Is Urban Air Mobility in danger of turning into an urban air myth

FUJITSU

With Urban Air Mobility (UAM) set to commence services in 2025, there are a multitude of questions to be answered. Will the service be adopted and grow rapidly? Who will invest and why? What value will it deliver and how? How will UAM contribute to solving economic and societal challenges?

This paper discusses why industry must focus on value to drive investment in future UAM services and offers an approach to underpin UAM investment. Without a value led aproach, UAM promises will become a myth.

We are at the dawn of a new aviation era

Urban Air Mobility refers to an air transportation system that moves passengers and cargo in integrated transport networks across urban and suburban areas. It is expected to become a reality in Europe within 3-5 years with market size of £4.2bn euros by 2030[1] and seen as contributing to UK PLC net and jet zero, and our economic growth agenda.

UAV passenger transportation

Across the UK, consortia of service partners, airports, Civil Aviation Authority, National Air Traffic Services and local and central government are running trials across passenger travel, goods delivery, operational safety, supply chain, and emergency use cases. Work will focus on designing, building, and testing capabilities that seamlessly integrate with the existing air transport infrastructure and operational, control and safety systems.

The first commercial operations are expected to be the delivery of goods by drones and the transport of passengers, initially with a pilot on board. Later remote piloting or even autonomous services could follow.

Coventry Airport went live with the first UAM vertiport in 2022[2], passenger commercial services are expected from 2025 and emergency use cases such as transporting blood sooner.

Significant investment made in infrastructure and systems trials

It is great seeing the cross-industry investment and partnerships building the technological, operational and physical infrastructure for UAM, however billions more will be needed to join cities, towns and regions not part of the original trials, integrate with future transport hubs and UK, European, and international aviation traffic management systems.

Several use cases are being trialled however how do we ensure value for money is being returned to government, the private sector and citizens for every £1 spent?

Must invest in uses cases that deliver societal value

Much of the promise of UAM is about delivering value to society. We then ask ourselves what value is needed from UAM, and which societal strategic goals must it contribute to? Do all communities see the same value? For example, some communities who are located near vertiports or under the flight path of Urban Air Vehicles (UAV) may experience disbenefits such as additional and harmful noise pollution. Further variables that influence value include the extent that the solution solves urbanites' problems, safety, security, privacy fears, and the value of alternative services based on their availability, reliability, safety, affordability, and accessibility.

A further challenge to overcome is who has accountability to deliver the societal outcomes from UAM investments: e.g. local councils, partners, airports, service providers, regulators, central government, or financiers, amongst many others.

Without clarity of contribution to societal outcomes, and accountability, UAM risks becoming a museum exhibit such as the Blackburn Botha which had three different roles - and failed in everyone[3]

Blackburn B.26 Botha

Start by defining the path to value

So let us explore how we approach determining value using an example use case, passenger travel, for an imaginary city. Travelling by UAV should make your journey from A to B faster and more sustainable, not having to deal with the constraints of congestion, physical infrastructure, and conventional power.

This city targets sustainability outcomes linked to UN Sustainability Delivery Goals (SDGs). A key one for them is SDG11; make cities and human settlements inclusive, safe, resilient, and sustainable.

Next let us understand what capabilities we have created. These include a speedier, and more sustainable means to travel from A to B, and the supporting aviation infrastructure and operational systems.

We have illustrated the strategic outcomes and new capabilities in what we call a ResultsChain™ (RC) benefits model in **Figure 1**. The model illustrates the line of sight between UAM investments and strategic outcomes.

So how can our new capabilities deliver the UN goal of our SDG 11? The middle is known as the value void; plot the wrong path of outcomes between the new capabilities and strategic outcomes and risk falling into the void and not delivering SDG 11.
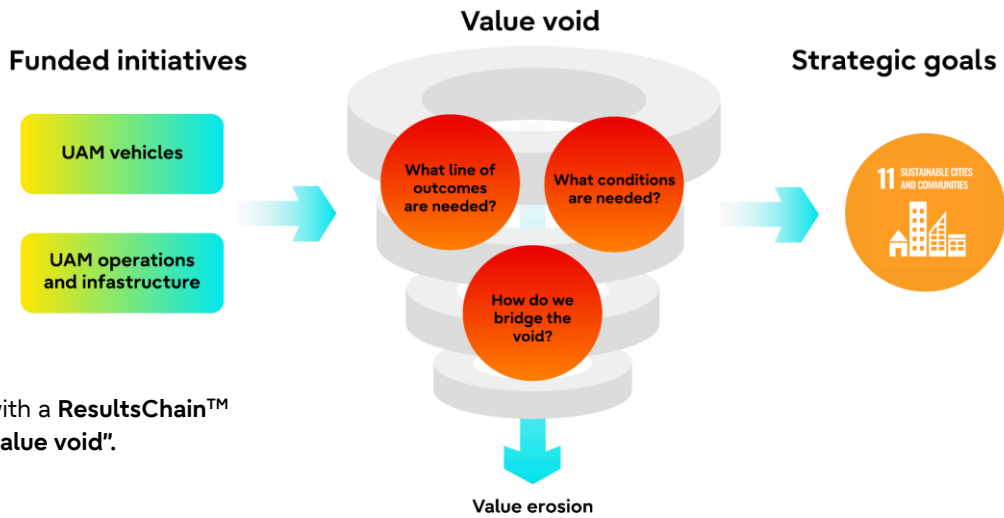
Figure 1: start with a **ResultsChain™** to bridge the **"value void".**

Determine necessary outcomes and interventions

Let us build one path across the void and keep it simple. SDG 11 requires a promotion of inclusivity so UAVs must be able to accommodate all from society. Consequently, a key outcome is creating an ability to fly passengers with disabilities; If this outcome doesn't exist, we set a risk against its achievement. Not achieving it means we do not achieve SDG 11 as we mean to. Mitigating that risk would be working with UAV providers to ensure future vehicles have the ability to accommodate wheelchair users, or other disabilities. Vertiports would also require the means to support the transfer of passengers with disabilities and the supporting transport infrastructure. Take this one step further and the booking system would need to be accessible and simple to use via ticket offices, mobile apps or via desktops, and UAM would need to be part of a wider integrated and affordable city transport ecosystem of travel modes (e.g. cars, taxis, buses, trains etc.).

Our value approach determines outcomes and interventions needed across a number of lenses including society, legislation, partnerships, operations, technology and people, and tackles how we support disadvantaged communities such as those impacted by noise pollution. A take this one step further and the booking system would need to be accessible and simple to use via ticket offices, mobile apps or via desktops, and UAM would need to be part of a wider integrated and affordable city transport ecosystem of travel modes (e.g. cars, taxis, buses, trains etc.). The conceptual model in **Figure 2** bridging the value void illustrates the line of outcomes, new projects needed to deliver missing capabilities and clear outcome accountabilities.

Without a value led approach, the goal of inclusivity will become a myth benefiting a subset of society, the able-bodied executive.
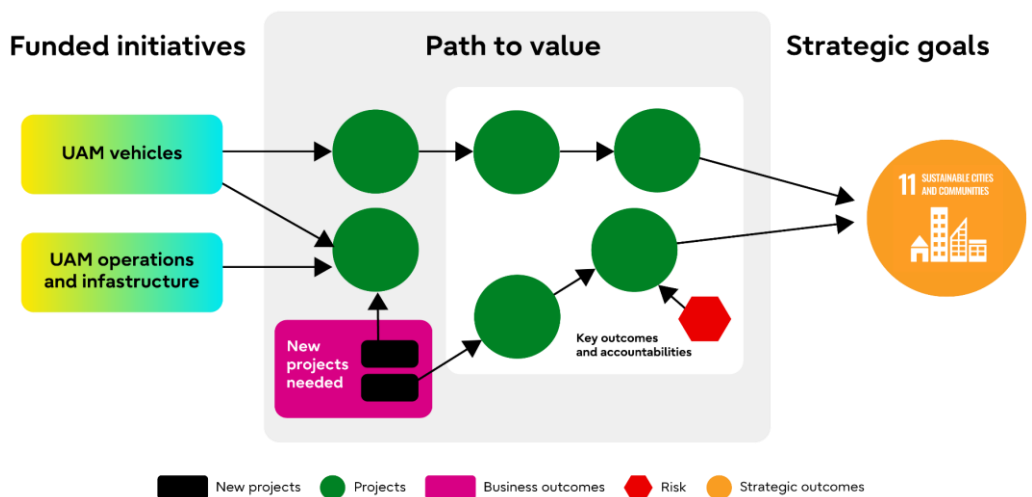

Figure 2: ResultsChain™ determines right path to value.

A value focus delivers UAM promises

Taking a value focus to future UAM investments is essential to deliver on its promises to society. I used a simplified example to illustrate that a comprehensive approach is needed to understand value across our impacted communities, determine the gaps in capability and accountabilities needed to contribute to societies goals.

Determining the UAM path to value is more complicated, however this is where our Value Management approach helps break down complexity and determine clear outcomes, their path to strategic goals and ownership.

If you want to learn more around how Fujitsu can help you take a value lens to your problems, contact me at rami.deen@fujitsu.com.

[1] EASA 2021 Study on UAM
[2] www.airport-technology.com
[3] www.bbc.com/future/article/20140522-are-these-the-worlds-worst-plane

"I am a lead business consultant working with Fujitsu Consulting. I have over 25 years' experience successfully delivering value management and digital transformation engagements to public and private industry clients globally."

Rami Deen, Fujitsu Business Consultant

Contact

Fujitsu

Email: rami.deen@fujitsu.com

Phone: +44 (7867) 828 929