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Agile airport planning: Building
back better with passenger
appearance forecasting



Introduction

As the future of flying unfolds, we know that airports and airlines will be operating in much more unpredictable conditions than ever before experienced.

Many in the industry are positive about the projected upturn in capacity. Travel corridors are opening and in the US traffic growth is looking very robust. And yet, they also know there's a chance that if travel restrictions are imposed, they'll have to slash capacity with almost no notice. In the UK and Europe, travel list and vaccinations and test checks requirements are very fluid making it difficult for immigration planning. Close-in bookings are also making it difficult to accurately gauge demand any more than a few weeks out. And airlines are exploring new routes and networks. For any business, these are undeniably tough conditions to plan around.

And yet, plan we must.

Airports will feel the aftershocks of the pandemic for years to come. But it's these reverberations that are leading to a significant re-think around planning - namely, the need to become drastically more flexible and agile.

The more operational data they can capture and centralise, the faster they can bring some certainty back to operations, and rebuild passenger confidence.

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In 2021, the pre-pandemic approach simply doesn't cut it anymore. If airports continue to plan their operation in the same way, using the same historical data and assumptions – uncertainty will be the only certainty.

Pre-pandemic planning ways are over

Even before the pandemic, operations planning was less efficient than many airports and their aviation partners would have liked. And yet, given seasonal schedules were generally predictable, day-to-day operations were nonetheless manageable.

For example, capacity plans and staff resourcing for checkpoints such as check in, security and border control were fed by forecasts, built on historical passenger volumes, observations and assumptions on movements. Small changes were sometimes made in response to large weather events or terminal issues. But by and large, these changes were reactive, human-led and isolated.

In 2021, the pre-pandemic approach simply doesn't cut it anymore. If airports continue to plan their operation in the same way, using the same static data sets and assumptions - uncertainty will be the only certainty.

Fast forward to today where airports and their partners face significant unpredictability - changing flight schedules, carrier loads and passenger behaviours – and it's clear a new,

more collaborative planning approach is needed to anticipate and act upon changes faster.

More specifically, airports will need to significantly increase the resilience of their capacity planning, while anticipating and adapting to change in an efficient way. And do this in coordination with their aviation partners, including border control, retail and baggage handling.

Most important is the role that technology, and real-time data, will play in helping airports adapt. Only with machine learning and intelligent automation will airports be able to get ahead of change.

If the airport ecosystem is to truly adapt resourcing to post-COVID flying conditions, every granular change will need to be accounted for, and fast, across all airport partners. From new flights and travel corridors to changes in health screening and passenger behaviour, all partners need to be informed, collaborate and be able to adapt their planning as quickly as possible.

3 steps in re-thinking the planning process

Let's take a closer look at the three steps in the airport planning process and how to improve them:

Step 1: Tactical planning (Seasonal and beyond)

Get prepared with AI capability

In the future, artificial intelligence will be the cornerstone of tactical planning for more informed, data-driven decision making. AI can help by quickly sifting through pools of rich data to analyse past performance and understand the impact of terminal flow, flight and baggage handling activity on the passenger journey.

AI also increases the team's ability to run 'what if?' scenario simulations. This makes it easier to assess the impact of potential schedule changes or passenger load on capacity, wait times, congestion and ultimately revenue.

Questions to be addressed at this stage include:

- What are the implications of changes to carriers or fleets on our passenger throughput handling?
- Which customer profiles are we likely to see, particularly in light of a likely shift towards leisure travellers?
- What are the behavioural changes we expect to see and what actions can we take to improve people flow, processing efficiency and revenue opportunities?

Step 2: Operational Planning (0-6 weeks out)

Build robust plans while looking ahead

Based on an expanded array of data inputs and scenario developments, capacity teams can produce an initial plan for the weeks ahead. Here the goal should be to generate the most robust plan possible without using excess resources. A resilient plan will reduce the potential of having to make major changes on the day of operations – changes that inevitably degrade efficiency and performance.

As the market continues to fluctuate, the ability to forecast passenger behaviour remains crucial. Operators will need to reconstruct their algorithms to rely more on real-time data than historical, while also making use of contextual information.

And, we're not just talking about data within the airport. External data should also support the activities of the planning team – combining local events and transport information (e.g. roadworks, planned infrastructure works) with regularly updated flight and booking data. By measuring and building in passenger show up and movement data, by flight, into models – airports will be ready as new routes open and passenger numbers rise.

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Most important is the role that technology, and real-time data, will play in helping airports adapt. Only with machine learning and intelligent automation can airports get ahead of change, quickly and accurately.

Step 3: Day of operations (-1 to 0 day)

Prepare for fine-tuning with live data and dynamic forecasting

For day-of-operations, airports must base proactive, precautionary decisions on live information combined from multiple data inputs.

They need a single source of passenger forecasting truth across the airport. And only a forecast that's continually revised, using per-flight data and a measured understanding of behaviour and processing, can paint the clearest situational picture.

With this live re-forecasting approach, airports and their partners can pinpoint:

- The passenger show-up profile in real-time versus forecast by flight – in all areas
- The current wait time, queue occupancy and processing rate and how it's tracking against the plan
- The reason behind any change, from passengers arriving later to congestion at the check-in, a baggage processing problem, a lane opening late, equipment issues or staff absences.

Ultimately, predicting changes sooner and understanding the best compromise to the plan based on priorities and current constraints, will allow airports to efficiently meet key metrics. This could include postponing breaks, reconfiguring lanes or prolonging a shift.

Investing in technology as a way to improve efficiency and performance on the day of operations has already proven to be valuable for some airports. For example, [Keflavik Airport](#) uses passenger flow insight and live forecasting to predict and plan for passenger behaviour by flight.

By getting an early heads-up of likely deviations from the plan in the hours ahead – they can more easily optimise capacity and performance while creating a smoother customer journey.

Live re-forecasting - Why?

Change is constant. Predicting what's coming gives you options



Why re-forecast?
We cannot change staffing on the day

It might be possible to:

- Postpone breaks
- Re-configure lanes
- Prolong a shift
- Increase attention to production per lane.



When would dynamic re-forecast be relevant?

Dynamic operations

- Post pandemic flight activity implies changing schedules, loads and cancellations
- Passenger arrival impacted by traffic / transport / check-in
- The live queue length is longer than planned. Fewer lanes open than planned/lane processing slower than expected.



A great plan only matters if it's executed

To follow the plan with confidence, airport planners and their aviation partners need to believe in the data. A common tool that shows forecasted data versus actual and provides actionable recommendations for each partner, is essential in building trust that the plan is not only viable, but the best choice.

One of the greatest benefits of re-forecasting, that is, comparing actual plans to forecasted plans, is accountability. Understanding why things don't go to plan by focusing on the small things, like production per lane, lane opening times and adherence to the original plan, goes a long way to continually improving performance.

Optimal capacity planning based on live data, not human hunches, is not just long overdue, but a necessity to create more resilient, agile airports.

Unpredictable events will always happen, from the big unknowns like pandemics, to the small ones like passenger lateness.

It's how airports and their partners respond and how fast that will make all the difference to performance, efficiency and ultimately, customer satisfaction.

Key recommendations

- Move from a fixed cycle forecast to a more dynamic and automated process to get ahead of change
- Continually refresh your models with up to date flight schedules and behavioral data to increase planning resilience
- Integrate live show up and queue data to ensure that your plans match operational realities
- Communicate the latest forecast to all partners to build trust and improve responsiveness.

What's fueling the forecasting engine?

Real-time or near real-time decisioning can't happen without data - driving airports to integrate a wide variety of high-value data sources.

But what data sources are airports prioritising to provide efficient planning and brilliant experiences?

Recent volume / same week day

Show-up profiles by flight / destination / day / hour / carrier

Live boarding card scans

Airline booking

Anonymised biometrics

Live flight schedule

Live queue length and occupancy

Staff availability / min max lanes

Ready to move to agile planning? Veovo is here to help

Veovo Passenger Forecasting transforms future flight traffics schedule into a passenger arrival curve and occupancy forecasts. For every location.

By analysing anonymised per passenger appearance data from boarding pass scanners, biometrics, AODB passenger loads, or kerb-to-flight passenger flow tracking, Veovo builds flight-level appearance curves throughout the airport.

With Veovo you can generate a counter allocation plan, desk or lane opening plan and staff roster to meet demand. And then adjust those plans in the operational window to ensure service level agreements are met.

Plan in confidence: Answer questions such as, “based on next week’s or tomorrow’s scheduled flights, how should I deploy staff to reduce wait times.”

Adapt to day-of-operations: Optimise plans on the fly by re-forecasting as flight times change and queue processing is slower or faster than planned. Proactively get recommendations on lane opening and staffing adjustments to prevent excessive waits or crowding.

One common forecasting platform for optimal planning across the airport.

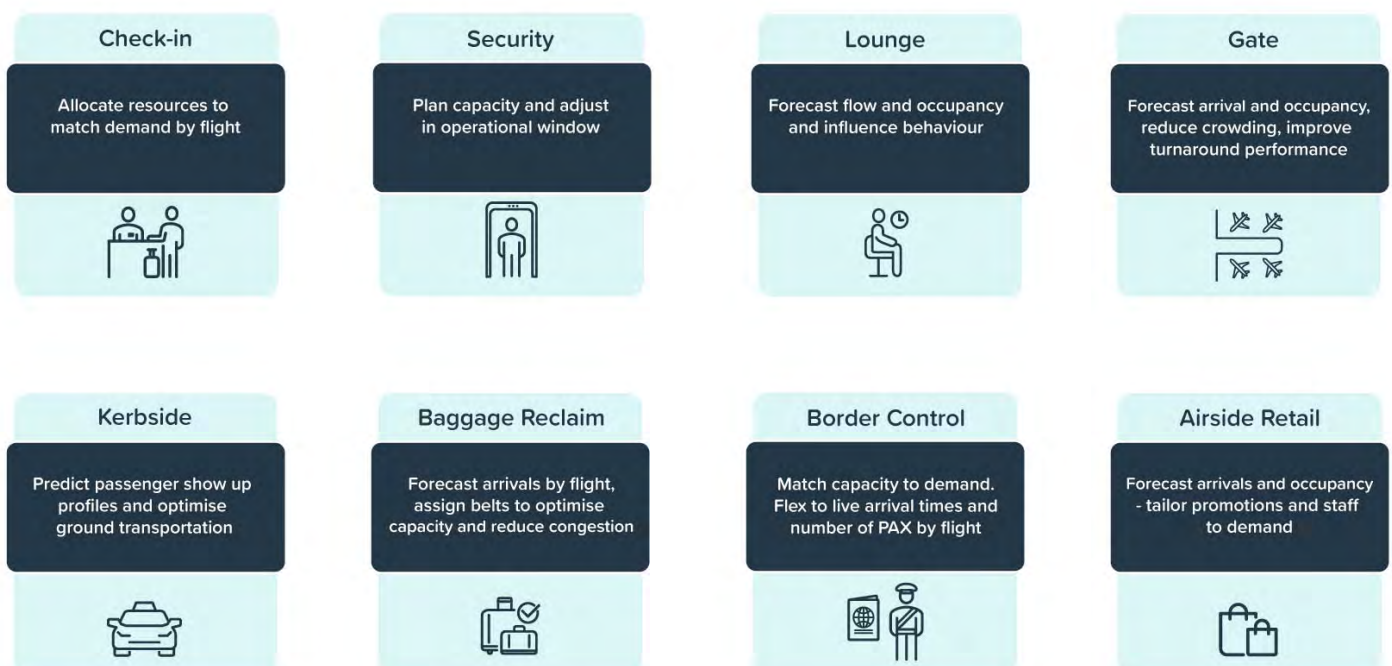
Tailor visibility for the ecosystem: Create and share live occupancy and appearance forecasting with partners across the airport, via customised dashboards.

The Veovo Difference: Appearance Forecasting by flight.

With Veovo Passenger Forecasting by flight, airports have a significantly more agile approach to planning than relying on historic volume forecasts - making it much faster to respond to inclement weather, holiday travel, new health checks or passenger volume trends. It also allows a much strong prediction of show up profiles for flight combinations that haven’t been seen before.

Features

- Easy to use with very visual profiles and configurable alert framework
- Cloud-based Software-as-a-Service - always up-to-date, available and secure
- AI driven continual improvement.



Go Brilliantly. Go Veovo.

The world's most innovative airports such as Amsterdam, Auckland, JFK, and Keflavik rely on Veovo to optimise capacity, build resilient operations and deliver brilliant customer experiences.

Our AI-powered platform connects people, systems and sensors across the ecosystem to provide instant situational awareness. With smart automation and intelligent recommendations, the solution perfects the way forward, delivering brilliant outcomes in every situation.

To navigate turbulent times, airports need to be adaptable to evolving guidelines, while creating a new, more efficient future.

From passenger density analytics to AI-driven forecasting and resource optimisation, Veovo's Intelligent Airport Platform helps operators plan in confidence, adjust quickly to dynamic realities and provide safer, smoother journeys.

Veovo is headquartered in London, UK with our 120+ airport customers supported by teams in the United States, New Zealand and Denmark.

Reach new heights at
www.veovo.com

