Article reading time: 10 minutes

How COVID-19 impacts airport operations planning – Physical distancing, volatile schedules, and limited budgets

Challenge 3: Physical distancing

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THIS ARTICLE IS AIMED AT READERS WHO ARE LOOKING FOR

— A status on the physical distancing requirements for airports

— An assessment of the implications of physical distancing across airport operational areas

— A guide on how to best plan airport operations in the time of physical distancing

ONE-MINUTE SUMMARY

Physical distancing has proven effective in limiting the spread of COVID-19. For airports, this means operational plans must allow for physical distancing.

Implications of physical distancing on airport operations
Lower utilization of infrastructure
Passenger safety compliance
More demanding communication management
Changed processes and increased processing time
Assurance of employees' safety

In this article, we outline our recommendations to handle the impact of physical distancing:

Planning airport operations in the time of physical distancing measures	
1.	Understand and predict passenger flows
2.	Assess exposure risk and evaluate segmenting passengers and operational areas accordingly
3.	Incorporate new flows and processes in your plans
4.	Support your suggestions with data to ensure buy-in
5.	Make use of state-of-art technology
6.	Incorporate physical distancing in your metrics
7.	Accommodate physical distancing for staff

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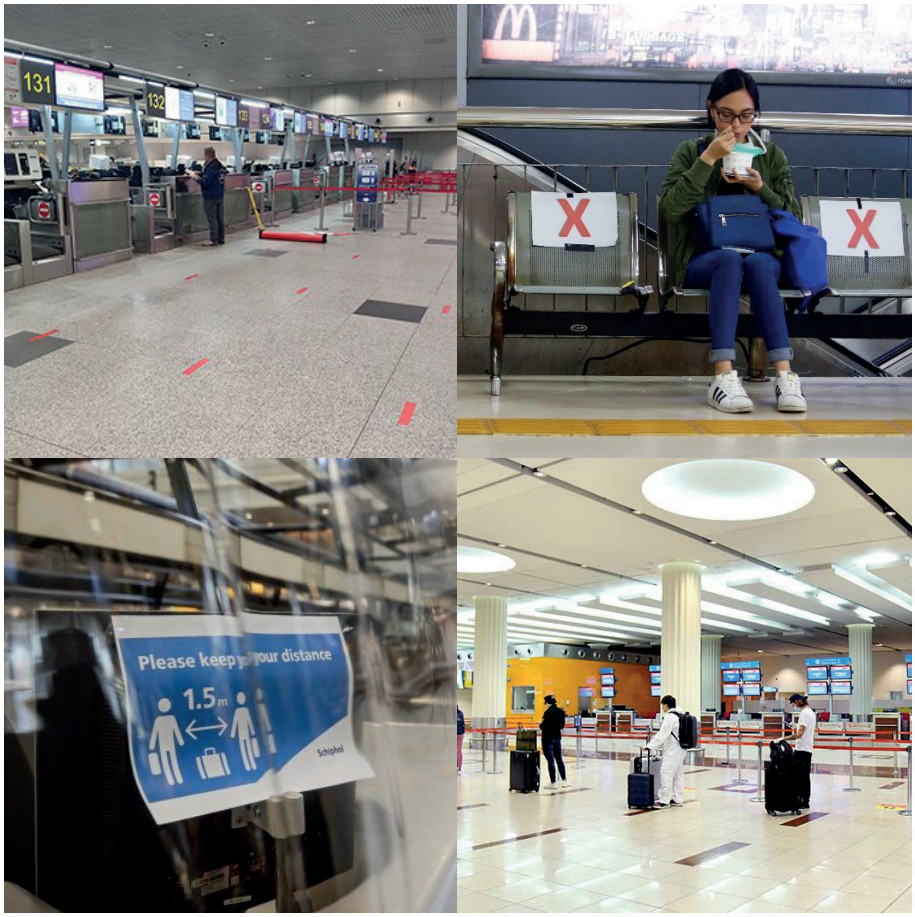
The real challenge is to ensure physical distancing “tomorrow”, as the search for extra space intensifies into a costly affair

Physical distancing: already a reality in airport operations

EU Transport Commissioner Adina Valean announced on Apr 22 that "the European Commission will next month [May 2020] present a set of rules for the safe reopening of air travel when coronavirus lockdowns end, including physical distancing in airports and planes".

Similar statements have already been made by agencies, airports and airlines from all parts of the world. Measures put in place to minimize the risk of infections and satisfy new and evolving safety regulations include:

— Floor markings and other audio-visual channels
— Reshuffled seating arrangements
— Plexiglas separators
— One to two meters distance between passengers



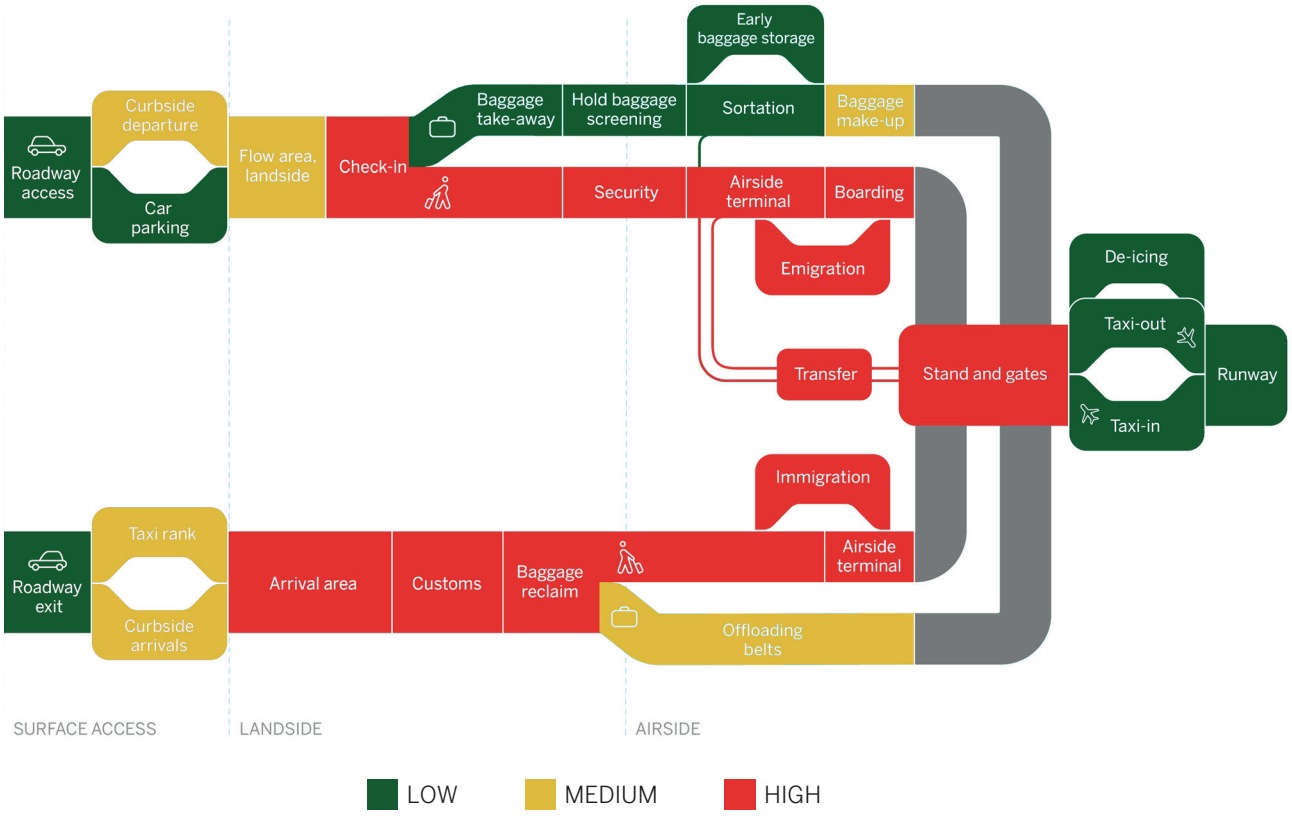
From top-left to bottom-right: DME, Moscow; CGK, Jakarta; AMS, Amsterdam; DXB, Dubai

The term “evolving” is pivotal in understanding the magnitude of the implications on operations and prepare accordingly. As the world learns to cope with the virus, as the aviation industry gradually picks-up, and as the regulatory landscape adapts, so should airports. The real challenge is not to ensure physical distancing today, in semi-deserted airports, but “tomorrow”, as the search for extra space intensifies into a costly affair.

Implications of physical distancing on airport operations

Using the horseshoe diagram introduced in article 2, it is possible to carry out a general assessment of the impact of physical distancing on each operational area based on the density of passengers and staff in the area (we are aware that specific implications will vary from airport to airport depending on local regulations and traffic).

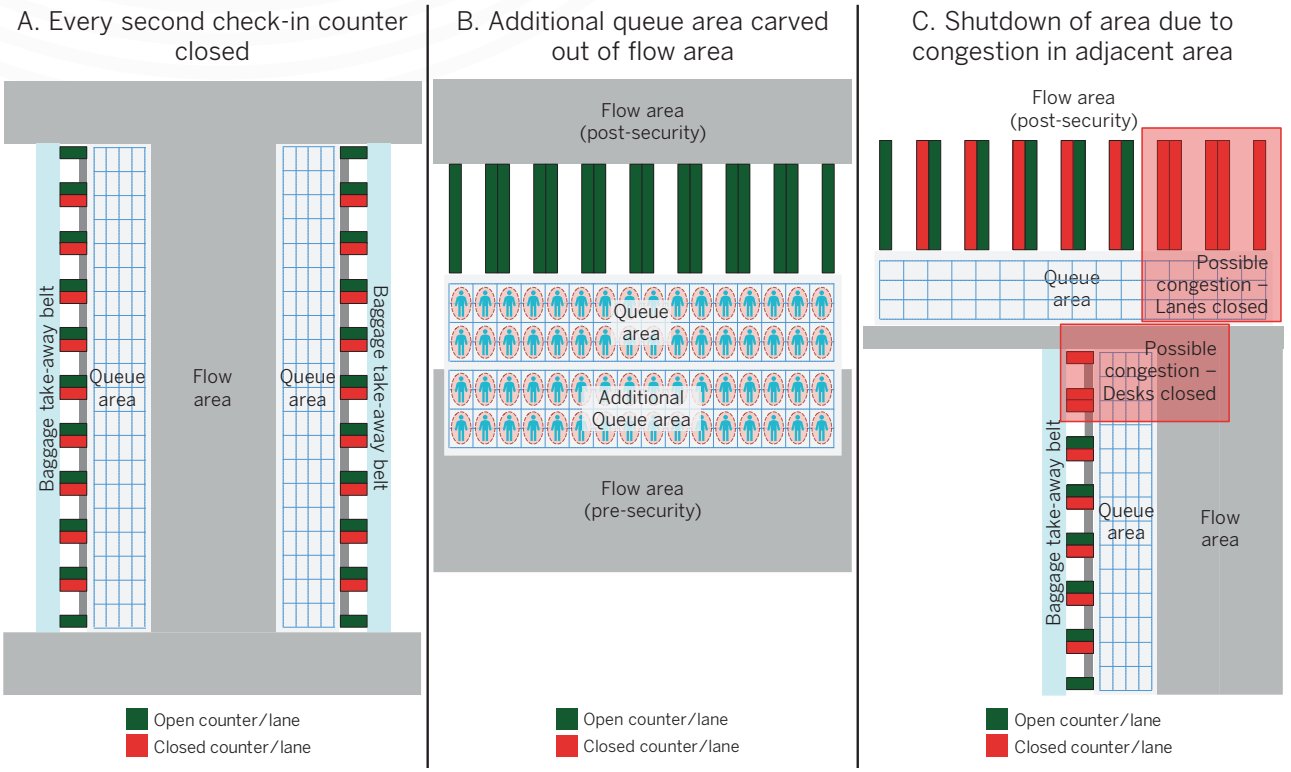
Impact of physical distancing across operational areas



Although the specific measures may vary across operational areas, all airports will generally have to learn to cope with the following implications:

Lower utilization of infrastructure

If one passenger is required to occupy the space that used to be occupied by several passengers, infrastructure utilization inevitably drops. Put in different terms, physical distancing significantly lowers the capacity of terminal areas. Planners will be required to assess capacity on an ongoing basis, as regulations change and terminals populate again. In the following picture we illustrate three cases of how physical distancing will reduce infrastructure capacity.



Passenger safety compliance

Passengers and authorities will expect the airports to be compliant with physical distancing regulations. This will increase the workload necessary for reporting and monitoring activities.

More demanding communication management

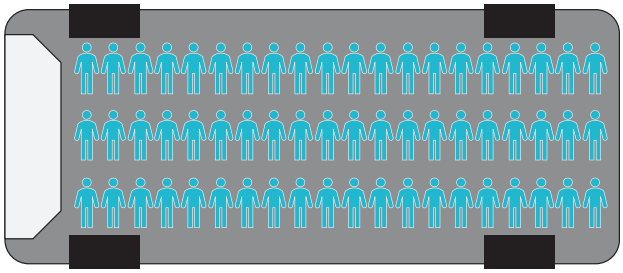
Physical distancing requires clear communication to passengers: posters, leaflets, speaker announcements, floor markings, separators and more. All these audio, visual, physical channels and tools require staff for creation, installation, and maintenance. And, as with any other tasks, staff will need to be planned accordingly. Similarly, staff will also be required to enforce physical distancing measures (i.e. terminal managers on the floor).

Changed processes and increased processing times

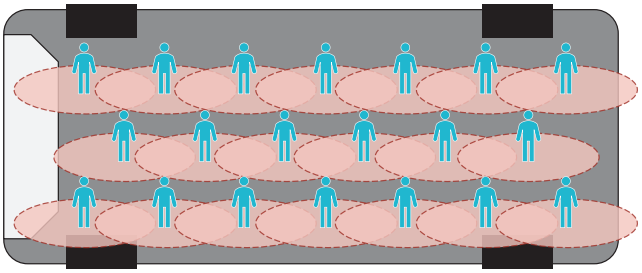
Passenger-intensive processes will change to accommodate the new safety measures, for instance:

- Check-in desks, security lanes, reclaim belts will be allocated to allow increased distances between passengers (e.g. every second asset is utilized, larger queue areas, new flow areas)
- Queue layouts will be adapted to limit the number of neighboring passengers in line
- Boarding and bussing time per passenger will become slower as a result of crowd avoidance in gate holdrooms and buses (in the picture we show half-full bussing activities, but the same will be true of occupancy in gate holdrooms prior to boarding)

Bussing without physical distancing

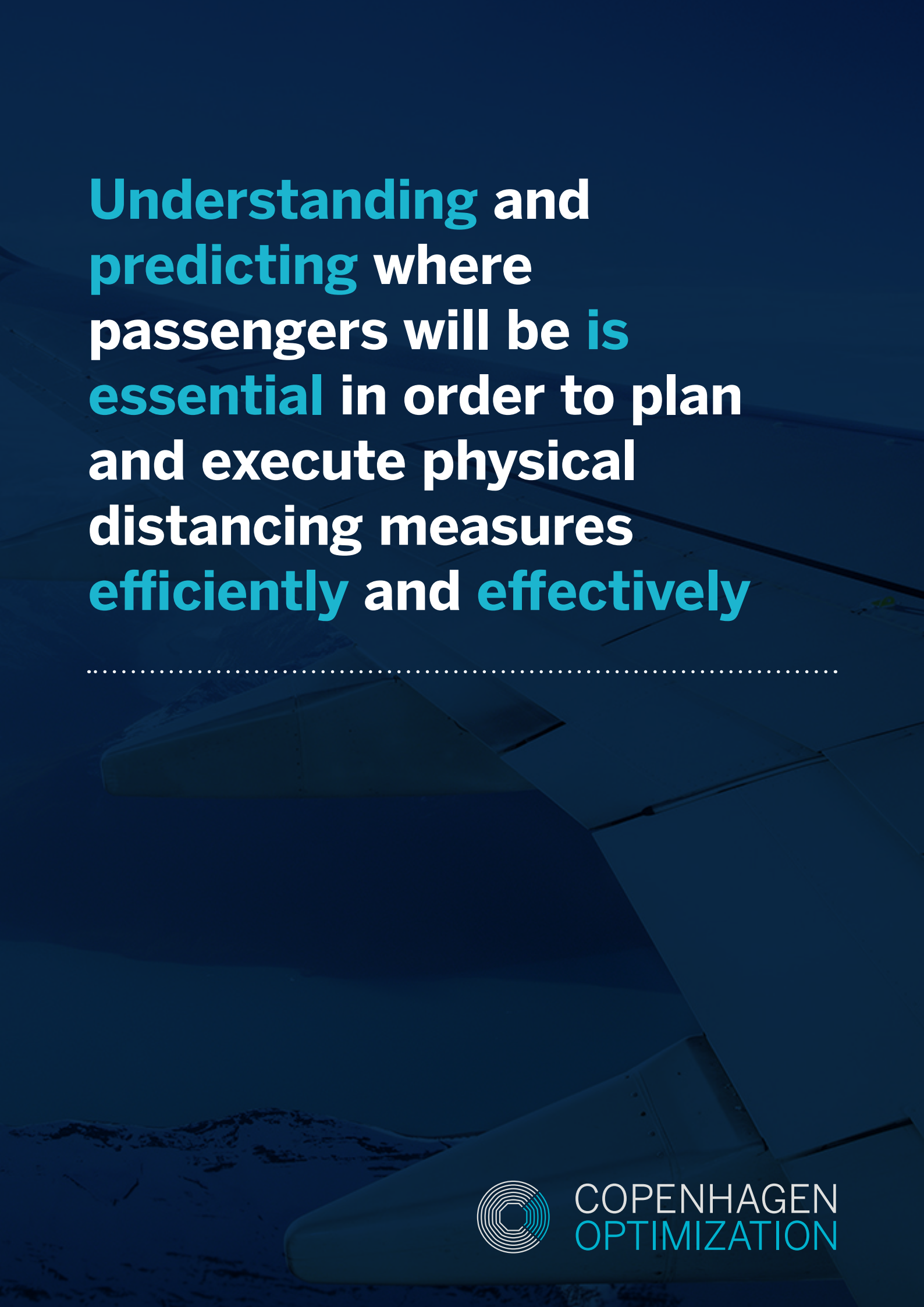


Bussing with physical distancing



Assurance of employees' safety

Given the daily exposure to hundreds of passengers and colleagues, ensuring the safety of employees is vital. Staff, like passengers, will be subject to measures that ensure distance is kept and/or exposure within the staff is limited (e.g. by grouping staff members).


Understanding and predicting where passengers will be is essential in order to plan and execute physical distancing measures efficiently and effectively
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Incorporating physical distancing measures into planning airport operations

Physical distancing will challenge airport operations. If handled correctly, though, it might be a chance to welcome new, favorable industry practices and speed-up the penetration of advanced analytics and technologies.

Recommendation 1: Understand and predict passenger flows

It is a better time than ever to put your analytics capability at the service of passenger flow forecasting. Understanding and predicting where passengers were, are, and will be is essential in order to plan and execute physical distancing measures efficiently and effectively. Taking the check-in area as example, a good prediction of show-up profiles enables the airport operator to:

- allocate desks so that passengers are kept distant enough from each other and from other flights
- plan queues and overflows according to physical distancing rules and without bottlenecks
- invest time and resources on deployment of physical distancing measures (e.g. floor staff, visual aids) only when and where really needed
- maximize the usefulness of such measures by deploying them when and where passengers can be affected by them

The same can be done for security lanes, border desks, baggage belts as long as reliable show-up profiles are available. To create such profiles, reliable input data is required. Depending on analytics and technology maturity, this data can be:

— Manual: observations or surveys (i.e. "when are passengers showing-up at a processing point?")
— Automated: baggage check-in scans (for show-up at check-in), boarding card scans (for show-up at security), passenger detection systems (i.e. cameras)

For more recommendations on how to forecast in these times of high traffic volatility, take a look at the first article in this series "Challenge 1: High variance in flight schedules and load factors."

Recommendation 2: Assess exposure risk and evaluate segmenting passengers and operational areas accordingly

Just as with forecasting and planning, risk management needs to become flexible and iterative. Regularly assess the risk profile of passengers and operational areas, and investigate actions to lower risks accordingly.

Assess risk profiles

Expected people density/occupancy
This can be influenced by e.g. queue layout, behavior of passengers in the terminal

Airport layout and operational areas
As we illustrated in the horseshoe, some operational areas are more affected than others; similarly, parts of an area might present more physical limitations in ensuring physical distancing

Origin airport/Country
As countries are hit by the pandemic at different times, some may present higher risks of hosting infected passengers

Investigate mitigating actions

Can a layout that minimizes passengers' proximity to each other be implemented?
E.g. linear queues put passengers in the proximity radius of fewer other passengers than serpentines

Can I positively influence passenger behavior/flow?
E.g. adapt flow to/from toilets to minimize interactions; shut down terminal areas with physical constraints; prevent queue stretches into flow area

Can high risk passengers be channeled into ad-hoc parts of the terminal?
e.g. different border controls for passengers from high risk countries

Recommendation 3: Incorporate new flows and processes in your plans

Ensure the outcomes of the first two recommendations are accounted for in your planning: increasing times to process passengers (if fewer counters/lanes are used), unavailability of terminal areas (e.g. check-in desks, entrance, security lanes), adjusted passenger show-up profiles and more. In doing so, get the most out of your available planning tools or consider switching to some that allow for frequent, dynamic planning with these key input parameters.

If you are interested in reading about how LHR is planning for physical distancing in check-in in their current operation in Terminal 2, please check our case study "Physical distancing at London Heathrow Check-in".

Recommendation 4: Support your suggestions with data to ensure buy-in

Once again, we highlight the importance of having a strong quantitative foundation in order to get buy-in from stakeholders. Sticking to the check-in allocation as example, creating an optimized counter opening plan based on an analysis of passenger show-up profiles (e.g. based on bag scans or data from passenger tracking solutions) combined with current load factors can be a solid starting point to argue why an airline could do with fewer desks, or why airlines from the same alliance should adopt common-use check-in.

Recommendation 5: Make use of state-of-the-art technology

Technology can provide a great deal of help. Passenger flow measurement systems are even more valuable today thanks to their functions to measure queues, flow density, and passenger counts in zones. This in turn allows the airport

operator to monitor and sustain adoption of physical distancing measures.

Similarly, newer planning software is flexible and allows you to update parameters easily, so that you can test several scenarios and get the best overall results.

These systems are more important than ever, and their use and implementation (where not already available) should be prioritized within budgets.

Recommendation 6: Incorporate physical distancing in your metrics

Airports' performance in achieving physical distancing will be as relevant as security. Consider planning and implementing physical distancing metrics in order to: boost passenger and staff confidence, provide safety evidence to authorities, increase preparedness to future pandemic threats. These metrics will be a mix of new ones and adaptations of traditional ones and will fall under two categories: safe separation and exposure risk metrics. Below we present a few examples:

Safe Separation metrics

- Square meters per pax in a given area
- Queue overspill into a flow area
- Passengers per security lane
- Passenger occupancy per queue area

Exposure Risk metrics

- Risk level of origin airport/country
- Risk level of utilized queue layouts
- Risk level of specific flow through terminal

It is worth stressing that such metrics are proxies of the actual safety and risks experienced by passengers. For instance, the occupancy of an area might be within the desired metric, but the individuals in that area might be squeezed in an angle, hence not far apart from each other. Therefore, metrics need to be supported by floor staff that can ensure compliances with measures.

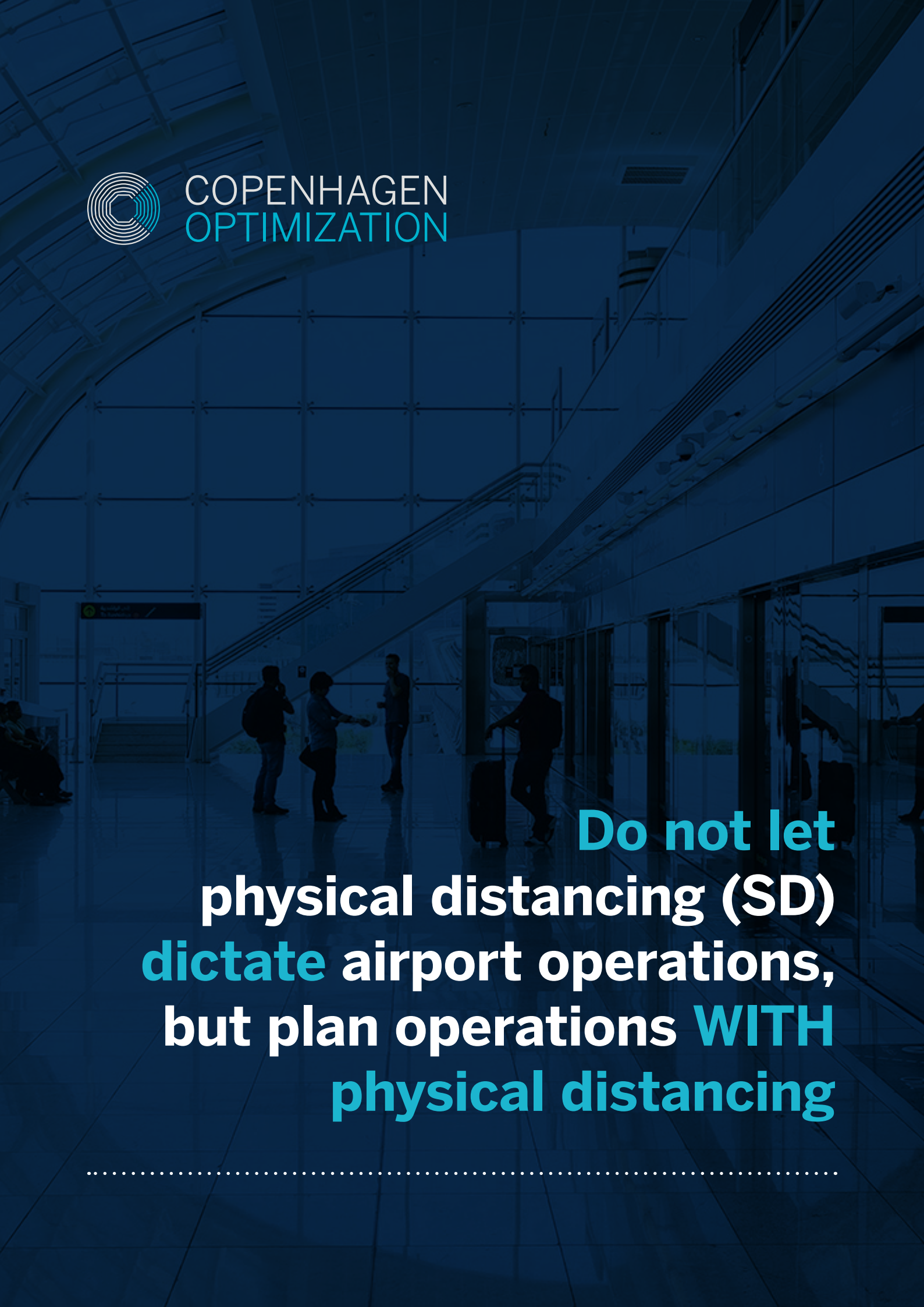
Recommendation 7: Accommodate physical distancing of staff

As briefly stated above, staff is highly exposed to passengers. This poses higher risks to themselves and others. To accommodate the need for physical distancing of staff we see two levers: digitalization and planning.

The first is about introducing technology (where not yet available) to facilitate no-touch operations instead of manual, for example passport scanning at check-in (rather than visual inspection) or e-gates (to avoid touching tickets).

The second revolves around the introduction of a practice to minimize exposure among staff members: smaller and more stable teams, different break rooms, and different toilets for different teams.

Implementation of thorough cleaning practices and personal protection equipment will boost safety of staff. This will be the focus of the fourth article in this series "Challenge 4: Cleaning and personal protective equipment".



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Do not let physical distancing (SD) dictate airport operations, but plan operations WITH physical distancing

CONCLUSION

Embed physical distancing in your planning cycle

Do not let physical distancing (PD) dictate airport operations, but plan operations WITH physical distancing by leveraging relevant data analytics, risk management and technology, and embedding them in the planning cycle.

- Monitor physical distancing metrics
- Report PD compliance to stakeholders

- Collect internal and external intel *(read our article 1)*
- Make qualified and quantified suggestions to stakeholders

- Adopt new technologies
- Implement new or improved processes
- Plan PD of staff as much as passengers

- Predict flows and traffic with PD
- Assess risk profile of passengers and operational areas

This article is part of a series on the challenges of COVID-19 for airport operations planning, and on how to best handle these challenges. Our focus is both short-term and long-term when we refer to the post-COVID-19 situation.

READING MATERIAL MENTIONED IN THIS ARTICLE

Case study: Physical distancing at London Heathrow Check-in, Copenhagen Optimization

ABOUT
Copenhagen Optimization

Copenhagen Optimization is a combined consultancy and software company specializing in analyzing and planning any operation on a strategic, tactical, and operational level. We improve your airport operation through data-driven analytics and strategic consultancy in combination with our Better Airport® software suite to support you all the way. Working with more than 50 airports globally, we offer our unique services and technology to support airports of all sizes.

If you would like to learn how we can help your airport navigate through the COVID-19 aftermath, reach out to us for a personal talk via:
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