strategy&

Formerly Booz & Company

Telecom operators in the age of drones

Preparing for the new era

Strategy& is part of the PwC network

Contacts

Beirut

Ramzi Khoury
Manager, Strategy& Middle East
+961-1-985-655
ramzi.khoury
@strategyand.ae.pwc.com

David Abi Diwan
Associate, Strategy& Middle East
+961-1-985-655
david.abidiwan
@strategyand.ae.pwc.com

Dubai

Jad Hajj
Partner, Strategy& Middle East
+971-4-390-0260
jad.hajj
@strategyand.ae.pwc.com

Warsaw

Michał Mazur
Partner, PwC Poland
+48-502-184-684
michal.mazur
@pl.pwc.com

Adam Wiśniewski
Director, PwC Poland
+48-501-049-409
adam.wisniewski
@pl.pwc.com

Agnieszka Babicz
Vice-Director, PwC Poland
+48-664-575-811
agnieszka.babicz
@pl.pwc.com

About the authors

Jad Hajj is a partner with Strategy& Middle East based in Dubai. He is a member of the communications, media, and technology practice. He specializes in helping telecom operators develop winning strategies and build distinctive capabilities. He has particular expertise in corporate strategy, business-to-business, as well as digitization and innovation.

Michał Mazur is a partner with PwC Poland and the leader of Drone Powered Solutions — a dedicated PwC global centre of excellence in drone technology. He specializes in technology strategy and digital transformation working with large multinational clients in Europe, the Middle East, the U.S., Canada, and Asia.

Adam Wiśniewski is a director, PwC Poland, with PwC's Drone Powered Solutions team. He holds a professional drone pilot license and is one of the pioneers of the drone business applications. He specializes in delivering value to clients from various industries using advanced drone-powered solutions.

Ramzi Khoury is a manager with Strategy& Middle East, based in Beirut. A member of the communications, media, and technology practice, he works closely with telecom operators on shaping their B2B digitization strategies. His areas of expertise are corporate planning, strategy and business development, national ICT plans, and corporate efficiency programs, namely technology cost optimization.

Agnieszka Babicz and David Abi Diwan also contributed to this report.

Executive summary

Telecom operators are uniquely positioned to become pivotal players in the rapidly developing commercial unmanned aerial vehicles (drone) market. Drone applications enable various types of companies to transform their operations and gain efficiency, in terms of cost and time, by capturing and analysing datasets to improve decision making. The range of commercial applications — known as drone-powered solutions (DPS) — is already immense and constantly growing. However, individual companies require significant investments and specific capabilities to conduct drone operations internally. A separate player, meanwhile, can offer DPS for all companies. Telecom operators can play this role because of their capabilities in connectivity, cloud, big data, and analytics.

Two specific opportunities exist for telecom operators. First, they could offer DPS by building partnerships in areas related to drone procurement, data processing, and data delivery, and by leveraging their internal capabilities across the value chain. We expect the market for DPS, excluding drone procurement, in the Gulf Cooperation Council (GCC)[1] to reach US$1.5 billion by 2022. This market can be served through multiple business models, such as end-to-end commercial drone services, on-demand live video data acquisition, or a fully autonomous system operated at a client's premises.

Second, telecom operators could help to establish a drone traffic control centre (DTCC) that would enable control of drone operations, and ensure compliance with regulations. They would facilitate the technology components of the DTCC, from end to end, by supplying and managing data storage, connectivity, cybersecurity, professional services, and applications, including a drone traffic management system and real-time reporting and analytics.

Telecom operators should develop a tailored strategy and implementation road map for commercial drone applications. Drones represent a unique opportunity for telecom operators to diversify their revenue sources and spur new growth.

Dawn of the drones

The information revolution is reshaping the global economy. Data generation, computing, storage, and exchange are transforming operations and redrawing business models. Storing extensive datasets, and using them creatively and productively, is now indispensable to gaining competitive advantage. A further disruption within this revolution is occurring because of drone technology. Drones are at the nexus of two breakthrough technologies: the Internet of Things (IoT, connected sensors and devices) and artificial intelligence. Drone technology, along with robots and self-driving cars, are an instance of information systems integrated into physical devices. Drones are also a disruptive source of data. Because they are equipped with sensors and cameras, they capture unprecedented levels of high-quality data that can be analysed and transformed into actionable information. Drones can autonomously execute critical tasks, such as analysing, seeking, finding, transmitting, navigating, and avoiding, thanks to automated software.

As with other IT applications, drone technology has rapidly expanded beyond its original military purposes, and has now entered the commercial sector. Commercial drone usage is proliferating, mainly due to the advancements in underlying technologies (such as sensors, cameras, Global Positioning Systems [GPS], and batteries), a positive regulatory environment, and investor enthusiasm. The Federal Aviation Administration (FAA) projects that the number of commercial drones in the U.S. will reach almost three million by 2020, quadruple the number in 2016.

Drones are making it possible for companies to transform their operations and perform challenging activities in a more efficient way, in terms of both cost and time. Disruption from drones is therefore not limited to their physical capabilities, but also flows from their broader applications for business.

There are several types of DPS depending on the purpose: surveying and mapping, investment supervision, asset inventory and management, maintenance monitoring, transport of goods, surveillance, and video coverage (*see Exhibit 1, page 6*). Numerous DPS are already commercially available within different industries, while others are being developed. New applications will materialize, especially after the enhancement of related technologies.

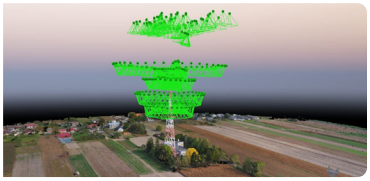
Disparate companies are starting to see the impact of drones on their daily operations, making them keener to use these applications and so build competitive advantage. The main benefits of the drone disruption are increased automation, improved operational efficiency, enhanced visibility, and accelerated decision making.

For example, using drones for investment supervision in public infrastructure projects allows sites to be surveyed quickly and accurately. Field data for precise site modelling can be gathered equally efficiently. Construction sites are surveyed up to 20 times faster than via ground-based land surveying teams. Investors can continuously monitor work progress through constantly updated orthophotomaps of the construction site.

Investors can compare changes that have occurred after every inspection with a split-screen view feature, and identify discrepancies within one centimetre. Drones also generate savings in claims settlement litigation by providing unique evidence. Furthermore, the technology helps to reduce the number of life-threatening accidents and limit the penalties incurred through crossing site borders by guaranteeing compliance with safety and environmental rules.

Exhibit 1

Drone-powered solutions commercial applications

Surveying/ mapping	Providing precise and measurable photogrammetric products to enhance stakeholders' awareness about examined area	
Investment supervision	Gathering image data concerning matters like work progress, compliance with safety rules, etc.	
Asset inventory/ management	Providing key information about owned assets and performing stock-taking	
Maintenance monitoring	Assessing conditions of multiple infrastructural objects or assets that are located in vast or remote areas	
Transport of goods	Delivering light packages quickly when destinations are within the range of drone base	
Surveillance	Monitoring behaviour activities, operations, or other changing information to enable real-time decision making	
Video coverage	Providing aerial video coverage for advertising and marketing production, as well as TV footage (news reporting and shows)	

Source: Strategy&/PwC analysis

For telecom operators, drones solve their most substantial technical challenges in maintenance monitoring. They also assist with asset inventory and management, and network planning and implementation — which have long been challenges for telecom operators. In the past, technicians had to climb to the top of towers and complete a manual count on the different installed equipment. Drones can now perform this task. They provide detailed, high-quality data on owned assets, and carry out timely and efficient stock-taking. This allows telecom operators to obtain an accurate picture of property that is often dispersed over large areas.

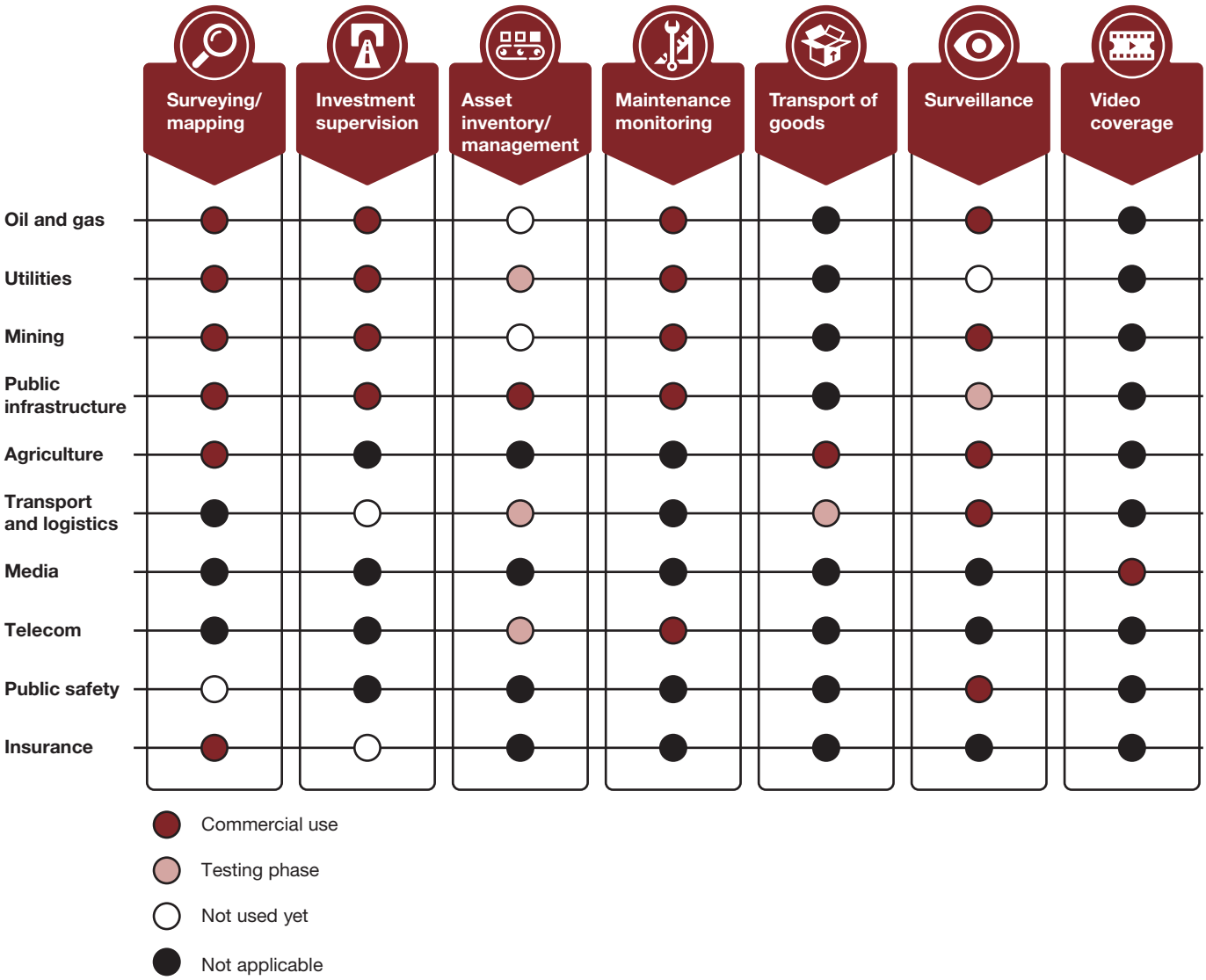
Drones can play a role in keeping infrastructure and installations in good condition. They can perform regular inspections more efficiently, at greater speed, and at lower cost. As they are able to take pictures, videos, measurements, and readings, drones can replace technicians. This enhances safety because companies no longer need to put workers at risk to conduct inspections, especially in remote areas or in bad weather conditions (*see Exhibit 2, page 8*).

Various telecom operators have made progress in this regard. AT&T launched a program in October 2016 that uses drones to inspect cell towers, streamlining the job of maintenance technicians. Verizon also uses drones to inspect tower sites affected by severe storm flooding.

Drones support network planning and implementation, identifying dead or weak spots in cellular networks. AT&T uses drones to test signal strength across different regions in the U.S. Nokia has performed similar experiments in the United Arab Emirates (UAE).

Exhibit 2

Drone-powered solutions across different industries



Source: Strategy&/PwC analysis

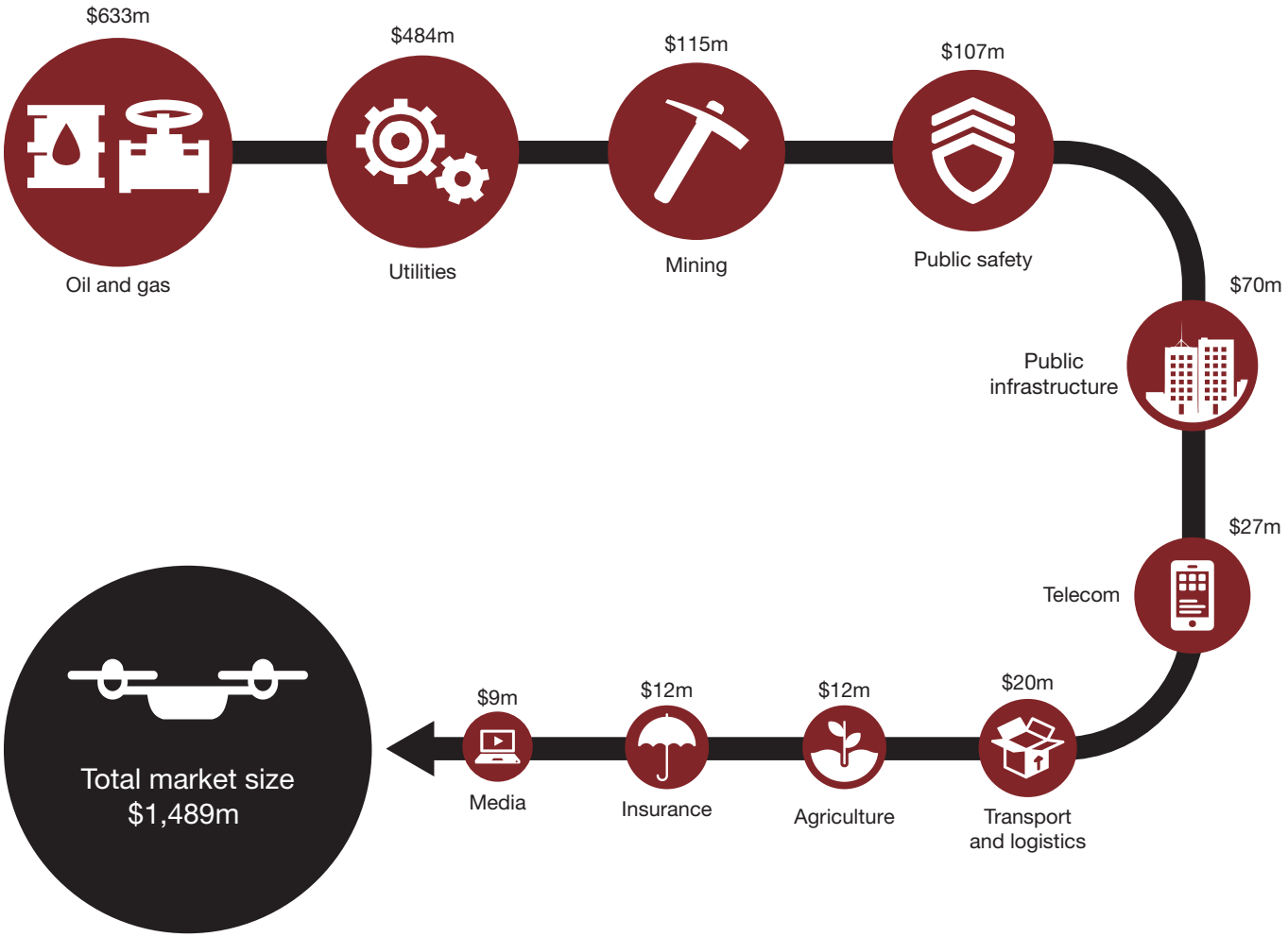
The central role of telecom operators

Telecom operators are uniquely positioned to play a central role in the drone space. Various DPS involve the ability to collect massive amounts of data, mainly via images and video footage, store it, and then process and analyse it thoroughly — activities that could fall within the purview of telecom operators.

This new role for telecom operators makes sense given that the traditional telecom market is maturing. Telecom operators have been looking for new growth avenues and have been venturing into the digital space. The commercial opportunity is significant. Companies across all sectors in the GCC are becoming increasingly aware of drones and are exploring ways of benefiting from them. The size of the overall DPS market in the GCC region (excluding drone procurement) could reach US$1.5 billion by 2022. Much of this will come from oil and gas, and utilities — which respectively are projected to constitute 43 percent and 32 percent of the market (*see Exhibit 3, page 10*).

Exhibit 3

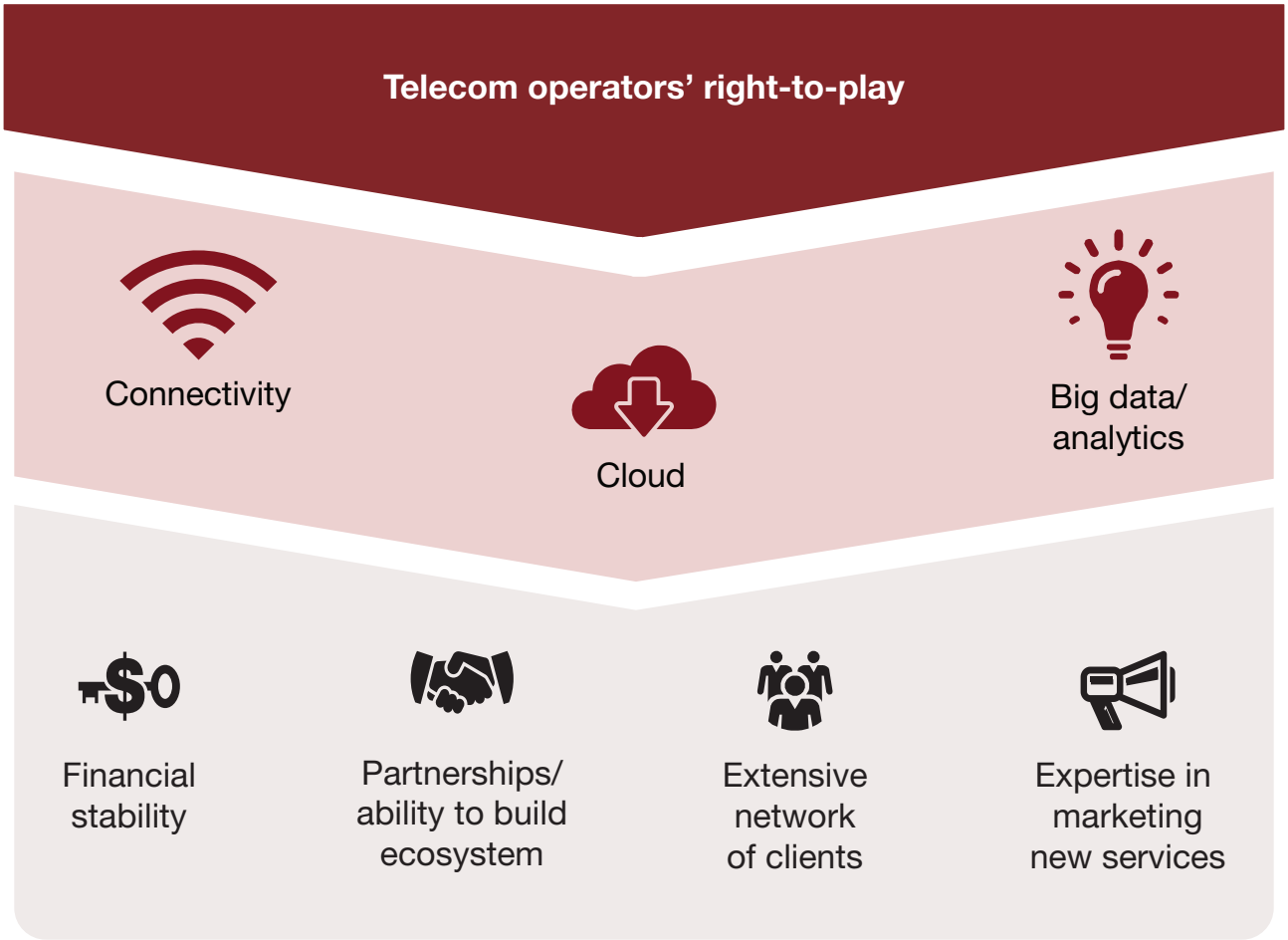
Drone-powered solutions high-level market size in the GCC (US$ millions, 2022)



Source: Strategy&/PwC analysis

Telecom operators are reinventing themselves as digitization players and have thus developed solid capabilities in big data and analytics, and in the IoT space (such as fleet management and device management), making them better placed to offer DPS. They also have numerous additional capabilities such as their financial stability and capacity to invest, their ability to build partnerships and facilitate the drone ecosystem, their extensive market reach through their network of clients, and their expertise in marketing and selling new products (*see Exhibit 4*).

Exhibit 4
Telecom operators are well placed to offer drone-powered solutions



Source: Strategy&/PwC analysis

Although the acquisition of data alone is a relatively unsophisticated task, the crucial elements of DPS are data transfer, storage, and processing and analytics — precisely the specific capabilities telecom operators possess.

Data transfer is essential for drone operations and requires constant connectivity, which telecom operators can provide. Drones need to maintain this connectivity so that they can be tracked by airspace regulators and receive real-time air traffic control information and instructions, for example, about restricted geographical areas. Connectivity allows drone-to-drone communication and information exchange that could lead to advanced features, such as coordination between drones, and the avoidance of collisions. The collected data are typically stored on the drone itself for subsequent downloading. However, live streaming is indispensable in some cases, such as for emergency response or police operations. This requires reliable connectivity to transfer data from the drone to a storage server in real time.

Storage is also a crucial element of DPS. Drone flights generate massive amounts of data because of multisensor information gathering, and high resolution video, sometimes even involving 360-degree video capture. One commercial drone flight of 25 minutes could produce hundreds of gigabits of data. The collected data need to be properly stored so that they can be constantly available and accessible, even after several years. Most important, these data have to be shared with third parties, such as data scientists or clients, while still being restricted only to authorized staff. Transporting data using portable storage devices, such as hard drives, is inefficient due to the duplication of storage, logistical hurdles, and security concerns. With these evolving challenges, companies are rethinking data storage and security. Increasingly they are adopting cloud technology as an effective solution for data management, storage, and archiving.

The most important element in the process is data processing and analytics. These generate much added value for businesses. For data to be meaningful and insightful they must undergo thorough processing. Processing images and video footage is delicate, time-consuming, and requires highly developed capabilities. There are numerous advanced systems that automatically process the data, but they are prone to errors as they lack accuracy and subtlety. Companies need skilled human resources to ensure adequate, professional data processing.

Companies are enthusiastically using drones but are finding data management and storage difficult. Building internal capabilities in data analytics has likewise been a challenge, as has hiring qualified resources and buying software licenses, which are very costly. Conducting drone-powered solutions internally requires substantial investment, extensive capabilities, and time. Obtaining approvals from authorities adds further complications. The business case for such an internal strategy would be difficult to justify for companies that do not have the sufficient scale and do not use these drones frequently. Companies in different industries need an outside player to offer DPS.

Telecom operators, with their extensive tower networks that provide the necessary connectivity for live streaming, drone tracking, and information exchange, can be that outside player. For example, Verizon has acquired Skyward, a drone company, which enables users to connect their drones wirelessly and receive data plans on its network. Telecom operators also possess the mature cloud infrastructure suitable for managing, storing, and archiving data, and for delivering insightful reports (such as interactive maps and 3D models) to clients.

Telecom operators as providers of drone-powered solutions

Telecom operators are an obvious choice to offer DPS to companies across different industries. To seize this opportunity, operators need to develop a way to play within each of the four key components of the DPS value chain. These are:

- Drone procurement
- Drone operations
- Data processing and analytics
- Data storage and delivery

Drone procurement
Drone procurement entails providing the physical device (drone) with the information systems, sensors, and additional features that enable it to capture massive amounts of data and execute critical tasks. In the main, there are two types of drones: fixed-wing and multi-rotor. Which drone type to select depends on the intended use. Telecom operators can purchase drones from vendors rather than developing their own in-house. There are many well-established global players that offer a good selection of commercial drones. In-house development of drones is costly in terms of hardware and software, and demands advanced technical and manufacturing capabilities.

Drone operations
Telecom operators can carry out drone flights to execute necessary tasks, such as collecting images and video footage, or transporting goods to the end client. Professional pilots should operate the commercial drones. Operators can hire skilled pilots or train staff internally within a few weeks, and then issue them with the necessary licenses and certifications. Because drone flights should be conducted very frequently to gather data, and it is relatively easy to recruit or train pilots, it is more efficient for operators to build and acquire capabilities internally rather than outsourcing.

Data processing and analytics
Telecom operators can process and analyse the collected aerial data by using qualified experts, such as photogrammetrists and analysts connected through advanced systems. Raw data are transformed into meaningful geospatial products, such as digital terrain models, orthophotomaps, and 3D models, while image data analysis leads to insights.

Building capabilities in data processing and analytics is certainly within reach of telecom operators, which have to manage the cost of acquiring data processing software and analytics tools. Operational expenditure, meanwhile, mainly consists of experts' salaries and software licenses.

To build these capabilities, primarily within aerial imagery analytics, telecom operators can forge partnerships with leading data processing and analytics service providers. The telecom operator and the partner would execute this function as a joint enterprise in the first phase. Over time, the telecom company should aspire to conduct processing and analytics internally when capabilities mature, as this step is critical in terms of operations and market value.

Data storage and delivery
DPS require data storage and data delivery to clients via online portals such as geospatial tools, with cloud storage and delivery systems the main elements. Telecom operators employ extensive cloud platform capabilities and can use these to store, manage, and deliver data to clients. Telecom operators could build partnerships with service providers to deliver and visualize data through a state-of-the-art platform for data presentation on geospatial tools.

Multiple business models

Telecom operators could adopt multiple parallel business models that differ according to the type of DPS provided, the capabilities required, and the particular pricing methodology. These business models are: to establish a drone operations centre (DOC), develop a mobile drone surveillance unit (MDSU), and resell autonomous drones systems (ADS) (*see Exhibit 5, page 17*).

Drone Operations Centre
Telecom operators could build a DOC that offers end-to-end drone-powered services for businesses (surveying and mapping, investment supervision, inventory management, and maintenance monitoring). Clients would contract the DOC for individual projects, and would agree on key requirements, such as the area or surface to be assessed,

or the required analyses and indicators. The DOC then sends drones to the designated area to gather data through high-resolution images and video footage. Data are transmitted for photogrammetric processing and then for analytics. The DOC offers the client access to a geospatial platform to visualize the data, including high-resolution illustration, and precise area and volumetric measurements. It would also deliver analytical business reports containing the required analyses and indicators. Pricing therefore depends on the size of the assessed surface and on the extent of the required analysis, such as the number of items of equipment that are analysed.

Mobile Drone Surveillance Unit
Telecom operators could also build a MDSU to meet clients' demand for surveillance and video coverage during critical events. The MDSU provides on-demand live aerial video coverage through mobile teams of drone pilots. A stream of data is transmitted in real time to a control room where it is analysed by technicians, using automated analysis algorithms. Recent advances in cameras and sensors are spawning innovative functionalities, including thermal imaging, face recognition, and crowd counting. The MDSU could be used for various purposes, such as emergency operations, traffic management and monitoring, or simply news coverage. Pricing would be calculated according to the duration of operations in hours or days.

Autonomous Drones Systems
Telecom operators could resell ADS for surveying and mapping, investment supervision, inventory management, maintenance monitoring, and surveillance. A telecom operator might establish the infrastructure of the autonomous system at the client's site, maintain the hardware and software, and if necessary provide support in daily operations such as technical help and photogrammetric analysis. The drone then autonomously carries out the required tasks. Data gathered are stored on the cloud, with the client able to access it easily through a user-friendly interface. Clients are charged by operating year.

Telecom operators could also operate or provide semiautomated drone systems for the transport of small packages, such as goods and medical products. A package is attached to the drone in the delivery unit located next to the dispatching centre, and then the autonomous flight to its destination is carried out with operational safety assured. The drone leaves the package in the destination area marked by the client and then returns to base. Pricing could be based on the number of deliveries or per operating year.

Exhibit 5

Drone-powered solutions business models

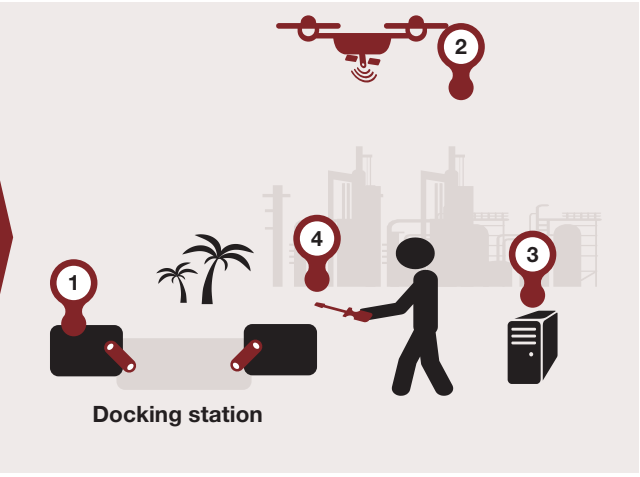
Drone Operations Centre (DOC)

1. **Data acquisition**
   Rotary or fixed-wing drone flights over designated area in order to gather high-resolution images and video footage
2. **Processing**
   Photogrammetric processing of the data and generation of geospatial products (i.e., 3D models, orthophotomaps) by engineers
3. **Data analytics**
   Image data analysis conducted by analysts and tailored to the requirements of each project
4. **Data storage and delivery**
   Data management in terms of storage, security, accessibility, as well as archiving

Mobile Drone Surveillance Unit (MDSU)

1. **Data acquisition**
   Acquisition of aerial video footage via drones and live streaming and transmission to a mobile control and command center
2. **Data analytics**
   Real-time data analytics by skilled analysts, using automated analysis algorithms
3. **Reporting**
   Live reporting and alerts, providing active and timely support in critical operations

Autonomous Drones Systems (ADS)



1. **System setup**
   Installation of the autonomous system's infrastructure at the client's site
2. **Drone operations**
   Autonomous drone operations within designated area to complete required tasks
3. **Data storage and delivery**
   Data management in terms of storage, security, accessibility, as well as archiving
4. **Maintenance**
   Regular maintenance of hardware and software

Source: Strategy&/PwC analysis

Telecom operators as enablers of the drone traffic control centre

The second opportunity for telecom operators involves enabling a drone traffic control centre (DTCC) for governments. Airspace regulators globally are vigilantly observing the development of drone technology and its recreational and commercial expansion, aware of its potential and conscious of the risks. They are searching for the optimal balance between economic efficiency and public safety. Instead of obstructing drone development, regulators have been implementing comprehensive regulatory frameworks that aim to permit drone operations whilst also ensuring airspace safety and security. Drone usage has been possible under certain conditions established by the law. Legislative frameworks differ between countries, but there are significant common aspects of relevant regulations. Legislation generally seeks to control drone operators (pilots), as well as organize drone operations. Progress across the GCC on these matters is uneven (*see Exhibit 6*).

Drone operators must obtain a license before being allowed to conduct drone flights. They must undergo a thorough program of theoretical and practical training, and must pass a security check. For their part, drone operators should secure liability insurance coverage for damage to third parties, and should register their drones and have identification numbers displayed on them.

It is imperative that drone operations be conducted in compliance with geographical restrictions defined by airspace regulators. Operations should be authorized, and all incidents and accidents reported through the appropriate channels. Operators should conduct flights in line with conditions specified by regulators, namely distance from other airspace users including manned aircrafts, together with altitude, timing, and visual line of sight, and respecting the privacy of uninvolved third parties. Finally, they should abide by frequency band restrictions and data storage requirements.

Exhibit 6

Regulatory framework benchmarking

Benchmark	Requirements for operator/owner					Regulations on drone operations					
Country	Licensing - registration	Licensing - training	Licensing - security check	Insurance	Drone registration	Conditions of flights	Geographical restrictions	Flights reporting	Privacy protection	Pilot-drone communication	Data protection
Saudi Arabia	●	●	●	●	●	●	●	●	●	●	
UAE	●	●	●		●	●	●	●	●	●	
Oman	●	●	●		●	New regulations planned, no details available					
Kuwait	●				●		●	●	●		
Qatar	○	○	○	○	○	○	○	○	○		○
U.S.	●	●	●		●	●	●	●			
Canada	●	●		●	○	●	●	●			
U.K.	●	●		●	●	●	●				
Poland	●	●		●	●	●	●	●		●	
European Union	○	○		●	●	○	○	○	●		●
Singapore	●						●				
Australia	●	●			●	●	●	●			

● Regulation in place

○ Planned introduction/change

● According to local law

Source: Strategy&/PwC analysis

One of the DTCC's responsibilities is to provide a centralized authority to manage and control drone traffic, and ensure compliance with regulations defined by legislative bodies. All drones should be registered in the DTCC's database.

Given their importance to national security, the operations of the DTCC should be conducted by airspace regulators. Sensitive functions such as tracking and monitoring should be managed in-house by the personnel of airspace regulators as they require only a short training program to become proficient.

The DTCC should also provide necessary tools (e.g., a dongle or chip) to be attached to the drone to supply it with connectivity and allow tracking and communication. The control centre would be provided with information on restricted areas and would continually communicate this information to drone vendors so that it can be integrated in the software. The DTCC would receive requests for drone flights and operations. It would authorize or deny a request after assessing the particular case according to various criteria, such as pilot license, insurance, area, time of flight, air traffic, and weather. The DTCC would also track drone flights in real time with details such as 3D GPS coordinates, identify infractions to stated flight conditions, and act accordingly. There would be constant communication with the drone pilot, as well as with air traffic controllers and other key stakeholders.

However, given the significant requirements in terms of investment and specialized expertise, technology enablement should be outsourced. For example, the UAE's General Civil Aviation Authority started work on establishing a drone traffic control centre in partnership with a technology vendor in November 2016. In the United States, AT&T is also collaborating with NASA to develop a drone traffic management system. The overall ecosystem will be based on tracking and monitoring via Long-Term Evolution Machine-to-Machine (LTE-M) or Low Power Wide Area Network (LoRa) technologies that are tailored for IoT connectivity.

Substantial expenditure on the telecom network and infrastructure will be necessary to support the IoT connectivity, including the installation of reception devices on telecom towers in the case of LoRa, and the upgrade of the network's software releases in the case of LTE.

LTE and LoRa technologies enable tracking of the registered drones via the attached dongle or chip. Drones that do not use this tool could threaten the airspace because they are not visible in the system. Through their technical know-how and infrastructure, telecom operators could therefore devise solutions that mitigate this risk, such as sensors (acoustic, optical, and Wi-Fi), radio frequency detectors, and radars to detect unregistered drones. These solutions would be complementary to the network-based tracking (LTE and LoRa).

Selection of the particular technology is dependent on the situation, as each tool has its advantages and limitations, and is more effective in specific conditions. Bear in mind also that jammers could be used to neutralize drones by interrupting and blocking transmissions of signals — radio frequencies, GPS, Wi-Fi, or 3G/4G connections. For example, in late 2016, Deutsche Telekom started offering protection to its customers against threats to drones through these technologies. Deutsche Telekom cooperates closely with a specialized technology vendor to provide a robust value proposition to its customers.

Telecom operators can approach airspace regulators with an end-to-end value proposition to provide all the DTCC's technology support. They can independently manage the DTCC's data storage, connectivity, and the security of its systems (*see Exhibit 7, page 22*). Partnerships with technology vendors and system integrators will be indispensable in building and developing the applications' software and rolling out the system.

The involvement of telecom operators in the DTCC is crucial to its future success. They can cooperate with airspace regulators on one of several business models: service provider, build-operate, build-operate-transfer, or joint venture. Their goal could be revenue generation, or it might be to reinforce their position as providers of drone-powered solutions, using favourable conditions from regulators, such as accelerated approvals or exclusive permissions to operate commercial drones across the country.

Exhibit 7

Telecom operators can provide end-to-end support for a drone traffic control centre

Technology components	Description	Telecom operators' capabilities	Telecom operators' target play
Systems and applications	Developing software modules needed to enable DTCC functions (e.g., drones traffic management system)	Limited capabilities in applications development and management	**Telecom operators** Technology vendors
Data storage	Providing the infrastructure required to host the platforms (on premises or in the cloud)	Extensive offering of infrastructure services (e.g., cloud and data centre management solutions)	**Direct play**
Data transfer	Maintaining reliable connectivity to ensure continuity of operations	Comprehensive connectivity offering, with high network reliability	
Security	Providing information security management and cybersecurity services	Solid expertise in managed security services	
Professional services	Rolling out the systems (e.g., installation of reception devices on towers), system integration, training, and support	Extensive network of towers and solid know-how of LTE/LoRa technology	**Telecom operators** System integrators

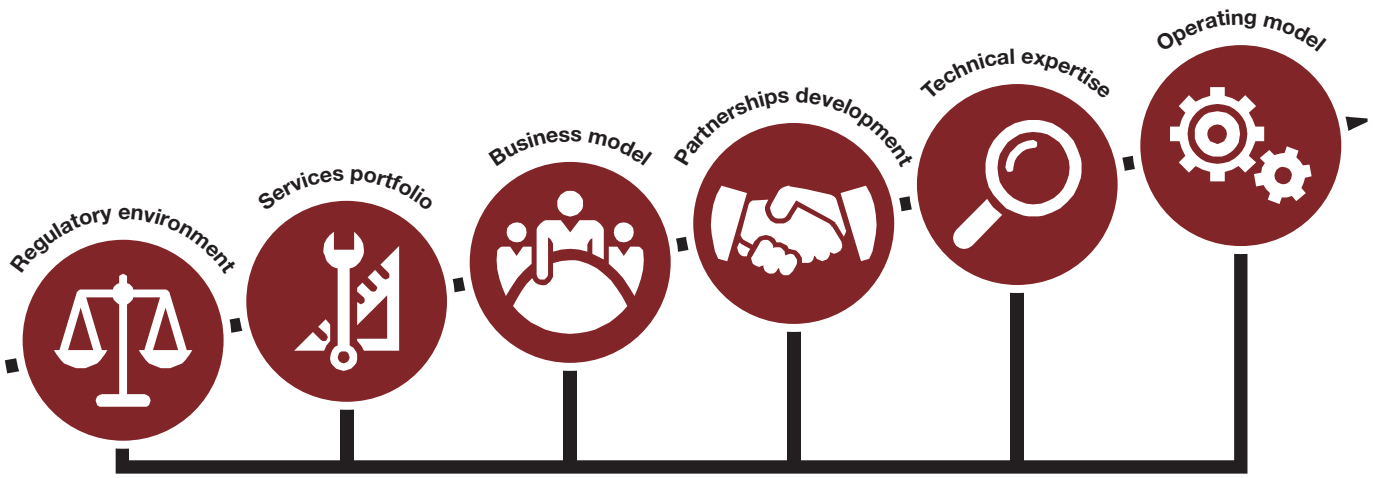
Source: Strategy&/PwC analysis

Paving the way for growth and success

Telecom operators need a tailored strategy and a clear implementation road map to turn this opportunity into a success (*see Exhibit 8*).

In the GCC, regulations are still ambiguous and largely restrictive, as the region's regulators always tend to prioritize security and public safety. Telecom operators should thus engage with relevant stakeholders to change the character and purpose of such legislation. The establishment of the DTCC could support telecom companies in their lobbying, as it will reassure regulators that the safety and security of the airspace will not be put at risk. Telecom operators should start by engaging with regulators proactively to meet their requirements and obtain the necessary permissions to conduct commercial drone operations across the relevant country.

Exhibit 8
Key success factors



Source: Strategy&/PwC analysis

They should also thoroughly analyse the potential DPS market to determine the overall size of the opportunity. The analysis should consider demand in various industries, reflected in past global adoption, market concentration, and more country-specific elements.

Assessing their own internal capabilities, such as their technical expertise and their relationships across different industries, is also critical. Based on this market analysis and the internal capabilities assessment, target industries should be selected. Engagement with clients within these industries will be essential in understanding their precise challenges and identifying those services that can help to tackle them. If market need can be guaranteed, these services will then be prioritized and offered.

Telecom operators should evaluate potential business models (such as DOC, MDSU, and ADS) that provide a platform for these services. A comprehensive business case should be developed for each model to determine its financial potential. This quantitative analysis should be accompanied by a qualitative assessment of key requirements for each model, typically in relation to regulations, partnerships, market reach, and technical expertise. For instance, autonomous drone systems (ADS) could be financially appealing, but might not reach their potential in the GCC if regulations on autonomous flights remain restrictive. Multiple business models should be selected and pursued in parallel to cover the various eventualities.

Necessary functions should be defined, while requirements, in terms of hardware, software, and workforce, need to be set out accordingly. Each function should be thoroughly assessed in order to decide whether it should be built in-house or outsourced. This assessment would consider the obstacles to acquire certain capabilities, given the investment and specialized expertise required. Potential vendors that can provide certain outsourced elements should also be screened. An exhaustive comparative analysis of their offerings based on pre-defined criteria, such as the functionalities and technicalities of their solutions, and their flexibility towards various financial and business models, will yield a shortlist of eligible vendors.

Internal capabilities should also be built and acquired. Technical expertise can be acquired by recruiting experienced resources and developing existing employees. Training should be conducted on a regular basis to reinforce employees' capabilities in critical areas, ranging from sales and business development to drone flights and data processing and analytics. It could be provided by specialized trainers, vendors, or by the hired skilled resources themselves.

Finally, telecom operators should define the target operating model required for this business. The organizational structure should evolve as operations expand. A new business unit to offer drone-powered solutions could first be created. Subsequently, a stand-alone entity, or spin-off, could be established as the business grows and as internal capabilities continue to develop. Acquiring an existing player would reduce the relevant time to market. Options for acquisition are however very limited in the GCC, given the dearth of drone applications service providers.

Conclusion

Drones will have a tremendous impact on multiple sectors in the GCC in coming years. There will be deliveries of goods to homes by drones, there will be traffic control aided by drones, and the region's oil and gas sector will deploy drones for a variety of purposes. The disruption caused by drones will also present an important opportunity for the GCC's telecom operators to target new sources of growth, build capabilities, and position themselves as leading players in digitization.

Endnotes

[1] The GCC consists of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

Strategy& is a global team of practical strategists committed to helping you seize essential advantage.

We do that by working alongside you to solve your toughest problems and helping you capture your greatest opportunities.

These are complex and high-stakes undertakings — often game-changing transformations. We bring 100 years of strategy consulting experience and the unrivaled industry and functional capabilities of the PwC network to the task. Whether you're charting your corporate strategy, transforming a function or business unit, or building critical capabilities, we'll help you create the value you're looking for with speed, confidence, and impact.

We are a member of the PwC network of firms in 157 countries with more than 223,000 people committed to delivering quality in assurance, tax, and advisory services. Tell us what matters to you and find out more by visiting us at strategyand.pwc.com/me.

www.strategyand.pwc.com/me

© 2017 PwC. All rights reserved. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details. Mentions of Strategy& refer to the global team of practical strategists that is integrated within the PwC network of firms. For more about Strategy&, see www.strategyand.pwc.com.
No reproduction is permitted in whole or part without written permission of PwC. Disclaimer: This content is for general purposes only, and should not be used as a substitute for consultation with professional advisors.