EA Maven
www.eamaven.com

Introduction

About EA Maven

Electric Aviation Maven Ltd (EA Maven) is a management consultancy firm focusing on solving the key challenges in the area of AAM through the provision of RAM/AAM strategy support, demand modelling, infrastructure design and due diligence services. EA Maven is a leading expert in advanced air mobility demand modelling, system planning and infrastructure design. Our clients' portfolio comprises OEMs, airports, airlines, infrastructure investors, governments and more. Our aim is to help our clients assess the potential that RAM/AAM revolution will bring to their business.

Darrell Swanson - Director / Co-Founder

- Extensive advisory experience to AAM players, supporting clients with go-to-market strategies, infrastructure planning, and regulatory challenges, AAM demand modelling, and market analysis
- Expert in the UK market as board member of British Aviation Group, a representative body for UK companies in the airport and aviation sector
- Former advisor to NASA on electric aviation infrastructure and business model and various leadership roles in aviation consultancy companies

32 years of experience

- MBA, Strategy, Finance, Entrepreneurship, Cass Business School
- MSc, Airport Planning and Management, Loughborough University

Jarek Zych - Director / Co-Founder

- Jarek specializes in demand modelling for AAM, air service development and traffic forecasting for airports, and network, fleet and schedule planning / strategy for airlines
- Significant experience in the UK, US and European markets, advising aviation clients in/out of Europe, US
- Former Sales Engineer EMEA at Cirium and Managing Consultant at Avia Solutions (GE Capital Aviation Services)

19 years of experience

- Postgraduate, Airports Financing, Warsaw School of Economics
- MSc, International Management, University of Warsaw
- BSc, Civil Engineering, Polytechnique

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Electric and Hybrid Aviation Background

Key Considerations

Advanced Air Mobility

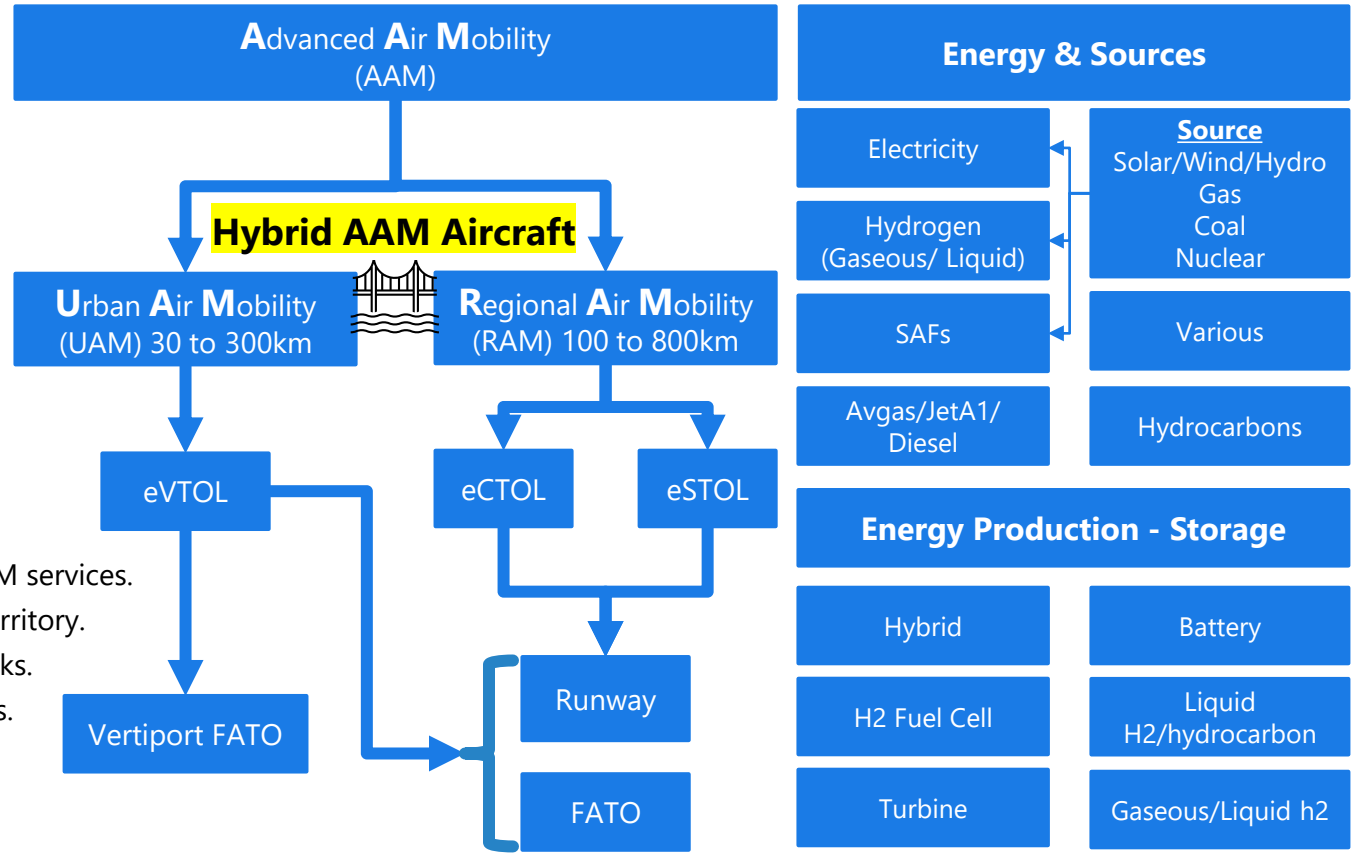
EA Maven's Interpretation

- Urban Air Mobility describes a market which is typified by routes with a range between 30 and 300 km served by eVTOL aircraft at specialised vertiports or existing airports with suitable infrastructure to support operations.
- Regional Air Mobility is a sub section of Regional Aviation which is distinct from the Commuter Aviation market
- Regional Air Mobility is defined by trips that are of high value to the passenger who would otherwise spend significant time on other surface modes of transport.
- This is driven by airline operating economics in that the volume of demand for Sub Regional Aviation is below the threshold for commercially viable services

AAM HORIZON

H: **Hybrid** - A nod to hybrid propulsion systems expanding operational range.
O: **Opportunity** - Capturing the emerging market potential for extended AAM services.
R: **Range** - Overcoming traditional UAM limitations and extending into RAM territory.
I: **Integration** - Seamlessly merging urban and regional air mobility frameworks.
Z: **Zoom** - Focusing on speed within aerodynamic and passenger comfort limits.
O: **Optimisation** - Balancing technology, efficiency, and user needs.
N: **Next** - Representing the next phase in AAM evolution.

HORIZON represents forward-looking innovation and the expanding boundaries of what is possible in air mobility, symbolizing the industry's continuous growth and redefinition.



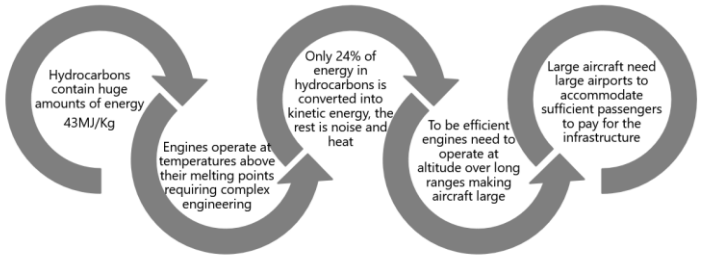
AAM as enabled by electric propulsion system architectures which is agnostic with regards to energy source and storage system (Battery, Hydrogen (gas/liquid), Hybrid, SAFs, Hydrocarbons

Electric and Hybrid Aviation Background

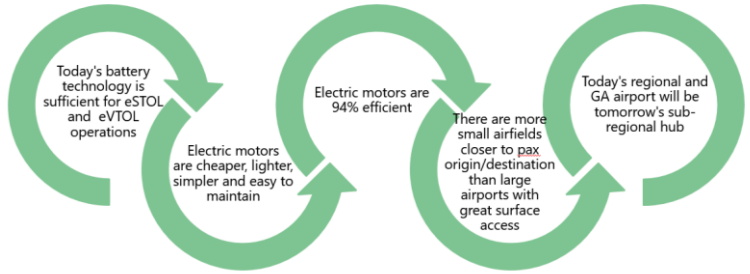
Hydrocarbon vs Electric

- Electric Aviation presents us with an unprecedented opportunity in the aviation sector not seen since the very early days of aviation. This innovation has come about through the incremental development of electric propulsion systems which has its roots in electric car manufacturing.
- **The Economics of Hydrocarbon Aviation v Electric Aviation**
  - In this new world the economics of aviation are upside down. In this case traditional hydrocarbon powered aviation favoured large aircraft and large airports to pay for effectively the energy density of Jet A1. As engine technology evolved the complexity increased requiring aircraft to be larger, carrying more passengers over longer distances. This in turn required larger airports to be able to pay for the whole system.
  - Conversely electric aircraft due to their lower capital, operating and maintenance cost will be able to operate out of smaller airfields at lower costs which may be closer to the passenger's true origins and destinations.
  - With reference to regional aviation, we identified a trend whereby regional aircraft manufacturers are developing aircraft with more and more range and seat capacity whereas airlines peak average sector length is only 200nm. In this case we have aircraft with a range of up to 2,500nm being operated on sectors of 200nm or only 8% of their range capability. In this case electric aviation has the potential to operate in this 'sweet spot' thus addressing almost 50% of aviation carbon emissions which have been identified by sectors flying less than 500km.

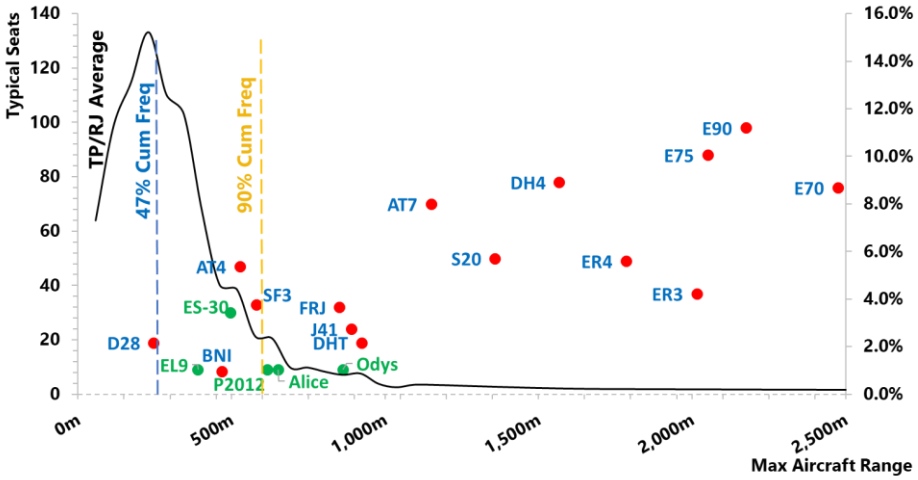
Economics of **Hydrocarbon** v Electric Aviation

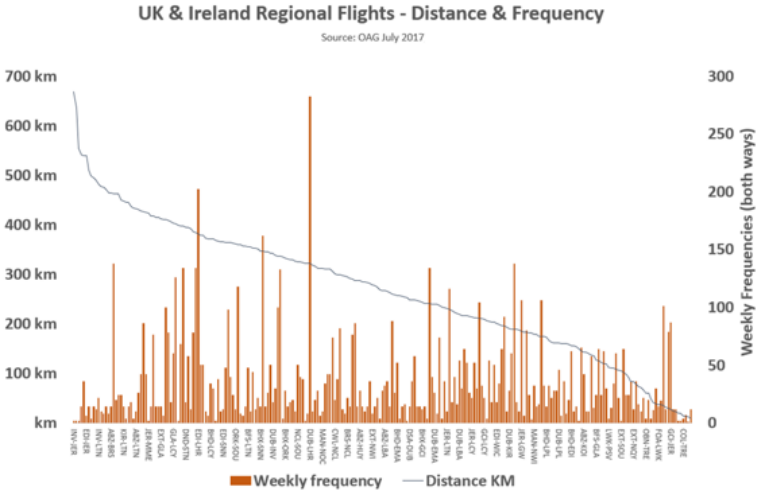


Economics of Hydrocarbon v **Electric** Aviation



Regional Jets/Turbo Props
Frequency Distribution vs Distance/Max Range Europe
Source: EA Maven analysis, OAG Schedules





The significance of this chart is that it demonstrates that 90% of flights in Europe using Turbo Prop and Regional Jets are less than 575 miles , yet these aircraft have ranges up to 3000 miles

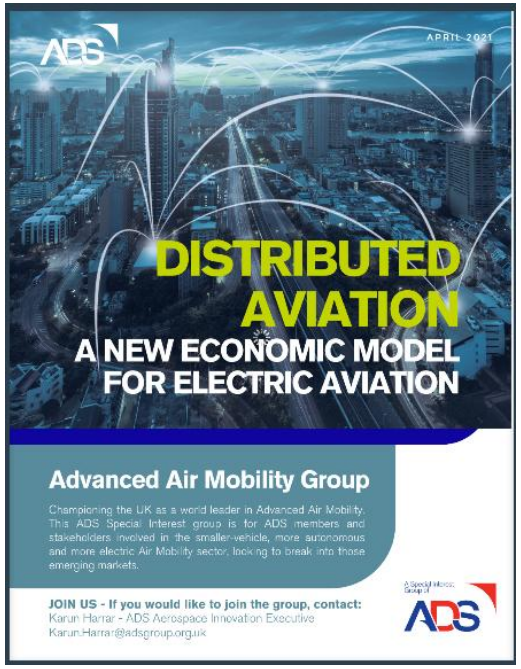
Electric and Hybrid Aviation Background

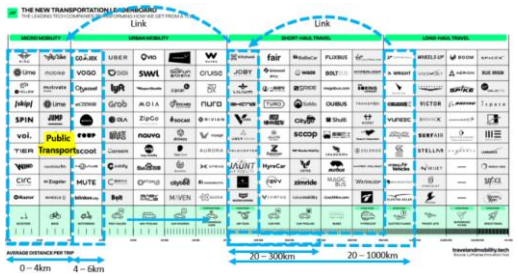
The Rise of Distributed Aviation

- The opportunity presented via electric propulsion is that we can develop a distributed aviation system that allows us to make the best use of existing aviation infrastructure while still increasing regional connectivity leading to increased economic benefit. The evolution of a distributed aviation system is set out below:
  - Electric propulsion will disrupt the current sub regional aviation system that will lead to a future of distributed aviation.
  - Electric low-cost sub regional airlines (eLCCs) will operate on thinner routes enabled by lower capital, operating and maintenance cost of electric propulsion systems.
  - A quantity of sub-regional traffic will distribute away from the current hub and spoke system of airports (international & regional airports) to secondary and smaller airports.
  - eLCCs will operate out of secondary and general aviation airports due to their lower charges, available capacity, and closer proximity to markets which are viable even though they are uneconomic for hydrocarbon powered airlines.
  - Fixed wing electric aircraft will take passengers over longer distances where passengers will transfer onto either local transportation services or an eVTOL for access into large urban environments. As technology permits direct city center to city center eVTOL operations will be established.
  - A distributed electric aviation system offers lower cost sub-regional flights closer to passengers' origins and destinations while helping reduce the carbon impact of travel.

https://www.adsgroup.org.uk/knowledge/distributed-aviation-a-new-economic-model-for-electric-aviation/

- Larger international airports may lose some domestic traffic but gain in terms of a reduction in the number of smaller less profitable routes which can be replaced with long haul international flights whilst still maintaining regional connectivity. This has the potential to make the best use of our existing hub airports and their precious runway slots whilst still accommodating growth.
- As electric aviation technologies develop, they will enable larger aircraft, they will be incorporated into our well-established aviation system helping the UK to meet its carbon commitments.





Regional Advanced Air Mobility (RAAM) the natural evolution of Regional Air Mobility

Making Regional Air Mobility Great Again

From RAM

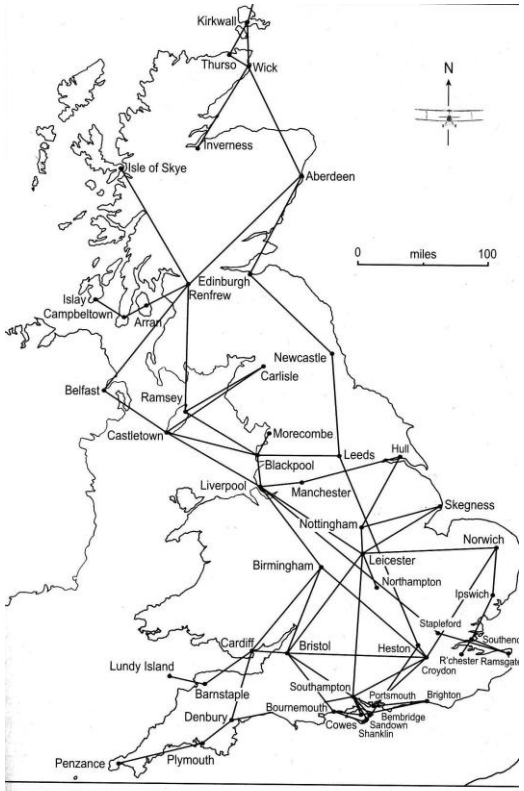


Figure 6: The routes of the UK internal airways in 1935.
Dr. Anne Tarver; Nottinghamshire County Archive Service

Regional Air Mobility (RAM) was the original commercial aviation model, dating back to the days when smaller aircraft connected nearby cities across relatively short distances. Over time, as engineers continually improved hydrocarbon engine technology, it became possible to extract more energy from hydrocarbons, enabling larger and longer-haul aircraft to fly longer routes. This evolution gradually overshadowed the original regional-scale connectivity, and while today's regional aviation still exists (as demonstrated by operators such as Loganair, Harbour Air, Skybus, and many others deploying aircraft like the P2012, DHC-6 Twin Otter, BN2 Islander, Cessna Caravan, ATR 42/72, and similar types), it serves a more limited set of denser routes. Historically, these denser routes have higher travel demand, which was captured using legacy data sources and established patterns of passenger traffic at larger regional airports.

Under the Distributed Aviation theory, the high energy density of hydrocarbon fuels naturally drove a trend towards longer haul and higher capacity operations; smaller, thinner routes became commercially difficult for traditional aircraft to serve. Electric propulsion, however, reopens these smaller markets. Newly emerging fixed-wing Advanced Air Mobility (AAM) aircraft—likely seating between 4 and 30 passengers—promise lower operating and maintenance costs, making routes that were formerly uneconomic under the existing hydrocarbon paradigm suddenly viable. One could label the older network of existing aircraft and routes as "RAM," with the next-generation, electric-powered systems becoming "RAAM" (Regional Advanced Air Mobility). RAAM aircraft will be capable of serving a far broader set of city pairs, requiring a more intelligent approach to route identification than simple reliance on legacy traffic data.

This is where EA Maven's use of mobility data and its bespoke Indexing Methodology come into play. Rather than relying solely on historical records of passenger numbers at major airports, EA Maven's approach looks at how, when, and why people travel—capturing large swathes of potential demand that lie outside conventional aviation datasets. By correlating door-to-door travel times, population density, trip purpose, and other socio-economic indicators, the EA Maven dashboard quickly pinpoints which under-served routes could become prime candidates for RAM or indeed RAAM services. This indexing framework empowers airports, airlines, OEMs, air navigation service providers, and governments to identify—and confidently invest in—the next wave of short-haul aviation opportunities that electric propulsion is about to unlock.

to RAAM

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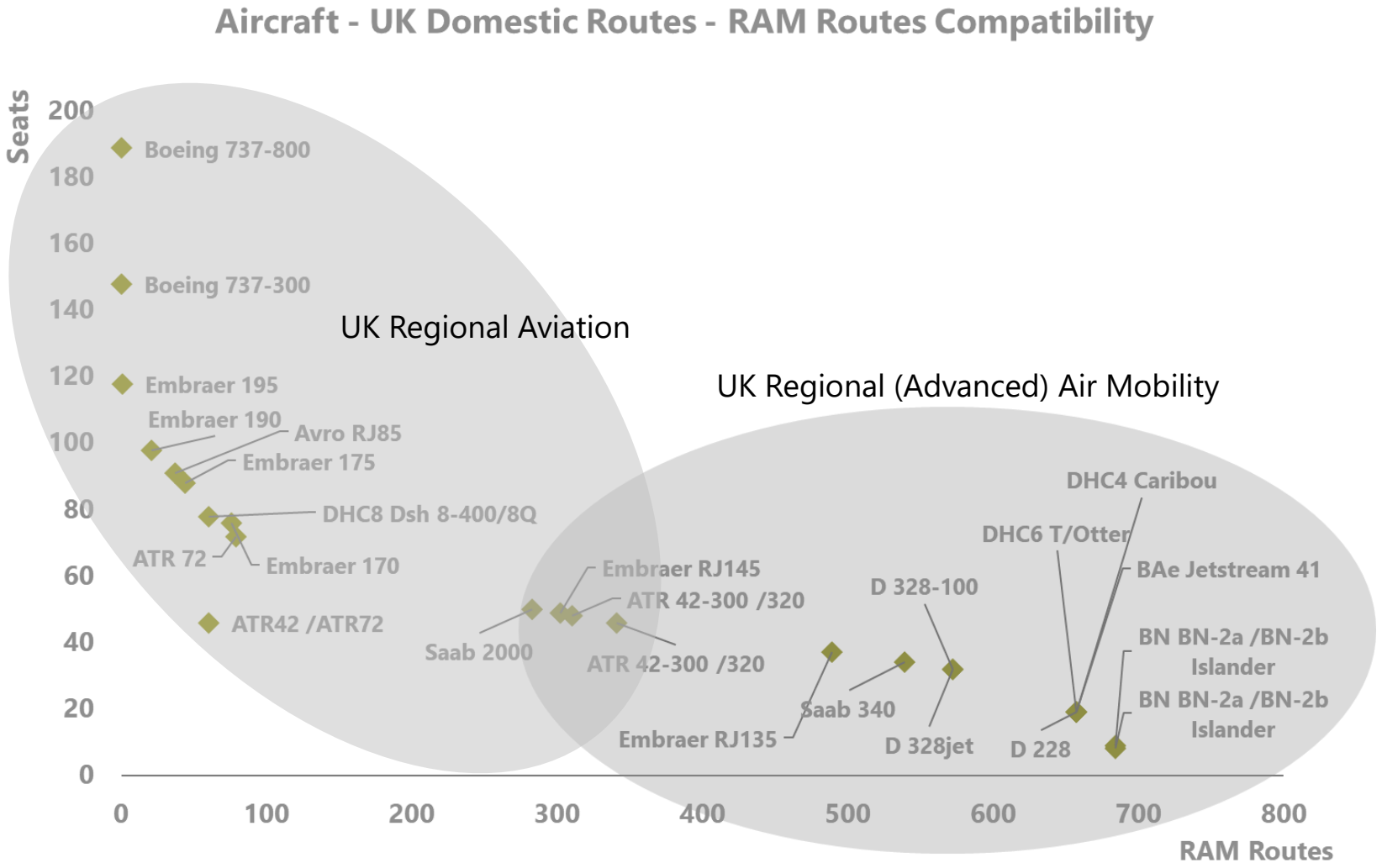
UK RAM Potential

Regional Air Mobility – Aircraft Compatibility and Availability

- The chart to the right sets out an approximation of the number of routes that could be operated by different aircraft in the UK RAM Index.
- This analysis shows that with current hydrocarbon aircraft that there is significant potential for the economics of some of these routes are viable for traditional hydrocarbon aircraft.
- Globally there is a large volume of these aircraft that could be registered in the UK for operations thus the market potential could be significant.
- A current focus of EA Maven's work is on the Tecnam P2012 with over 100 available for operation.
- It would be reasonable to interject that there is a number of traditional hydrocarbon aircraft available to enter the RAM market early while electric and hybrid electric aircraft are being produced.



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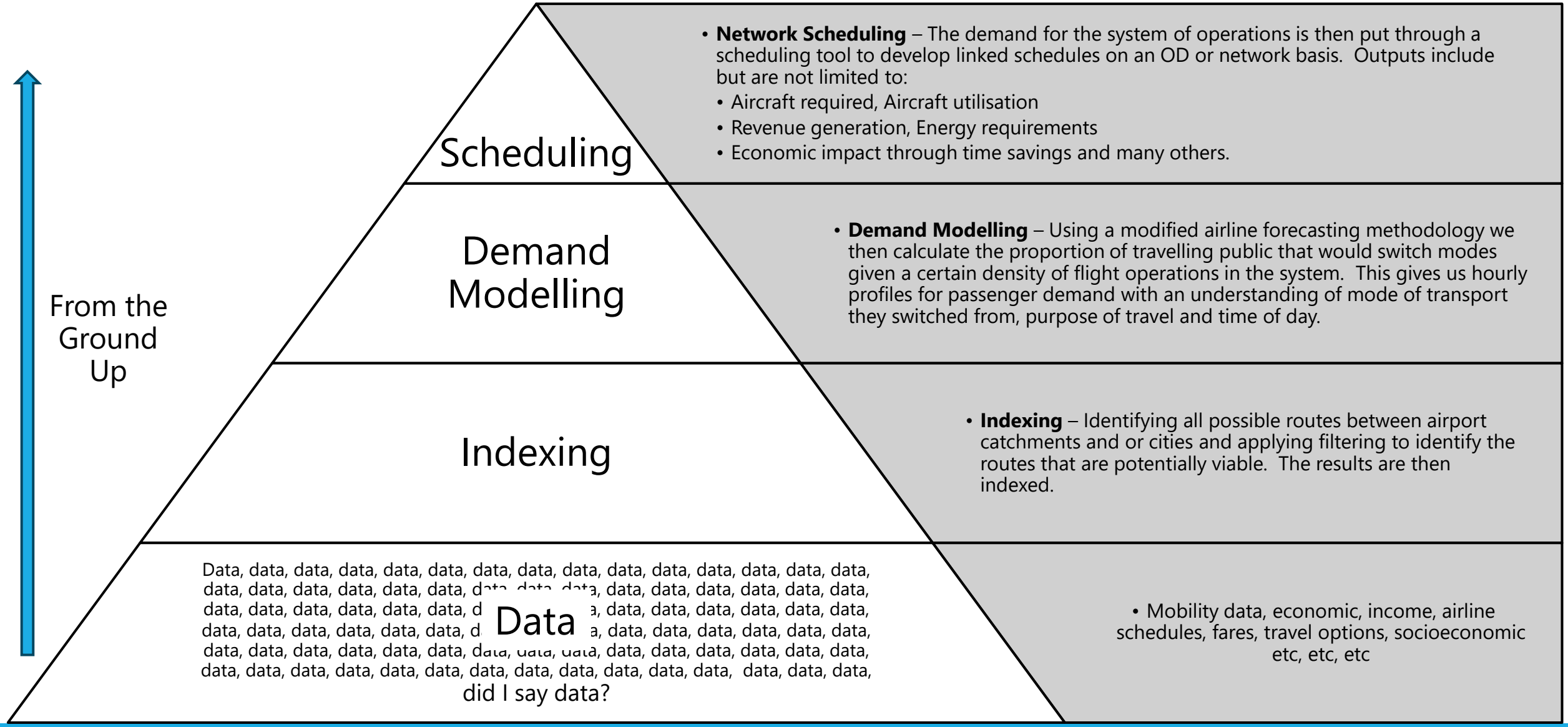
Our Approach to the AAM Opportunity

Our Approach – Not Top-Down Econometric Guessing


From the Ground Up
Scheduling
Demand Modelling
Indexing
Data, data, data,

Market Assessment Method (mobility data)

Mobility data analysis

- Analysis on the total number of journeys (passengers) undertaken from/airports (incl. catchment areas) in the UK

Setting up distance thresholds *(60nm onwards)*

- Thresholds:
  - aircraft range requirements
  - general assumptions for AAM services
  - bladder factor

Airports - preliminary selection (networking factor)

- Airports with the highest number of connections (top performers) within the distance threshold (excl. London)

Analysis on top routes between top performing airports

- Top routes (airport pairs excl. London) – total journeys (passengers) with min 2k travellers per week

Top route detailed analysis

- An indexing method to help identify the most suitable routes for further analysis
- Based on specific measurable factors that are likely to influence a passenger's choice of mode.

Next Steps... Further AAM demand modelling proposal

- Subject to individual airports' requirements we would conduct detailed demand modelling exercise for selected routes within the top routes.
- Assessment would inform:
  - The number of passengers willing to switch to AAM (weekly/annually), by purpose of travel and mode of transport
  - Number of frequencies, directionality
  - Number of aircraft required, average annual aircraft utilisation
  - Achievable revenue
  - Economic gains from time saved
  - Carbon emission saving

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Next Step – Detailed Demand Modelling
(mobility data & demand modelling)

1 **Mobility data analysis**

2 **AAM Demand Modelling** *(on a weekly basis)*

- Analysis on the total number of journeys (passengers)

- Mode of transport/purpose of travel
- Travel time (by mode of transport)
- Journey time ratios
- Propensity to fly (journeys vs population)
- Top road traffic share routes

A model developed for aviation - used by airlines for planning and scheduling and adapted with other models.

We have adapted a methodology to other modes of transports as it considers universal factors such as quality of service, frequencies, total elapsed times, etc.

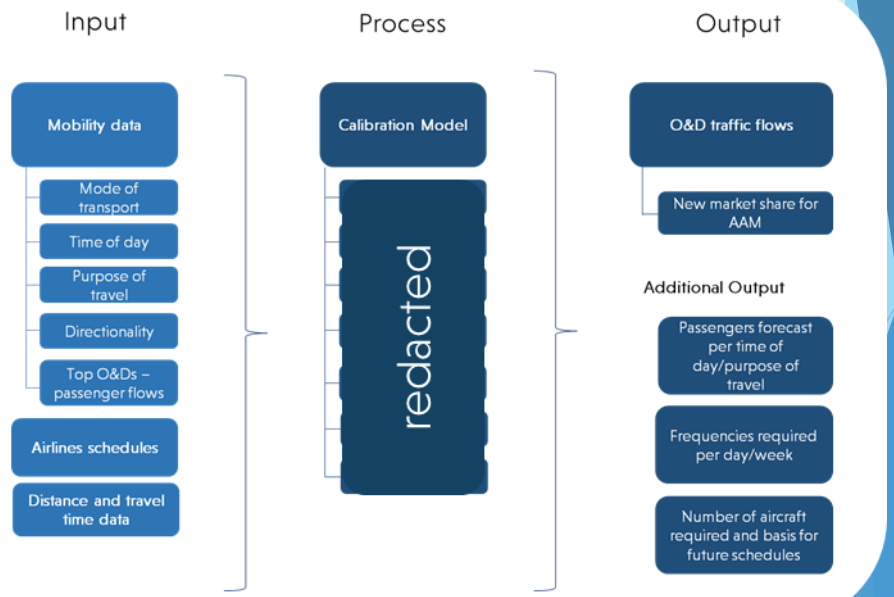
Our O&D analysis looks at passenger flows between two given points based on mobility data which undergoes analysis to make the best use of the data.

Mobility data considers different modes of transport including private cars and public transport, as well as existing traditional aviation (if available on a given route).

We then use our in-house AAM Demand model for point-to-point traffic forecasting.

The approach helps quantify market share, predicted passenger traffic, and ultimately helps to forecast route profitability.

Our model estimates the share of demand that a newly introduced AAM service could potentially capture out of the traditional modes of transport.

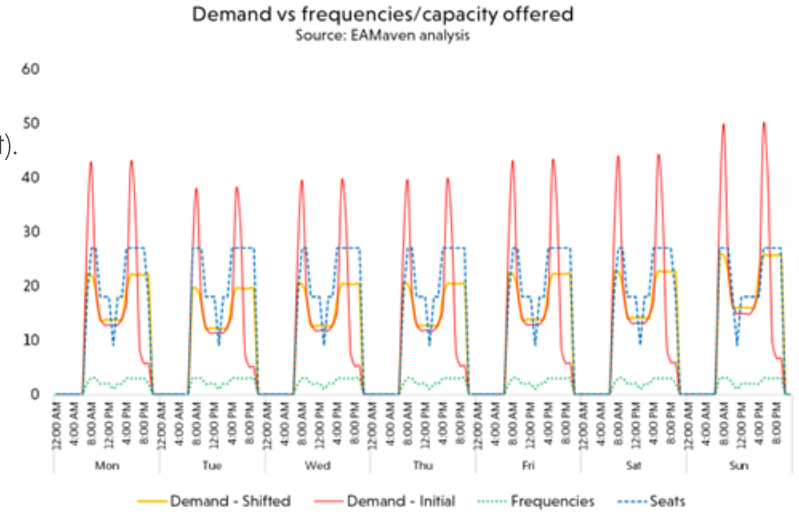


Next Step – Detailed Route Scheduling (scheduling)

3

Scheduling
O&D basis

- Based on the total numbers of passengers that could switch from other modes of transport we build up an O&D schedule to optimally match the theoretical demand and assess the number of aircraft required.
- The route has a unique weekly/hourly travel profile therefore we utilise a demand smoothing method to allow optimal aircraft utilisation. The drawback of such exercise is that some of the theoretical demand would not be captured. This approach is preferred by airlines, in order to allow optimal aircraft utilisation and equal frequency distribution.
- Outputs of the scheduling exercise include:
  - A weekly/directional profile of demand/frequency and capacity distribution.
  - The number of aircraft required on to satisfy the demand (further optimised/smoothed out).
  - Average aircraft utilisation.
  - Average daily utilisation.
  - Average load factors (directional/bidirectional and per day).
  - Achievable one-way net fare and fares per mile / weekly and annual achievable revenues.
  - Economic benefits of the total time saved from switching modes.



The Dashboard

Logout

Filter Data

Select Origin(s)

Choose an option

Select Destination(s)

No options to select.

Scenario Management

Scenario Options

- None
- Save Scenario
- Load Scenario

Metric Filters

Add Metric Filter

Select a metric to filter

Visualization Options

- Show Airport Markers

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Share

Contact:
jarek.zych@eamaven.com
darrell@eamaven.com

UK Regional Air Mobility Index Dashboard

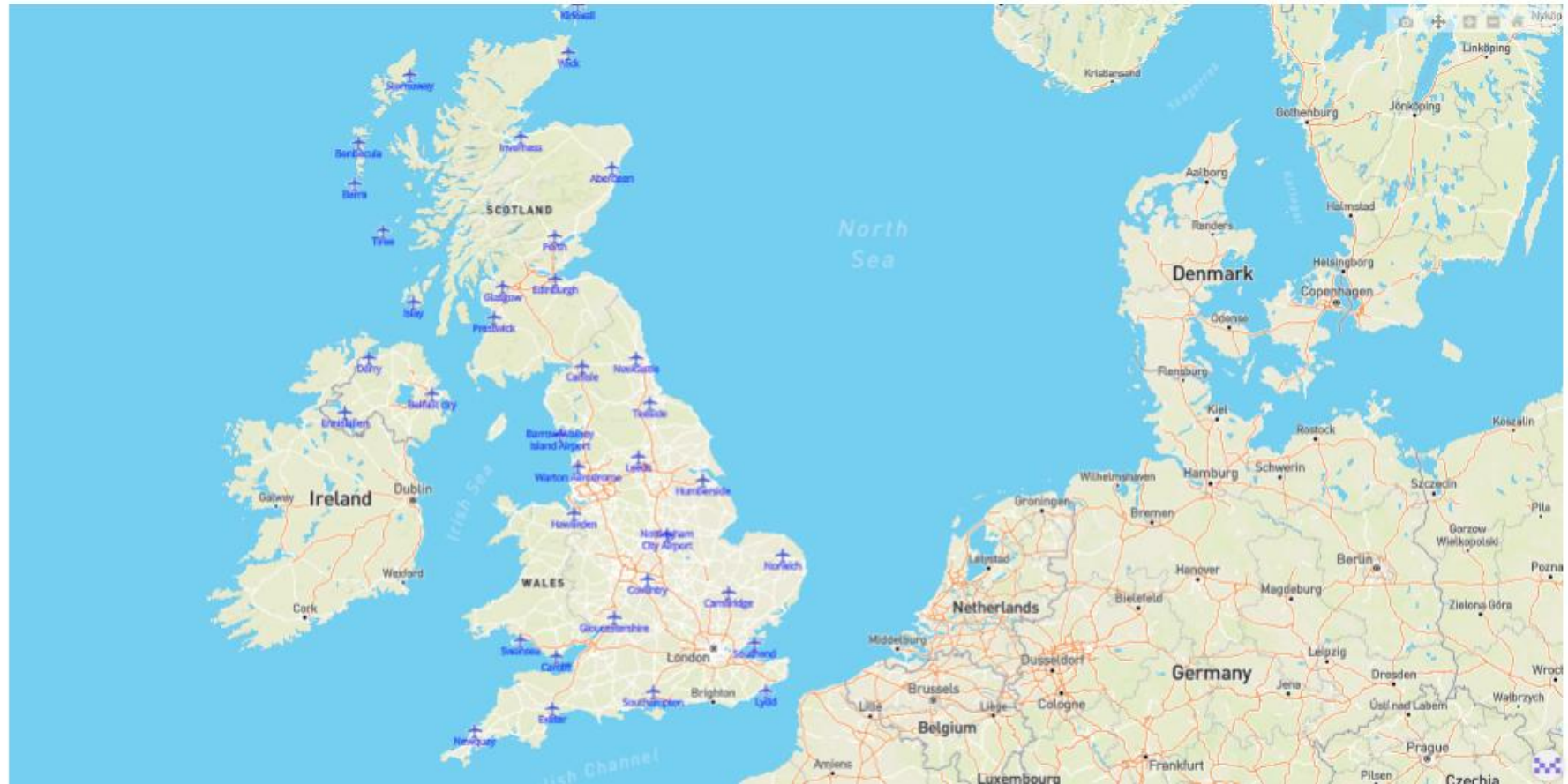
Map View | Metrics | O&D Matrix | Heat Maps | Insights | Route Comparison | Terms Explained | About Index | Next Steps

Network Map

Interactive visualization of RAM routes and metrics

Map Theme

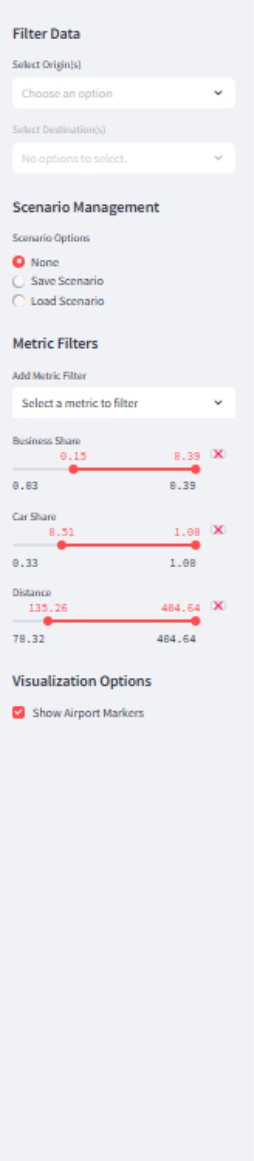
streets-v11

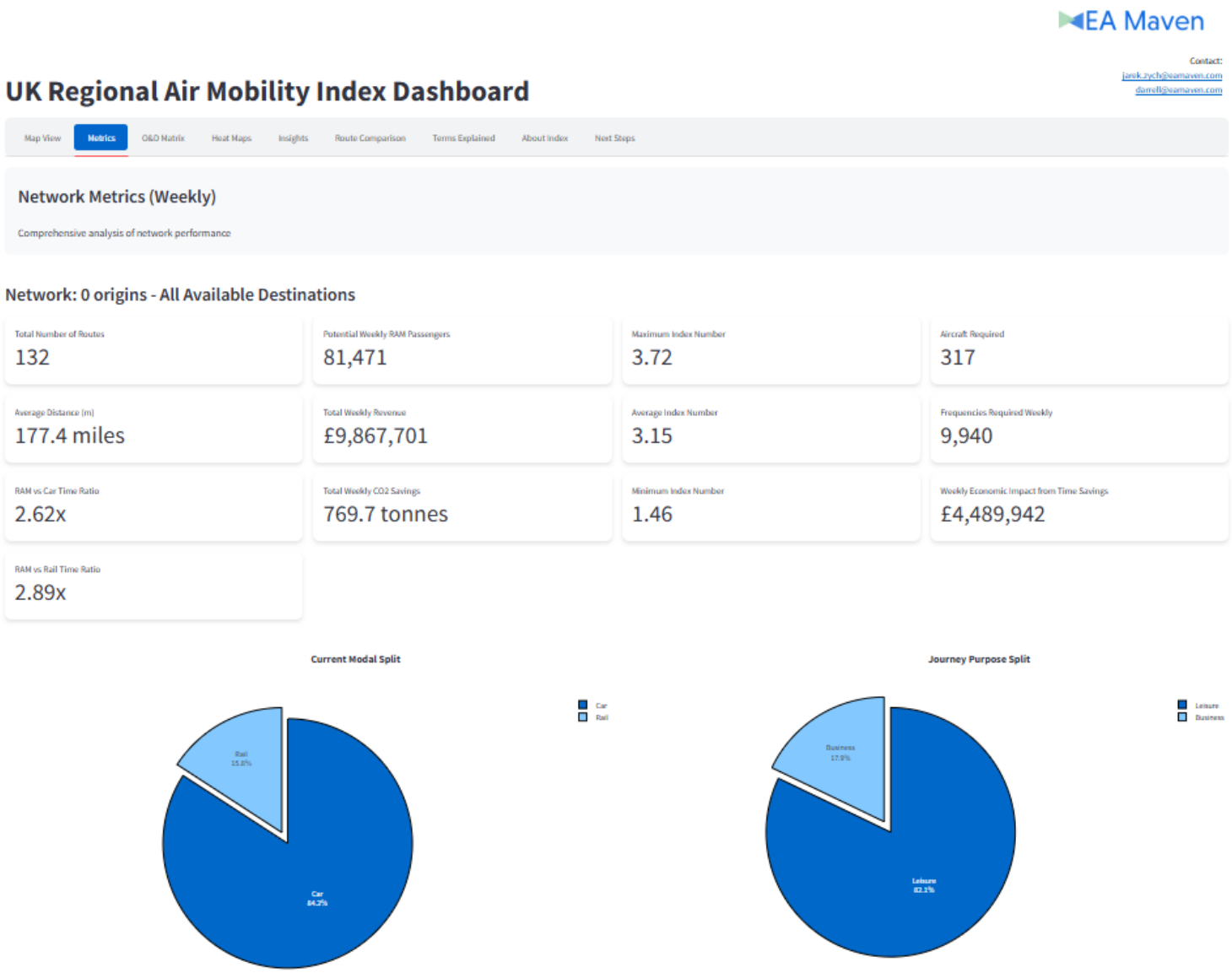


EA Maven Index Dashboard

Navigating the Index

- To navigate the EA Maven Index, a Dashboard was built to allow the use to quickly query the underlying data.
- Based on user inputs of either origin and destination pairs or general filtering based on the metric filters the user is able to quickly identify networks for further investigation.
- In this case the filtering process is used to identify likely networks of AAM services based on the predicted number of available aircraft in that class.





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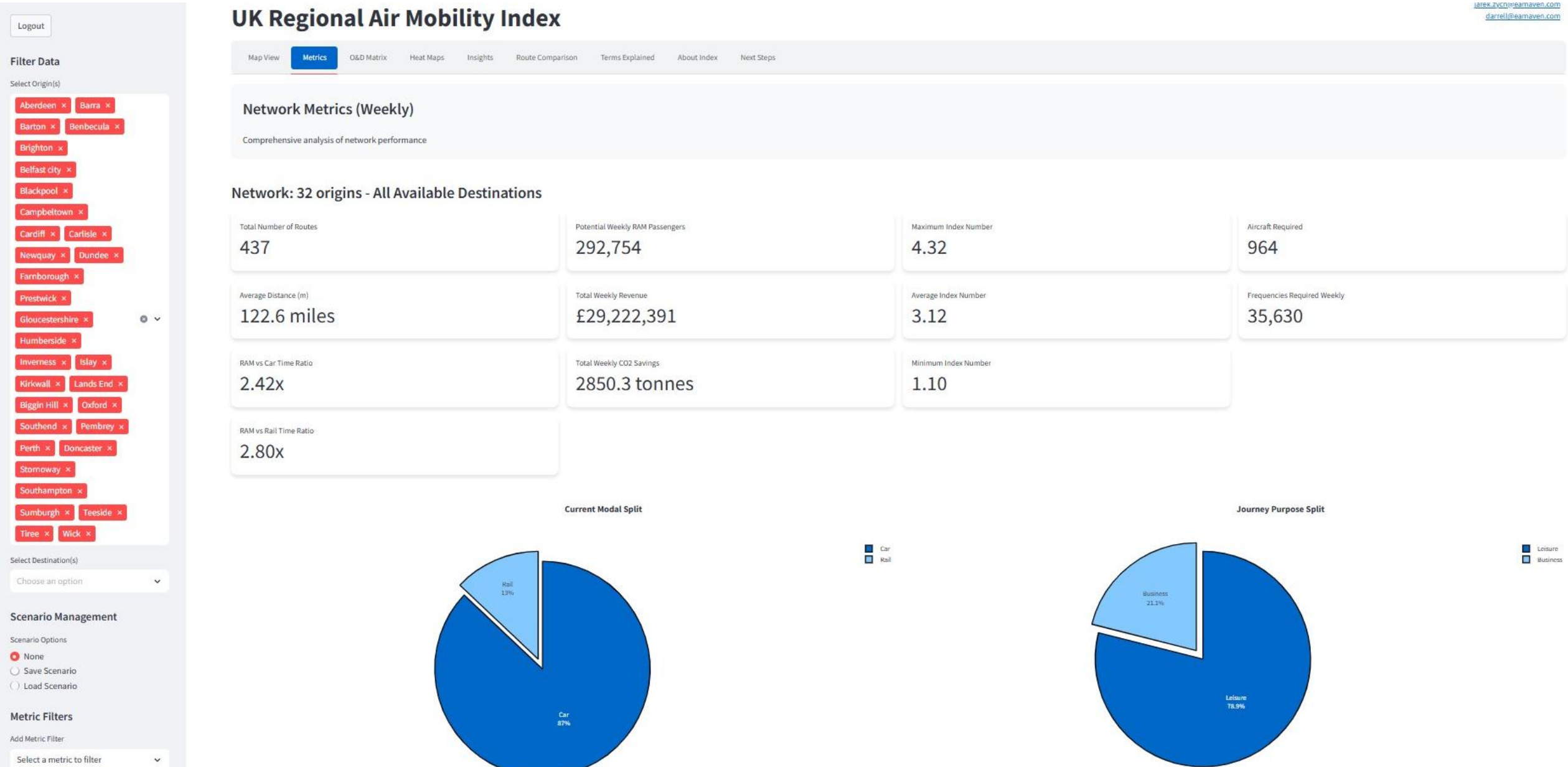
EA Maven Index Dashboard

Navigating 437 Potentially Viable RAM Routes between RABA Members



EA Maven Index Dashboard

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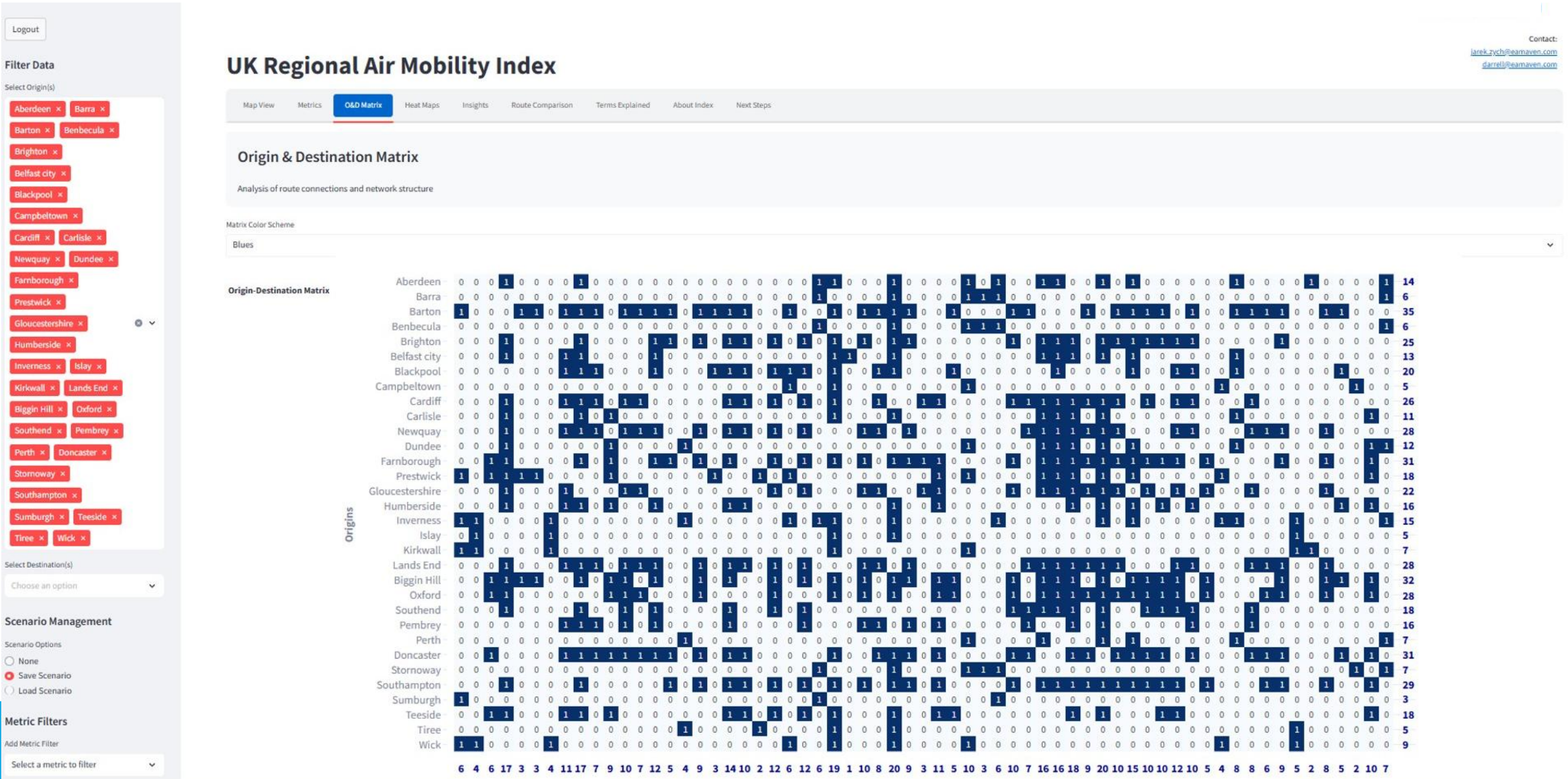

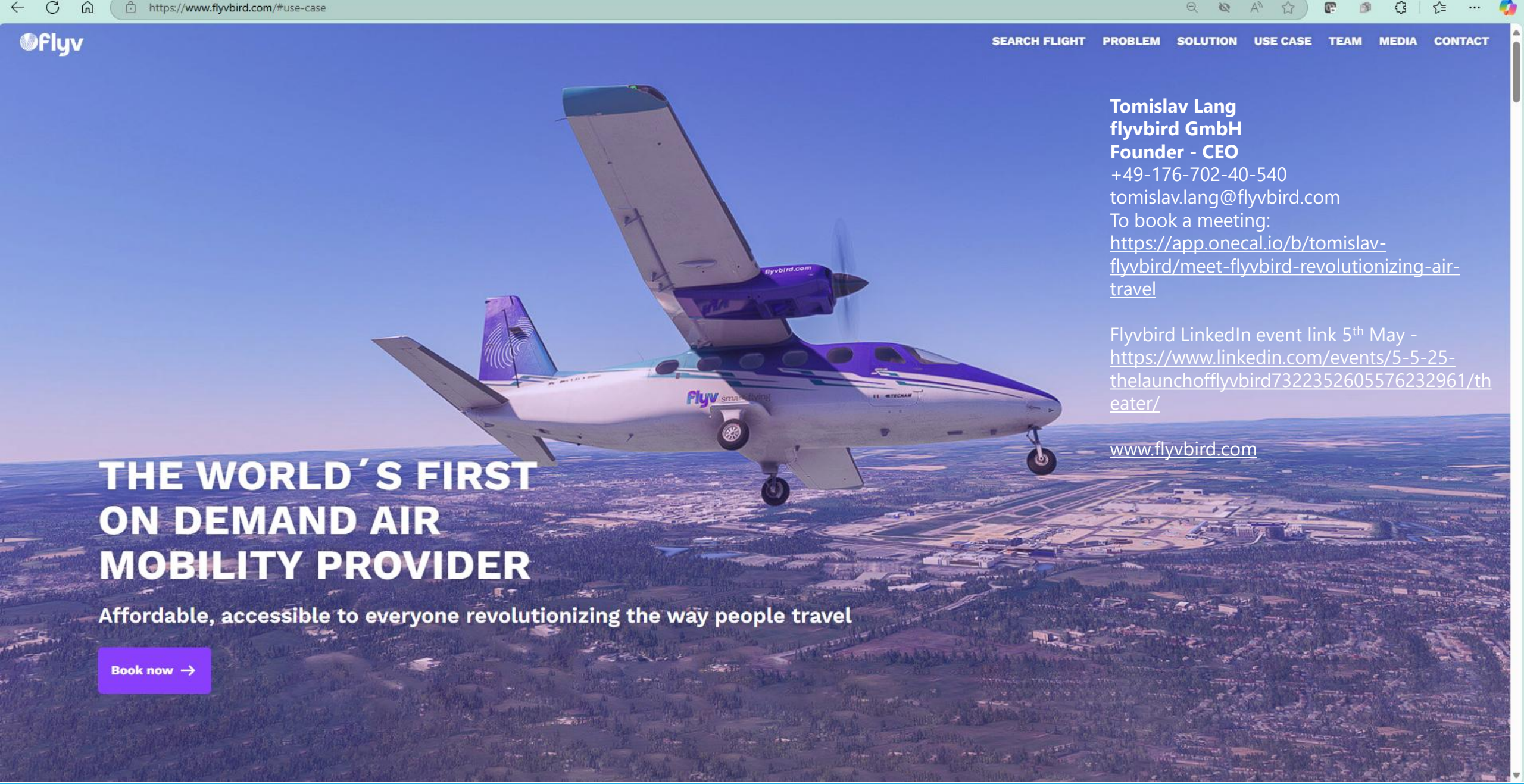

Tomislav Lang
flyvbird GmbH
Founder - CEO
+49-176-702-40-540
tomislav.lang@flyvbird.com
To book a meeting:
https://app.onecal.io/b/tomislav-flyvbird/meet-flyvbird-revolutionizing-air-travel

Flyvbird LinkedIn event link 5th May -
https://www.linkedin.com/events/5-5-25-thelaunchofflyvbird7322352605576232961/theater/

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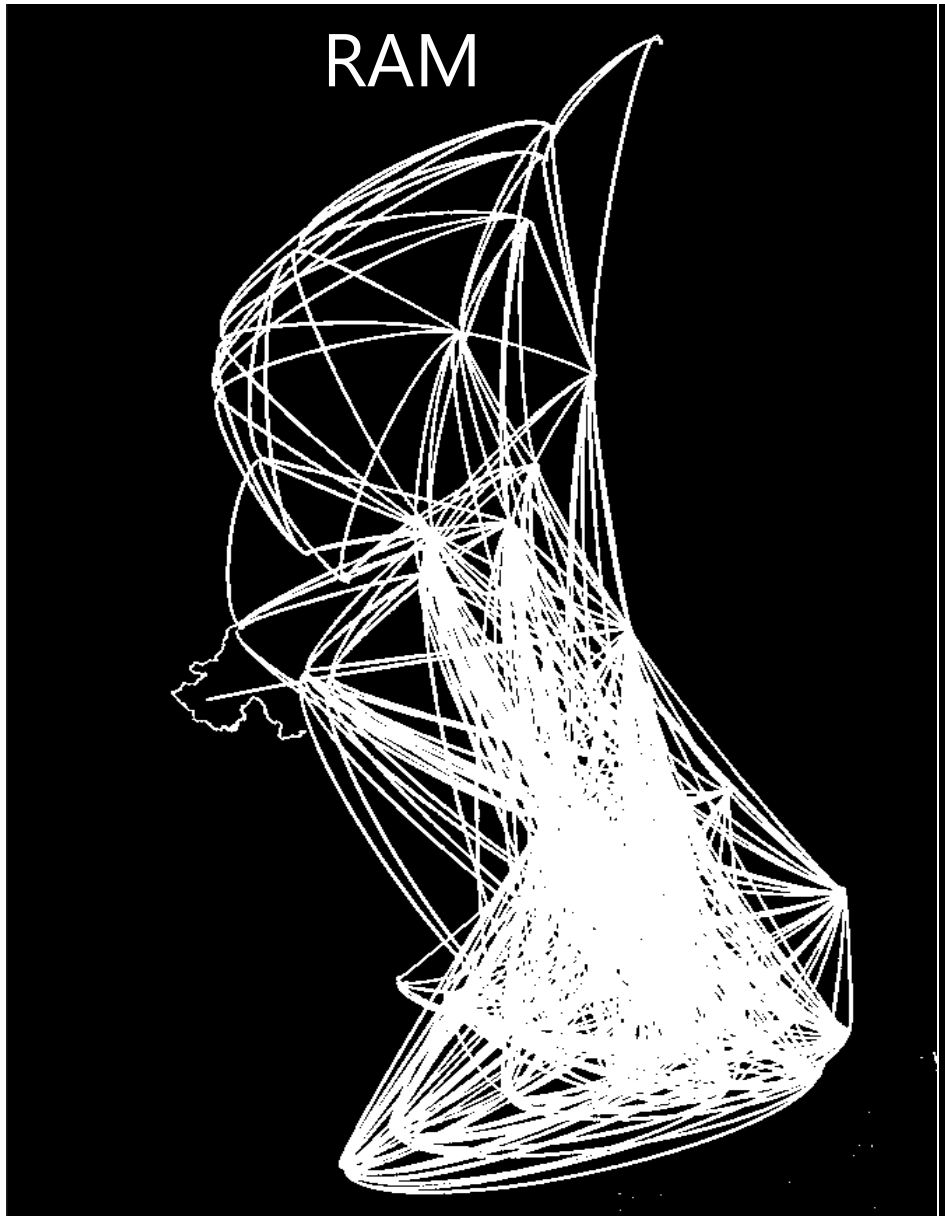
RAM > UAM

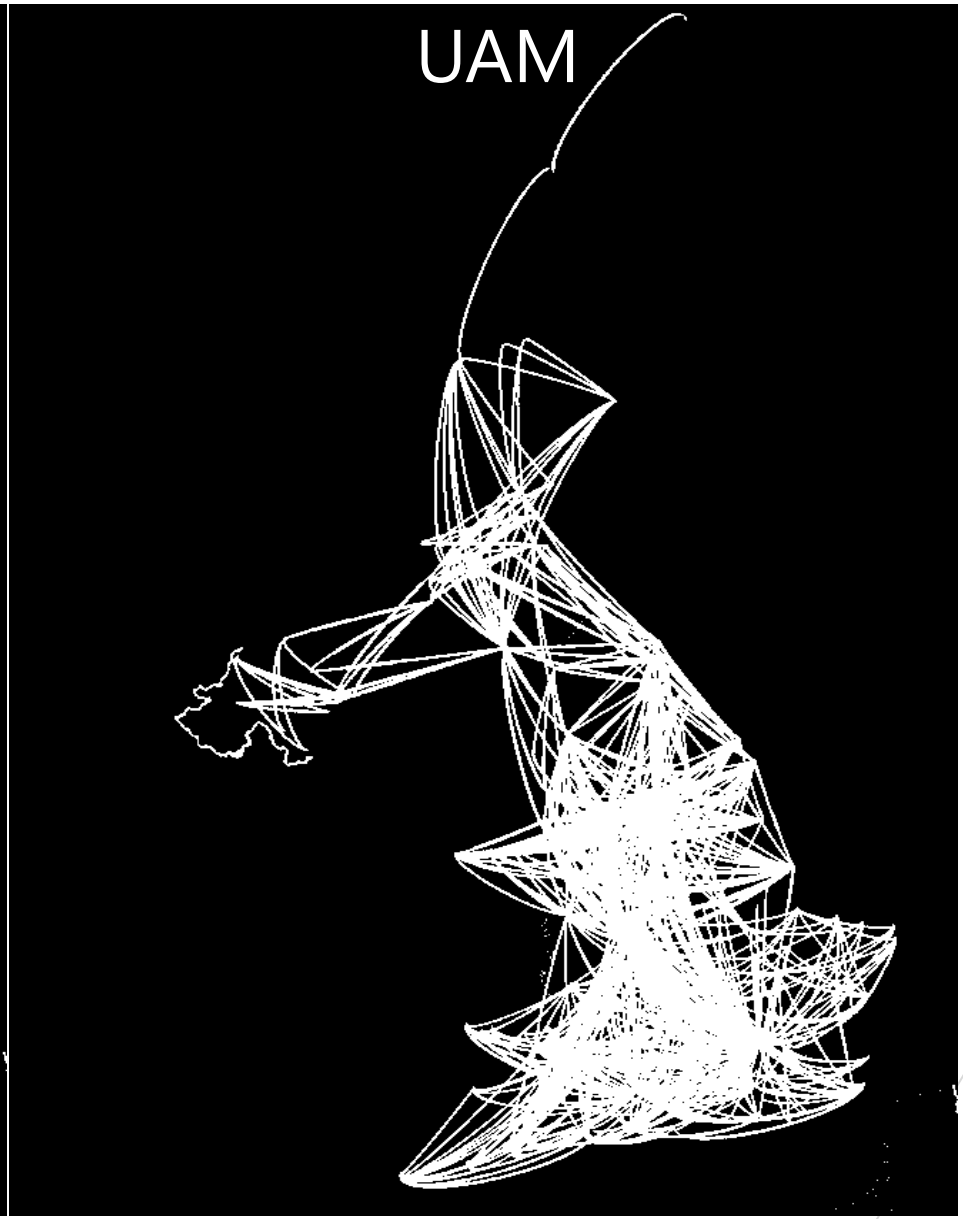
Why?

Total UK AAM Potential Summary

Routes Network

Average Sector Length 143mi





Average Sector Length 71mi

Total UK AAM Potential Summary

RAM		UAM
63/684 airports*/routes**	>	264/994 cities/routes identified with at least 96k travellers per year with 49 routes having over 1m travellers per year
TM – 430.7m travellers annually***	>	TM – 316.8m travellers annually***
82.5% of journeys by car producing significant carbon emissions	>	75% of journeys by car producing significant carbon emissions
21.9% business, 78.1% leisure/VFR travellers	<	33.3% business vs 66.4% leisure/VFR travellers
47.2m hours saved weekly/annually if switched to RAM**** 5.4k years annually!	>	27.8m hours saved weekly/annually if switched to UAM**** 3.2k years annually!

** Based on LAU1 UK spatial division of 400 shapes. Each airport and its respective catchment based on the shape where each airport is located plus the adjacent shapes.*
*** Total possible routings between all airports and their respective catchment areas with a minimum distance of 70 statute miles. Excluding routes touching London.*
**** Sum of all travellers on 1,706 routes analysed. Demand numbers based on airports' catchment areas.*

** Cities selected based certain sifting criteria.*
*** Total possible routings between all cities based on 3 main selection criteria: distance (50-120 statute miles), population (min 20k inhabitants per city), min travellers*
**** Sum of all travellers on 994 routes analysed. Demand scaled down based on population distribution (city-city demand adjustment).*
***** Based on mixed capture rates of top 994 routes. Time savings based on flight vs car/rail travel time ratios for biz and leisure. Economic stimulation based on the DfT WebTag data.*

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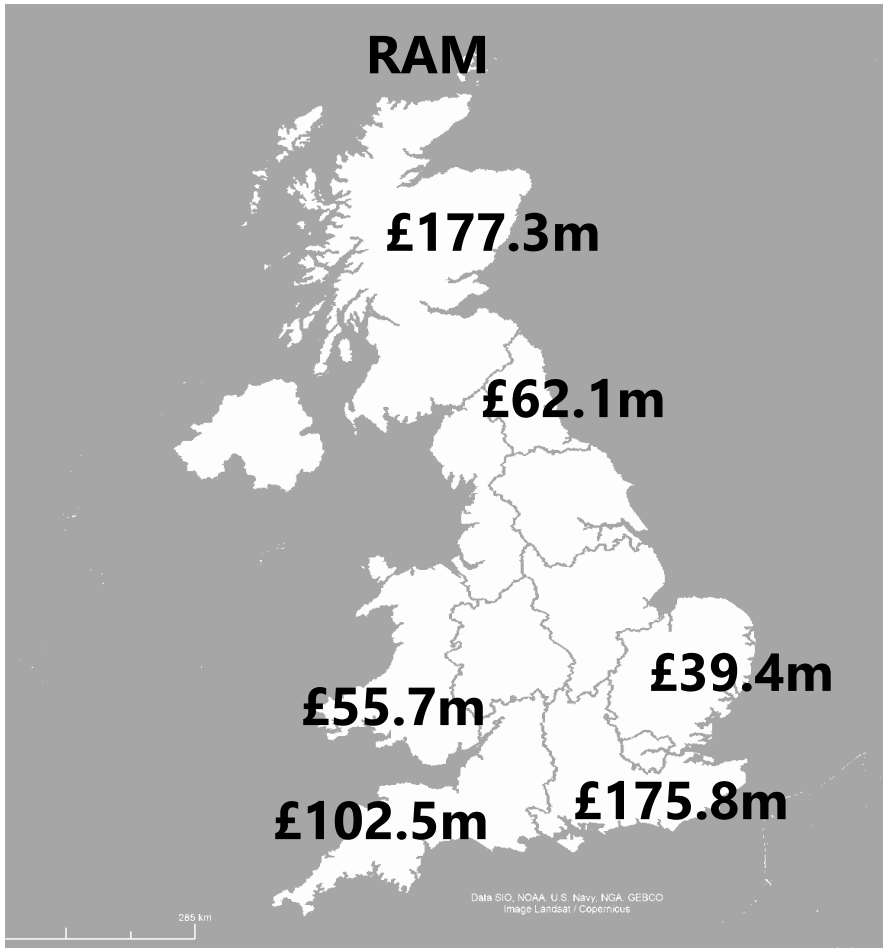
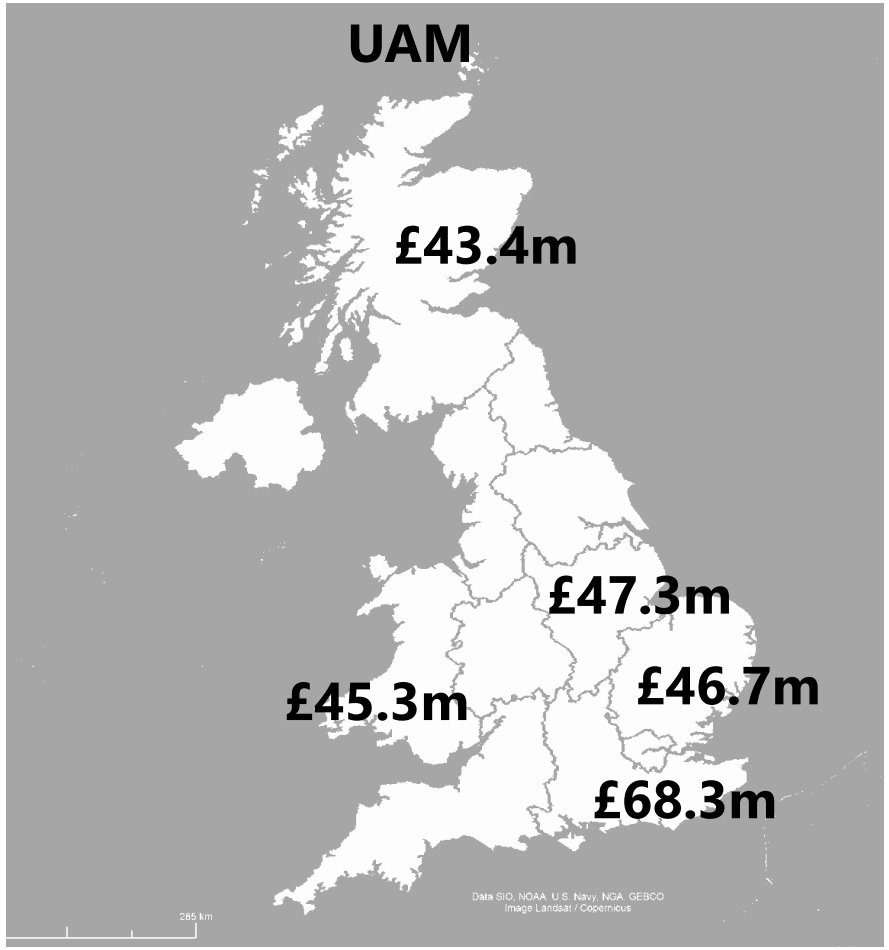
Total UK AAM Potential Summary

Economic Boost by Top Regions (annually)



£1.1bn per year****

Economic stimulation through increased productivity



615.9m per year****

Economic stimulation through increased productivity

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Total UK AAM Potential Summary

Aircraft, Stands, Energy, Hydrogen & Carbon Emissions

RAM

Up to 1,5k aircraft required*

448.3k/214.7k tonnes

Carbon emission savings (on people switching from cars and rail) annually assuming using 100% of SAF/JET A fuel**

120.9k tonnes – H2 Aircraft

Carbon emission savings (on people switching from cars and rail) **annual** assuming using Hydrogen (22% of blue and 78% grey hydrogen)***

H_2 2,730 GWh to create the 52m kg of hydrogen for an all-hydrogen system

* Assuming all routes are operated. Calculations based on a 9-seater aircraft; performance based on various OEMs. Annual aircraft utilisation at max 2000hrs.
** Across all routes
*** CO2 emission of 9kg per 1kg of grey hydrogen and 2kg of CO2 per 1kg of blue hydrogen.

UAM

Up to 2.2k aircraft required*

905/314 stands/vertiports required**

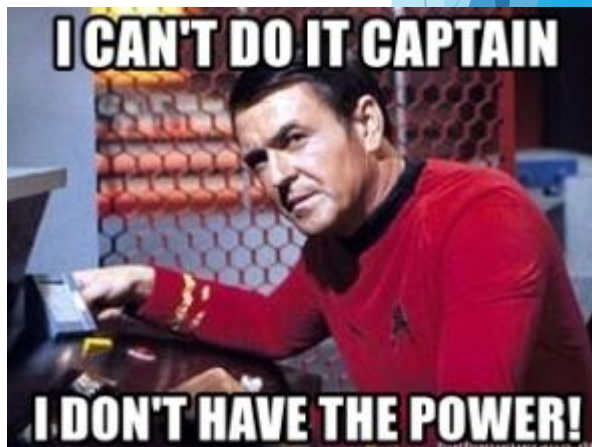
178k tonnes

Carbon emission savings annually**

849.1 GWh

cumulative energy required annually**

* Assuming all routes are operated. Calculations based on a 4-seater aircraft; performance based on various OEMs. Annual aircraft utilisation at max 2800hrs
** Across all routes



Total UK AAM Potential Summary

Airline/Operator Revenues

RAM

£2.8bn Annual operator ticket revenue

£621m
Annual airport operator revenue from landing and ground handling charges

£203m
Annual airport operator revenue from passenger charges

UAM

£2.27bn Annual operator ticket revenue

£495.3m
Annual vertiport operator revenues from landing and ground handling charges

£100.9m
Annual revenues for vertiport operators from energy

£953m
Capital cost of infrastructure excluding planning application and design costs

** Cumulative on all routes. Revenues assuming LF of 80% and annual utilisation of 1500hr for RAM and 2800hrs for UAM. Cost structure based on EA Maven analysis derived from various OEM data.*

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UAM or RAM

Which is potentially more economically significant?

Measure	RAM	<>	UAM	Total/Note
Cities/Airports	63	<	264	327
Average Sector Length (mi)	143	>	76	
Potential Routes	684	<	994	1,678
Target market	430	>	316	
Hours Saved (m hours)	47.2	>	27	74.2
Economic Impact (£bn) increased productivity	1.1	>	0.61	£1.71bn
Operator revenues (£bn) tickets sales	2.8	>	2.27	£5.07bn
Routes/City or Airport	10.9	>	3.8	RAM is **3**x bigger than UAM
Economic Impact/City or Airport £m	15.9	>	3.8	RAM is **8**x bigger than UAM

- In terms of potential economic impact, RAM is 8.16x bigger than UAM
- This is because RAM offers more utility to travellers in terms of potential time savings and hence the ability for them to be more economically productive.
- An additional contributory factor is that the catchment area for airports in this study are larger than cities given the longer range of fixed wing aircraft attributing to increased utility of RAM flights. This approach is consistent with airport catchment area analysis.

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Total UK AAM Potential Summary

Assuming 10% of routes operated in 2035

Total UK AAM Potential Summary

10% routes operated in 2035

RAM		UAM
23/70 airports*/routes**	>	82/105 cities/routes
78.9% of travellers by car producing significant carbon emissions	>	70.3% of travellers by car producing significant carbon emissions
27.4% business vs 72.6% leisure/VFR travellers	<	33.4% business vs 66.6% leisure/VFR travellers
5.5m hours saved annually if switched to RAM**** 633 years annually!	>	4.9m hours saved annually if switched to UAM**** 568 years annually!
£143.9m per year**** Economic stimulation through increased productivity	>	£130.8m per year**** Economic stimulation through increased productivity

** Based on LAU1 UK spatial division of 400 shapes. Each airport and its respective catchment based on the shape where each airport is located plus the adjacent shapes.*
*** Total possible routings between 23 airports and their respective catchment areas with a minimum distance of 70 statute miles. Excluding routes touching London.*
**** Sum of all travellers on 1,706 routes analysed. Demand numbers based on airports' catchment areas.*

** Cities selected based certain sifting criteria.*
*** Total possible routings between all cities based on 3 main selection criteria: distance (50-120 statute miles), population (min 20k inhabitants per city), min travellers*
**** Sum of all travellers on 994 routes analysed. Demand scaled down based on population distribution (city-city demand adjustment).*
***** Based on mixed capture rates of top 994 routes. Time savings based on flight vs car/rail travel time ratios for biz and leisure. Economic stimulation based on the DfT WebTag data.*

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Total UK AAM Potential Summary

10% routes operated in 2035 - Aircraft, Stands, Energy, Carbon Emissions

RAM

Up to 193 aircraft required*
Assuming 7 operators operating on 70 routes from 15 hubs

55.3k/24.7k tonnes
Carbon emission savings (on people switching from cars and rail) **annual** assuming using 100% of SAF/JET A1 **

32.4%
% share of SAF fuel required to nullify carbon emissions from people switching from rail for Jet A1 Operations.

11.6k tonnes
Carbon emission savings (on people switching from cars and rail) **annual** assuming using Hydrogen (22% of blue and 78% grey hydrogen)***

361 GWh to create the **6.87m kg** of hydrogen for an all-hydrogen system

** Assuming 70 routes are operated. Calculations based on a 9-seater aircraft; performance based on various OEMs. Annual aircraft utilisation at max 1500hrs.*
*** Across all 70 routes*
**** CO2 emission of 9kg per 1kg of grey hydrogen and 2kg of CO2 per 1kg of blue hydrogen.*

UAM

Up to 356 aircraft required*
Assuming 7 operators operating on 105 routes from 15 hubs*

88/219+137 vertiports/stands+remote parking stands required**

£329m est. capital cost of vertiports

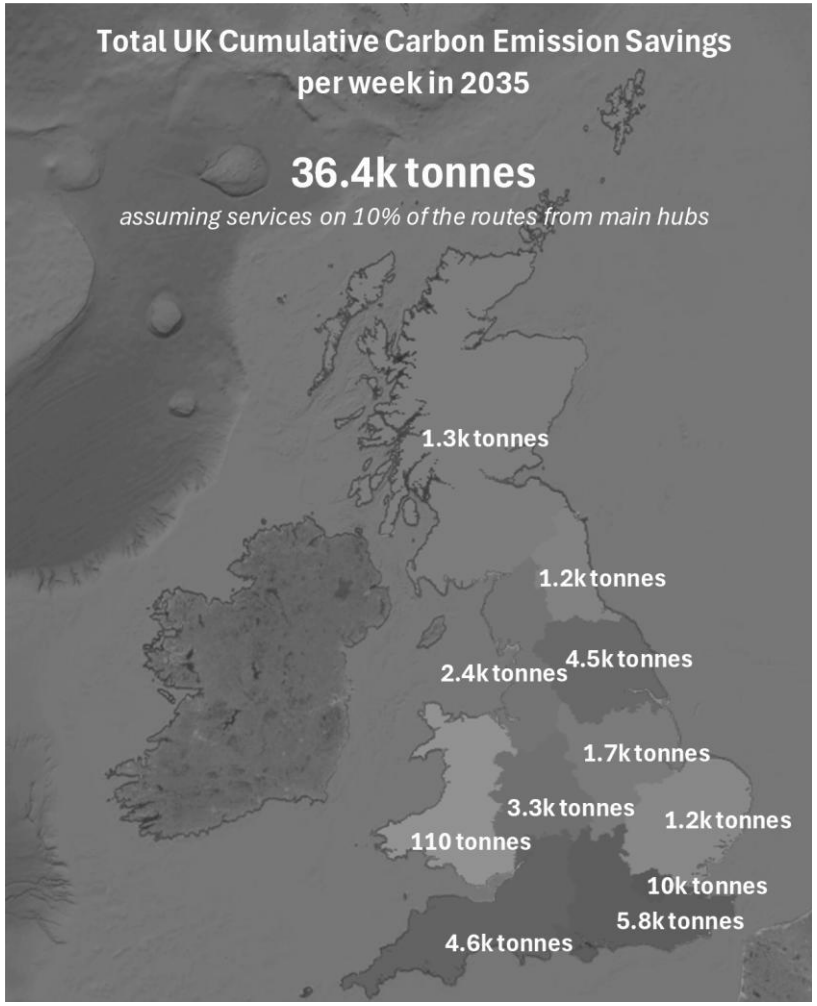
36.4k tonnes
Carbon emission savings annually**

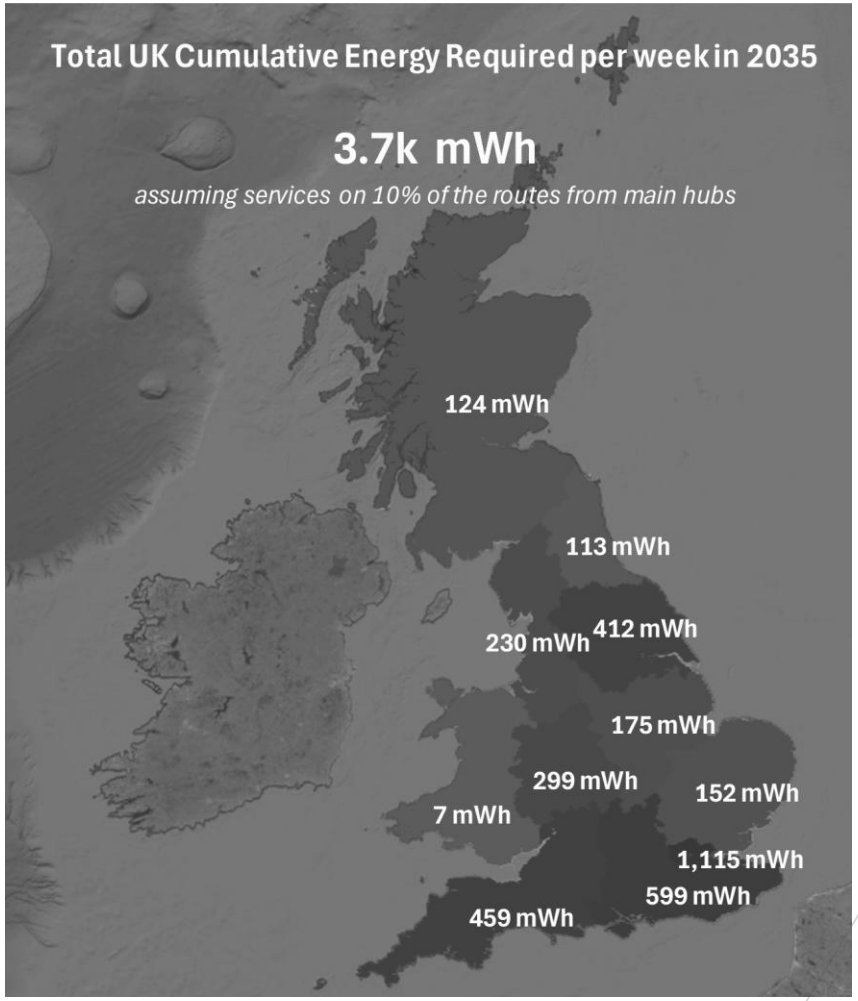
177.6 GWh cumulative energy required annually**

** Assuming 105 routes are operated. Calculations based on a 4-seater aircraft; performance based on various OEMs. Annual aircraft utilisation at max 2800hrs*
*** Across 105 routes*

Total UK AAM Potential Summary

10% routes operated in 2035 – Carbon Emission Savings and Energy Required by Region





Total UK AAM Potential Summary

10% routes operated in 2035 - Airline/Operator Revenues

RAM

£307.8m
Annual revenues from selling tickets

£76.6m
Annual revenues for an airport operator from landing and ground handling/passenger charges

UAM

£503.3m
Annual revenues from selling tickets

£180.5m
Annual revenues for an airport operator from landing and ground handling charges and passenger charges

£43.3m
Annual cumulative revenues for an airport operator from energy charges

** Cumulative on 105 UAM and 70 RAM routes. Revenues assuming LF of 80% and annual utilisation of 1500hr for RAM and 2800hrs for UAM. Cost structure based on EA Maven analysis derived from various OEM data.*

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Total UK RAM Potential Summary

*10% routes operated in 2035 – **RAM** Operators Analysis*

Operator	Hubs	Routes	Aircraft	Pilots	Maintenance	Landings (k)	Pax (k)	Revenue (£m)
1	6	45	30	180	6.0	62.9k	533.3	48.2
2	4	38	29	171	5.0	68.5k	582.1	45.0
3	4	30	18	106	3.0	43.2k	365.9	27.6
4	7	50	42	254	8.0	93.4k	794.4	67.5
5	4	36	26	158	6.0	55.3k	469.0	42.4
6	5	38	23	139	4.0	53.7k	454.6	36.6
7	5	39	25	150	5.0	50.3k	428.6	40.4
Total	**15**	**105**	**193**	**1,158**	**37**	**427.4k**	**3.6m**	**£307.7**

** Assuming 7 operators operating on a 9-seater aircraft from different hubs. Cumulative on 105 UAM and 70 RAM routes. Revenues assuming LF of 80% and annual utilisation of 1500hr for RAM and 2800hrs for UAM. Cost structure based on EA Maven analysis derived from various OEM data.*

Total UK UAM Potential Summary

*10% routes operated in 2035 – **UAM** Operators Analysis*

Operator	Hubs	Routes	Aircraft	Pilots	Maintenance	Landings (k)	Pax (k)	Revenue (£m)
1	6	64	51	203	6	196.5	776.1	71.5
2	6	54	55	221	6	217.7	844.8	78
3	4	37	36	145	4	139.3	548.2	51.2
4	8	75	72	289	8	280.7	1.1m	101.5
5	5	58	52	209	6	203.0	796.8	74.2
6	5	45	41	163	5	158.8	624	58
7	6	60	49	195	5	187.5	736.4	69
Total	**15**	**70**	**356**	**1,425**	**40**	**1.38m**	**5.4m**	**£503.3m**

** Assuming 7 operators operating from different hubs. Cumulative on 105 UAM and 70 RAM routes. Revenues assuming LF of 80% and annual utilisation of 1500hr for RAM and 2800hrs for UAM. Cost structure based on EA Maven analysis derived from various OEM data.*

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Credentials

EA Maven

Credentials

Selected EA Maven's Clients

- We have been working at the forefront airport acquisition and route development services as well as working in the electric aviation sector since 2017. A short list of relevant projects is set out below.
- Airport acquisition due diligence including forecasting and route assessment:

Airport	Infrastructure Assessment	Forecasting & Route Analysis
Milan	✓	
Malpensa		
Bergamo		
Venice		
Treviso		
Rome		
Ciampino		
Florence		
Bologna		
London City Airport		
Birmingham		
Manchester		
Bristol		
Leeds Bradford		
Taipei		✓
London Gatwick		
Manchester Airport		
Scottish Airports		
San Jose		
Chicago		
Bosnia Airports		
Irish Airports		
Myanmar Airlines		
Nigerian National Airlines		
Tac Airlines		
Fly Bondi		
UKRI – Initial 10 Route Analysis for Distributed Aviation Paper		
UKRI – 20 Route Analysis paper		
eVTOL OEM - Confidential		
eVTOL/eCTOL OEM - Confidential		
Regional Air Mobility UK Index		
eVTOL Network Study – Undisclosed client in the Middle East		
City Index and RAM Index – a country in Europe		

The Red Sea Development Company – AAM Strategy

Project: AAM strategy including vertiports and demand modelling.

- EA Maven along with Buro Happold (project lead), and Cranfield University were engaged by Red Sea Global (RSG) to prepare an Advanced Air Mobility strategy that complimented and built on the existing surface transportation plan for the Red Sea Project. A key objective of the works was to consider the opportunity to improve guest experience and amenity through the introduction and provision of eVTOL aircraft operations across the resort and tourist attractions. Our analysis was divided into four interdependent work-streams: Vendor Assessment, Technical Due Diligence, Strategy Development, Implementation Road Map. EA Maven was solely responsible for the Strategy Development and Implementation Road Map. The Strategy and Road Map Report evaluated the feasibility of AAM at the Red Sea through an unconstrained demand assessment taking into consideration the overall visitor numbers and applying special use cases, capture rates for the islands, resorts, hotels, and attractions. In preparing the Strategy our focus was on identifying what the opportunities are for AAM in the Red Sea Project. The main areas of this were:
- Strategy development –provided an overview of the analysis we conducted to establish the potential of AAM, including use cases, ConOps, demand, scheduling, stand requirements and energy requirements.
- Governance strategy – illustrated possible operating models and organizational structures that are likely to be suitable in the context of the Red Sea and how the roles and responsibilities integrate into the existing RSG mobility strategy.
- Sustainability strategy – set out sustainability framework and how AAM can support in meeting the wider sustainability policies of the Red Sea Project.
- Implementation road map- presented a timeline of milestones, key activities, decision points as well as factors that could hinder or accelerate the successful roll-out of AAM at the Red Sea.

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Credentials

Selected EA Maven's Clients

UKRI - Skybus eVTOL Concept

Project: ConOps, use cases, vertiport locations, scheduling, and demand modelling.

- As part of the Future Flight Challenge Phase 2, EA Maven (formerly Swanson Aviation Consultancy and Aveo Advisory) partnered with GKN Aerospace (project lead), Pascall+Watson and the Connected Places Catapult. The purpose of the project was to investigate the system of systems that needed to be put in place to allow the development and operation of a 30 seat eVTOL vehicle including the necessary infrastructure to operate the vehicle.
- ConOps & Use Case – Working with the project team we developed the concept of operations for the Skybus including the mapping of an entire journey in detail and the various use cases for the Skybus eVTOL. The primary use case identified for detailed analysis was a shuttle type operation from the periphery of Greater London to a central London vertiport. Additional use cases were explored which ultimately identified other more productive uses of Skybus.
- Demand Modelling – Based on an inhouse bespoke demand model for AAM we undertook an assessment of 10 potential routes leveraging the maximum range of Skybus and developed indicative schedules.
- London Vertiport – Working with Pascall+Watson, identify a number of potential sites for a vertiport. Later we developed the concept design with a team of architects located to the north of London Bridge train station to take advantage of the Thames location and proximity of the London Bridge Underground stations.

- Maturity Timeline – This was an assessment of the supply chasing to assess its readiness for the delivery of the Skybus eVTOL concept into the market. This included an assessment of relative legislation, infrastructure provision, supporting technologies and various roadmaps for the delivery of an AAM system.

- Business Plan – Based on a bespoke forecast developed by EA Maven develop a business plan to the EBITDA level to assess the commercial viability of a Skybus service.

- Capital Cost Estimate - Working with Gardiner & Theobald, develop a capital cost estimate for the London Bridge Skybus project.

Vertical Aerospace and other undisclosed OEMs

Project: Demand Modelling and Market Assessment for eVTOL routes.

- Market assessment, 10 route detailed demand modelling, infrastructure assessment, scheduling, revenue estimation, economic impact assessment, carbon reduction analysis, time savings analysis. For two specific OEMs EA Maven were engaged to undertake an in-depth market assessment of potential routes in the UK with a deep dive on 10 specific routes providing a forecast of potential services on these routes. The range of services are set out below.

- Market Analysis – Based on a hybrid approach of using traditional aviation related sources of data and new mobility data provide an analysis of potential routes for analysis as a route sifting exercise. Then on an Origin/Destination basis the analysis looked at modes and purpose of travel, time of day and the mobility of populations of the OD pairs. This information was used to identify 10 specific routes for detailed assessment and demand modelling.

- Infrastructure Analysis – Based on the market analysis an exercise was undertaken to identify potential operating locations for an eVTOL operation including an assessment of potential capacity as it has an impact on demand modelling through capacity constraints. The analysis assessed the feasibility of 20+ sites including local airports and city/regional based vertiports.

- Demand Modelling – Based on an inhouse bespoke demand model for AAM we undertook an assessment of 10 potential routes leveraging the maximum range of the eVTOL. The analysis identified the propensity for travellers to switch mode including a breakdown of travellers' mode of travel and purpose of journey.

- Indicative Schedule Analysis – Based on our inhouse scheduling tool we developed indicative schedules for the demand that was identified for each 10 OD pair. The analysis allowed us to calculate the number of aircraft required, revenue projections, economic impact, time saved, aircraft utilisation and carbon emissions savings.

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Credentials

Selected EA Maven's Clients

UK Route Demand Modelling Exercise

- EA Maven was engaged by the UKRI to undertake an indicative market assessment of the potential for AAM in the UK. The report identified 20 potential routes across the UK fitting a wide range of criteria to meet UK Government objectives of 'Levelling up', the Norther Powerhouse and the Union Connectivity Review.
- The analysis included, detailed market assessment comparing different modes of transports, purposes of travel, travel times and fares; demand modelling and scheduling using in-house tools, aircraft operations assessment (utilisation, frequencies), revenue and carbon emissions estimations as well as economic stimulation projections.
- The analysis identified a need for 224 aircraft that would have an average aircraft utilisation of +1800 hours per year generating over 13.3m in revenue per aircraft on average and contribute £125m to the economy through increased economic output.

Crisalion

- Crisalion engaged EA Maven to prepare specific market analysis of the capability of the Integrity aircraft. Specifically, we developed a detailed forecast for an example route with linked schedules and cost analysis. The linked schedules provided key performance indicators such as the number of aircraft needed to serve the route, aircraft utilisation, carbon emissions savings, passenger volumes, revenue generation potential and economic benefit among other criteria.

FlyVbird

- EA Maven and flyvbird have engaged in a strategic collaboration to revolutionize regional air mobility, focusing on connecting underserved regions through efficient and sustainable air travel. Through this arrangement, EA Maven delivers expert route forecasting and schedule analysis, offering solid proof of the viability of flyvbird's unique operational approach. The collaboration has also involved specific case studies that support the effectiveness of utilizing a hubbing effect in regional air mobility, illustrating that EA Maven's vision for Distributed Aviation could soon become a tangible reality.

Future Mobility Ireland

- An overall assessment of the Irish market. Analysis on the propensity to travel, gross flows of travellers, travel volumes, purpose of travel and mode of transport based on mobility data.

National Air Traffic Services

- This project aimed to develop scenarios of potential development of the Advanced Air Mobility (AAM) system in the UK, encompassing both Urban Air Mobility (UAM) and Regional Air Mobility (RAM) operations. The study considered the evolution of the AAM market, infrastructure, regulatory environment, and technological advancements to forecast likely operational routes in 2030, 2035, and 2040. EA Maven worked closely with NATS to ensure a robust, data-driven approach that aligns with industry developments, regulatory landscapes, and technological advancements.
- Forecast based on the EA Maven Index and Dashboard identifying networks for aircraft operation based on availability of aircraft.

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THANK YOU

Darrell Swanson
Director | Co-Founder

darrell@eamaven.com
www.eamaven.com

Jarek Zych
Director | Co-Founder

jarek.zych@eamaven.com
www.eamaven.com