An airport approach to digital transformation

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ABSTRACT

The complexity of the airport business and its logistical environment is a well-known feature of our industry. This complexity often translates into significant technological needs within a highly available, stable and resilient information technology (IT) operational framework. The financial and human resources devoted to the IT function in airports, however, are not always comparable to those of equal complexity in other industries making it challenging to deploy digital transformation programmes. Consequently, it is necessary for airport IT functions to adopt a set of strategies that allow them to navigate the thin line of a large number of critical systems to be operated while respecting the limited resources offered by the relatively small size of the organisations that exploit these tools. This paper discusses such strategies that have been put in place at Montreal-Trudeau International Airport (YUL) in order to have winning conditions for a successful digital transformation.

Keywords

airport digital transformation, airport IT, IT automation, IT transformation

INTROUDCTION

In recent years, the most striking fact observed in the travel industry is certainly the expansion of the role of technology. Whether it is during trip planning, reservation, the actual journey or post-trip evaluation, there are today a multitude of systems that support the complete cycle of a journey made by a traveller.

The airport world has not escaped this trend and has seen its main processes largely supported by increasingly sophisticated technological tools. Any visit to an international airport underscores how much the facility has benefited from technology in the last 20 years to accommodate more passengers in the same footprint. This evolution offers the prospect that capital-heavy construction projects will not always be the solution to managing growth.

To say that airports today have completed a full digital transformation would be, however, an overstatement. Indeed, technological tools have offered passengers a more pleasant and streamlined process, but the passenger

experience is still composed of multiple steps that require an effort from the passenger. This is described by Paul Griffiths, CEO of Dubai airport, as having to bump a shopping cart across multiple train tracks.

The current pandemic situation provides airports with a unique window of opportunity to make greater use of technology in their business transformation. Indeed, this may be the last opportunity for our industry to profoundly transform its systems without the risk of disruptions due to peak hours or high seasonal traffic. Once air travel resumes to normal levels, the passenger will have changed significantly, becoming highly digitalised and exigent following months of telecommuting and travel restrictions. The risk of airports being perceived as technologically dated environments is very real and must be addressed now.

BENEFITS OF TRANSFORMATION

In fact, for now, we could argue that airports have essentially undergone a process of automation. This finding in the travel industry is similarly described for air carriers in a recent paper in the McKinsey Quarterly.[1] The benefits of the digital transformation, however, remain undeniable. This same paper grouped those benefits around four key points that we can apply here for the airport industry:

First, digitisation can make travellers more satisfied and more loyal. Although loyalty is a softer concept in the context of an infrastructure for which there are generally few alternatives, passenger satisfaction for the airport operator remains the golden measure of performance in terms of quality of experience and, generally, the propensity to spend and thus increase non-aeronautical revenues.

Secondly, digitisation can reduce costs by streamlining and automating processes. This is certainly a critical point for an airport that coordinates and executes flows of passengers, baggage and aircraft. A high-quality operational execution is a prerequisite for any ambitions to provide a superior passenger experience.

Thirdly, digitisation can lift revenues by better matching needs, better insights and better differentiation. In the airport world, this is expressed in particular by engaging travellers from the planning stage of their trip so that they can position their needs in advance in terms of parking, shopping in boutiques and duty-free stores and going to restaurants. This anticipation makes it easier to propose tailor-made, unsolicited offers that will not only enhance the experience but also improve non-aeronautical revenues.

Fourthly, digitisation improves agility through a reduced development cycle based on sprint deployment approaches, using more of a trial-and-error mode. This 'fail fast, fail cheap, fail often' approach reduces time to market, increases business agility and limits the risks associated to large IT projects with uncertain business results.

ENABLING TECHNOLOGIES

What is it that allows airports today to hope for such benefits? A fairly recent development, a set of enabling technologies are now available and mature enough to support the digital transformation process. Based on our experience at YUL, we argue that three in particular have this

transformative capacity: cloud-based scalable infrastructure; data management and analytics and application building blocks.

Cloud-based scalable infrastructure is certainly the most fundamental trigger for this change through the democratisation of the tools it offers users, its elastic capacity to offer computing resources and the dematerialisation of data centre management (which are not part of an airport's core business). Framed by adequate automation tools, this infrastructure allows to scale up according to the requirements of the technological products and services offered to the lines of business.

Data management and analytics. Today's technologies offer solutions that simplify the collection, storage and consumption of business data provided that adequate governance is implemented around the use of these platforms. For example, artificial intelligence, already used effectively in targeted contexts, offers the potential to solve complex problems that would be difficult to solve for a human being alone due to the complexity and large volume of data to be interpreted in real time.

Application building blocks. Today, application development is greatly simplified by the use of reusable components that take different forms (application programming interfaces, microservices, cloud services, etc) depending on the nature of the product developed. These building blocks allow the deployment of composable solutions better tailored to the requirements of the business units. They also make it possible to accelerate deployment times and reduce the costs associated with the design of business solutions.

THE DIGITAL CHALLENGE FOR AIRPORTS

Therefore, if the benefits seem so tangible and enabling technologies are present today, we should hope for an accelerated digital transformation of airports that would allow the passenger to become a customer, terminals to be a place of hospitality and the airport operator to grow into optimised, predictive-based operations.

This challenge is not unique to the travel industry. Many companies have not yet achieved transformative results with their innovation programmes. Perhaps this is because conventional concepts or ideas do not necessarily apply to digital business. Perhaps, also, 'digital' is often interpreted as conducting traditional business by digital means, preventing leaders from doing what it takes to succeed. As recently documented by Gartner,[2] 72 per cent of technology spend was still allocated to running the business, 18 per cent to growing the business and only 10 per cent was allocated to transformation.

In the context of airports, one important factor to also take into account is that operators are generally small- or medium-sized organisations that manage particularly large IT fleets, both in terms of equipment and applications. This makes it difficult to set aside time for the transformational aspects of the business. In addition, many critical business processes involve multiple organisation and government agencies that need to be coordinated if any transformation is considered.

Figure 1 illustrates, at a high level, the diversity of products that will generally be found in an airport of medium size and above to ensure consistent operations.

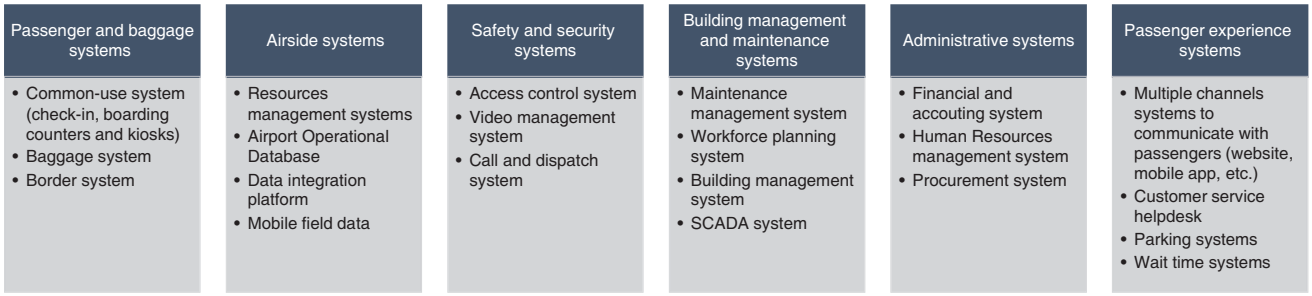

Figure 1 Example of systems present in airports

How can airports manage the complexity of digital transformation in a context where financial and human resources are more scarce than in industries of similar complexity?

We argue in this paper that, before embarking on a digital transformation, some efforts must be made by the IT function to shift the focus from 'keeping the lights on' to being a partner in technological innovation. Indeed, business operations in the airport world can quickly become a drain on an IT team's time. As a result, after a few months, the fact is that much effort has been put into resolving breakdowns, incidents or updating infrastructure equipment. While it is very admirable to aim for a particularly high level of resilience, this is no longer seen as a competitive advantage but as a necessity. To enable this shift in focus, favourable conditions must first be put in place to build solid foundations for transformation. Secondly, a framework for the setting the priorities should be identified to make sure that projects will be aligned with current challenges.

LEVERS OF TRANSFORMATION FOR AIRPORTS

We believe, based on our experience, that five transformational levers should be acted on to set up a favourable ground for digital transformation projects (see Figure 2).

Adjust sourcing strategy to share risks and benefits with partners/vendors

Legacy technology and service delivery models lock airports into a never-ending cycle of IT asset management for which few business benefits can be identified outside of the IT function. Indeed, business lines have little interest in infrastructure solutions and look for rapid and concrete results on their key indicators. Managing legacy technologies is at odds with the principles of innovation, agility and quick results.

In such a context, when important business processes are in need of a technological overhaul, and external vendors are considered to take charge of the transformation effort, they should assume a good part of the risk. In return, they should be eligible to receive part of the resulting benefits if they effectively materialise. This ensures that the initial capital required for this effort is reduced and that the burden of business (not technological) success of the solution is no longer borne solely by the airport authority.

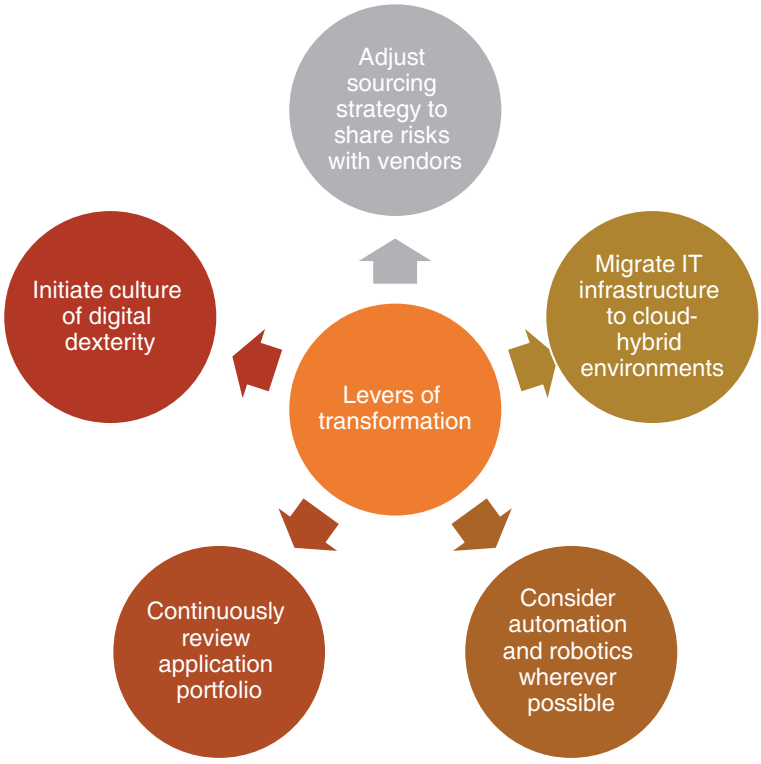

Figure 2 Levers of transformation for airports
Note: IT, information technology.

Migrate information technology infrastructure to cloud-hybrid environments

The lock-in problem explained earlier stems from the fact that it is increasingly difficult for a small organisation to maintain large technological operating environments. Limited asset life, the continuous race to upgrade and patch, and inelastic processing and storage capacity can quickly overwhelm the best and brightest teams and cripple transformation efforts.

The adoption of hybrid cloud-computing models (balanced between local and external hosting), when properly architected and managed, can relieve this pressure and offer elastic computing consumption, delegation of life cycle management and greater flexibility to change technology if the results are not as expected. This allows your internal talent to reorganise their time and to focus more on delivering business solutions.

This step can often be difficult from an organisational culture perspective because it involves going through the process of acknowledging that data centre operations and IT infrastructure management are not part of an airport's core business.

Automate, automate, automate

Repetitive activities that add little or no value to an airport should be addressed through automation initiatives without delay. In particular, three important areas have seen advances that deserve to

be exploited in order to free up time for higher value-added activities.

First, the automation of IT infrastructure is a key component of the digital transformation as it requires rapid and flexible deployments to meet the needs of business lines. IT automation is the use of software solutions to ensure the execution of processes or instructions required to operate an IT environment. This can be best leveraged in the areas of configuration, deployment, platform monitoring and even incident resolution with self-healing. A good example is the provisioning of IT resources. If it takes several weeks to deploy computing resources for a simple IT project, business agility is diminished. This can have a significant impact considering the seasonality of the airport business where timely deployment before peak seasons is critical.

Secondly, robotic process automation (RPA) consists of automating business tasks through the use of a specialised platform that can integrate multiple applications to automate tasks normally conducted by a human. Such a workflow is defined as a 'bot'. An excellent strategy to support administrative activities is to have automation teams available to tactically address any opportunities identified by the lines of business. Account receivables and payables and administrative HR tasks are excellent candidates for such initiatives.

Thirdly, the automation of customer service, made possible by modern artificial intelligence tools, makes it possible to manage a large volume of generic requests and to reduce support costs because the involvement of a human agent is only required for more complex cases.

Continuously review application portfolio

Active management of the application portfolio should be part of good practices at any airport. Given the sheer size of the application base in airports, it is crucial to classify applications according to their life cycle stage and the value they produce for the organisation. Too often, technology functions devote their energies to supporting legacy systems that no longer generate value for business functions.

Therefore, just as most airports have a project prioritisation process in place, it is important to have a similar decommissioning process in place to relieve the portfolio of applications that are no longer generating value and unnecessarily consuming computing and support resources.

Promote innovation and digital dexterity

While we have so far mentioned essentially technological and technical aspects, the most important element, in our opinion, is having a work team that evolves in conditions favourable to digital transformation. This includes a greater tolerance for error and failure (counterintuitive in our industry) and encouraging team autonomy. This means autonomy to access technological training, to experiment with technologies in the laboratory and, also, to interact with lines of business and external IT expertise. Over time, this leads to what Gartner[3] qualifies as a digitally dexterous workforce that exhibits a healthy balance between business and technological skills.

Obviously, the transformational levers we have just described are not objectives to be fully achieved before any

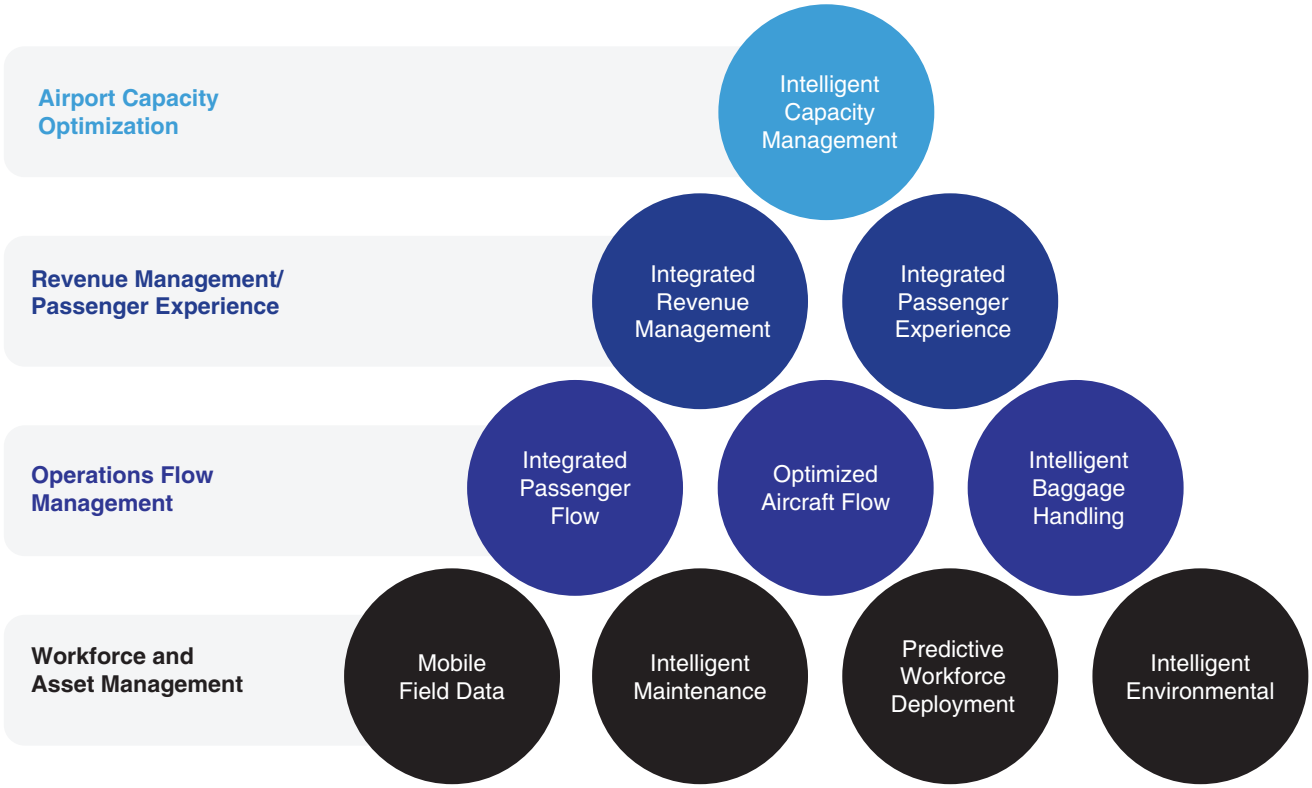

Figure 3 A possible airport digital transformation framework

digital initiative can begin. Rather, they consist of a direction to maintain consistently to support the transformation programme.

Ultimately, the important thing is to start somewhere and cultivate these favourable conditions continuously during your transformation programme. Just start!

SETTING THE PRIORITIES

Now that these steps are in place, where should you focus your airport's efforts? A typical approach in digital transformation is to shoot in all directions with an excessively ambitious approach instead of focused initiatives that deliver quick results.

In fact, each airport platform is unique and will require varying efforts depending on current strategic priorities. In such a context, it is often useful to define a framework to balance focus areas of transformation initiatives. Figure 3 presents such a framework that has been used at YUL to identify potential initiatives for digital transformation.

Any airport framework will inevitably have to be based, in the same way as we have just defined it for the technological function, on the fundamental aspects of an airport's operation, that is, the management of the physical facilities and then the management of passenger, baggage and aircraft flows. These are the fundamentals of the game of airport management. Indeed, it should be kept in mind that the passenger experience must go hand in hand with operational excellence. Catching up on the frustration

caused by a long wait at check-in or at the screening point will be very difficult, if not impossible, to do and will generally be reflected in non-aeronautical revenues.

For each of the components of your reference framework, we suggest that you define, in collaboration with the business areas concerned, what your digital ambition could be. While aiming for a moonshot can be motivating, it is often simpler to consider elements that are easy to achieve. These could include a new way of interacting with your passengers, optimising sales, offering new products and services or increasing operational efficiency. Or even, more simply, to confront a known problem and try to finally solve it by using digital tools.

For example, for the passenger experience component, we decided at YUL that we wanted to offer a vibrant and warm experience to our customers through the unique contribution of our staff. This initiative was rewarded in 2020 when YUL Montréal-Trudeau International Airport won top honours in the 'Best Airport Staff Service in North America' category during the Skytrax World Airport Awards. To support this initiative, YUL had quickly adopted digital solutions such as the implementation of a tablet-based application to help our customer service ambassadors guide our passengers. Also, we deployed a chat system available on our website that was linked to our ticketing system to manage customer requests. In both cases, these were simple solutions deployed in a short period of time that generated quick results.

Another example at YUL: for the mobile field data component, we have equipped our snow removal vehicles with geolocation and sensor systems. Indeed, snow removal operations are critical to our continuity of operations because on average, we receive more than 220 cm (86 inch) of snow per year in Montréal. Accessing this data allows our teams to continuously improve the speed and quality of our interventions.

CONCLUSION

With recent advances in enabling technologies, digital transformation has the potential to offer a multitude of business solutions that will optimise the performance of airport operations and the quality of the passenger experience, supporting the vision of transforming airports from a place of transit to a place of hospitality.

Setting some winning conditions first and having a shared framework throughout the organisation, with an action plan for each of its constituents, should facilitate the generation of tangible benefits. This will require to evolve from mindsets of the past where asset acquisition and large IT programmes were symbols of stature. Incrementally evolving solutions based on a composable architecture are better suited to support the changing nature of the airport business. Also, the success of such an endeavour will hinge not just on technology alone but also on effective talent management and the promotion of a culture of innovation.

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