THE FUTURE OF POSSIBLE

DJI

Response to

Department of Infrastructure, Transport, Regional Development and Communications

National Aviation Policy Issues Paper on Emerging Aviation Technologies

October 30, 2020

Introduction:

DJI appreciates the opportunity to submit our comments regarding the National Emerging Aviation Technologies issues paper. And we are highly supportive of the consultative committee approach the department is instituting to discuss the issues outlined. We hope to continue to be invited to work with other industry players in giving supportive input in to what will necessarily be a long deliberative process on the many substantive areas raised.

By way of introduction, DJI is the world's largest civilian drone manufacturer. We were founded by people with a passion for Remotely Piloted Aircraft Systems (RPAS). As such we are keen to cooperate with regulators and legislators to ensure RPAS users retain their admirable safety record and the sector continues to thrive.

In Australia, we served on CASA's Technical Working Group on registration and participated in both rounds of consultation undertaken by CASA on this issue. In the U.S., we participated in the FAA's RPAS Registration Task Force and most recently the FAA's Aviation Rulemaking Committee on RPAS Remote Identification and Tracking. We also spearheaded an effort with the Consumer Technology Association to develop a standardized global RPAS serial number system to help ensure globally harmonized serial numbers for registration and remote ID purposes.

In each of these processes we have held to the principle that all stakeholders want to see safe skies that are open to innovation. In fact, we have harnessed our research and development resources to this cause. By engaging with government and industry stakeholders and understanding the relevant concerns, DJI has been able to develop and voluntarily adopt technologies to ameliorate core concerns by:

- implementing geofencing of airports and critical national security areas in 2013 and continuing to upgrade and add to this system in an effort to minimize risks in airspace around controlled aerodromes and secure areas.
- creating a remote ID system that works for all DJI craft and is now used at airports and security sites and by law enforcement globally to ensure accountability and enforcement of existing laws, as well as for ensuring security at sensitive sites.
- adopting ADSB-in receiver technology on our larger RPAS to ensure operators have advanced warning of ADSB-equipped aircraft in the vicinity so that they can avoid conflict. We have also committed to incorporate this technology in all RPAS over 250 grams going forward.
- putting in place a quiz to ensure all users have a basic knowledge of the rules before they can fly their DJI products and instituting other safety innovations including smart batteries to detect anomalies, smart return to home functions to ensure our products return to their take-off point avoiding obstacles along the way, as well as altitude limits and other features.

General comments:

The issues paper does an admirable job of outlining the many critical issues that need to be addressed. However, while all the issues are important, they are not of equal importance. We would hope to see that safety, airspace integration and security are addressed as the primary concerns. These are threshold issues. If we do not get the policy and regulatory settings correct in each, there will not be the public and stakeholder group acceptance needed for the sector to thrive.

Some of the issues outlined in the paper are not necessarily RPAS issues and in fact go quite far outside the normal bounds of aviation policy. Neighborhood noise is a prime example. Infrequent drone services such as roofing surveys or a real estate photographer using a drone have no more, and probably far less, impact than a landscaping business or a neighbor mowing a lawn. If we are to regulate at all regarding small RPAS noise, better to regulate or legislate regarding noise in a technology neutral manner. Similarly, privacy rights might need strengthening, but this is not an RPAS issue. Someone with an SLR camera can be as

intrusive as someone flying an RPAS. And so the approach and resulting legislation should remain technology neutral and not RPAS specific.

We support the principles in the issues paper but would also like to note that the interpretation of these principles will vary. We suspect that in particular, "a fair, competitive and efficient approach to airspace access" will mean different things to different stakeholders. This is an academic question currently as there is not great competition for most airspace. But with time, the issue will become more real. We hope that what is decided and enacted today does not jeopardize current users for the benefit of predicted future use cases.

One final general point we would like to make is that we should all acknowledge the current admirable safety record in the RPAS sector. We looked at RPAS operations in the US using FAA estimates on DJI share of market and the data from DJI users who voluntarily shared flight logs with us. We extrapolated that some 10.3 million flight hours using small RPAS occurred in the US last year. There were zero fatalities recorded. Compare this to the US general aviation safety record of anywhere from .935 to 1.305 fatalities per 100,000 flight hours annualy from 2012 to 2018[1] and we see that the RPAS safety record is enviable.

Of course RPAS are unmanned and so fatalities are far less likely. But the point is that when we look at the need for change and the safety case for change, we must look at the data as well. And although RPAS technology is new, we should not allow that to mean we overemphasise the threat or risk associated. We need to reground all our discussion in data wherever possible. If we are to make large changes and investments, we should be able to prove those changes are needed with data.

Also, our efforts should focus on building on this admirable safety record and ensuring we sustain and grow the culture of safety among RPAS users. This will require that all regulations, UTM requirments and other changes to current legislation or rules are seen to be:

- reasonable and rational – users will need to understand the necessity of any changes and the benefit.
- easy to comply with – we should eliminate friction in compliance wherever possible.
- affordable – we should ensure that costs are fair and as low as possible as high costs will drive down compliance.

If we fail on any of the above fronts, we will undermine the very safety culture we want to foster.

<u>Of the issues outlined in the paper, we have the following comments:</u>

1) Airspace integration: The questions surrounding an eventual UTM system are varied and vast. Where is UTM really required? Who needs to be part of an eventual UTM? What services does a UTM need to provide? What will be the cost? Who will pay? Why are each of the proposed services needed? What real risks are the services mitigating or opportunities are they creating?

   We hope that as the Australian UTM concept matures that these questions remain front of mind. In particular, any change should be examined in a cost-benefit framework with an analysis of the impacts on the sector as a whole and fairness to various categories of RPAS operator.

   DJI believes that UTM should be equitable, affordable, technology neutral and adopted in a staged-approach that matches current needs but builds with the future in mind.

   - Equitable: operators should be able to enjoy access to unrestricted airspace for their visual line of sight (VLOS) flights without having to fund services for more advanced operations. In other words, what is now free-of-charge, should remain free-of-charge. And for currently restricted airspace, an equitable and affordable system of access is also required.

[1] https://www.avweb.com/flight-safety/accidents-ntsb/u-s-civil-aviation-fatalities-increase-in-2018/

- **Affordable:** To this aim of fairness and equitable access, UTM should enable competitive and cost-effective service provision and avoid creating a monopoly service provider or limiting market entry to a few providers. Either scenario would give too great a pricing power to the service provider. Any system that requires high charges for access is automatically unequal.
- **Technology neutral:** In line with the above need for competition, we believe that UTM must be technology-neutral wherever possible. Relying on a specific technology would run the risk of favouring solutions of certain service providers or manufacturers and risk creating a closed market. It would also close off innovation that could lower prices.
- **Staged-approach:** A truly efficient UTM framework should consist of an architecture that provides the required services and associated technologies in a differentiated way, according to each drone operators' needs while maintaining safety for all users. Equally, this means a full suite of UTM offerings is perhaps not necessary in the very first instance. We believe government should focus on parts of UTM that are of immediate benefit. However, those constituent parts should be laid down with thought to enabling future applications.

In respect to constituent parts that meet current needs, we believe there are some key elements of UTM that are beneficial now and that lay the groundwork for the future. These UTM-type services offer benefits across multiple issues discussed in the paper:

- **Geo-awareness data** – currently the data available from Airservices is not fit for purpose. Drone users need data that show existing airports and No Fly Zones (such as national security areas, prisons, and other sites). ASA are working to improve their data sets, but this should be job one and should be made available in an affordable format as many providers such as DJI would provide this for free to their users. The safety and security benefits are obvious of RPAS operators having clear and accurate data on where they cannot fly and why. CASA have done some admirable work in this area. But improvement is still needed.
- **Dynamic data** – the next phase we would hope to see is dynamic data provision via an API so that drone users are made aware of Temporary Flight Restrictions for bushfires or other emergencies in real time. This will also dramatically improve safety and could have a beneficial impact on security as high profile political summits or other events could be subjects for a TFR.
- **Registration** – while registration recently launched for commercial RPAS, it is also needed as soon as possible for the consumer RPAS sector. Without registration we are left with estimates - many of which DJI believe are inflated – as to numbers of RPAS currently in use. This lack of accurate data has direct implications for policy-making. But also registration provides a channel for educating users. And when combined with remote ID, registration provides a means of enforcement akin to a car license plate number.
- **Remote identification** – there is now a global standard for remote identification that can easily be adopted and implemented. ASTM F3411-19 enables remote ID via interoperable methods that include network, wi-fi broadcast and bluetooth broadcast methods. By enabling this flexible standard, law enforcement, regulators, and the community at large will have the tools to add greater accountability to RPAS operation. This is critical for safety, security and public acceptance.
- **Airspace authorization** – it is clear that there is a need to automate authorizations for the 5.5 kilometer area around controlled aerodromes. Handling these via waivers is time consuming, costly and an inefficient use of Airservices and CASA personnel. By instituting a system similar to the US FAA's Low Altitude Authorization and Notification Capability, these permissions can be made instant, free and low burden for the regulator and ANSP.
- **Basic low altitude deconfliction** – while we believe there will be little immediate need for UTM outside of congested areas, there is still a danger of conflict with helicopters, paragliders, hot air balloons and small aircraft that share the low altitude airspace. ADSB is the most obvious technology that could provide an answer, but we are interested in all options that could ensure greater safety when sharing the airspace with these other users.

2) **Safety:** safety is paramount and we applaud the work done by CASA in this area. The issues paper points to several proposals that have merit. In particular, a blanket waiver system for RePL and ReOC holders makes sense. In effect, we either trust our certified operators to fly safely as skilled professionals, or we need to do something to improve the certification and licensing system until we can trust them to operate safely. Doing otherwise is an uncomfortable halfway house that undermines the value of holding a RePL and ReOC.

   But we think there are additional areas worth CASA's investigation. ADSB as a means for deconflicting with other low altitude airspace users has been addressed in the preceding section (airspace integration). But we also believe that regulations are needed for flight overhead or nearer than 30 meters to others.

   The current regulations have served the industry well in the early phase, but it has to be acknowledged that the 30 meters rule in particular is limiting to urban operations or even to use in lifesaving operations near to crowded areas such as beaches. An investigation into what weight class, mitigation technologies, or airworthiness certification would enable safe operations closer to the public would open up much wider applications of RPAS technology.

   In regards to data, there is a lack of accurate data across the entire sector and efforts to fill that gap are often flawed. Phone surveys and air proximity reporting data give indications but both are open to overinflated numbers of how many drones are in the sky and how many incidents are actually occuring. With the technologies available to us today and in use at 29 controlled aerodromes across Australia, we should be able to discuss the issues of safety with an accurate, data-driven depiction of the kinds of issues we are seeing.

3) **Security:** we agree with the paper's assessment of the categories of potential threats and the need to mitigate those threats. From our perspective, registration and remote ID are a critical first step. Once we know who the honest actors are and where they are operating, we can lower the "noise level" and filter for those that are the true threat. Equally, good geo-awarness data and dynamic data will allow authorities to communicate easily and effectively with RPAS operators as to which areas are deemed security risks. Again, this will lower the noise level and filter for any remaining bad actor.

   In regards to cybersecurity, DJI has been vocal in calling for global standards. Any narrow focus on point of origin misses the point. Irrespective of where an RPAS is made, it could be vulnerable. What we all should want to see are agreed standards that any product can be measured by – and those standards should account for the type of user and the type of operation. A government agency flying a sensitive mission will need a higher degree of cybersecurity protection than a consumer. But both will need protections.

   One caveat, as a global manufacturer, DJI would like to see Australia put its weight behind global efforts at setting cybersecurity standards for RPAS. A national standard that sits apart from any other jurisdiction would drive up our costs to serve this market and those costs would most likely need to be passed on. But even considering this issue outside our own narrow interests, drone cybersecurity is a global issue and could benefit from a globally harmonized approach.

4) **Noise:** DJI do not believe there is a need for noise regulations for the majority of small drone operations. First, any drone operating under existing operating conditions has to remain more than 30 meters from people. Second, the current regulations prohibit operations at night. These existing operational regulations mean that noise issues are already excluded under normal operating conditions. Should those regulations change over time, and we believe they should, then we see the need for regulation in neighborhoods as on par with the need to regulate leaf blowers or lawnmowers. Most states do this via time of day regulations for higher decibel products in quieter areas.

For repetitive operations – such as delivery services - that take place in residential areas and/or at night, there may be an argument for noise limits. But we would advocate for these to be easily understandable and practical. For these types of operations – and these types of operations alone – there should be a fair benchmark set that looks at how close the operation would come to those not directly involved in the operation (bystanders, neighbors, etc). This would mean setting a noise level measured to that distance. Nuisance should be balanced against public goods. Delivery will not be confined to burritos and coffee. Medicine deliveries or even the convenience of food delivered to a disabled resident have clear and important benefits that must be considered.

The one area where noise issues will approach the threshold issue that it is with traditional aviation is within the urban air mobility sector. And so this issue should truly be focused on the needs of UAM and community acceptance and standards for UAM.

5) **Privacy:** similar to noise, we do not see this as a specific RPAS issue. If privacy laws need strengthening, then a separate process should enable this and it should be done with a technology neutral lens. The same law should be able to be used for the peeping tom, or the stalker with a phone camera or SLR or video camera as for the person misusing an RPAS.

Conclussion:

The NEAT issues paper is a welcome window into current thinking at the department. It serves as a template laying out the issues to be handled. But it does not indicate clear directions as to what the end result will be. This is not a criticism. This paper was needed. We need a common sense of the issues and the approach government will take to ameliorating them. But it does mean there is still an enormous amount of detail to be sorted through on each and every issue listed. How those details are decided will have huge impacts on the industry. It is the details that will determine whether RPAS thrive and drive additional economic activity and jobs or whether Australia loses ground to other jurisdictions.

The issues paper is a productive first step. But what would truly help industry get greater surety is an ongoing commitment to working through these issues with industry input from the very earliest stages and throughout the process. In that vein, we would hope that the department will commit to allow the NEAT consultative committee live on in some form or fashion beyond the discussions of the current issues paper.

The US Federal Aviation Administration set up the Drone Advisory Committee as a long-term source of advice from across the industry – from manufacturers to user associations, to research and academic specialists. The DAC has been a source of valuable input to the FAA throughout its work on rulemaking for issues such as registration, remote ID, night operations and flight overhead.

We would strongly encourage that the department consider a similar arrangement – and enshrine this grouping as a core part of its ongoing consultative process. Membership can vary over time and as to whether a current topic is of interest to a set of members, but this grouping should be enabled to deliberate with independence and report findings back to the department.

Participation in the DAC has been invaluable to DJI as the deliberations have informed and inspired us to create and adopt safety technologies faster than regulatory models could be changed and adopted. There is an obvious win-win to embracing such a process and we hope the department will make this central to all of its deliberations on each of these issues over the foreseeable future.

Also, a commitment to producing an eventual roadmap would be beneficial as so much of what industry needs would come from a more detailed examination of timing and details on what will be done, by which department, and by when. Again, a consultative committee made up of industry participants would be

invaluable of building out such a roadmap and giving input on what industry needs from government in order to make investment decisions that will result in jobs and growth.

We also hope that with the solutions to all these issues there is a chance to discuss the need to maintain and further grow a culture of safety and compliance among RPAS operators. First and foremost if we want operators to comply with rules, the rules must be reasonable, be clearly seen to be reasonable, and be as easy to comply with as possible. If we fail on any of these fronts, we will undermine compliance and undermine safety. And so we will end with the exact opposite result of what we all intend – to have safe skies that remain open to innovative and productive new uses.

Finally, it is impossible to discuss such a broad array of issues and potential regulatory and technology solutions without addressing costs. What will the costs be and who will pay will be difficult and divisive questions. We recognize, and believe the majority of the industry recognize, the need to pay our way as best we can for the kinds of services that will keep our sector safe and compliant. However, there are questions of fairness as to who pays, and questions of what value the industry gets for what it contributes. In addition, there is a question of how much capacity to pay there is in such a nascent industry. This means that any cost impost should measure whether it is for a necessary or beneifical service. And the department should further weigh up whether those benefiting from the service are the ones footing the bill or is the cost being unfairly distributed.

We thank you for this opportunity to comment.

Adam Welsh

APAC Policy Director

DJI