Productivity Commission
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Dear Productivity Commission,

Intel welcomes the opportunity to provide input into the Productivity Commission's research study "Disruptive Technologies: What do governments need to do?" This study is a positive step in assisting governments to understand their role in a range of policy areas when it comes to innovative and disruptive technologies. In particular, Intel would like to focus on how governments can adapt to the disruption from Unmanned Aerial Vehicles (UAVs) to reap the enormous economic and social benefits UAVs promise to bring to Australian businesses and consumers.

Background

Intel is a global technology leader that has innovation at the heart of its business. We are proud to have developed the universal serial bus (USB), the world's first microprocessor (sometimes called a CPU), the first commercially dynamic random access memory (DRAM) chips, the first electrically programmable read-only memory (EPROM) chips, and many other products that are essential to today's digital economy. Intel has driven computing innovation to the highest performing servers that speed discoveries in science and medicine, to low power computing sensors that are always on and connected to make devices, homes and cities smarter in the future. Currently, Intel is actively engineering the technology that will enable a UAV platform with outstanding safety, functionality, and performance.

UAVs at the cusp of innovation

It is increasingly clear to Intel that UAVs are the computing platform of the future with wide-reaching applications. Australian society, consumers and businesses stand to benefit in profound ways if the nascent drone ecosystem can develop safely, quickly, and in a manner in which governments and the private sector work cooperatively and expeditiously across a range of statutory, regulatory and policy matters.

In keeping with the Government's National Innovation and Science Agenda, it is important that governments and regulators encourage innovation, entrepreneurship and investment in nascent

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technologies such as UAVs to grow the Australian economy, keep Australia competitive, create the jobs of the future, and improve Australian standards of living.

The applications of UAVs

A myriad of applications and services will result from the development of UAV technology. UAVs can be used to inspect infrastructure like bridges and mobile phone towers while keeping workers safely on the ground. They can be used to deliver medicine and diagnostics to remote or rural areas faster and more efficiently than other means. UAVs can also be used to map areas affected by natural disasters, allowing first responders to quickly and safely locate survivors, inspect damaged structures, track fires, and survey damage.

In Australia, a ground-breaking trial is currently underway integrating UAVs into the emergency and critical rescue services offered by groups such as Surf Life Saving NSW. In this setting, drones are proving highly cost efficient and effective for aerially detecting sharks and pin-pointing accurate and safe delivery of lifesaving devices such as electronic shark repellent, defibrillators, floatation devices, and personal survival kits.

UAVs are already starting to reshape how organisations and communities in Australia live and do business. It is important that governments continue to adapt to this changing reality through policy and regulatory frameworks.

Government adaptation

Governments and regulatory authorities have already demonstrated their ability to adapt to the changing UAV environment. Last year in June for example the Civil Aviation Safety Authority relaxed licensing rules for lightweight drones weighing less than 2kg, encouraging Australian businesses to adopt UAV technology. Intel applauds this flexible, risk-based regulatory approach.

As UAV operations become more advanced – such as operations beyond the visual line of sight of the operator, highly automated operations, and operations over people – it is also critical that providers like Intel address safety concerns expressed by regulators and consumers. Intel is currently working on 'RealSense' – an onboard sensor application that is at the cutting edge of collision avoidance. It features several attributes for collision avoidance with real-time on board computing: it is intuitive, self-aware, adaptable and self-guided. It provides real time depth sensing capability for a flying drone and combined with GPS, altitude and other onboard sensors, and can avoid no-fly areas and comply with regulatory limits.

Recommendations for the regulation of UAVs

Intel supports a regulatory framework that is risk-based and flexible enough to change as technology evolves so that it does not hinder innovation and economic growth. This flexibility can be achieved by governments adopting a streamlined certification and approval process; issuing exemptions, waivers, and other approvals for different UAV technologies, models, and operations without having to complete a protracted rulemaking proceeding.

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A flexible regulatory framework should recognise that there are a wide variety of devices that fall under the definition of UAVs. A hobbyist's small quad copter should not be governed by the same regulations as transport category size platforms used for business purposes. The Government should recognise that the nature and extent of regulation of UAVs will vary based on their weight, size, and functionality. The Government's efforts to integrate UAV operations into the national airspace should begin with smaller UAVs, operated both for recreational and business purposes, and build on the data and experience collected from these operations to expand operational parameters for these UAVS as well as inform regulation of larger UAVs.

Regulations should also encourage the use of computing to meet the key challenges involved in safely integrating UAVs into modern life. The Government should encourage the development of sense and avoidance technology, collision avoidance, secure geo fencing and command and control technology. As Intel and others innovate and then integrate these innovations onto UAV platforms, it will be critical to have a seamless and effective regulatory structure in places that supports such innovation.

Finally, a critical element in a regulatory framework is that spectrum must be available to ensure safe and secure ground platform-to-vehicle and vehicle-to-vehicle communication. Government policy should consider the suitability and adequacy of existing wireless LTE technology and resolve any concerns arising from such consideration. Intel is widely supportive of this effort throughout the world and stands ready to assist policymakers here in Australia.

Intel welcomes future opportunities to discuss and provide assistance on disruptive technologies, especially UAVs. For further information regarding this input, please do not hesitate to contact me

Yours sincerely,

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