

OpsTech Session 3

Future-Proofing Airport Terminals

Moderator:

Joan Zatopek,
Aviation Planning &
Development
Manager, Oakland
International Airport

Speakers:

Eric Bernhardt,
Vice President,
Kimley-Horn &
Associates

Michael Moran,
General Manager,
Aviation Planning, Noise
& Environmental Services,
Port Authority of New York
& New Jersey

Stephen Russell,
Senior Aviation
Planner, ARUP

Scott Tumolo,
Terminal Planning
Manager, C&S
Companies



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ACI-NA Terminal Planning Issues White Paper

Presented by:
Eric Bernhardt and Scott Tumolo
September 15, 2019



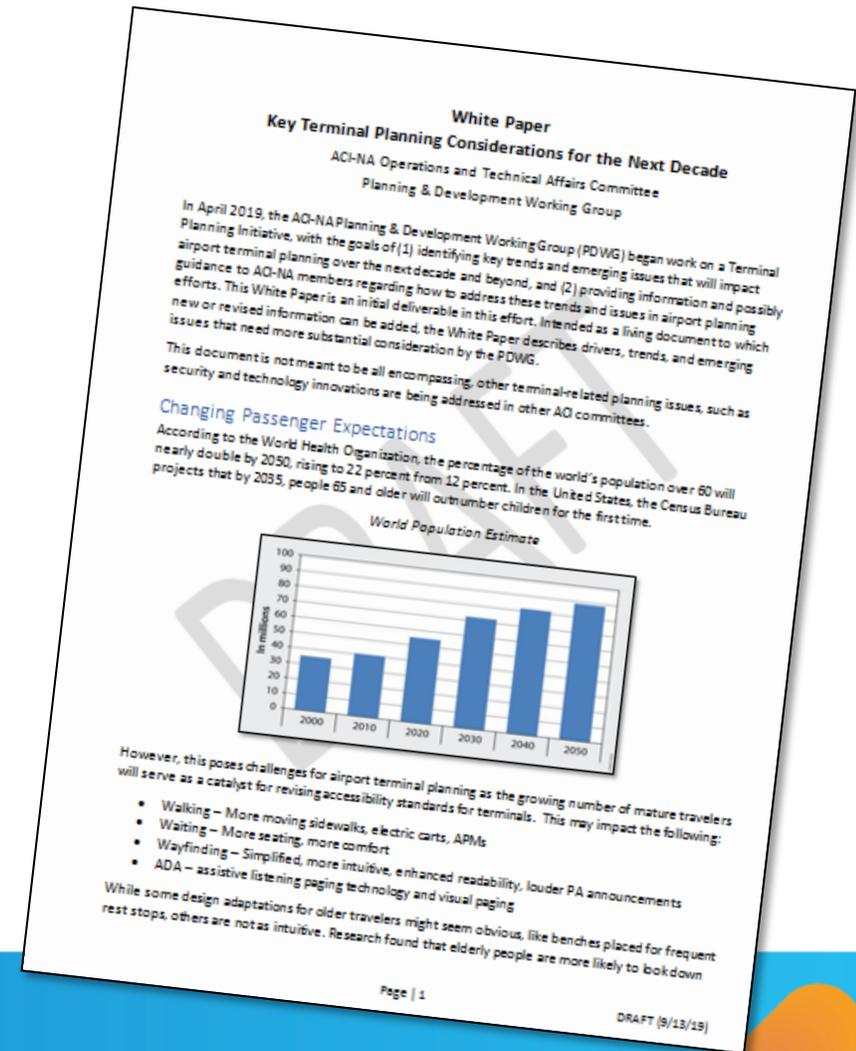
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ACI-NA Terminal Planning Issues White Paper

- Effort began in 2017
- Objective: Identify top level terminal planning and design concerns facing the airport industry for the next decade
- Provides a foundation for future deep dives into key terminal issues
- Anticipated publication Q4 this year
- Intended to be a living document—will be updated as issues evolve



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Future-proofing Airport Terminals: An Airport Operator's Perspective

Presented by:

Michael Moran

General Manager, Aviation Planning, Noise & Environmental Services

Port Authority of New York and New Jersey

September 15, 2019

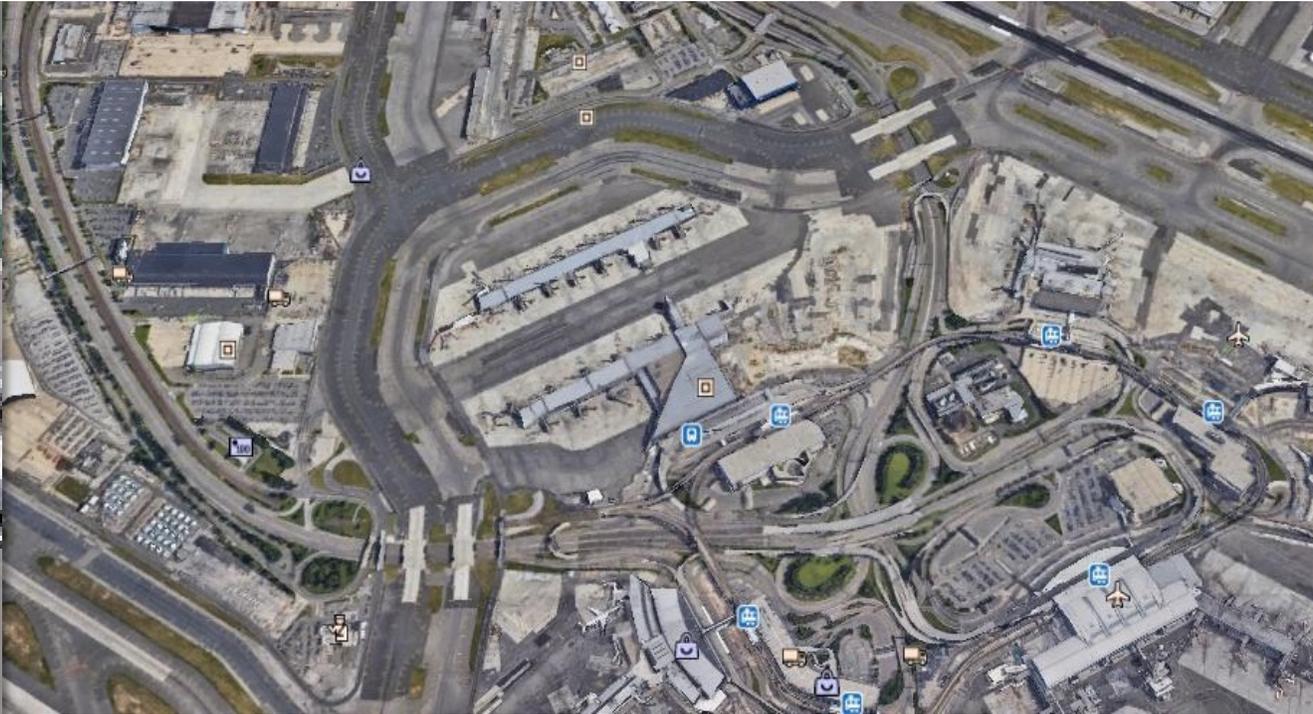


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JFK Terminal 8



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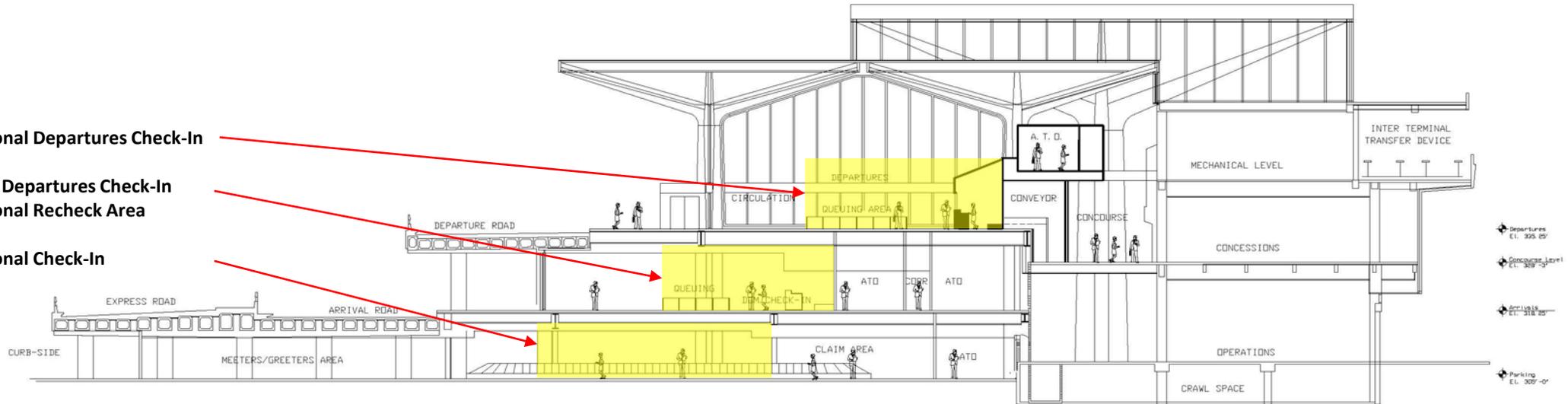
EWR Terminal B

International Departures Check-In

Domestic Departures Check-In

International Recheck Area

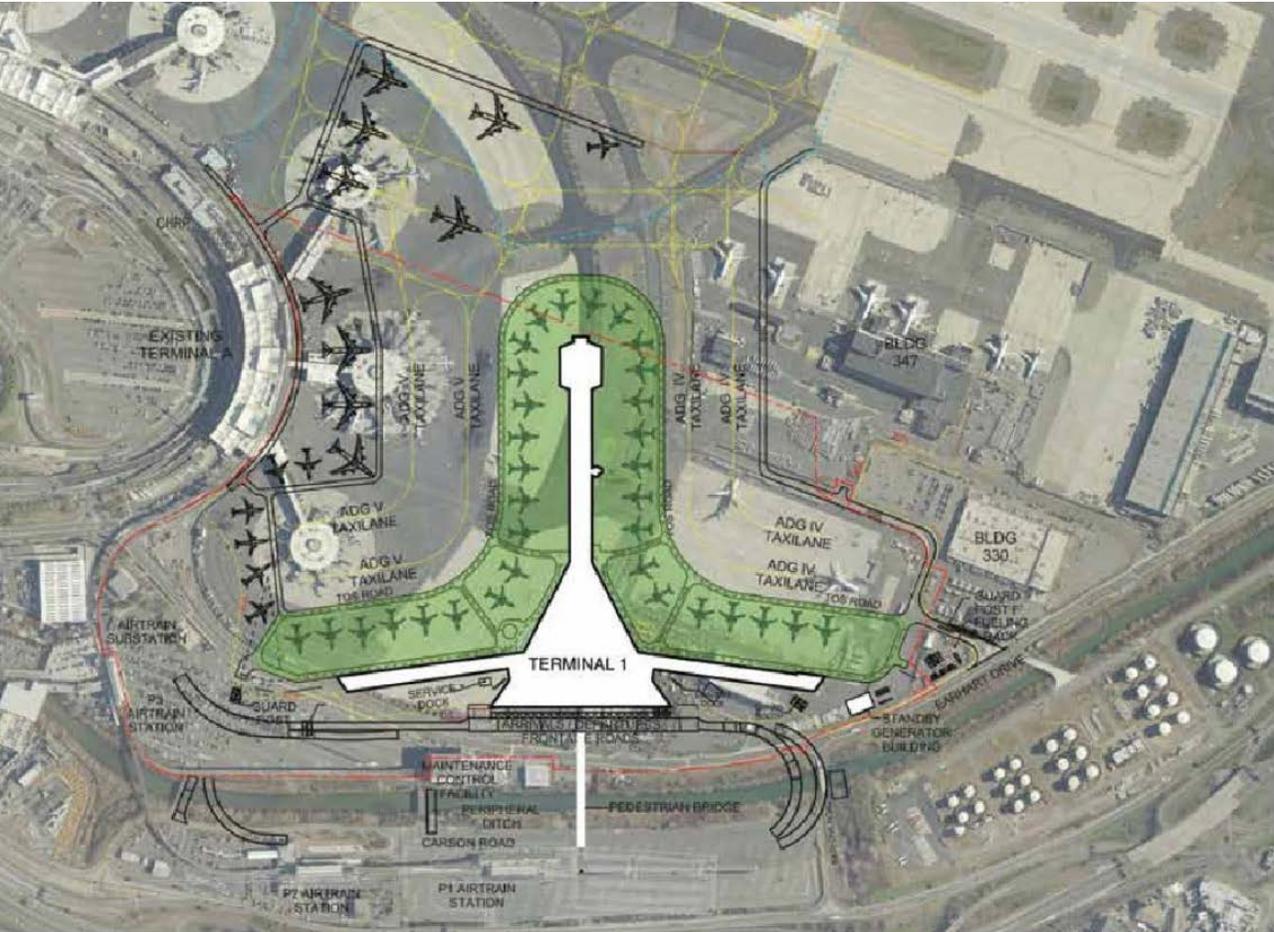
International Check-In



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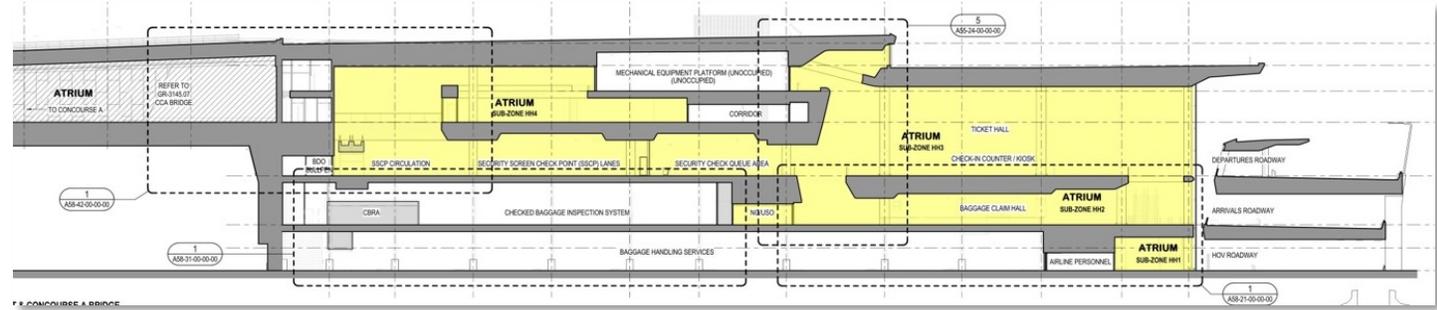
EWR Terminal One



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LGA Terminal B



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Future-proofing Airport Terminals: Trends and Outlook

Presented by:
Stephen Russell
Senior Aviation Planner
Arup
September 15, 2019



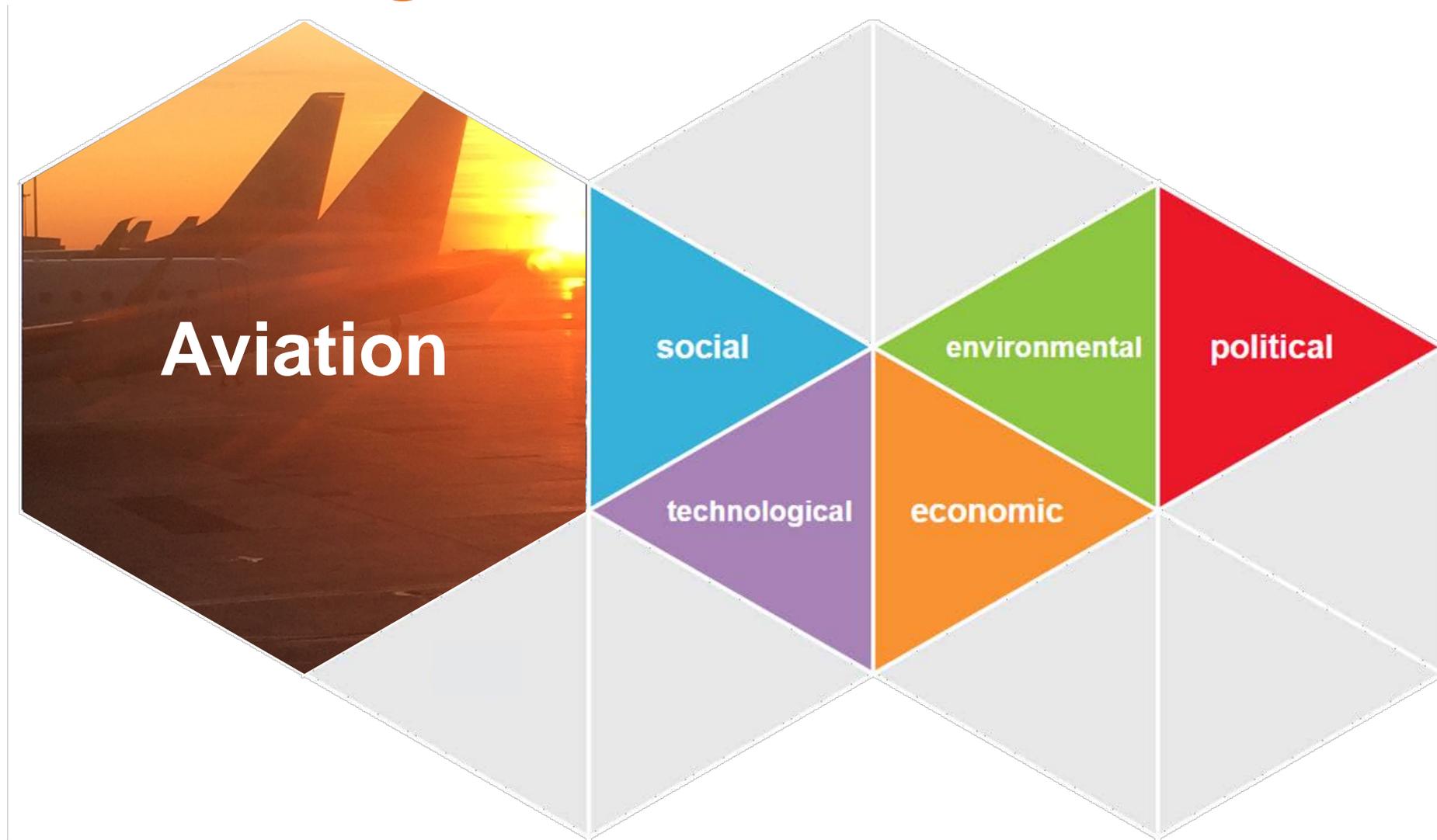
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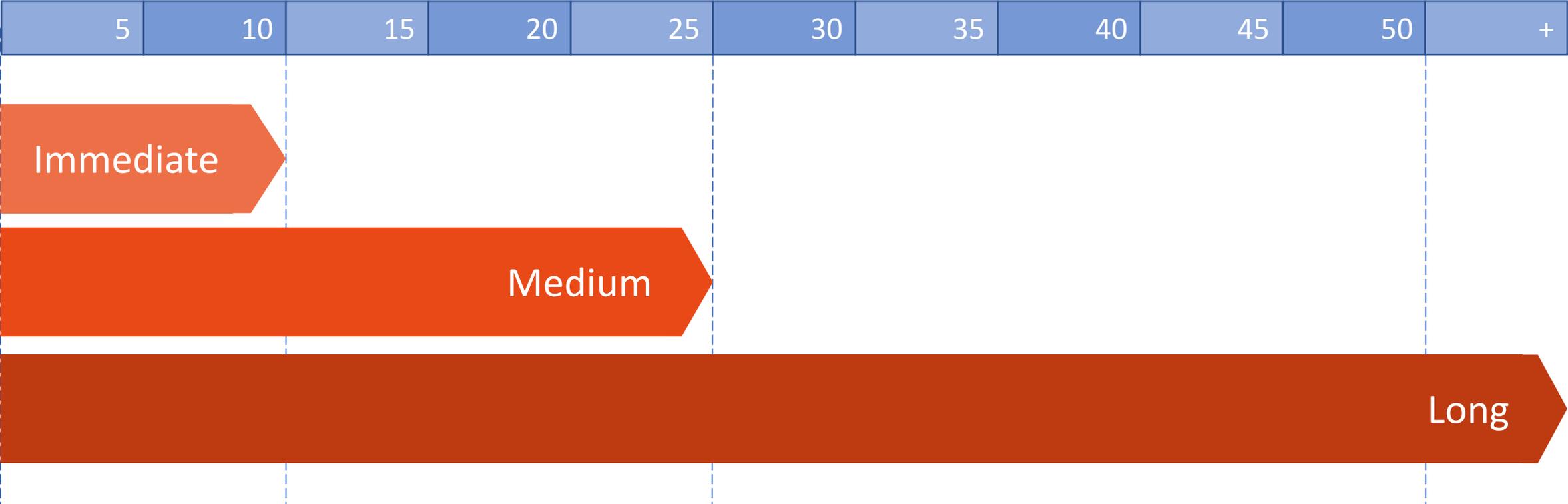
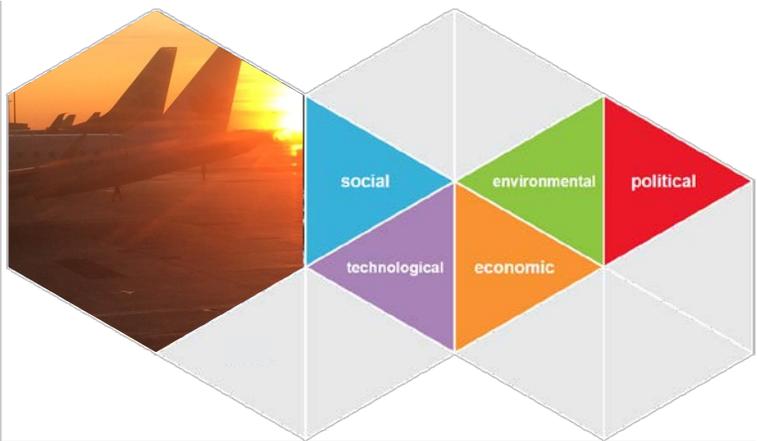
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Drivers of Change



Horizons



Drivers and Horizons - Considerations

The drivers and horizons should be considered at the outset of the project and investment opportunities prioritized.

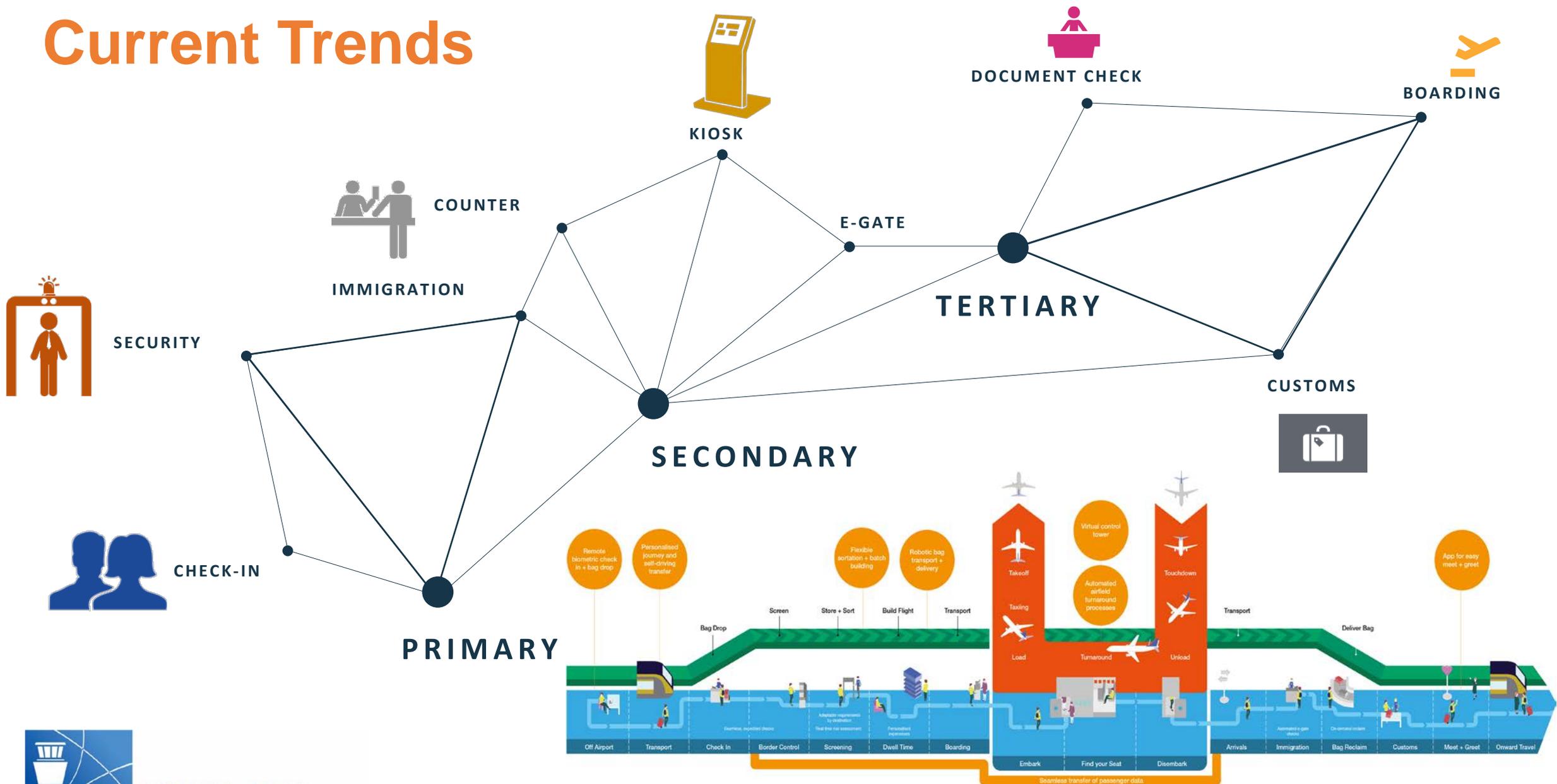
- Not all future proofing adds cost, but all should add value
e.g. locating electric rooms and genset away from low level to deal with rising risk of storm surges and flooding



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Current Trends



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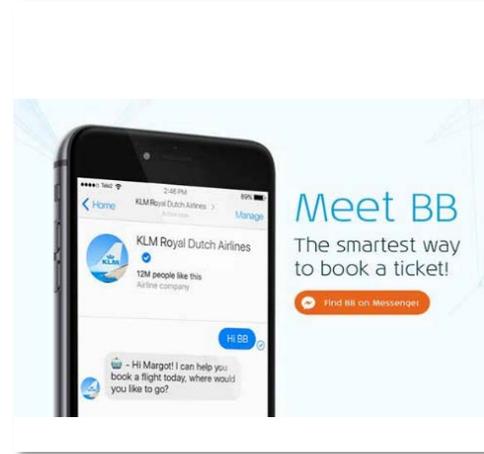
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Key Technologies

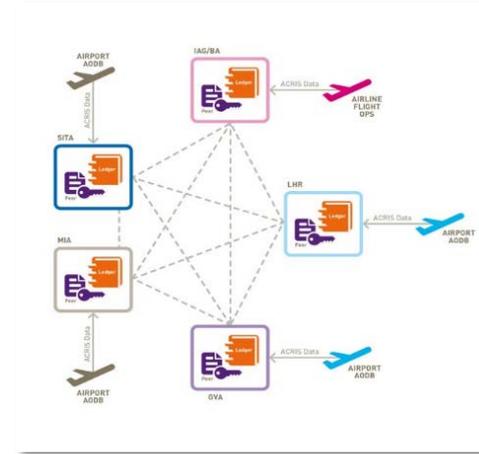
BIOMETRICS



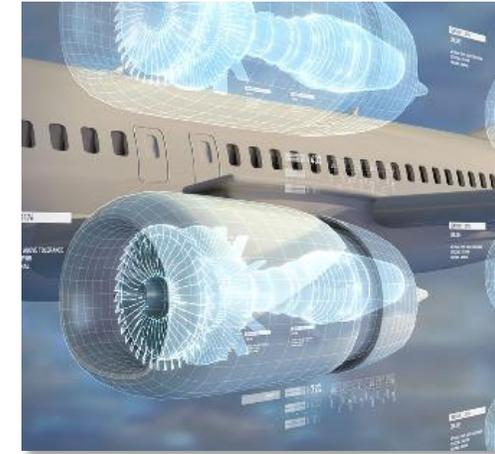
ARTIFICIAL INTELLIGENCE



BLOCKCHAIN



DIGITAL TWIN



ROBOTICS

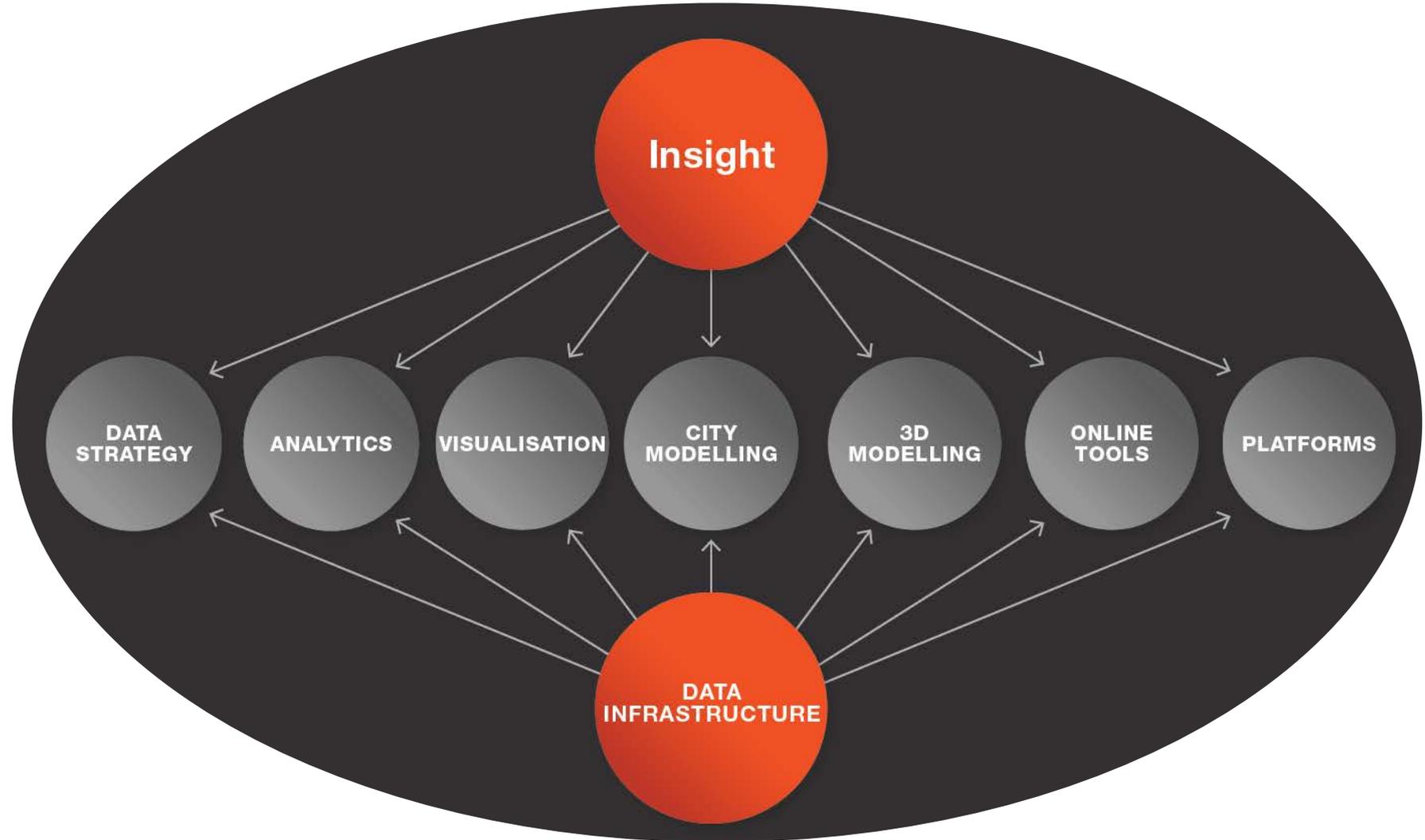
IoT

AUGMENTED REALITY

5G

Key Technologies - Data Insight

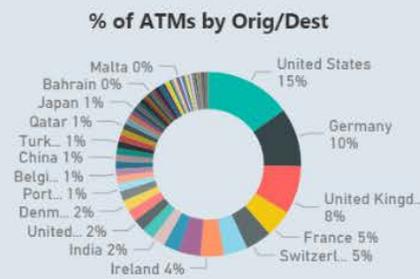
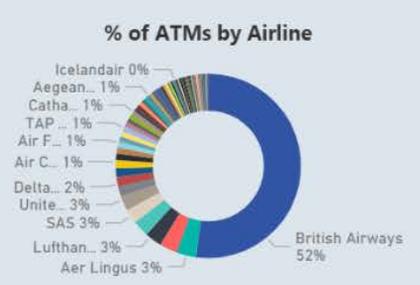
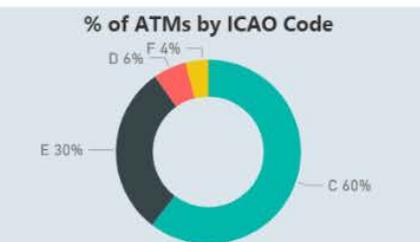
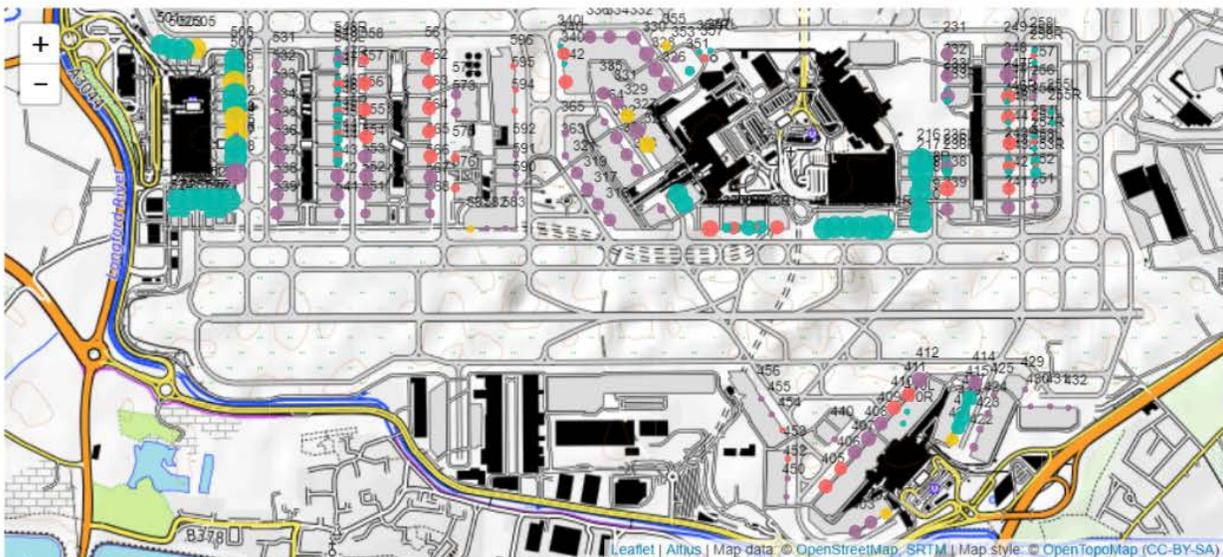
Airports collect a vast amount of data each day. The key is in identifying the data that is useful and presenting this in a simple manner.



Key Technologies - Data Insight

Heathrow Stand Utilisation Dashboard

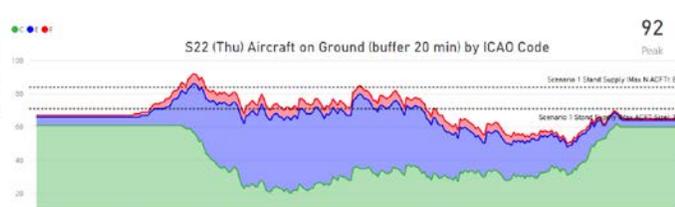
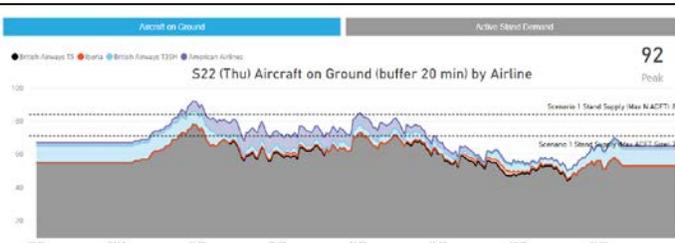
Terminal: 2 3 4 5 | Stand ICAO Code: C D E F | Arrivals / Departures: A D | Year: 2015 2017



Airline & ICAO Code

- Select: All
- British Airways TS
- Iberia
- British Airways T3SH
- British Airways T3UH
- American Airlines
- Aer Lingus
- KLM
- LATAM
- SriLankan Airlines
- Finnair
- Cathay Pacific
- Japan Airlines
- Malaysia Airlines
- Qatar
- Qatar Airways
- Royal Jordanian

Airline	Daily ATMs	Daily PAX
British Airways TS	435	18533
Iberia Airways T3SH	33	3565
American Airlines	44	1232
Iberia	15	3340
Total	762	147K



Occupancy Scenario

- TS Aa B - BA T3 SH
- TS Aa B - BA T3 SH + AA
- TS IAG

Summary

Occupancy Scenario	Scenario 5	Scenario 6	Scenario 7	Scenario 5	Scenario 6
Layout Scenario	BA++	BA++	BA++	BA++	BA++
Pier Service (PAX)	89.8%	89.2%	91.7%	89.9%	89.6%
Pier Service (ATMs)	89.8%	88.7%	91.2%	89.6%	89.2%
Total Coaching Movements	43	49	37	41	42
Max Active Coaching Gates	7	8	6	8	8
Total Tows	135	128	145	124	123
Max Tows per Hour	20	19	25	21	21

Layout Scenario

- Scenario 4
- Scenario 5
- Scenario 6
- Scenario 7



Stand Planning Rules

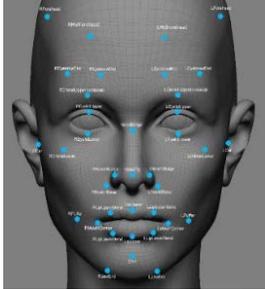
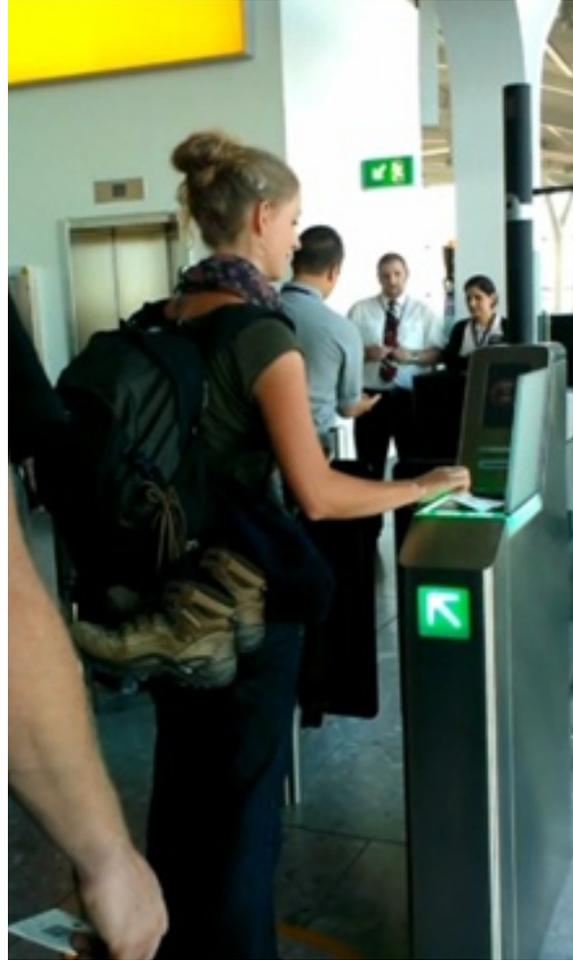
- BA++
- BA++ (10 min Buffer)



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Key Technologies - Automation

An automation initiative that incrementally automates key process to reduce errors and speed up processing time.



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Key Technologies - Automation

THROUGHPUT

- Seamless journeys
- Faster processing

INFRASTRUCTURE

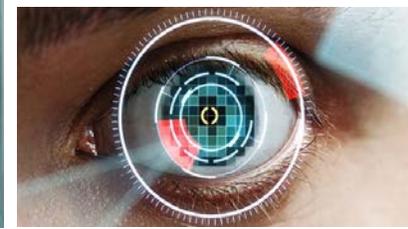
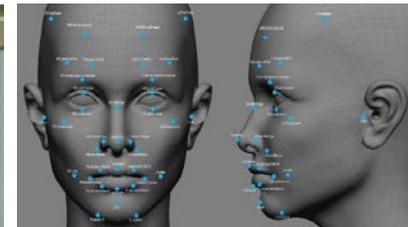
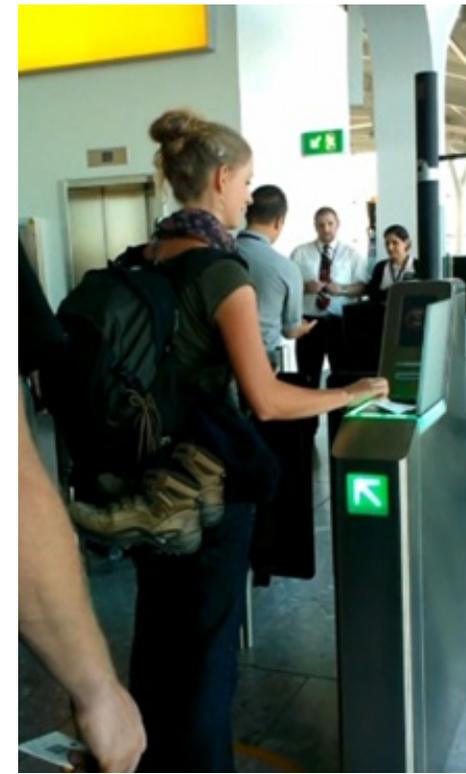
- Machines/system for registration/enrollment
- Automatic systems can be deployed throughout the terminal: duty-free, lounges, boarding gates, etc.

- Data Sharing Agreement
- Staff reduction
- Inter-Governmental MoU
- Combining biometric system with One Stop Security and One ID protocols

STAFF

PASSENGER

- Privacy concerns
- Potential for pax to enroll biometric data prior to flight (example Digi Yatra in India)

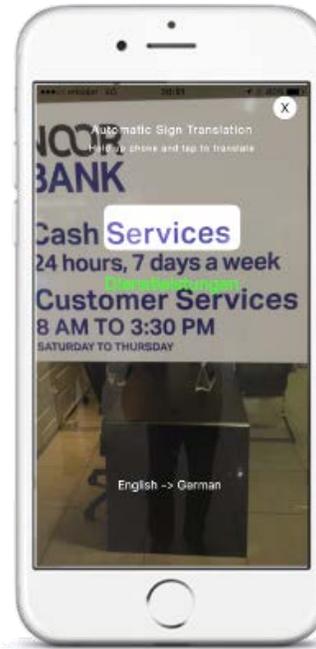


Communication Strategy

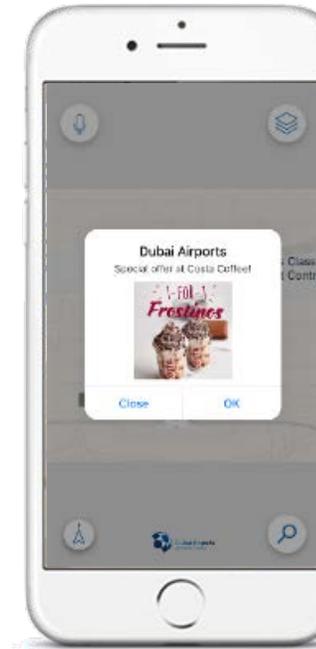
A communication strategy – that better informs passengers & guests in regard to their opportunity to maximize the value of their time in the facility/terminal



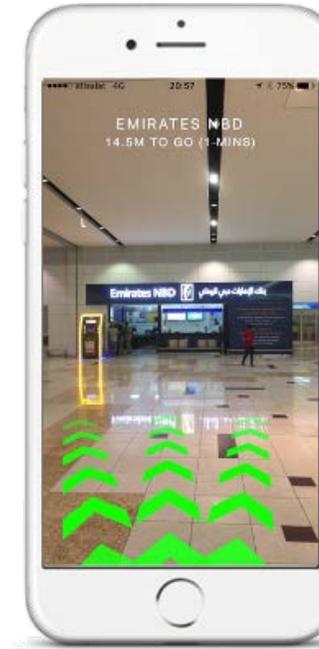
Blue-dot navigation



Auto translation



Proximity messaging



Augmented reality



3D maps

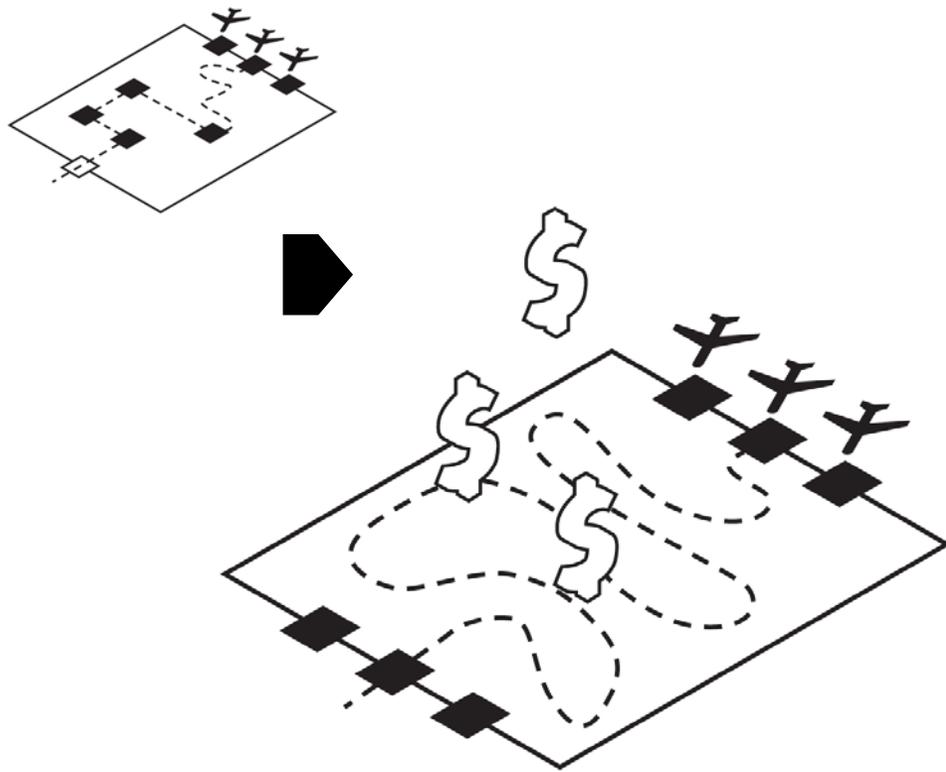


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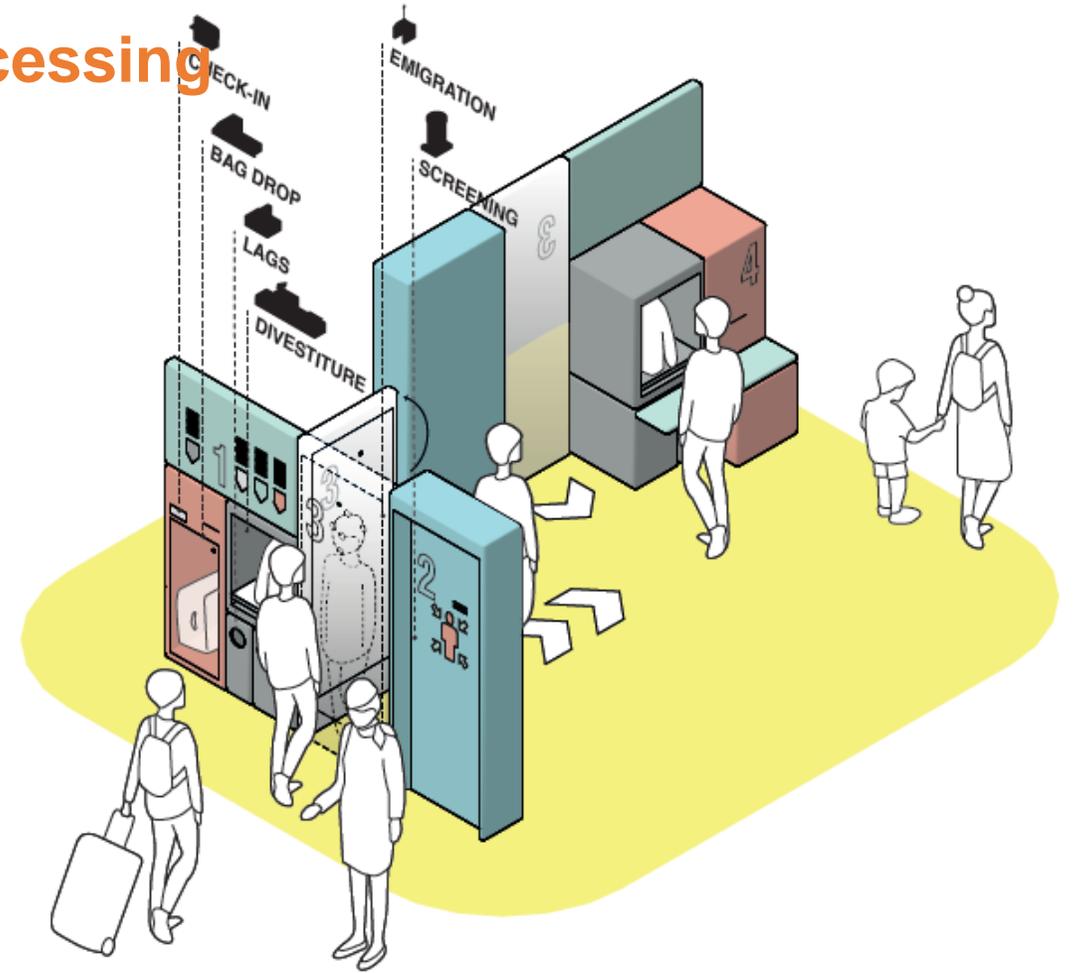
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The Zero Touch Terminal

Arup Concept to simplify passenger processing



Flight, personal identification and screening data are unified within a single, one-stop process.



This could free up space, reduce overall processing time and queues, thus leaving more time for passengers to relax, eat and shop

Watchpoints

- Sustainability initiatives - radiant floors for heating and cooling are difficult to cut openings in the slab for future needs.
- HVAC on top of ticketing islands. They may disappear as passenger processing changes in the years to come
- Future Technologies - when adopting future technology that has not been implemented elsewhere, have an ability to roll back to current operations
- Space Requirements - Danger is assuming future technology means less space required; sometimes it takes more

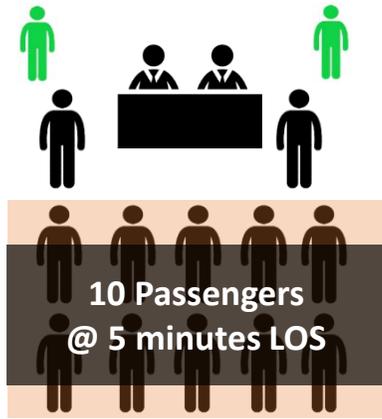


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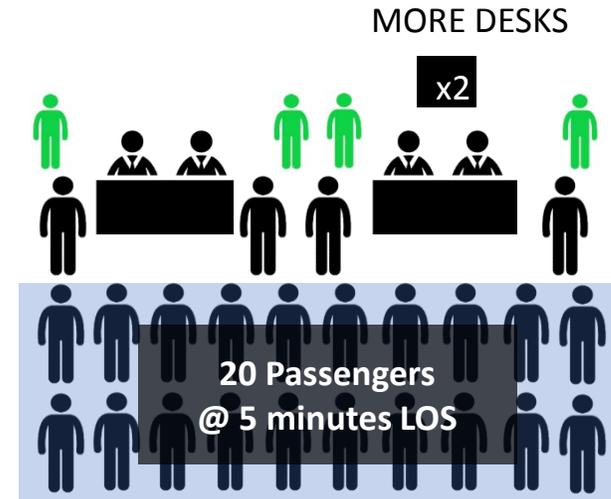
Watchpoint – space requirements



TOTAL Throughput
2 passengers/minute

Queue Calculation:

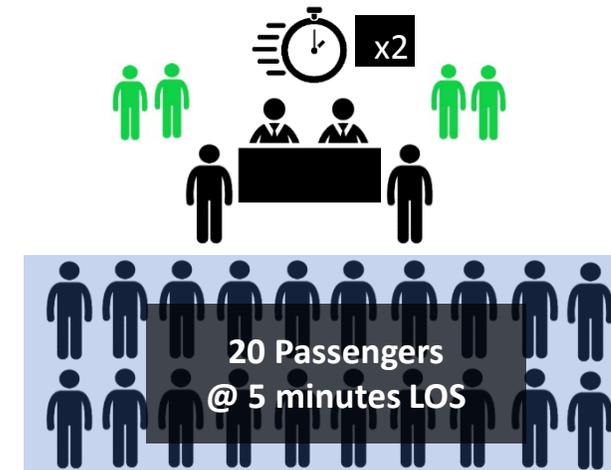
Throughput x LOS target =
Passengers in Queue



TOTAL Throughput
4 passengers/minute

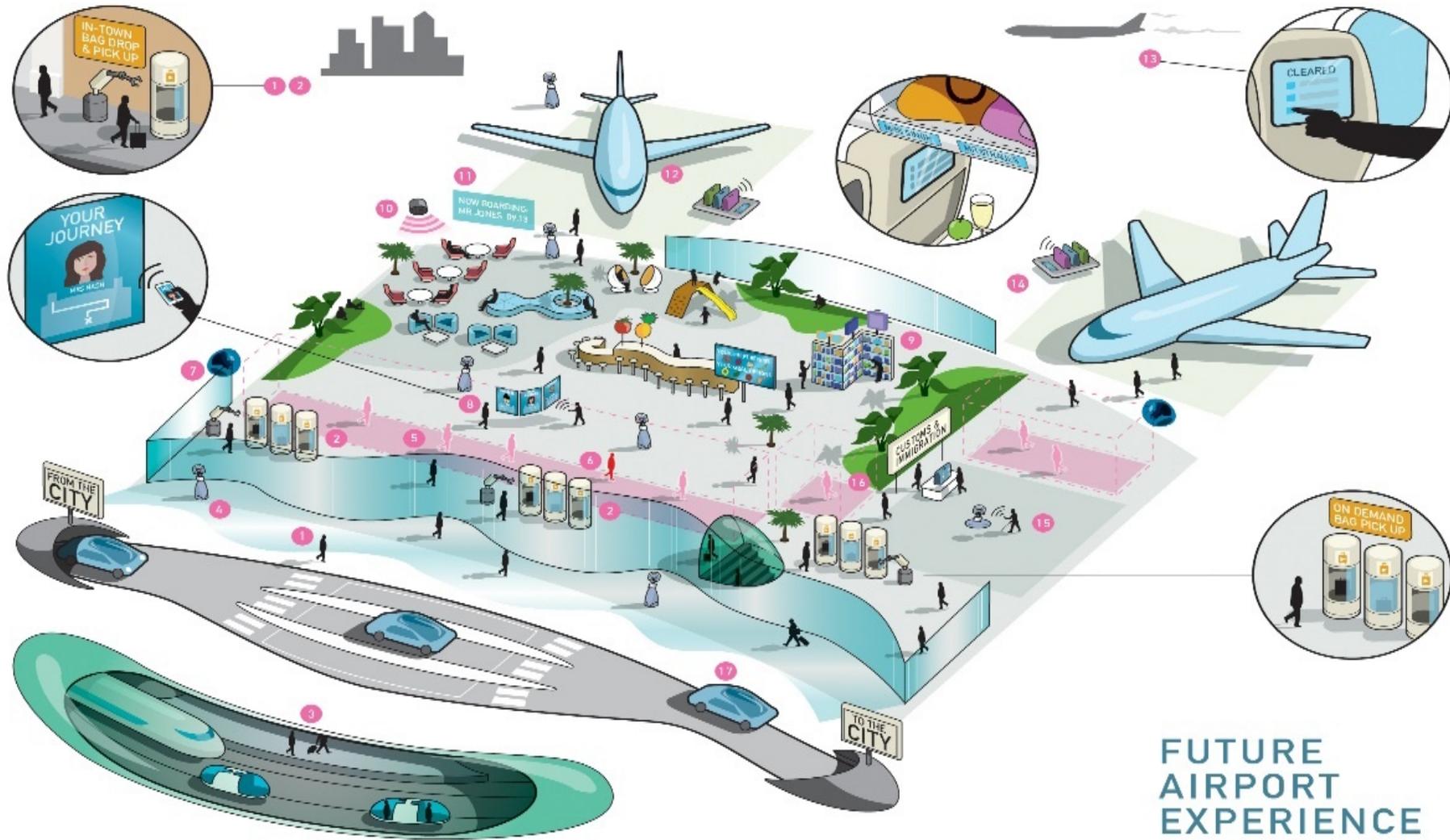


FASTER PROCESSING



TOTAL Throughput
4 passengers/minute

Future of Air Travel



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