

# THE USE OF UNMANNED AERIAL VEHICLES FOR DISASTER MANAGEMENT

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*This paper discusses potential applications of unmanned aerial vehicles (UAVs) for disaster management. Based on the current state and diversity of research, there is considerable evidence to support the strategic investment in UAV technology to develop new and enhance existing operational capabilities. When developing these capabilities, it is essential that officials understand a range of variables that will influence the development of a concept of operations for particular types of disasters. As the technical capabilities of UAVs exceed the permissible use of this technology, public safety officials and agencies will have to work closely with national airspace regulators to ensure that these responses are safe and do not endanger other aircraft. The community's attitude and perceived risks will also influence the potential use of UAVs for disaster management. It is essential that officials address these concerns and build in safeguards to protect against any breaches of privacy and individual rights.*

*Cet article examine les applications possibles des véhicules aériens sans pilote (UAV) pour la gestion des catastrophes. Selon la diversité et l'état actuels de la recherche, il existe de nombreux indices pour appuyer l'investissement stratégique dans la technologie des UAV dans le but de développer de nouvelles capacités opérationnelles et améliorer celles qui existent déjà. Lors du développement de ces capacités, il est essentiel que les responsables de la sécurité publique comprennent un éventail de variables qui influenceront le développement d'un concept d'opérations pour des types particuliers de catastrophes. Comme les capacités techniques des UAV excèdent l'utilisation permissible de cette technologie, les responsables et les organismes de la sécurité publique devront travailler en étroite collaboration avec les organismes nationaux chargés de réglementer l'espace aérien afin d'assurer que ces réponses sont sécuritaires et ne mettent pas en péril les autres aéronefs. L'attitude de la communauté et les risques perçus influenceront également l'utilisation potentielle des UAV pour la gestion des catastrophes. Il est essentiel que les responsables de la sécurité publique tiennent compte de ces préoccupations et incorporent des mesures visant à assurer une protection efficace contre toute violation de la vie privée et toute atteinte aux droits individuels.*

## 1. Background

Public safety officials continually examine ways of enhancing their agency's service delivery through the improvement of operational policies and processes as well as the expansion of their existing operational capabilities. Technological developments can provide a range of operational benefits from the enhancement of current practice up to the complete transformation of business practice. For example, Victoria Police transformed international police practice by introducing a wireless radio system within a motor vehicle patrol in the 1920s. The 'Patrol' became the benchmark for police operations internationally [Haldane 1986]. Further technological advancements have continued to provide enhanced communication and operational capabilities; however, wireless voice

communications remains a primary aspect of current international police practice.

Within the public safety sector, technological advancement has led to the development of a range of sensor systems which can be used to deliver specific operational outcomes. These sensors are used in a range of ways, namely:

- Fixed systems—monitored close circuit television systems enhance the situational awareness of what is occurring in a given area. When a disturbance or incident is observed, patrol units can be sent to the location to resolve the matter [GAO 2003];
- Semi-mobile systems—deployable and vehicle-mounted speed measuring devices which detect vehicles travelling at excessive speeds and