Blockchain in Airports and Aviation in the post-COVID-19 era

Simon Brown CEng MIET
Head of IT Architecture, Operations
COVID-19 impact

Re-charging our business

Long-term sustainability
34% of UK exports by value for non-EU exports

80 million passengers a year

82 airlines serving 204 destinations in 85 countries

76,000 jobs supported at the airport

9 routes to other UK airports

2 full length runways and 4 operational terminals
200,000 passengers in April

Consolidation

1 full length runway and

2 operational terminals

1,788 cargo-only flights in April

Supporting the NHS
Digital & Data

Supporting our colleagues
Digital & Data

Supporting our passengers
Re-charging confidence
“Aviation is the cornerstone of the UK economy, and to restart the economy, the Government needs to help restart aviation. [Agreeing a] standard is key to minimising transmission of Covid-19 across borders, and the technology we are trialling at Heathrow could be part of the solution.”

John Holland-Kaye - Heathrow CEO
IATA: over two thirds of travellers will not fly if it means quarantine period

14 May 2020 by Mark Caswell
Innovations pipeline
Digital Disruption?

Heathrow Airport apologises for IT failure disruption
Cranfield Study - Data flow fails are 60% of root cause of flight delay

Analysis of flight delay contributions

- Weather delay: 26%
- Technical and aircraft equipment: 15%
- Air traffic control: 12%
- Passengers and baggage: 11%
- Flight operations and crewing: 8%
- Aircraft and ramp handling: 8%
- Enroute delays: 10%
- Other: 10%

https://www.cranfield.ac.uk/-/media/files/events/farnborough-dartec-whitepaper.ashx
Series systems are not as reliable as distributed parallel systems

\[ A_{\text{all data}} = A_{\text{System}^1} \times A_{\text{System}^2} \times \ldots \times A_{\text{System}^n} \]

Assuming 10 systems in chain are 99.99% available then

\[ A_{\text{all data}} = 0.999 \]

\[ A_{\text{all data}} = 1 - (1 - A_{\text{Cloud}^1}) \times (1 - A_{\text{Cloud}^2}) \times (1 - A_{\text{Cloud}^3}) \]

If all Clouds are 99.99% available in multi-region, then

\[ A_{\text{all data}} = 0.999999999999 \]
Please enter your Type B and AFTN Station code for your destination.

Will the zip-code work?
The UK’s Future Flight research programme is to develop & demonstrate integrated aviation systems enabling the introduction of new classes of electric & / or autonomous air vehicles.

These could include drones, urban air mobility (UAM) vehicles or electric regional aircraft.
By researching the use of modern and emerging internet technologies of public cloud infrastructure and distributed ledgers, the decentralised operating models built over generations of pioneering aviation discovery can be preserved, whilst transforming operating resilience and costs for the community.
As we look to a future of increased trust, accountable governance, interdependence and resilience, our commitment to pioneering research remains despite COVID-19.
Digital Readiness

Process-driven international collaboration

Data ecosystem transformation
Thank you

linkedin.com/in/uksimonbrown