THE
AIRPORT
OF THE
FUTURE

AIRPORTS ENABLING A SUSTAINABLE RECOVERY

Airport operators around the globe have been navigating through some strong economic headwinds but need to look at how they can recover their commercial operations better and more sustainably. This means successfully balancing several different requirements: complying with new emerging biosafety regulations, taking steps to protect staff and passengers, mitigating potential security risks, and continuously improving the safety levels of their airport. And they need to introduce some of these requirements whilst keeping costs down due to the current low traffic flows, and thinner aeronautical and airport-related revenue streams.

A sustainable recovery means looking beyond the current situation, and using this opportunity to build an airport that is future-ready. An airport that builds on an open IOT infrastructure and process improvements that were introduced to address the unique challenges of 2020.

So, what's needed to make airport recovery sustainable - what should airports be looking into? And how do you create a healthier airport in practice? In this white paper we will investigate some of the elements that will help enable a sustainable recovery of the aviation eco-system.

In the airport of the future, the operator benefits from cost efficiencies and sustainability advantages through operational optimization

THE CONNECTED, INTEGRATED AIRPORT

The airport of the future is a connected, integrated infrastructure that links passenger flows, air quality, energy levels, security and operational systems and processes across landside and airside operations. It's where passengers enjoy a welcoming, seamless and memorable travel experience. All passenger touchpoints - from the moment they arrive at the airport to the moment they board the plane and depart on time - are fully aligned and talking to each other. This level of communication enables a hassle-free experience for travelers – despite numerous stakeholders involved, from authorities to terminal operators, outsourced services and airside operations.

In the airport of the future, the operator benefits from cost efficiencies and sustainability advantages through operational optimization. It does this by, for example, streamlining the usage of existing airport assets such as gates and runways, improving the real-time readiness of the terminal for flows of passengers, baggage and aircrafts, and by using intelligent energy management throughout the airport.

Safety and security are embedded into its fabric, aligning all security systems from airport curb and perimeter to terminal check in, security, immigration and duty free, to provide thorough, yet non-invasive, security and an actionable overview of airport operational security.

THE CURRENT SITUATION

A number of industry-leading airports had already embarked on this vision, well before the pandemic struck, by introducing greater integration and efficiencies for a frictionless passenger experience and better airport cost management.

As the pandemic swept across the industry, the ICAO Council's Aviation Recovery Task Force (CART) worked to provide practical, aligned guidance to governments and industry operators. It aimed to help restart the international air transport sector and recover from the impacts of COVID-19 on a coordinated global basis, and has been of extreme importance in defining what needed to be done. The guidance, however, didn't go into how to do it, so airports responded according to their different levels of technology usage.

The majority of airports tended to react to evolving industry rules by implementing rapid, low-cost point solutions, such as social distancing stickers on the ground, Perspex protectors at checking, and labor-intensive point solutions that varied from extensive cleaning and people compliance, to temperature and mask wearing at strategic places. The question now becomes: how sustainable are they are in a prolonged crisis?

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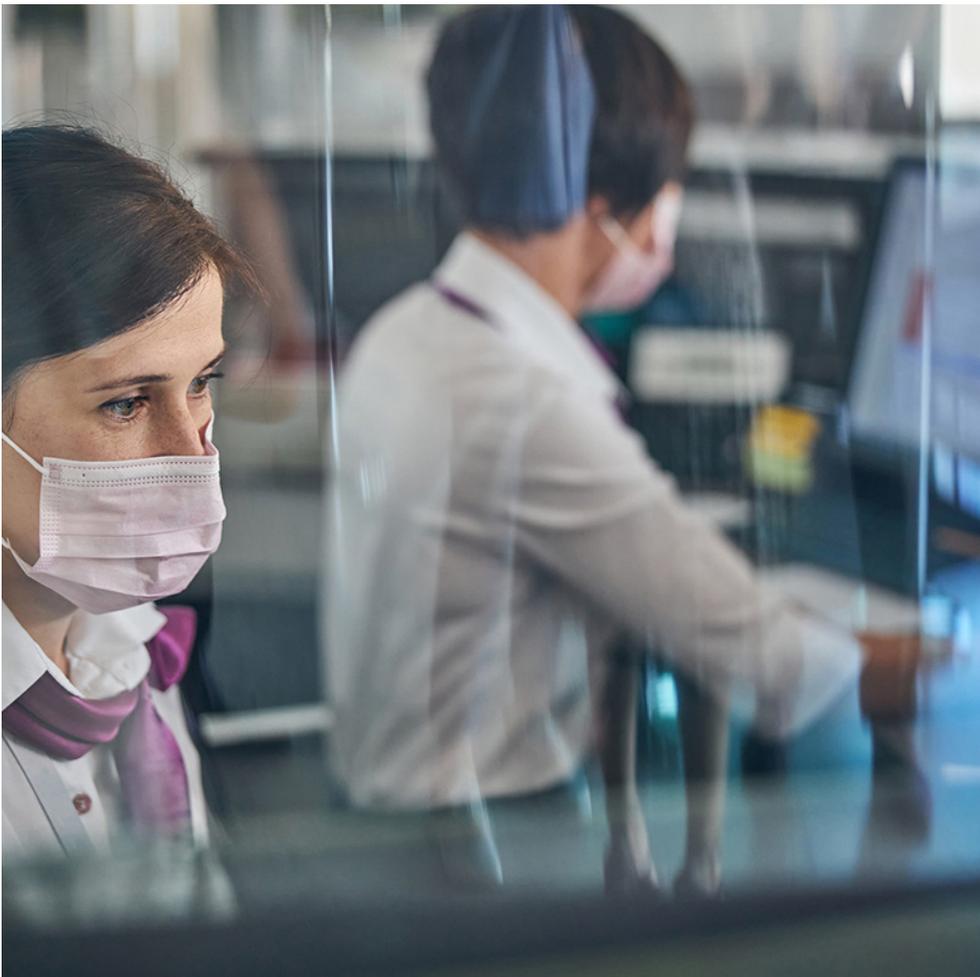
The airport of the future requires a more strategic, integrated approach to the technology systems and processes it implements. Nevertheless is possible for airports to leverage existing technologies by optimizing what they have and extending it with features such as customer self-service and data analytics-driven assets utilization and resourcing.

But first, airports need to do the basics well, and this includes addressing indoor air quality, maintaining airport safety and security, and running efficient airside operations.

MOVING FORWARD

As well as enabling airport operators to do the basics well, the right technology can help deliver OPEX savings, efficiencies and new revenues, which are much needed in today's challenging climate.

One way to bring new agility, integration and cost efficiency to the operation is by better visualizing how airport assets are utilized and perform in real time to ensure the appropriate levels of cleaning and maintenance. Another way is to migrate some applications from on-premise to cloud-based SaaS solutions. An increasing number of airport-specific applications and platforms are available as-a-service today, offering speedy implementations with automated updates, predictable pricing, greater flexibility and rapid scalability when required.

Having end-to-end integration, that links airport IT and OT systems across both landside and airside, will also provide a strategic advantage in pursuing a sustainable recovery, and this is something that Honeywell has developed with its delivery platform for airport operators.

Indeed, healthy, efficient and smart airports depend on systems communicating well with each other, when, for example, indoor air-quality, light intensity, and health screening lanes in the terminal are fully aligned to the actual arrival time of the aircraft and effective - as opposed to scheduled - usage of the gate.

Then, by having an overview across the terminal and airside systems estate, and how they impact infrastructure utilization, airport managers can use an alarm system to increase their situational awareness. They can thereby predict and address issues before they negatively impact the passenger experience or expenses, enabling recovery today, tomorrow and beyond.

Integrated solutions can also help to reimagine the entire passenger processing flow, and this is something a number of airports started before the pandemic by digitizing the passenger experience. Mobile and cloud apps are helping airports and airlines to transition towards a contactless, self-service customer journey that even starts off-airport and gives more control and responsibility to customers with online check-in and digital health forms that are completed at home, for example.

Airports could potentially generate additional revenue streams, as some airlines are doing, by collecting the customer's luggage from their house and transporting it straight to their destination hotel or apartment. Or by opening preferential lanes or offering VIP treatment. The sanitary crisis has only accelerated the need for increased non-aeronautical revenue and digitization expansion across all airport segments, and there are many ways to achieve this.
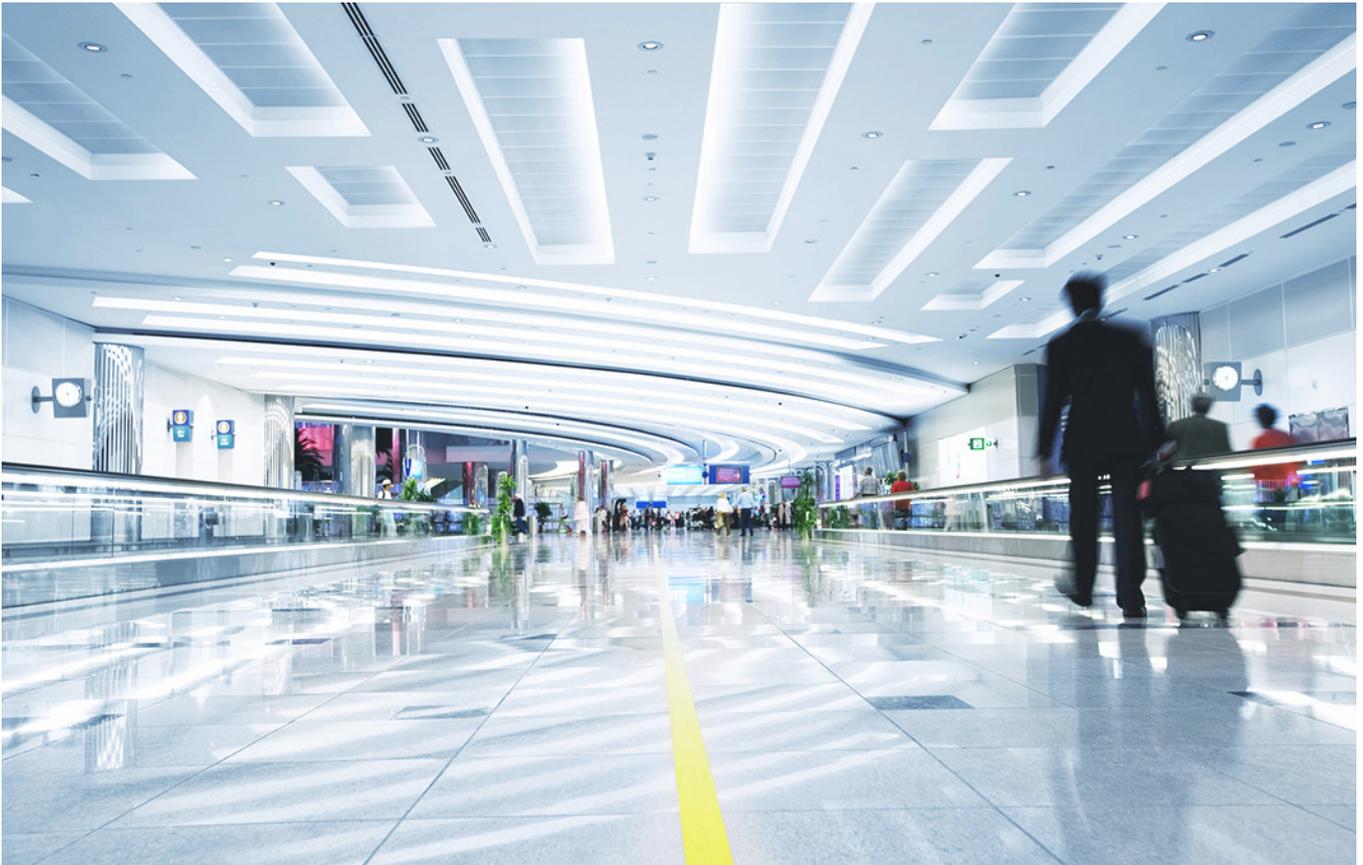
Honeywell's approach to air allows a terminal's indoor air quality to be adapted to the flow of passengers and changing conditions

AIRPORT TECHNOLOGY INNOVATIONS

Honeywell's Healthier & Safer Airport Suite is designed to leverage airside and landside systems and processes to deliver efficiencies and give airports a scalable and agile platform for the future. It includes a safety and security element with solutions covering people flow, reporting and counting, PPE detection, thermal temperature screening, touchless access control, contact tracing, and social distancing enablement.

And there is also an air-quality aspect, with technology and controls that allow airports to manage key air quality parameters such as pressurization, ventilation, temperature, humidity, air composition, filtration substantiated with active UV sterilization in terminals and rooms across the facility.

BALANCING AIR QUALITY AND ENERGY SAVINGS

Honeywell's approach to air allows a terminal's indoor air quality to be adapted to the flow of passengers and changing conditions, which means isolation can be maintained in case of positive health threat detection. The integrated platform uses sensor technology coupled with data analytics to offer airport managers a comprehensive way to manage and maintain the environmental quality of a space more effectively, and automatically adapt to dynamic airport operations, based on factors such as activity and occupancy.

It does this by displaying healthy airport metrics and KPIs on a dashboard for readings such as temperature, pressure, air change rates, particulate counts, and occupancy. As a result, operators can act quickly to address air-quality issues should the readings shift out of range.

Good around-the-clock ventilation is also key in maintaining a healthier airport. Banning or minimizing the percentage of air recirculation, in order to lower the risk of contaminants, is something the Honeywell platform offers alongside UV deep cleaning of air ducts and surfaces. It can also automatically optimize HVAC settings for a high rate of air change, and reduce the risk of infectious aerosol dissemination by maintaining differential room pressurization and stable directional airflow in sensitive areas of the airport, such as interview or first aid rooms.

Another advantage of having well-managed air-quality is that passengers, staff and contractors can be reassured and have confidence they are in a healthier environment and air flows are optimized. By displaying real-time data, such as terminal occupancy, air-quality, respected physical distancing, mandated mask wearing and temperature checks, a 'healthy terminal dashboard' can convey a sense of security and wellbeing at all times during their travel.

PASSENGER SAFETY AND SECURITY

Passenger safety and security are key concerns of every airport, and will continue to be into the future. Honeywell enables airports to create a 'safety-focused continuum' from the moment passengers enter the airport to when they are on board the airplane.

It can incorporate features at the entrance of the terminal, such as a terminal dashboard that informs passengers about climate, cleaning and people flow. There can be a PPE kit vending machine at the airport entrance or at the airline. Video analytics-based cameras can screen passengers for temperature efficiently and in a non-invasive way alongside detecting suspicious activity or crowd information.

Once inside the terminal, people counting and social distance monitoring can use digital video technology and advanced analytics to monitor passengers and make sure they remain physically distanced without creating congestion or extra labor. The airport can then offer passengers touchless check-in and immigration that minimizes physical contact with security and access control hardware.

Another innovation that enhances the passenger safety continuum is ultraviolet light cleaning, which when used properly can help clean surfaces, trolleys, luggage and air streams. This is especially effective in confined, high-used, high-density spaces such as baggage carousels and restrooms.

Integrated airside systems can also deliver efficiencies, as airline, tower and airport operations and maintenance work together. Honeywell's Navitas modular software suite makes end-to-end airport management possible

AUTOMATED AND OPTIMIZED AIRPORT OPERATIONS

Honeywell's suite of solutions also enables airports to leverage airport operational database information, which can improve aircraft ground movement management and turnaround for on-time departures, decrease CO2 footprint and improve terminal preparedness. Integration can aid efficiency in optimizing airside runway systems, offering the ability to control, and efficiently send aircraft on the most efficient route, for easy and safe docking. The best route could be the shortest one, or perhaps the one with the lowest carbon footprint, or the most appropriate gate at a particular time. These advanced calculations and decisions are made possible by taking into account information such as connecting flights as well as available resources and assets.

Integrated airside systems can also deliver efficiencies, as airline, tower and airport operations and maintenance work together. Honeywell's Navitas modular software suite makes end-to-end airport management possible by connecting these different departments together, and leveraging IoT, predictive analysis, automation, and a secure interface to streamline airside operations, saving time, money and resources.

And as systems on both sides check-in with each other to make operations more efficient, they can help the facility to avoid unnecessary waiting time that could compromise social distancing for staff and passengers, and waste time and money for the organization.

With over 500 airports using Honeywell technologies across the globe, the company has developed a deep understanding of the industry eco-system

As well as optimizing the utilization of airport assets, an integrated technology system can also help automate energy savings. It does this by applying analytics to understand how airport spaces are used in real time, and where energy reductions can be made. Not only can energy efficiency help airports to meet their compliance and standards requirements, they can also indicate to passengers and the industry the airport's commitment to give back to society where possible.

HONEYWELL'S MSI APPROACH

With over 500 airports using Honeywell technologies across the globe, the company has developed a deep understanding of the industry eco-system, and significant experience in delivering complex projects this has resulted in the development of its Master System Integration (MSI) approach. This is based on having the knowledge and technology to transition an airport to being agile, energy efficient and sustainable, with pre-integrated systems that enable the organization to decrease its CO2 footprint and optimize its energy costs.

Delivering an airport IOT platform is no easy task, however. Sometimes the value envisioned at design phase gets lost during the contracting phase where hidden costs appear. This can force contractors to settle for the cheapest options without considering the longer term impact those choices might have in terms of passenger experience, cyber vulnerabilities, sub-optimal energy efficiencies and coordinating future upgrades.

Honeywell's MSI approach, therefore, combines an outcome-based engagement, where the operator's objectives are prioritized, and ROI is calculated with cutting-edge technologies running on a future-proof platform. It involves direct collaboration with the airport throughout each construction phase, into the commissioning and operational lifecycle of the facility.

CONTINUOUS EVOLUTION

Honeywell has the experience and ability to be both the management and technology partner for the continuous evolution of the integration platform and customer business transformation strategy, over the life of the program. That means that, working with Honeywell, there's only one touchpoint to ensure the airport's agreed KPIs are met. It also means the airport's goals are kept throughout the design, contracting, implementation and live phases.

By adopting this MSI approach, airports can accelerate their delivery schedule, reduce margin stacking and significantly decrease project costs due to factors such as redundant material, duplicated labor and integration errors.

They can also ensure the airport functionalities that are delivered are aligned to the airport-defined use cases and objectives. Lastly, the systems themselves will be cybersecure, with technology refresh, upgrades and expansion planned and orchestrated going forward.

THE AIRPORT OF THE FUTURE

The airport of the future will be highly digitized, automated and integrated, aligning airside and terminal operations, stakeholders and technologies. Cost optimization and efficiencies will continue to be drivers of change for the next few years.

Indeed, airport digitization will enter smaller airports as well as bigger ones as organizations look to technology to automate new requirements that will continue beyond current needs. Requirements that will continue include indoor air quality, a touchless experience, end-to-end cybersecurity, efficient passenger flow, and customer self-service.

Sustainable airport recovery, however, requires airports to, first and foremost, meet their minimum requirements for security, energy efficiency, and passenger health. Then, by having a strategic, integrated approach like the one Honeywell offers, they can add more advanced and innovative features that will drive efficiencies and deliver OPEX savings into the future.

Engage with Honeywell to define your airport goals and use cases.