

# FOREWORD



The recent rapid rise of Unmanned Aerial Vehicles (UAVs)—or drones—has generated equal parts excitement, fascination and consternation from all sectors on all sides. Previously the sole domain of the military and a very few committed hobbyists, drones have exploded onto the public consciousness with images of breathtaking mountain summits, daring search-and-rescues, spectacular crashes, and acrobatic pizza deliveries. By 2024, the industry is projected to reach about \$11.5 billion annually. All but unheard of just four years ago, drones are now here to stay.

While non-military, non-commercial uses of UAVs are now, and will probably remain, a small fraction of overall drone activity, given the potential applications—and consequences—it is imperative that all public inquiry, debate and consequent policy making be as thoughtful and well informed as possible. Yet, given the speed, diversity and intensity of drone proliferation and ongoing innovation, it has been difficult to get a comprehensive, global understanding of this fast moving, far-flung landscape.

We hope that this Primer will serve as the first step in a thoughtful, deliberative, fact-based dialogue on how UAV's can make the world a better, safer place. Putting military usage aside, we realize that there are no easy answers to the myriad of regulatory, policy, privacy and appropriate usage questions that have emerged in the last few years regarding drones. Omidyar Network, in partnership with Humanity United and New America, is eager to identify and promote those conditions that maximize the positive externalities of drones while mitigating the negative.

This Primer emanated from the [Property Rights Initiative](#) at Omidyar Network, where we appreciate how transformative aerial and satellite mapping can be in lowering the cost and complexity of defining and maintaining property rights, as well as resolving entrenched conflicts and systematically empowering individuals and communities. UAVs hold out the promise of even lower costs and easier use in defining and maintaining property rights.

While drone imagery does require some degree of knowledge and basic resources to use effectively, it can be controlled and owned by users themselves, unlike more expensive satellite and aerial imagery, thereby providing immense opportunities for empowerment. A [modestly-priced UAV](#) (< \$600 USD) is sophisticated enough to produce timely, high-quality and cloud-free imagery, which can, in turn, be used to define land and property rights, as well as other broader community uses, including community boundary definition, land use planning, accurate population censuses, and the inventory and management of [natural resources](#). Even easy-to-use, no-cost mapping platforms like Google Earth, which have been used to amazing effect by civic groups like [Transparent](#)

[Chennai](#) for counting previously ignored slum populations, still require ready access to the internet, and rely on the provision of satellite data by third parties which are often out of date and can be obscured with clouds. The traditional information asymmetry is starting to crumble; previously disenfranchised and disadvantaged populations are finding the wherewithal to define and claim their rights.

Not surprisingly, governments worldwide are wrestling in real time with exactly how to react to this democratization of technology and information, particularly in the areas of surveillance and privacy. This is where smart, informed public policy is especially critical. It is imperative that we balance the rights of citizens with legitimate privacy and security concerns. The only way this will happen is if we set up an open, fair and transparent exchange of ideas—something we hope that this Primer will enable.

Similarly, drones provoke another tricky question: [Who “owns” the air?](#) Law and public policy have yet to catch up with drone technology in this regard. There is a huge swath of space between 83 feet and 500 feet that still remains unclaimed and undefined. Innovative companies like Amazon and forward-looking public institutions like the [Swiss postal service](#) are hoping to fill this void but need this “right of way” to be defined. Likewise, there is an emerging class of “drones for good” that is delivering vaccines to the last mile, uncovering mass atrocities, helping communities recover from natural disaster, [keeping governments honest](#), and saving endangered species. The potential is enormous, and this is only the beginning.

We look forward to engaging with the global community in a measured, even-handed conversation on how we parse the legitimate ethical and legal considerations that drones have uncovered. The promise that they hold for property rights alone is worth the effort. Formal recognition of property rights is essential to the economic security of individuals and communities—and foundational to their economic empowerment. UAVs directly tackle one of the most recalcitrant barriers to property rights—the lack of access to formal systems to register and safeguard property rights. By lowering the cost and complexity of aerial mapping property rights, drones can literally put entire communities on the map, enabling them to be counted and formalized so that they can assert their rights and determine their own destinies.

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