

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



TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

#AIRPORTS19

ACI-NA Terminal Planning Issues White Paper

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



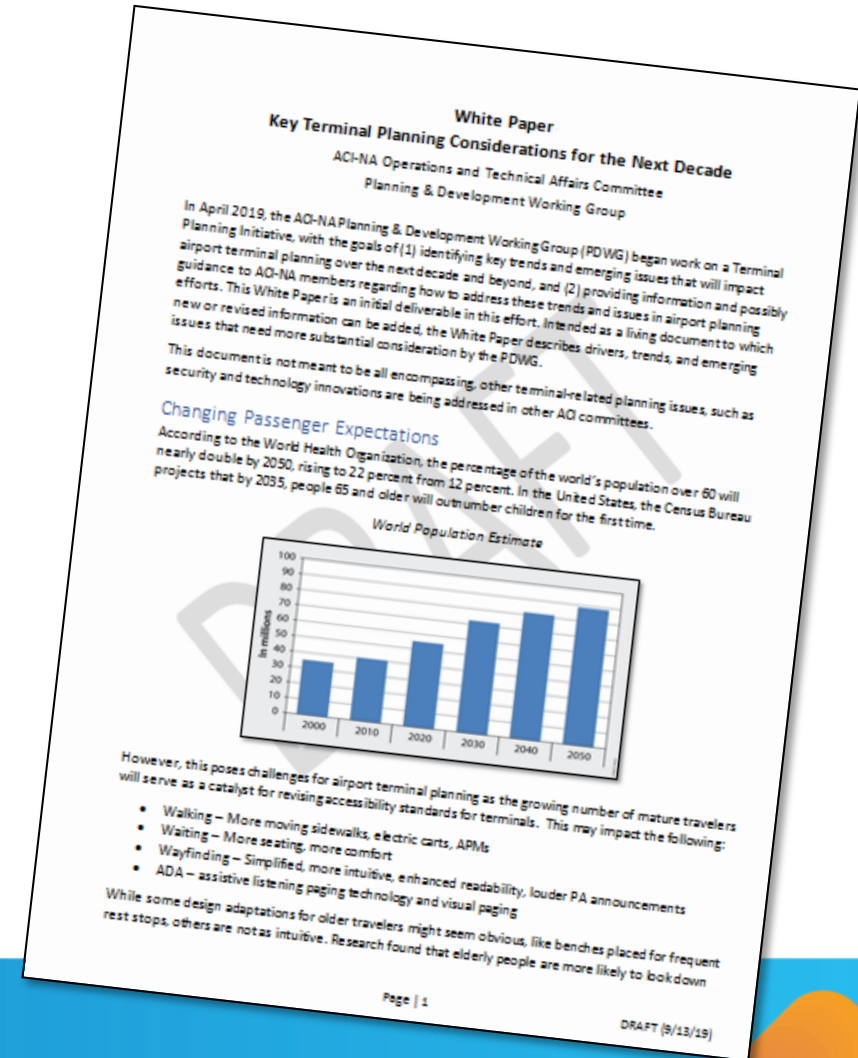
TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 — 17, 2019

#AIRPORTS19

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



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

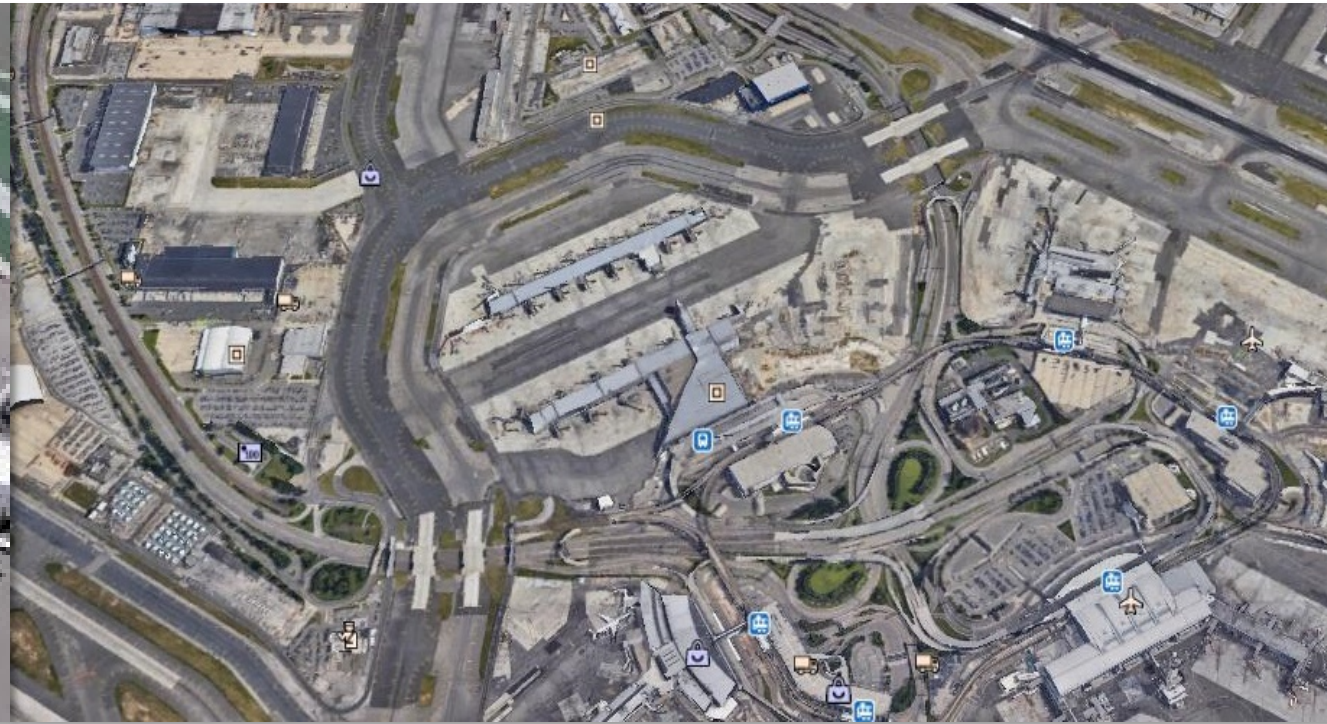


TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 — 17, 2019

#AIRPORTS19

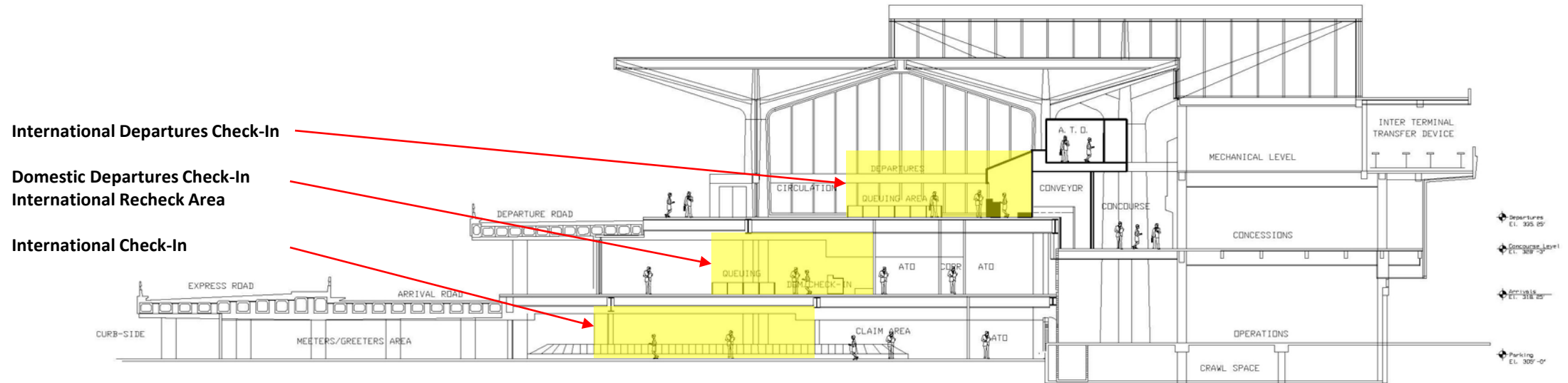
JFK Terminal 8



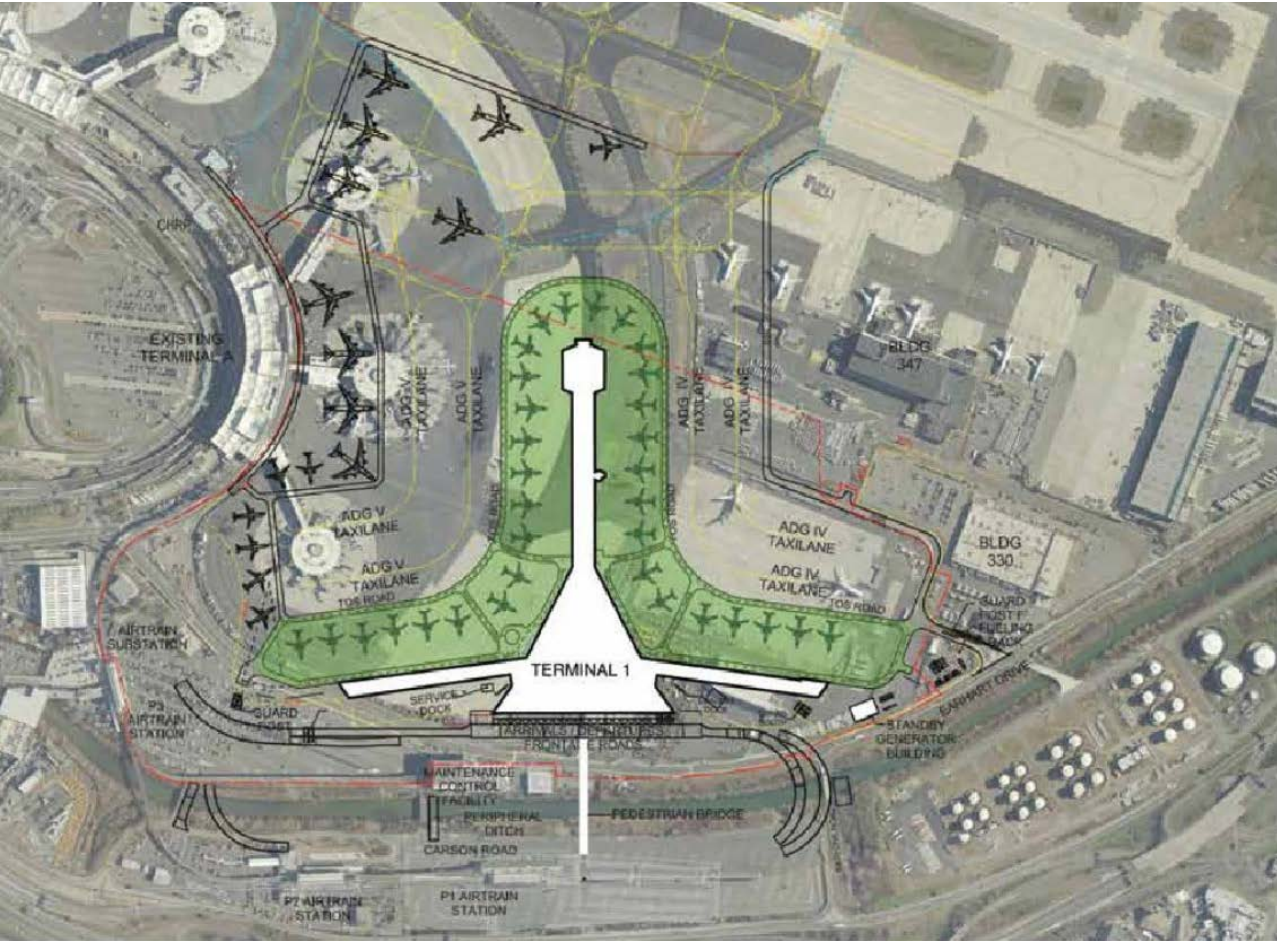
TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

EWR Terminal B



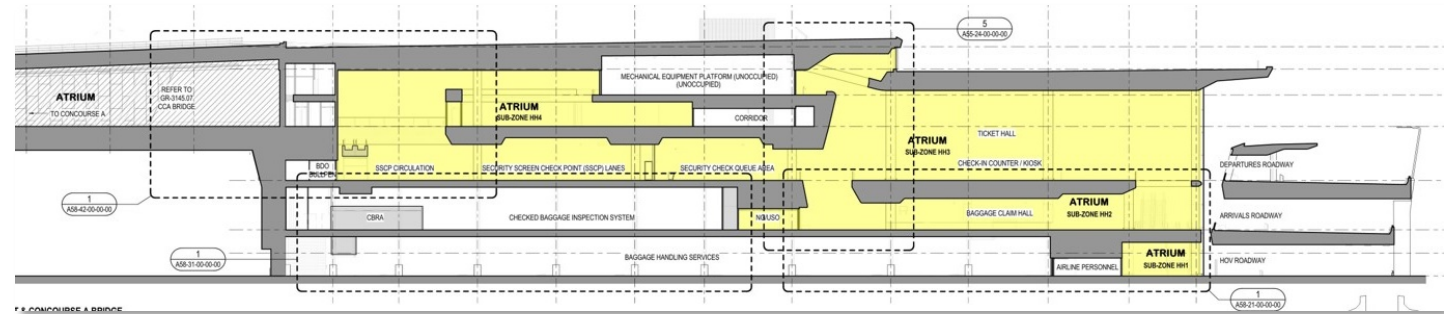
EWR Terminal One



TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

LGA Terminal B



TAMPA 2019
AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

Future-proofing Airport Terminals: Trends and Outlook

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



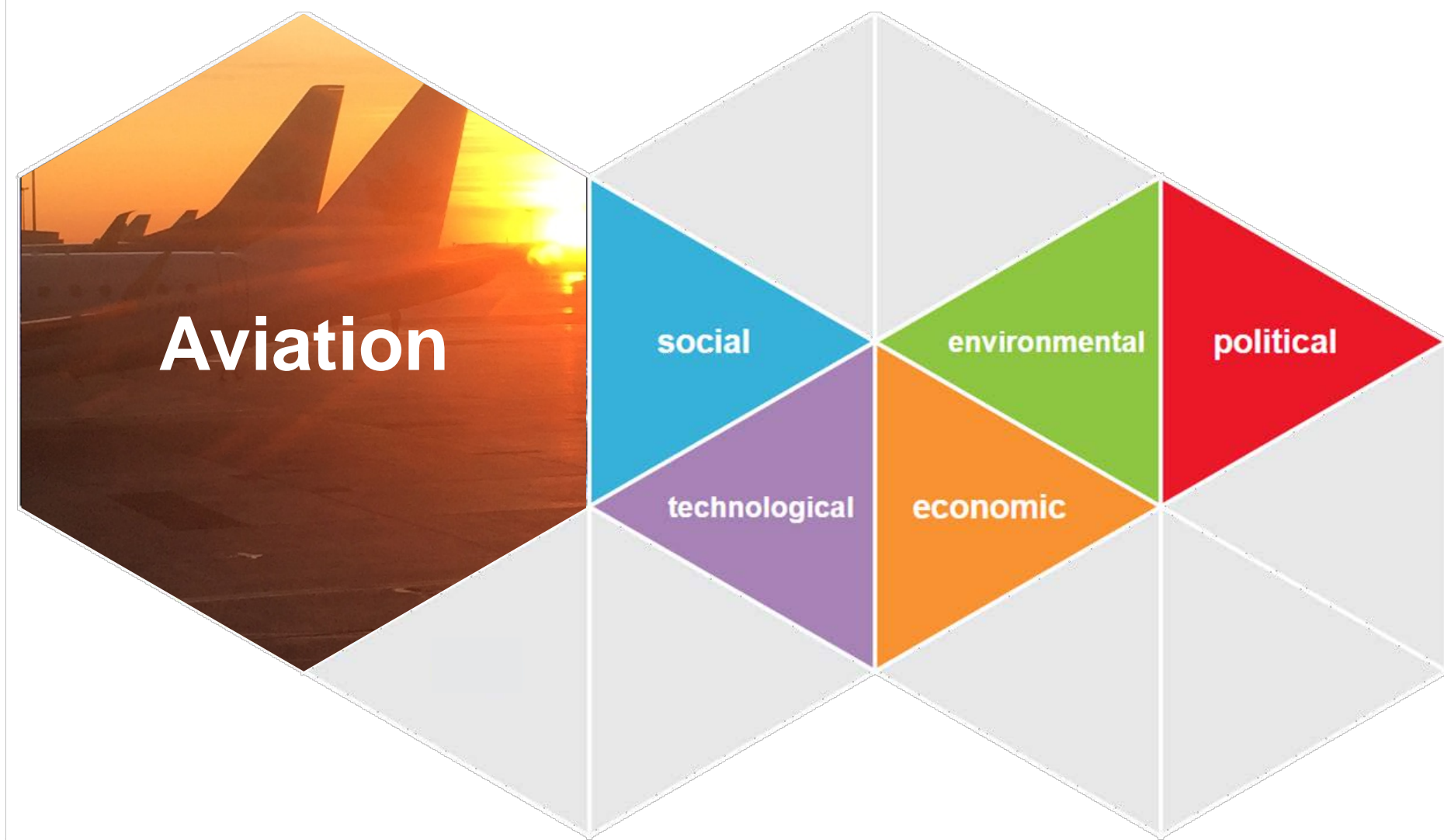
TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 — 17, 2019

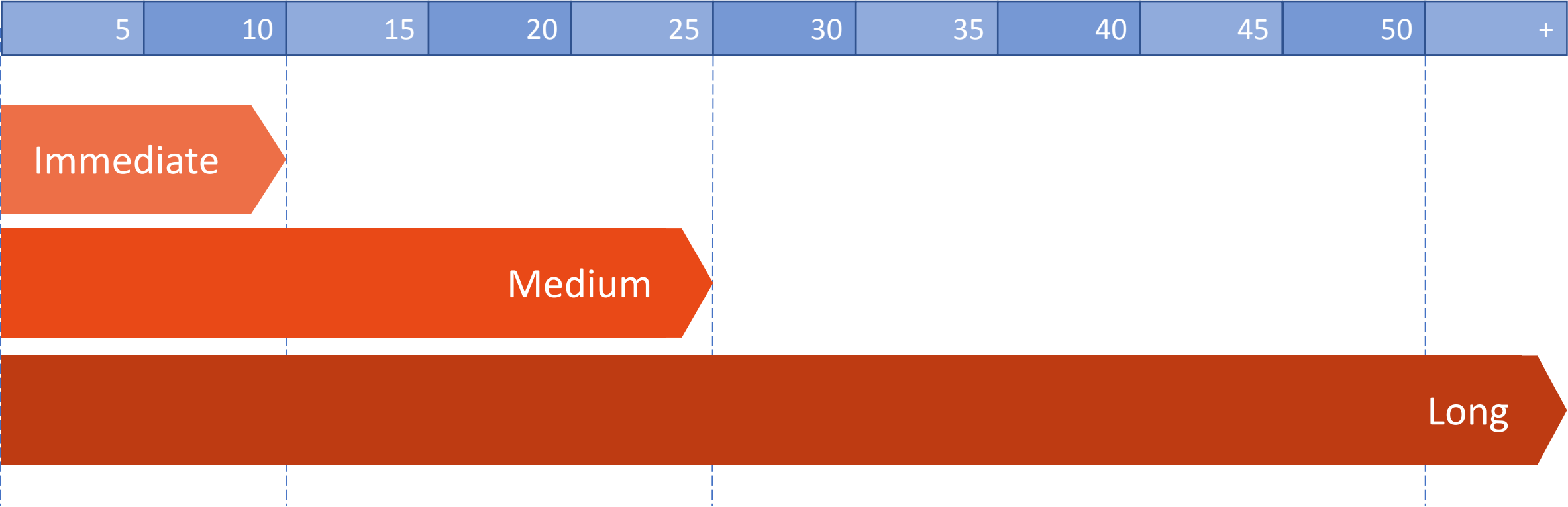
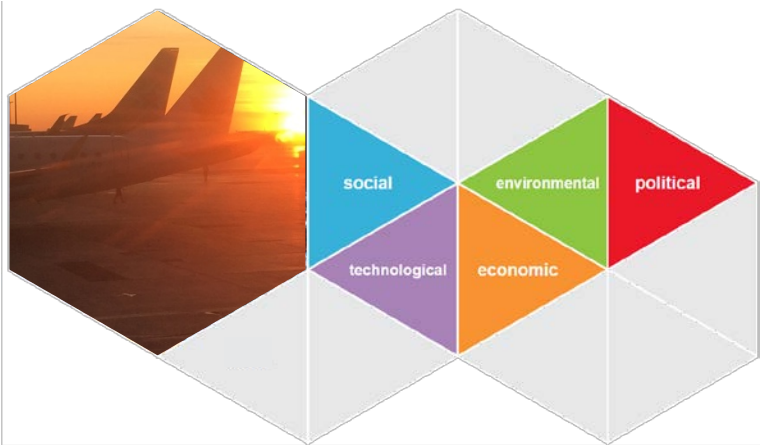
#AIRPORTS19



Drivers of Change



Horizons

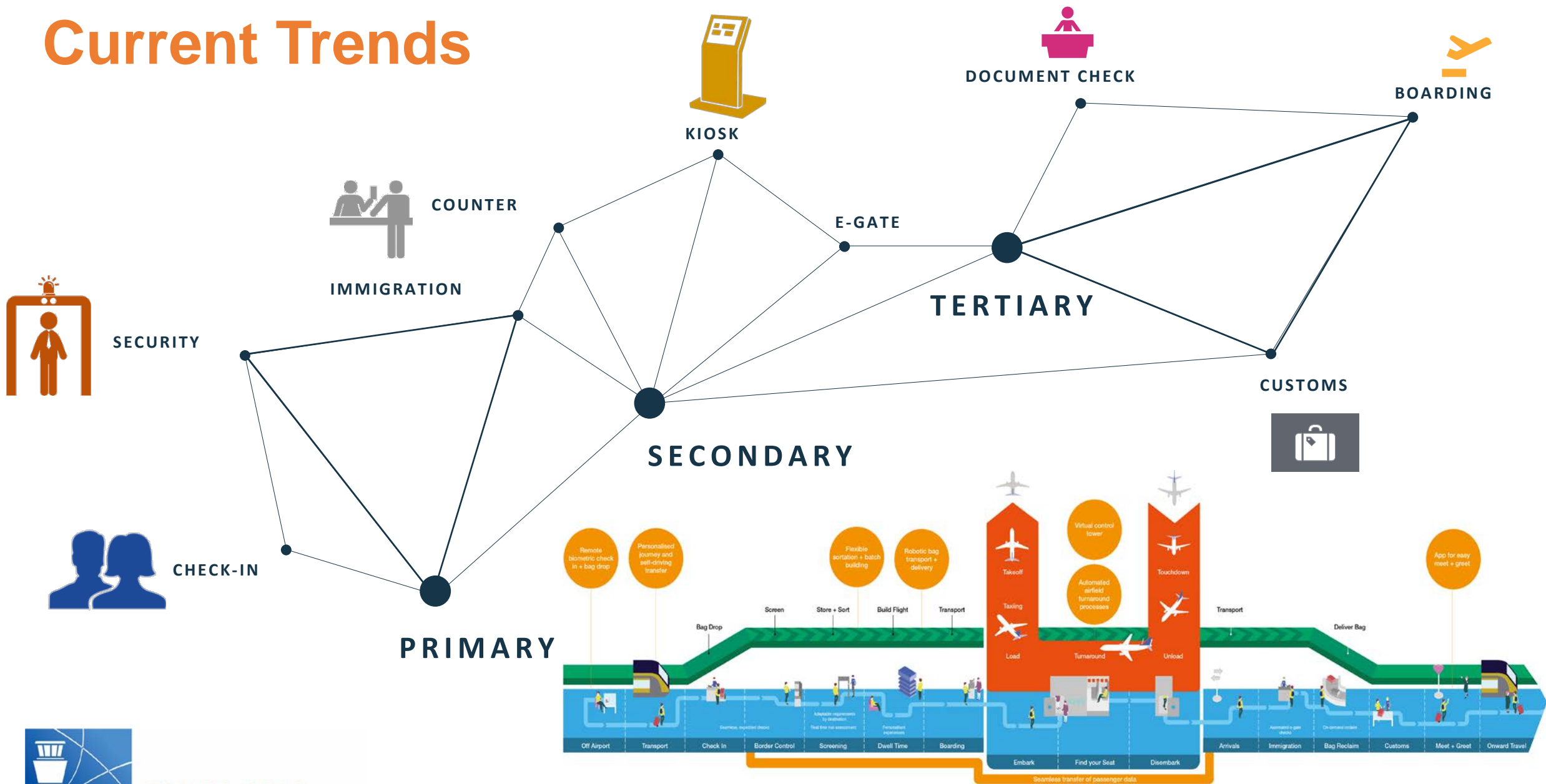


Drivers and Horizons - Considerations

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

Current Trends



TAMPA 2019
AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

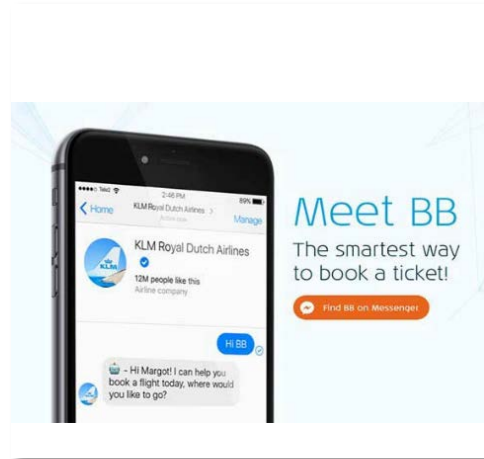
#AIRPORTS19

Key Technologies

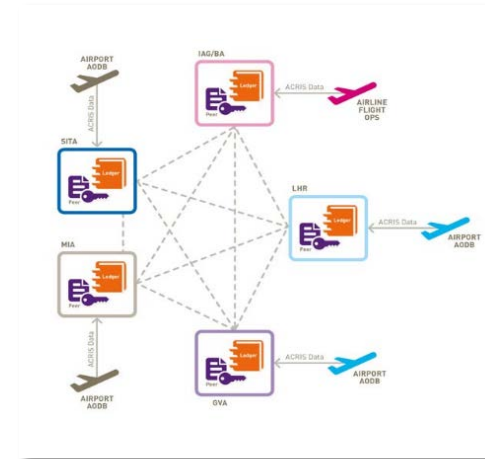
BIOMETRICS



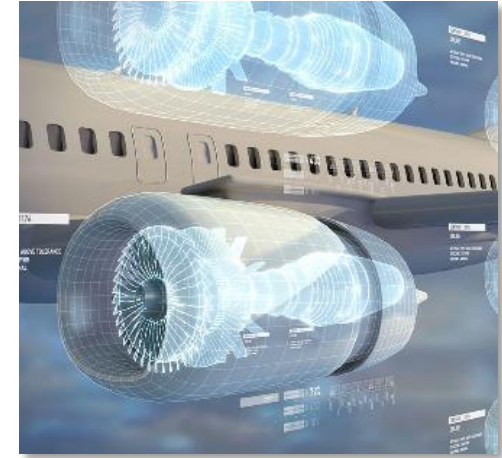
ARTIFICIAL INTELLIGENCE



BLOCKCHAIN



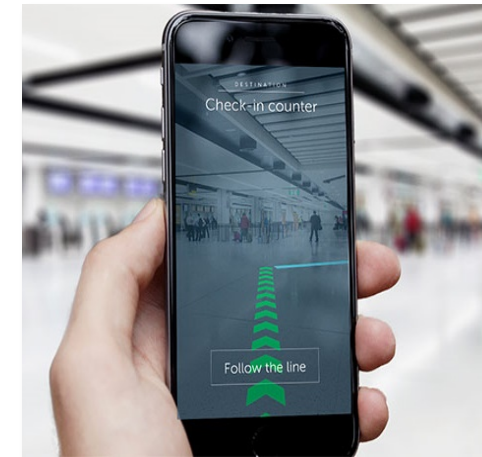
DIGITAL TWIN



ROBOTICS



IoT



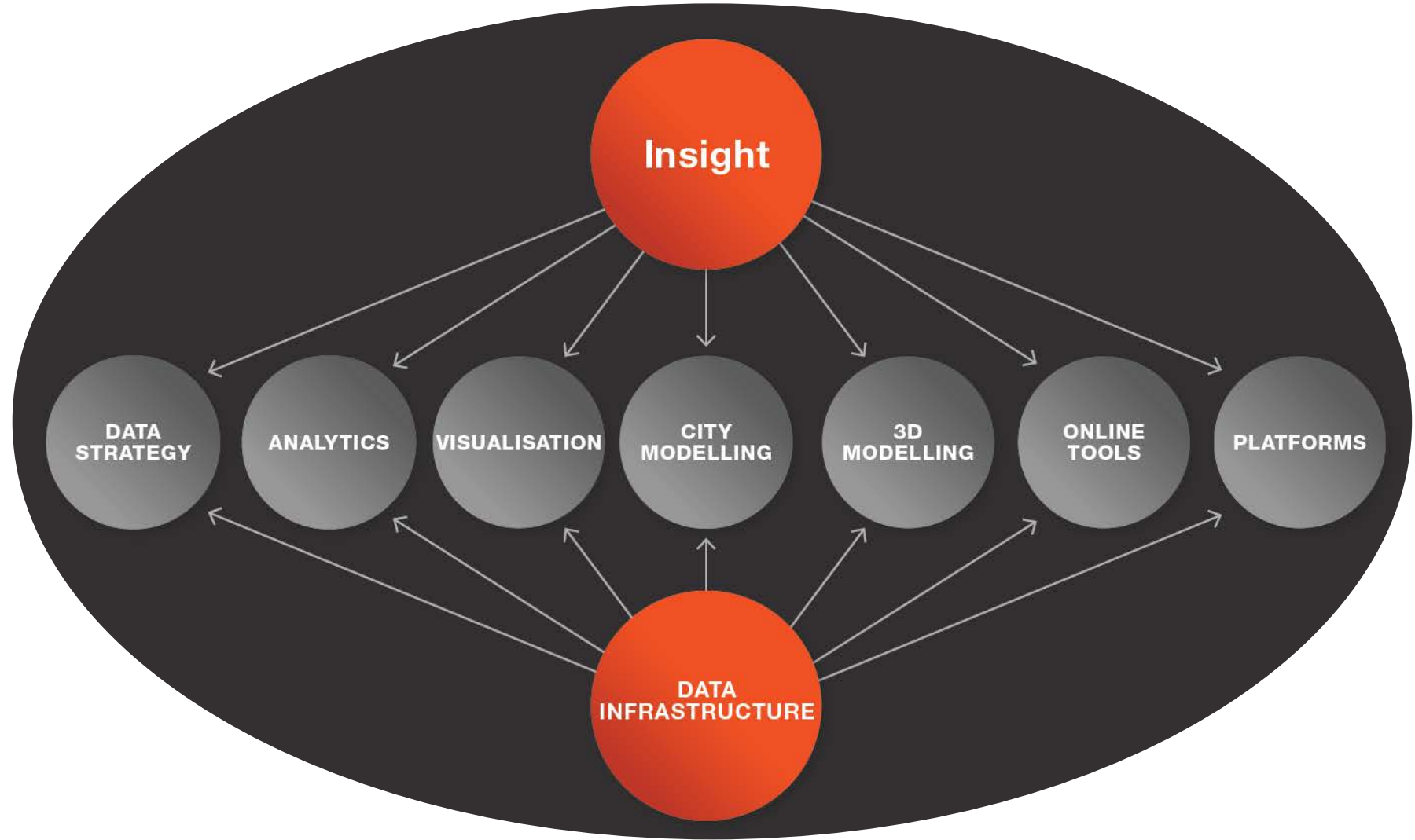
AUGMENTED REALITY



5G

Key Technologies - Data Insight

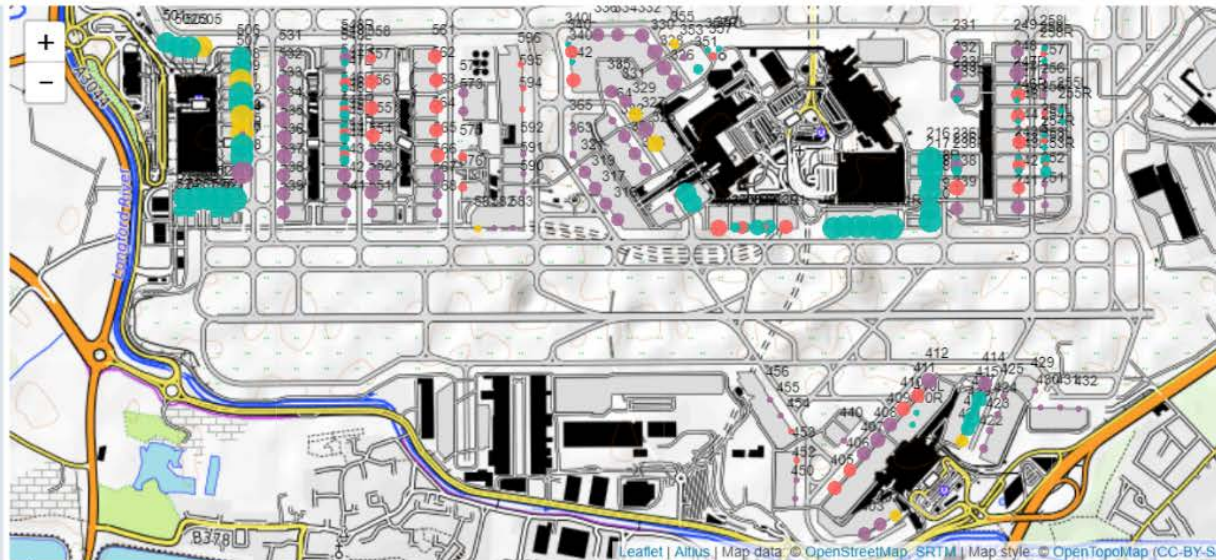
Airports collect a vast amount of data each day. The key is in identifying the data that is useful and presenting this in a simple manner.



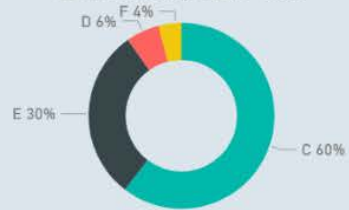
Key Technologies - Data Insight

Heathrow ARUP Stand Utilisation Dashboard

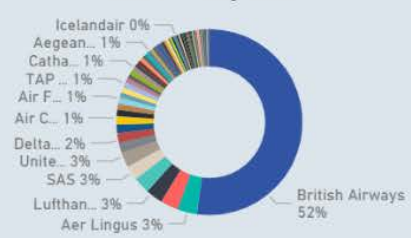
Terminal: 2 3 4 5 Stand ICAO Code: C D E F Arrivals / Departures: A D Year: 2015 2017



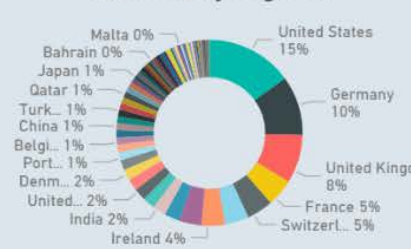
% of ATMs by ICAO Code



% of ATMs by Airline



% of ATMs by Orig/Dest



Yearly ATMs per Stand



Yearly PAX per Stand



Aircraft & ICAO Code
☐ Select All
☒ British Airways TS
☒ Iberia
☒ British Airways TSH
☒ British Airways TSH
☒ Aer Lingus
☒ KLM
☒ LATAM
☒ SriLankan Airlines
☒ Finnair
☒ Cathay Pacific
☒ Japan Airlines
☒ Malaysia Airlines
☒ Qatar Airways
☒ Royal Jordanian

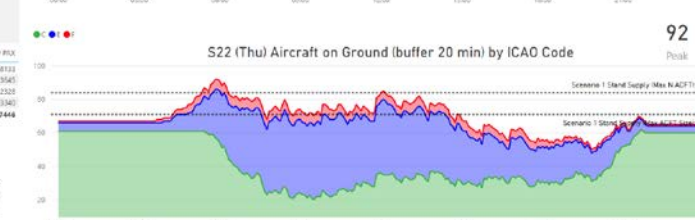
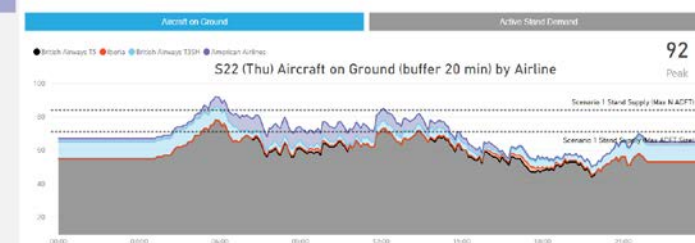
Active Stand Demand
 92 Peak
 762 Daily ATMs
 147K Daily PAX

Occupancy Scenario
☒ TS As Is + BA TS SH
☒ TS As Is + BA TS SH + AA
☒ TS IAG

Layout Scenario
☒ Scenario 4
☒ Scenario 5
☒ Scenario 7

Stand Planning Rules
☒ BA+
☒ BA++ (70 min Buffer)

Property
☒ Select All
☒ Pier Service (PAX)
☒ Pier Service (ATMs)
☒ Total Coaching Movements
☒ Max Active Coaching Gates
☒ Total Tows
☒ Max Tows per Hour



Summary

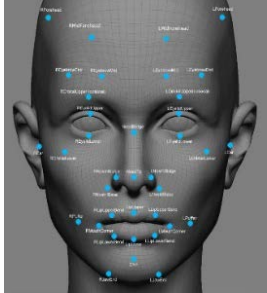
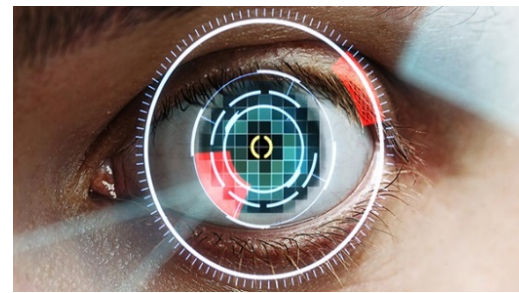
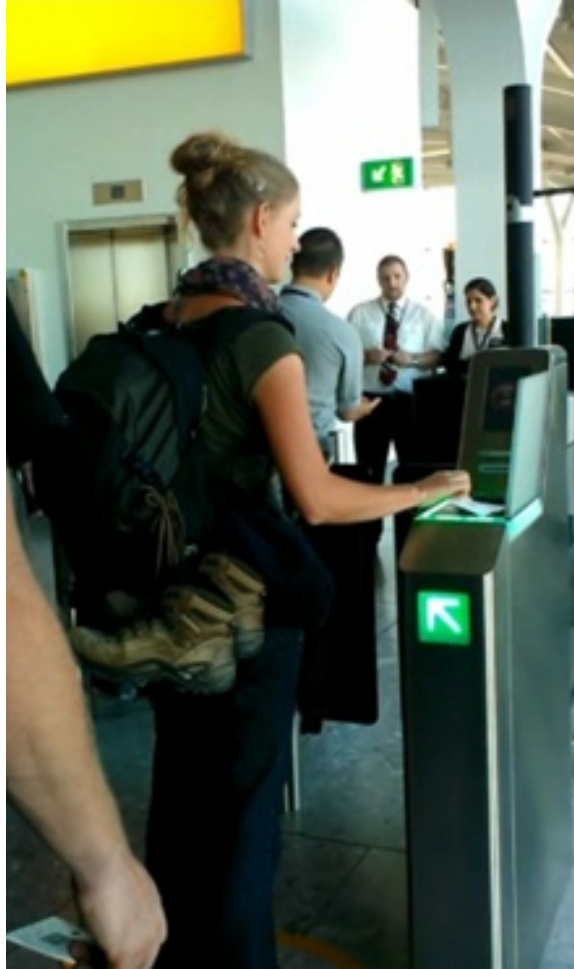
Occupancy Scenario	Scenario 5	TS As Is + BA TS SH + AA	Scenario 6	Scenario 7	Scenario 5	Scenario 6	TS IAG
Output	BA++	BA++	BA++	BA++	BA++	BA++	BA++
Pier Service (PAX)	89.8%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%
Pier Service (ATMs)	43	49	37	41	42	42	42
Total Coaching Movements	7	9	6	9	9	9	9
Max Active Coaching Gates	135	128	145	124	123	123	123
Max Tows per Hour	20	19	25	21	21	21	21



TAMPA 2019
 AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
 ANNUAL CONFERENCE AND EXHIBITION
 SEPTEMBER 15 - 17, 2019

Key Technologies - Automation

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



TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

Key Technologies - Automation

THROUGHPUT

- Seamless journeys
- Faster processing

INFRASTRUCTURE

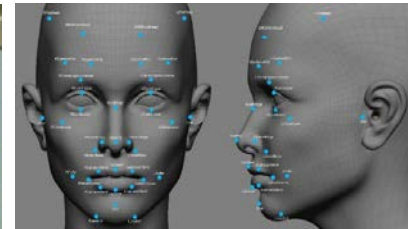
- Machines/system for registration/enrollment
- Automatic systems can be deployed throughout the terminal: duty-free, lounges, boarding gates, etc.

- 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)

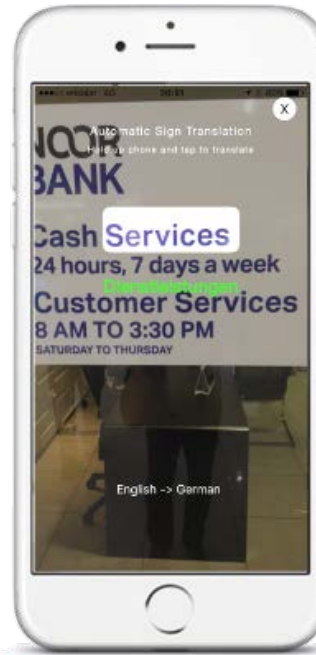


Communication Strategy

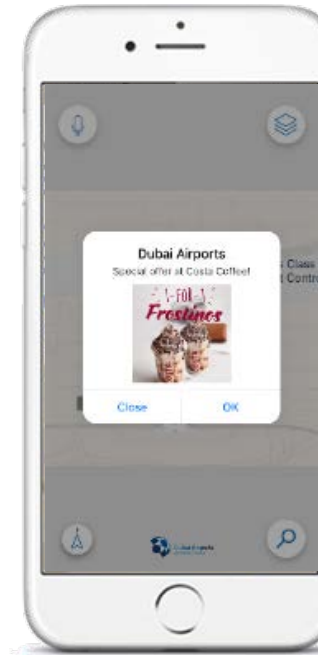
A communication strategy – that better informs passengers & guests in regard to their opportunity to maximize the value of their time in the facility/terminal



Blue-dot navigation



Auto translation



Proximity messaging



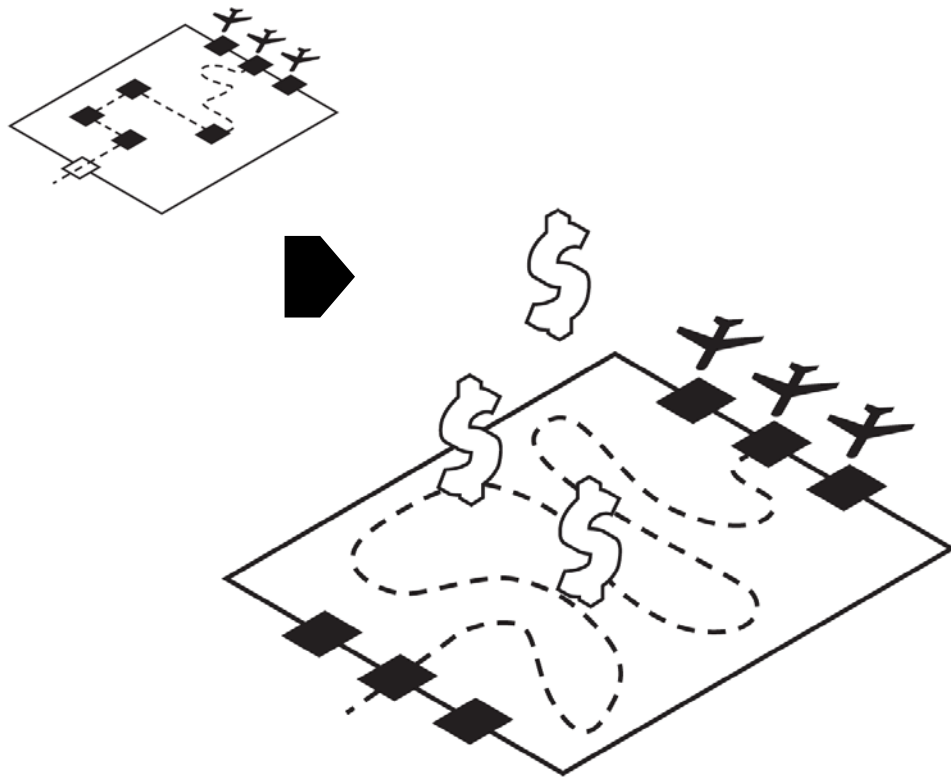
Augmented reality



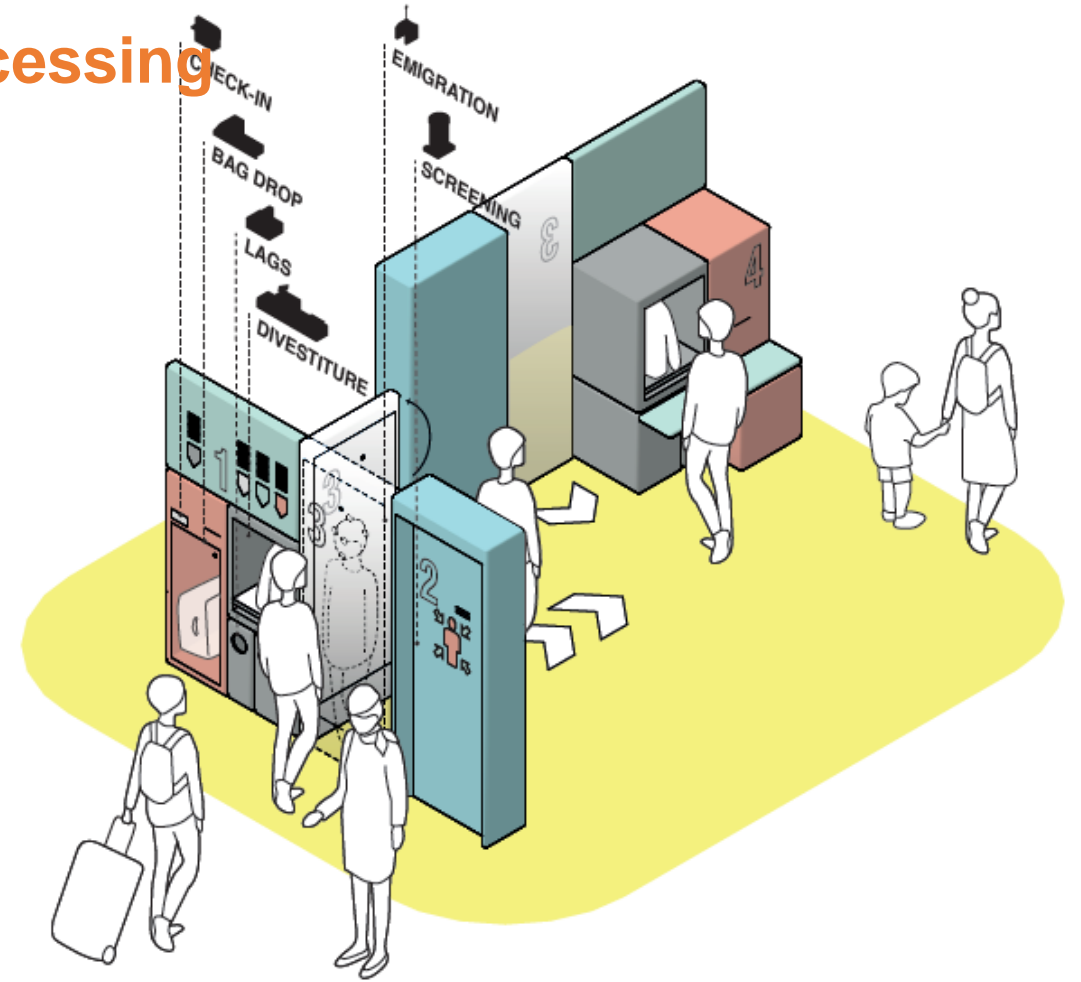
3D maps

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

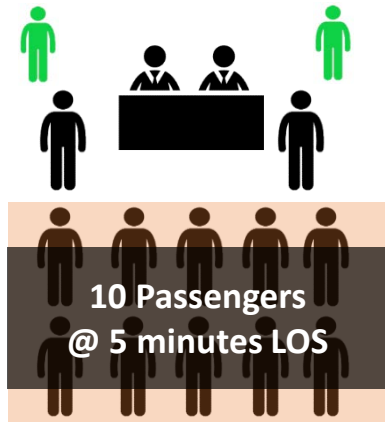


TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

#AIRPORTS19

Watchpoint – space requirements



TOTAL Throughput
2 passengers/minute

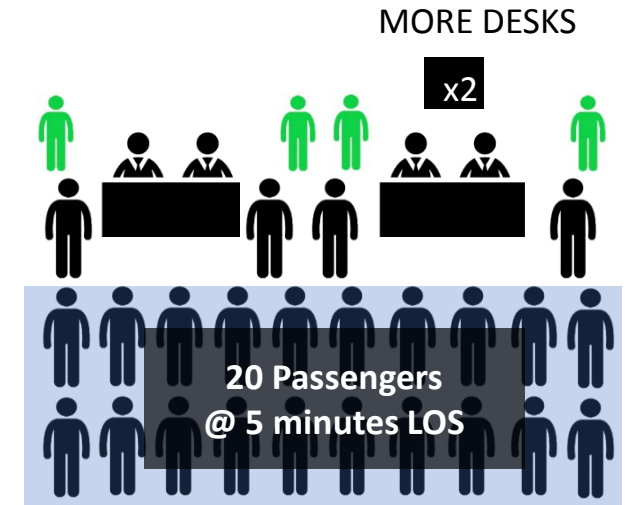
Queue Calculation:

Throughput x LOS target =
Passengers in Queue

Option 1 – Increase Capacity

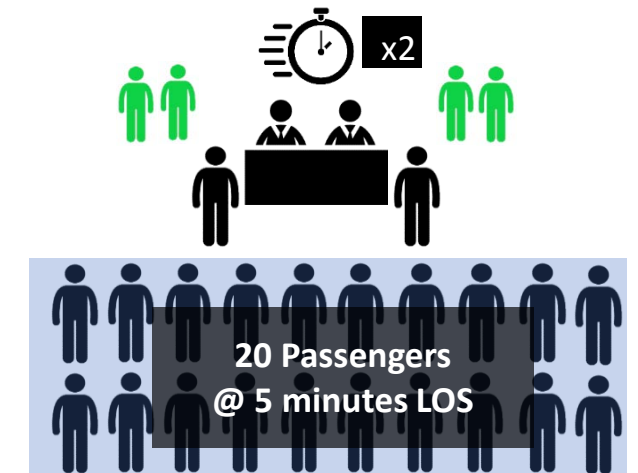


Option 2 – Increase Efficiency



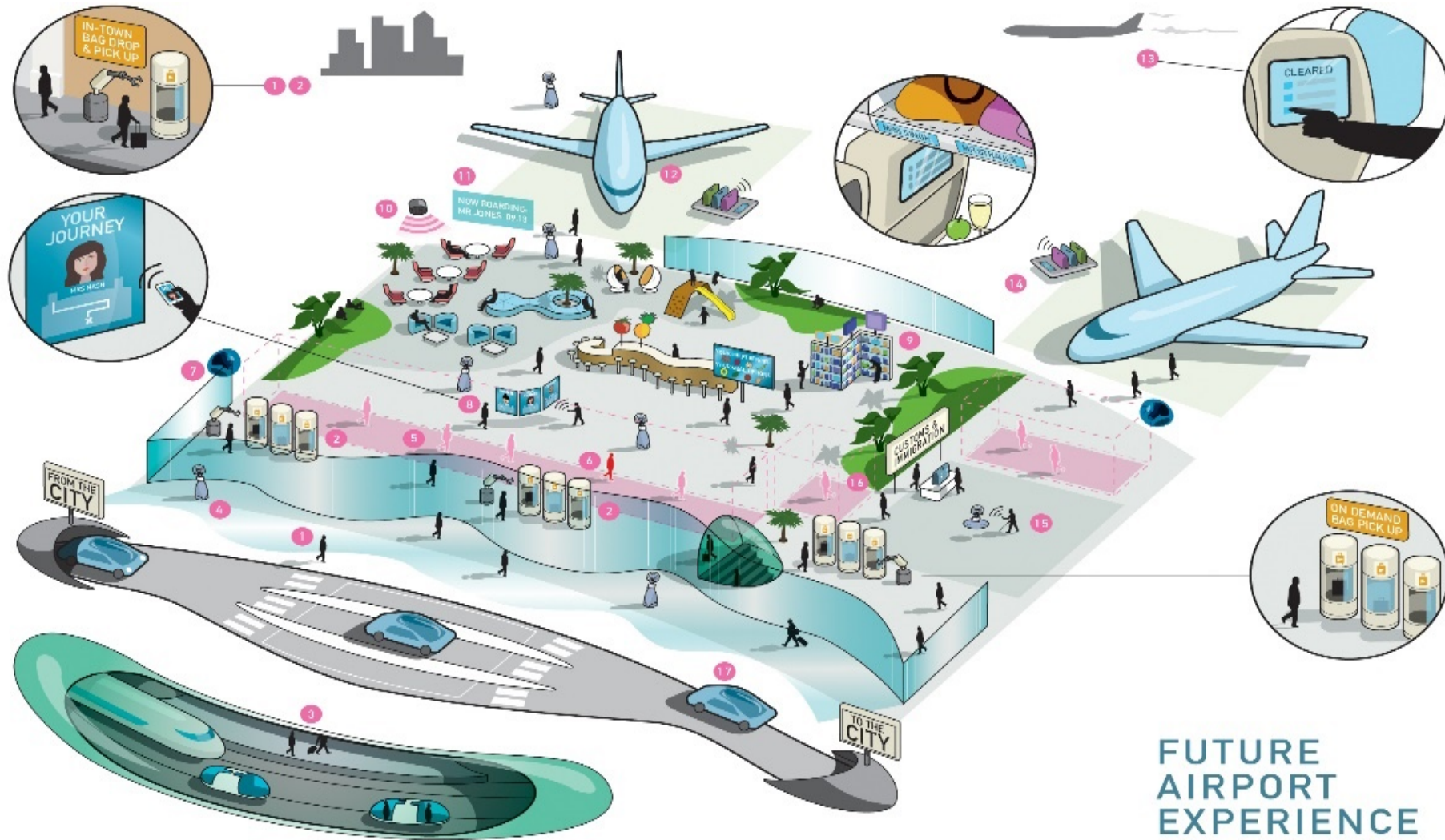
TOTAL Throughput
4 passengers/minute

FASTER PROCESSING



TOTAL Throughput
4 passengers/minute

Future of Air Travel



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



TAMPA 2019

AIRPORTS COUNCIL INTERNATIONAL - NORTH AMERICA
ANNUAL CONFERENCE AND EXHIBITION
SEPTEMBER 15 - 17, 2019

#AIRPORTS19