Plan Elements in Performance Measurement

A well-developed strategic plan should contain the basic information necessary to begin the formulation of an integrated performance-measurement system, as shown in Exhibit I-2.1.

Exhibit I-2.1. Strategic plan elements and performance-measurement attributes.

Strategic Plan Element	Performance-Measurement Attributes
Mission	A broad statement, often in legislation, of what the airport has been charged to accomplish and why.
Vision	A concise, compelling, measurable statement describing the desired future results the airport seeks to achieve.
Values	These describe how an airport will conduct itself, both internally and externally, while engaging in its business activities.
Strategic Goal	This is derived from the mission and vision and articulates an enduring end state desired.
Objective	This describes the outcomes required to accomplish the goal.
Strategy	This defines how objectives will be achieved. Typically, this contains dates, basis of measurement, and performance targets.
Tactical Plans	These identify the short-term actions or initiatives needed to implement the strategy. Typically, these contain cost, time, milestone, quality, or safety attributes as well as performance targets.

Source: Adapted from the Performance-Based Management Handbook⁶

With performance measurements collected from the strategic plan (as well as from stakeholders and senior management), an assessment must be performed to determine the quality of information and the current use of existing measures. One of the main objectives is to find out what measures are maintained and monitored to begin moving from occasional performance measurement in some parts of the organization to a true performance-measurement system. Once existing performance measures are mapped to strategies, the result will be a more precise strategy formulation for senior managers.

Performance Measures and Areas of Measurement

Performance measures are measures of the output of a particular process or procedure. Performance measures can represent a single dimensional unit such as costs, revenue, or length of time. Performance measures can also be multidimensional, such as ratios of two or more underlying units: costs per passenger, revenue per work load unit, and so forth.

Each airport selects performance measures for different reasons, but selection of performance measures usually is based on an airport's strategic objectives, specific environment, and other organizational intricacies. Properly selected performance measures indicate relevant information about airport service, operations, and processes. Performance measures are important tools in helping to understand, manage, and improve certain outcomes by making well-informed decisions. The result of performance measurement will tell how well the airport is doing against predetermined goals, assess strengths and weaknesses, and help establish performance standards.

Performance measures can be, and increasingly are, applied to all aspects of airports, not just financial and customer satisfaction or airside and landside operations. Airport management employs performance measures within its core functions: planning, organizing, staffing, coordinating, reporting, budgeting, and evaluating. However, the areas of measurement at airports have expanded to reflect a more balanced approach and ensure that all airport activity performance is accounted for. A balanced approach considers the financial and nonfinancial drivers of an organization's achievements. Airports across the United States and Canada measure a broad array of areas. Exhibit I-2.2 summarizes the most common areas of performance measurement together with the corresponding sample performance measures.

Vertical and Horizontal Integration of Performance Measures

Performance measures need to be integrated in both vertical and horizontal directions. Vertical integration of performance measures involves organizational units and their individual staff members and aligns organizational activity with the strategic objectives. A strategic plan initiates vertical integration and selection of corresponding measures and thereby enforces strategic objectives down through all levels within the organization, as explained above. A strategic plan establishes strategic goals, which are then linked to strategic measures to assess progress toward the strategic goals. Further, each subsequent level of the organization establishes performance measures that must fit into the strategic agenda. Full deployment of performance measures occurs throughout the organization until it reaches individual staff members. A vertical integration framework of different levels of performance measures is illustrated in Exhibit I-2.3.

This deployment of measures is not limited to the operational and staff individual levels, as depicted in the exhibit, and may be divided according to organizational design as long as those levels and measures support the upper-level measures and eventually the strategic objectives.

Exhibit I-2.2. Common areas of performance measurement and performance measures.

Area of Measurement	Performance Measure	Performance Measure Component
Safety	Employee Accidents and Incidents	Construction Injuries Lost Time Injury Rate
	Airfield Violations	Runway Incursions Runway Condition FAA Safety Compliance Violations Warning Citations Issued
Security	Security Incidents and Violations	Security Badge Breaches
	Security Efficiency	Security Wait Times
Financial	Revenue Management	Total Revenue per EPAX* Aeronautical Revenue per Outbound Operation Non-Aeronautical Revenue % of Total Revenue Commercial Development Acres Leased Retail Sales per EPAX
	Cost Performance	Operating Cost per EPAX Capital Expenditures Airline Cost per EPAX
	Debt Management	Debt Service Coverage Ratio Debt per EPAX Credit Rating
	Operating Performance	Return on Assets Revenue to Expenses Ratio Days Unrestricted Cash on Hands
Operational	Productivity	EPAX per Gate Slot Utilization Parking Turnover Rate
	Efficiency	Operating Expenditures per Work Load Unit Delays per Operations Workers' Compensation Claims Baggage Cart Retrieval Taxi Out Times
Customer Service	Service Quality	Terminal Cleanliness Concessions Quality and Variety Security Timeliness
	Customer Value	Signage/User-Friendliness of Terminal Number of Carriers Serving the Airport Number of Direct Destinations Served Ground Access Availability (bus, rail, taxi) Average Fares
	Customer Satisfaction	ACI Survey Rank J.D. Power Rating Customer Complaints
Environmental Sustainability	Environmental Compliance	Violations Identified by Regulatory Agency De-Icing Material Discharge Frequency and Severity of Spills
	Air Quality	Emissions per Aircraft Movement Air Quality at the Airport
	Noise	Noise Levels Noise Complaints
	Reuse and Recycle	Total Weight of Recyclable Waste % of Water Recycled and Reused
	Energy and Water Efficiency	Electrical Power Consumption Water Consumption per Passenger
People	Employee Satisfaction	Job Satisfaction Index Employee Turnover
	Employee Engagement	Employee Engagement Index Wellness Program Participation
	Learning and Growth	Training Hours per Employee % Employees in Career Development Program
	Workforce Diversity	Men and Women Salary Ratio Minority Representation in Workforce
Community Relations	Social Responsibility	Contracts Awarded to DBE Community Donations Scholarships
IT	Service Delivery	Baggage Processing System Faults
	Transaction	Check-In Kiosk Usage

Source: Infrastructure Management Group
*EPAX - Enplaned passengers

Exhibit I-2.3. Framework of vertical integration of different levels of performance measures within the organization.



Source: Performance-Based Management Handbook⁷

Vertically integrated performance measures have the following characteristics:

- They have a clear or at least a cause-and-effect relationship to the strategic goals.
- All measures contain performance targets.
- Ownership of each measure is assigned to the appropriate level of the organization.

Horizontal integration of performance measures ensures the optimization of workflow across all process and organizational boundaries.⁸ Horizontal integration ensures that the final outcome is achieved no matter how complex the process is and how many organizational units are involved. A customer satisfaction scenario can provide a simple example of the importance of horizontal integration. It is often said that airport customers complain about the cleanliness of airport bathrooms. The reasons for the complaints could originate in several departments. Perhaps the procurement unit did not order enough cleaning supplies, or the maintenance unit has issues with the cleaning equipment, or the airport cleaning crew is understaffed. The final outcome is that the bathrooms are not clean and the customer is not satisfied. Horizontal integration of performance measures assists management in understanding the roles of units across the organization in implementing a particular process and thereby allows management to allocate resources more effectively and synchronize the efforts of multiple departments to achieve overall organization goals.

Types of Measures

Most performance measures can be grouped into various types based on their purpose and the type of information used. Types of performance measures frequently cited by airport management and performance-measurement experts are described herein. Attention should be given to selecting the right balance of performance measures among the several types of measures. The mix of measures chosen will depend on how the measures will be used in the organization; however, failure to acknowledge the various types of performance measures may limit management's ability to objectively assess performance and take an active role in improving it. The following sections describe leading and lagging measures; input, output, and outcome measures; quantitative and qualitative measures, and timing and progress measures.

Leading and Lagging Measures

To date, performance measurement has been used mostly to monitor past performance in order to stimulate future action. Measures that evaluate what has happened in the past, i.e., operating

Leading measures can predict future performance and allow management to act in a proactive manner.

Lagging measures are typically easier to identify and collect than leading measures. Organizations that use too many lagging measures, however, risk seeing evidence of a problem only after it occurs.

expenses or aeronautical revenue, are called lagging measures. Lagging measures are beneficial in reviewing performance after the fact, ascertaining the impact of certain actions or program implementations, and indicating the areas of improvement. Lagging measures only allow management to take reactive action.

Airport operators have increasingly expressed a need for leading measures, which are measures that can predict future performance and which allow management to act in a proactive manner. Currently, few leading measures are used at airports, and they are most valuable when there is a specific need within an organization. A number of contracts to be expired, for instance, is a leading measure that could be helpful in building future costs into budgets. Managers could annually track the status of contracts and identify the ones set to expire in the short term and the long term. In anticipation of a contract’s expiration, airport management could assess the costs and benefits of the current provider, enter into negotiations with a new service provider, or prepare for the requested variances in the contract with the current provider. In addition, airport management can turn to external sources such as airline and hotel bookings to predict future airport passenger traffic.

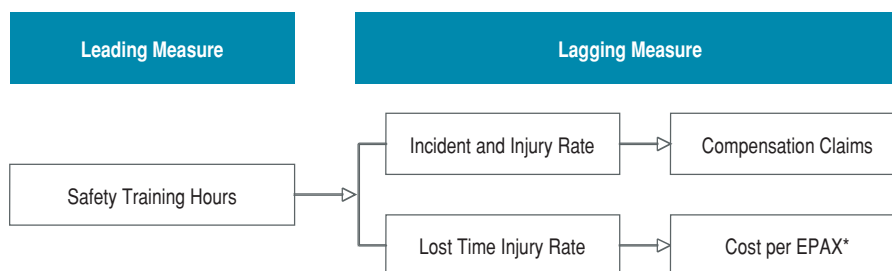
Leading measures could be especially important for safety and security areas since they would allow airport management to foresee a fault or risk before it occurs, which could help prevent accidents and injuries. For instance, instead of tracking a lagging measure such as worker injuries and accidents, airports could track leading measures such as unsafe-on-job acts, training hours, or useful life of safety equipment. Both types of measures have their advantages and disadvantages. It is difficult for managers to predict future performance and risks if they only use lagging measures. On the other hand, emphasis on the use of leading performance measures can be speculative since overall airport performance not only should be assessed based on expected future performance, but also based on the analysis of past performance. In order to have the clearest view of an organization’s past and future performance, a balance between lagging and leading measures needs to be established when selecting performance measures.

An advantage of dealing with leading measures is that a map can be made linking leading measures to corresponding lagging measures. A leading measure is supposed to indicate a possible outcome of lagging measures depending on a direct or inverse relationship between them. Managers aware of this relationship could take an action to prevent or stimulate those outcomes. Exhibit I-2.4 is a sample map for safety performance measurement that depicts the correlation of leading and lagging measures.

Input, Output, and Outcome Measures

Airports provide a public transportation service that requires extensive resources, produces several units of output, and generates certain effects. With that in mind, The International Civil Aviation Organization’s (ICAO’s) *Airport Economics Manual*,⁹ in an effort to set

Exhibit I-2.4. Leading and lagging measures map.



Source: Infrastructure Management Group
 * EPAX - Enplaned passengers

a standard for the application of principles of best commercial practices for airports, categorizes performance measures by input, output, and outcome. In some instances in the industry, the fourth measure of *efficiency* is added to assess how efficiently inputs are being used to produce outputs.

Input measures represent airport resources allocated to the execution of activities and work processes. Input measures record capital assets, employees, supplies and services. Capital inputs are airport infrastructure and can be classified into the following:

- Airside assets (e.g., runways, taxiways, and navigation aids)
- Landside assets (e.g., terminals, parking spaces, and hangars)
- Airport support facilities (e.g., aircraft maintenance area and rescue and firefighting station)

Employees may include administrative staff, air-traffic controllers, maintenance technicians, security personnel, and the cleaning crew. Supplies and services may consist of communication and maintenance services, electric power, and fuel. Inputs are mostly one-dimensional measures and while they do not reflect actual performance, inputs do provide context for calculating other measures. Data sources for inputs should be easily available within the responsible units of the organization.

Output measures represent the amount of service provided. They are often referred to as workload measures and provide valuable feedback on the demand for service and the quantity of clients being served. Examples of outputs are the number of passengers, the number of aircraft operations, and the cargo weight handled by an airport. Revenues and costs can also be outputs. Data sources for outputs are operational and financial records.

Outcome measures provide feedback on the quality and efficiency of services or on the intended performance of the organization. These measures are often referred to as effectiveness measures. Outcome measures indicate accomplishments or results that occur (at least partially) because of services provided. While the airport itself may control the number of parking lot spaces, their ultimate result is getting passengers to their planes in a timely fashion. An integrated performance-management system requires the use of both output and outcome measures, with the output measures supporting long-term changes in the outcomes. Outcomes provide the relationship between input and output measures and almost always are measured in multidimensional units. There are some exceptions to this, however, such as when the outcome is customer service levels, which are usually measured by surveys in percentage of satisfaction unit. Typical outcome measures are runway incursions in safety area per million operations, passengers per employee in productivity area, and variable costs per aircraft movement in cost performance area.

End-outcome measures demonstrate whether the airport's customers and stakeholders have seen the results and benefits expected from the airport's work. All end-outcome measures should be phrased in terms of this external perspective. An end outcome would not measure how many square feet of carpet were cleaned daily, but whether the customer viewed the airport as clean and attractive. An end outcome would not measure whether the airport had offered gates to international airlines, but how many international cities the airport served. The most important end-outcome measures for each goal are the KPIs for the airport.

Efficiency measures describe how successful an airport is at producing the most outputs possible with the lowest possible utilization of resources. An efficiency measure indicates the unit cost of an airport service or program (how many dollars, staff members, or other resources it takes to produce a particular activity or outcome) or a nonmonetary measure of how well an organization is doing in carrying out its activities (as measured by on-time performance, the ratio of staff to workload/caseload, and so forth).

Many organizations count "inputs" as a performance measure. An input is simply a resource.

End-outcome measures should be developed and viewed from the perspective of the customer.

Quantitative and Qualitative Measures

Performance measures can be sorted into quantitative and qualitative. Quantitative measures deal with pure statistics and numbers. Examples of quantitative measures are operating expenses, revenues, terminal area leased, landing fees, and so forth. Quantitative measures are preferred because the data are easily and more frequently obtainable and comparable. In some cases, quantitative measures are the only way to assess performance. Airports frequently use quantitative performance measures.

A true quantitative measure must either use numbers or a yes/no format to display data.

The opposite of quantitative measures are qualitative measures, which cannot be easily quantified. Qualitative measures evaluate intangible aspects of operations such as employee satisfaction, process efficiency, the value of certain programs, and so forth. Such information is hard or impossible to capture with statistics, thus it is difficult to measure. Tools used to acquire qualitative data include surveys, feedback, observations, established rules, guidelines, and programs, and so forth. A well-known qualitative measure in airport operations is customer service or satisfaction, which has gained popularity over the years through customer surveys. Qualitative measures can predict the results of quantitative measures: if customer satisfaction is poor, sales and revenue will decrease; if employee engagement is low, employee turnover will most likely increase. In the same way, quantitative measures can predict the results of qualitative measures: if the number of maintenance staff decreases, most likely the appearance of the airport will degrade, negatively impacting customer satisfaction.

Timing and Progress Measures

Other categories of measures deal with timing and progress of the organization:

- **Long-Term Outcome Measures** indicate the goals or results that the airport is striving to achieve in the long term. While the process for achieving these goals is usually expected to take at least 3 years and the outcome may be considered challenging to measure, these goals represent the long-term results that are expected to occur if airport efforts are successful.
- **Intermediate Outcome Measures** indicate changes the airport must see first in order to achieve longer term goals. Intermediate outcome measures begin with a specific action verb such as “increase,” “decrease,” or “reduce.” These intermediate measures reflect the airport’s strategies and are key to measuring strategy execution.
- **Activity Measures** indicate the progress of projects and programs that will produce outputs. Progress is tracked by measuring the deviation of scheduled and budgeted metrics from the actual numbers.

The most complete sets of organizational performance measures use activity, output, intermediate and end-outcome measures.

Functionality of Measures

A single measure can simultaneously be one or more of the types of measures discussed above. For instance, sale of fuel is a leading quantitative output measure. It is leading because it can predict the future behavior of other measures such as aircraft operations and origin and destination (O&D) versus connecting traffic. It is also a quantitative measure because it represents the monetary value of a sold commodity that can be easily measured in numbers. Finally, it is the output, or result, of the service provided to airlines and aircraft owners in the sales of a commodity.

One measure can simultaneously be both a leading and a lagging indicator depending on the perspective of the analysis.

However, measures categorization is not always so strict. Customer satisfaction could be for the most part a lagging qualitative outcome, but in some instances it could also behave as a leading measure. It will be lagging when it is a consequence of inputs that contribute to the customer experience. For instance, a reduction in the supply of cleaning products as part of a cost-savings program could impact customers’ perceptions of airport cleanliness, which could lead to a decrease in customer satisfaction. Customer satisfaction is also a qualitative measure because it depends on customer perceptions that are not directly measurable with numbers, and it is an outcome measure because it is the result of the quality and efficiency of a service. Finally, customer satisfaction is a leading measure because a decline in customer satisfaction at an airport

Exhibit I-2.5. Summary of types of performance measures.

Type of Measure	Description	Examples
Lagging	Measures that evaluate what has happened in the past and allow management to take reactive action.	Revenue per Enplaned Passenger, Operating Expenditures, Runway Incursions
Leading	Measures that may predict future performance and allow management to take a proactive action.	Analysis of the Safety Management System, Percentage of Employees Recommend Airport Job to a Friend, Total Accounts Receivable
Input	Measures that record the resources used to produce an output	Number of Parking Spaces, Number of Employees (air traffic controllers, security personnel), Number of Gates, Amount of Investment
Output	Measures that represent capacity provided and the quantities of service produced	Number of Passengers, Number of Aircraft Operations, Aeronautical Revenue
Outcome	Measures that describe improvement or success in achieving a goal. Outcome measure is a ratio of input and output measures	Number of Delayed Aircraft, Total Airport Costs per Passenger, Aircraft Movements per Gate
Efficiency	Measures that assess how well the organization is doing in carrying out its activities	Labor and Contractual Expenses per Work Load Unit, Total Passengers per Full-Time Employee (FTE)
Quantitative	Measures that are pure statistics and numbers	Employee Injuries, Operating Income Margin, Terminal Square Feet Per FTE
Qualitative	Measures that cannot be quantified and measure intangible aspects of organization	Workforce Diversity, Employee Satisfaction
Long-Term Outcome	Measures that indicate the goals or results the organization is striving to achieve over the next several years	Improve Customer Satisfaction, Increase Operating Liquidity, Increase Bond Rating
Intermediate Outcome	Measures that indicate changes the organization must meet to achieve long-term goals	Increase Non-Aeronautical Revenue, Decrease Number of Accidents and Incidents
Activity	Measures that indicate the progress of the projects and programs that produce outputs.	Scheduled vs. Actual Timeline of Terminal Improvement, Budgeted vs. Actual Employee Compensation Claims

Source: Infrastructure Management Group

could predict a decline in the number of enplaned passengers at that airport and an increase in enplaned passengers at competitor airports given the same flight schedule and fare conditions.

Exhibit I-2.5 summarizes the types of performance measures and provides some examples.

Structural Alignment with Enterprisewide Outcome Measures

The airport’s management structure can greatly help or hinder performance-measurement success. As airports develop outcome measures, it becomes apparent that in many cases the true performance indicators are the result of multiple processes and multiple departments. Unfortunately, in most large organizations a “silo effect” exists, where the organization is very effective vertically within the individual area, yet lacks a focus on outcomes across these silos, most of which require cross-departmental cooperation.

True outcome measures rarely exist within any one department, and enabling airportwide change and improvement in areas like service quality, customer satisfaction, and even IT requires cross-functional teams to succeed. Some very successful organizations have adopted this philosophy and created “matrix” organizational structures. These structures work to break down silo walls by creating reporting structures based on both operational function and market or product. Ultimately, more than one area will have an impact on measurable success, creating a more transparent and innovative approach to problem solving and a better understanding of the strategic goals of the entire airport.

The best outcome measures involve multiple departments working together and being held jointly accountable for results.

Transparency and performance are related concepts, but are not the same. Transparency highlights exposing where resources are going, while performance highlights the results.

Performance Measures Clearly Communicated to Employees for Greater Transparency

While today's business environment has focused increasingly on financial transparency to shareholders and regulators, performance transparency has also become increasingly important. Organizations with performance transparency have conveyed to employees, stakeholders, and partners exactly what success means in quantitative terms. While performance measurement is an organizational effort, the actual prioritization and integration of measures into daily activities happens at the individual level.

Many organizations evaluate the transparency of their performance efforts with an emphasis on engagement and performance integration in everyone's work. In addition, greater performance transparency can encourage better vertical communication on what drives the airports' performance, significantly contributing to the main goal of performance-measurement efforts.

Key transparency questions that organizations pursue through performance measurement include the following:

1. **What is our most effective path to enhanced revenue and sustainability?** Without accurate measures integrated with strategy, surprisingly few people can answer this question correctly. In a transparent organization, no one has to guess how the airport makes money or how what they individually do in their jobs affects bottom-line performance.
2. **Why do our customers do business with us?** What are the reasons the airport's customers use it and not an alternative? Price? Convenience? Quality? Need? Aesthetics? Habit? Lack of choice? Customer-focused outcomes can reveal behaviors and identify what is important to the customer.
3. **What makes our airport or travel experience worthwhile and truly different from others?** What's in the airport's cultural and behavioral patterns that give it a competitive advantage? These issues should be understood through key performance indicators and become the focal point of resource investment and management attention.

Performance-Measurement System Frameworks

Below is a description of the major performance-measurement system frameworks that are most commonly used by organizations. The main goal of all the frameworks is to guide organizations in determining the best way to reach outcomes that support their organizational mission and vision. Selection of a framework will depend on each airport's business practices, the development level and characteristics of the individual performance-measurement system, and the expected outcomes of the system. Airport business models differ in many ways, so there is no one framework that fits all airports. The performance-measurement system frameworks to be described are the logic model, Balanced Scorecard, The Malcolm Baldrige National Quality Award, and Dashboard.

Logic Model

A logic model is a top-level depiction of the flow of materials and processes required to produce the results desired by an organization. The model can be very useful in organizing planning and analysis when designing programs and systems or when designing outcomes-based evaluations of either or both.

Although logic models can be used in whatever application the designer chooses, it is more effective to use logic models to depict major, recurring items in an organization or program than to depict one-time items. Using a logic model for one-time activities intended to build an organi-

Logic models graphically represent the rationale and logic behind a program's design. By illustrating the logic, flows and disconnections can be exposed and resolved.

zation or program may not be helpful. However, using logic models to analyze and describe major, recurring activities in the organization or program that produce the results desired for clients and the community can be beneficial.

Logic models typically depict the inputs, processes, outputs, and outcomes associated with an organization and its programs:¹⁰

- **Input** is the material the organization or program takes in and then processes to produce the results desired by the organization. Types of inputs include people, money, equipment, facilities, and ideas. Inputs can also be major forces that influence the organization or program. Obtaining and using inputs often involves a cost.
- Logic models are usually concerned with the **major recurring processes** associated with producing the results desired by the organization or program.
- **Outputs** are usually the tangible results of the major processes in the organization. Usually, outputs are accounted for by number, for example, the number of people who received training.
- **Outcomes** are the impacts on the people whom the organization wants to benefit with its programs. Outcomes are usually specified in terms of learning, including enhancing knowledge, understanding/perceptions/attitudes, skills (ability to accomplish results or capabilities), and conditions (increased security, stability, and so forth).

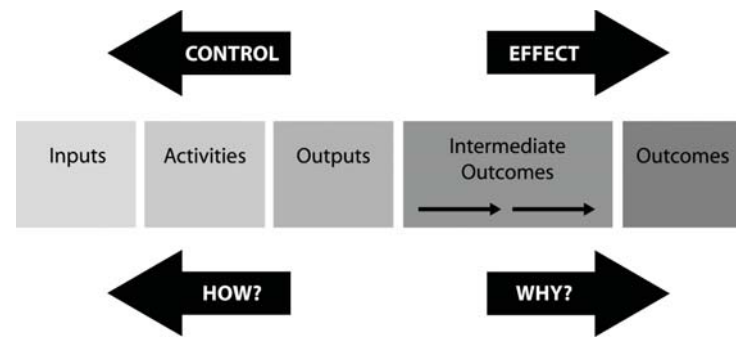
In order to retain focus and engage all employees in a common vision, it is important to limit the number of goals and key performance measures. If the vision is to make the airport an “international gateway,” there should be three to five key long-term objectives taken from the vision with their corresponding end-outcome measures to evaluate success. These three to five long-term objectives and their measures would cascade to be transformed into performance targets for all of the airport’s products, services, activities, and employees. All end-outcome measures would be expected to meet their performance targets within the long-term planning cycle, typically 5 years for most businesses and public organizations.

In order to understand the relationship between end outcomes and intermediate outcomes—output and activity measures that cascade from the vision—it is useful to graphically illustrate the relationship with a somewhat revised version of the performance logic model (see Exhibit I-2.6).

Performance logic is the underlying framework that aligns measures with organizational goals and ensures that all strategies and activities are properly organized and understood. As Exhibit I-2.6 demonstrates, outcomes are the results of the airport’s work and outputs. Outputs are airport products and services; activities are the projects and programs; and inputs are the time, money, and human resources used in activities. Performance measures should exist for each aspect of the logic model, with the exception of inputs or resources, which themselves do not measure any aspect of performance. While some organizations initially are unable to measure end outcomes, these end outcomes must be determined up front to guide subsequent measurement development. Where data are not available to populate these outcome measures, data collection should begin as soon as possible.

The performance logic model works by asking airports to plan with the end in mind. You should not set performance measures and targets starting from now and moving into the future; start with where you want to be in the long term and work back. Ask, for example, what your capacity needs will be 10 years from now and the long-term targets, and then set annual performance targets based on implementation of your plans and programs. Usually, improvement will not proceed in a straight line. For example, if you plan to build a new runway in 5 years, you

Exhibit I-2.6. The performance logic model.



Source: The Performance Institute¹¹

Beginning with the end in mind, the logic model follows standard planning principles. The end outcomes are established first, and only the strategies and activities that contribute to those outcomes are measured and emphasized.

will see virtually no benefits from that runway until it is built and equipped, sometime in Year 5. Also, there are often lags between implementing a program and gaining its full impact.

You won't succeed unless you know what success looks like: in other words, what outcomes you propose to achieve. A good performance goal tells you that. Good performance goals, in addition to being primarily outcome oriented, have the following attributes:

- An improvement verb (increase, reduce, etc.).
- A measure (the “yardstick” you will use, for example, on-time arrivals). You'll want to describe the measure in detail, a point to which we will return.
- A target, the level you want to achieve. Having at least 80% of flights arrive on time is an example. The target can be as simple as having something in place.
- A target date, that is, when you propose to achieve your target.
- Usually, you'll also want to specify a baseline (improvement from what level). Normally, the baseline will be today's level or a level in the recent past. The baseline puts your performance target in perspective by letting people know how big an improvement would be.

In order for performance measures to tell you what you need to know to gauge success—that is, what you have achieved and by when—they will need to conform to the following “SMART” criteria:

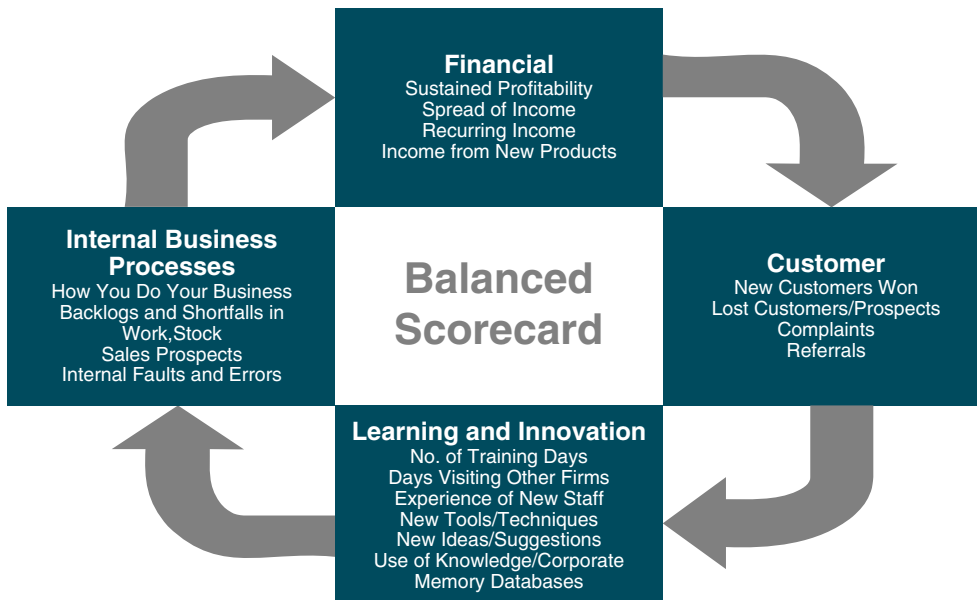
- **Specific.** Is the measure's definition so specific that there will be no confusion in calculating it? Will someone else, calculating the measure as described, get the same result?
- **Measurable.** Is the measure quantifiable?
- **Accountable.** Does the airport have the ability to influence the measure?
- **Realistic.** Is it doable? Does it fit with the overall strategy and goals of the airport?
- **Time-Bound.** Is it understood how frequently we need to measure and when we can expect to see movement?

Balanced Scorecard

The Balanced Scorecard is a strategic planning and management system that helps employees in an organization understand and work toward a shared vision. The scorecard system helps align the organization's picture of the future (shared vision) with its business strategy, desired employee behaviors, and day-to-day operations. Also, strategic performance measures are used to better inform decision-making and show progress towards desired results, so the organization can then focus on the most important aspects necessary to achieve its vision and satisfy customers, stakeholders, and employees. Other benefits include measuring “what matters,” identifying more efficient processes focused on customer needs, improving prioritization of initiatives, improving internal and external communications, improving alignment of strategy and day-to-day operations, and linking budgeting to strategy. Exhibit I-2.7 illustrates the four major areas of activity considered in the Balanced Scorecard approach and examples of related measures.¹²

According to the Balanced Scorecard Institute, there are nine steps an organization or company needs to go through to “connect the dots” between strategic planning and management and the mission.¹³

1. The process starts with an assessment of the organization's mission and vision, challenges, enablers, and values. The start of the process also includes preparing a change of management plan for the organization and conducting a focused communications workshop to identify key messages.
2. Elements of the organization's strategy, including strategic results, strategic themes, and perspectives, are developed to focus on customer needs and the organization's value.
3. The strategic elements developed in Steps One and Two are broken down into strategic objectives, which are the basic building blocks of strategy and define the organization's strategic

Exhibit I-2.7. Balanced Scorecard.

Source: <http://sydstewart.com/balancedscorecard.htm>

intent. Objectives are first categorized on the strategic theme level, which is sorted by perspective. Each strategic theme is matched with “cause-and-effect linkages,” and then later combined to produce one set of strategic objectives for the entire organization.

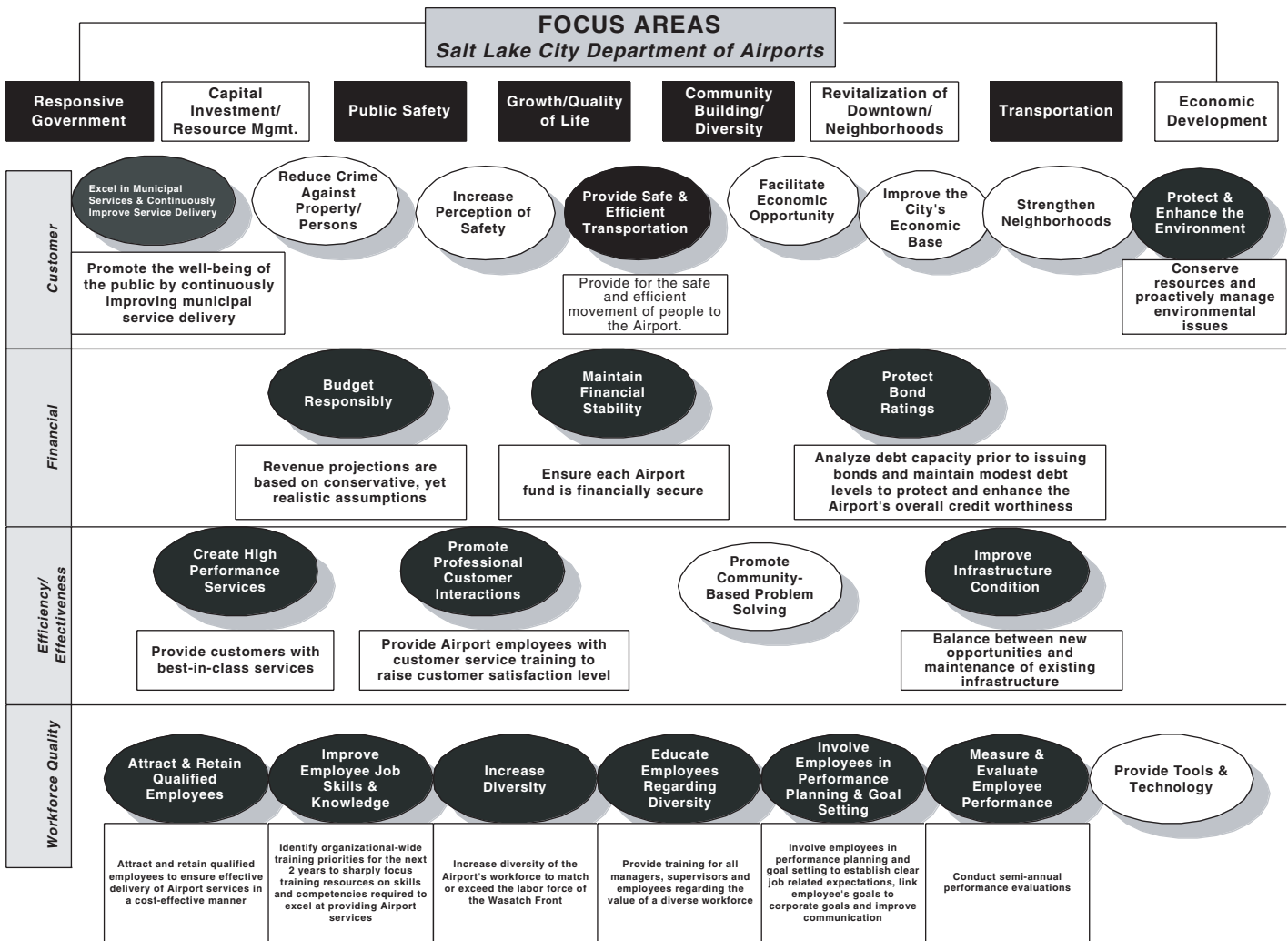
4. The cause-and-effect linkages between the companywide strategic objectives are formalized in an enterprisewide strategy map.
5. Performance measures are developed for each of the enterprisewide strategic objectives. This process helps identify leading and lagging measures and establishes expected targets and thresholds. Also, baseline and benchmarking data are developed.
6. Strategic initiatives (supporting the strategic objectives) are developed. To build accountability throughout the organization, performance measures and strategic initiatives are assigned to the appropriate staff and documented in data definition tables.
7. The implementation process begins by using performance-measurement software (described later in this document) to get the right performance information to the right people at the right time. The software helps people make better decisions because it offers quick access to actual performance data.
8. The enterprise-level scorecard is cascaded down into business and support unit scorecards, meaning the organizational level scorecard is translated into business unit or support unit scorecards and then into team and individual scorecards. Cascading translates high-level strategy into lower-level objectives, measures, and operational details.
9. An evaluation of the completed scorecard is conducted to answer questions such as the following: Are our strategies working? Are we measuring the right things? Has our environment changed? Are we budgeting our money strategically?

Exhibit I-2.8 presents the Salt Lake City Department of Airports final version of a balanced scorecard.

The Malcolm Baldrige National Quality Award

The Malcolm Baldrige National Quality Award is given by the United States National Institute of Standards and Technology. It was established by the Malcolm Baldrige National Quality

Exhibit I-2.8. Salt Lake City Department of Airports Balanced Scorecard.



Source: Salt Lake City Department of Airports

Improvement Act of 1987—Public Law 100-107 and named for Malcolm Baldrige, who served as United States Secretary of Commerce during the Reagan administration. The program recognizes quality service in the business, health care, education, and non-profit sectors and was inspired by the idea of Total Quality Management. This is the only quality award that is actually presented by the President of the United States.

The current award criteria are described as having three important roles in strengthening U.S. competitiveness:

- Helping to improve organizational performance practices, capabilities, and results;
- Facilitating communication and sharing of information on best practices among U.S. organizations of all types; and
- Serving as a working tool for understanding and managing performance and for guiding planning and opportunities for learning.

The criteria are designed to help organizations use an aligned approach to organizational performance management that results in delivery of ever-improving value to customers, contributions to market success, improvement in overall organizational effectiveness and capabilities, and organizational and personal learning.¹⁴ The seven categories of the criteria are the following:

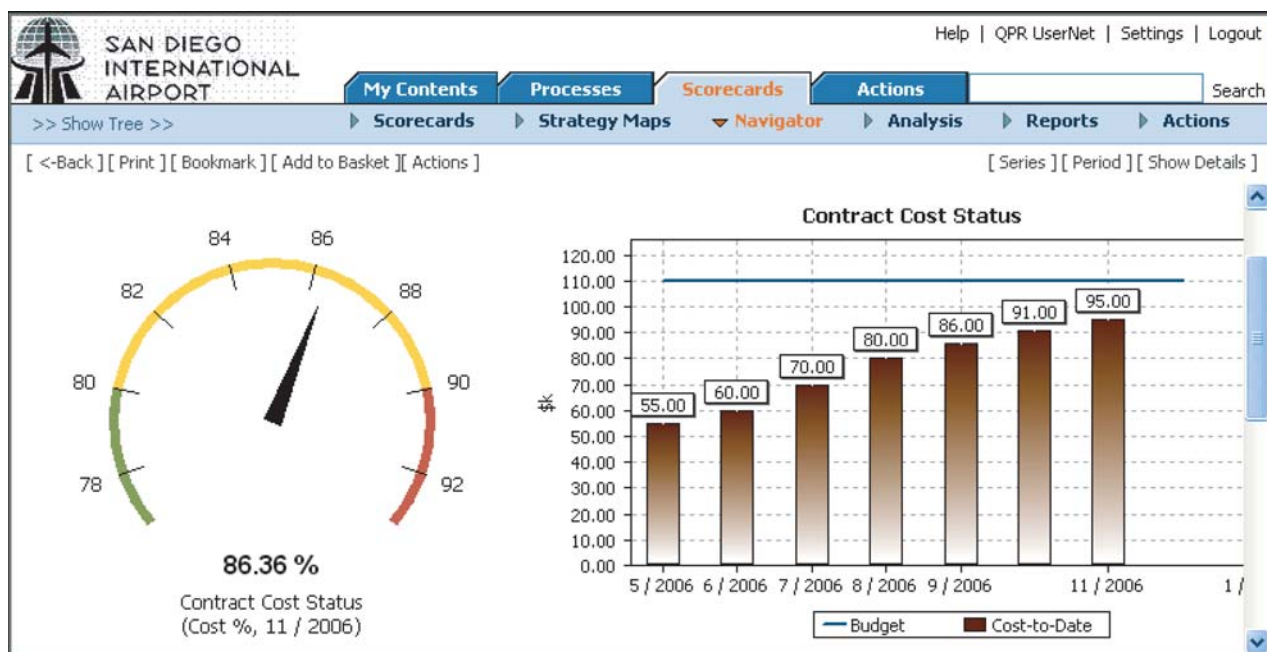
1. Leadership—Examines how senior executives guide the organization and how the organization addresses its responsibilities to the public and practices good citizenship.
2. Strategic planning—Examines how the organization sets strategic directions and how it determines key action plans.
3. Customer and market focus—Examines how the organization determines requirements and expectations of customers and markets; builds relationships with customers; and acquires, satisfies, and retains customers.
4. Measurement, analysis, and knowledge management—Examines the management, effective use, analysis, and improvement of data and information to support key organization processes and the organization’s performance-management system.
5. Workforce focus—Examines how the organization enables its workforce to develop its full potential and how the workforce is aligned with the organization’s objectives.
6. Process management—Examines aspects of how key production/delivery and support processes are designed, managed, and improved.
7. Results—Examines the organization’s performance and improvement in its key business areas: customer satisfaction, financial and marketplace performance, human resources supplier and partner performance, operational performance, and governance and social responsibility. This category also examines how the organization performs relative to competitors.

For many organizations, using the criteria results in better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability.

Dashboard

A performance dashboard is a performance-measurement system commonly used to gauge performance and progress toward business goals. Dashboards can be designed and developed to address a wide range of objectives, from monitoring the viability of a global organization’s business strategy, to keeping a check on a department’s ability to achieve service-level targets. The visual display of information is characteristic of this framework, as can be observed in Exhibit I-2.9.

Exhibit I-2.9. Snapshot of a dashboard implemented by San Diego International Airport.



Source: San Diego International Airport

There are many of providers of performance dashboard software, also referred to as “performance management automation development companies.” Some solutions are specifically based on performance management in general, and others use the Balanced Scorecard. Dashboard can also offer tools for business intelligence, analytics, or data warehousing. The dashboard framework guides businesses to

- Communicate key objectives by using performance maps, programs, and initiatives—and the relationship among them. The maps help visualize key linkages between agency objectives and results and can also provide insight into performance from several perspectives.
- Monitor business processes and activities by using metrics of business performance. The system also alerts companies when potential problems arise.
- Analyze the root cause of problems by using several timely sources of information.
- Manage people and processes to improve initiatives and decisions, as well as optimize performance and guide the organization in the right direction.

Performance-Measurement Systems versus Performance-Management Systems

While an exponential increase in computer power and connectivity has allowed organizations to store, recall, and process an increasingly large number of *performance measures* or amount of data in recent years, true accountability, transparency, and actual *performance management* has remained more challenging across both the private and public sectors. This difference between a *performance-measurement system* and *performance management* is critical in understanding why simply collecting organizational data does not necessarily lead to management improvements. Since the invention of computerized spreadsheet technology in 1978, most organizations have increasingly collected quantitative data on almost all aspects of their business. An organization’s financial, customer, human resources, and operational data reside in pockets of individual computers and servers, and today it is largely used as simple historical or trend data, if at all. Even organizations making a concerted effort to use analytics and measures to drive decisions report a continuing inability to change management and organizational culture.

The effective use of performance management to drive and execute strategy is premised on one core truism: the ability to understand and apprehend the interrelationships of key indicators throughout the business is based on carefully reported data. Aligning data thoughtfully and understanding cause-and-effect relationships are the essence of performance management.

Characteristics of Performance-Measurement and Performance-Management Systems

In summary, the main characteristics of a well-defined performance-measurement system are the following:

- Organizational performance measures are gathered and displayed in a system or systems.
- Measures are designed to ensure that past practices are analyzed, and lessons are learned from prior decisions.
- Measures are utilized to gauge whether current actions are moving the organization toward a desired future state.
- The organization may use measures from a largely reactive and tactical perspective, but the long-term goal is for more proactive, strategic use.
- The organization consciously uses data to challenge management decisions, pre-conceived notions, and past practices.
- Quantitative and qualitative information are used together to provide accurate and rich interpretations of organizational activities, outputs, and outcomes.

- Measures are analyzed by multiple observers with multiple interpretations.
- Hypothetical questions, varying resource allocation models, and other scenarios are employed to understand the driving causes behind the performance measures and to make better decisions going forward.

Moving to Performance Management

Performance management stresses the timely delivery of data to decision-makers and the actual use of measures to drive management decisions throughout the organization.

Performance management moves organizations from a process in which measurement and analytics are used to discover long-term trends to a process that must quickly reveal performance shortfalls and provide corrective action before tactical misalignment becomes a bigger organizational issue. Modern business intelligence applications allow information to be presented in whatever timeframe is appropriate (daily, weekly, monthly, and so forth) and to be accessible to the proper personnel, directors, and/or managers so that they not only have an up-to-date view of the current situation, but they can also make data-driven decisions on the latest and most accurate information.

Performance management also emphasizes a drill-down hierarchy that reflects organizational strategic thinking in almost every type of information and data reporting, something that is now expected to be present in all data-visualization models.

Beyond ease of use and clarity is the importance of tailoring performance information to match the strategic framework utilized by the individual organization. Matching performance reporting to the strategic framework ensures consistency in tracking and evaluating information in appropriate timeframes, accurately customizing the way information is presented, and correctly choosing the types of reports to be produced. Performance management and strategic planning are two sides of the same coin: where the organization is heading and is it on course to arrive on time and on budget. Spreadsheets capture a slice of this story, but fail to create the linkages between strategy and the vibrant daily measures that are so important for execution at all levels.

Effective Performance Management—Gauging Your Airport's Performance Maturity

Do you know how mature the performance-measurement system is at your airport?

On a scale of 1–10, where 1 indicates the preliminary stages of developing a performance-measurement system and 10 indicates a mature performance-measurement system, gauge your airport's performance maturity.

1. Interaction among management, staff, and stakeholders on what the measures mean and how to improve performance.
 - Your airport's leadership uses performance measures to encourage discussion and feedback
Score: 1–10 _____
 - Your airport matches data with pilot projects or new practices to gauge their impact
Score: 1–10 _____
 - Your airport encourages employees to analyze performance measures to enhance organizational learning and growth.
Score: 1–10 _____
 - The measures chosen by your airport are actionable for management and employees, meaning management and employees are accountable and able to take action and improve performance.
Score: 1–10 _____

2. Integration

- Performance measures are used to understand cross-functional relationships and the link-ages between departments.

Score: 1–10 _____

- Performance measures are tested to see their effect and relationship to customer and financial outcomes. Evaluation leads to refining or changing performance measures over time.

Score: 1–10 _____

Add each score. Total: _____

So how does your airport measure up?

45–60: High Performance Maturity

35–45: Developing Performance Maturity

25–35: Average Performance Maturity

25 and below: Airport still in performance-measurement system or measurement stage

Building a Performance-Measurement System

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Introduction to Part II

Part II of this guidebook is intended to provide airport managers with the necessary steps to develop a well-structured performance-measurement system tailored to the specific needs of airports. The proposed development process suits airports of all sizes and incorporates examples and best practices from airports that have mastered performance measurement in the United States and Canada. Finally, managers will find a sequence of worksheets to assist them in a step-by-step development of their performance-measurement system.

The framework used in this guidebook for the development of a well-defined performance-measurement system starts with an assessment of the airport's environment to confirm the alignment of strategic elements with long-term and short-term objectives that will be later used to determine performance measures and targets. It is key to ensure a connection among *planning*, *execution*, and *measurement*. Finally, the framework evaluates the results and uses that performance data to initiate a new performance-measurement system cycle. This model allows an airport full flexibility in determining what measures and what categories of measures are most appropriate for it to use in managing its performance.

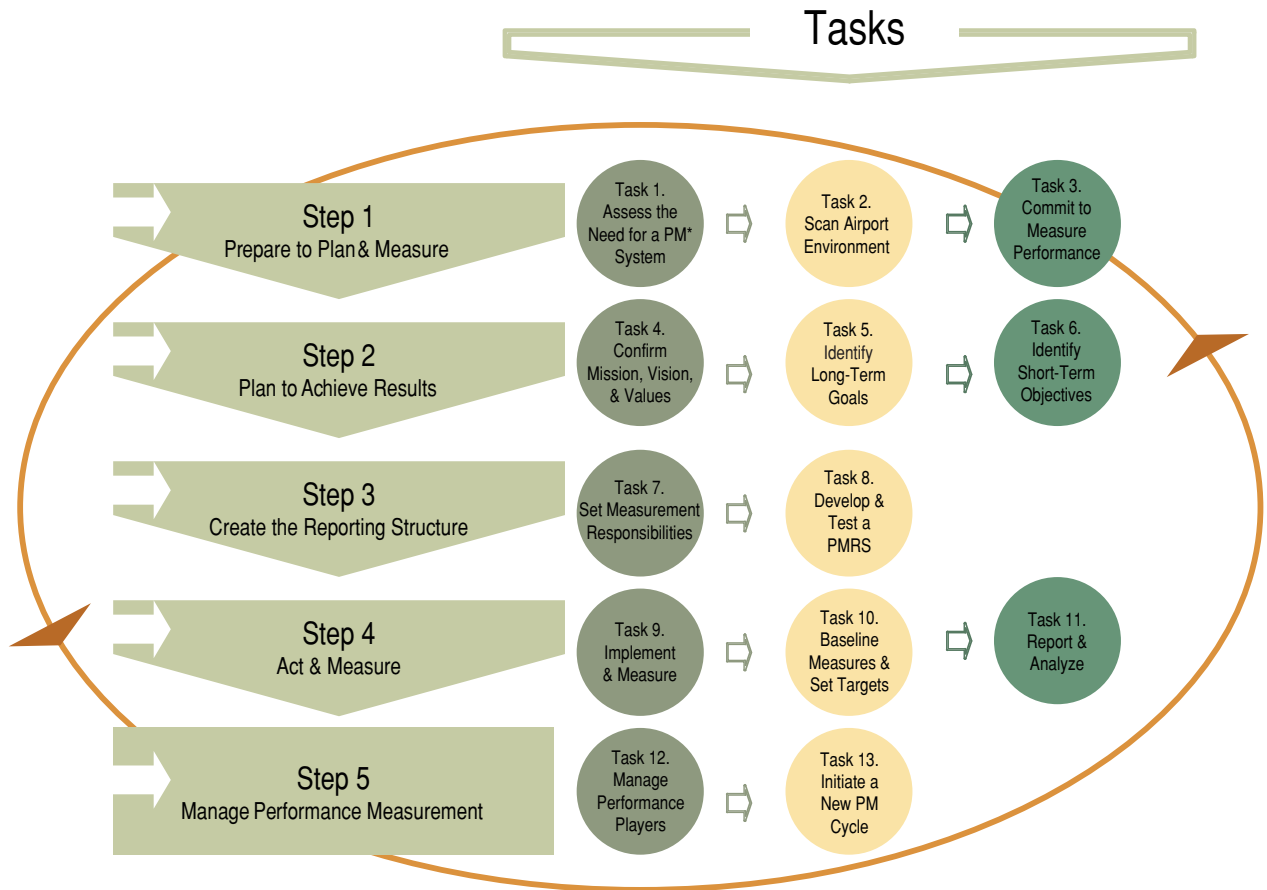
Stages of Performance Measurement

The performance-measurement system was conceived as a five-step cyclical process, as shown in Exhibit II-1. The discussion that accompanies the five stages provides guidance on a step-by-step process, suggests tools, gives process hints and warnings to help airports achieve maximum results, and provides worksheets of this step-by-step process that can be used to help develop and/or improve their performance-measurement system.

The goal is to encourage airports to engage in a cyclical performance-measurement process in which they

1. **Focus.** Conduct environmental scanning sessions to identify key airport and business trends and seek stakeholder input.
2. **Create Strategic Alignment.** Confirm the alignment of mission, vision, values, and long-term objectives.
3. **Develop Measures.** Select key performance indicators that serve to measure airportwide objectives.
4. **Cascade Measures.** Select performance measures that monitor intermediate and short-term objectives at the divisional and department levels.
5. **Collect and Validate Data.** Ensure that data are available, verifiable, and valid.
6. **Report Data.** Report relevant data to upper management in a timely manner.

Exhibit II-1. Steps for measuring performance.



* PM – Performance measurement
 ** PMRS – Performance-measurement reporting system

7. Assess the New Performance-Measurement System Cycle. Assess the performance-measurement system and recommend any changes prior to the commencement of the new performance-measurement cycle.

The step-by-step process also includes a performance-measurement assessment tool that consists of a series of questions for airports about their performance-measurement system organized by development step. Through checking on the development progress of the system at the end of each stage, as well as at the end of the process, the airport should have a sense of where it is strong and where it can improve. Importantly, the performance-measurement assessment tool provides airports with immediate feedback, enabling corrective action during the development of the performance-measurement system.



Performance-Measurement System for Larger Airports

The implementation of the five steps presented in the following chapters should result in a well-developed performance-measurement system at larger airports, and it will aid the airport in doing a better job of fulfilling its mission and meeting the needs of its customers, investors, and other stakeholders.

Performance-Measurement System for Smaller Airports

Smaller airports, on the other hand, should assess whether they need to use every tool and suggested process presented in this guidebook and whether they need to implement the entire performance-measurement system at once. Smaller airports should use discretion in implementing the proposed development steps and tailor the tools and suggestions presented here to their own particular situation and needs.



Strategic Planning and the Performance-Measurement System Go Hand in Hand

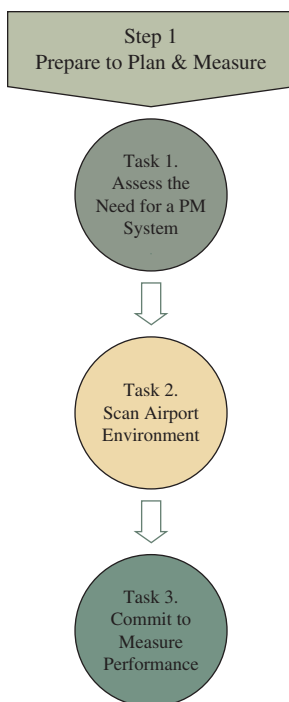
Airports should view their performance-measurement system as a key tool in implementing and measuring the success of their strategic plan. Although the process of developing an effective performance-measurement system begins as a strategic-planning process focused on how to measure airport management's proposed strategic outcomes, later in the process the performance-measurement system becomes a tool for managing the strategic plan. In other words, the performance-measurement system becomes a tool for knowing where you are in implementing your strategic plan, whether you are achieving results, and what current practices need to be adjusted to achieve better results.

This guidebook provides airport managers with the necessary tools to evaluate how well an airport is achieving its strategic goals and mandates; however, strategic planning and performance measurement go hand in hand. Readers interested in airport performance-measurement systems may also be interested in the guidance on airport strategic planning offered in *ACRP Report 20: Strategic Planning in the Airport Industry*.¹⁵ These two publications complement each other and together provide readers with information and guidance on strategic-planning and performance-measurement tools to help airports improve performance outcomes.



CHAPTER 1

Prepare to Plan and Measure (Step 1)



- Understand the benefits of having a performance-measurement system
- Involve staff from the very beginning of the process
- Benchmark internally and externally
- Use and participate in industry surveys and studies

Step 1 of the performance-measurement process includes the following tasks: Task 1: Assess the Need for a Performance Measurement System, Task 2: Scan the Airport Environment, and Task 3: Commit to Measure Performance. Task 1 involves investigating whether an airportwide performance-measurement system is needed and, if so, why. Task 2 includes identifying the benefits of systematic performance measurement for the airport and scanning the airport’s environment. Task 3 includes gaining or reaffirming the commitment of the airport director and the senior executive team and identifying the roles of everyone who will be involved in performance measurement.

Task 1: Assess the Need for a Performance-Measurement System

The first step in developing a performance-measurement system is to assess the need for its implementation and the benefits it can provide (see Exhibit II-1.1). Generally, organizations measure performance in order to assess and improve goal attainment, strengthen strategic alignment, and justify budgets. In assessing the need for a performance-measurement system, you will have to evaluate the particular needs of your airport, assess its current performance environment, and identify how a performance-measurement system could help improve the management of your airport.

Most likely, you will present the initiative to the airport director and perhaps other senior executives. Thus, you will have to justify your recommendation. First, identify the broad benefits that a well-defined, performance-measurement system will bring to your airport. For instance, a performance-measurement system should help increase cost savings, identify performance trends, improve the decision-making process, identify performance gaps, support budgeting practices, and also ensure that resources are aligned with strategic goals.

Measuring performance, however, can pose challenges and limitations that can jeopardize the implementation of the performance-measurement system. For instance, executives can

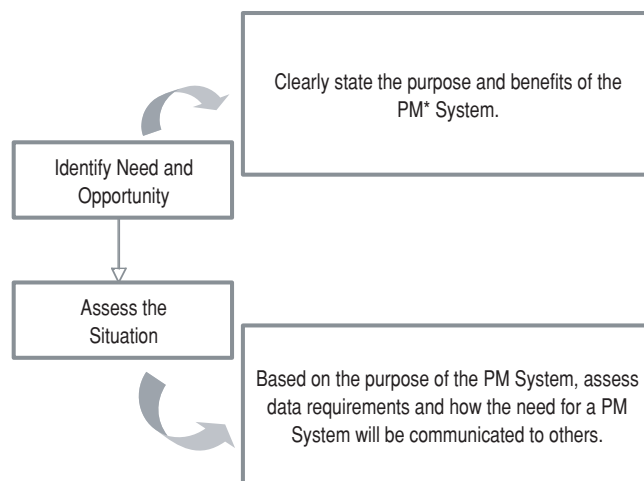
Assess the benefits and challenges of a performance-measurement system to make the case to senior executives.

challenge the priority given to performance indicators, and employees might disagree with the idea that performance measurement is needed and argue that “if it is not broken why fix it or measure it?” The limitations of implementing a performance-measurement system can be caused by a lack of technology, the costs of developing the system, and a lack of staff to develop and run the system. Be ready to address these issues. You can support your initiative by identifying some of the benefits the performance-measurement system will bring to the airport. These benefits include information on the airport’s progress toward achieving its strategic goals, transparency in evaluating outcomes, information on areas in which the airport is performing well and areas in which performance could be improved, open communication practices, and a competitive organizational climate.

The foundation of an airport’s performance-measurement system is its strategic plan. Before a performance-measurement system can be developed, the airport needs to have adopted some form of strategic plan. A firm understanding of the airport’s mission, vision, values, and strategic objectives is fundamental to a well-structured and solid performance-measurement system.

Planning for success and measuring successful performance go hand-in-hand. *ACRP Report 20: Strategic Planning in the Airport Industry*¹⁶ focuses on how to develop a strategic plan, starting with the airport’s mission and vision and ultimately describing the activities that will achieve success. As a follow-up to the guidance on strategic planning offered in *ACRP Report 20*, this guidebook on performance measurement focuses on measuring success by developing an airportwide, integrated, performance-measurement system that measures performance at all levels of the organization and provides information to airport leaders so that they can identify and address issues and opportunities in ways that improve airport performance.

Exhibit II-1.1. Assess the need for a performance-measurement system.



*PM - Performance measurement

A good performance-measurement system is based on a solid strategic plan.

Understanding the Benefits. Assessing the need for a performance-measurement system should help senior executives understand and support setting and measuring results-based goals. Each airport was established for a purpose. For public airports, legislation often specifies a mission, and it is usually something like “providing safe air services and meeting the community’s business and passenger needs.” For airports governed by airport authorities the purpose could be more financial. Measurable goals can be set for the airport mission, and the airport can measure its achievement. Measuring enables an airport to monitor success.

Understanding can be augmented by other factors. If the entity that owns the airport has implemented a performance-measurement system, it will want an airport system that supports their performance-measurement system. You may be able to point to their performance-measurement system as well as the performance-measurement systems of other airports to make the case that performance measurement and management work.





Need for and Benefits of a Performance-Measurement System

Identifying the needs, benefits, and challenges of a performance-measurement system in the early stages of development is crucial to assessing the impact of the system in the entire organization. As with any other process, to obtain the sponsorship and support of upper management, the performance-measurement system will have to offer clear benefits to the airport.

Dayton International Airport completed a strategic plan and implemented a Balanced Scorecard in 2007 that serves as the navigation system of the organization. The performance-measurement system was created to determine what to measure based on strategies in the strategic plan and external benchmarks. The benefits of implementing a performance-measurement system, according to Dayton International Airport's experience, are the establishment of the organization's direction and the alignment of all organizational efforts with that direction.



Worksheet 1. Assess the Need for a Performance-Measurement System

In completing this worksheet, the reader will justify the development and implementation of a performance-measurement system and be ready to present the initiative to senior management.

Gain stakeholder insight on their needs, priorities, and requirements.

Task 2: Scan the Airport Environment

Your airport is not isolated. Obtaining factual and subjective information on stakeholders' expectations of and interest in the airport will help you not only assess the need for a performance-measurement system, but also improve performance.

An airport stakeholder is an individual or group that affects or can be affected by the airport's actions. It is important to know who they are and gain insight on their needs, priorities, and requirements, as well as the opportunities and issues that they see facing the airport. Any airport has many internal (e.g., employees, managers, owners, board) and external stakeholders (e.g., suppliers, society, immediate community, government, customers, airlines, concessionaires, regulators, and others). Know who the most important stakeholders are based on their influence on the airport and their interest in the success of the airport.

Once stakeholders have been identified, develop a list of stakeholders to involve based on both *interest* in your airport and *power* to influence the airport's direction. *Interest* and *power* are separate characteristics and need to be analyzed independently. Organizing stakeholders by "power" and "interest" as shown in Exhibit II-1.2 can provide a structure for requesting and using input and comments.

Stakeholders with a large amount of power over and interest in the airport include the flying public or airport customers, powerful community groups, trade unions, local government officials, and others. Bringing these groups into a measurement development process can ensure that they accept and understand their roles and stake in achieving success for all parties. On the other hand, elected officials at the state level, for instance, would be categorized as being interested in airport performance but not as wielding much power over airport operations. This group and others like it should be kept informed, but not brought into high-level discussions. Conversely, powerful but disinterested groups should be monitored, but it is not necessary to solicit their input into measurement development.

Scan the Airport's Present and Future Environment

It is time now to engage stakeholders and ask how the airport is doing. How is it likely to do in the future? How will the future differ and how will that affect the airport's ability to move toward its vision? This is the "environmental assessment."

This key step helps in planning actions and setting performance targets. Without understanding the external and internal environment and the airport's strengths and weaknesses, developing executable, meaningful strategies becomes much more difficult. The environmental assessment sets the stage for a change management model, emphasizing what obstacles must be overcome in moving toward the organization's vision. The emphasis on change becomes particularly important in the context of establishing your performance-measurement targets.

Effectively aligning the airport's strategies and activities with stakeholder goals and with the opportunities and threats in the external environment is as important as aligning the airport's internal structure and activities with the strategies. In fact, key outcome measures will be largely unattainable without the buy-in and cooperation of other responsible parties. Measures such as on-time departure and passenger satisfaction are the product of cooperative work with stakeholders. Aligning performance measures with the aims of cooperative external parties can improve performance for the airport and external stakeholders and result in an improved experience for customers.

If stakeholders see airport outcomes that support their own interests and requirements, they are more likely to commit their support. Three keys to structuring this input are the following:

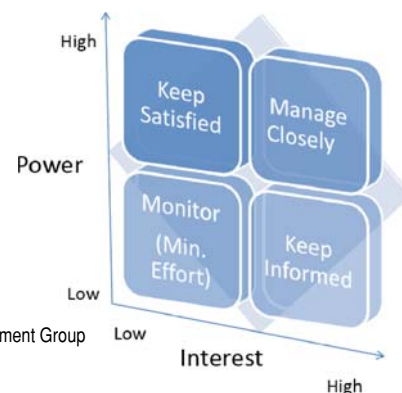
- **Categorize responses.** Identify and merge similar commentaries. Finding shared sentiments and viewpoints can bring multiple groups together more quickly.
- **Engage a full range of views.** Stakeholders value simply being asked for input. Each group's perspective, even if not fully accepted, can help move the conversation forward and produce results.
- **Acknowledge input and provide feedback.** A truly valuable conversation on performance means embracing cooperation and acceptability. Every suggestion and every idea may not be acceptable or even prudent; yet these opinions form the first step in stakeholder support and engagement.

Bringing multiple stakeholders together in one scanning session can expose and test multiple perspectives on business, political, social and other pertinent issues. To build stakeholder participation in this process consider asking the following:

- Who are our customers and what are their needs? What are the obstacles in getting them what they need and want?
- Who are our investors and owners? What are they looking for? (Your board is a good place to start. Don't forget that the FAA is an investor through Airport Improvement Program [AIP] grants.)
- Who are our other stakeholders? Employees? Regulators (FAA, state departments of transportation [DOTs], EPA, others)? Immediate community impacted by noise and other concerns? Suppliers? Others?

Finally, outreach to stakeholders and employees can be as simple or as in-depth as the airport and its performance-planning process requires. Outreach does not, however, have to be

Exhibit II-1.2. Stakeholder mapping.



Source: Infrastructure Management Group

Environmental scanning is beneficial to aligning the strategic plan and initiatives to internal and external forces.

complicated. For small airports, it can be as simple as informal conversations with key employees, customers, and stakeholders.



Involving Staff. Airport employees are key stakeholders with great power over and interest in airport success. Involve them in the environmental scanning. Not only do they bring valuable frontline perspectives, knowledge, and understanding to the table, involving them helps them “own” the results. One of the best motivators of performance is seeing your input being used and engaging in creating solutions.

Use environmental scanning tools appropriate to the airport’s size and type.

Environmental Scanning Tools

There are many tools available for environmental scanning. For example, *trend analysis* looks at where an airport has come from and where it is today.

Turning toward the future, perhaps the simplest tool is a *SWOT analysis*, in which a list would be made of an airport’s internal strengths (S) and weaknesses (W) and the opportunities (O) and threats (T) in its environment. You want to build on strengths and take advantage of opportunities as well as address weaknesses and mitigate threats that you see now and in the future.

Another future-focused tool is *scenario building*. It can be relatively simple, but it is often a formal, complex, time-consuming process. Scenario building begins by identifying a host of factors that may affect an airport’s future. These are combined into four to six broad “drivers” of the future, such as economic growth. Using the identified factors, consider how each driver can vary. Also consider wild cards—unanticipated, discontinuous events such as disasters, terrorism, and the current economic crisis—that can affect the future. Next, combine the drivers into scenarios of the future and choose up to four scenarios that roughly cover the range of possible futures. These scenarios are explored, and strategies are developed to achieve the airport’s goals in each scenario. Strategies that work in several scenarios are robust strategies and are strong candidates for the airport to adopt in its planning. The other strategies may also be useful in the future, if it becomes clear that a particular scenario is coming to pass.

Finally, you can synthesize the results you gained from other tools using *gap analysis*. By stating where you want to be and where you are likely to be under different futures, you can identify the gaps and develop strategies. The gaps you identify are the major challenges facing the airport, and they are prime candidates to be the strategic issues you’ll want to address in your strategic and performance project plan.



Worksheet 2. Scan the Airport Environment

The goal of this worksheet is to outline a comprehensive airport environmental-scanning process, the results of which will be later used to adjust strategic elements and long-term objectives.



Environmental Assessment

Environmental assessment is key to the successful positioning of the airport in the market. Relying on factual market information, understanding stakeholder needs, and acknowledging the impact of the airport in the community, airport managers will be more assertive in designing the future of the airport.

In developing a strategic plan, **Dayton International Airport** conducted one-on-one interviews with over 35 internal and external stakeholders, including city and county managers, the chamber of commerce, the conventions and visitors bureau, car rental agencies, airlines, and fixed-base operators (FBOs). Dayton International Airport also held focus groups with employees to learn about airport weaknesses and strengths, as well as the opportunities and threats in the market. The process took 3 months and served to position Dayton International Airport in the marketplace, taking into consideration size, competition, and environmental factors that play a key role in identifying those characteristics that differentiate the airport from peers.

Minneapolis–St. Paul International Airport reviews the airport's overall strategic plan and long-term initiatives every year in a process that involves conducting an environmental and a SWOT analysis and reviewing their impact on the airport's performance-measurement system.

Task 3: Commit to Measure Performance

If you don't know what success looks like, you will not be able to achieve it. Achieving success means knowing whether you have accomplished the airport's mission. Commitment to measuring results is the key to monitoring progress toward a mission. Planning for and measuring results takes thought, time, effort, and resources. Without commitment, the performance-measurement system will be ineffective and useless.

Commitment needs to come from the very top levels of the airport organization. If the airport director and senior executives are not committed to measuring and being accountable for airport performance, there may be good performance measurement in parts of the airport, but only rarely will there be a truly airportwide, systematic set of metrics established. Having the airport director's commitment makes gaining commitment from other senior executives much easier.

When Commitment Is Lacking. At a large hub, a performance-measurement system was implemented with a great endorsement from the chief financial officer (CFO), but it has been difficult to gain support from employees and peers. Because the system hasn't been endorsed by the airport's top management, there is resistance to its implementation. Airport employees take the attitude that the interest in the performance-measurement system is coming from a single source and when that source leaves the system will be abandoned. Having commitment from the very top of the organization and communicating that commitment to staff provides a clear message that the performance-measurement system is here to stay regardless of who is leading the effort. Staff should also understand the benefits of having such a system.



This guidebook addresses how to gain commitment to planning for measuring performance and actually measuring performance throughout the organization. At this stage in the performance-

measurement system development process, two tools that can help senior executives commit are (1) understanding the benefits that the airport will gain from a well-structured performance-measurement system and (2) seeing benchmarking information that shows how well the airport compares to similar airports.

The benefits of having a performance-measurement system are numerous and vary by airport, but some common benefits are the following:

- Knowing where you are in regard to achieving your goals
- Providing documentation regarding performance to internal and external stakeholders
- Assessing whether targets and outcomes are being met
- Identifying the strengths and weaknesses of the airport
- Rewarding exemplary performance
- Providing transparency in the assessment of processes
- Aligning processes and strategies



Benchmarking. Benchmarking means comparing key performance data from your airport with data from peers or other airports similar in nature and location. Comparing benchmarks allows you to assess performance inside and outside of your organization. Identifying peer airports for external benchmarking should be done carefully so as to achieve properly comparable benchmarks.



Senior Management Commitment

Gaining commitment from senior management is fundamental to obtaining staff buy-in and making progress toward the airport's goals. Airport senior executives need to display strong commitment to the performance-measurement system and advocate accountability for achieving results if the airport is to improve its performance.

At **Minneapolis–St. Paul International Airport**, the performance-measurement system was initiated by the airport executive director and supported by the Metropolitan Airports Commission (MAC) directors and the Board of Commissioners. The performance-measurement system commenced in 2003 and was included as part of the airport's strategic plan development. Due to management support, MAC developed and implemented its performance-measurement system in only a 9-month period.

One of the most advanced airport performance-measurement systems is used by **Tampa International Airport**. The idea of measuring performance was brought to the airport by the executive director based on his previous experience in Salt Lake City. The performance-measurement system was developed by senior management with the participation of the Finance, Human Resources, and Performance Management/Internal Audit departments.



Worksheet 3. Commit to Measure Performance

This exercise will help you determine the level of commitment of senior executives and the governing body (cities or airport authorities). Their commitment is fundamental in securing the grounds for a successful performance-measurement system.

Identify Key Performance Players

The airport director has a key decision to make early in the development of the performance-measurement system and that is to select the key performance players that will provide support, logistics, and facilitation, and coordinate measuring performance and reporting. The number of people involved varies from airport to airport depending on airport size, staffing levels, senior executive commitment, the extent of the performance-measurement system, and how developed the system is. In the largest airports, the airport director might choose a core person (core executive) to sponsor and coordinate performance-based planning and measurement. In many airports, this responsibility is assigned to an executive, such as the business planning or human resources (HR) director. Other airports name a dedicated person for this purpose, such as a continuous improvement coordinator, performance project manager, performance management, internal audit, and so forth. In some instances, a performance team (Core Team) is also assigned to assist the core executive in this effort. In the smallest airports, especially general aviation airports, the airport director may himself or herself be the Core Team that oversees planning and measurement. To simplify, the core executive, the Core Team, and the airport director when acting as the core executive will be addressed as the Core Team.

In the smallest airports, the same person may fill all the roles involved in implementing performance-based planning and measurement.

Once the responsible party for the performance-measurement system has been identified, the Core Team should identify senior executives in charge of making the key decisions on planning and performance. The director and the Core Team, if different, will also need to identify the policy board, namely, the board of directors and/or governing entity that will approve the performance-measurement system.

Involvement Is Always Good. Early involvement of staff in key decisions in the development of the performance-measurement system, such as setting objectives and activities, will help with gaining buy-in of the system by staff members.



Use of External Organizations

Part of planning for the performance-measurement system is deciding whether and how to use external organizations, especially paid contractors and consultants. While major decisions will be made by the airport's leadership, external organizations can provide invaluable support in the following ways:

- Experts on strategic and performance theory and practice can help an airport develop and execute its project plan based on broad experience with a wide variety of organizations.
- Experts on organizational process and organizational development can help design, plan, and facilitate the numerous sessions the airport will hold, gaining the most out of participants and assisting the airport in developing its plans and programs. They can also help design and support outreach efforts and distill the results.
- Airport experts can research airport best practices, provide advice on criteria to use in selecting comparable airports, and evaluate an airport's own processes and programs, pointing out possible weaknesses and ways to address them.

Industrywide Surveys and Studies. ACI-World administers the Airport Service Quality (ASQ) Survey, a customer survey tool that is used to benchmark airports on the level of service performance delivered by the airport and pinpoint



under-performance, bottlenecks, and over-performance. Currently, 120 airports in more than 45 countries are enrolled in the survey, and participation is increasing. More information on the survey can be found at <http://www.airportservicequality.aero/content/survey.html>.

ACI has also undertaken an extensive study entitled *Airport Benchmarking to Maximise Efficiency*.¹⁷ The study, published in July 2006, reviews a variety of products developed to assist airports in maximizing their efficiency, provides background on airport benchmarking, and describes a number of initiatives in ACI's regions. The study can be found at <http://www.airports.org>.



Selecting the Core Executive and/or Team

Setting up a core performance executive and/or team is a common practice at airports for establishing accountability and responsibility for the performance-measurement system.

Often, this role is given to an existing position, such as the director of business planning or the human resources director. In the smallest airports, it may be the airport director. Other airports create a dedicated office. Some airports assign the Core Team's responsibility to a specific person or department and rename it to reflect this new task. Regardless of the approach, there's always a responsible party for the execution of the system.

At **San Diego International Airport**, the airport authority's business planning department was charged to align the new performance-management system with the organization's strategic goals and each division's annual goals. With cooperation and support from all of the functional groups, the current performance-management system was designed, tested, and implemented.

In order to successfully implement a performance-measurement system, **Dayton International Airport** created a continuous improvement coordinator position that is fully dedicated to the management of the performance-measurement system and other strategic endeavors, such as the development and future update of the strategic plan.

Toronto Pearson International Airport has established a Strategic Planning and Airport Development (SPAD) department. One of its functions is to develop and oversee the performance-measurement system and report the results of the airport's performance to the executive team and chief executive officer (CEO).

The **Metropolitan Washington Airports Authority** created the Financial Strategy and Analysis Department to advance the development of a performance-measurement system that incorporates both Dulles International Airport and Reagan National Airport. The Metropolitan Washington Airports Authority consists of two different airports, and implementing a performance-measurement system that is relevant to both can be challenging. Due to the different natures of the two airports, the performance measure components at Dulles International Airport and Reagan National Airport monitor somewhat different areas and use performance measures in different ways for management decisions.

CHAPTER 2

Plan to Achieve Results (Step 2)

- Promote employee participation
- Document performance measures
- Concentrate on outcomes
- Cascade and align measures

A good performance-measurement system is closely integrated with an airport's strategic plan. While the strategic plan should define an organization's mission, vision, and values and outline the strategic goals to be achieved, an effective performance-measurement system should measure whether those strategic goals are achieved. Performance monitoring makes employees and management pay attention to results and improve them, and if performance measures are correctly lined up with the airport's strategic goals, performance monitoring should help achieve those goals. Step 2 of performance measurement includes Task 4: Confirm the Airport's Mission, Vision, and Values; Task 5: Identify Long-Term Goals, and Task 6: Identify Short-Term Objectives.

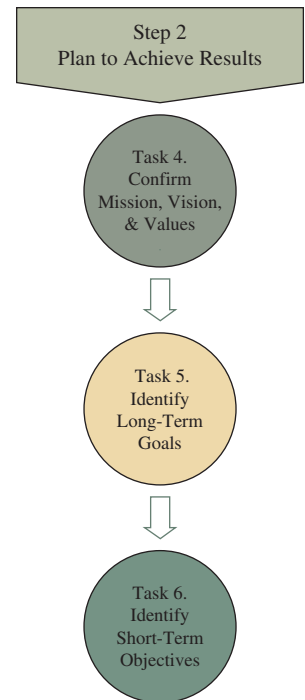
Task 4: Confirm the Airport's Mission, Vision, and Values

Mission, vision, and values are the bedrock for developing strategies and measuring results. While most organizations have closed the gap between strategic plans and performance measures, it is still common for the two processes to proceed independently, especially in de-centralized business environments. Developing performance measures based on strategic goals ensures that measures are designed with the end in mind, preventing pointless data collection.

The Mission Statement

Strategic planning starts from a mission statement that clearly states *what* the Airport does and *why*. "What" and "why" are good mantras for planning, measuring, and managing performance. The mission gives the measurement framework boundaries and scope.

Mission statements are often set in statutes and rarely change. Most airports also have a shorter statement intended to inform the public and employees and enlist their support. Both mission statements should include measureable terms, as measurability is key. For example, a mission statement such as "Achieve a world-class airport" is overly vague without more explanation. If instead the mission statement says "Achieve a world-class airport by providing our customers safe



The mission should be clear and measurable.

and reliable services, satisfying the community needs, and serving as the economic engine to the region,” you have a complete statement. Safety, reliability, community satisfaction, and economic benefits are all measurable. In some instances, airport departments also have their own missions. If so, taken together, they should support all aspects of the airport’s mission. Each department should be clear on how its mission both supports the airport mission and provides direction to its people.

Organizational Values

Values are simply the organization’s message on *how* employees should behave as they pursue the organization’s performance goals. While performance measures track what is produced and the results of those products and services, value statements describe how customers expect to be treated and how the airport gets to the end point. For example, responsibility and accountability are crucial values for any performance-measurement system.

Airport values are reflected in airport mission statement modifiers such as “safe,” “secure,” “effective,” and “in an environmentally sound manner,” among others. *ACRP Report 20: Strategic Planning in the Airport Industry* states, “A values statement describes the way an organization desires to conduct itself, both internally and externally, while engaging in its business activities. The values statement should answer the following three questions: (1) How should our organization treat external stakeholders? (2) How should we treat our fellow employees? and (3) How do we want our organization to be viewed by external stakeholders and employees?”¹⁸

Values can be the basis for sound leading measures.

The Vision Statement

While the airport’s mission statement sets boundaries for all subsequent goals and measures, the vision statement is where leadership establishes a focused long-term result for the airport’s activities and services. The vision statement needs to answer, “What is the expected result from all of our work?” and “How will we know when we’ve achieved that result?” If a vision does not bring to mind a clear and specific idea of what success means, it cannot serve as the foundation for all subsequent plans and performance measures. This measurable result, often on a 5-year time horizon (it may be as long as 10 or 20 years), becomes the end point for all the airport’s strategies and activities. Without a definable vision, performance-measure development will lack cohesion and a common end point.

The vision establishes the basis for long-term goals. It is the initial and primary bridge between a strategic plan and a performance-measurement framework. It creates the first outcome measures in a top-down model. Just as a vision is necessary to develop specific results-oriented measures, no vision statements should be drafted without understanding how the vision will be measured.

Set a short, clear vision that can be the basis for measurable long-term goals.



Promote Employee Participation. Involve airport employees in helping set the airport’s mission, vision, and values and in developing the goals, strategies, plans, programs, and measures to achieve them. Employees not only bring valuable perspectives, knowledge, and understanding, but also involving them helps them “own” the results. One of the best performance motivators is believing in what your airport is seeking to achieve and knowing how your contribution fits in.



Mission and Values

Mission and values represent what an organization is today, and they should be reflected through the organization's products and services, customer care, and relationships with all stakeholders.

Nashville International Airport has been a leading airport in strategic planning and performance measurement. In 2003, Nashville International Airport started by developing a comprehensive Long-Term Strategic Business Plan with clear mission and vision statements. Values are prominently displayed on lapel buttons worn by all employees on identification badges, patches, and vehicles. Nashville International Airport vision, mission, and values statements are provided below:

- *Vision: To deliver exemplary customer service by providing premier airport services and facilities.*
- *Mission: To be the heartbeat of the Mid-South by providing services and facilities that keep Music City flying high.*
- *Values: Embodied in the symbol E³, values help BNA [Nashville International Airport] complete its mission through:*
 - *Exercising:* Its assets—staff and facilities—should be kept in top shape. Staff should have the skills to perform their duties with the flexibility to meet highest professional and ethical standards. Its facilities should be optimally managed, made secure and maintained for their entire life cycle.
 - *Intersecting:* It should be a center of the Middle South's ideas and activities, and support its communities.
 - *Enterprising:* It should have an entrepreneurial mindset—innovative and financially efficient.
 - *Entertaining:* It should have a beat and rhythm. Passionate about customer service and it should be a wonderful place through which to travel.



Strategic Planning and Performance-Measurement Systems

Strategic planning is crucial to the success of a performance-measurement system independent of airport size. Management needs to measure success at attaining the airport's vision and mission and align organizational direction so that departmental activities and measures merge into a unified effort that achieves the vision and mission.

The approach to performance-measurement by **San Antonio International Airport** also builds on strategic planning. The former director initiated a quarterly planning process that was to eventually drive performance based on an integrated airport strategy. The airport established strategic goals and some outcome-based performance measures and targets. These strategic goals are reviewed quarterly in a management retreat exercise. Current strategies for San Antonio International Airport are to optimize assets, maximize financial performance, invest in employees, improve customer experience, and identify and reduce risk.

At **Tampa International Airport**, the Performance Management Program was developed to

- 1) share the mission and vision, underlying strategic initiatives, and organizational goals and objectives with its employees, 2) provide a mechanism to assess the efficiency and effectiveness of Authority activities based upon quantifiable information and the results of strategies developed to enhance activity performance, and 3) ensure Authority accountability for performance.¹⁹

Minneapolis–St. Paul International Airport included the performance-measurement system as part of the strategic plan development. The airport started by defining its framework and aligning it with the airport's strategic plan. It then selected performance measures, developed tracking and data-collecting processes, and set timetables and formats for data and reporting. The strategic plan is reviewed annually at the beginning of the fiscal year. This process involves revising the airport's vision, mission, and values; conducting an environmental

scan; and finally reviewing the foundation of the performance-measurement system by evaluating strategic goals, corresponding annual and long-term key initiatives, and key performance measures.

Dallas/Fort Worth International Airport implemented a good internal process for developing the strategic plan and selecting measures that consisted of a series of six 1-day sessions that included top executives down to the level of assistant vice president. Dallas/Fort Worth International Airport used an outside consultant to facilitate the process. The executives did an external scan of the environment and considered the views of customers and stakeholders as they were perceived, but did not involve stakeholders or the board of directors directly in the process. The vision, mission, primary business goal, key results, and beliefs were developed collaboratively by the executive vice presidents and vice presidents of the organization. The assistant vice presidents provided input on the strategic objectives and initiatives. Once the strategic foundation was established, a formal performance-measurement system was developed.



Worksheet 4. Confirm the Airport's Mission, Vision, and Values

This worksheet is intended to confirm the airport mission, vision, and values and their "measurability" to be used later in setting long-term objectives and identifying staff involvement in the strategic process and buy-in of overarching performance measures.

Task 5: Identify Long-Term Goals

A performance-measurement system that focuses on the wrong measures can undermine an airport's mission, vision, and values by perpetuating shortsighted business practices. For this reason, airport management should ensure that its performance-measurement system supports the critical elements of its strategic plans.

The first step in establishing performance measures is to extract from the airport's mission, vision, and values a set of long-term objectives. Long-term objectives are measurable statements that specify outcomes the airport proposes to achieve over perhaps 5 years (but sometimes over 20 years). For example, a long-term objective could be "Maintain Federal Aviation Regulation Compliance." In this case, outcome measures would be, for example, number of runway incursions, number of federal fines, number of recurring deficiencies, and security costs per enplaned passenger, among others. Outcome measures are the "yardsticks" airports use to measure its success. Outcome measures are sometimes referred as to KPIs or effectiveness measures. They provide feedback on the quality and efficiency of services or on the intended performance of the organization. Outcome measures indicate accomplishments or results that occur (at least partially) because of actions taken and services provided.

Strategic Alignment

Strategic alignment means aligning airport resources and activities with the mission, vision, and long-term goals as illustrated in Exhibit II-2.1.

Setting Outcome Measures

There are at least five considerations that need to be addressed when setting outcome measures: (1) degree of control over measures, (2) selection of good end-outcome measures, (3) selec-

tion of leading indicators, (4) when to set end-outcome measures and targets, and (5) data sources and availability.

Degree of Control

Often the most important airport outcome measures are at least partly outside of the airport's control. An example is on-time performance. Airports can't control the weather or flights that leave another airport late. The same can be said of cost per enplaned passenger. Airports influence, but do not control, the number of passengers that move through their facilities.

The first strategy for addressing the issue of control is to choose performance measures over which the airport has relatively more control. For instance, cost per operation might be more controllable than cost per enplaned passenger. Another strategy is to choose a measure that is part of a series of more controllable measures. For instance, service quality is a subjective, customer perception. Controllable measures of it could be, for example, terminal cleanliness, concession quality and variety, and security timeliness. However, airports may need to accept that some important measures aren't fully controllable. Clearly no airport should adopt a performance measure it doesn't influence. If the measure is important (net revenue, for example) and if the airport can mitigate the effects of random environmental variations (e.g., cut costs when revenues or passengers decline), then the airport should consider adopting the measure.

Selection of Leading Indicators

Airports seek performance measures with leading indicators that predict future change in other measures. For example, when airlines maximize revenues by replacing fuel weight with extra cargo load and airplanes are refueled at each destination, an increase in fuel sales at airports where the mix of in-transit passengers is relatively high implies that the number of in-transit passengers is increasing as well. Airports should try to identify and measure leading indicators that support long-term objectives the airport wants to achieve to better prepare for adverse situations.

When to Set End-Outcome Measures

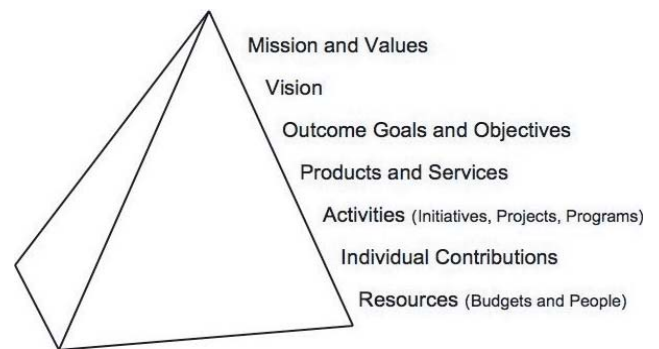
The reason for setting end-outcome measures early in the performance-measurement process is so that an airport can be clear about how success will be measured and thereby plan and align strategies and activities to achieve success. Without clear goals and measures, planning becomes little more than a catalog of ongoing activities, some supporting the airport's mission, some with little or no impact, and some that may even conflict with the mission or with each other. Strong, mission-based goals and clear success measures focus airport planning on what is needed to achieve results.

Data Sources and Availability

Fundamental performance measurement questions go beyond "What should we measure?" Almost as important a question is "What can we measure?" and "Where can I obtain the data?" A path many organizations have taken is to begin with all possible indicators to track long-term objectives and then narrow that list through a realistic and practical discussion of data sources and accessibility. To be accessible, information often needs to be standardized, normalized, and otherwise usable for benchmarking and other purposes.

For a comprehensive list of common areas of measurement at airports and corresponding performance measures, please refer to the Compendium of KPIs at the end of this guidebook.

Exhibit II-2.1. Strategic alignment.



Source: The Performance Institute²⁰

Airports often don't fully control key results that they seek to achieve.



Document Performance Measures. Documenting performance measures is crucial to validating accuracy. Many airports reflect strategies, goals, initiatives, and performance measures, along with targets and results, in their strategic plan. Others even publish the annual performance activity on the Internet to keep their stakeholders informed about airport progress.



Concentrate on Outcomes. While everything should get measured, airportwide performance measurement should concentrate on outcomes, that is, the changes the airport wants to make in its environment. That's where you will find out if what you're doing is achieving your goals. Make sure you know the outcomes you want your airport to achieve and tie your other measures to them.



Cascade and Align Your Measures. The board or airport director doesn't necessarily need to see all measures every month, although they should have the ability to drill down to supporting information and assessment. Provide them with the information they need to make decisions that improve performance. Give other managers and employees the information they need to manage their work. That does not mean excluding employees from airport-level outcome information; far from it, they need to know how the airport is doing so they can see how they fit in. Cascading airport goals and measures down to division and individual-level performance plans through the performance-measurement system moves the strategic plan from a high-level blueprint to a much more useful operational plan. The entire organization, including support functions, needs to be aligned with enterprisewide outcome measures. Strategic alignment allows for prioritization of work at the individual level, where daily decisions on resource allocation actually occur.



Developing Long-Term Objectives and Outcome Measures

Once the mission, vision, and values are set, the next step in strategic alignment is to set the long-term objectives and outcome measures that will achieve them. These long-term objectives, in turn, will be supported by the airport's strategies, activities, and human and budget resources.

As an airport owned by the Town of Leesburg (the Town), **Leesburg Executive Airport** subscribes to the Town's strategic plan. Leesburg Executive Airport management crafts strategies to satisfy the financial and business environment objectives the Town has set for the airport—a 100% occupancy rate of all of its facilities (hangars, terminal space, tie downs) and revenue recovery costs. Airport management monitors its financial and operational performance measures to ensure that the Town's goals are met. Currently, the

airport has 100% hangar occupancy, 99% office space occupancy, and 100% tied-down occupancy, and revenues cover costs.

Mahlon Sweet Field in Eugene, Oregon, has identified three overarching strategies, with corresponding targets and action plans, and tracks performance measures to monitor core processes. Broad objectives are developed through collaboration between airport management and the city performance-measurement manager and aligned with the high-level strategies. Exhibit II-2.2. shows Mahlon Sweet Field current strategies and outcome measures.

At **Toronto Pearson International Airport**, the strategic plan is based on the Balanced Scorecard concept developed by Kaplan and Norton. In this approach, the airport's vision leads to three strategic themes, which are based on core organizational values and beliefs: (1) global competitiveness, (2) gateway development, and (3) corporate sustainability. These themes, in turn, lead to a number of broader strategic objectives grouped into four perspectives: financial, customer service, internal processes, and learning and growth. The Integrated Corporate Plan sets out specific initiatives with defined targets and measures for achieving each strategic objective.

Dallas/Fort Worth International Airport has a good strategic plan with a clear mission, a vision, a primary business goal, and four strategic goals. The primary business goal is to "Grow the Core Business," and the four strategic goals are the following: Keep Dallas/Fort Worth International Airport Cost-Competitive, Create Customer Satisfaction, Deliver Operational Excellence, and Foster Employee Engagement. Each strategic goal is broken down into objectives and each objective into initiatives.

Each strategic goal is supported by "Level 1" outcome-based performance measures with a target for the current fiscal year. All information is gathered internally, except for customer service data that come from the ACI International Benchmarking Survey and the employee engagement survey. Following is a list of measures by goal/strategic focus area:

- Primary Business Goal: Grow the Airport's Core Business:
 - International Passenger Airline Destinations
 - Number of Passengers (total and O&D)
 - Landed Weights (total and cargo only)
 - Strategic Focus Area 1: Keep Dallas/Fort Worth International Airport Cost-Competitive
 - Total Airline Costs
 - Airline Cost per Enplaned Passenger (CPEP)
 - Revenue Management (parking revenue per originating passenger, concessions sales per enplanement, commercial development acres leased, natural gas wells in production)
 - Underlying Bond Ratings
 - Strategic Focus Area 2: Create Customer Satisfaction
 - ACI Survey Rank–International
 - ACI Survey Rank–Over 40 Million Passengers
 - Strategic Focus Area 3: Deliver Operational Excellence
 - FAA Safety Compliance
 - Environmental Compliance
 - Strategic Focus Area 4: Foster Employee Engagement
 - Employee Engagement Index Score
 - Wellness Program Participation
-

Exhibit II-2.2. Mahlon Sweet Field strategies and outcome measures.

Strategies	Outcome Measures
Recruit and retain air service providers that meet regional needs	<ul style="list-style-type: none"> • Increase the number of passengers using Mahlon Sweet Field by 2% annually • Establish a sustainable Air Service Development Fund with \$\$ in annual contributions
Develop airport facilities and infrastructure to accommodate operational, safety, and security requirements and to meet projected demand	<ul style="list-style-type: none"> • Within 4 years meet airfield development needs as identified in the new Airport Master Plan • Within 4 years complete the projects identified in the terminal rehabilitation plan • Annually meet FAA and TSA safety and security mandates
Provide the products and services needed by customers at Mahlon Sweet Field	<ul style="list-style-type: none"> • Maintain a satisfaction rating from customers of 80% that they are able to find the products and services they need

Source: Mahlon Sweet Field, Eugene, Oregon



Worksheet 5. Identify Long-Term Goals

Through this exercise, airport managers will confirm long-term objectives directly related to the airport’s mission, vision, and values. They will identify current measures and leading indicators to monitor the attainment of these long-term objectives and will be positioned to recommend key performance indicators that could improve measurement results.

Task 6: Identify Short-Term and Intermediate Objectives

Based on the airport’s long-term objectives and conclusions from the environmental scan performed in Step 1, you should be able to identify short-term and intermediate objectives to determine the success of activities—initiatives, projects, and programs—proposed to achieve the long-term objectives. Short-term objectives are milestones to end-outcome measures. For example, if your long-term objective is to be the least costly airport in your region in 5 years, you need to first set short-term objectives to gradually reach this long-term objective. Some example short-term objectives might be to reduce CPEP by 3% annually, reduce FTE overtime expenses by 2% annually, and increase AIP funding by 7% annually.

Intermediate outcome measures, like end-outcomes, focus on results. Intermediate outcomes, however, may have a shorter time horizon. Many airports hope to see improvements within 1 to 2 years. These measures focus on the results of several activities, products, or services supporting a coherent strategy. Intermediate outcome measures can determine the success of one department or several departments working together on a common goal, for instance, providing customers with an “easy experience.” Elements that contribute to “an easy experience” might include effective signage for getting to the airport, quick access from parking/car rentals to the main terminal, and short waiting lines. These elements involve the efforts of several different departments within the airport.

Examples of some long-term objectives, end outcomes, intermediate outcomes, and short-term objectives are provided in Exhibit II-2.3.

Remember to measure results, not efforts.

Exhibit II-2.3. Examples of some long-term and short-term objectives and intermediate and end outcomes.

Long-Term Objective	End Outcome	Intermediate Outcome	Short-Term Objectives
Improve Customer Service	Customer value	Increase responsiveness	Reduce customer complaints Improve cleanliness Increase security timeliness Increase information messages
	Customer care	Improve airport accessibility	Increase signage to and from airport Reduce parking fees at daily parking garage Increase shuttle frequency Improve ground access availability
	Service quality	Increase number of carriers serving the airport	Reduce aeronautical revenues Increase number of direct destinations served Offer competitive airfares
Excel in Social Responsibility	Promote local arts Promote local businesses Airport economic impact	Community donations Scholarships in aviation Secure DBE contracts	Employ handicapped and elderly citizens Hire volunteer greeters in the busy season
Environmental Stewardship	Environmental quality	Air quality	Emissions per aircraft movement New generation fleet vs. old fleet
		Water pollution	Water consumption per passenger Amount of deicing used
		Noise pollution	Noise complaints Noise levels
	Reuse and recycle	% of water recycled and used Total weight of recyclable waste	

Source: Infrastructure Management Group



Set Short-Term and Intermediate Objectives

Short-term and intermediate objectives are the immediate desired result of activities entrusted to divisional and departmental levels. Periodic monitoring allows for timely correction. Activities are roadmaps to achieve short-term and intermediate objectives and contribute to the attainment of long-term objectives.

In addition to end-outcome measures, **Leesburg Executive Airport** tracks performance to improve services and remain competitive. Measures include land rent, hangar space, fuel sales, land leased, personal property tax, user fees, landing fees, and tie-down fees among other service fees. Airport management also conducts external benchmarking on business activity with the following seven peer airports located within a 45-minute drive:

Fredericksburg Shannon Airport, Stafford Regional Airport, Winchester Municipal Airport, Manassas Regional Airport, Warrenton-Fauquier Airport, Eastern West Virginia Regional Airport-Shepherd Field, and Charlottesville-Albemarle Airport.

Mahlon Sweet Field in Eugene, Oregon, has defined 17 performance measures that monitor core processes and the total system. Core processes include operating and maintaining the airfield, providing traveler support facilities and services, providing general aviation facilities and services, and planning and developing regional air service and facilities. The total system, on the other hand, is oriented to the efficiency, effectiveness, financial performance, and customer satisfaction generated by Mahlon Sweet Field (see Exhibit II-2.4).

Mahlon Sweet Field also benchmarks its goals and objectives against similar airports and uses its performance measurement and external benchmarking to determine how it compares with peers. Mahlon Sweet Field also uses these comparisons to provide a sense of comfort to the Airport Advisory Committee. Effectively, the airport is able to use its performance-measurement strategies as a mechanism for annual and periodic performance improvement focused primarily on customer service.

At **Tampa International Airport**, the standard operating procedures manual identifies measurement areas that guide staff in selecting and modifying measures proposed for the following fiscal year. The areas and number of measures per area are the following:

- Administration and Information Systems: 18 measures
- Construction: 8 measures
- Finance: 19 measures
- General Aviation: 14 measures
- Human Resources: 33 measures
- Internal Audit and Performance Measurement: 10 measures
- International Commerce: 7 measures
- Legal Affairs: 9 measures
- Maintenance: 23 measures
- Operations: 23 measures
- Parking: 19 measures
- Planning, Development, and Environmental: 18 measures
- Police: 12 measures
- Properties: 23 measures
- Public/Community Relations: 14 measures

Measures related to capital investment projects are added to the list above, which is currently monitored externally through the Construction Industry Institute (CII) benchmarking study. These indicators relate to the financial impact and performance of completing a capital project from inception, such as:

- Soft versus hard costs,
- Percentage of internal costs capitalized to projects,
- Change order percentage over original contract value,
- Amendment percentage over original contract value,
- Days from approval to issuance of notice to proceed,
- Percentage project completed on schedule,
- Percentage project completed on budget,
- Percent original project contingency released at end of project, and
- Days from substantial completion to contract closeout.

In addition to general end-outcome measures defined at **Minneapolis–St. Paul International Airport**, each division and department has developed its own measures to track its performance. Exhibit II-2.5 depicts the different performance-measurement levels.

Division and department measures are developed by unit leaders with managers and employee input. Employee input allows employees to be directly involved in the performance-measurement system and encourages sincere interest in achieving organizational goals. Each division tracks close to 100 measures. Often, performance measures are budget driven to meet Government Finance Officers Association (GFOA) requirements. When high-level measures aren't achieved, departments analyze underlying components to find the cause of the unsatisfactory performance and take corrective action.

Exhibit II-2.4. End-outcome measures at Mahlon Sweet Field.

Core Processes	Short-Term and Intermediate Measures
Operate and Maintain the Airfield	<ul style="list-style-type: none"> • Landing fees per 1,000 lb of landed weight • Total aircraft operations • Meet FAA safety requirements
Provide Traveler Support Facilities and Services	<ul style="list-style-type: none"> • Customer satisfaction rating or quality and importance of terminal services • Airline passenger-related revenue per enplaned passenger • Meet TSA security requirements
Provide General Aviation Facilities and Services	<ul style="list-style-type: none"> • Change in based aircraft • Gallons of fuel sold
Plan and Develop Regional Air Service and Facilities	<ul style="list-style-type: none"> • Market demand for air service • Demand triggers as identified in the Airport Master Plan • Percent of regional trips through Mahlon Sweet Field
Total System	Short-Term and Intermediate Measures
Effectiveness	<ul style="list-style-type: none"> • Number of passengers using Mahlon Sweet Field • Percent of regional trips through Mahlon Sweet Field
Efficiency	<ul style="list-style-type: none"> • Average airline cost per enplaned passenger
Financial	<ul style="list-style-type: none"> • Operating expense per enplaned passenger
Customer Satisfaction	<ul style="list-style-type: none"> • Customer satisfaction rating of signage, cleanliness, and appearance of the terminal • Number of Mahlon Sweet Field passenger top 10 destination markets receiving direct service from Mahlon Sweet Field

Source: Mahlon Sweet Field, Eugene, Oregon

Exhibit II-2.5. Performance-measurement levels at Minneapolis-St. Paul International Airport.



Source: Infrastructure Management Group



Worksheet 6. Identify Short-Term and Intermediate Objectives

Airport managers will be able to identify short-term and intermediate objectives and corresponding measures that the airport could adopt to achieve its mission.

CHAPTER 3

Create the Reporting Structure (Step 3)

- Communicate with your staff
- Motivate and set accountability
- Recognize performance
- Start simple
- Allocate Resources

Once measures are set, the airport needs to set responsibilities for each objective, initiative, and measure and then hold people and their groups accountable for monitoring and reporting their progress and ultimately achieving their goals. Step 3 of the performance-measurement process includes Task 7: Set Measurement Responsibilities and Task 8: Develop and Test a Performance Measurement Reporting System.

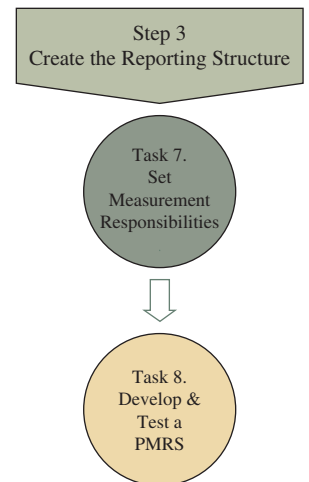
Task 7: Set Measurement Responsibilities

Responsibilities should cascade down through the airport so that every employee knows and is managed on what he or she is expected to contribute to achieving the airport's goals and objectives. Ideally, each objective, initiative, and measure will have a name attached to it.

Establishing and Deploying an Accountability Structure

Successful deployment of an integrated performance-measurement system is strongly related to developing a culture of accountability at all levels in the airport. The accountability structure forms the centerpiece of the entire system. Without accountability performance measurement is purely symbolic and unable to drive change and improvement. The willingness of airport management and employees to be held accountable for their performance is essential in managing the performance-measurement process.

Airport leadership needs to assign three types of responsibility for measures. In smaller airports, some or all may be assigned to the same person. First, charge the Core Team to coordinate reporting measurement results to airport management. Second, assign departments and their leaders the responsibility to achieve each measure. Third, each office should assign a designated point of contact, who is charged with providing office performance information to the Core Team.



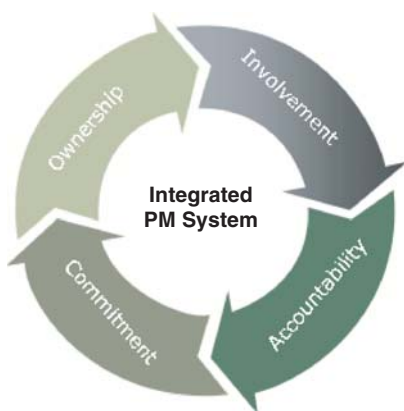
An engrained culture of accountability at all levels in the airport is key to the success of the performance-measurement system.

You need someone to run performance measurement, someone to achieve each result, and someone to report the data.

Creating a culture of performance accountability requires showing staff and managers how they will benefit from the system.

Creating a culture of performance accountability requires showing staff and managers that both they and the airport can benefit from such a culture. It is important for management to communicate positive aspects of the initiative. It is crucial for staff to understand how the performance-measurement system benefits them. It is also important to reward successful performance clearly and publicly. Involve managers and staff in all aspects of the process, listening to their concerns and communicating the benefits of the program. It is vital to communicate that management appreciates and will reward successful performance, accepts that organizational failure can occur despite everyone's best efforts, and will use performance measurement as a tool to indicate areas for improvement and possible savings rather than using it to blame and punish any responsible party.

Exhibit II-3.1. Performance-Measurement System Key Organizational Components.



Source: Infrastructure Management Group

Employee Buy-in

Employees will show little interest in and ownership of a performance-measurement system if it is developed by senior executives without employee involvement and feedback. Employees and their managers are the ones who directly contribute to the input, output, outcome, performance, process, and every other aspect of organizational operation. When employees have input into all phases of creating a performance-measurement system, buy-in is part of the process. As shown in Exhibit II-3.1, involvement, accountability, commitment, and ownership are all integral parts of a well-developed performance-measurement system.

Often employees do not know their role in the performance-measurement system and the impact of their behavior on performance. When developing a performance-measurement system, involve everyone. While executives are the ones who should establish strategic goals and corresponding macro-level measures, department leaders, in collaboration with staff, should develop micro-level measures and decide on specific targets in order to meet the objectives set by the executive team. “People involvement in the process brings about ‘buy-in’ which brings about commitment.”²¹ The methods and timing of employee involvement should be individually tailored depending on the size and structure of the airport while recognizing the following:

- Involvement creates ownership, which increases loyalty and commitment, thereby increasing accountability.
- Since employees will perform according to a set of performance metrics, it would be prudent to give employees a say in the development of the system that will drive their performance.

Without a culture of performance and accountability, performance measurement may fail.

Managing Change

Change management is challenging in any organization and by no means unique to airports. Senior management, however, needs to move beyond blaming employee resistance for the failure of a performance-measurement system. Lack of employee buy-in may be true at some airports, but management needs to look at causes. Certainly, resistance can be expected initially at most airports. Strong leadership that involves employees in change and that recognizes success should overcome that resistance. Where resistance continues, one should look at other common factors, such as lack of executive commitment, absence of clear goals and direction, or even system inefficiencies such as poor design and choice of measures. Strong leadership can eradicate these underlying problems. One way airport managers overcome resistance is by introducing the new system organizationwide with “top-to-bottom” explanatory meetings and presentations illustrating how each employee plays a significant role in the performance-measurement system and how their actions will affect the overall results.

Recognition of success and employee involvement supports change.

Resistance to change is also more likely to occur when the senior management team constantly changes. In such cases, employees are frequently asked to accept and adapt to the new management's initiatives, which eventually becomes an inconvenient routine. Employees that have worked in the organization for a long time are especially resistant to accepting new programs and feel they can persevere through any new reforms because they will be short-lived.

Communicate. Sharing results with employees and letting them know how their work aligns with airport goals is critical to employee buy-in. Employees should be able to view strategic organizational and division results along with their own individual measures. Most importantly, twice a year reviews with supervisors as well as informal feedback have been observed to provide true accountability and improvement at the division, team, and individual level.



Employee Reward System

Recognizing and rewarding positive performance is a key incentive for performance improvement. A reward system can greatly support employee buy-in. It may not be necessary if the organization has encouraging and positive leadership together with organizational character that portrays strong commitment to the organization's established values and sincere concern about the good of the organization and the benefits it provides to the public. However, that kind of organizational character is rare in any industry or organization.

Although many airports do not have an airportwide, performance-based reward system, many airport leaders believe that system's incentives can encourage performance improvement. In particular, those airports that experience challenges with employee buy-in to the performance-measurement system believe that a performance-based reward program could transform employee attitudes.

Motivate and Set Accountability. Motivation and accountability, more than pure compensation, are the core rationale behind fully cascading measures at all levels. Gallup's Q12²² survey reports that employee understanding of their connection and contribution to corporate goals is the single highest long-term factor in engagement and motivation. While financial incentives can provide a short boost in engagement levels, only strategic alignment and the associated feedback from management provide long-term gains in productivity, effort, and other engagement measures.



Pay for Performance

Pay and bonuses can be an important part of an airport's system to motivate and reward performance by individuals, teams, and even the airport's employees as a whole. Coupling recognition with a pay increase or a bonus says to an employee or team that his or her contribution was worth considerably more than a simple "pat on the back." Rewarding airport employees as a whole when the airport meets its targets is a way of focusing everyone on what

the airport seeks to accomplish and encouraging people to work with each other across organizational “stovepipes” to accomplish mutual goals. Some airports use bonuses and pay to reward performance.

Over the years, a number of lessons have emerged on how to design a good pay-for-performance system, one that actually motivates performance:

- Look at pay as part of the overall system the airport will use to motivate performance. Pay alone is not an especially good motivator. Link pay to performance and to other motivators, such as recognition, more responsibility, job enrichment, the inherent value of what the airport is trying to accomplish, and the simple satisfaction of a job well done.
- Make sure that employees see pay for performance as rewarding excellent performance, not as a way of punishing inadequate performance. Employees (and supervisors and managers) have a keen sense of the probability that a change can benefit or harm them, and they will react accordingly.
- Make performance criteria objective and measurable. If people perceive that performance standards are applied arbitrarily or capriciously—that the boss’s favorite or the smooth talker is being rewarded rather than the performer—then they will resist pay for performance.
- Involve employees and their unions in setting up pay for performance. Listen to their concerns and address their suggestions. If key employees and their unions are on board, pay for performance can succeed.



Recognize Performance. If you want to maximize performance, you need to recognize good performance by individuals, teams, and even the airport as a whole when it meets its performance goals. Compensation and pay for performance can help as part of an overall approach to motivation that includes recognition, increased responsibility, increased trust, job enrichment, promotion, and even the value to an employee or team in knowing that they’ve done a job well, that they’ve helped the airport serve its community’s needs, and that the airport has acknowledged their contribution.



Set Measurement Responsibilities

One of the most important factors for performance-measurement system success is the organization’s joint pledge to the system. Often, airport employees find it hard to accept and realize the benefits of a performance-measurement system. They could show little interest and ownership if a performance-measurement system is developed by senior executives without employee involvement. Many times, managers do not explain to employees their role in the performance-measurement system and the impact of their behavior on performance. While developing a performance-measurement system, involve everyone in the process.

Dayton International Airport did not escape the challenges of implementing a performance-measurement system; however, having a solid strategic foundation and a clear understanding of the airport’s positioning and vision were critical in overcoming these challenges. With 203 full-time employees, it took Dayton International Airport a year to gain employee buy-in at all levels in the organization, including from employees at the managerial level who showed some skepticism due to the drastic change. Employees embraced the changes once

they saw positive results from the system and understood what was in it for them. Lessons learned at Dayton International Airport are the following:

- It is important to bring external stakeholders into the process to obtain support.
- It is important to clearly communicate to staff members that an airport strategy with defined objectives and direction improves efficiencies when decisions need to be made. Knowing in what direction to move simplifies the decision-making process, thereby reducing thinking time. The basic question employees should be asking themselves when in doubt is: “How does this action play into the strategy?”
- Staff members need to know what is in the performance-measurement system for them in order for them to embrace it. People follow success and their buy-in is a reflection of it.
- A strategy is as much about a set of initiatives you will fully embrace as it is about divesting yourself of others.
- Employees look for more than compensation in a job. In the words of President Roosevelt, it is the “joy of achievement and the thrill of creativity” that provides them with ultimate job satisfaction.

With approximately 600 full-time and 400 contract employees, it took **Tampa International Airport** 3 years to attain employee buy-in at all levels. In order for employees at lower levels of the organization to embrace the performance-measurement program, management allowed them to define measures and implemented a performance-based reward program—an employee incentive program (EIP). Probably the most challenging endeavor was to make employees understand that failure was tolerable. Staff at top levels of the organization also posed some resistance, and it was not until they could see the use of the results to identify areas for improvement and the benefits of internal benchmarking that the performance-measurement program was embraced.

The current level of employee buy-in and participation in the system at Tampa International Airport required a high level of strategy and planning to implement and achieve. The program is an example of a well-defined performance-measurement system and contains the critical elements that are necessary to succeed:

- Communication
- Training
- Staff Buy-in
- Community Involvement
- Knowing Your Customers
- Transparency
- Reward Program
- Quality Control



Employee Rewards and Pay for Performance

Recognizing and rewarding positive performance are key incentives for performance improvement. A number of airports have experienced success through rewarding performance.

Management employees at the **Greater Toronto Airport Authority (GTAA)** can earn a pay-for-performance annual bonus in addition to salary. The program was developed to focus and link employee behavior and performance with the corporation’s achievements and the strategic plan. Goals are cascaded down from the CEO and aligned to corporate strategy.

Each level of management is entitled to a target percentage performance-based bonus made up of corporate (i.e., “team”) achievement and individual achievement. For 2009, corporate achievement represents 45% of

the bonus, and personal achievement the remaining 55%. Corporate achievement is defined and evaluated by the following corporate performance measures:

- **Revenue Over Expense.** This performance measure links pay to the achievement of the overall corporate budget for the current year.
- **Cost per Enplaned Passenger.** This performance measure links pay to the achievement of (lowering) the air carrier rates and charges objective as set out in the strategic plan for the subsequent year. This is meant to be a forward-looking goal.
- **Airports Council International's Airport Service Quality Rating.** This performance measure links pay to the achievement of a prescribed (higher) overall passenger satisfaction score as measured by the ACI Quality Service Index score for the current year.
- **Quality Management Initiatives.** This performance measure links pay to support for the airports process (continuous) improvement quality enhancement program

The individual portion of the bonus is defined by achievement of the employee's annual goals. These goals are developed to fall in line with the strategic plan, departmental objectives, and *PROACT* principles—Positive, Reliable, Objective, Action-oriented, Controllable, and Timely. Individual success is reviewed and determined by immediate senior staff and approved by the CEO.

This program ensures that the goals of the organization are translated top to bottom through all departments and sub-groups. An example of how goals are translated and documented for one department of the airport is presented in Exhibit II-3.2.

Management at **Memphis International Airport** recognized the difficulty in ensuring that airport employees were aligned with the long-term vision and direction of the airport. To foster buy-in, Memphis International Airport implemented several employee performance-reward programs. The awards are sought and recognized as prestigious commendations in the organization and include the following:

- *Employee of the Quarter.* Non-management employees can be nominated by anyone in the organization, and the winner is selected by a committee of seven to ten people led by the Human Resources Department. The winner receives \$250 (less tax), a medallion, a letter of congratulations, a certificate of achievement, and a personalized banner.
- *Employee of the Year.* From the four selected employees of the quarter, one employee of the year is chosen. The selection process replicates the dynamics of the Employee of the Quarter. The award consists of public recognition at the airport's annual banquet and a larger monetary incentive.
- *Annual Larry Cox Excellence in Management Award.* This award is only open to managers and directors. Each year, nominees' names are embossed on a commemorative plaque that hangs in the airport. The winner gets a monetary award as well as a crystal trophy and is recognized at the airport's annual banquet.

Tampa International Airport recognizes employee contributions with the EIP, which is tied to the financial performance of the Authority and achievement of board-designated goals and objectives. The performance of the Authority in relation to budget numbers and goals directly affects what, if any, incentive payment is to be made. The EIP award is based upon a potential performance bonus. The actual portion awarded depends upon how actual performance compares to projected numbers and whether performance has met the goals that are assigned to each department. This system is designed to be a team effort with each employee receiving the same amount.

Exhibit II-3.2. Departmental goals: operations and customer experience.

1	2	3	4	5	6	7	8	ID	Goal
x								OCE*-1	Corporate Financial: 2009 revenue under expenses of \$69.9 million or better.
x								OCE-2	Corporate Financial: 2010 budgeted airline cost per enplaned passenger of \$38.37 or less.
x								OCE-3	Corporate Customer Service: Maintain a standard of service and facility offered by Toronto Pearson as measured by the "overall satisfaction index" of the annual ASQ survey. (3.70-3.90)
						x		OCE-4	Corporate Learning & Growth: Demonstrate the GTAA's commitment to learning and growth of its people by delivering: a) Quality management training to all GTAA employees; b) Training on leading adaptive change to all management employees.
								OCE-5	Develop and implement a new Night Flight Management program in cooperation with Corporate Affairs and Marketing.
	x	x						OCE-6	Develop and implement a new protocol to replace TFAP.
		x						OCE-7	Implement Phase 2 of SEMS.
						x		OCE-8	Develop and Benchmark a new Passenger Information Services program in the terminals.
		x				x		OCE-9	Optimize Airside Safety program.

Source: Toronto Pearson International Airport

*Operations and Customer Experience

Worksheet 7. Set Measurement Responsibilities

This exercise takes airport managers through the necessary steps to increase involvement among employees, set a system of accountability, and establish measurement responsibilities.

**Task 8: Develop and Test a Performance-Measurement Reporting System**

For an airportwide performance-measurement system to be successful, the Core Team, working with the Airport Director and leadership, needs to create a performance reporting structure and operate it to provide useful information to senior level staff as close to “real-time” as possible. While the term “real-time” has multiple definitions for different businesses and functions, as used here, it means simply to provide performance information to decision-makers in time for them to take timely action. Frequently, this real-time demand requires balancing the best possible measure or analysis with the ticking clock. In short, real-time measurement is required to perform critical business functions. This rapid data flow provides continual proactive communication to leadership and employees within an enterprise.

While airport leadership seldom makes a snap strategic decision based on a real-time performance indicator on a dashboard, many lower-level decisions are made continually. Airports already provide second-by-second data on flights and safety, providing further real-time analytics is a logical next step.

A highly functional performance-measurement reporting system (PMRS) provides up to seven key functions:

1. **Dynamic strategy maps** that graphically represent program and initiative performance and the relationships among them.

Real-time measures allow decision-makers to take timely action.

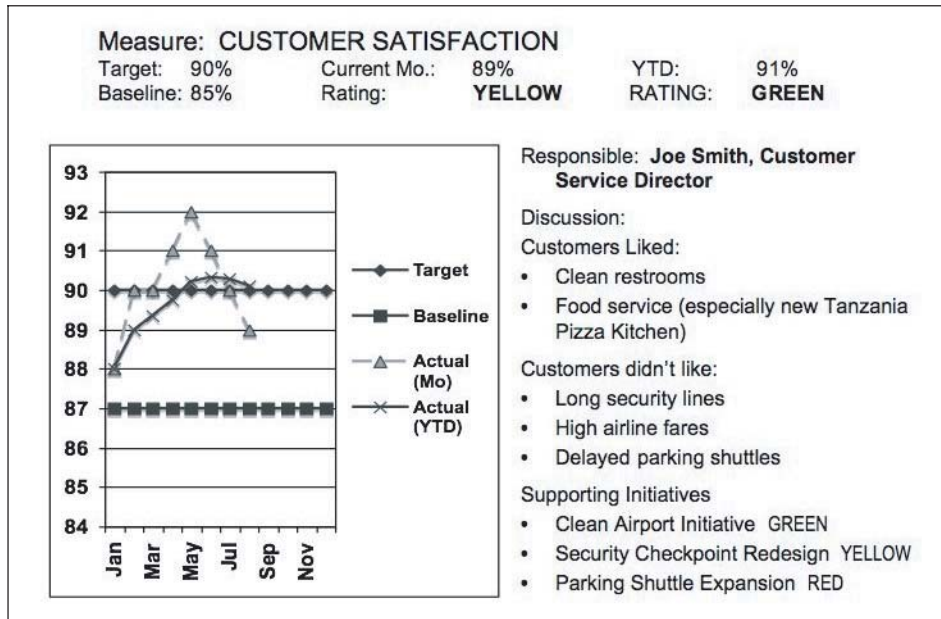
2. **Analytic capabilities** that enable quantitative and qualitative data to be “sliced and diced” in order to provide predictive and “what-if” scenarios.
3. **Tools that foster a culture of performance measurement** so that individual product or service performance can be “rolled up” and measured in the context of strategic priorities and outcomes. This includes bringing performance indicators to life so that they can become part of day-to-day management.
4. **The capability to align results to funding** (budget-performance integration), to provide evidence where funding increases can have direct, measurable impacts on activities.
5. **Evaluation of direct and indirect costs** associated with programs and use of technology that allows for cost management activities to be reported to internal and external stakeholders.
6. **Tools that are interoperable** with existing airport data systems, including those found in reporting, planning, and budgeting functions.
7. **Strategic communication tools** like dashboards and scorecards that provide managers and employees line of sight from the airport level down to individual functions and departments.

The PMRS should allow points of contact to retrieve information needed from other departments and ensure that there is a common source for and interpretation of data. For example, should the snow removal expense be monitored as a separate item for benchmarking purposes, or should it be included in repairs and maintenance expense under operating expenses? Either approach is valid; the Core Team needs to ensure that a single approach is used. Key issues, especially in the first airportwide performance-measurement system cycle, include the following:

- **Selecting the software** the airport will use to gather and report performance information to leadership. Will the airport use off-the-shelf software such as MS Word, Excel, and PowerPoint, or will the airport purchase specialized performance software that can provide real-time data access, simple and intuitive data presentation, and database integration capabilities? Chapter 6 in Part II of this guidebook discusses capabilities, advantages, and disadvantages of specialized performance management software.
- **Designing the structure of the PMRS** as the Core Team designs the structure of airport objectives, activities, measures, and responsibilities into its PMRS. The Core Team will also have to determine how to drill down from top levels (e.g., long-term objectives) to associated measures, activities, and responsibilities and how to highlight performance problem areas for leadership’s attention.
- **Populating the PMRS** with objectives, activities, measures, and responsibilities. While this is a mechanical exercise, the process of inputting data and correctly linking it can prove complex and time consuming.



Start Simple. The first time you develop an airportwide performance-measurement system, use relatively simple tools such as MS Word, Excel, and PowerPoint to collect data and report results. For smaller airports, these tools may be all you need. The sample dashboard depicted in Exhibit II-3.3. is a PowerPoint document that displays useful information on a hypothetical monthly customer satisfaction measure that airport decision-makers could use to improve performance.

Exhibit II-3.3. Customer satisfaction dashboard.

Source: The Performance Institute²³

Note that the simple dashboard provides the measure, the responsible person and office, supporting initiatives, measure status, and useful discussion. Note also that the graph provides two leading indicators that suggest the airport may not achieve its customer satisfaction target unless action is taken:

1. Monthly customer satisfaction peaked 4 months ago and is declining.
2. This month, for the first time in months, monthly customer satisfaction did not meet the target.

Finally, the airport and its Core Team need to think about how to report information and present it to senior executives in easy-to-understand ways that focus executives on performance issues and decisions. The difference between a jumble of statistics and useful knowledge is the difference between confusion and decisive action. The Core Team needs to think early in the performance-measurement cycle about the reporting system it will use to provide knowledge to executives.

Allocate Resources. The airport needs to recognize that good development, measurement, and management of performance reporting takes funding, time, and work. There are, however, ways to reduce the effort.

Before implementing it, beta test the system you will use to report performance measurement to leadership. Better yet, beta test it repeatedly, and if possible, test it with the airport director. Work out the kinks before going live so that when the system is exposed to the airport leadership as a whole, it works as it should, providing them with the information they need to manage performance in an unobtrusive way that focuses on discussion and action, not on system failures.





Performance Reporting Systems

The systems used to report airport performance are diverse. The most common approach is the dashboard and its variations. The PMRS should be a comprehensive system that reports the overall performance of the airport and serves as a repository and tracking mechanism for data.

Performance-measurement data at **San Diego International Airport** are compiled from several sources, e.g., financial application software, external vendor databases, and individual MS Excel spreadsheets. These data are gathered and downloaded either electronically or manually into the Authority's Enterprise Resource Planning (ERP) system. Having the data centrally located makes them readily available to be extracted and presented on the QPR software dashboard. Performance data collection does require a more systematic and rigorous process to ensure the data's accuracy and timeliness. Most Authority operational and financial data are collected monthly for reporting purposes. The data are entered into the ERP system from which the QPR application can readily extract it and display/report the results. Performance data from customer surveys are reported quarterly while employee survey results are reported every 1 to 2 years.

Dayton International Airport has adopted measures that allow for both internal and external benchmarking. For Dayton International Airport, internal benchmarking compares performance trends based on previous experience to gain an understanding of what the airport is doing better than it did before. External benchmarking is used to identify industry trends. Selected measures were chosen based on indicators the industry embraces as important and indicators that other airports use to allow for proper comparison.

As shown in Exhibit II-3.4, Dayton International Airport's Balanced Scorecard reflects a total of 26 measures selected according to what the airport industry is measuring in the following areas:

- Cost Performance
- Revenue Performance
- Concessions Performance
- Efficiency and Effectiveness
- Customer Service

Performance measures at the corporate, departmental, and sub-departmental levels at **Toronto Pearson International Airport** are prepared for each strategic objective and initiative and are categorized by one of the four Balanced Scorecard areas. Each measurement area is built on the department-level measures that in some cases may have only a soft correlation or be relevant under several overarching strategic themes at the same time. Selection and prioritization of measures assessing overall corporate performance are largely determined by executive team requests. Most of the measures are budgetary figures; however, measures incorporate a mix of qualitative and quantitative metrics because certain important aspects of operations, such as process efficiency, cannot be quantified. There are three key measures that the board considers critical in its assessment of the organization's overall performance: airline cost per enplaned passenger, the ASQ level of ACI's ASQ Survey, and revenue under expenses ratio. If the targets for these three measures are not met, the organization as a whole will not have met the desired level of performance for that year.

Targets are in the process of being developed for all measures. Targets for performance measures are set through a consultation process at an executive level with considerable research. For example, if the executive team is concerned about whether a target for ownership costs (rent) of 12% of airport revenue is feasible, SPAD will run a model to estimate how such a target would affect various operational areas and whether it is reasonable and achievable. Organizational standards also play an important role in the performance-measurement system. According to GTAA, the governing body of Toronto Pearson International Airport, if organizational standards are set low, the improvement in performance will be minimal as well.

Nashville International Airport and the **Metropolitan Nashville Airport Authority (MNA)** are in the process of establishing performance measures related to performance excellence. The current 28 airport measures were

Exhibit II-3.4. Dayton International Airport 2007 Balanced Scorecard.

Key Performance Measures	FY 07 Goal	Q1 FY 07 Performance		Q2 FY 07 Performance		Q3 FY 07 Performance	
		Actual	% Change	Actual	% Change	Actual	% Change
Cost Performance							
Meet "Target" Budget	<i>95% of Approved Budget</i>	65%	46%	60%	58.33%	68%	58%
Total Airline Cost Per Enplaned Passenger*	\$12.00	\$8.42	43%	\$8.42	43%	\$8.42	43%
Total Operating Costs Per Enplaned Passenger	\$22.70	\$18.40	23%	\$13.88	64%	\$16.12	41%
Total Operations & Maintenance Costs Per Enplaned Passenger	\$8.46	\$7.11	19%	\$5.92	43%	\$5.22	62%
Operations & Maintenance Costs Per Terminal Square Foot	\$16.27	\$6.24	161%	\$6.15	165%	\$5.30	207%
Public Safety Costs Per Enplaned Passenger	\$2.25	\$2.64	-15%	\$1.88	20%	\$1.81	24%
Fire Safety Cost Per Enplaned Passenger	\$1.94	\$1.86	5%	\$1.73	12%	\$1.50	29%
Soft Costs of projects	20%	11%	82%	0%	0%	0%	0%
Revenue Performance							
Non-Airline Revenue to Airline Revenue	50%	51%	2%	49%	-2%	51%	2%
Total Non-Airline Revenue Per Enplaned Passenger	\$12	\$16.46	37%	\$12.99	8%	\$12.93	8%
Cargo Space Leased	<i>100,000 sf</i>	0	0%	0	0%	0	0%
Concessions Performance							
Total Concessions Revenue per Enplaned Passenger	\$5.00	\$5.62	12%	\$5.44	9%	\$5.58	12%
Total News & Gifts Revenue Per Enplaned Passenger	\$1.62	\$1.42	-12%	\$1.40	-14%	\$1.50	-7%
News & Gift DBE	25%	25%	0%	25%	0%	25%	0%
Food & Beverage Revenue per Enplaned Passenger	\$3.65	\$3.84	5%	\$3.67	1%	\$3.72	2%
Food & Beverage DBE	3%	0%	-100%	0%	-100%	0%	-100%
Parking Revenue Per Enplaned Passenger	\$7	\$9.60	37%	\$9.08	30%	\$8.82	26%
All Other Concessions Revenue Per Enplaned Passenger	\$0.20	\$0.37	85%	\$0.37	85%	\$0.36	80%
All Other Concessions DBE	3%	1.46%	-51%	1.46%	-51%	1.46%	-51%
Efficiency & Effectiveness							
Change Order Costs /Project Costs	5%	0	100%	0	100%	0	100%
Number of breaches of airport security plan	0	1	-100%	0	100%	0	100%
Number of violations airfield/runway incursions	0	0	100%	0	100%	0	100%
Customer Service							
Customer Satisfaction-Parking & Signage	85%	70%	-18%	70%	-18%	70%	-18%
Customer Satisfaction-Appearance	85%	70%	-18%	70%	-18%	70%	-18%
Customer Satisfaction-Concessions	85%	72%	-15%	72%	-15%	72%	-15%
Customer Satisfaction-Complaint Response Time	<i>72 hours</i>	<i>72 hours</i>	100%	<i>72</i>	100%	<i>72</i>	100%

*Based on DAY Preliminary draft with residual Method of Rates & Charges

Source: Dayton International Airport

created using the Balanced Scorecard approach. Nashville International Airport continues to use these measures, shown in Exhibit II-3.5, as it transitions to measures supporting performance excellence.

Exhibit II-3.5 identifies the performance measures for areas of results adopted by MNAA. Strategic or “Change the Business” measures are either a C or B. “Run” or “Operate the Business” metrics are designated as R or B. This distinction creates the capability to actively monitor the change effort underway as MNAA changes or creates management processes on the performance excellence journey.

MNAA is currently evaluating 290 sources of data to identify key measurements that will directly support key work processes. Once completed, MNAA will use the appropriate data to calculate a service quality index as an aggregate measurement of the performance of those key work processes and as the indicator of how the airport is serving its customers.

Finally, MNAA implemented a performance projection process. Central to the process is the need to financially project performance based on the changing economic environment. The pilot model is a projection of the rates and charges.



Worksheet 8. Develop and Test a Performance-Measurement Reporting System

This exercise is intended to help airport managers to define the PMRS and the necessary resources for a successful implementation.

Exhibit II-3.5. Metropolitan Nashville Airport Authority results metrics.

Category	Metric	Who?	4.1 Test	Level	Trend	Comparison	Importance
7.1 Products	By customer Segment!						
Services	Space conversion metrics	PDC	R				
Space Changes	Counts of	Properties	R				
-	Square Feet converted	Maintenance	R				
-	Functionality Upgrades		R				
-	Maintain versus new?		R				
Inspect/Maintain	Compliance	Maint/OPS	R				
Space	Safety Metrics	Safety	R				
-	Corrective Action Counts	Maint/OPS	R				
-	Corrective Cycle Time	Maint/OPS	R				
Secure Space	Compliance	DPS/OPS	R				
-	Safe feeling (PAX survey?)	CACS	B				
-	Access Control Metrics	DPS/OPS	R				
Manage	Contracts	Properties	R				
Partnerships	Partner Services provided	Properties	R				
Comm Relations	Contacts	CACS	R				
-	Activites focused on Community	CACS	R				
7.2 Customer Focused	By Segment						
Outcomes	Satisfaction - Dissatisfaction	CACS	B	X			
-	Perceived Value	CACS	B				
-	Loyalty (Retention)	CACS	B				
7.3 Financial & Market	By Segment						
Outcomes	PAX - Revenues	Fin	B	X			
-	PAX - Market Penetration of	Bus Dev	R	X			
-	Air Services (License PI)		R				
-	Partners Revenues	Properties	R	X	X	X	
-	Air Services - Cost/EPAX	CIU	R	X	X	X	
-	No. non-stops, total dest	Bus Dev	R				
7.4 Workforce	By Segment						
Engagement	Education Level	HR	R				
Satisfaction	Six Sigma Participation	CIU	B				
Development	Performance Review over time	HR	R				
-	Emp Opinion Surveys	HR	R				
-	Training Hours	HR	R				
-	AOC & Spec Training	HR	R				
-	Recognition Reward Counts	HR	R				
-	Staffing Report DPS/OPS	HR	R				
Capability	Turnover	DPS/OPS	R				
Capacity	Termination Report Data	CIU	R				
-	Vacancy Report	HR	R				
-	% Payroll to Employee Benefits	HR	R	X			
Climate	Safety Report	HR	R	X			
-	Safety Comm Actions	Safety	R				
-	Occ Injury Trends	Safety	R				
-	OSHA 300	Safety	R				
-	Personnel Change Log	Safety	R				
-	Salary Survey	HR	R				
-	Emergency Preparedness	All	R				
7.5 Process Effectiveness	By Segment						
-	TNCPE Recognition Process	All	C	X			
-	Work System Changes	CIU	C				
-	KWP Process Metrics	CIU	C				
-	MNAA Service Quality Index	CIU	C				
-	Support Process Metrics	All	B				
7.6 Leadership	By Segment						
Strategy	Action Plan Implementation	All	B				
Ethical	Strategy Implementation	CIU	B				
-	Reported Breaches of Ethics	Legal	R				
-	Employee Survey of Ethics	HR	R				
-	Corrective Actions to Breaches	Legal	R				
-	Audit Results	HR	R	X			
Fiscal	Audit FollowUp Progress	Legal	R				
-	Financial Statement Issues	Audit	R				
-	External Audit Issues	Audit	R				
-	Financial Statement Risks	Fin	R				
Citizen Community Support	Time Donated	CACS	R				
-	Percent Workforce Involved	CACS	R				
-	Resources Contributed	CACS	R				

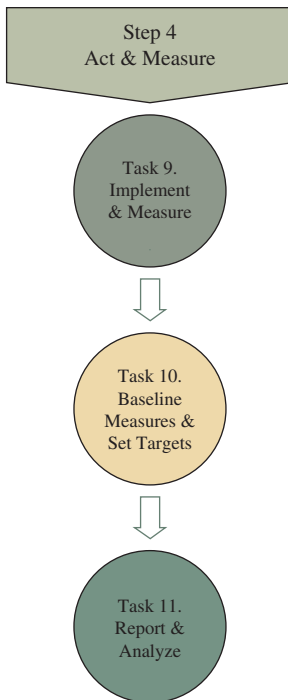
Metric Coding R=Run Business C=Change Business B=Both

Source: Nashville International Airport



CHAPTER 4

Act and Measure (Step 4)



- Allocate time to implementation
- Deliver a clear message of performance-measurement system objectives
- Collect the necessary performance data
- Set challenging but achievable targets
- What information to make public

In this step, the airport will implement the performance-measurement system. The airport will measure its performance, including measures for initiatives, strategies, and activities. As part of the process, the airport will develop a baseline of its measures; in other words, measure where it is today and set targets for the future to identify improvements and trends. Finally, the airport will report and analyze performance data that will be used in the decision-making process. Step 4 includes Task 9: Implement and Measure, Task 10: Baseline Measures and Set Targets, and Task 11: Report and Analyze Performance Results.

Task 9: Implement and Measure

Implementation

Implementation is probably the most challenging phase in the performance-measurement system. Airports should be prepared to allocate sufficient time for staff to embrace the new system, maybe longer than expected, before reporting its success. Due to their complexity, larger airports might require longer periods of time than smaller airports—usually 1 to 3 years. At smaller airports, implementation could take up to 12 months. There are a number of key elements to successful implementation. The most critical elements include the following:

- Good structural alignment, especially communication across “stovepipes” when different parts of the organization are involved in or affect implementation.
- Good project and program planning so as to use human and other resources effectively.
- Good budgeting that addresses mission-critical needs, allocates sufficient resources to accomplishing proposed initiatives, and uses resources efficiently.
- Responsibility and accountability and a culture that encourages and rewards them.
- Employee buy-in based on a consensus on performance expectations for employees, employee accountability, and employee understanding of how their actions affect the airport’s mission and goals.

- Motivating, recognizing, and rewarding good performance and correcting performance that doesn't meet the mark.
- Learning about and seizing opportunities, identifying and addressing issues and barriers, and changing direction when necessary to improve performance.
- Stakeholder outreach as an important part of both learning and communication.
- Performance management to ensure monitoring and reporting are occurring on schedule.

Structural Alignment

The airport's structure can greatly help or hinder performance. Performance indicators are usually the result of multiple processes and departments. In most large organizations a "silo effect" exists, where the organization is very effective vertically within its departments, yet may not focus on outcomes that require cross-departmental cooperation.

Generally, outcome measures rarely involve the efforts of one department; enabling airport-wide improvement in areas like service quality, customer satisfaction, and even IT, requires cross-functional teams to succeed. Therefore, horizontal information is as critical as vertical information not only to improve outcomes, but also to benefit from other departments' learning experiences.

In general, outcome measures require cross-functional teams.

Transparency and Communicating Performance Measures to Employees

While today's business environment emphasizes financial transparency to shareholders and regulators, performance transparency to employees has also become increasingly important. Transparent organizations tell employees, stakeholders, and partners what success means in quantitative terms. The best organizations tie what each individual is asked to achieve directly to objectives and measures of airport performance. While performance measurement is an organizational effort, prioritization and integration of the measures into daily activities is done by the individual. In addition, greater transparency can encourage better conversation on what drives the airports' performance, and should be the first order of business in the quest to discover what really matters.

Key transparency issues that organizations pursue through performance measurement include the following:

1. What is our most effective path to enhanced revenue and sustainability? Without accurate strategy measures, surprisingly few people can answer this question correctly. In a transparent organization, no one has to guess how the airport makes money or how their jobs affect bottom-line performance.
2. Why do our customers do business with us? What are the reasons customers use the airport and not an alternative? Price? Convenience? Quality? Need? Aesthetics? Habit? Lack of choice? Customer-focused measures can reveal behaviors and lead an airport not merely to keep pace with customer expectations but to stay ahead of them.
3. What makes our airport or travel experience worthwhile and truly different from others? What's in the airport's cultural and behavioral patterns that give it a competitive advantage? These issues should be understood through key performance indicators and become the focal point of resource investment and management attention.

Throughout the public and private sectors, connecting and aligning employee strengths to the goals of the organization is seen as increasingly important and critical to success.

Performance Management

Finally, measure-based performance management is in itself a key to successful implementation. Without decisions that improve specific activities and outputs (products and services), it is difficult to improve end results. Activity and output measures often simply indicate whether tasks were accomplished and how much output was produced. However, they can also improve

efficiency by assessing schedule, cost, and quality. In short, is the airport producing quality services on schedule (including meeting interim targets) and on budget? More importantly, are the activity and output measures the best mix to achieve strategic goals and the airport's vision?



Allocate Time to Implementation. Selling a new methodology to the staff might not be that easy. People need time to embrace the change and adjust to new requirements.



Clearly Communicate the Objectives of the Performance-Measurement System. Ensure that the staff that will participate in the system understand the performance-measurement system objectives and performance data and what the system will do for them.

Data Collection

Data are the bedrock of any performance-measurement system. Data supporting the chosen performance areas and measures are gathered from various airport departments and, in some instances, from outside parties such as airlines, contractors, and concessionaires. The data collection process can be well established and seemingly effortless or quite cumbersome. Typically, smoother data collection processes, those requiring less time and money, have a centralized data location, i.e., an ERP system data warehouse. (In small organizations, the centralized data location could be a department where data resides, or there could be a person who is responsible for the data.) Ongoing, smooth communication among departments plays an important role in reducing the time and effort expended to collect necessary information.

Timely, useful information leads to timely adjustments to improve performance.

Directly related to acquiring data is management's ability to make time-sensitive and assertive decisions based on data. One advantage of data collection and performance monitoring is the ability to predict situations and contribute information that allows executives to make sound decisions proactively, rather than reacting after the fact. If data are not readily available when needed due to infrequent collection, inability to retrieve existing data, or time-consuming reports that delay delivery of data and make data confusing, managers will not be able to respond quickly to operational issues. Airports can choose to collect and monitor data more often, for instance daily rather than monthly, when the nature of the measure allows. However, more frequent collection/monitoring might require more resources and be burdensome to employees. Airport management needs to decide if frequent data collection is more beneficial for the organization. One way to improve data collection is to create a very simple and clear data request format. Employees with various statistics can provide data faster and with fewer resources if the request for information is specific, does not alter over time, and the data are already in the required format.

Data to be collected must be useful to determine the achievement of goals.

On the other hand, far from having difficulty collecting data, some airports have too much data and do not have the knowledge to use the data well. Collecting data is not an end in itself. Collected data must be useful for determining whether or not goals have been achieved. Performance measures should not be established because data are available and convenient. Only necessary data should be collected, and not all data should be provided routinely to all levels of management. Furthermore, data provided to senior management should be limited to those measures that senior management can act upon in order to improve performance.

The quality of collected data is more important than the quantity.

More importantly, the quality of collected data is more important than the quantity. Data that contribute to the performance-measurement system should be aligned with strategic initiatives in order to measure goal attainment. Other relevant data can be collected at a departmental level and tracked with the aim of improving processes, but should not necessarily be part of the airport's performance-measurement system.

Another factor determining whether to collect data on a measure and how data should be collected is the degree of control the airport has over the measure. Usually, measures over which the airport has a higher degree of control are the ones for which it is recommended that data be collected; however, there are some exceptions to this. Airport management needs to review performance measures regularly and decide whether the measures are still useful enough to the organization to expend resources on collecting information for them.

Collect the Necessary Performance Data. Do not overwhelm your staff with collecting performance data that will not be used. Not all available data will be relevant to your performance-measurement system. Being precise and remaining focused will simplify the data collection process.



Maximizing Data Integrity and Accuracy

Data need to be collected, managed, and analyzed in a uniform and consistent manner, and data need to be validated or verified as accurate independently or through sampling.

Data Consistency

Inconsistency in data, whether within one airport or across several airports (in benchmarking), is a serious obstacle to using performance information for better decision-making. Some of the issues that can undermine an airport's ability to collect consistent, accurate data over time are the following:

- **Definitional Issues:** As data requests move through organizations, an understanding of what data are actually being requested can be lost. Use of "data dictionaries" that define in exact terms what the data are, explain where they can be located, and identify the knowledgeable data "owner" can help clarify which data are actually needed.
- **Inaccurate comparisons:** Over time, comparisons between one group and another or one time period and another can become inaccurate. Normalizing data between groups and time periods becomes essential as the processes and products being measured change.
- **Rules and Ownership:** Individual spreadsheets, e-mails, and other data transfer methods can contribute to a situation in which there is a lack of ownership and control over data. Uniformity and consistency demand strong controls over information and data collection.

Validating the Data

Generally data collection efforts lack an independent process for validating and verifying accuracy. Some organizations assign data validation to a specific department, such as finance. This office investigates three aspects of collected data:

- **Validity** (Do the data accurately represent what they are intended to portray?)
- **Reliability** (Are the data consistent and replicable?)
- **Integrity** (Can the data be altered or manipulated?)

While a fully independent verification and validation may not be possible at all airports, efforts to keep this process independent from the data source are essential.

Integrate performance across departments and with supporting external organizations.

Achieving Performance Integration

To maximize airportwide performance, it needs to be integrated, not only throughout the airport but also with the performance of other organizations that help achieve the airport's measures. Integration can be internal and external.

Internal Integration

In addition to integrating performance across line organizations ("stovepipes"), good performance measurement recognizes the contributions of support services (HR, IT, Finance, etc.) to program performance and ensures that these contributions are well documented and managed. The struggle to measure or justify the cost of a new technology system, a new training program, or an enhanced recruiting effort is a consistent and increasingly important theme in most organizations. Once a new support service is approved, finding ways to measure the outcome on an ongoing basis is also critical in order to retain corporate support for the service.

External Integration

In an airport environment, multiple independent organizations operate together for success in areas like safety and customer satisfaction. Integrating common outcome level measures between the airlines, TSA, and others is a crucial part of a successful performance-measurement process. Such work is already underway in areas like the Aviation Direct Access Screening Program (ADASP) and Visible Intermodal Prevention and Response (VIPR) operations to enhance perimeter security.



Implement and Measure

Success is measured by comparing performance data to performance targets. Data are gathered from airport departments and, in some instances, from outside parties such as airlines, contractors, and concessionaires. Airports that have tracked and reported information for a long time using an ERP system central data warehouse and/or designating a department or a person to be responsible for data experience smoother data collection processes that are less expensive and time consuming.

At **Minneapolis–St. Paul International Airport** there is an abundance of data collected in various departments and levels. Staff members in the Strategic Planning Department centralize data for selected measures and produce a performance-measurement results report to deputy executive directors and the executive director, who later presents it to the board. Data collection has been standardized over time using a periodic data request and submission format that has proved to ease the data collection process. Depending on the type of measure, departments collect data daily, weekly, or monthly. More frequent data reporting helps to identify issues as they occur and improve response time. An MS Access database is the most common platform for storing and analyzing information in the departments. There are two internally developed MS Access–based databases for the budgeting and planning process.

Customer satisfaction data are mainly received from ACI's ASQ program results and the internal airport Customer Service Assurance Center, which provides data on customer complaint records, phone logs, road traffic delays, safety concerns, and so forth.

To ensure a comprehensive performance-measurement system approach, data at **Toronto Pearson International Airport** are collected for various periods, from all organizational units, and from various external sources, including airlines (about passengers), government agencies, and tenants (about customers). The SPAD department organizes and centralizes data for reporting purposes. Micro-level data stay with individual units and are not shared across the organization. Data that impact several departments, such as financial informa-

tion (costs), are collected centrally and are accessible to various people within the organization. On the other hand, data that affect only a limited number of business units, such as data from customer survey results, are available only to the unit responsible for the activity. Currently, no central data warehouse exists; therefore, one of the challenges experienced by GTAA is data gathering from various sources across the organization. GTAA aims to improve system efficiency in an effort to sustain employee support in the process.

Worksheet 9. Implement and Measure

This worksheet assists airport managers in identifying and implementing a comprehensive, tailored, performance-measurement system evaluating the current level of effectiveness at the airport of several implementation elements.



Task 10: Baseline Measures and Set Targets

By now, the airport should be implementing its plans and programs and using its measures (“yardsticks”) to assess achievement of its goals, objectives, strategies, and activities. The next step is to *baseline* each measure. This is done by determining where the airport is today in terms of achieving a particular goal, discerning any trends in achieving that goal, and then revisiting the goal and setting a realistic target for what the airport will achieve and by when in relation to the goal.

The baseline is the starting point (normally, last year’s results) from which you will make improvements. The target is the level of improvement the airport will make within a specific timeframe. Airports should set long-term (5-year) targets and interim, annual targets. For the current year, consider reviewing performance monthly or even more often. An extreme example is runway friction, which, during icy conditions, will be tracked constantly. On-time arrivals may be tracked hourly to measure the impact of traffic peaks. Delays also will not be spread evenly over the year. Examine the airport’s actual performance and variations as you set interim targets. That way, you’ll know success or failure is not just a result of extraneous factors such as the time of year. Finally, targets should be set in collaboration with the person or department responsible for achieving the target and approved by the airport director.

Start by identifying a baseline, where you are today. Look at trends. For instance, has on-time performance been improving or is it getting worse? Have security violations been declining as well as airfield violations? Has concession quality and variety improved? Then set your *long-range target* to reflect the improvement you plan to make based on your plans, programs, and budgets. Make the targets challenging, but realistic (such targets are often referred to as “stretch” targets). Then work back toward the present to set interim targets for key dates in the interim, for example, the end of each fiscal year. If you are not meeting interim targets, you are less likely to meet long-term targets.

Another way to set targets is to benchmark within the airport. Often, the airport will have separate teams, perhaps in different departments, providing similar tasks or services. Compare their performance. Is there a team or teams that are performing significantly better than others? Consider setting that team’s (or those teams’) performance level as a goal for the entire airport. Additionally, find out why some teams perform better than others. Apply what you find out to improve the performance of other teams.

In order for measured results to be meaningful, they need to be compared to a baseline of previous performance.



Set Challenging but Achievable Targets. Unrealistic targets are detrimental to a performance-measurement system. If targets are set too low, it is likely that organizational goals will not be achieved within the expected timeframe. If targets are set too high, they will negatively impact your staff. When setting up targets, be reasonable and take into account the resources available to achieve them.



Baseline Measures and Set Targets

Identifying a baseline level for each measure is important. Identifying a baseline starting point and setting targets for improvement allows an airport to track measures from the baseline level of where the airport is today.

The goal of the board of directors at **Memphis International Airport** is to operate under a business model that improves efficiencies by reducing costs. Therefore, the goal of Memphis International Airport from an operations perspective is to keep rates and charges on a level base. Management's position is that if the airlines do their job and the airport does its job, the natural outcome is a level, continuous line. Baseline measures are established based on a proven record of past performance. When a measure deviates from this baseline, management revisits the process to improve efficiencies.



Worksheet 10. Baseline Measures and Set Targets

On completion of this worksheet, airport managers will be able to identify current measures' baselines and set targets, stating the improvements the airport will have to make and what level of improvement it will achieve on the measure in a pre-determined period of time.

Task 11: Report and Analyze Performance Results

It is not enough to merely collect data. Data must also be reported and used by management to improve performance. Further, the need to rapidly integrate business intelligence and KPI data has increased in the face of a quickening business cycle. As airport customer demands grow and competitors move to meet the traveling public's needs, measuring performance is only as important as how fast measurement data can reach decision-makers.

Senior executives will need to decide the timing and frequency of reporting and how it will be provided. Reporting should be kept short and easy to read and understand. Managers should be able to examine the data and fairly quickly obtain an explanation of why variances occurred and what action was taken to improve those deviations. Monthly and quarterly reports are usually prepared by the Core Team and submitted to the airport director and senior executives. The major value of having performance data available regularly is that it empowers senior executives to identify potential problems in advance and take a more proactive approach to resolving them. Thus, data obtained from interim reporting should be incorporated into decision-making. However, each airport should establish its own schedule.

Finally, the Core Team needs to develop schedules, formats, and requirements. The Core Team also needs to provide access to the PMRS, explain and demonstrate it, and train employees in how to use it (particularly when specialized software is involved). If the airport director and leadership are going to use the software, they also need to be provided with access and training.

Year-End Reporting

While interim reporting helps managers adjust processes and programs during the year, year-end reporting and analysis are the basis for reporting performance on reaching those targets and for making more fundamental changes—at a minimum, setting new targets. Year-end reporting is also the basis for performance awards, payouts, and reports to the public. Therefore, year-end reporting needs to be more carefully documented and validated than interim reporting, with better explanation and analysis of what happened and why. It is also important to tailor year-end reporting to multiple audiences—the airport’s management and employees, the airport’s “community” of stakeholders, and the public at large.

Year-end reports are generated by the Core Team and submitted to senior executives. At a minimum, analysis accompanying year-end reporting needs to convey the following information:

- The performance results and how they compare with baselines and targets for the year,
- The actions taken during the year to achieve the target,
- Reasons the target was or was not achieved, and
- The impact that the reported performance results will have on the long-range outcome they support.

Yearly reporting focuses on the annual report and associated financial reports. Yearly reporting often supports the following year’s budget, determines baselines, and justifies capital improvement projects. Information on baselines, capital improvement project data, and so forth is usually made public at city hearings, in annual reports, and on the Internet.

What Information to Make Public. Many airports, like businesses, prefer to keep information private. Yet commercial airports are usually public entities, and performance information is often made public in the annual report and elsewhere. In fact, extensive airport information is already available to the public from FAA, U.S. DOT, and other sources. Financial data for even small commercial airports are available in the FAA Compliance Activity Tracking System (CATS) online at <http://cats.airports.faa.gov/>. The Bureau of Transportation Statistics keeps online “airport snapshots” of 400 airports, with information on operations, passengers, cargo, air carriers, market shares, and on-time performance. U.S. DOT also tracks average airline fares at airports. One reason to make information public is to allow benchmarking and adoption of airport best practices.



Airports should develop a communication plan for all audiences addressing the type of information that will be provided to each audience, the interim reporting and the venue, and the type of year-end reporting.



Report and Analyze Performance Results

Reporting the results of the system is essential to communicating the progress of the airport toward its goals and to monitoring trends. Likewise, timely and accurate review of performance data is an invaluable source of information in airport planning.

At **Dayton International Airport**, information is summarized in different forms and presented in the following forms and venues:

- Biweekly management meetings to discuss strategies and tactics that involve the Finance, Safety, Engineering, and Operations departments and the Director and Deputy Director of Aviation.
- Monthly financial updates (expenses and revenues) presented to the Director.
- Quarterly budget overview reports presented to the city.
- Once-a-year budget hearings in which performance measures and goals are presented to the city and to the Airport Council as guiding facts to legitimize additions to the budget.

With all of this information in hand, the scorecard is updated quarterly to show progress through the course of the year. This information is widely available to staff members, but lower-level staff members often don't show interest, preferring to fully concentrate on their work.

At **Minneapolis–St. Paul International Airport**, performance is monitored by managers as needed and reported to executives weekly. Once a week, senior staff members from each department and division meet with the executive director to update information and discuss any issues and concerns. As part of the staff meeting, performance measures are reviewed to discuss any noticeable trends. These meetings are crucial in ensuring smooth communication because the division directors become aware of issues in other operational areas that may affect their own operations. Open communication and the approachability of the executive director help to bring attention to problem areas sooner rather than later. Even though communication across various organizational divisions and departments is satisfactory, employees are continuously encouraged to further improve information sharing. Airport management believes that sharing information among all levels of staff and all departments is key to operational efficiency and performance excellence.

External reporting of the airport's performance data is done in the Minneapolis–St. Paul International Airport strategic plan. Exhibit II-4.1 presents performance indicators from the 2008–2012 strategic plan.

Tampa International Airport has a comprehensive and effective airportwide performance-monitoring process. Reports on the airport's adopted measures are reported to the executive director annually (or more frequently) by the Performance Management and Internal Audit department. Quarterly organizational goal reports are prepared by staff and submitted to the deputy executive director; a copy is also given to Performance Management. Goals not completed by the end of the fiscal year are carried over to the next fiscal year and continue to be reported on until completed. Successful completion of goals is a performance dimension of the responsible director's annual performance evaluation. Departmental performance measures are reported monthly by managers to the performance project manager, who in turn reports to the executive director quarterly. The fourth quarter report is a summary of the year.

Tampa International Airport developed a series of reports to internally monitor and report airport performance:

- The *Initial Form* describes efforts and tasks to accomplish each goal and the planned completion date. Elements of the form are the goal description, timeline, inputs, outputs, outcomes and measurement, goal number, and the responsible department and director.
- The quarterly *Goal Status Reporting Form* reflects the progress of goal achievement. It states the goal number, quarter and goal, the process and date of completion, original goal completion date, approved revised

Exhibit II-4.1. Minneapolis–St. Paul International Airport performance indicators as published in 2008–2012 strategic plan.

Performance Indicators	2003 Results	2004 Results	2005 Results	2006 Results
Safety				
◆ MSP Runway Incursions & Airfield Violations				
■ Airfield Operations Area (AOA) Violations	NA	(July – Dec.) 4	(July – Dec.) 2 (Jan. – Dec.) 3	(July – Dec.) 9 (Jan. – Dec.) 13
■ Citations Issued	NA	(July – Dec.) 21	(July – Dec.) 15 (Jan. – Dec.) 35	(July – Dec.) 18 (Jan. – Dec.) 43
■ Warning Citations Issued	NA	(July – Dec.) 80	(July – Dec.) 17 (Jan. – Dec.) 56	(July – Dec.) 19 (Jan. – Dec.) 47
■ Runway Incursions	3	1	1	0
◆ Employee Accidents & Incidents				
■ Total Employee Injuries	107	82	91	107
■ OSHA Recordable Injuries	41	33	29	34
■ Injuries Per FTE**	0.22	0.15	0.15	0.19
■ Lost Work Days Per FTE**	1.21	0.61	0.69	0.41
■ Workers Comp Experience Rating Modification Factor	0.70	0.73	0.86	1.05
■ MAC Vehicle Accidents	60	45	64	50
◆ Airport User Accidents & Incidents				
■ Claim Cost Per Million Enplaned Passengers	\$76,913	\$127,462	\$79,442	\$120,956
■ Number of Accidents & Incidents	280	313	294	186
Security				
◆ Security Breaches & Violations				
■ Failure to Display Security Badge	97	20	13	11
■ Piggybacking	81	47	26	17
■ Failure to Challenge	21	13	45*	14

*This upward spike is due to increased staffing in the Aviation Security Division and education efforts.

** Full Time Equivalent Employees

Source: Strategic Plan 2008–2012, 10²⁴

date, status (on-schedule or late), the baseline data, quarterly changes, explanation for late goals, and point of contact information.

- The *Goals & Objectives Completion Reporting Format* provides documentation that supports the performance measured. Elements are the goal number, responsible director, description of the goal, process completion date, original goal completion date, approved and revised goal completion date, explanation for late goals, outputs, outcomes, and measurements. This report is submitted after the end of the fiscal quarter in which the goal was completed.
- The *Quarterly Summary Report* contains a summary of all measures reported in the quarter and a Balanced Scorecard with the target, actual results, and comments organized by department. This report is prepared by the director of performance management and internal audit and submitted quarterly to the executive director and deputy executive director.
- The *Year End Report* summarizes the EIP by department with a year-to-year comparison of goals and objectives completed late, on schedule, and dropped, and EIP award. This report is prepared by the director of performance management and internal audit and submitted to the executive director and deputy executive director.



Worksheet 11. Report and Analyze Performance Results

Upon the completion of this worksheet, airport managers will be able to define the reporting mechanisms necessary to secure effective, real-time measurement data.

Manage Performance Measurement (Step 5)

- Communicate with staff
- Plan ahead of time

The final step in the performance-measurement cycle is for the Core Team to manage the airport's performance-reporting system, assess the current performance-measurement system, and coordinate the annual process of establishing new performance goals. Step 5 includes Task 12: Manage Performance Players and Task 13: Initiate a New Performance-Measurement Cycle.

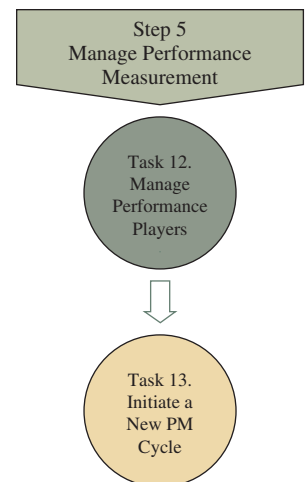
Task 12: Manage Performance Players

The size of the airport and the complexity of the performance-measurement system will affect the structure of the Core Team. Large airports will probably identify a Core Team, and each department will identify a point of contact who provides performance information. Smaller airports may assign a single individual to coordinate performance planning, measurement and information gathering. In general aviation airports with only a handful of employees, the airport director may handle the entire performance-measurement function. In any case, there should always be one person or group in charge of the performance-measurement system, and this person or group will collect data from other departments and report to the airport director.

In managing the performance-measurement process, the Core Team should

- Set and confirm what is to be reported including data and explanations, deadlines, formats, requirements, and responsibilities.
- Document the performance-measurement process and provide it to the team (all points of contact).
- Remind the team of deadlines early and often, check in with them, and push them when they fall behind, preferably before deadlines are missed.
- Review monthly and quarterly reports to ensure data quality is adequate and requirements are met.
- Validate the accuracy of submissions and the objectivity of accompanying explanations of when and why performance is going off track.

The best way to test the validity of reported performance is to conduct an internal audit each year. The Core Team and the finance department (if different) should collaborate; finance will



be intimately familiar with audit requirements and procedures. For information, see the discussion of data integrity in Step 4.



Communicate. Especially at larger airports, the Core Team should meet with points of contact early and often. Involve points of contact in setting requirements. Inform them about why performance is being measured: senior executives want it, and employee participation helps the airport meet its goals. Recognize inherent tensions; for example, employees always want more time to report, and management always wants information sooner. Recognize that you will not please everyone, but that you can create a reporting system that provides good, timely information to management. Give points of contact space to air their concerns and address them when possible. Finally, as the end of the year approaches, meet with the team to prepare for year-end reporting and changes for the new year.



Worksheet 12. Manage Performance Players

This worksheet provides a template for evaluating reported data with the aim of securing the quality and timeliness of performance data.

Task 13: Initiate a New Performance-Measurement Cycle

Once the airport has set performance goals and targets; developed and executed activities, strategies, and initiatives; and is measuring and evaluating the results; it is time to begin planning a new annual performance-measurement system cycle.

Initiating a new planning cycle each year does not mean everything in the performance-measurement system will change. The airport's mission and vision are not apt to change for years. Long-term goals and end-outcome measures rarely change; however, the airport's environment changes and should be monitored constantly. Strategies and activities can change as often as annually. Interim targets may need to be reviewed and possibly reset even when set in the context of a long-range target. At a bare minimum, targets set earlier for the upcoming year should be revalidated or reset. Among the topics to evaluate in 2- to 5-year cycles are the following:

- Was any environmental change identified that needs to be addressed?
- Do any of these changes affect long-term objectives?
- If so, how do they affect end-outcome measures? Interim and short-term measures?
- Do results from performance data show gaps in performance improving over time?
- If not, does any performance measure need to be adjusted/changed?
- Do baselines need to be updated?
- How about targets?
- Was data reporting carried out in a timely fashion? Did it allow for immediate corrective action?
- Is reported data sufficient to identify leading trends?
- Is performance data available to airport staff at all levels?

Using evaluation techniques to confirm or alter performance measures is essential to the airport's continuing improvement. With no "check" on strategic impact, measures may become

static and eventually pointless. Validate connections between leading and lagging measures and confirm that current measures are still the best set to measure progress on current objectives.

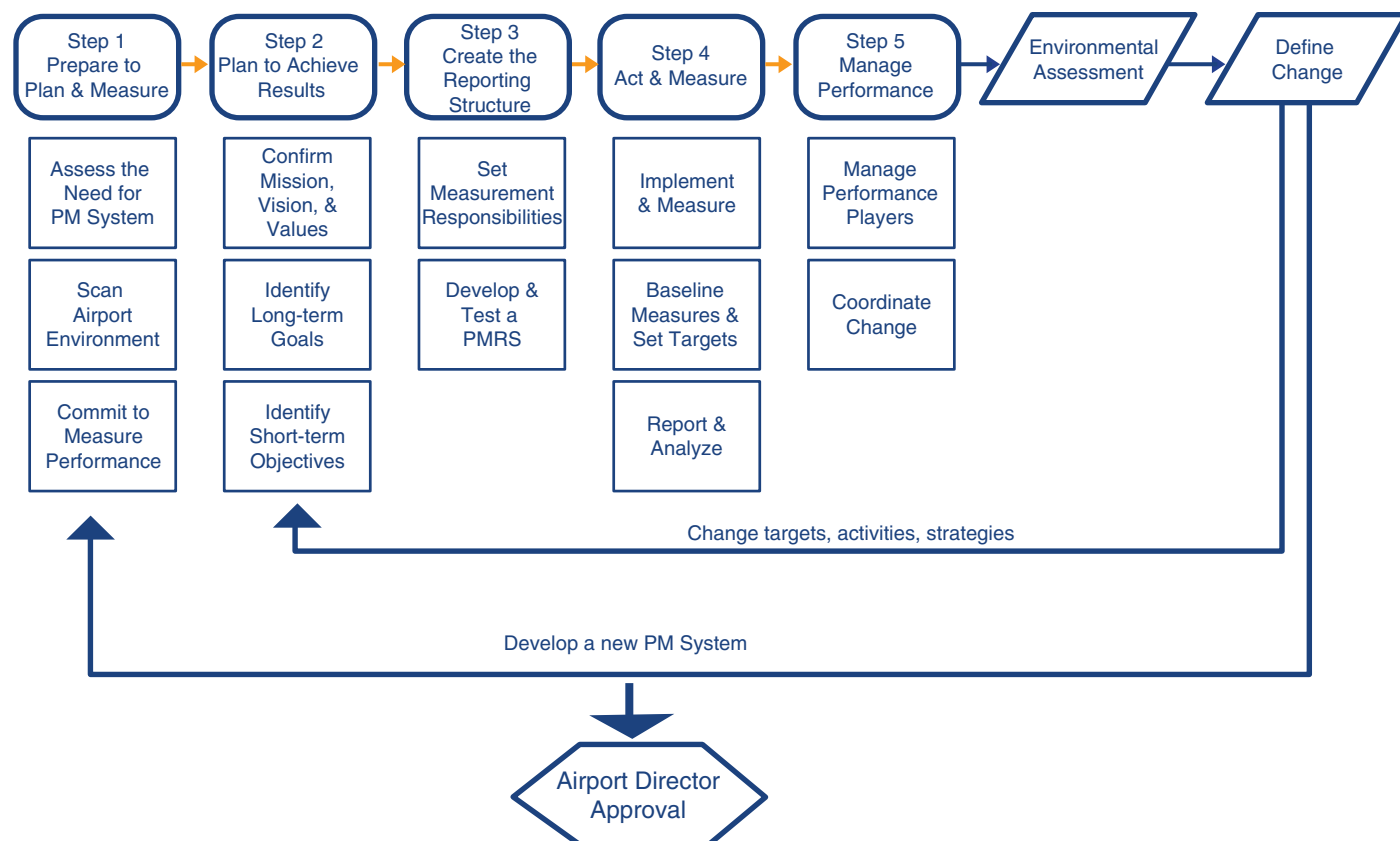


Plan Ahead of Time. The Core Team needs to begin planning for the new performance-measurement cycle well before completing the current cycle in order to have a new performance framework in place when the new cycle begins. In other words, the Core Team will have to start planning before they have year-end results. The Core Team will need to estimate what will be accomplished by year's end and use that estimate to work with the airport director, management, and others to identify areas for improvement and set new targets.

The Core Team will coordinate the change process and should gain airport director approval on how to proceed to prepare for a new performance-measurement cycle (see Exhibit II-5.1). The following steps are recommended:

- Scan the airport's environment and performance. Gain airport director agreement on what needs to change and on how fundamental changes should be in the upcoming year (e.g., an update of some activities and interim targets or a whole new performance-measurement system).

Exhibit II-5.1. The change process.



Source: Infrastructure Management Group

- If a decision is made to develop a new performance-based strategic plan, go back to Step 1 by reaffirming senior executive commitment.
- If the airport will keep the performance framework, but will change annual targets and some activities and strategies, then go back to the airport's offices for recommendations on new targets and activities, and start from Step 2. Even though the Core Team has briefly scanned the environment, the airport should plan to formally reach out to stakeholders and employees during every performance-measurement system cycle. If you have set both long-range and intermediate targets, your focus may be on validating the interim targets set for the next year. You will also need to plan for communication and outreach to stakeholders and employees.



Initiate a New Performance-Measurement Cycle

Performance measurement is a cyclical process. Each year, the airport should coordinate changes to the performance-measurement system that are made necessary by the changing environment and airport accomplishments.

The performance-measurement system at **Minneapolis–St. Paul International Airport** is updated in the annual review and update of the strategic plan. At the beginning of the fiscal year, management is directed by the executive director and the HR division strategic planning department to initiate the process for future strategic planning. The airport reviews the organization's vision, mission, and values; conducts an environmental scan and a SWOT analysis; and reviews and evaluates the strategic goals, annual and long-term key initiatives, and key performance measures.

The Metropolitan Airports Commission Executive Board reviews the strategic plan draft and provides input to the strategic plan components. The directors decide on strategic goals for the next 5 years, covering the following key performance areas of the organization:

- Long-term financial viability,
- Enhancement of customer service,
- Improvement performance through the leverage of resources and technology and development of human capital, and
- Increased effectiveness through strengthening relationships and partnerships with neighboring communities, regional businesses, and governmental agencies.

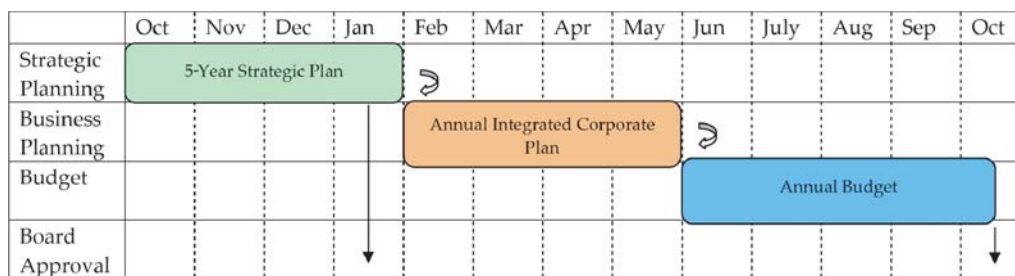
Further, each strategic goal is linked to long-term and annual key initiatives, each with performance measures. Thus, the performance-measurement system is aligned with the airport's strategic goals and initiatives.

The performance-measurement system at **Toronto Pearson International Airport** tracks airport performance toward established strategic plan goals. In an effort to continuously maintain a successful and competitive airport, the process is cyclical, with scheduled reviews and updates of the strategic plan to adapt to a changing environment. Exhibit II-5.2 illustrates the update process.

At **Nashville International Airport** process improvement results are monitored through the Listen, Leverage, Learn (LLL) meeting at the beginning of each wave of projects. Performance measurements are integral to airport performance review.

The CEO conducts quarterly reviews of each department's performance with the department head. They discuss budget performance, performance metrics, and departmental action items and audits. In these reviews, they may change the metrics, benchmarks, or goals in response to current business conditions, either internal or external. The level of analysis involves responsibilities, timing, decisions, and improvements. The data obtained from the different processes are updated annually to assess performance and used in the yearly strategic planning, resource allocation, budgeting process as a planning input.

Exhibit II-5.2. Toronto Pearson International Airport annual review and planning cycle.



Source: Toronto Pearson International Airport

An eight-section package is prepared for quarterly meetings that consists of (1) budget performance charts, (2) a performance-metrics trend graph with goals and benchmarks, (3) process behavior charts, (4) a table of metrics covering current Month–YTD and previous year Month–YTD, (5) equal employment opportunity participation, (6) small, minority and woman-owned business enterprise (SMWBE)/disadvantaged business enterprise (DBE) participation, (7) status of strategic business plan action items, and (8) outstanding items from internal and external audit reviews. As needed, corrective actions are formulated and reported in subsequent quarterly reviews.

The purpose of performance analysis and review is to improve performance in relation to metrics. Executive and senior staff members compare results to benchmarks and strategic plan targets. Performance then is translated into corrective action, prioritized, and either implemented or put into the idea bank for LLL. Chosen opportunities are translated into actionable projects and the appropriate teams are formed. Root-cause analysis is performed by the team, and the innovation or improvement is defined and deployed through department heads.

Worksheet 13. Initiate a New Performance-Measurement Cycle

Upon completion of this worksheet, airport managers will be able to identify the strengths and weaknesses of the current performance-measurement system and environmental changes and use that information to plan for and launch a new performance-measurement cycle.





CHAPTER 6

Current and Emerging Technology for the Performance-Measurement Process

Performance-measurement software does more than just provide charts, graphs, and other displays. Well-executed performance software connects departments, monitors and cleanses data for accuracy and consistency, and implements a structured process for collection, analysis, reporting, and decision-making. While it is easy just to focus on what appears on the screen as a report, the true power of these increasingly sophisticated tools lies in their ability to tell an accurate and meaningful story and to answer the questions management asks. This chapter discusses the following

- Understanding software-based reporting,
- Key characteristics of effective performance-measurement software, and
- Considerations when purchasing performance-measurement software.

Understanding Software-Based Reporting

Automated reporting can allow the performance-measurement team department the ability to distribute every report type: high-volume reports for many stakeholders, individual ad hoc queries, widely distributed business reports, centrally authored reports with self-service customization, and other custom reports. They also allow the performance-measurement group to draw on any available data source through the use of a single metadata layer. The benefits of automated reporting include the following:

- **Ensuring a single, reliable version of the truth.** Common data definitions ensure specificity and objectivity of the numbers. This means more time is available to make important decisions because less time is spent debating the validity of the data.
- **Interfacing with all data sources.** The most robust scorecards can connect to almost any available source and are not limited to proprietary reporting packages that only answer some data questions. Having the widest possible access to multiple data sources makes it easier to move forward with fully integrated enterprisewide performance management.
- **Making better decisions rapidly.** Frequent data updates and self-service reporting can give an airport the needed indicators in a much more timely fashion.
- **Meeting the information needs of all users.** Modern scorecard software can deliver information over the web, on mobile devices, and by populating documents through common interfaces like Microsoft Office.

However, performance measurement and management, budgeting, forecasting, and modeling have often required separate reporting tools for different capabilities and styles of reporting. The reporting tool is often dictated by the structure of the underlying data. This underlying data formatting, often called metadata structures and their designated data architectures, makes it hard for IT departments to ensure data consistency. Maintaining multiple reporting

applications across various departments also has created high costs, both in purchasing and upkeep. Each reporting application has its own performance limits, which forces networks to work at the lowest common denominator. Another common issue has been the end-users switching back and forth among applications and piecing together data in spreadsheets to answer performance questions.

Technology and database staff members in both the public and private sectors have struggled with a constant backlog of requests for new and modified reports because most reporting solutions have an “all or nothing” approach to functionality or because they don’t allow business users to create or modify reports themselves.

For business users, the right reporting software is simply the tool that allows them to study, cross-reference, and understand the data in a way that makes sense. The right reporting software allows access to relevant information quickly and maintains confidence in the objectivity and consistency in the indicators and the background data. The KPIs are presented in a sensible context that may be flexible and changeable based on the department that is presenting the information. Ultimately, good software can allow airport executives to make informed decisions rather than lose time debating what action to take because of unclear data.

On the other hand, from a technology perspective, IT’s impact on an organization is to reduce the cost of doing business through efficiency gains and increased productivity, according to *CIO Magazine’s* 2004 “State of the CIO” survey. From this perspective, it is the reporting efficiencies provided by automated reporting that are most attractive.

Efficient enterprise reporting involves a single reporting software application that reduces the complexity of the reporting environment for the technology staff while delivering more for the organization’s business users. A complete performance management solution should

- Recognize and accommodate different kinds of users,
- Provide complete coverage for all types of reports, and
- Access all enterprise data, regardless of the source.

Key Characteristics of Effective Performance-Measurement Software

In today’s environment, business intelligence and performance-measurement software overlap and intersect. Airport technology staff should examine business intelligence solutions when determining the proper performance tool. To that end, the most powerful and useful scorecards include these standard business intelligence capabilities: analysis; scorecarding; event management; and extract, transfer, and load (ETL) data loading functions.

Scorecards transform data into a small number of easy-to-read indicators with targets. Typical characters of scorecards include the following:

- **Quick information.** Scorecards show the most vital information in a condensed and easy to understand format to indicate performance versus targets
- **Understand strategy and goals.** Scorecards show everyone what’s important, what’s expected, and the relationship between strategies and goals for individual departments.
- **Accountability.** Scorecards feature drill down mechanisms that allow each part of the organization to measure its performance.
- **Connect departments.** Scorecard metrics, like outcome-based strategies, are interdependent. Scorecards highlight cross-functional relationships.

Modern business intelligence software can develop a huge range of reports—from simple inventory lists to high-volume billings and high-impact business dashboards. A major stumbling block

Maintaining data consistency is a major asset to automated systems.

The right software depends on specific airport needs. What’s most important is unique to every organization.

has been that some software tools cannot be integrated into existing infrastructures or process data from other systems. The ability to integrate software tools into existing infrastructure without creating a need for additional security, data storage, or other redundancies has become a major factor in determining suitable solutions.

Well-designed graphic displays of data are better understood and more meaningful to most decision-makers than many other forms of data presentation.

As the business environment becomes increasingly graphically oriented, the ability to create reports containing any number of report objects—charts, cross tabs, and lists, as well as images, logos, and live, embedded applications—has also become an important factor in software. These objects allow organizations to extend the boundaries of traditional reporting, giving them unprecedented ways to view their business performance. Reports can be built with multiple data queries.

Modern software tools make departmental reporting a much easier process. Complex enterprise reporting can become standardized and understandable. Ultimately, the best software can extend the power to create, distribute, and modify reports to everyone across an organization. All airports investigating performance software should look for a software that allows reporting from a single source and provides advanced authoring abilities that match user needs while operating on a web-based architecture.

Considerations When Purchasing Performance-Measurement Software

A list of questions to consider before purchasing any performance-measurement software should include the following:

Is the software compatible and interoperable with the airport's existing enterprise architecture? Any software purchase should align with the airport's overall enterprise architecture (EA) or its standards for aligning technology resources to improve business performance. For performance-measurement system software, in particular, it is critical to take into consideration the following five aspects of the architecture to allow for full integration of information and information technology:

- The business architecture drives the information architecture,
- The information architecture prescribes the information systems architecture,
- The information systems architecture identifies the data architecture,
- Data architecture suggests specific data delivery systems, and
- Data delivery systems (software, hardware, and communications) support the data architecture.

The hierarchy in the performance-measurement system model is based on the notion that the airport operates a number of business functions; each function requires information from a number of sources; and each of these sources may use one or more operation systems, which in turn contain data organized and stored in any number of data systems. Therefore, any software purchased needs to work smoothly with this overall architecture.

If the airport's software will need to interact with TSA, FAA, or any other federal organization's technology or data, the software may also need to interoperate within the Federal Enterprise Architecture, a common methodology for technology acquisition, use, and disposal for all federal agencies. More information is available from www.whitehouse.gov/omb/e-gov/fea/.

How well does the software automatically move data in and out of the system? The automated data transfer portion of the performance-measurement system process is key to any performance-measurement software system. How the software accomplishes this process is critical information for software purchase decision-making. Almost all major software vendors use one of two processes: ETL or comma separated values (CSV).

An airport's IT enterprise architecture refers to the structure and flow of data and information.

The more robust and increasingly popular ETL process has major advantages, including the following:

- **Retention of metadata.** This is a major point because analytical applications of performance measures are highly dependent on proper understanding of metadata.
- **Ease of use.** Most ETL tools are based on a graphic user interface (GUI) and have repositories; the tools have increased ease of use and ease of modification.
- **Built-ins.** ETL tools have built-in objects to handle recurring tasks such as aggregation, so these do not need to be coded and recoded.

The more traditional and still widely used CSV process works well with File Maker and spreadsheets. It is a more basic approach but can be the best way to transfer a large volume of spreadsheet or database information between programs without worrying about special file types.

It is important to ask any vendor to show examples and demonstrate how their system validates and handles increasing volumes of data, which may require designs that can scale from daily batch delivery to multiple-day microbatch to integration or real-time change-data capture for continuous transformation and update.

How well does the software handle automated workflow processes and approvals? A straightforward but important component of performance-measurement system software is its ability to handle the workflow process of data input, adjustment, analysis, and use through proper authorization assigned by users. Managing authorization to manipulate the data, approve the data, and adjust the data is part of the performance-measurement system workflow process and should be automated and transparent.

How secure is the software? In the security-conscious airport operating environment, data security is a primary issue for performance-measurement system software. Asking the vendor how it secures the ETL or CSV data transfer process as well as the security of the data warehouse itself is extremely important. Secure password protection, encryption, and other standardized procedures are essential.

The possibility of interacting with TSA, FAA, or other federal data repositories signifies the need to understand the federal IT security procedures as well. The Federal Information Security Management Act of 2002 (FISMA) was meant to bolster computer and network security within the federal government and affiliated parties, including airports and contractors. The performance-measurement system software may be required to comply with FISMA and therefore will need to undergo the following security procedures:

- Determine system boundaries of the performance-measurement system software
- Determine system information types and perform categorization
- Document the system's reach and breadth
- Perform a risk assessment on the software and related processes
- Select and implement security controls
- Certify system and test
- Accredite system through federal guidelines

The vendor should be screened for FISMA knowledge and previous compliance.

Will the data be housed on-site or remotely? Related to security, as well as cost, is the question of on-site or off-site data housing. A critical question in this step is how willing the airport is to accept responsibility for the day-to-day handling of the software and the data.

Smaller airports with fewer technical and financial resources may opt for the Software as a Service (SaaS) model. In this model, the performance-measurement system software is licensed for use as a service provided to customers on demand, reducing the cost and burden of installation

ETL has enhanced the utility and ease of performance management software. It is a major feature to consider when purchasing.

Storing data in secure, off-site facilities lowers costs and can enhance reliability; however, it is not always considered a secure solution.

Data cleansing is vital for reconciling inconsistent or inaccurate data; however, it may not always deal with the underlying data issues in other systems.

Software utilizing OLAP uses a data cube to create a faster, richer, and more customized analysis of all data points.

and upgrades. This would also reduce airport responsibility for handling other aspects of software and data such as end user licensing agreements, software maintenance, ongoing operation patches, and patch support complexity. The SaaS model also can ensure security at a remote, hardened location but can reduce the airport's ability to have full control over every aspect of the software code.

Larger airports and those airports with a dedicated technical staff may opt for the on-site model, where software and data are hosted on airport servers. This more traditional approach requires a higher up-front cost, and the airport needs to ensure that a full technical specifications manual is provided so that airport personnel have full control over all aspects of the software. Deciding to host data and software on site means assessing how this decision will affect the airport's security needs, emergency power needs, and other operational requirements.

How does the software handle data cleansing and data quality? Some performance-measurement system software provides data cleansing as part of the standard application while others require additional purchases. When multiple users are entering data, there is a risk that information will be inconsistent and of poor quality, which can cause the software to fail to reconcile identical datapoints. Data cleansing is vital for data quality and incomplete cleansing can raise three large issues:

- Processes performed using defective data in the source databases will provide invalid results, which will cause the airport to incur the costs of measurement failure, discarded information, and rework.
- The uncorrected data will have the potential to corrupt the data warehouse, as changed data are propagated from the source over time.
- Reports that should be equivalent, consistent, and trustworthy will not be, causing confusion, lack of trust, and ultimately disuse of the system and process.

What type of data processing system does the software use? Vitality important in the world of performance-measurement system software is the type of analytical processing that drives functionality. Asking and understanding what type of analytical processing drives the software is important; different airports may require different processing methods.

The increasingly popular OLAP (online analytical process) utilizes a data cube to allow rapid analysis of data. Some popular software tools use an arrangement of data into cubes to allow for fast, sometimes nearly instantaneous analysis and display of large amounts of data. This arrangement also allows users to match and analyze customized and changing sets of data depending on their needs.

Another type of analytical process is ROLAP (relational online analytical processing). Software uses ROLAP to access the data in a relational database and generate structured query language (SQL) queries to calculate information at the appropriate level when an end user requests it. ROLAP may not always be as fast as OLAP, but it can be a better alternative when dealing with data in existing, predetermined hierarchies, which is often the case with financial data.

Be sure to ask the vendor which process is used in its software and understand which process best fits the airport's specific needs.

How does the software handle reporting? The most visible and therefore very critical aspect of performance-measurement system software is the reporting function. How the reports are created, what they look like, how customized they can be made, and how easy they are to interact with are all aspects of this vital question.

Some software requires custom-built reporting, which can be awkward and hard to decipher. Missing symbols, difficult-to-decipher colors, mangled text, and other problems are often seen in custom-built reporting tools.

Wizard-driven reporting allows for the use of pre-programmed reports to create the appropriate reports for an airport's specific needs. Requiring airport personnel to write SQL script to create reports requires that personnel have the technical knowledge necessary to do so and can cause the airport to incur higher technical costs.

Ask the vendor how reports are created, what they look like, and how they are modified to ensure that the final performance-measurement system reports capture the intent of the performance-measurement team and satisfy executive decision-makers.

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Airport Case Studies on Performance-Measurement Systems

This chapter presents a detailed summary of current performance-measurement practices from a representative sample of airports that volunteered to share their experience. The purpose of the case study airport analysis is to leverage the knowledge of current industry practices, determine how outcomes and efficiencies are commonly measured, evaluate the role of performance measure results in the decision-making process, and identify types of commonly used measures and their benefits, as well as the factors that prevent airports from implementing a performance-measurement system.

What Is a Case Study?

Case studies are examinations of problems or issues in their real-world settings that serve as learning tools for those in a professional environment by contributing a tangible and innovative approach or particular scenario. Case studies share knowledge and experience gained by those who have already traveled similar paths. Readers can learn from others' achievements, challenges, successes, and failures in obtaining goals similar to their own.

This concept has been used to study performance-measurement practices in strategically chosen airports of all sizes and types. Case studies of how airports develop and manage their performance-measurement system can help individual airports evaluate their own performance-measurement system, avoid the mistakes that other airports may have made, and learn from airport best practices.

Case Study Sample

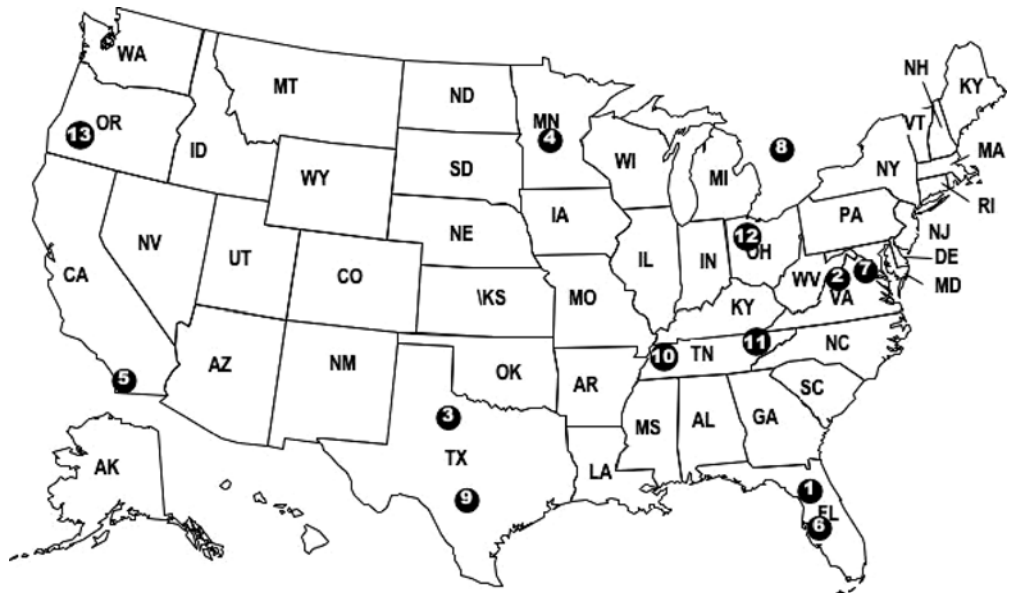
The sample consists of 13 airports, 12 in the United States and 1 in Canada. The airports selected are of varying sizes, locations, and management types in an effort to most effectively represent the potential end users of the guidebook. Information on airport size was derived from the most recent data reported by the FAA. In 2007, the FAA defined large hubs as those airports with more than 7,635,056 reported annual enplanements, medium hubs were defined as having between 1,908,764 and 7,635,055 annual enplanements, and small hubs had between 381,753 and 1,908,764 annual enplanements. Those airports with commercial airline operations and annual enplanements of fewer than 2,500 passengers (the minimum number of enplaned passengers necessary to be categorized as a small hub) are referred to as commercial service airports. Finally, GA airports (as defined by the FAA) are the remaining airports, excluding reliever airports. Based on this classification, the selected case study airport sample is the following:

- 7.7% Commercial Service, Non-Hubs
- 15.4% General Aviation

Exhibit III-1.1. Case study airports.

	Location	Airport ID	Airport	Classification
1	Sebring, FL	SEF	Sebring Regional	GA
2	Leesburg, VA	JYO	Leesburg Executive	GA
3	Dallas, TX	DFW	Dallas Fort Worth International	Large Hub
4	Minneapolis, MN	MSP	Minneapolis St.Paul Int'l	Large Hub
5	San Diego, CA	SAN	San Diego International	Large Hub
6	Tampa, FL	TPA	Tampa International	Large Hub
7	Washington, DC	DCA/IAD	Washington National/Dulles	Large Hub
8	Toronto, Canada	YYZ	Toronto Pearson	Large Hub
9	San Antonio, TX	SAT	San Antonio International	Medium Hub
10	Memphis, TN	MEM	Memphis International	Medium Hub
11	Nashville, TN	BNA	Nashville International	Medium Hub
12	Dayton, OH	DAY	Dayton International	Small Hub
13	Eugene, OR	EUG	Mahlon Sweet Field	CS

Map of Performance Measurement Case Study Airports



- 7.7% Small Hubs
- 23.0% Medium Hubs
- 46.2% Large Hubs

Exhibit III-1.1 lists the selected airports and provides their classification and approximate geographical location.

Learning Objectives

Through the 13 airport case studies, information was gathered on the following topics:

- Airport approaches to performance-measurement systems and the relationship of the performance-measurement system to size and governance;
- Industry understanding of the relevance of performance measures in monitoring outcomes and reaching goals;
- Best practices and industry trends;

- Performance-measurement system elements of success—communication, participation, and personnel buy-in;
- Advantages, challenges, limitations, and trade-offs of the performance-measurement system;
- Commonly used performance measures; and
- Reasons airports have not implemented a performance-measurement system.

Case Study Reports of Selected Airports

Sebring Regional Airport

Abstract

Formerly Hendricks Field Army Air Base, Sebring Regional Airport is a GA airport operated by the Sebring Airport Authority. Sebring Regional Airport's strategy is to become the economic engine of Highlands County in central Florida, a traditionally agricultural area. The airport has defined a clear mission and vision that give direction to Sebring Regional Airport for the next 50 years. Management is currently in the process of defining goals and strategies, and no measures have been identified yet. However, financial performance and operational performance are monitored on a weekly basis. A small number of staff who have access to all available data, limited time and financial resources, and the need to address urgent matters immediately have constrained Sebring Regional Airport's efforts to develop and implement a performance-measurement system.

Airport Profile

Sebring Regional Airport is a GA type airport located in the center of Florida in an agricultural area approximately 7 miles from downtown Sebring and an average of 100 miles (or a 2-hour drive) from Orlando, Tampa, St. Petersburg-Clearwater, Sarasota-Bradenton, Southwest Florida, Melbourne, Vero Beach, and Palm Beach airports. Since its inception as a military flying school in 1941, Sebring has turned into an economic engine in the area. Serving the government in times of war, Sebring was conceived to boost war-related activity until it was declared inactive at the end of the Second World War in 1945. In early 1946, the city received a temporary permit to operate so-called Hendricks Field as a civilian airport that opened to the public in 1947. In 1967, the city turned over the deed of the airport to the Sebring Airport Authority, which has managed the airport since then. The airport has evolved into an economic engine—developing a commerce park that is the home of 17 organizations, including Sebring International Raceway, which attracts thousands of race fans from around the world every year. Sebring Regional Airport is run by a five-member staff, and all services are outsourced to the private sector.

Program Goals and Objectives

The airport has defined a vision and a mission that establish a clear direction for the airport as an economic generator for Highlands County for the next 50 years. The airport is currently in the process of defining goals and strategies, and as such, no measures have been established yet. However, airport management believes in the relevance of performance measures and the benefits of monitoring performance.

Because the airport's strategic approach to attracting air-traffic activity is through economic development, the airport works as a channel for businesses and infrastructure development. Management is very active in regional projects to improve transportation as a means of promoting economic activity in the area. Some of these projects are the following:

- The Heartland Coast-to-Coast Corridor that will connect the east and west coasts of Florida through I-75/Florida's Turnpike and I-75/I-95;

Sebring Regional Airport is in the first stages of strategically aligning the organization. A performance-measurement system will be the final component in the development of the system.

- The Encouragement Zone, which allows airport-adjacent property owners to enjoy the same development opportunities as the Sebring Airport Authority by creating a strategic alliance for economic advantage that capitalizes on higher land values and land use compatibility and provides for future airport needs; and
- The Scale and Economic Stewardship Program, which acts as a economic and community steward to provide infrastructure development and prosperity to the county and the region.

The airport also capitalizes on the catalyst project, which promotes tax breaks.

The most pressing goal for the airport is the acquisition of surrounding land to expand airport property and attract more businesses to the airport commerce park, which is supported by a global platform with intermodal transportation (air, rail, and roads).

Airport principles to be considered as goals are the following:

- Community perception of the airport as a leader in growth and development of the area;
- Airport growth;
- Provision of the benefits of economic zone status to airport tenants through airport participation in permitting, zoning, elimination of fees, and so forth; and
- Retention of a young population.

Data-Collection Procedure

Financial and operational data are collected by administrative staff on a daily basis. Although it is not compiled or documented in a performance-measurement system, it is easily accessible through financial and operational records. Customer service is measured through customer service surveys. The drawback of not documenting performance measures resides in the difficulty of determining trends, leveraging gains from improvements and learning, and accessing the data when required since it is not readily available in one place. Finally, the alignment of strategic elements and the achievement of goals are unknown or difficult to determine with accuracy.

Measures, Standards, and Targets

Currently, Sebring Regional Airport management collects data in four areas considered to be essential:

- Financial performance
- Operational performance
- Capital investment programs
- Customer service

Employee satisfaction and training, although relevant measures, are not being documented due to the simplicity of monitoring a small staff (five employees).

Performance measures under discussion that are related to potential airport goals are the following:

- Increased number of organizations in the airport commerce park, increased airport revenues, and expanded airport property;
- City and County grants received by Sebring Regional Airport in relation to grants received by other airports;
- Florida Department of Transportation and FAA grants; and
- The results of an economic impact study

Monitoring and Reporting

Because there's no performance-measurement system in place and the airport staff is small, monitoring and reporting are done by management on a weekly basis. Since Sebring Regional

Data collection is embedded in the day-to-day operations.

Airport staff members are not involved with airport operations, information is being shared among managers only. Maintenance of the current process is fairly simple, with minimal time and cost implications.

Successes and Challenges

Sebring Regional Airport management sees a performance-measurement system to be an imperative tool for airports of all sizes. However, for airports with a smaller volume of operations, the development, implementation, and maintenance of a full-scale performance-measurement system isn't always a priority. Some of the characteristics of smaller airports that contribute to this situation are the following:

- **Small Staff.** Tracking training and overall staff performance without the implementation of a measurement tool is feasible when the number of employees is small, as is the case with Sebring Regional Airport. Airport management strives to deliver outstanding customer service and believes the private sector excels in that field; thus Sebring Regional Airport outsources many of their services.
- **Longevity of Management.** Senior staff appointed for long periods of time leverage their knowledge of airport data that are not formally documented.
- **Limited Resources.** Not having the time required to administer a performance-measurement system, having a small staff, and having limited available funds could very well impact the decision of a small airport on whether to develop and implement a system to monitor performance.
- **Urgent versus Relevant Matters.** In an environment run by a small staff with limited resources, urgent matters take precedence over relevant matters. Thus, the development and implementation of performance measures and performance-measurement systems, although relevant to airport outcomes, are constantly being postponed in order to resolve emergencies or attend to immediate needs.

Two major reasons to implement a performance-measurement system in spite of the difficulties are the following: (1) transferability of knowledge from airport officer to airport officer within the organization and (2) collecting data to be used for internal marketing directed at elected officers and constituents.

Mahlon Sweet Field, Eugene Airport

Abstract

Owned and operated by the City of Eugene, Mahlon Sweet Field Airport is a small airport and the second busiest in Oregon. The core of the business at the airport is GA activity. Mahlon Sweet Field has many components of a sound performance-measurement system including customer satisfaction surveys, benchmarking, demand studies, tenant surveys, and periodic performance reports. The city performance-measurement manager works with the management teams of each city department to develop service profiles that include very broad strategies and some high-level performance measures. The airport performance measures are compiled via a collaborative effort involving the city performance-measurement manager and the Mahlon Sweet Field management team and used as part of the annual city budget document.

Airport Profile

Located along the I-5 corridor, 5 miles away from downtown Eugene, in the middle of the State of Oregon, Mahlon Sweet Field is the second busiest airport in the state and the fifth largest airport in the Pacific Northwest. Owned and operated by the City of Eugene, Mahlon Sweet Field serves an expansive six-county region. In 2007, Mahlon Sweet Field experienced 379,089 enplanements, a 26% increase since 2003. The airport operates with 40 full-time employees, which includes police and Aircraft Rescue Fire Fighting (ARFF) personnel. Providing excellent customer

Mahlon Sweet Field has defined overarching strategies with a mission, targets and action plans, outcomes, and operating principles, and the airport tracks performance measures.

Mahlon Sweet Field uses measurement results as a communication vehicle and performance improvement.

service is the focus of this non-hub commercial service airport. Leadership at Mahlon Sweet Field regards its agreements with existing air carriers and other service providers as partnerships. Airport officials are committed to creating expanded and new relationships with airlines, with a goal of supporting demand for air service in the region.

Program Goals and Objectives

Mahlon Sweet Field has many components of a sound performance-measurement system. The airport has a strategic framework to leverage the development of a performance-measurement system: mission, outcomes, operating principles, and a SWOT analysis are in place. Mahlon Sweet Field also has identified three overarching strategies with corresponding targets and action plans and tracks performance measures to monitor core processes. Because the pieces are viewed independently, they are not perceived as an integrated performance-measurement system, although independently they provide valuable information to airport operators.

Mahlon Sweet Field objectives are developed at a broad level as a collaborative effort with the management team and the city performance-measurement manager. At this broad level, the objectives are aligned with the high-level strategies but are not detailed enough to be aligned with stakeholder expectations. Exhibit III-1.2 shows Mahlon Sweet Field’s current strategies and outcome measures.

Along with the internal goals and objectives for the airport, Mahlon Sweet Field benchmarks against similar airports to gain a comparison perspective. The airport uses their performance measurement and external benchmarking to determine how Mahlon Sweet Field compares with peers. The airport also uses these techniques and measurement results as a way to communicate with the Airport Advisory Committee. The airport is able to effectively use their performance-measurement strategies as a mechanism for annual and periodic performance improvement focused primarily on customer service.

Data-Collection Procedure

Data-collection requirements are not substantial given that the bulk of the work is conducted annually and that a clearly defined and integrated performance-measurement system consisting of visible “dashboards” does not yet exist. Because the customer survey and demand survey are out-sourced, there are limited data requirements other than an annual review and revision of the survey instrument. The benchmarking survey is the most time consuming and includes the annual distribution of an MS Excel survey to the study partners. The monthly activity report is gathered from Mahlon Sweet Field’s financial reporting system and monthly tenant submissions and is managed

Exhibit III-1.2. Mahlon Sweet Field strategies and outcome measures.

Strategies	Outcome Measures
Recruit and retain air service providers that meet regional needs	<ul style="list-style-type: none"> • Increase the number of passengers using Mahlon Sweet Field by 2% annually • Establish a sustainable air service development fund
Develop airport facilities and infrastructure to accommodate operational, safety, and security requirements and to meet projected demand	<ul style="list-style-type: none"> • Within 4 years meet airfield development needs as identified in the new Airport Master Plan • Within 4 years complete the projects identified in the terminal rehabilitation plan • Annually meet FAA and TSA safety and security mandates
Provide the products and services needed by customers at Mahlon Sweet Field	<ul style="list-style-type: none"> • Maintain a satisfaction rating from customers of 80% that they are able to find the products and services they need

by a finance and administration staff person. Management uses the data gathered primarily as a means of communicating with the city, improving customer service, and negotiating with airlines.

Mahlon Sweet Field uses a number of discrete tools to gather data in its performance-measurement system. The tools include the following:

- **Customer Satisfaction Survey.** The customer satisfaction survey receives the most attention from the management team and is analyzed for areas of improvement; for example, a new volunteer program resulted from feedback on the survey, and implementation of free WiFi also emerged from this tool.
- **Demand Forecast Survey.** This tool is used by the director and his team to negotiate with existing airlines and attract new ones.
- **Benchmarking Survey.** The benchmarking survey involves the tracking of 19 key performance indicators from 8 peer airports.
- **Activity Report.** This report summarizes operational data and is distributed to all tenants, Mahlon Sweet Field managers, and the Airport Advisory Committee.
- **Tenant Survey.**
- **Tenant Meetings.** Airport tenants are met with on a regular basis.
- **Airport Advisory Committee Meetings.** These committee meetings provide good forums in which tenants can voice their concerns.

Measures, Standards, and Targets

Mahlon Sweet Field has defined 17 performance measures that monitor core processes and the total system. Core processes are the following: operate and maintain the airfield, provide traveler support facilities and services, provide GA facilities and services, and plan and develop regional air service and facilities. The total system, on the other hand, involves the efficiency, effectiveness, financial performance, and customer satisfaction generated by Mahlon Sweet Field. (See Exhibit III-1.3 for a list of short-term and intermediate measures of Mahlon Sweet Field's core processes and total system.) Six of the 17 performance measures overlap with the benchmarking study, in which Mahlon Sweet Field monitors four key performance areas: operations, productivity, revenues, and expenses and debt, for a total of 21 benchmarking measures.

Monitoring and Reporting

Each year, the Mahlon Sweet Field management team presents a summary of its performance (using all of the tools listed under the section entitled "Data-Collection Procedure") to the Airport Advisory Committee:

- Customer Satisfaction Survey (outsourced and conducted annually).
- Demand Forecast Survey (outsourced and conducted annually).
- Benchmarking Survey (led by Mahlon Sweet Field and conducted annually).
- Activity Report (led by Mahlon Sweet Field and conducted monthly).
- Tenant Survey (led by Mahlon Sweet Field and only conducted once, in 2006).
- Tenant Meetings (led by Mahlon Sweet Field and conducted monthly).
- Airport Advisory Committee Meetings (led by Mahlon Sweet Field and conducted monthly).

Successes and Challenges

Mahlon Sweet Field has implemented many components of a performance-measurement system and works closely with the city to establish measures to track performance. The biggest challenges associated with Mahlon Sweet Field's performance-measurement system include the following:

- Difficulty in obtaining data from third parties (i.e., tenants and benchmarking partners);
- Annual increases in the cost of the customer service and demand surveys; and
- Systematic use of the information to communicate and improve performance.

Exhibit III-1.3. Short-Term and Intermediate Measures at Mahlon Sweet Field.

Core Processes	Short-Term and Intermediate Measures
Operate and Maintain the Airfield	<ul style="list-style-type: none"> • Landing fees per 1,000 lb of landed weight • Total aircraft operations • Meeting FAA safety requirements
Provide Traveler Support Facilities and Services	<ul style="list-style-type: none"> • Customer satisfaction rating or quality and importance of terminal services • Airline passenger-related revenue per enplaned passenger • Meeting TSA security requirements
Provide General Aviation Facilities and Services	<ul style="list-style-type: none"> • Change in based aircraft • Gallons of fuel sold
Plan and Develop Regional Air Service & Facilities	<ul style="list-style-type: none"> • Market demand for air service • Demand triggers as identified in the Airport Master Plan • Percent of regional trips through Mahlon Sweet Field
Total System	Short-Term and Intermediate Measures
Efficiency	<ul style="list-style-type: none"> • Average airline cost per enplaned passengers
Effectiveness	<ul style="list-style-type: none"> • Number of passengers using Mahlon Sweet Field • Percent of regional trips through Mahlon Sweet Field
Financial Performance	<ul style="list-style-type: none"> • Operating expense per enplaned passenger
Customer Satisfaction	<ul style="list-style-type: none"> • Customer satisfaction rating of signage, cleanliness, and appearance of the terminal • Number of Mahlon Sweet Field passenger top-10 destination markets receiving direct service from Mahlon Sweet Field

From a transferability perspective, the discrete elements of the Mahlon Sweet Field system could be implemented at another organization with relative ease. They would serve as a foundation to develop an overarching strategy and an integrated approach.

Dayton International Airport

Abstract

City owned and operated, Dayton International Airport is a small hub that is recovering remarkably from a period of recession. With a new director in 2006, Dayton International Airport changed its approach to doing business, understanding the need to define strategies and measure performance in order to take the organization in a clear direction. Dayton International Airport implemented a scorecard system for measuring performance that is embedded in the decision-making process, thereby reducing thinking time and increasing accomplishment of new endeavors. Using the scorecard system, the airport can determine which tactics are not contributing to the achievement of airport goals and take corrective action. Dayton International Airport measures are limited to tangible assets and are determined based on what is important in the industry and what other airports measure in order to benchmark. Dayton International

Airport uses 18 performance measures to monitor finance, operations, productivity, and safety and to establish the next year's goals, targets, and budget.

Airport Profile

Dayton International Airport is owned and operated by the City of Dayton and has 203 full-time employees. It is considered a small hub airport and is located approximately 14 miles from the center of Dayton, Ohio. Surrounded by three main airports (Port Columbus International Airport, Indianapolis International Airport, and Cincinnati/Northern Kentucky International Airport), Dayton International Airport has managed to excel in a recession while other airports are facing a challenge in retaining demand. In 2005, Dayton International Airport endured a 15% drop in passenger demand and the phasing out of Emery Aircraft, adding to the impact of dropping cargo volumes, which began in 2001 and left the airport with a large, unoccupied cargo facility. With a new airport director in 2006, Dayton International Airport increased the number of enplaned passengers by 6.85%. By 2007, the increase in enplaned passengers was 8.4%, and this trend continued throughout 2008. Dayton International Airport served 1,412,758 passengers in 2007, decreased cost per enplaned passenger from \$13 in 2006 to \$5.5 in 2008, and expected to further reduce it to approximately \$4.5 in 2009. These results reflect Dayton International Airport's new leadership style, which has emphasized creating a goal-oriented environment with measurable outcomes and working closely with stakeholders to understand customer needs and gain support from the city, businesses, and the community.

Program Goals and Objectives

Under the premise that an organization must have a strategy in order to know what to measure and to move forward in a clear direction, Dayton International Airport completed a strategic plan and implemented a Balanced Scorecard in 2007 that serves as the navigation system of the organization. The performance-measurement system was created based on the strategic plan, and performance metrics are based on external benchmarks.

Dayton International Airport's strategy is different than the strategies of similar airports in that it focuses on airport opportunities. In order to increase opportunities, an airport should position itself advantageously. Factors such as size, competition, and SWOT analysis play a key role in determining an airport's business strategy and differ from airport to airport. Therefore, managers must know an airport's strategic market positioning and its public to maximize opportunities and measure the right data.

Unfortunately, not all measurable data are under the airport's control. In some instances, airports have little or no control over some of the key elements that impact airport performance, such as the number of enplaned passengers. Although the airport's ultimate goal is to increase enplanements, whether or not this goal is reached is the result of a joint effort by airlines and airports to attract demand. Enhancing the airport's appeal and facilitating the passenger experience in the airport can contribute to an increase in the number of enplaned passengers. However, Dayton International Airport also focused in decreasing costs to airlines to make the airport an attractive place to operate. A concentration and/or increase in airline operations at Dayton International Airport would increase the number of enplaned passengers as well. The decreased cost per enplanement was a significant factor in the airport starting to offer international flights to Toronto, Canada. Dayton International Airport has continuously reduced cost per enplaned passenger since 2006 to remain competitive and attract airlines if possible.

Despite an uncertain economy, Dayton International Airport has been able to reduce its cost per enplaned passenger by prioritizing objectives and focusing on one at the time. Once a goal was attained, a new objective was established, shifting all the energies to the achievement of the new goal. A goal could be achieved through a myriad of alternative efforts that the airport defined based on its unique characteristics, identity, and the needs of its users. For instance, in

Dayton International Airport sought strategic alignment by implementing a Balanced Scorecard tailored to the strategic plan.

Dayton International Airport remains strategically focused through a selective prioritization of objectives, channeling all departments' synergies toward the achievement of the same goal.

order to decrease airline costs, Dayton International Airport increased non-aeronautical revenues to pass on more incentives to airlines. Dayton International Airport was able to do this by addressing, and thus realizing, value on both the cost and revenue sides. On the cost side, the measures included decreasing staffing from 203 personnel to 160, cutting overtime, and creating efficiency in operating processes. The operating processes included work methods related to seasonal mowing, snow removal, security measures, and so forth. On the revenue side, the measures included capitalizing labor in construction projects, marketing and then leasing hangars at the airport, and shifting costs—for instance, increasing parking fees while decreasing landing fees. The result of increasing parking fees while decreasing landing fees was an increase in enplaned passengers regardless of parking fees because passengers are more attracted to the benefits airlines offer to them than the extra dollars in airport services.

Dayton International Airport appointed a dedicated person to be in charge of the performance-measurement system and other related strategic issues.

In order to successfully implement the performance-measurement system, Dayton International Airport created a “Continuous Improvement Coordinator” position fully dedicated to the management of the system and other strategic endeavors, such as the development and future update of the strategic plan. The success of the performance-measurement system implementation was complemented by a training program for all staff to promote objectives. The implementation cost was exceeded in the short term by the benefits realized from the performance-measurement system. The benefits of implementing a performance-measurement system for Dayton International Airport can be summarized in the following three main outcomes:

- Establishment of the organization’s direction,
- Alignment of all organizational efforts and leveraging the synergy of different departments working towards the same goal, and
- Performance improvement in a downturn economy when the aviation industry is suffering.

Data-Collection Procedure

Data are collected on a regular basis, depending on each measure, and processed manually into a performance-measurement spreadsheet that is updated every quarter. For instance, the budget for the airport is divided into nine areas and the director meets with those nine departments each quarter. Data are collected by the finance department, which sends updates to the director each month.

Two customer surveys were completed in 2007 to measure customer service. Also, there’s a venue for channeling customer complaints through the airport’s web site that ensures a response within 72 hours.

Although Dayton International Airport led an effort to automate data-processing efforts, it was restricted from doing this by the transparency rules of other city departments.

Measures, Standards, and Targets

Internal benchmarking is valuable for the information it provides on airport performance trends—how the airport is doing in relation to its own previous performance. External benchmarking is valuable for identifying industry trends. Thus, in selecting measures, it is important to adopt measures that will allow for both internal and external benchmarking. These measures should also be based on indicators that the industry embraces as important and indicators that other airports use to allow for proper comparison.

Unfortunately, U.S. airports are not doing much to measure passenger comfort not only because of the difficulty of quantifying such subjective data, but also because of the implications of cultural diversity on such data. However, measures of intangible assets such as aesthetics, sense of space, shuttle bus waiting time, or distance between the parking lot and the terminal building, to name a few, need to be incorporated into performance-measurement systems in

Dayton International Airport selects performance measures that are being tracked by peer airports for use in benchmarking studies.

order to monitor customer satisfaction. Until this type of measure is widely adopted by the industry, benchmarking of such intangible assets will not be feasible. Dayton International Airport strongly supports the incorporation of this type of measure into airport performance-measurement systems since no organization can efficiently manage those areas that are not being measured.

Dayton International Airport's Balanced Scorecard has a total of 25 measures selected according to what the airport industry is measuring in the following areas:

- Cost Performance
- Revenue Performance
- Concessions Performance
- Efficiency and Effectiveness
- Customer Service

Each measure serves as a baseline for that reporting year, and it is compared with previous year's performance, as shown in Exhibit III-1.4.

Exhibit III-1.4. Dayton International Airport 2007 Balanced Scorecard.

Key Performance Measures	FY 07 Goal	Q1 FY 07 Performance		Q2 FY 07 Performance		Q3 FY 07 Performance	
		Actual	% Change	Actual	% Change	Actual	% Change
Cost Performance							
Meet "Target" Budget	95% of Approved Budget	65%	46%	60%	58.33%	68%	58%
Total Airline Cost Per Enplaned Passenger*	\$12.00	\$8.42	43%	\$8.42	43%	\$8.42	43%
Total Operating Costs Per Enplaned Passenger	\$22.70	\$18.40	23%	\$13.88	64%	\$16.12	41%
Total Operations & Maintenance Costs Per Enplaned Passenger	\$8.46	\$7.11	19%	\$5.92	43%	\$5.22	62%
Operations & Maintenance Costs Per Terminal Square Foot	\$16.27	\$6.24	161%	\$6.15	165%	\$5.30	207%
Public Safety Costs Per Enplaned Passenger	\$2.25	\$2.64	-15%	\$1.88	20%	\$1.81	24%
Fire Safety Cost Per Enplaned Passenger	\$1.94	\$1.86	5%	\$1.73	12%	\$1.50	29%
Soft Costs of Projects	20%	11%	82%	0%	0%	0%	0%
Revenue Performance							
Non-Airline Revenue to Airline Revenue	50%	51%	2%	49%	-2%	51%	2%
Total Non-Airline Revenue Per Enplaned Passenger	\$12	\$16.46	37%	\$12.99	8%	\$12.93	8%
Cargo Space Leased	100,000 sf	0	0%	0	0%	0	0%
Concessions Performance							
Total Concessions Revenue per Enplaned Passenger	\$5.00	\$5.62	12%	\$5.44	9%	\$5.58	12%
Total News & Gifts Revenue Per Enplaned Passenger	\$1.62	\$1.42	-12%	\$1.40	-14%	\$1.50	-7%
News & Gift DBE	25%	25%	0%	25%	0%	25%	0%
Food & Beverage Revenue per Enplaned Passenger	\$3.65	\$3.84	5%	\$3.67	1%	\$3.72	2%
Food & Beverage DBE	3%	0%	-100%	0%	-100%	0%	-100%
Parking Revenue Per Enplaned Passenger	\$7	\$9.60	37%	\$9.08	30%	\$8.82	26%
All Other Concessions Revenue Per Enplaned Passenger	\$0.20	\$0.37	85%	\$0.37	85%	\$0.36	80%
All Other Concessions DBE	3%	1.46%	-51%	1.46%	-51%	1.46%	-51%
Efficiency & Effectiveness							
Change Order Costs /Project Costs	5%	0	100%	0	100%	0	100%
Number of breaches of airport security plan	0	1	-100%	0	100%	0	100%
Number of violations airfield/runway incursions	0	0	100%	0	100%	0	100%
Customer Service							
Customer Satisfaction-Parking & Signage	85%	70%	-18%	70%	-18%	70%	-18%
Customer Satisfaction-Appearance	85%	70%	-18%	70%	-18%	70%	-18%
Customer Satisfaction-Concessions	85%	72%	-15%	72%	-15%	72%	-15%
Customer Satisfaction-Complaint Response Time	72 hours	72 hours	100%	72	100%	72	100%

*Based on DAY Preliminary draft with residual Method of Rates & Charges

Source: Dayton International Airport

Monitoring and Reporting

The information is summarized in different forms and discussed at management meetings as follows:

- Biweekly management meetings to discuss strategies and tactics with the participation of Finance, Safety, Engineering, and Operations departments, the director of aviation and deputy director of aviation.
- Monthly financial update (expenses and revenues) presented to the director.
- Quarterly budget overview report presented to the city.
- Annual budget hearing in which performance measures and goals are presented to the city and to the airport council as guiding facts to legitimize additions to the budget.

With all this information in hand, the scorecard is updated on a quarterly basis to show the progress in goal achievement through the course of the year. This information is widely available to staff at all levels.

Successes and Challenges

The implementation of the performance-measurement system proved to be successful at Dayton International Airport. The results are overall improved operations and revenues at a time when airport activity is slowing down across the country. The data support this assessment:

- Enplaned passengers (EPAX) increased by 6.9% in 2006 and 9.3% in 2007, and the latest numbers, in October 2009, show that enplanements are up by about 3% for the year.
- CPEP dropped from \$13.84 in 2005 to \$5.5 in 2008 and is estimated to be \$4.5 for 2009.
- Aeronautical revenues dropped and Non-Aeronautical Revenues increased.
- Landing Fees dropped from \$3.95 in 2007 to \$1.10 in 2008.
- Airport impact in the community is calculated at \$1 billion a year.

Dayton International Airport did not escape the challenges generally encountered in the process of implementing a performance-measurement system; however, having a solid strategic foundation and a clear understanding of the airport's positioning and vision were critical in overcoming these challenges. Lessons learned that Dayton International Airport can share with other airports on the successful implementation of a performance-measurement system are summarized below:

- It is important to bring external stakeholders into the process to obtain support.
- It is important to clearly communicate to staff members that an airport strategy with defined objectives and direction improves efficiencies when decisions need to be made. Knowing in what direction to move simplifies the decision-making process, thereby reducing thinking time. The basic question employees should be asking themselves when in doubt is: "How does this action play into the strategy?"
- Staff members need to know what is in the performance-measurement system for them in order for them to embrace it. People follow success and their buy-in is a reflection of it.
- A strategy is as much about a set of initiatives you will fully embrace as it is about divesting yourself of others.
- Employees look for more than compensation in a job. In the words of President Roosevelt, it is the "joy of achievement and the thrill of creativity" that provides them with ultimate job satisfaction.

Dayton International Airport management strongly believes that people follow success; as such, they have not had the need to implement an employee reward program. Understanding the benefits of the performance-measurement system and how it translates into an employee's individual interests appear to support the success of the system.

The implementation of the system was also a challenge, as it has proven to be in other organizations as well. Implementation demanded time and effort at all levels of the airport. The performance-measurement system was seen as a radical change, and change is uncomfortable. To overcome resistance to change and anxiety, the director of aviation met twice in a 6-month period in small groups with all staff to explain what was going to take place and where the airport wanted to go. Complaints were heard and addressed. Simultaneously, the deputy director and managers also met with their staffs to reiterate what was happening and what the next steps were. With 203 full-time employees, it took Dayton International Airport a year to gain employee buy-in at all levels in the organization—including managers, who were skeptical that the airport could implement such a drastic change. Employees embraced the changes once they saw the positive results from the system and understood what was in it for them.

Finally, as a city department, the airport must conform to city standards regarding automation. These limitations pose a restriction on the transferability of the system.

Dallas/Fort Worth International Airport

Abstract

Dallas/Fort Worth International Airport is the third largest airport in the world in terms of daily operations, the seventh in regard to passenger traffic, and the 28th in terms of cargo volume. The Airport supports this growth with a good strategic plan that establishes a clear mission, vision, and primary business goal, which is to grow the airport's core business. After a solid strategic foundation was established, the implementation phase of the formal performance-measurement system took place in 2006. Previously, the airport had monitored a wealth of measures by department, but lacked a structural airportwide system. The current system reflects good top-level outcome measures and targets. It uses process tools such as Balanced Scorecard and Six Sigma. Top executives are rewarded for achieving performance results with bonuses.

Airport Profile

Dallas/Fort Worth International Airport is located 21 miles northwest of the city of Dallas and 26 miles northeast of Fort Worth in Texas. In 2007, the airport served over 59.7 million passengers and operated over 690,000 flights. The airport also has a strong cargo operation, having facilitated about 799,000 tons in 2007. Airport management reports to a board of directors, a semi-autonomous body charged with governing the airport that is appointed by the city council of Dallas and Fort Worth. Although the board enjoys some freedom in carrying out its core activity, it needs the council's approval for its annual budget, bond sales, and other financial activities. Dallas/Fort Worth International Airport employs approximately 1,700 employees and has seven runways, five terminals, and 155 gates. It brands itself as a global airport. American Airlines is its primary carrier, with a market share of about 85% of the airport's passengers. In 2007, Dallas/Fort Worth International Airport won "Highest Customer Satisfaction for Large Airports" from J. D. Power and Associates and was rated the "Best Airport in the Americas" by ACI.

Program Goals and Objectives

Dallas/Fort Worth International Airport developed a strategic plan with a clear mission, vision, and primary business goal and four strategic focus areas derived from the airport's mission. The airport's primary business goal is to grow the core business of domestic and international passenger and cargo airline service. This primary business goal is to be accomplished through the following four strategic focus areas: (1) to keep Dallas/Fort Worth International Airport cost competitive, (2) create customer satisfaction, (3) deliver operational excellence, and (4) foster employee engagement. Each strategic focus area is broken down into specific goals and actions, and tied to specific key performance indicators.

Dallas/Fort Worth International Airport has a well-developed strategic plan with a clear mission and vision, primary goals, and a strategic focus.

Goals and actions are assigned top-level outcome measures referred to as “Level 1” measures.

The strategic plan and the selection of performance measures are interrelated.

At Dallas/Fort Worth International Airport, goals and actions are assigned top-level outcome measures referred to as “Level 1” measures and are addressed in a separate report called *Key Airport Measures*, an internal Dallas/Fort Worth International Airport document. Each measure is assigned a target for the year. Management bonuses down to the associate vice president (AVP) levels are tied to achieving specified targets for each strategic goal. The airport has not yet taken performance measurement further down into the organization’s structure.

The airport implemented a good internal process for developing the strategic plan and selecting measures. This process consisted of a series of six 1-day sessions that included top executives down to the AVP level. Dallas/Fort Worth International Airport used an outside consultant to facilitate the process. The executives did an external scan of the environment and considered what they perceived to be the views of customers and stakeholders, but did not involve stakeholders or the board of directors directly in the process. The vision, mission, primary business goal, and key results were developed collaboratively by the executive vice presidents and vice presidents of the organization. The assistant vice presidents provided input on the strategic objectives and initiatives.

Once the strategic foundation was established, a formal performance-measurement system was developed. The implementation phase started in 2006. Previously, the airport had monitored a wealth of measures by department but lacked a structured airportwide system. The performance-measurement system is headed by the Airport’s CFO. The system uses process tools such as Balanced Scorecard and Six Sigma. To secure a successful implementation and employee buy-in, Dallas/Fort Worth International Airport has trained its employees on the strategic plan. The CFO would like to benchmark Dallas/Fort Worth International Airport measures and practices against those of peer airports in the future and so would like to see more transferability of measures among airports.

Data-Collection Procedures

Right now, data on the airport’s Level 1 outcome-based performance measures are gathered by the finance department annually and published in the report *Key Airport Measures* for that year, which is not distributed outside the airport or published on the Web. Currently, the performance-measurement system does not track Level 2, or “lower” measures, although there is a great deal of performance measurement at lower levels. The finance department also acts as the repository source for the Level 1 data. Most measures are taken monthly, but some are taken quarterly or annually. Financial information is provided by the AVPs and is directly tracked by the responsible department. Operational data come from the Airport Operations Database maintained by the operations department. Customer service information comes from the annual ACI International Benchmarking Survey

Measures, Standards, and Targets

The airport’s primary business goal and the four strategic focus areas are supported by Level 1 outcome-based performance measures, each with a target for the current fiscal year. All the information is gathered internally, with the exception of customer service data, much of which comes from the ACI International Benchmarking Survey and the employee engagement survey. Following is a list of key performance measures for primary business goal and each of the strategic focus areas:

- Primary Business Goal: Grow the Airport’s Core Business
 - International Passenger Airline Destinations
 - Number of Passengers (total and O&D)
 - Landed Weights (total and cargo only)
- Strategic Focus Area 1: Keep Dallas/Fort Worth International Airport Cost-Competitive
 - Total Airline Costs
 - Airline Cost per Enplaned Passenger (CPEP)

- Revenue Management (parking revenue per originating passenger, concessions sales per enplanement, commercial development acres leased, natural gas wells in production)
- Underlying Bond Ratings
- Strategic Focus Area 2: Create Customer Satisfaction
 - ACI Survey Rank—International
 - ACI Survey Rank—Over 40 Million Passengers
- Strategic Focus Area 3: Deliver Operational Excellence
 - FAA Safety Compliance
 - Environmental Compliance
- Strategic Focus Area 4: Foster Employee Engagement
 - Employee Engagement Index Score
 - Wellness Program Participation

Dallas/Fort Worth International Airport is cognizant that one of the limitations of its performance-measurement system is that it includes measures of areas that escape the airport's control and directly affect the airport's performance. One example of this kind of measure is CPEP, a widely used measure that is affected by factors such as the nation's or a region's economic and financial conditions, airlines performance, and policies and other factors beyond the control of the airport—factors that are often unique to a particular area or airport and that therefore make it difficult to compare peer airports.

Because the performance-measurement system has been implemented for about a year at Dallas/Fort Worth International Airport, the airport currently monitors only Level 1 measures, and the system is currently structured around lagging indicators. The next version of the performance-measurement system will include Level 2 and Level 3 measures as well as leading indicators to help the airport be more proactive in making certain decisions. This will not be formalized until a business intelligence system is in place at the airport.

Monitoring and Reporting

Most monitoring and reporting is done monthly, although, depending on the nature of the measure, some reporting is done quarterly and some annually. The responsible departments assemble the information and provide it to the CEO and other top executives. Some of this information is shared in meetings of the board of directors. The CFO would like to see all senior airport executives meet quarterly to discuss the status of Level 1 measures and those measures most closely linked to them.

Success and Challenges

Dallas/Fort Worth International Airport has gone a long way toward developing a well-structured performance-measurement system with a solid strategic foundation. Dallas/Fort Worth International Airport's best practices include the following:

- A strong strategic-planning process giving proper direction to the organization.
- Clearly defined, measurable, strategic focus areas and primary business goal.
- A good set of top-level performance outcome measures, with near-term (Fiscal Year 2008) targets.
- IT platform adoption to ensure accuracy and availability of data with the double benefit of reduced data-collection effort and time.
- Employee training program on strategic planning to ensure strategic element alignment and employee buy-in.
- Executive compensation (bonuses) tied to outcome performance targets, down to the AVP level.
- A good planning process that involved executives at the AVP level and above.
- Branding and strategic positioning as a global airport.

Dallas/Fort Worth International Airport is still in the implementation phase of its first cycle of the performance-measurement system. The airport has not escaped employee resistance to change, making performance-measurement system implementation a tedious and longer process than originally expected.

The current development of the Dallas/Fort Worth International Airport performance-measurement system reflects good top-level outcome measures and targets. At a later stage, the airport will cascade measures to link them to programs at lower levels, thus aligning the entire organization with the primary business goal and its four strategic focus areas. Ultimately, the airport plans to develop the performance-measurement system to the point where the airport can tie individual employee performance standards to airport results.

San Diego International Airport

Abstract

San Diego International Airport is a large hub governed by the San Diego County Regional Airport Authority (the Authority). The need for an airport performance-measurement system began with the realization of an ongoing need to strengthen management accountability and manage the Authority's key initiatives, crucial outcomes, and overall results. The system is aligned with the organization's mission, vision, values, and strategic objectives as well as the annual operational and capital budgets. Over the past 2 years, the airport has implemented a state-of-the-art performance-management system incorporating sophisticated software and data collection technology into the airport's ERP system.

Airport Profile

Founded in 1928, San Diego International Airport is the 30th busiest airport in the country in terms of passengers and the nation's busiest single-runway commercial service airport. San Diego International Airport is located approximately 3 miles from downtown San Diego, California, and served 8.9 million enplaned passengers from throughout the Southern California region (and Mexico) in fiscal year 2007. The Authority was created in 2003 as an independent agency to manage daily airport operations and work collaboratively with local, state, and federal agencies to address the region's long-term air transportation needs. As a financially self-sufficient agency, the Authority does not rely on taxpayer dollars or city or county funds for its operations.

Program Goals and Objectives

The Authority recognized the need for a more robust and effective performance-measurement system in late 2006. Prior to 2006, the management staff relied on a variety of distributed legacy software applications, electronic spreadsheets, paper forms, and other ad hoc materials and methods to collect, report, and manage key performance measures. The data collection and performance-measurement processes were cumbersome, often not timely, and very labor intensive. The Authority wanted to embed greater accountability and establish better, more accurate, measurement of performance indicators. With the appropriate technology tools, the Authority was able to better define the expected performance level and each individual's contribution to divisional and organizational results.

The Authority's Business Planning Department was tasked to align and integrate the performance-management system with the organization's strategic goals and each division's annual goals. With functional cooperation and support, the performance-management system was designed, tested, and implemented. The performance-measurement system has matured from a limited scope of primarily reporting financial information to a fully integrated desktop application accessible by all management personnel through the Airport's ERP software applications. The organizational and functional scorecards are supplemented with external benchmarking results collected from comparable peer airports.

To attain employee buy-in, the current PM System was designed, tested, and implemented with cooperation and support from all functional groups.

The performance-management system provides timely and accurate visibility of organizational goals and performance. Accountability is enhanced when those responsible have access to the right data, at the right time, and in the right format to make the appropriate decisions. All management personnel have access to the performance-measurement system application (otherwise known as QPR) to monitor both organizational and divisional performance trends and results. Management’s involvement in the performance-measurement system criteria and their periodic review of results has strengthened their commitment to and accountability for performance.

The objective of the PM System is to instill accountability for the organizational goals.

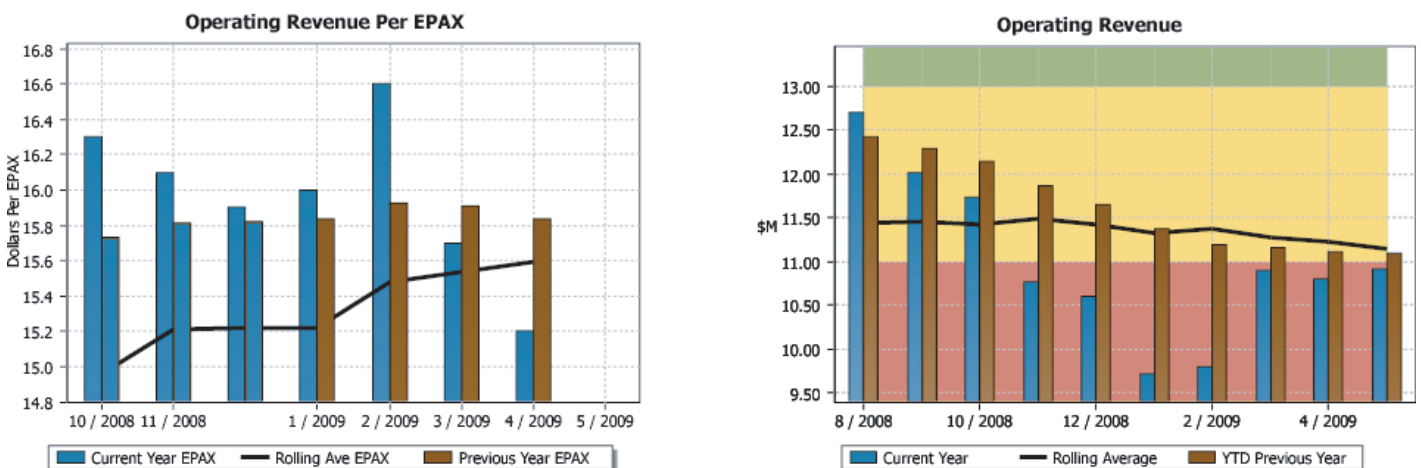
The Authority’s performance-management system monitors key organizational metrics as well as specific project cost and schedule performance. The QPR application offers a more user-friendly way of collecting and reporting performance data and a visual display of current performance and past trends (see Exhibit III-1.5). The dashboard allows users to drill down on each performance measure to better understand the underlying measures and to identify which measure may not be performing to plan. The QPR software is linked to the Authority’s ERP system, which greatly enhances data utilization, accessibility, and consistency.

The Authority periodically modifies its strategic plan and key objectives to reflect a 3-year planning horizon instead of the traditional 1-year perspective. Five objectives—Financial (e.g., Rev/EPAX, Cost/EPAX, Cash on Hand), Sustainability (e.g., energy and water conservation, waste reduction, and recycling), Customer Satisfaction (e.g., passenger, employee, and tenant), Performance Excellence, and Community Outreach—have specific initiatives and action plans over this 3-year time period. The dashboard tracks both the results and the progress of various projects within each of these objectives.

Measures, Standards, and Targets

Strategic objectives and the annual budget are closely linked so many initial measures reflect financial and operating results. As the performance-management system has matured, additional measures reflecting the five objectives have been created to present a more balanced measurement scorecard approach. The Authority’s performance-measurement system will be continually updated and realigned to these new objectives, and more relevant measures will be linked to report progress and trends. The measurement system’s utility is very dependent on data collection and analysis, the generation of timely reports, and the availability of current and pertinent data to the organization. The updated performance-management system provides extensive information on the airport’s operations for better management decision-making and faster response to critical issues. The Authority views the performance-measurement system as an essential

Exhibit III-1.5. Snapshot of a dashboard implemented by San Diego International Airport.



management tool to achieve world class performance and recognition as best in class. The Authority also realizes that the performance-measurement system has yet to attain its full potential value to the organization and its management staff.

The PM System is linked to strategic planning and budget processes.

Business Planning works closely with divisional management to identify and select the appropriate performance measures. Core measures are made up of more granular measures to thoroughly understand cause and effect. A number of performance measures are financially oriented because of the close link between strategic planning and the budget process. In addition to the traditional financial and operational measures, the Authority is also measuring internal operational process efficiency such as contract and hiring process cycle time, internal cost activity, and internal customer satisfaction. Performance targets are established on the basis of projected results and are expected to reflect business needs and the Authority's objectives.

Data-Collection Procedure

Performance data collection does require a more systematic and rigorous process to ensure the data's accuracy and timeliness.

Performance-measurement data are compiled from several sources, e.g., financial application software, external vendor databases, and individual MS Excel spreadsheets. Many of these data are gathered and downloaded either electronically or manually into the Authority's ERP system. Having the data centrally located makes them readily accessible and easy to extract and present on the QPR dashboard. Collecting performance data requires a more systematic and rigorous process to ensure the data's accuracy and timeliness. Most Authority operational and financial data are collected monthly, while the remainder is collected quarterly or annually.

Monitoring and Reporting

Data and performance results are available to all management personnel for review and evaluation. Most performance measures and associated reports are generated within the QPR application and available electronically.

Successes and Challenges

The Authority's biggest challenge is refining the data collection process and integrating the performance-measurement system application throughout the Authority. The organization has a great deal of interest in and enthusiasm for the performance-measurement system and its ability to improve problem solving and decision-making. Both the manual and electronic activities associated with the performance-management system need continual refinement and employee input to enhance the capabilities.

The Authority's performance-measurement system continues to mature and evolve through a number of adaptive stages. It offers the organization a number of advantages including better performance data accuracy and timeliness. The performance-management system's full benefits and payback have yet to be fully realized in the short time the system has been operational. The Airport Authority, however, fully expects that with continued use and ongoing refinements, the full functionality of the system will greatly exceed all expectations.

Toronto Pearson International Airport

Abstract

Toronto Pearson International Airport is located in Ontario, Canada, and is governed by the GTAA. The GTAA has developed a new strategic plan, which defines the main three strategic themes of the airport for the next 5 years: global competitiveness, gateway development, and corporate sustainability. The strategy and performance measurement build on a Balanced Scorecard framework that incorporates four significant perspectives: financial, customer and internal business processes, learning, and growth. Each of these four perspectives has associated strategic initiatives, actions, measures to identify performance, and targets to monitor results and provide accountability. In turn, the actions, measures, and targets drive the development of annual

business plans to map annual goals and budgets. High-level corporate measures and extensive operational metrics are available to each department for measuring performance. Results are used to determine performance-based rewards.

Airport Profile

Toronto Pearson International Airport is Canada's busiest airport, located 17 miles northwest of downtown Toronto. Toronto Pearson is a large hub handling close to 32 million annual passengers. It is operated by the GTAA, which was incorporated in 1993 as a non-share corporation under Part II of the Canada Corporations Act. It was recognized as a Canadian Airport Authority by the federal government in 1994. The GTAA operates Toronto Pearson as a public facility to benefit its customers, partners, and other stakeholders. Entirely self-funding, the GTAA is a not-for-profit corporation that reinvests any operating surpluses to expand and develop Toronto Pearson International Airport. Since 1996, when the GTAA assumed management of Toronto Pearson, the GTAA has replaced outdated airport infrastructure and expanded airport facilities. This includes terminal buildings, hangars, runways, parking garages, and other facilities. In 2007, the GTAA completed the Airport Development Program. Future expansions will be built by the GTAA when warranted by demand, giving the airport an ultimate capacity of 54 million passengers annually.

Program Goals and Objectives

Toronto Pearson's strategic planning serves as the basis of the performance-measurement system. Both strategic-planning and performance-measurement system efforts commenced in 2005 and are comparatively new initiatives, with many aspects still developing. One function of the SPAD department is to develop and oversee the performance-measurement system and report results of the corporation's performance to the executive team and CEO.

The strategic plan is based on the Balanced Scorecard developed by Kaplan and Norton. In this approach, the airport's vision leads to three strategic themes, based on core organizational values and beliefs: global competitiveness, gateway development, and corporate sustainability. These themes, in turn, lead to a number of broader strategic objectives grouped into four perspectives: financial, customer, internal processes, and learning and growth. The Integrated Corporate Plan sets out specific initiatives with defined targets and measures for achieving each strategic objective.

Performance measurement is a three-tier process. The first tier involves SPAD developing and tracking corporate measures, which are high-level measures developed for each strategic theme and reported to the CEO and the board. The second tier encompasses the operating departments, which develop micro-level operating measures that make up the Integrated Corporate Plan (i.e., the means of achieving the vision and strategic themes). Airline CPEP demonstrates this process well. CPEP is a corporate measure that falls under the strategic theme of global competitiveness. CPEP is further composed of operating activity metrics such as logistics, baggage cart retrieval, commercial vehicles, and public parking, which are measured at the corresponding operating department levels.

The GTAA believes that when strategic planning is developed, a performance-measurement system needs to be implemented as well in order to assess the success of strategic initiatives. Measures and targets give employees something to focus on and track and create an urgency to achieve the target. Measures and targets also allow managers to base their decisions on performance-measurement results and take action to improve outcomes. There are five key objectives in the present GTAA performance-measurement system:

- To understand cost drivers, efficiency, and reliability of airport operations
- To measure progress
- To improve performance

Toronto Pearson International Airport implemented a Balanced Scorecard strategically aligned with the airport's vision and three strategic themes.

- To set priorities
- To respond to changing conditions

In addition to the objectives listed above, the GTAA also includes a reward for performance as one of the performance-measurement objectives to encourage accountability for the results. Currently, the reward program extends only to the third level of management. However, the long-term goal is to put the reward program into practice throughout all levels of the organization.

Data-Collection Procedure

To ensure a comprehensive performance-measurement system approach, data at Toronto Pearson are collected for various periods from all organizational units and from various external sources, including airlines (about passengers), government agencies, and tenants (about customers). SPAD organizes and centralizes data for reporting purposes. Micro-level data stay with individual units and are not shared across the organization. Data that impact several departments, such as financial information (costs), are collected centrally and are accessible to various departments within the organization. Data that affect only a limited number of business units, such as customer survey results, are available only to the unit responsible for that activity.

Currently, no central data warehouse exists; therefore, one of the challenges experienced by the GTAA is data gathering from various sources across the organization. The GTAA aims to improve the system's efficiency in order to sustain employee support of the process.

Measures, Standards, and Targets

Performance measures at the corporate, departmental, and sub-departmental levels are prepared for each strategic objective and initiative and are categorized by one of the four Balanced Scorecard areas. Each measurement area is built on department level measures that, in some cases, may have only a soft correlation or be relevant under several overarching strategic themes at the same time. For instance, outcomes of measuring taxiway delay may show how much the airport accrues in costs, prompting a decision to invest in new facilities. On the other hand, taxiway delay could be considered as an environmental measure, showing correlation between delays and the amount of emissions emitted into the atmosphere.

Selection and prioritization of measures assessing overall corporate performance are largely determined by executive team requests. The executives review and reassess the measures annually to ensure continued support of the strategic themes. Most of the measures of Toronto Pearson's performance-measurement system are budgetary figures. All Toronto Pearson measures are expressed in constant Canadian dollars to avoid an inflation effect and overstatement of results. The GTAA acknowledges that more leading measures could be included in the performance-measurement system. Measures incorporate a mix of qualitative and quantitative metrics because certain important aspects of operations, such as process efficiency, cannot be quantified and could be omitted in a system that was only "numbers" focused. The GTAA aims for all measures to be results-oriented.

There are three key measures that the board considers critical in its assessment of the organization's overall performance: airline CPEP, the ASQ level of ACI's ASQ Survey, and revenue under expenses ratio. If the targets for these three measures are not met, the organization as a whole will not have met the desired level of performance for that year.

Targets are in the process of being developed for all measures. Targets for performance measures are set through a consultation process at an executive level with considerable research. For example, if the executive team is concerned about whether a target for ownership costs (rent) of 12% of airport revenue is feasible, SPAD will run a model to estimate how such a target would affect various operational areas and if it is reasonable and achievable. Organiza-

Performance results are communicated at different levels of the organization.

Because Toronto Pearson International Airport's performance-measurement system is being reviewed and adjusted annually to ensure strategic alignment, it serves as a continuous improvement system to the organization.

The board monitors three key performance indicators to assess the overall airport performance.

tional standards also play an important role in the performance-measurement system. According to the GTAA, if organizational standards are set low, the improvement in performance will be minimal as well.

Due to a very unique cost structure at Toronto Pearson (no government support, single till debt, rent payments, etc.), benchmarking is mostly done internally to track financial annual performance. Internal benchmarking is also performed with Toronto Pearson's two terminals, which are measured and analyzed at each level of performance as two separate entities. When it comes to external benchmarking, Toronto Pearson management is very selective about its peer airports to ensure data comparability. Benchmarking peers are limited to only those airports that specify the underlying components of their measures or those whose internal operations are familiar to the GTAA. Benchmarking reports, such as the Air Transport Research Society (ATRS) publication, are not used by the GTAA due to the unspecified components of the performance measures of other airports.

Monitoring and Reporting

The GTAA has a cascading model in which performance measures are reported throughout the organization. There are three levels of reporting: corporate, departmental and sub-departmental.

The highest tier reports 15 high-level corporate performance measures to the CEO/executive team and the board of directors by way of the strategic management section. This reporting is done quarterly and includes highly aggregated performance measures for review, not action. The second tier of performance reporting and monitoring is at the departmental level. Monthly reports are developed and directed to each department's vice president. The monthly reports present more detailed performance measures and are often financially based. The third tier provides further detailed performance measures and occurs within a department at a sub-departmental level. These are often operational performance measures. Similar to the reports at the departmental tier, lower-level reporting highlights areas of concern, pinpoints immediate sources of difficulty, and acts as a prompt for action.

This cascading model allows for problems to be identified and resolved early, so that sources of influence at lower levels are identified and resolved before they become apparent in higher-level performance measures and untraceable. This model also promotes ownership and understanding of performance in all areas of the operation.

Success and Challenges

In an effort to maintain a successful and competitive airport, the strategic planning process is cyclical, with scheduled reviews and updates of the strategic plan to adapt to a changing environment. Exhibit III-1.6 presents the full business cycle at Toronto Pearson International Airport.

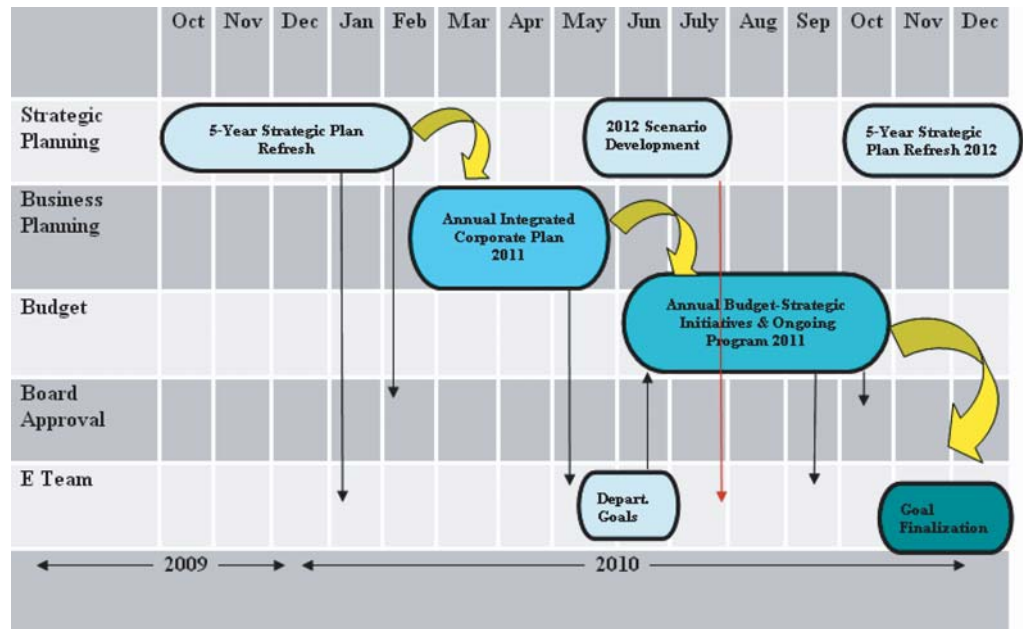
One of the benefits that the performance-measurement system has brought to the GTAA is the confidence the board has gained in airport management. The performance-measurement system is an accountability tool with results presented periodically. The board can take quick action if it notices the signs of poor performance and can request detailed explanations of specific outcomes. Management also has more knowledge and therefore has better control over airport operations.

In addition, a performance-based compensation system also contributed to the improvement of performance results. The compensation system at GTAA takes into consideration individual and collective performance to avoid competition among employees and encourage teamwork. Forty percent of the assessment is based on group performance; therefore, there is an incentive for an individual manager and the whole team to meet the targets and improve organizational performance.

There are 15 end-outcome or corporate performance measures. Cascading measures are monitored at the departmental and sub-departmental levels.

To recognize performance results, Toronto Pearson International Airport implemented an employee reward system.

Exhibit III-1.6. Toronto Pearson International Airport annual review and planning cycle.



Source: Toronto Pearson International Airport

The performance-measurement system served as a venue to improve internal communication at Toronto Pearson International Airport.

Together with improvement in performance, Toronto Pearson experienced an increase in communication efforts among the organizational units when the performance-measurement system was implemented. The GTAA reported that prior to the performance-measurement system departmental statistics and information were not always shared across departments in the organization. Even though opening lines of communication within the organization is still a work in progress, horizontal communication has improved considerably. Data sharing has especially improved in cases where data from various departments are needed to calculate corporate measures and produce reports for executives.

Due to its still maturing system, Toronto Pearson faces one of the most common performance-measurement system challenges—getting people to accept the system and accept accountability for results. This challenge may be explained by a change in the organization’s purpose and scope. Twelve years ago, the GTAA’s focus was on developing the airport infrastructure. Today, the focus is developing the airport business and making its operations more efficient. The change in the organization’s vision needs to be reflected in employee actions and attitudes. People do not yet fully recognize how their activities and actions affect overall organizational performance. To deal with this challenge, a strategy map illustrating the strategic themes, initiatives, and measures was introduced organizationwide by the executive team with the aim of showing staff at all levels of the organization how to incorporate strategic planning and performance measurement into their daily activity.

The GTAA’s desire to have a comprehensive performance-measurement system presented the challenge of measuring intangible assets. The GTAA had an abundance of statistical measures but had difficulty measuring and benchmarking unquantifiable aspects of organizational activity. Measurement is even more complex when the results will be compared with results of other organizations. This aspect of the performance-measurement system is a work in progress.

Regional, State, and Federal Applications of Performance-Measurement Systems

This chapter serves as a reference to the reader on relevant regional, state, and federal applications of performance-measurement systems. A vignette of the efforts carried out by organizations that set a precedent in performance measurement, along with available information and where to find it, is presented. The efforts described include the following:

- Government Performance and Results Act of 1993 (GPRA)
- *Airport Economics Manual* (ICAO Document 9562)²⁵ and *Report of the Conference on the Economics of Airports and Air Navigation Services* (ICAO Document 9908),²⁶ (ICAO)
- Association Support for Performance-Measurement Practices
 - Airports Council International (ACI)
 - Civil Air Navigation Services Organisation (CANSO)
 - National Association of State Budget Officers (NASBO)
 - Service Efforts and Accomplishments (SEA) Reports advocated by the Governmental Accounting Standards Board (GASB)
- The UK Centre for the Measurement of Government Activity

Government Performance and Results Act of 1993 (GPRA)

The Government Performance and Results Act of 1993, also known as GPRA and “The Results Act,” was one of a series of laws passed in the early 1990s that was designed to bring a higher level of management practices to federal organizations. Together with the Chief Financial Officer’s Act of 1990, which instituted more rigorous financial management, and Chief Information Officer legislation, which raised technology decisions to the executive level, GPRA sought to bring a higher level of performance to the federal government.

Interest in GPRA arose out of Congressional and White House interest in Total Quality Management (TQM) in the late 1980s. The work of W. Edwards Demming was cited by the Defense Department and other organizations as a model for improving performance and quality. Malcolm Baldrige, President Ronald Reagan’s first Secretary of Commerce, emphasized this model as important for improving America’s competitiveness and quality levels, in both the private and public sectors. This effort resulted in the creation of The Baldrige National Quality Award in 1987. The criteria used in awarding this trophy have been widely used as a performance framework by corporations and government at all levels.

In 1992, building on this rising awareness of performance initiatives across all sectors, Senator Fred Thompson, Representative Newt Gingrich, and others championed a new “Results Act” to bring increased transparency and accountability to the federal government’s many activities and programs. GPRA required agencies to author a strategic plan with measurable performance targets and was signed into law in 1993. However, it did not take effect for most agencies until

The “Results Act” required agencies to create a strategic plan with measurable performance targets.

1997. GPRA marked the first time Congress had required that firm agency measures be integrated into the budget process. GPRA requires all federal agencies to do the following:

- Set a 3- to 5-year strategic plan with a clear mission and vision.
- Set measurable outcome goals for all major functions.
- Develop target levels for all goals.
- Develop specific strategies for achieving goals.
- Regularly measure results and set annual goals.
- Incorporate measures and analysis into the annual budget process through publicly available Performance and Accountability Reports.
- Set timeframes for regular program evaluation.

GPRA also allows the Office of Management and Budget (OMB) to authorize an alternative form of a goal, including a description of a successful and minimally effective program.

In 2006, the OMB developed a pilot program to make agencies' goals and measures more transparent and easily accessible to the public. Agencies participating in the pilot program prepare a 25-page Citizens' Report that sums up key financial and performance issues, key goals, and the way that funds are spent to meet those goals.

While the White House and OMB emphasized the importance of keeping performance information short and concise, others have argued that the Citizen's Report separates performance from budgeting. The standard Performance and Accountability Reports (PARs) publish performance and budget data together, but these large reports have been characterized as too long and complex for the general public. All major agencies, regardless of whether they participate in the pilot program, are now also required to create a two-page summary that gives the reader a quick snapshot of agency results, in addition to the standard PAR.

More than 15 years after GPRA became law, it stands as the only piece of legislation that addresses government strategic planning and performance management. GPRA has continued to gain importance as agencies have begun not only to meet the letter of the law, but also to incorporate the principles underlying the law into their management practices.

Airport Economics Manual (ICAO Document 9562) and Report of the Conference on the Economics of Airports and Air Navigation Services (ICAO Document 9908)

The International Civil Aviation Organization (ICAO), a UN Specialized Agency, develops regulatory principles, policies, and techniques of international air navigation to foster the planning and development of international air transport. ICAO was founded in 1947, and it operates through regional offices throughout the world, with headquarters in Montreal, Canada.

One of the major duties of ICAO is to adopt international standards and recommended practices. In this capacity, ICAO initially addressed performance and productivity measures in the *Airport Economics Manual (ICAO Document 9562)*²⁷, dedicating Chapter 3, Section C, to discussing performance measurement as a financial management tool for airport managers, regulators, and users. The document stresses that performance measures can be applied to all aspects of an airport, not only to its airside and landside operations, but also to safety, security, and commercial practices. ICAO encourages airports to select relevant areas of measurement and suggests four key areas: safety, delay, productivity, and cost-effectiveness.

ICAO suggests a five-part performance system that airports developing performance measures could use: (1) selecting the most important goals, (2) establishing a measurement method, (3) setting targets, (4) determining what work or initiatives are needed to achieve those goals,

and then (5) assessing the results of performance measures and their impact on achieving the goals. Within this context, ICAO identifies three units of measurement: (1) inputs (capital assets, staff numbers, supplies, and services), (2) output (enplanements, operations, cargo handled, financial aspects such as costs and revenues and aero and non-aeronautical revenues and their components), and (3) outcome (quality and efficiency of services such as safety, timeliness, productivity, and cost-effectiveness).

Applications of performance measures are benchmarking, identification of best practices and performance drivers, investment analysis, consultation with users, forecasting, and internal assessment tools.

Performance-measurement practices were further discussed at the Conference on the Economics of Airports and Air Navigation Services (CEANS) in September 2008, where the interaction among states, providers, and users was reviewed and incorporated. The revisions and several recommendations were documented in *Report on the Conference on the Economics of Airports and Air Navigation Services (CEANS) (ICAO Document 9908)*²⁸. Contributions relate to two main areas:

- Economic Performance and Minimum Reporting Requirements
 - States should ensure that appropriate performance-management systems are developed and implemented by their service providers.
 - States should ensure that service providers establish performance objectives with the purpose, as a minimum, to continuously improve performance in four key performance areas and report at least one relevant performance indicator for each key performance area.
 - Based on *ICAO's Policies on Charges for Airports and Air Navigation Services* (ICAO Document 9082)²⁹ the establishment of performance-management systems by service providers is recommended.
- Consultation with Users as a Source of Allocating Funds to the Right Projects:
 - A dialogue should be established with regional organizations on economic performance with a view to improving performance of the air navigation services system.
 - States should ensure that a clearly defined, regular consultation process is established with users by their airports.
 - Users will be consulted on the level and structure of charges as well as on capacity development and investments.
 - Users' feedback obtained during consultations will be considered as far as possible before reaching a decision regarding any proposal.
 - Confidentiality of market-sensitivity data will be properly protected.
 - Relevant decision documents will provide an appropriate rationale for the decision.

Association Support for Performance-Measurement Practices

Airports Council International (ACI)

The ACI is actively involved in performance measurement as a tool to improve customer service and overall airport performance. Among the many efforts pursued by the organization, two have been successfully deployed: ACI-NA Airport Performance Benchmarking Survey and the ASQ Survey.

ACI-NA Airport Performance Benchmarking Survey

ACI-NA is proactively conducting the Airport Performance Benchmarking Survey, which generates operation and financial data on participating airports in the United States and Canada. The origin of the survey was the Airport Initiatives in Measurement (AIM) Survey developed by

ICAO suggests a five-part performance system that airports developing performance measures could use.

The ACI-NA Airport Performance Benchmarking Survey generates operating and financial data of participating airports.

The survey is conducted on a yearly basis and has two releases: (1) June–July and (2) August–September.

Tampa International Airport, an outreach to eight Florida airports in 2003. By 2005, ACI-NA had launched the Airport Performance Benchmarking Survey, a consolidation of the AIM Survey with the Macro Benchmarking Survey administered by ACI-NA that provided data on four to five macro indicators. Over the years, the ACI-NA Finance Committee has revised and improved the survey form to incorporate information from other industry surveys with the aim of reducing the reporting burden of participating airports. As a consequence, the FAA has submitted a request to OMB to revise FAA Form 5100-127 to unite it with this survey. The Airport Performance Benchmarking Survey is also aligned with the ACI Economics Survey. The survey currently is made up of approximately 75 operational and financial measures. A snapshot of the Airport Performance Benchmarking Survey is presented in Exhibit III-2.1.

Results from the survey reflect raw data provided by all participating airports. It is at the discretion of the individual airports to select the best peer group for benchmarking purposes. Data are available to participating airports in MS Excel and MS Access through email and on CD-ROM. Airport contact information is also provided to encourage communication between airports so that they can learn from each other's best practices. A summary report that presents the aggregate performance of participating airports is presented at the ACI-NA Finance Committee Meeting; however, there is no specific mention of data or actions undertaken by individual airports.

The Airport Performance Benchmarking Survey is administered by the ACI-NA Strategic Planning and Performance Management Group once a year. It is rolled out by the end of March and data are readily available to participating airports in two releases. The first release is done in June–July and it involves airports with a fiscal year ending in December of the previous year. The second release is done in August–September and includes data from airports with a fiscal year ending in June of that year. This two-phase release process allows for up-to-date information.

Participation in the survey has increased by 67% since it was first rolled out in 2005, and the survey captures 90% of large hubs and 57% of medium hubs. Small hubs and non-hubs also participate but to a lesser extent. Five Canadian airports were incorporated into the sample in 2008. A total of 77 airports participated in 2008. Enrollment in the survey is open to all airports in North America and there is no charge.

ACI-NA also sponsors a series of training sessions offered to airports on what information to include and how it should be reported. The goal is to ensure that airports enter comparable data that can be widely used in external benchmarking efforts. During the training sessions, airports are encouraged to ask questions, which helps ACI-NA improve the survey tool. Sixty people have attended the training sessions since the beginning of the series in year 2007.

Airport Council International-Airport Service Quality

Within ACI there is a subgroup dedicated to airport service quality (ASQ). ASQ offers services and information to the airport industry specifically tailored to airport performance measurement and emphasizing customer service. Within ASQ there are four main initiatives: (1) ASQ Survey, (2) ASQ Performance, (3) ASQ Assured, and (4) ASQ Management.

The ASQ Survey is the world's leading airport customer satisfaction benchmark program with over 120 airports in more than 45 countries surveying their passengers every month of the year. All airports use the same questionnaire and follow the same methodology. Airports can participate in the process on four different levels:

- **ASQ Survey Main Programme.** The Main Programme has over 120 airports participating and is designed for all airports that require regularly updated information on their service performance for operational and strategic decision-making. Every month, at all participating airports, departing passengers are interviewed about their on the day experience. All airports use the same questionnaire and methodology. The ASQ Survey Main Programme is tailored for

Exhibit III-2.1. ACI-NA Airport Performance Benchmarking Survey³⁰ sample.

Airport Name					
Airport 3 digit ID Code					
If this is a consolidated report, list the 3 digit codes of the other airports					
1.0	Passenger Airline Aeronautical Revenue	2007	2006	Change	ACI Ref
1.1	Passenger airline landing fees	0	0	#DIV/0!	A1+A2
1.2	Terminal arrival fees, rents and utilities	0	0	#DIV/0!	C1
1.3	Terminal area apron charges/tiedowns	0	0	#DIV/0!	C3
1.4	Federal inspection fees	0	0	#DIV/0!	C2
1.5	Other passenger aeronautical fees	0	0	#DIV/0!	C8-C1,2,3
1.6	Total				
		For Fiscal Year Ending			
		Date Filed or Revised		2006	
				1/11/08	
2.0	Non-Passenger Aeronautical Revenue				
2.1	Landing Fees from Cargo				
2.2	Landing Fees GA & Military				
2.3	FBO revenue; contract or sponsor-operated				
2.4	Cargo and hangar rentals				
2.5	Aviation fuel tax retained for airport use				
2.6	Fuel sales net profit/loss or fuel flowage fees				
2.7	Security Reimbursements from Fed govt.				
2.8	Other non-passenger operating revenue				
2.9	Total				
3.0	Total Aeronautical Revenue				
4.0	Non-Aeronautical Revenue				
4.1	Land and non-terminal facility leases and rever				
4.2	Terminal-food and beverage				
4.3	Terminal-retail stores & duty free				
4.4	Terminal-services and other				
4.5	Rental cars-excludes customer facility charges				
4.6	Parking and ground transportation				
4.7	Hotel				
4.8	Other				
4.9	Total				
5.0	Total Operating Revenue				
6.0	Operating Expenses				
6.1	Personnel compensation and benefits				
6.2	Communications and utilities				
6.3	Repairs and maintenance				
6.4	Marketing/Advertising/Promotions				
6.5	Supplies and materials				
6.6	Contractual services				
6.7	Insurance, claims and settlements				
6.9	Other				
	Subtotal				
6.8	Depreciation				
6.10	Total Operating Expenses				
7.0	Operating Income (Loss)				
<p><small>Paperwork Reduction Act Statement: The information collected on this form requires the Secretary of Transportation to use a simplified format for reports to provide information concerning the amount of revenue surplus, the amount of the burden for each response is estimated to be 1 hour. Responses are required only for certain operations, and a person is not required to respond if the control number associated with this collection is 2120-0689. BNA F</small></p>					
8.0	Non-Operating Revenue (Loss) and Capital	2007	2006	Change	ACI Ref
8.1	Interest income	0	0	#DIV/0!	Q1
8.2	Interest expense (use minus sign)	0	0	#DIV/0!	Q5
8.3	Grant receipts	0	0	#DIV/0!	Q2
8.4	Passenger Facility Charges	0	0	#DIV/0!	Q3
8.5	Capital contributions (for withdrawal use minus sign)	0	0	#DIV/0!	Q6
8.6	Special items (loss)	0	0	#DIV/0!	Q7
8.7	Other	0	0	#DIV/0!	Q4,8,9
8.8	Total Non-Operating Revenue (loss)	0	0	#DIV/0!	Calc
9.0	Net Assets				
9.1	Change in net assets	0	0	#DIV/0!	R
9.2	Net assets (deficit) at beginning of year	0	0	#DIV/0!	=LY
9.3	Net assets (or Net assets (deficit) at end of year	0	0	#DIV/0!	Calc
10.0	Capital Expenditures and Construction in Progress				
10.1	Airfield	0	0	#DIV/0!	T1
10.2	Terminal	0	0	#DIV/0!	T2
10.3	Parking	0	0	#DIV/0!	T3
10.4	Roads, rail and transit	0	0	#DIV/0!	T4
10.5	Other	0	0	#DIV/0!	T5
10.6	Total	0	0	#DIV/0!	
11.0	Indebtedness at End of Year				
11.1	Long Term Bonds (GA, GARB, PFC, ect)	0	0	#DIV/0!	Z1a,c,e
11.2	Loans and interim financing	0	0	#DIV/0!	Z1b
11.3	Special facility bonds	0	0	#DIV/0!	Z1d
11.4	Total Debt at End of Year	0	0	#DIV/0!	
12.0	Restricted Assets				
12.1	Restricted debt reserves	0	0	#DIV/0!	U3
12.2	Restricted renewals and replacements	0	0	#DIV/0!	U4
12.3	Restricted other	0	0	#DIV/0!	U5
12.4	Total	0	0	#DIV/0!	
13	Unrestricted Assets, Including Cash	0	0	#DIV/0!	U2
14.0	Reporting Year Proceeds				
14.1	Bond proceeds	0	0	#DIV/0!	S1
14.2	Proceeds from sale of property	0	0	#DIV/0!	S2
15.0	Debt Service				
15.1	Debt service, excluding coverage	0	0	#DIV/0!	Z10f
15.2	Debt service, net of PFCs and Offsets	0	0	#DIV/0!	Z15f
16.0	Operating Statistics (for large and medium hub airports)				
16.1	Enplanements	0	0	#DIV/0!	V3
16.2	Landed weights	0	0	#DIV/0!	X4
16.3	Signatory landing fee rate per 1,000 lbs	\$0.00	\$0.00	#DIV/0!	Y1
16.4	Annual aircraft operations	0	0	#DIV/0!	Z7
16.5	Airline cost per enplanements (line 1.6/16.1)	#DIV/0!	\$0.00	#DIV/0!	Calc
16.6	Actual Full Time Equivalents at end of year	0	0	#DIV/0!	ZZ1
16.7	Security and law enforcement costs	0	0	#DIV/0!	E1f
16.8	ARFF costs	0	0	#DIV/0!	E1g

airports of all sizes, from 0.5 million passengers to 85 million. The wide range of ASQ participants allows each airport to select an appropriate benchmarking panel. The Main Programme offers quarterly results, providing insight into and comparisons with the service performance of airports all over the world. A powerful array of deliverables is available within weeks of the end of each calendar quarter. These deliverables include management summaries and interactive data mining and analysis tools as well as individually tailored reports, panels, and raw data. Participating airports have access to all other participating airports' results.

- *ASQ Survey Regional Programme.* ASQ Regional is specifically designed to provide benchmarking for airports with fewer than 2 million passengers. It allows smaller airports to take advantage of the benefits of ASQ without having to invest in the full ASQ main programme. ASQ Regional surveys twice a year for each season's schedule and is fully compatible with the ASQ Main Programme. It also offers the powerful array of ASQ management tools and customer insight, including benchmarking indices based on the entire ASQ airport list. Airports can upgrade from ASQ Regional to the ASQ Main Programme at any time. The Regional Programme is particularly attractive for airport management companies looking for a tool to measure and monitor the customer service performance of their regional airports. Larger airports, which need the full depth of information provided by the Main Programme, can then be compared against smaller regional and developing airports.
- *ASQ Survey Unique.* ASQ Unique is a one-off survey and review of an airport's customer service performance that can be conducted at a time of the airport's choosing. ASQ Unique is a fully flexible customer service benchmark that gives airports access to ASQ management insight and information without requiring significant investment. ASQ Unique allows airports to analyze and investigate their customer service performance secure in the knowledge that they are benefiting from the techniques and methodologies used in the world's most advanced airports. ASQ Unique is distinguished from ordinary customer satisfaction surveys in that it offers benchmark indices to allow airports to place their results in perspective and compare themselves against the industry average. ASQ Unique is fully compatible with the ASQ Main and ASQ Regional Programmes and permits airports to "test drive" the ASQ management tools.
- *Airport Specific Survey.* ASQ identifies any concerns, but to get to the heart of the issue and to highlight the causes and potential solutions often requires more detailed research. Airport Specific Research concentrates only on areas of concern and potential key revenue/success drivers. This ensures that airports receive detailed action points focused exactly where they are needed. This research operates at a varying number of levels, depending on individual airport requirements. Each airport is different and requires a different mix.

ASQ Performance complements the ASQ Survey with 16 standard KPIs on the service delivered.

ASQ Performance was developed at the request of a number of airports that wished to complement the information obtained from the ASQ Survey with actual measures of the service delivered. Faced with a wide range of methodologies and measurements, airports worldwide have agreed to standardize performance measurements on 16 KPIs that define the passenger experience through the airport, and one unique methodology—ASQ Performance. ASQ Performance measures the levels of service delivered by an airport through a series of observations scheduled to ensure an accurate reflection of key issues and it puts those measures into context through comparison with other airports. It allows airport management to measure the service performance actually delivered by the airport and accurately pinpoint underperformance, bottlenecks, and over-performance.

Each participating airport receives the data from all other participating airports, allowing it to identify best practices and to measure its own performance precisely. Excellence in service is not a singular occurrence; it is proven to be the result of continual effort and commitment to providing the best possible service. Conceived as a tool for airport management, ASQ Performance offers monthly feedback and a range of deliverables from management summaries to full databases capable of displaying each recorded observation. The ASQ Performance methodology is

simple in concept, but experience has shown that an in-depth understanding of each airport is vital to creating accurate measures that can be trusted.

Key aspects of ASQ performance methodology are the following:

- 16 KPIs are measured by all airports all year round, with the option to add additional KPIs.
- Observations are conducted using a PDA (personal digital assistant) to keep fieldwork costs at a minimum.
- All airports use an identical methodology to guarantee consistent data for trend and benchmark analysis.
- KPIs are only measured during peak times.
- A minimum sample size is mandatory to guarantee representative benchmarking.
- Participating airports can choose to increase the sample size or the number of surveyed KPIs.

ASQ Assured, the third component to ASQ, is a certification scheme specifically designed and operated for airports by ACI. It helps airports meet the challenge of managing service quality in a very dynamic industry environment by recognizing the initiatives and processes in place at the airport. Airports participating in ASQ Assured go through ACI's custom-designed audit process to assess their commitment to service quality.

ASQ Assured is unique in that it recognizes that providing a continually high quality of service is a journey, not a destination. ASQ Assured does not mandate an arbitrary service level. Certification recognizes airports' commitment to service quality and the fact that systems and processes are in place to constantly improve the service provided to passengers.

ASQ Management, the fourth and final aspect of ASQ, provides support, advice, and advisory services for airports looking to improve their quality of service. Advisory projects range from supporting airports looking to achieve ASQ Assured Certification to assistance in changing airport culture and implementing best practices throughout the airport. ASQ Management can also provide training for staff involved in using the ASQ Survey and ASQ Performance. The training covers understanding and analyzing market research to presentation skills and assistance in embedding ASQ in day-to-day business processes at the airport.

One of the core roles of the ASQ Management service is to assist airports in the implementation of best practices identified through the ASQ Survey and ASQ Performance. By analyzing and collating the results of hundreds of airports' customer satisfaction surveys and through regular meetings and discussions with the airports, the ASQ initiative is building a best practice model of service quality in an airport.

Airports wishing to improve customer quality can now access knowledge of the best practices through the ASQ Survey and ASQ Performance to accelerate their own improvements.

Civil Air Navigation Services Organisation

The Civil Air Navigation Services Organisation (CANSO) acts as the global voice of the companies that provide air traffic control and represents the interests of Air Navigation Service Providers (ANSPs) worldwide. CANSO's mission is to assist its members in providing a safe and seamless airspace, with particular emphasis on customer-driven performance, cost efficiency, and optimized air traffic management.

CANSO's strategic goals are focused on improving global air navigation service performance. As such, its mission is to provide a global platform for customer- and stakeholder-driven civil air navigation services, with emphasis on safety, efficiency, and cost-effectiveness. Air navigation service performance measurement and global benchmarking lie at the heart of this objective. It is recognized that the ability to monitor and measure performance is a key requirement for any business or industry in identifying areas for improvement and setting performance-based targets.

ASQ Assured is a certification scheme that helps airports manage service quality.

ASQ Management provides support, advice, and advisory services for airports looking to improve their quality of service.

CANSO's global benchmarking program supports the establishment of performance-based ATM, improved decision-making and facilitate target-setting.

Global performance indicators in air navigation service productivity, cost-effectiveness, quality of service and safety metrics are being developed by CANSO.

It is for this reason that CANSO launched its global benchmarking work program, supported by its Global Benchmarking Workgroup (GBWG). One of the key objectives for this ANSP initiative is to support the establishment of performance-based air-traffic management (ATM). Improved transparency of air navigation service performance and the visibility of the performance of others promotes understanding of what drives good performance. Further, it supports improved decision-making and facilitates target setting. Overall, CANSO's aim is the following:

- To develop a set of key global performance indicators for air navigation service,
- To identify international best practices,
- To support constructive dialogue with customers and other stakeholders, and
- To assist individual ANSPs in optimizing their performance.

The CANSO GBWG initiative acknowledges the significant achievements in the field of performance measurement and benchmarking by the Eurocontrol Performance Review Unit (PRU). The approach taken by the GBWG sought to draw from a range of existing initiatives, including those of the Eurocontrol PRU, the Asia Pacific ANSP benchmarking initiative, the International Air Transport Association's (IATA's) work on air navigation service performance, and individual ANSP international benchmarking studies and harmonization efforts. The GBWG has also been developing global performance indicators in air navigation service productivity, cost-effectiveness, and quality of service. The CANSO Safety Standing Committee is also developing safety metrics. The ultimate goal for the GBWG is to develop robust reports suitable for external publication; however, it is acknowledged that before this can be achieved, more work is required to refine supporting processes, improve the speed of data collection and validation processes, and establish an appropriate scope of measures.

CANSO member ANSPs have, through their own initiative and the demands and expectations of their customers, placed a great deal of importance on performance measurement and benchmarking. The CANSO Global Benchmarking initiative has and will continue to provide an essential opportunity to share knowledge and collaborate globally. It will promote understanding of what drives good performance in ATM, reveal best practices that will assist individual ANSPs in optimizing their performance, and serve the needs of air navigation service oversight bodies.

National Association of State Budget Officers

The National Association of State Budget Officers (NASBO) has served as the professional membership organization for state finance officers for more than 60 years. NASBO is the instrument through which the states collectively advance state budget practices. As the chief financial advisors to our nation's governors, NASBO members are active participants in public policy discussions at the state level. The major functions of the organization consist of research, policy development, education, training, and technical assistance. These are achieved primarily through NASBO's publications, membership meetings, and training sessions. NASBO is an independent professional and educational association and is also an affiliate of the National Governors' Association.

NASBO's role in the performance-measurement arena is to serve as an information source for its members so that best practices can be shared. In this capacity, NASBO staff members monitor the performance-measurement activities of the federal, state, and local governments that are at the forefront in this area. Further, NASBO maintains contacts with states, the federal government, and other associations and keeps apprised of recent developments, including new publications and training.

NASBO recognizes that due to both fiscal constraints and the public's desire for government to be more accountable, state governments have increasingly turned to incorporating performance measures in state budgeting. Whether performance measures are legislative or gubernatorial ini-

NASBO serves as an information source for its members in the performance-measurement arena to promote best practices.

tatives, the budget office is often responsible for implementing the process; at the very least, it is an integral part of the process.

NASBO points out that just as each state is unique, their approach to incorporating performance measures is also individualized, tailored to the specific political realities and governance of the state. States continue to experiment in this area and their experiences provide insight into best practices for the implementation of performance measures. NASBO's 2008 document *Budget Processes in the States* (available at www.nasbo.org) illustrates the measures and processes adopted in each of the 50 states and Puerto Rico.

The approach to incorporate performance measures is individualized

Government Accounting Standards Board— Service Efforts and Accomplishment

The Government Accounting Standards Board (GASB) has been studying the use of performance management, measurement, and reporting by governments almost since its creation in 1984 by the Financial Accounting Foundation (FAF). The GASB's focus with its Service Efforts and Accomplishments (SEA) project is on only one aspect of the performance-management process—the external reporting of SEA performance information. The GASB is providing state and local governments with voluntary guidance that will assist them in effectively communicating SEA performance information to city councils, staff, and the public. Such guidance will assist governments in their duty to be publicly accountable and make informed economic, social, and political decisions. In addition, the GASB seeks to guide and educate the public about SEA reports.

The objective of the SEA is to encourage the reporting and use of SEA performance information by doing the following:

- Developing conceptually based suggested guidelines for voluntary reporting of SEA performance information that will help officials effectively communicate the government's SEA performance in a way that the public will find meaningful and understandable and
- Completing a limited update of selected sections of "Concepts Statement No. 2, Service Efforts and Accomplishments Reporting," based on information that has been gained through the GASB's combined research and to clarify the scope and limitations of SEA reports. The scope of the overall project does not include establishing the goals and objectives of state or local governmental services, establishing specific nonfinancial measures or indicators of service performance, or establishing standards of or benchmarks for service performance.

The reporting of the results of governmental programs and services is referred to as SEA reporting for government. This type of reporting encompasses not only information about the acquisition and use of resources, but also includes information about the outputs and outcomes of the services provided. Information is included about the relationship between the use of resources (costs) and those outputs and outcomes—what may be referred to as measures of performance. A variety of measures are needed to assist users in assessing governmental performance, including measures of inputs, outputs, efficiency, and outcomes (measures that relate service efforts to service accomplishments) and external factors that influence results.

SEA reporting is the act of preparing and publishing a report measuring the efficiency and effectiveness with which an organization operates in trying to achieve desired results. SEA reporting produces information on the results of government programs or services that can be used to help make decisions. Literally, it provides citizens and other users with measures or indicators of the volume, quality, efficiency, and results of public services. These indicators of performance, when publicly reported, are yardsticks that can be used to figure out whether government is working well or poorly, or somewhere in between.

Reporting of SEA performance information is more effective if the government's officers, elected officials, citizens, public entities and organizations, and public servants realize they are all accountable for their performance and the use of public resources. The reporting of this information for assessing accountability is more commonly done internally, but there is a growing desire for external users/recipients (such as citizens) to know how the government is performing.

The UK Centre for the Measurement of Government Activity

Recognized by the United Nations and the McKinsey Group as a leader in government performance management, The UK Centre for the Measurement of Government Activity is a division of the Office of National Statistics and is responsible for measuring volume of inputs, output, and productivity change over time for public services. The United Kingdom, along with Italy and other European countries, has taken the lead in addressing productivity and performance in government, as well as in addressing the broader issue of the impact of government spending and national gross domestic product figures.

The aim of the UK Centre for the Measurement of Government Activity is to measure all outputs resulting from several broad areas of public spending.

The aim of the UK Centre is to measure all outputs resulting from several broad areas of public spending including health, education, transportation, and so forth. The Centre contributes government production and performance data to the overall UK national accounts figure, giving a more complete view of the nation's economic activity and production than is currently available in the United States. As government spending continues to grow and represents an increasing proportion of all economic activity, the failure to determine how productive the public sector is can greatly impede our understanding of the national economy.

The UK Centre is developing an advanced framework to truly determine the quantity and quality of products and services resulting from government spending. A specific focus is to develop measures for the quality of public services in terms of their actual impact on desired and pre-determined outcomes and the use of output and productivity measures.

The UK Centre was created in 2005 as the result of recommendations in a high-profile government report that determined that the lack of performance measures was damaging the national economy and government management. The UK Centre's specific duties are the following:

- To ensure that the measures of key government services in the national economic statistics are accurate and meaningful;
- To keep improving performance measures, working with government departments, managers and other stakeholders;
- To conduct rolling reviews of methods of measurement of different public services, ensuring methodology keeps pace with changing circumstances and modes of delivery;
- To continue publishing a regular series of authoritative "productivity" articles describing the output and productivity performance of the main public services; and
- To develop and publish credible and coherent individual reports on specific government program areas.



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Definitions and Glossary of Acronyms

Definitions

Activities	The initiatives, projects, and programs the airport undertakes to produce outputs and achieve outcomes.
Balanced Scorecard	Management improvement system and framework created by Norton and Kaplan based on financial success, customer needs, learning and innovation, and internal business processes.
Baseline	The beginning level on a measure, normally where an airport is at the start of a performance-measurement system cycle.
Benchmarking	Comparing performance, either internally (e.g., how well do different teams perform?) or externally (how does our airport compare to others?). The “best practice” team or airport is the benchmark against which others are compared.
Dashboard	A simple way of presenting summary measurement results. The dashboard presents the measures, the target and current level for each, and visually shows whether each measure is failing (red), in trouble (yellow), or successful (green).
Enterprise	The entire airport. Parts of the airport can and do measure performance, but a true performance-measurement system needs to integrate measurement airport-wide to achieve the airport’s goals and mission.
Goal	A measurable statement of a result or outcome the airport proposes to achieve.
Key Performance Indicators	A set of quantifiable measures that an airport uses to gauge performance in meeting their strategic and operational goals.
Lagging Indicators	Lagging indicators are measures that evaluate what has happened in the past and allow management to act in a reactive manner.
Leading Indicators	Leading indicators are measures that can predict future performance and allow management to act in a proactive manner.
Leadership Team	The airport senior executives who set performance goals and manage performance. May not be named such or recognized as a formal team.
Measure	An objective, measurable “yardstick” that airports will use to indicate goal success.

Mission	A broad statement, often set in legislation, of what the airport has been charged to accomplish and why.
Outcomes	Results. End outcomes are the ultimate results the airport wants to accomplish, such as safety. Intermediate outcomes, such as reducing runway incursions, lead to achieving the end outcomes.
Outputs	The products and services the airport provides to achieve its end outcomes.
Performance Assessment Model	Illustrates how airports can identify the outcomes and strategies they propose to achieve, then align programs and budgets to achieve them.
Performance Goal	A goal statement that includes a measure, a target, and a date the target will be achieved.
Performance Indicator	A measure that helps indicate whether an airport is succeeding in achieving a goal or objective. A goal may have several indicators.
Performance Logic Model	Management improvement system and framework that translates the airport mission into measurable, results-oriented goals and targets, and the plans, strategies, programs, and budgets to achieve the goals and targets. The performance logic model then tracks implementation—application of resources to undertaking activities that produce outputs that achieve the intermediate and ultimate outcome goals the airport has set.
Performance Management	Basically, monitoring performance, identifying when it is off track, evaluating why, and taking action to bring it back to where you want it.
Performance Measurement	The process of assessing progress toward achieving predetermined goals.
Performance-Measurement Assessment Tool	A series of questions for airports to answer by development step to assess the development and implementation process of the performance-measurement system.
Performance-Measurement System	A system to measure overall airport performance in achieving its mission, vision, and end-outcome goals. A good performance-measurement system measures success against end and intermediate outcomes, then cascades to the outputs and activities that different parts of the airport will contribute and ultimately to individual employee contributions.
Performance-Measurement Team	The group of people throughout the airport who will take measurements and report them to the performance office. The team may not be named “the performance measurement team” or be recognized as a formal “team.”
Performance Office	The office charged to manage the performance-measurement system (Usually, not named “performance office”). Most airports charge the CFO with managing the performance-measurement system.
Point of Contact	The performance office should have a single contact in each department responsible for providing information to the performance-measurement system.

Red, Yellow, Green	Think of a stop light. Using these colors is a simple way to visually depict measures as failing (red), in trouble (yellow), or successful (green).
Resources	The people, budgets, land, facilities, and equipment that airports apply to undertake activities that produce outputs and achieve the airport's desired outcomes.
Strategies	Broad approaches to achieving the airport's goals. Goals and outcomes are the "why"; strategies and supporting activities and resources are the "how."
Strengths, Weaknesses, Opportunities, and Threats	Looking at each of these is a good way to scan the airport's environment.
Stretch Goal	A goal that is challenging but achievable.
Target	A level the airport proposes to achieve on a measure. Normally, the target should be achieved by a date.
Vision	A statement describing the desired future results the airport wants to achieve. It should be concise, measurable, compelling, and consistent with the airport's mission.

Glossary of Acronyms

ACI	Airports Council International
ADASP	Aviation Direct Access Screening Program
AIM	Airport Initiatives in Measurement
AIP	Airport Improvement Program
ANSP	Air Navigation Service Provider
ARFF	Aircraft Rescue Fire Fighting
ASQ	Airport Service Quality
ATM	Air-traffic management
ATRS	Air Transport Research Society
AVP	Associate vice president
CANSO	Civil Air Navigation Services Organisation
CATS	Compliance Activity Tracking System
CEANS	Conference on the Economics of Airports and Air Navigation Services
CEO	Chief executive officer
CFO	Chief financial officer
CII	Construction Industry Institute
CPEP	Cost per Enplaned Passenger
CSV	Comma-separated values
DBE	Disadvantaged business enterprise
DOT	Department of transportation
EA	Enterprise Architecture
EIP	Employee incentive program
EPAX	Enplaned passengers
ERP	Enterprise Resource Planning
ETL	Extract, transfer, and load
FAF	Financial Accounting Foundation
FBO	Fixed-base operator
FISMA	Federal Information Security Management Act of 2002
FTE	Full-time employee
GA	General aviation
GASB	Governmental Accounting Standards Board
GBWG	Global Benchmarking Workgroup
GFOA	Government Finance Officers Association
GPRA	Government Performance and Results Act
GTAA	Greater Toronto Airport Authority
GUI	Graphic user interface
HR	Human resources
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IT	Information Technology
KPA	Key performance area
KPI	Key performance indicator
LLL	Listen, leverage, learn
MAC	Metropolitan Airports Commission
MNAA	Metropolitan Nashville Airport Authority
NASBO	National Association of State Budget Officers
NIST	National Institute of Standards and Technology
O&D	Origin and Destination
OCE	Operations and Customer Experience

OLAP	Online analytical process
OMB	Office of Management and Budget
PAR	Performance and Accountability Report
PDA	Personal digital assistant
PM	Performance measurement
PMRS	Performance management and reporting system
PRU	Performance Review Unit
ROLAP	Relational online analytical processing
SaaS	Software as a Service
SEA	Service Efforts and Accomplishments
SPAD	Strategic Planning and Airport Development
SQL	Structured query language
SMWBE	Small, minority and woman-owned business enterprise
SWOT	Strengths, weaknesses, opportunities, and threats
TQM	Total Quality Management
VIPR	Visible Intermodal Prevention and Response



APPENDIX B

Compendium of Key Performance Areas and Indicators

The following examples of Key Performance Areas, or KPAs, are those in use by numerous airports across the country in their performance-measurement techniques. Those airports that participated as case study airports for the development of the guidebook also supplied data on their most common KPAs. For a full list of the airports featured as case studies in the guidebook, please refer to Part III, Chapter 1, where a full report can be found on each.

The following chart first lists a KPA, then the associated Key Performance Indicator(s) (KPIs) and then the associated measures. This list represents a sample of metrics used in the aviation industry and does not account for every area of measurement or measure.

KPA	KPI	Measure			
Finance	Costs - Expenses	<ul style="list-style-type: none"> Total airline cost per enplaned passenger Total operating costs per enplaned passenger Total operations and maintenance cost per enplaned passenger Material and supply costs per EPAX Telephone expenses per EPAX Insurance expenses per EPAX Rental expenses per EPAX Other operating expenses per EPAX Outstanding long-term debt per EPAX Operating cost per enplaned passenger Operating cost per enplaned passenger (with depreciation) Airline operating expense per enplaned passenger 			
		Revenue Performance	<ul style="list-style-type: none"> Operating revenue per enplaned passenger Non-aeronautical revenues as % of operating revenue Accounts receivable aging - days Return on cash balances Yield on investment Cost-to-budget ratios Total grant volume per passenger 		
			Operating Performance	<ul style="list-style-type: none"> Meet "Target" Budget Operating income margin Operating income per enplaned passenger Revenue-to-expenditure ratio Non-airline revenue to airline revenue Total non-airline revenue per enplaned passenger Cargo space leased per ton moved Operations and maintenance costs per terminal square foot Work-In-Process (WIP) balance aging 	
				Financial Reporting	<ul style="list-style-type: none"> Errors in accounting reports used % of on-time, routine reports Average cycle time of key activities, i.e., bank reconciliations, parking audits, closing, etc. Routine reports per accountant % of average profit/loss reports completed within 30 days of the end of the month Average number of days to distribute financial reports % of the capital status reports completed within 30 days of the end of the month
					Debt Management

KPA	KPI	Measure
Safety	Runway Incursions and Airfield Violations	<ul style="list-style-type: none"> • Number of runway incursions • Warning citations issued
	Employee Accidents and Incidents	<ul style="list-style-type: none"> • Total employee injuries • Number of OSHA recordable injuries • Injuries per FTE • Lost work days per FTE • Number of airport vehicle accidents
	Airport User Accidents and Incidents	<ul style="list-style-type: none"> • Claim cost per million enplaned passengers • Number of accidents and Incidents
	Police	<ul style="list-style-type: none"> • Number of tickets issued • Curb time per arriving vehicle • Number of safety seminars conducted • Number of attendees at safety seminars • Number of security inspections conducted • Number of hours training provided per employee • Ranking in skill tests • Number of certifications held by the department
People	Affirmative Action	<ul style="list-style-type: none"> • % Female employees of total work force • % Minority employees of total work force • % Disabled employees of total work force
	Satisfaction	<ul style="list-style-type: none"> • Number of performance reviews over time for total work force • Turnover rates and costs • Turnover rate of probationary employees • Number of labor grievances • Employee opinion surveys • Employee attitude change scores • Employee morale change scores • Number of labor grievances • Grievance settlement rates and costs
	Development	<ul style="list-style-type: none"> • AOC and Special Training • Recognition reward counts to total work force • Staffing report DPS/OPS • Turnover numbers to total work force • Vacancy to total work force
	Training	<ul style="list-style-type: none"> • Number of training hours per employee • Pre- and post-test scores from training programs • Number of post-test scores from training programs • Number of certifications acquired • Number of "critical incident" reports
	Finance	<ul style="list-style-type: none"> • Salary increase or appraisal patterns • Overtime pay costs or ratios • Compensation (or benefits) as a % of expenses • Overtime as % of total wages • Operating revenue per employee

KPA	KPI	Measure
		<ul style="list-style-type: none"> Operating expenses per employee (excluding depreciation) Personnel as % of total cost operating expense (including benefits) Terminal square feet per FTE employee
	Reviews/Reporting	<ul style="list-style-type: none"> % of performance appraisals submitted on time Number of late end-of-term performance evaluations
	Human Resources	<ul style="list-style-type: none"> Average position hired in pay range (by quadrant) Number of job descriptions written Benefit cost per employee Error rates in processing benefit claims Comparable private sector pay in critical categories % Payroll to employee benefits Absenteeism rates Lost time costs Labor utilization rates
Operations	Maintenance	<ul style="list-style-type: none"> Labor cost per square foot of building or paved surfaces Material cost per square foot of building or paved surfaces Duration of system failure Number of system failures Cost of equipment failure Total maintenance cost per square foot of buildings and paved areas Energy costs per square foot of buildings Temperature consistency Frequency of rest room cleaning Number of successful maintenance inspections Preventative maintenance costs compared to non-preventative maintenance costs Inventory costs as a % of maintenance costs % of inventory shrinkage % of tool shrinkage Average response time Groundskeeping costs per acre % of work orders completed within guidelines Ratio of productive labor hours to actual labor hours % of maintenance hours used for work that was preventative in nature Number of shuttle complaints per 100,000 passengers Utility expenses per EPAX
	Parking	<ul style="list-style-type: none"> Parking cost per EPAX Frequency of ground transportation service Number of parking spaces per EPAX Number of short-term parking spaces per passenger and visitor ratios Number of long-term (daily) parking spaces per passenger

KPA	KPI	Measure
		<ul style="list-style-type: none"> • Number of parking employees as compared to vehicles in long-term and short-term parking • Average processing time for short-term parking and long-term parking • Average time from long-term parking to the passenger terminal • Total vehicles parked vs. total passengers • Average parking time in long-term parking and short-term parking • Maintenance cost per parking space • Contractor cost per parking space • Parking revenue per EPAX • Number of complaints per EPAX • Parking ratio/per hour • Parking ratio/per day
	Planning, Development, Environmental	<ul style="list-style-type: none"> • Project planning hours versus total hours • Timeliness and budget accuracy • Time to complete environmental reviews • Number of errors and re-work • Contract specification and bidding time to total time • Number of design changes • % noise reports completed before the end of the month • % of tenants inspected annually for environmental violations • Bid estimated to actual bid • Percent of change order dollars as compared to original dollars bid • Speed of grant application processes and receipt of funds • Food area as a proportion of total concession area • Duration of average food and beverage retail lease • Viewing/children's area per EPAX • Terminal area per EPAX • Concession revenue per EPAX • Concession revenue as a % of total revenue • % of contracts in place by renewal/start date
	Properties	<ul style="list-style-type: none"> • Number of contract extensions given • Number of DBE contractors • DBE contractors as a % of total contracts • DBE contractors as a % of total contract dollars • Concession revenue per square foot • Advertising revenue per square foot • Revenue from food and beverage per EPAX • Revenue from general merchandise per EPAX • Car rental revenue per EPAX • Airline revenue per EPAX • Total contracted service expense per EPAX • Total contracted maintenance expense per EPAX • Average acquisition cost of land per square foot

KPA	KPI	Measure
	Manage	Contracts
	Partnerships	Partner services provided
Community	Community Relations	<ul style="list-style-type: none"> • Number of contacts • Number of activities focused on community
	Public/Community Relations	<ul style="list-style-type: none"> • % of media calls responded to within the same day • Media contact indicators • Media notice volume indicators • Positive vs. negative press • Number of community outreach initiatives • Visitation and special event counts • General government satisfaction tests • Customer satisfaction indicators • Complaint tracking and response • Number and frequency of customers surveyed • Number of customer complaints, by type • Number of tours conducted • Number of people on tours



APPENDIX C

Author Acknowledgments

The authors would like to acknowledge the airports and organizations whose input was instrumental to the research and development of the guidebook.

Case Study Airports

Case Study Airport	Interview Participant	Participant Position
Dallas/Fort Worth International Airport	Chris Poinatte	Chief Financial Officer
Dayton International Airport	Iftikhar Ahmad Walter Krygowski Joseph Homan	Director of Aviation Deputy Director of Aviation Manager of Finance & Administration
Eugene Airport	Robert Tintle	Director of Finance & Administration
Leesburg Executive Airport	Timothy Deike	Airport Director
Memphis International Airport	Scott Brockman	Executive Vice President, Finance & Administration
Metropolitan Washington Airports Authority	Chelie Cameron Valerie O'Hara Michael Brogan	Manager, Financial Strategy & Analysis Debt Manager Manager, Organization Development
Minneapolis–St. Paul International Airport	Jeff Hamiel	Executive Director
Nashville International Airport	Raul Regalado	President & CEO
San Antonio International Airport	Eric Kaalund	Assistant Director of Finance
San Diego International Airport	David Boenitz	Director, Business Planning
Sebring Regional Airport	Michael Willingham Bev Glarner Bill Lutrick	Executive Director Executive Assistant External Consultant
Tampa International Airport	Louis Miller John Wheat Dallas Dawson Edward Haines	Executive Director Deputy Executive Director Performance Management Analyst Director of Development Program Services
Toronto Pearson International Airport	Bill Newman Tom Driedger Sandra Hantziagelis	Director of Strategic Projects Manager, Strategic Planning

Internal and External Airport Stakeholders

Organization	Interview Participant
Beacon International	John Lawrence, President
University of Westminster	Anne Graham, Professor, School of Architecture and Built Environment
RAND Corporation	Julie Kim, Senior Researcher of Supply Chain Policy Center
RAND Arroyo Center	Eric Peltz, Director of the Logistics Program
The Hershey Foods Company	Edward Martin, Global Director Breakthrough Innovation
Airports Council International – World	Craig Bradbrook, Director, Security & Facilitation Mark Adamson, DKMA
International Civil Aviation Organization	Osten Magnusson Julian De La Camara
National Air Transportation Association	Eric Bryer Jacqueline Rosser Russ Lawton A. Koranda
Federal Aviation Administration	Nan Shellabarger Toni Trombecky Tony Diana Roger Schaufele Jerry McNiff Willie Miller David Fish Mary Bissett Wayne Heibeck Mary Beth Monte
Air Transportation Research Society	Dr. Chunyan Yu
Air Transport Association of America	Laura McKee
Airports Council International, Concessions Benchmarking Working Group	Rajni Tripathi
U.S. Department of Transportation	Bernie Stankus, DOT-BTS David Fish, FAA Tom Boles, DOT/RITA Charlie Han, Contractor (BTS) Anne Suissa, DOT-BTS

Beta Test Airports—Five-Step Building Process

Airport	Beta Test Participant	Participant Position
Dallas/Fort Worth International Airport	Chris Poinatte	Chief Financial Officer
Dayton International Airport	Iftikhar Ahmad	Director of Aviation
Memphis International Airport	Scott Brockman	Executive Vice President, Finance & Administration
Metropolitan Washington Airports Authority	Chelie Cameron	Manager, Financial Strategy & Analysis
Minneapolis–St. Paul International Airport	Jeff Hamiel	Executive Director
San Diego International Airport	David Boenitz	Director, Business Planning
Toronto Pearson International Airport	Bill Newman Tom Driedger	Director of Strategic Projects Manager, Strategic Planning

Beta Test Airports–Guidebook

Airport	Beta Test Participant	Participant Position
Dayton International Airport	Iftikhar Ahmad	Director of Aviation
Tampa International Airport	Dallas Dawson	Performance Management Analyst
Leesburg Regional Airport	Timothy Deike	Airport Director
Mahlon Sweet Field, Eugene Airport	Robert Tintle	Director of Finance and Administration

AAAE

The authors would also like to acknowledge the American Association of Airport Executives for their cooperation and inclusion of survey questions regarding performance measurement on their annual survey.

Abbreviations and acronyms used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI-NA	Airports Council International-North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation