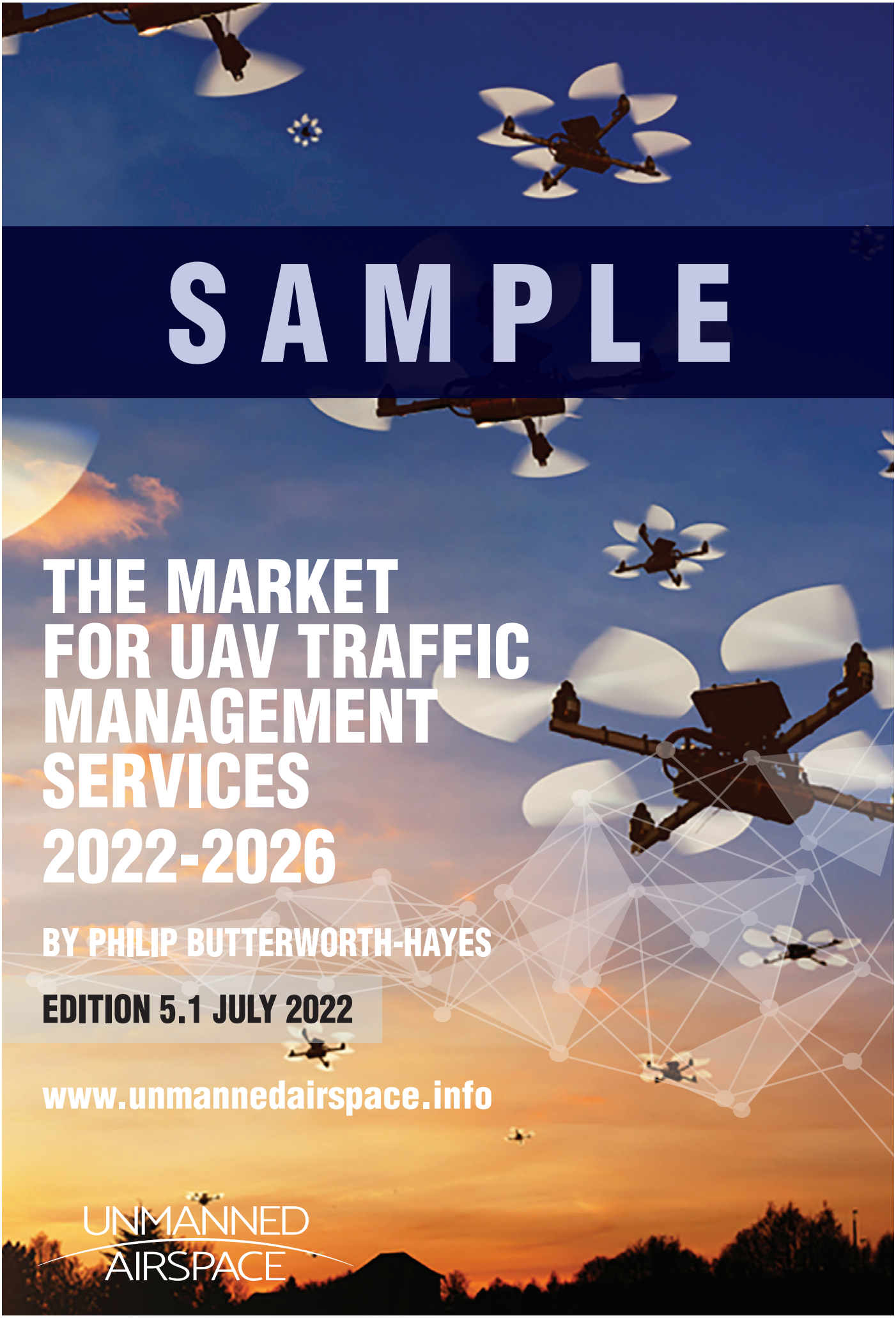

SAMPLE

THE MARKET FOR UAV TRAFFIC MANAGEMENT SERVICES 2022-2026

BY PHILIP BUTTERWORTH-HAYES

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Market overview

1.1 Progress on UTM regulations and business cases

At the start of 2022 the Dutch government undertook a study to examine what kind of U-space architecture/governance structure would best meet the needs of the Dutch drone industry. The study authors broke down the competing architectures into four types: participation, management, open market and integration.

- The participation model is based on an equal cooperation between the state, local authorities, existing implementing organisations and market parties in which the design and maintenance of the U-space ecosystem is jointly and step-by-step ensured (this model is applied in Switzerland and Belgium).
- The management model is based on the premise that there is a significant public interest in the creation of U-space in the Netherlands and that this will not or insufficiently get off the ground without a pulling role of the state (Poland and France follow such a model).
- In the market model, the national government opts for a restrained role (this is the model being applied in the USA).
- The integration model aims to align the design of unmanned traffic management (UTM) as much as possible with the current (ATM) management of the airspace (in the UK this method of implementation is chosen).

"In order to be able to determine how well the proposed scenarios meet the objectives of the Ministry of Infrastructure and the Environment, an assessment framework has been developed with five main criteria: participation, incentive, uniformity, organisation and costs," continues the study text, "It is obvious to choose the participation scenario as a starting point, in line with Switzerland and Belgium. The reason for this is that the end goal of all scenarios is the same (namely full integration of manned and unmanned air traffic), the market of UAS is still (far) from mature and the Ministry of Infrastructure and Water Management wants to stimulate the innovation of (the use of) UAS."

Table one: Competing U-space governance structures

Theme	Criteria	State direction	Open market	Integration	Participation
Participation	Support	0	0	-	+
Incentive	Accessibility of the market	+	-	-	0
Uniformity	EU level	0	-	+	0
	National	+	-	+	0
Organization	Local customisation	-	0	-	+
	Manageability	+	-	+	0
	Scalability	0	+	-	0
	Future proofing	0	+	-	+
Costs	Cost scenario	0	0	-	+
	Cost state	-	+	0	0

"In the participation scenario, no mandatory design choices need to be made in advance, which gives the most flexibility in a market that is still developing both in terms of application and technology. This scenario also offers room to gradually form the picture of which U-space design is the most suitable for the Netherlands. This could mean, for example, that in the long term the participation scenario will turn into a management scenario and even later into an open market scenario. In addition, the government has an active role in the

participation scenario, which is in line with the desire to give space to innovative applications of UAS and at the same time to safeguard the public interest. Finally, the participation scenario is a scenario that can be started relatively easily, quickly, on a small scale and without high start-up costs (neither for the government nor for the market)."

This study was important because it considered the integration of technology and rules development alongside the potential cost and revenue implications. For while there has been considerable progress in the last six months on defining the rules and procedures for U-space/UTM implementation there is still considerable uncertainty over the revenue potential and costs for setting up these services.

In May 2022 UTM service provider (USP) Skyward announced it would cease operations in June, the second major US USP to exit the market following the take-over of AirMap by DroneUp. The concern among many in the industry is that although the revenue streams for deploying UTM technologies are becoming slightly clearer the revenue from operating UTM systems are far less obvious.

In March 2022 the Global Uncrewed Traffic Management (UTM) Association (GUTMA) hosted a European U-space policy summit "*From rules to market: Can we achieve a competitive UTM services market?*" There are, according to Koen de Vos, Secretary General of GUTMA, three distinct but interlinked markets under construction: the drone services, the drone operations and the U-space services markets. They are a pyramid. "Most of the value is created in the drone services market and the challenge for this sector is business development, integrating drones into industrial value chains." How can we make U-space an efficient enabler to create down-stream value creation, is the key question, he asked? To have a large base of this pyramid we need competition to drive innovation, to keep the costs down for drone operators and service providers.

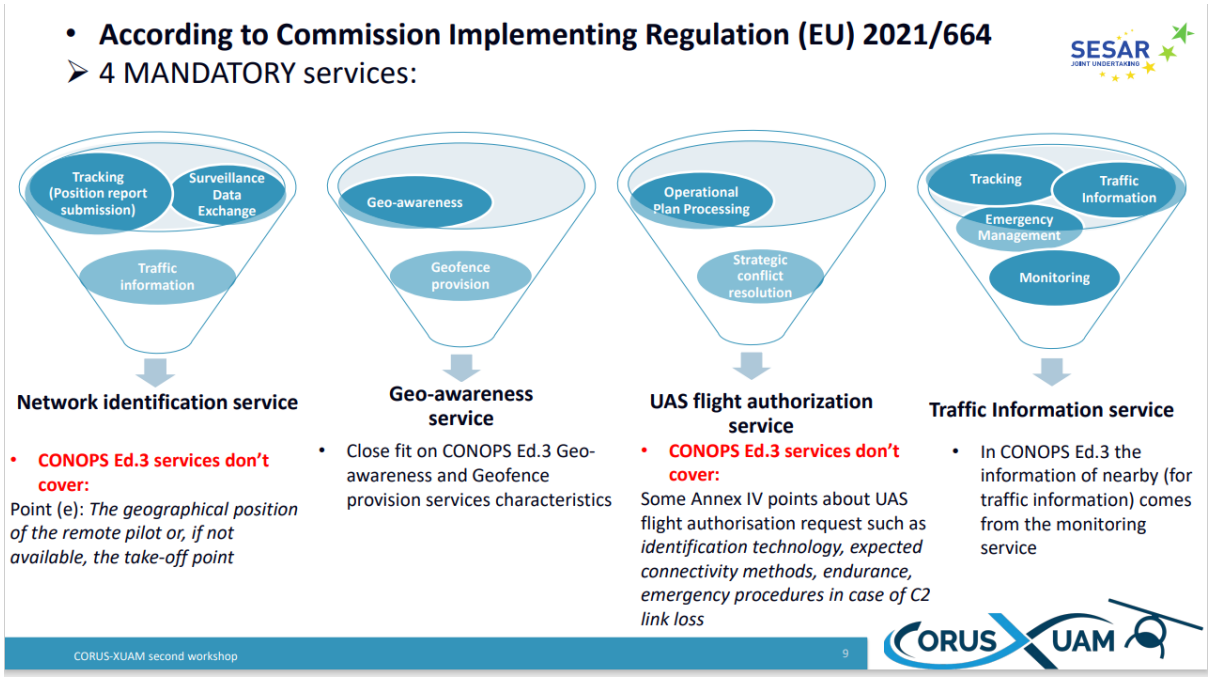
Most of the discussions were around which would be the first commercial drone markets required to be supported by UTM (Rural? Suburban? Short-range delivery flights or longer range mapping and surveillance?)

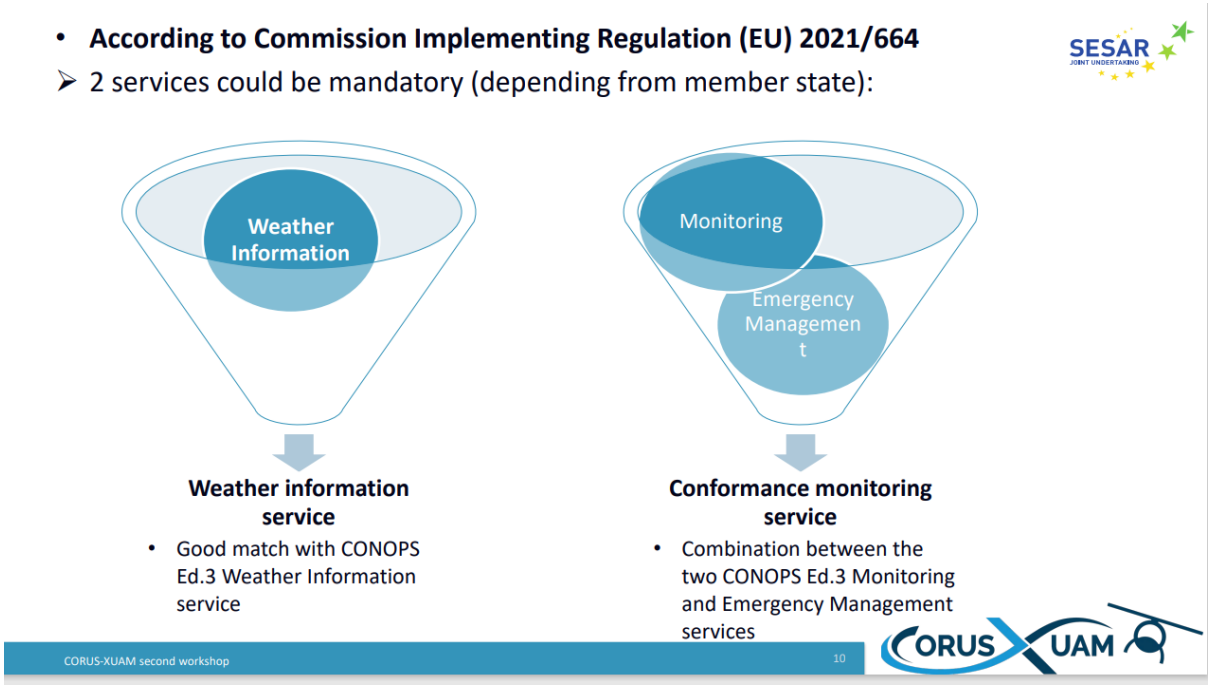
According to Amit Ganjoo of IT provider ANRA speaking at the event, there are three circles to implementation – technology, standards and regulations – and the first use cases will be where there is an intersection between all three of them. He cited Switzerland's FOCA as one way of ensuring regulators and operators were fully in sync. "FOCA pulled in a lot of industry players to identify where technical means of compliance lined up with the U-space regulations."

According to Thorsten Indra of Hamburg's HHL Sky, who is supporting the development of a drone eco-system in Hamburg port, the best way to start is with a vertically separated airspace and one or two initial operators. "Early on there may be only a small community that has a need to have U-space established. As they see the benefits then others will join. We need round tables with users to get their buy-in but also establish each other's needs."

However, none of these discussions made clear what the revenue opportunities were for USPs operating core, mandatory UTM services (see below) either in a monopoly or competitive environment or value-added services beyond these. Some UPSs have started to examine how to derives additional value from individual industry segments (parcels delivery, long range BVLOS pipeline inspections etc), tailoring their offerings to guarantee the most reliable end-to-end service packages beyond the core UTM services.

Figure one: The "four mandatory services"





In Europe there is a defined U-space/UTM architecture in place thanks to the European Aviation Safety Agency (EASA) there are considerable variations between States on how this should be implemented. Europe is important to the wider, global UTM market as it offers a range of political and institutional variations which reflect political differences outside the continent. The work on standards development underway in Europe and the USA will set the ground rules for UTM deployment elsewhere.

Even with a single EU regulation you will still have different USSP agreements which will differ from country to country, said Benoit Curdy of FOCA at the GUTM seminar. "As a USP you will

Section two: A growing demand for services

2.1 The market for commercial drones

Industry forecasters are continuing to offer widely different views of the scale and predicted growth rate of the commercial UAV sector. The small UAS market, based on the latest forecast-of-forecasts, is predicted to grow at an average of 23.23% compound annual growth rate over the next few years. However, perhaps more importantly from the UTM market viewpoint, BVLOS market for drones will grow at a rate of 71.1% CAGR globally, according to Drone Industry Insights.

Table five: Drone industry forecasts

Forecaster	Market value	Years	Market	Growth rate
ABI Research	USD92 billion by 2030	2020-2030	Small UAS	CAGR 25%
Analysys Mason	USD8 billion in 2030	2022-2030	Cellular connected drones	-
FACT MR	USD278 billion in 2032	2022-2032	Total UAS market	CAGR 25%
FAA	-	2020-2040	Commercial UAS fleet	CAGR 20%
Frost & Sullivan	-	2019-2023	Global commercial UAS fleet	CAGR 4.3%
DRONEII	USD26.3 billion in 2021-USD41.4 billion in 2026	2021-2026	Global drone fleet	CAGR 9.4%
Gartner	-	2019-2020	Global commercial UAS fleet	CAGR 50%
GAI	USD58.5 billion by 2026	2022-2026	Global UAV fleet	CAGR13.9%
Grand View	-	2021-2028	Commercial drones	CAGR 57.5%
Fortune Business Insights	USD 22.55 billion by 2026	2020-2026	Global sUAS fleet	CAGR 15.92%
International Data Corporation (IDC)	-	2020-2025	Global drone industry (including software)	CAGR 33.3%
MarketsandMarkets	-		Drone services market	CAGR 23.8%
MarketandMarkets	USD13.9 billion in 2021 to USD 40.7 billion by 2026	2021-2026	Global UAV market	CAGR 16.4%
Teal	USD18.9 billion by 2030	2021-2030	Global civil UAS fleet	CAGR 14.1%
Technavio	-	2021-2025	Commercial drones	CAGR 36.73%

As each forecast measures slightly different aspects of the market over different timescales it is difficult to reach any firm conclusions about the value the drone industry today and in the near future. Taking a conservative view of the forecast of forecasts, however (using data from the table below and further data from the following text), industry forecasters suggest

3.6 Middle East

In May 2022 the General Civil Aviation Authority (GCAA) granted the operational approval for the General Directorate of Civil Defense in Dubai to use UAS to support its daily operations after passing the operational requirements. The operational approval provides the necessary backup and support during firefighting in hard-to-reach areas such as high-rise buildings, confined spaces and hazardous materials warehouses.

The GCAA issued 180 operational approvals for drone systems during the first quarter of 2022, and the number of amateur registrants reached about 20,000. The authority also completed licensing 181 operators for commercial and government use, including 870 drones for the same purpose.

This announcement follows a decision in January 2022 by the United Arab Emirates Ministry of Interior (MoI) to ban all drone flights after two Indians and a Pakistani national were killed in Abu Dhabi in a drone and missile attack claimed by Yemen's Houthi rebels.

According to a November 2021 posting from the Emirates News Agency, Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai and Chairman of Dubai Executive Council has launched a programme to accelerate the use of drones in several sectors, including health, security, shipping and food throughout the country.

Although Dubai has several drone projects running, this new initiative will tie them all together under the leadership of the Dubai Future Foundation (DFF), which will work in conjunction with Dubai Future Labs, with DCAA, Dubai Silicon Oasis Authority (DSOA), Fakeeh University Hospital, Majid Al Futtaim, and Emirates SkyCargo, Talabat and Kitopi.

A pilot area will be established in Dubai Silicon Oasis for innovators and related entities from the UAE and abroad "to develop and test new drone solutions and transform them into effective services that improve people's lives and help achieve national economic goals."

In July 2020, Sheikh Mohammed bin Rashid Al Maktoum issued a law regulating the use of drones in Dubai. "This Act is considered one of the projects of the Dubai Sky Dome Initiative; this initiative aims to create a virtual airspace infrastructure for drone systems, through which public spaces and buildings will be connected through airstrips and mini-airports throughout Dubai and to develop major infrastructure schemes for airports, airstrips, multi-use stations and ground service sites, " according to the Sheikh. "The schemes will include promoting the concept of public transport in the Emirate, creating multi-modular transportation systems in order to promote the concept of integration of air vehicles and different ground transportation systems. This initiative will also include the development of systems to manage the movement of drones and the development of an integrated smart platform for all services related to the organisation of drone operations, such as the granting of immediate permits to drones and their operators, in order to ensure air security and safety and ensure that the efficiency of Emirates' airspace is not affected."

The MoU will also leverage Dubai Programme for Autonomous Air Vehicle Services in designated test zones across Dubai. It will also support the Dubai Self-Driving Transport Strategy aimed to convert 25% of total mobility journeys to driverless journeys by 2030.

On July 4, 2020 Sheikh Mohammed bin Rashid Al Maktoum issued announced new regulations governing drone operations in Dubai.

Law No. (4) of 2020 aims to reduce risks associated with drone operations. and specifies the duties and responsibilities of relevant authorities. "The new Law also seeks to help Dubai

promote itself as a hub for drone manufacturing, smart transportation and innovation in the sector, and enable public and private entities to use drones and provide drone-related services," according to a report in the *Gulf Times*.

The law assigns new responsibilities to different organisations, according to several press reports.

The Dubai Civil Aviation Authority (DCAA) will oversee the implementation of the law and "managing all related operations and activities in line with federal legislations and international treaties and conventions. This also includes monitoring and controlling drone activity in their designated airspace and outlining the conditions and procedures for issuing permits and conducting trials," say reports. The DCAA will also identify and approve designated areas and heights within which the operations and trials of drones can be conducted.

All drone-related operations will require a licence from the DCAA, which will work with the Telecommunications Regulatory Authority to outline the procedures for the use of radio frequencies for drones and their systems and remote-control stations. The DCAA will also be responsible for issuing licences to supply drones with power and ensuring operational procedures meet the certification requirements. The DCAA will designate areas for drone-operations within the country's airspace.

Dubai Air Navigation Services (DANS) will streamline "the activity of drones within Dubai's airspace and demarcating the airspace within which they can operate in order to support the DCAA in monitoring drone activity. Dubai Air Navigation Services is also tasked with providing air navigation services and air traffic movement and meteorological information to drone operators so that they can operate safely." DANS is responsible for determining the air routes in which drones may fly according to pre-planned and approved procedure set out by the DCAA.

Dubai Aviation Engineering Projects (DAEP) will develop specifications, standards and conditions for 'Drone Airports' and presenting them to the DCAA for approval. DAEP will also ensure these plans are aligned with urban plans and transportation regulations in the city.

Dubai Police will manage all security aspects of drone operations, coordinating with the DCAA "to put in place security measures to prevent the illegal use of drones and crimes committed by using drones, as well as measures to deal with the loss of control of drones, especially when they are flying outside their designated areas and not complying with regulations."

According to *Gulf News*:

"Without prejudice to any other legislation, tough penalties including imprisonment and/or fines, could be applied to anyone who endangers the safety and security of the airspace, or designs, manufactures, assembles or modifies drones and its systems, and develops simulation and training systems, or imports or sells drones, parts or systems in the Emirate without permission from the Dubai Civil Aviation Authority, as well as anyone who operates drones in violation of the provisions of the new Law. Any individual causing damage due to drone operations shall be responsible for damage compensation and removal of the cause of damage during the period determined by the Dubai Civil Aviation Authority. In case of delay, the Authority is authorised to remove the cause of damage, in addition to charging the person or party responsible for the damage 20% of the cost of removing the damage."

Meanwhile, the DCAA and its UTM technology partner Exponent Technology Services have been trialling integrated counter-UAS equipment from Dedrone, DJI and L-3 but are planning

for the integrated Dubai UTM system – now called "Utmosphere" – to eventually be C-UAS technology-agnostic, according to Exponent's Chief Commercial Officer Ayhan Kamil.

At the core of Dubai's UTM system is a 58 gram tracker which will be fitted to each commercial drone (https://www.unmannedairspace.info/utm-industry-leader-interview/dubais-pioneering-utm-technology-air-taxis-2020-interview-exponent-technology-services-ayhan-kamil/), equipped with built-in IMU accelerometer, barometric altimeter and GPS and GSM modules with an independent power source. The box is able to transmit over the GSM-network, in 2G, 3G and 4G environments.

The results of the trials with C-UAS technology companies – which have included research operations in Farnborough, UK – will mean UAE will be the first country into the world to field surveillance systems to detect uncooperative drones as an integral part of the UTM system.

In November 2017 Fetchr, Eniverse Technologies and Skycart announced that they had joined forces to develop the region's first autonomous drone delivery service in Dubai. "These autonomous drones from Skycart will help us beat typical last-mile challenges and enhance the delivery experience of our customers while they are on the go," said Idriss Al Rifai, founder and CEO of Fetchr.

Mohammed Johmani, founder and CEO of Eniverse Technologies said: "Today we mark the launch of a long-term relationship with Fetchr. We are delighted to be the first company to implement this new modern technology in the UAE, especially with a like-minded firm such as Fetchr in which we see great future growth potentials."

Skycart, based in San Francisco, California, makes autonomous drones to accommodate many different types and sizes of packages and enable 24/7 deliveries in less than 30 minutes.

In July 2017 and Skycart and Eniverse Technologies announced their partnership to create Space Autonomous Drones in Dubai, a company that will "disrupt the traditional behaviour and start approaching companies that would be of interest in such a service and start building strategic collaboration with them, such as: DHL, Souq, Amazon, UPS, Aramex and Alibaba group. The company will offer smart drones shipping solutions with cost savings and faster delivery times, maximising profit margins and providing an overall better customer experience to clients."

Officials from the **Israel** Innovation Authority, Ayalon Highways Ltd and the Israel Civil Aviation Authority in July 2022 gave more details of the next stage in the country's National Drones Initiative during an on-line meeting on 6 July 2022, which will see the aviation authority develop new procedures and technologies to allow 150kg drones fly distances of up 150 km in and between urban centres.

According to Libby Bahat, Head of Aerial Infrastructure Department, Civil Aviation Authority, Israel (CAAI):

"Generally the CAA sees the emphasis on the free market, we are trying to follow as strictly as possible the EU implementation regulation 664 which talks very clearly about the competition between U-space service providers and practically all other stakeholders."

"The regulation emphasises the roadmap and the acceptable means of compliance…and in that NPA regulations mentioned from ASTM 3548 regarding USSPs and others regarding remote ID.

4.0 Financing UTM

4.1 Different approaches to financing UTM systems

The December 2019 Notice of Proposed Rulemaking (NPRM) from the FAA setting out potential charging mechanisms for UTM service suppliers for remote drone ID services has underlined the principle that tactical UTM service providers will have to rely on "added extras" rather than "core services" covered by user fees for much of the future revenue sources.

The FAA assumes each entity operating a UAS would be required to subscribe to a Remote ID USS at an average rate of USD2.50 per month or US30 per year. If these costs were applied to the current fleet of drones this would have generated USD241.72 million – or around USD28.34 million a year. Given that the FAA expects there to be nine UTM service suppliers (USS) qualified as FAA partners in the first year of operations this suggests subscription costs will be able to finance only a small portion of the remote ID service being offered by USSs.

The number of new and renewed Remote ID USS subscriptions is approximately USD3.1 million for part 107 operators and USD5.7 million for recreational flyers. The potential commercial operator market in the USA is around 116,000 entities (https://www.reuters.com/article/us-usa-drones/u-s-agency-requires-drones-to-list-id-number-on-exterior-idUSKCN1Q12O9) who will provide the main clientele for UTM services. According to December 2019 FAA figures there are 1,509,617 drones registered in the USA, 420,340 commercial drones registered, 1,085,392 recreational drones registered and 160,748 remote pilots certified. While USS companies will already have established relationships with this community how will they define their own unique selling points over their competitors?

As the FAA will not provide payment for the development or operation of Remote ID USS products or services it anticipates that "the Remote ID USS would recoup the costs of providing services either through the sale of subscriptions for remote identification services, online advertising, or "value added" services that can be purchased from the service provider." But which added value services and would these be produced by the USS or in partnerships?

Unless they have already done so, UTM service providers will need to build scalable strategic partnerships with internet service providers and mobile phone companies in ways that everyone can make money

The proposed rule would require persons operating UAS with remote identification to transmit the remote identification message elements to a Remote ID USS over the internet. For most USS this is not a technical problem. But it becomes a business issue as the FAA appears to require UTM to be based on increasing numbers of scalable, certified telecommunications services (*"The FAA anticipates that in the future, third parties may develop mobile phone applications for law enforcement use…the FAA anticipates that some UAS manufacturers will also be Remote ID USS. In those cases, the Remote ID USS may choose to only connect to UAS made by the same manufacturer. This model is similar to how mobile telephone networks sell devices that can only be used on their networks. The FAA requests comment on whether manufacturers should be permitted to produce UAS that are only compatible with a particular Remote ID USS)*.

This insistence by regulatory authorities that UTM services be provided at minimal cost has also featured in recent European Union legislation. In September 2020 the European Commission proposed an upgrade of the Single European Sky (SES) regulatory framework which comes on the heels of the European Green Deal. As part of the proposals, the

Commission has published a staff working document which outlines its strategy for air navigation service providers (ANSPs) being able to provide both UTM services and UTM technology services, such as the provision of Common Information Services (CIS).

According to the working paper:" ….It is therefore necessary to establish requirements on the pricing, and related oversight, of the Common Information Services (CIS) that are needed to enable safe ATM of the unmanned traffic (i.e. drones), as well as on the pricing of and access to data necessary for such services. Those requirements should be similar to those relating to air traffic data services, namely that air navigation service providers must make data available at marginal cost. In addition, if an ANSP wishes to become a CIS provider, and in the interest of transparency and to avoid discrimination and cross-subsidisation, it

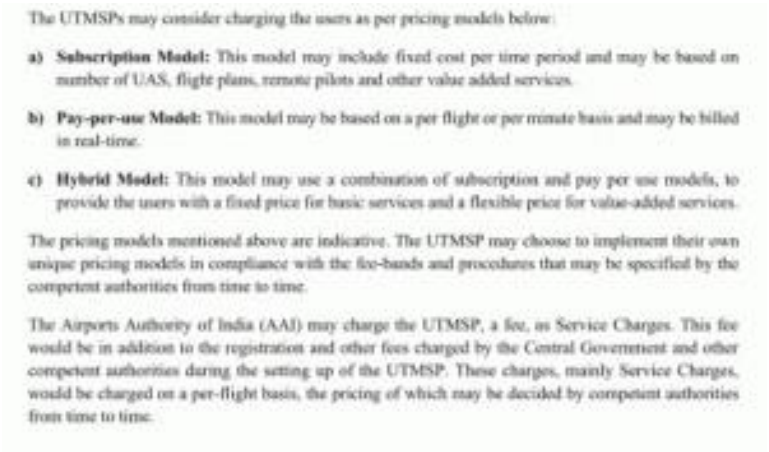
Other regulators are taking a more holistic view of charging for UTM services.

In October 2021 India's Ministry of Civil Aviation published an important high-level UTM roadmap in which stakeholder roles are defined and the next steps for UTM implementation have been published.

The government wants to develop a hybrid approach to UTM deployment, allowing competition between UTM service suppliers where possible but also considering the opportunity for single UTM services in niche areas of the market, such as delivery of goods and services by drone in remote rural areas.

The document includes a "next step" road map, including calls for participation in trials and the onboarding of UTM service providers. The document contains some interesting views on how UTM service providers can be recompensed for their services, suggesting several different finance models may be acceptable.

Figure eighteen: India's Ministry of Civil Aviation proposals for UTM service charging



The UTMSPs may consider charging the users as per pricing models below:

a) **Subscription Model:** This model may include fixed cost per time period and may be based on number of UAS, flight plans, remote pilots and other value added services.

b) **Pay-per-use Model:** This model may be based on a per flight or per minute basis and may be billed in real-time.

c) **Hybrid Model:** This model may use a combination of subscription and pay per use models, to provide the users with a fixed price for basic services and a flexible price for value-added services.

The pricing models mentioned above are indicative. The UTMSP may choose to implement their own unique pricing models in compliance with the fee-bands and procedures that may be specified by the competent authorities from time to time.

The Airports Authority of India (AAI) may charge the UTMSP, a fee, as Service Charges. This fee would be in addition to the registration and other fees charged by the Central Government and other competent authorities during the setting up of the UTMSP. These charges, mainly Service Charges, would be charged on a per-flight basis, the pricing of which may be decided by competent authorities from time to time.

There is a process of consolidation of independent UTM service suppliers under way, with the lack of a clear revenue stream from drone operational support as a main reason for this. It will be 2024 before automated BVLOS flight operations will be taking place with enough regulatory to provide independent service suppliers with a viable income. DroneUp's December 2021 takeover of AirMap (and the exit of Skyward in June 2022) points one way to the future. DroneUp is offering drone eco-system developers such as cities and ports an airspace monitoring tool and a communications system to talk directly to operators at no charge. If eco-system managers want to use the tool for more complex operations, or contract maintenance and upgrades to DroneUp, then those will be billable services. "If they want to go to higher levels and introduce classified operations or certain data metrics for

Adams and Reese LLP, AeroVironment, AIRT, Avitas Systems, DeTect Inc, Fortem Technologies, Kongsberg Geospatial, NUAIR and The New York UAS Test Site, SRC, SPH Engineering and Syniverse.

OneSky
NUAIR, LoneStar UAS CoE, FAA, NASA, Swiss FOCA, CAAS, and CASA

Unifly
Aernoyde, DFS, Fortem, HERE,Huawei, Integra, NUAIR, TerraDrone, State of Nevada UAS Test Site.

However, the UAS services sector is evolving extremely quickly and many of these differentiations are breaking down – and will break down even faster in the future once it becomes clear who exactly will have responsibility – and the money – for specifying UTM services. Group-three companies are investing in group-one companies and platform suppliers are investing throughout the UTM service provider sector.

Collectively, the industry has products for every sector of the UTM market – though not necessarily any customers yet beyond commercial drone operators.

Consolidation should be expected over the next 12 months, though, as many will find it tough to keep on developing their UTM business portfolios when their many sources of revenue are just drone operators, investors and research agencies – organisations which will remain the key cash generators until 2023/2024, when the first UTM service contracts are likely to be awarded. And these could well be cost-plus contracts.

Table seventeen: UTM service providers and commercial contracts with ANSPs, civil aviation and military authorities for operational UTM systems

Date	UTM service supplier	Client	Country	Contract details
April 2016	Exponent/Astra UTM	Dubai Civil Aviation Administration	Dubai	Public launch of the Exponent Portal software which allows DCAA officials and other local authorities to track the location, speed and height of drones.
2017				
July	Unifly	DFS	Germany	UTM deployment with mobile app in July 2017
August	AirMap (nowDroneUp)	Kansas Department of Transportation (KDOT)	USA	The AirMap (nowDroneUp) UTM platform is deployed in Kansas where drones will be mobilised for disaster recovery, search-and-rescue, agriculture, construction, package delivery, and more.
August/ September	AirMap (nowDroneUp)	States of Texas and Florida	USA	Temporary UTM set up in wake of hurricanes Harvey and Irma
September	Kongsberg Geospatial	Public Services and Procurement	Canada	A contract to produce an Emergency Operations Airspace Management System (EOAMS) for evaluation by Canadian

		Canada (PSPC)		government agencies for safely managing drones at emergency and disaster scenes.
October	Skyward	FAA	USA	Approval to give commercial drone operators instant access to controlled airspace with the Low Altitude Authorisation and Notification Capability (LAANC)
October	Unifly	Danish Transport, Construction and Housing Authority	Denmark	Launch of "Droneluftrum" app centred on interactive map based on Unifly software
November	AirMap (nowDroneUp)	FAA	USA	Approval to give commercial drone operators instant access to controlled airspace with the Low Altitude Authorisation and Notification Capability (LAANC)
December	AirMap (nowDroneUp)	Airways New Zealand	New Zealand	Drone operators use AirMap (nowDroneUp)'s iOS and Android apps to request airspace approvals required by New Zealand's Civil Aviation Authority at Christchurch, Queenstown, and Wanaka airports, and on public lands in the Christchurch City, Selwyn, and Queenstown Lakes District Council, including parks and reserves.
December	Rakuten AirMap (nowDroneUp)	Chiba City	Japan	Chiba City is the first city in Japan to deploy the Airspace Management Dashboard from Rakuten AirMap (nowDroneUp).
December	Unifly	Austrocontrol	Austria	UTM deployment with mobile app
2018				
March	Unifly	Belgocontrol and the Belgian Civil Aviation Authority	Belgium	Launch of droneguide.be, a digital platform based on Unifly software.
March	Wing	FAA	USA	Approval to give commercial drone operators instant access to controlled airspace with the Low Altitude Authorisation and Notification Capability (LAANC)
March	Rockwell Collins	FAA	USA	Approval to give commercial drone operators instant access to controlled airspace with the Low Altitude Authorisation and Notification Capability (LAANC)

7.3 Surveillance, tracking and identification

Introduction

Drone tracking and identification assumed a new priority among many States following the London/Gatwick 2018 drone incursion events. At the back of many ANSP and UTM service providers is the understanding that tracking drones within a mobile telephone network will be relatively simple – if linked to a registration system which outlines the drone ID, the pilot and the operating organisation, allowing UTM personnel the capability of identifying unregistered drones or drones which have swayed off their agreed flightpaths. But tracking drones beyond the cellular network will require a much more complex technical and institutional set of solutions.

The drone identification system market worldwide is projected to grow by USD71.1 billion between 2019 and 2025, guided by a compounded growth of 66%, according to market analysis carried out by ResearchAndMarkets published in July 2019. The Drone Identification System market study finds one segment in particular – drone mounting – is predicted to grow by over 63% over the period, rising to USD27.1 billion by 2025.

Representing the developed world, the United States will maintain a 69.4% growth momentum. Within Europe, which continues to remain an important element in the world economy, Germany will add over USD1.4 billion to the region's size in the next 5 to 6 years. Over USD2.9 billion worth of projected demand in the region will come from other emerging eastern European markets. In Japan, Drone Mounting will reach a market size of USD1.8 billion by the close of the analysis period. As the world's second largest economy, China exhibits the potential to grow at 59.4% over the next couple of years and add approximately USD9.6 billion in terms of addressable opportunity for this sector.

Government programmes - Europe

In August 2021 Swiss U-Space Implementation (SUSI) members, under the coordination of the Swiss Federal Office of Civil Aviation (FOCA), announced that a nationwide voluntary Network Remote Identification (NET-RID) service is now live across Switzerland. NET-RID is a joint collaboration between AirMap (nowDroneUp), ANRA Technologies, Avision, Involi, OneSky, Orbitalize, Skyy Network, skyguide and Wing. According to a SUSI press release:

"The service complies with the U-Space Regulation (EU) 2021/664 adopted by the European Commission, which will be enforced beginning January 2023. NET-RID ensures drone operations are safe and compliant by enabling information sharing about those operations via the internet. SUSI members are making it possible for drone operators to easily share information about their flights with airspace authorities, law enforcement, other operators and the general public."

"With the increasing amount of drones operating in the airspace it is now important to be able to identify a drone easily. Thanks to the remote identification service we will save precious time, which is of considerable value to the Geneva police" said Philippe Couturier of the Geneva police.

With NET-RID, airspace actors in Switzerland can now see drone operators' registration numbers and information related to their flights. Operator information is shared via the Linux Foundation's InterUSS Platform, an open-source platform that ensures a U-Space Service Provider (USSP) has obtained all relevant data from other USSPs. This allows USSPs to share information only when necessary and enables interoperability between all participants.