

Airport IT: Enabler of the long-term vision or insurmountable obstacle?

Received (in revised form): 30th September, 2014



Justin L. Phy

JUSTIN L. PHY

is the president and co-founder of Barich, Inc. He graduated from Texas A&M University with a Bachelor's of Business Administration in Management Information Systems. Justin has over 16 years of experience providing technology planning and project management services to the aviation industry and has conducted business and operational assessments and case studies in 32 airports globally. His specialty is in identifying and understanding airport business needs and providing appropriate strategic solutions based on the current capabilities and future direction of technology. He has co-authored five ACRP Reference Guides and is currently supporting two active research efforts.

Abstract

The fast pace of technology development, coupled with the unique requirements of an airport, make it difficult for an airport operator to ensure that investments made in technology provide the greatest possible return toward the long-term vision. Frequently, decisions are made based on assumptions formed from limited data and anecdotal evidence of peer airports, resulting in outcomes that do not meet stakeholder needs. In fact, alignment with the business needs of the airport is often an afterthought, as many airport operators do not appreciate which solutions can be effective in the current technology environment of the airport. Airport operators can be highly successful in leveraging technology to accomplish their long-term strategy through a systematic approach to understanding needs, evaluating opportunities, and providing governance.

Keywords

technology, best practices, business objectives, strategy, vision

INTRODUCTION

In this fast-paced world of change, information technology (IT) solution providers roll out new innovations and IT improvements seemingly on a continuous cycle of change. Even though such innovations enable airports of all sizes to deliver benefits, improve efficiencies and reduce risks, to the airport operator focused on meeting the needs of the many airport stakeholders, issues surrounding technology can often make the IT organisation seem like more of an obstacle to overcome than an enabler. The traditional approach of making a significant investment in computer server farms and onsite IT engineers is no longer the

only viable option for obtaining the necessary services. Today, understanding how to apply the many IT innovations to the airport's long-term operational and business vision has become so challenging that many airport operators find themselves at a loss as to how and when to innovate, especially when many of the innovations can provide more hype than benefit.

For an airport operator, the question comes down to this: When is an IT solution a risk, and when may it become an industry best practice? This article considers this challenge set before the airport operator, and proposes a solution to integrate IT into the airport governance

Justin L. Phy,
Barich, Inc.
1233 Crabb River Rd., Ste. B
Richmond,
Texas 77469
USA

Tel: 001 832 595 8448
E-mail: justin.phy@barich.net

structure, and thus establish a means to manage IT innovation for the benefit of the airport community. The paper presents a progression of an IT Maturity Model, then discusses how to use the model to align technology with the business and plan for the long-term vision.

EVALUATING IT SOLUTIONS

For a new 'IT best practice' to emerge, a particular solution must be accepted by two different categories of operators; the innovator and the early adopter. According to the Diffusion of Innovations Theory,¹ innovators, who represent approximately 2.5 per cent of society, are those who are willing to take a risk by investing in a solution before it has proven itself. The basis for this risk is an understanding of the technical aspects and a belief that it will achieve its intended purpose. Once a solution has been shown to produce consistent benefits to the innovators, the early adopters, who represent approximately 13.5 per cent of society, begin to make the investment. As with the innovators, the early adopters are driven by a belief that the solution will serve a beneficial purpose; however, their appetite for risk is lower and they are willing to wait to see the results of the innovators' investments. Early adopters are viewed by their peers as thought leaders who make pragmatic decisions. Upon full acceptance by the early adopter group, a tipping point is reached and a solution begins to be viewed as a best practice. Best practices are proven to be effective solutions for achieving a particular outcome in most environments; however, they do not necessarily represent the most appropriate solution for the unique and specific business requirements at every airport.

Airport operators around the world are seeking to address IT requirements to

meet their unique set of opportunities and challenges. Some are working to establish an IT programme that is aligned with the long-term business objectives of the airport, while others are focused on specific IT solutions to address immediate needs without looking at the bigger picture. It is the latter group of airport operators who are at risk of failure. A focus on addressing immediate needs can cause tunnel vision and lead to decisions based on confidence in a solution's ability to produce a specific desired outcome. This approach may result in the investment in an IT solution that falls short of meeting all of the necessary business requirements and does not support the long-term objectives of the airport.

To achieve the greatest benefit from IT solutions, best practices should be evaluated based on the strategic alignment of IT with the airport's business objectives. In order to effectively align the IT programme with the airport operator's mission, vision, values and objectives, the airport operator must take a strategic approach to understanding the current business objectives, the basis for changes in the environment, and the specific needs of the stakeholders.

IT MATURITY LEVELS

The maturity level of an airport's IT environment has a direct impact on the capabilities of the airport to effectively implement a given IT solution. Simple or outsourced solutions may be the only way to successfully meet business objectives in an airport with a low level of IT maturity. A greater number of options are available to airports with a high level of IT maturity. Many professional IT consultancies have published IT maturity models that map an organisation's maturity progression from non-existent to highly effective. Among those most highly respected is the Gartner

IT Infrastructure and Operations (I&O) Maturity Model.² The Gartner I&O Maturity Model maps four key dimensions across six levels and defines universally applicable objectives for each. Gartner I&O dimensions include people, process, technology and business management. The six levels are defined below as they apply to the airport industry.

Level 0: Survival

At level 0, there is little to no focus on IT infrastructure and operations. At this level, no IT standards exist and IT planning is not conducted. Airport IT requirements are typically provided by electronics or maintenance technicians led by a manager of another airport division such as operations, maintenance or finance. Technology systems consist of desktop computers and the few required operational systems, such as CCTV cameras, access control and paging systems. Infrastructure is made up of independent cabling systems and network switches are installed ad hoc to support systems where they are located.

A lack of planning results in unsatisfied long-term requirements. In addition, the viable IT solution options are significantly limited due to a lack of trained IT staff and dedicated management coupled with poor infrastructure.

Level 1: Awareness

At level 1, there is realisation that infrastructure and operations are critical to the business and the airport operator is beginning to take actions (in the areas of people, processes and technologies) to gain operational control. At this level, no firm IT standards are in place, and planning is limited to defining budgetary requirements. Airport IT maintenance support is provided through trained computer and

network technicians led by an IT manager who reports up through a non-IT airport division, such as operations or planning. IT systems include more advanced business applications and minimally complex airport special systems, such as parking revenue control systems. Infrastructure is made up of independent cabling systems and network switches are installed in an unplanned manner to support systems where they are located.

As with level 0, long-term requirements are not addressed due to the lack of planning. More viable IT solution options are available due to a greater level of trained IT staff and dedicated management; however, poor infrastructure is still a limiting factor.

Level 2: Committed

At level 2, airport IT is progressing towards a managed environment and providing day-to-day IT support processes. There is improved success in project management to become more customer centric and increase customer satisfaction. At this level, strategic planning is conducted and high-level project plans are defined to support budgeting. Airport IT is driven through a defined IT division with trained staff in all of the key areas of responsibility and defined processes for support and project delivery. Technology systems are standardised and procured through defined requirements. Airport special systems are still few, but may begin to include customer-centric services such as multi-user flight information display systems (MUFIDS). Infrastructure cabling and network switches are migrated to an airport-wide integrated communications system.

This level represents the beginning of a fundamental change in the approach to IT from reactionary to proactive.

Strategic alignment with the airport business objectives results in satisfied long-term requirements. Other improvements include greater accuracy in budgeting and significantly reduced limitations on viable IT solution options.

Level 3: Proactive

At level 3, airport IT is gaining efficiencies and improving service quality through standardisation, policy development, governance structures and the implementation of proactive, cross-divisional processes, such as change management. At this level, strategic and master planning are performed and strict IT standards and policies are adopted and enforced. Airport IT has a defined governance structure through which ongoing IT value is assessed according to key performance indicators. The IT division is led by a director with staff that operate under clearly defined processes. Technology systems are centrally managed and monitored for performance. Airport special systems include expanded operational and customer-centric services to improve operational efficiencies and customer service. A fully redundant and managed airport-wide integrated communications system is in operation.

At this point, IT has begun to show support for the long-term vision as a strong value proposition to business units and customers. Solutions consistently meet the intended purpose due to a focus on defined requirements. The airport operator gains increased operational control and financial management due to policies, standards and detailed planning. Ongoing improvements become a recurring process as a result of monitoring and measurement of key performance indicators. Finally, the airport IT customers experience improved service response and

system uptime due to managed support processes.

Level 4: Service-aligned

At level 4, the airport operator is managing IT like a customer-focused business that is a proven, competitive and trusted IT service provider. At this level, strategic and master planning are addressed as an ongoing process rather than a recurring event and IT functions are highly integrated and automated. Airport IT has a mature governance structure and the IT organisation is led by an assistant airport director or chief information officer and focused on meeting stakeholder needs through a service delivery approach. IT systems are defined within a comprehensive technology architecture. Airport special systems are aligned with stakeholder needs.

The service-aligned IT organisation enables the airport operator to provide significant value to the airport customers through a focus on meeting stakeholder needs and providing highly reliable IT services. It also has strong governance to provide accountability through the measurement of IT service performance and cost metrics and to drive continuous improvement through lifecycle planning.

Level 5: Business partnership

At level 5, the airport IT organisation is a trusted partner to the business for increasing the value and competitiveness of business processes, as well as the business as a whole. At this level, the IT organisation functions at optimal levels and is focused on identifying and leveraging innovative opportunities to add value to the airport. The IT organisation serves as a contributing partner to the airport's strategic and master planning efforts and the airport business objectives

are defined based on an understanding of what IT can provide.

When airport IT has reached the highest level of maturity, it is being evaluated against metrics for overall business contribution. The IT organisation contributes to improving the efficiency and effectiveness within divisions throughout the airport and serves as a key enabler for achieving the airport's long-term vision.

ALIGNMENT OF TECHNOLOGY WITH BUSINESS

Strategic technology alignment is the basis for moving from IT maturity level 1 to level 2 as it provides the needed linkage of the IT programme to the objectives of the airport business units. Alignment becomes necessary when stakeholder needs dictate a level of accountability for IT service and support.

The first step in establishing alignment between IT and the airport operator's business objectives is the creation of an IT strategic plan. The IT strategic plan defines the direction needed to develop the IT programme over a long-term period of time in accordance with the long-term direction for the airport. It details the enabling processes that must be implemented in order to achieve the IT goals. The IT strategic plan may address key enablers, such as organisational structures, high priority policies or near-term projects at a high level, but does not provide long-term project planning. It should be addressed from the perspective of a planning lifecycle, where it is re-evaluated and updated annually to ensure ongoing alignment with the airport operator's priorities. IT strategic planning is an exercise that can be accomplished with internal airport resources or with the assistance of consultants; however, to be effective, it must be done with significant input from the key airport stakeholders.

Multiple standards exist within the IT industry that provide a framework for the governance and management of IT, including ITIL, TOGAF, PMBOK, PRINCE2, COSO, ISO and COBIT. Each of these has a specific focus area in providing guidance, but all are general in nature and not uniquely applicable to the airport industry. The information in these standards can provide guidance, but achievement of the intended outcome does not require strict adherence.

Among these methodologies, one that provides a focus on aligning IT with the business is ISACA's COBIT 5: Framework for the Governance and Management of Enterprise IT.³ ISACA is an independent, non-profit, global association, engaged in the development, adoption and use of globally accepted, industry-leading knowledge and practices for information systems. COBIT 5 is an IT industry best practice that focuses on aligning IT programmes with the organisation's business objectives in order to minimise IT-related risks and maximise the benefits of technology. This methodology uses a cascading approach to identifying the enabling IT processes required to meet the stakeholders' needs.

Stakeholder needs

The overall purpose of the airport IT organisation is to create value for its stakeholders. Value is created by providing benefits with an efficient use of resources while minimising risk. In order to do this effectively, the stakeholder needs must be defined. Various methods may be employed to define stakeholder needs, including group brainstorming workshops, individual interviews, and surveys. In order for true needs to be uncovered, however, all relevant stakeholders must be directly engaged. Making assumptions

about stakeholder needs without validation can result in poorly formed or even misguided business objectives.

Airport goals

Once the stakeholder needs have been defined, the airport operator can create a specific set of airport goals to address each need. Goals should be created and prioritised based on the unique environment of each specific airport.

IT goals

Once the airport goals have been defined, the airport operator can create a specific set of IT goals to enable the achievement of each airport goal. This process provides the necessary linkage from the IT organisation to the business stakeholder needs. Each IT goal will likely serve as a primary facilitator of certain airport goals and as a secondary facilitator of other airport goals.

Enabling processes

COBIT 5 provides a comprehensive set of enabling processes that can be correlated to each of the defined IT goals. These enabling processes provide the foundation for creating a fully aligned IT strategy. The categories for the enabling processes are:

- Evaluate, direct and monitor.
- Align, plan and organise.
- Build, acquire and implement.
- Deliver, service and support.
- Monitor, evaluate and Assess.

ENABLE THE LONG-TERM VISION

The IT master plan is the tool commonly used for addressing the specific activities required for the long-term development

of the IT programme according to the direction provided by the IT strategic plan. The IT master plan should address all of the enablers with sufficient detail for the airport operator to be able to scope and budget new projects for the upcoming three to five years, with longer term projects and initiatives being addressed at a higher level. As with the IT strategic plan, the IT master plan is part of a planning lifecycle and should be updated on a consistent schedule in order to provide greater detail to the longer term initiatives as they enter the three to five year range. Historically, IT master plans are developed and then receive little, if any, attention for several years. In these cases, they serve as a snapshot in time and become less beneficial as stakeholder needs and circumstances within the airport change. When updated, they require significant effort to repeat the full planning process. To avoid this outcome and create an IT master plan that provides ongoing benefit with significantly less investment, the airport operator should implement a process that integrates project updates and changes in stakeholder priorities on at least an annual basis.

For an IT master planning programme to be successful, it must have three core components: support and direction from key stakeholders; initiatives based on practical issues being experienced on a regular basis or well-defined long-term benefits; and an implementable plan.

Stakeholder buy-in and support are necessary elements to avoid experiencing failure with many of the IT master plan initiatives and potentially the programme itself. Relevant stakeholders must be actively involved and on board with the initiatives being developed from the very beginning for IT improvements and changes to be adopted and sustained.

To gain this level of support, the IT master plan initiatives need to be linked directly to clearly defined stakeholder needs. This is easily accomplished if an adequate level of effort is invested in developing an IT strategic plan and the identified IT goals and enabling processes have been accepted by management as priorities to be resolved.

The initiatives being addressed by the IT master plan need much more than a link to stakeholder needs for the programme to be successful. The IT goals and enabling processes defined in the IT strategic plan must be expressed in terms of practical issues that stakeholders experience on a regular basis or well-defined long-term benefits in order to justify the investment of resources in order to accomplish a new initiative. Common issues include a history of project or service delivery failures, system outages or data loss, lack of responsiveness to business needs, and rogue IT spending.

In addition, changes in the internal or external environment may present issues that necessitate and justify new IT initiatives. Examples include changes in airport leadership, regulatory compliance issues, airline mergers, an economic downturn and technology advancements.

In order to turn specific instigating issues into implementable initiatives, a valid business case must be developed for each. This business case should accomplish the following:

- Define the specific issue to be addressed.
- Describe the current conditions in terms of financial, operational, stakeholder and staff impact.
- Associate it with the relevant enabling processes, IT goals, airport goals and stakeholder need.
- Describe the parameters relative to addressing this issue.

Once the issue has been thoroughly analysed, the status quo should be evaluated against the available options. In doing so, the business case must define for each: the benefits in terms of financial, operational, stakeholder and staff; the capital and operational costs and funding plans; the feasibility of success; the risks, issues and assumptions relative to implementation; and both short-term and long-term stakeholder impacts. This process, if completed with thorough and accurate information, should provide clear justification for maintaining the status quo or investing in a specific initiative.

CONCLUSIONS

As airport operators are focused on meeting the needs of the many airport stakeholders, issues surrounding technology can often make the IT organisation seem like more of an obstacle to overcome than an enabler of the airport's long-term vision. The actual obstacle is not the IT organisation itself, but rather the lack of governance over the IT organisation. Without governance by the airport management stakeholders, the IT organisation is left without clear direction as to how to provide what is needed to enable the airport to achieve its long-term vision. In this scenario, IT services and support do not deliver benefits, optimise efficiency and reduce risk to the extent expected by the airport operator.

A common result is an airport operator that does not trust its IT organisation to meet its needs and, as a consequence, isolates the IT organisation from the business process even more. This creates a downward spiral of failure, culminating in what seems to be an insurmountable obstacle. The only way to resolve this situation is to establish a governance structure that

evaluates, directs and monitors the IT programme towards alignment with the airport's business objectives. Airport operators who are committed to leveraging the value that technology can provide can, in time and with patience, develop an IT organisation into an airport business partner and trusted advisor.

References

- (1) Rogers, E. M. (2003) 'Diffusion of Innovations', 5th edn, Simon and Schuster, New York.
- (2) Scott, D., Pultz, J. E., Holub, E. Bittman, T. J. and McGuckin, P. (2007) 'Introducing the Gartner IT Infrastructure and Operations Maturity Model', Gartner, Inc., Stamford, CT.
- (3) ISACA. (2012) 'COBIT 5: A Business Framework for the Governance and Management of Enterprise IT', ISACA, Rolling Meadows, IL.