Omar Sherin

*Cyber Analytics in Aviation*
How many data records are created each month in DXB?

5 Billion (Records)
DXB in just 24 hours

351,000
Passengers detected by 1,000 sensors

150,000
Devices connected to the free WiFi

150 million
Number of data points collected

60,000
Faces scanned at e-gates

35 terabytes
Data handled by airport's passenger WiFi

16,000
Number of pieces of luggage per hour Terminal 3 can handle in 'virtual bag' tests

30 seconds
Accuracy window for predicting when your bag will arrive on the carousel

200
Approximate number of data points per bag

48 million
Data points collected by baggage system

Source: Wired.com 2019
Eid Holiday
(1 day)
2019

How things will look like with 5G?
24 Servers

12 CCTVs, 6 TB storage, 1K Meters of Fiber cabling, AD, DNS, DHCP, Wireless APs

A. Data center of a local airport
B. Data center of a medium business
C. Data center of an international airport
Boeing 777 - 300

A flying data center
Welcome to the Smart Cabin

- Passengers health monitoring !!
- Access your Netflix and Spotify (2022)
My Airbus A321 Trip

- **My Seat IP**: 172.17.34.136
- **My Seat MAC address**: 00:06:CF:03:E0:A6
- **The Ent. Server name**: D2P1-V111
So how can we put all this data to good use?
Merging Physical + Cyber security
Baggage Handling Analytics

Current State

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Input Data

- Incidence data
  - TOD/DOY/DOM
  - Origin of Travel
  - Destination
  - Weather data
  - Special events

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Employee data

- Name
- Age
- Employment duration
- Work profile
- Past history
- Education

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Passenger data

- Name, Age
- Demographic Information
- Citizenship
- Employment Information

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Methodology

\[ y_{i}(t+1) = f\left( \sum_{j \neq i} w_{ij} y_{j}(t) + I_{i}(t) \right) \]

Outcome

- Passenger Risk Score Risk Profile
  - A: High
  - B: Safe
  - C: Moderate
  - D: Safe
  - E: Low
  - F: Very Low

- Impact
  - Low Risk
  - Medium Risk
  - High Risk

- Variation in Risk with Time

\* TOD: Time of Day, DOY: Date of Year, DOM: Date of Month
Aviation Cyber Security Guidelines

A regional 1st
Questions?