UAM Recycle Challenge:

Activity Brief

Background:

Have you ever thought about what it would be like to travel in a flying car? Urban Air Mobility (UAM) is the future of transportation, and it is coming sooner than you imagine!

Figure 1: Credit to Luxuvere

Urban Air Mobility is the concept of transporting people and goods around cities and towns using aerial vehicles. This exciting new industry has a wide range of applications and benefits, for example commercial and emergency services, and can be used by everyone!

The aim of UAM is to reduce traffic congestion, which produces air pollution, whilst saving people time and money. These vehicles will be mainly powered by electric batteries, which unlike most current transport, do not release harmful pollutants. Therefore, provided that the entire UAM supply chain is sustainable, UAM is set to offer eco-friendly mobility.

Two of the key branches of UAM are the vehicle and the infrastructure:

Figure 2: Lilium (Left), EHang (Right)

So far there are over 500 UAM vehicle designs registered in the eVTOL Aircraft Directory all over the globe, and many leading companies have already built working prototypes! In fact, they are looking to operate their vehicles as early as the Paris Olympic Games in 2024! These designs all vary significantly as there is no convention on how the vehicles should look like, giving the opportunity for innovation and creativity.

Figure 3: Uber

However, UAM is more than just the vehicle. To be successful, UAM infrastructure also needs to develop and include the take-off & landing pads (vertiports), maintenance facilities, vehicle charging stations, and passenger areas. This concept is similar to the aviation industry, where aeroplanes require airports to function.

The Challenge:

What do you think the future UAM vehicles and vertiports will look like? We challenge you to create and build your designs using recyclable materials!

- You will be split into an even number of teams. Half of the teams will design & build a UAM vehicle (Team Vehicle). The other half of the teams will design & build a UAM vertiport (Team Vertiport).
- Each 'Team Vehicle' will be partnered with a 'Team Vertiport' and their vehicle & vertiport designs need to be able to coordinate and work together (i.e., the vertiport will need to be able to hold the vehicle)
- Each team has a designated 'Communicator' who is allowed to talk with the 'Communicator' of their partnered Vehicle or Vertiport team. No other team members can communicate with their partnered team. This role can be passed around the team members throughout the project.

You can brainstorm design ideas on a big sheet of paper with your team. Make sure to hear out everybody's ideas and give each team member a role. Explore the links in 'Further Resources' for inspiration.

You can then build your vehicle or vertiport design. You can only use recyclable materials that can be found at home to build your vehicle & vertiport (e.g., plastic water bottles, cardboard, paper, plastic bags, toilet paper tube rolls, etc). Glue and minimal tape may be used if you wish to help with construction.

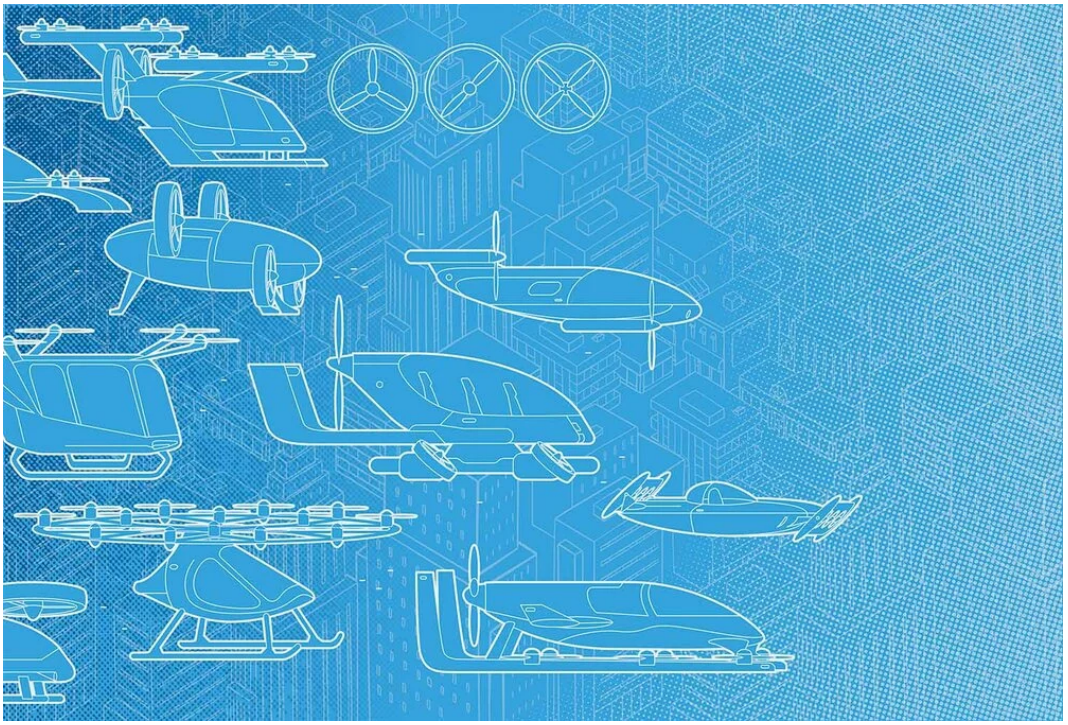

Figure 4: Credit to Carl Wiens

For your vehicle and vertiport designs, here are some questions you may want to consider:

- What will your vehicle & vertiport be used for? (e.g., tourism, air ambulance, air taxi, aerial firefighting or rescue, etc)
- Who will use your vehicle & vertiport? (e.g., wheelchair users, people with hearing & eyesight disabilities, parents with babies, elderly, etc)
- How will your vehicle & vertiport integrate with and affect the local environment? (e.g., wildlife, bird migration paths, current transportation, etc)

Desired Outcome:

Two teams to have come together to design and build a UAM Vehicle & Vertiport set out of recyclable materials, which considers the challenges that the UAM industry has to face.

Would you like to have your designs showcased on Flight Crowd's website? Send us your projects to the email below!

outreach@flight-crowd.com

Further Resources:

General:

- Flight Crowd's UAM Glossary, which is a compilation of key terms and definitions from the language of this emerging industry: https://www.flight-crowd.com/uam-glossary
- Video: Future is Now | Urban Air Mobility | EHang: https://www.youtube.com/watch?v=d66MoI4GdFs

UAM Vehicle:

- List of registered electric vertical take-off and landing (eVTOL) vehicles, for UAM vehicle design inspiration (eVTOL Aircraft Directory): https://evtol.news/aircraft
- Video, Joby Aviation: https://www.youtube.com/watch?v=4wbFw165ar0
- Eve Air Mobility: https://eveairmobility.com/

UAM Vertiport:

- Urban Air-Port, a small pop-up vertiport, Website: https://www.urbanairport.com/ Video: https://www.youtube.com/watch?v=LzrN5im1xJk
- Pascall & Watson: https://www.pascalls.co.uk/news/article/next-generation-air-mobility/
- UberAIR: https://www.dezeen.com/2018/05/11/uber-air-elevate-skyports-flying-taxi-service/

For any questions please email outreach@flight-crowd.com