11 October 2022

CIHT Dubai Online Seminar – Bulletin

Jay Latta – Emerging Technology Strategist, StINT (Moderator)
Dr Stefan Breunig – Head of Strategy, Rolls-Royce Electrical
Paul Franck Bijou – Senior Vice President Commercial, Lilium
Gloria Bouillon – Airport Director, Beverly Regional Airport, USA
James Walker – Senior Manager, Aviation Advisory, Atkins, UAE

About the Event

The promise of a new generation of flexible aerial vehicles, within a system known collectively as Advanced Air Mobility (AAM), replacing noisy and polluting helicopters and light aircraft that provide urban and regional services across a few global cities today, has been in the air for a long time. Could this decade see the promise of AAM become reality, offering a new form of affordable, electric, autonomous and shared transportation for people, places and things in three dimensions which will help ease urban congestion, boost regional connectivity and challenge conventional operating models, whilst helping to deliver Net Zero.

New aircraft designs, propulsion systems and power sources have been developed by a number of existing aviation players as well as a plethora of new start-ups, with significant funding from capital investment funds and strategic partners, running in parallel with other disruptive transportation technologies such as Connected and Autonomous Vehicles, Digital Highways and Electric Micromobility.

Meanwhile, the important aviation infrastructure, air traffic control, policy and regulatory components are taking shape in countries and cities across the World. It is vital now that we understand how this all fits together. Industry and regulators are moving to match the pace of eVTOL and other aircraft development, to connect AAM with existing airspace and ground transport networks and ensure it meets the needs of its future users. AAM must also integrate with existing infrastructure, sectors, and industries.

Many challenges and questions – and a few doubts – remain in developing a viable future roadmap towards commercial certification, early adoption and eventual technological and service model maturity. This topical and informative online seminar, hosted by CIHT Dubai, sought answers and reassurance from leading players on the feasibility of AAM on urban and inter-urban routes, and the types of operators, aircraft, airports and services we can expect to see emerging and in operation by the end of the decade.

We also heard about the specific potential of AAM for Dubai and wider UAE, and the steps that are, and could be, already being taken to prepare the ground (and air) for this.

The Panel

Our panel was chaired by **Jay Latta** – Emerging Technology Strategist at StINT and included a lively discussion around a number of issues relating to technology, infrastructure, clean energy for aviation and cities, and future travel behaviours.

Panel Discussion

Jay started the panel discussion by helping us all to question what mobility is. Jay postulated that it relates to the choice of options to suits our travel needs and this will change over time. Mobility is complex and one size certainly doesn't fit all, especially in a world where there will be 9 billion people by 2048, mostly urban based.

Jay was clear that the era of internal combustion engines is drawing to a close. Jay's view is that the future is electric and also pointed out that new technology in the form of eVTOLs will suit future transport needs and shortest connection straight line journeys.

Vertiports using existing infrastructure with on-site clean energy generation and storage will enable decentralisation of facilities and boost system resilience.

Jay also spoke about data and how the capture of what people do, when, how often and other characteristics can be used to predict the future and plan accordingly.

Stefan Breunig of Rolls Royce Electrical spoke enthusiastically about urban air mobility, eVTOL aircraft and regional air mobility. Rolls Royce's ambition is to become the leading electric propulsion energy development partner and is developing different technologies to extend range for introduction in 2025-26.

Electric charging and energy generation infrastructure is key to the success of eVTOLs and Stefan put the power generation needs in perspective. At 200kwh the battery power for even a small eVTOL is three times that of an electric car and charging will be required quickly between flights. A lot of power will be required and so power generation at airports and remote eVTOL facilities will be required. How can this fit into existing city grid systems to provide additional generation and resilience?

Gloria Bouillon emphasised that there has been a post COVID boom in demand for air travel at smaller regional airports, for passengers and cargo. An exponential growth has been driven by the demand for private flights and the value of smaller aircraft has soared (again, no pun on my part intended!). This all points to a strong outlook for eVTOL aircraft. **Paul Francke Biljou** agreed with Gloria and stated clearly that there has been a huge increase in demand for small aircraft and devices.

Paul went on to talk about how the market for eVTOLs can be developed to capitalise on this growing demand. It could start with the premium VIP market as a way into the market and to sell more eVTOLs against existing technology such as helicopters and smaller aircraft. eVTOLS will replace small helicopters and kerosene powered aircraft as they are quieter and less polluting. They will also become cheaper.

James Walker made the point that developing a city network and masterplan of facilities and energy will require critical demand and confidence for the future. This will begin through working with existing assets and infrastructure and carefully considering the different requirements for passenger and cargo traffic.

Jay Latta finished the panel discussion by stating that there is a need to demonstrate the benefits of eVTOLs and new technology, for the aircraft and devices, but also the benefits for society in terms of new flexible mobility options, less polluting technology and additional power generation and resilience for existing city grid networks. It will be safe, exciting and with city and regional authorities, let's do something in Dubai!

ADVANCED AIR MOBILITY (AAM) Ready for Lift-Off?

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Questions

Do skyscraper buildings represent a challenge to navigation?

Not really as eVTOLs will fly on agreed routes and paths and land on designated sites and this will need to be managed. They won't be darting on random paths between buildings.

Will it be safe?

Yes, the safety record of eVTOLs to date is very good and the industry is, and will be, highly regulated for safety.

What about hydrogen? Will there be another Hindenburg?!

The technology is being developed and will need to go through the process of approvals process for safety much like electrification. This is achievable though as aviation is highly safety regulated.

What could the % modal shift be and will there be an improvement in road congestion?

eVTOLs are more about improving accessibility, utility and democratisation of transport. However, it will be difficult to predict this given expected exponential growth in eVTOLs as new companies develop new technologies.

Air mobility unlikely to solve traffic congestion alone but it is one part of the whole mobility and transport system, and fully integrated.

With regards to safety, would having the driving and control system fully autonomous steer people away from using EVTOL technology?

No. The human is often the weakest link in mobility safety and so autonomy actually makes things safer. If autonomous navigation is allowed on the ground, then it is actually easier in the air.

The registration for this Seminar asked participants three questions about their views of AAM. The results (n=149) are shown below.