Unmanned Aerial Vehicles: Applications and Emergent Technologies

Executive Summary

On **April 20, 2015**, the Northwestern University Transportation Center and the Center for the Commercialization of Innovative Transportation Technology presented *Unmanned Aerial Vehicles: Applications and Emergent Technologies*. This industry technical workshop, which was co-chaired by Dr. Hani Mahmassani and Mr. Breton Johnson, brought to light the current and future potential of unmanned aerial vehicles (UAVs), commonly known as "drones." Speakers provided insight into infrastructure monitoring and inspection, package and cargo delivery, the evolution of the UAV market, and policy developments.

The workshop opened with **Michael Drobac** (website | presentation), Executive Director of the Small UAV Coalition, a partnership between UAV manufacturers such as DJI and client developers like Amazon Prime Air and Google X. The Coalition aims to promote safe use of UAVs with loads under 55 pounds—including the drone itself, as well as whatever package it might be delivering. Drobac outlined current issues surrounding commercial use of UAVs—firstly, that it is currently illegal to use drones for commercial purposes, but also that exemptions and the potential for bipartisan agreement on federal legislation are pushing the potential commercialization of UAV technology forward. Final rules for the commercial use of small UAVs are expected sometime in 2016 or 2017. Drobac's feeling on whether or not licensing will eventually be granted, however, was unambiguous: "Technology always wins," he explained, adding that because the technology is already out there, it is only a matter of time before they reach common usage.

The second speaker of the day was Captain **Joe Burns** (website | presentation), CEO of Sensurion Aerospace. Burns added to Drobac's presentation by showing how the development of UAV technologies is itself a burgeoning market: it already grosses somewhere between $6 billion and $14 billion annually worldwide, a number expected to jump to $80 billion by 2025. There are also a great many uses for UAVs beyond logistics delivery: they can be used in the energy sector both for noninvasive exploration and for infrastructure; they can be utilized (and, in fact, are currently being utilized) by the film industry and news departments to get airborne shots; and they can even be used for training at flight schools and within the FAA. All these applications are leading to the development of add-on technologies, such as sensors that can detect toxic chemicals, flammable gasses, radioactive materials, etc. Ultimately, Burns believes that UAVs can help not only improve the commercial landscape but the safety infrastructure as well—adding even more to their utility and the necessity to clarify rules in the near future.

The day's presentations were concluded by **Sean McCann** (website | presentation), CEO of MMIST, which has since 2000 aimed to create a safe and effective transportation system capable of delivering critical supplies when ground-based transportation is ineffective or impossible. McCann explained much of the military history of UAVs, which were cheaper to manufacture and fly than traditional aircraft. However, where McCann really sees the potential for UAVs is in delivering cargo, which could itself lead to a renaissance for North American manufacturing as an added method of keeping down costs. Moreover, McCann believes that UAVs might end up transforming the entire air transportation industry by spurring a creative explosion that might make companies look into ideas they otherwise would have been unlikely to explore.

Following the speakers, **Breton Johnson**, Director of the Center for the Commercialization of Innovative Transportation Technology and Associate Director of the Northwestern University Transportation Center, moderated a panel that included Drobac, Burns, McCann, and **Hani Mahmassani**, William A. Patterson Distinguished Chair in Transportation and Director of the Northwestern University Transportation Center.

Prepared by: Brendan Diamond, Communications Specialist, Northwestern University Transportation Center
Breton Johnson, Associate Director, Northwestern University Transportation Center