Self-Certification: A Safety Assurance Paradigm for UAS
Guest article[1] by Suzette Matthews, Washington Progress Group LLC

Federal law charges the FAA with certifying the safety and airworthiness of aircraft and aircraft operators. FAA has long grappled with the problem of how to fulfill this responsibility while the numbers and sophistication of vehicles keep increasing, and at the same time federal budgets stagnate or decline. Historically, the agency has addressed this problem by leveraging aircraft manufacturer technical capabilities, enlisting the assistance of volunteer standard-setting organizations, and certifying private sector experts to perform preparatory functions on the certification applicant's tab. But FAA has generally reserved to itself the ultimate authority to approve/disapprove all certification and safety decisions.

But the projected proliferation and sophistication of unmanned aerial systems (UAS) threatens to overwhelm FAA's current safety certification and assurance capabilities, in terms of both human and financial resources. It is widely acknowledged that either the FAA must add significant staff and resources or some innovative safety certification and assurance paradigm must be devised to meet the UAS challenge.

In its April 1, 2016 Final Report, the FAA Micro UAS Aviation Rulemaking Committee (ARC) takes the new paradigm approach, recommending that certification of small UAS be performed pretty much entirely by the private sector. The ARC proposes that the manufacturer be permitted to "self-certify" that its small UAS meets "industry consensus" safety standards "acceptable" to FAA for operations that fly over people. The ARC chose this alternative over (1) FAA certification of conformity with standards, or (2) mandated third-party certification (such as by an independent laboratory.) Given federal laws making FAA the safety certifier of pilots, airframes, and aircraft operators, this self-certification approach challenges the status quo in at least two respects: (1) there is no stated assurance that the "industry consensus standards" would be independently validated and formally promulgated or approved by FAA, and (2) no FAA official would do the certifying.

Self-certification has precedent in other transportation modes—in fact, it's more the rule than the exception in the private sector generally. And it can effectively promote and assure safe practices. Although various federal and state agencies promulgate or approve industry standards addressing the most likely, significant, or egregious instances of risk or abuse, there is no comprehensive federal government certification or licensing system for the manufacture of most things the public uses every day. Injury or damage from most defective products is primarily— and pretty effectively--deterred and remedied through the legal liability (tort) system and related insurance industry. It can be argued that fear of lawsuits and financial liability for negligence, as well as coverage requirements and limitations imposed by insurance carriers, have produced a remarkably safe environment for consumers and provided a viable source of redress for those injured or damaged by defective products. In the case of aviation products, legal liability principles can be expected to be especially effective: "strict liability" versus "negligence"

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principles apply--that is, manufacturers and operators are liable for any loss or damage they cause, regardless of whether they acted negligently or with reasonable care.

For better or worse, however, when it comes to aviation it has been demonstrated time and again that the public trusts the FAA more than the private sector to protect its safety. The worst of all possible outcomes is the situation in which the public relies on a government safety watchdog that fails--or that lacks the will or resources--to do its job. If the private sector is going to assume the role of self-certifier, it should be explicit that FAA is deliberately not exercising its certification role with respect to the UAS involved, but on the other hand, that manufacturers and operators are legally responsible for whatever damage or injury they cause. This self-certification paradigm would be consistent with the regulatory construct FAA already applies to ultralight and light sport aircraft, which might serve as a models.

To support tort liability as the safety assurance mechanism, registration of all UAS with FAA should be required from the point of original sale onward, and legal liability should adhere to the registered owner regardless of knowledge or fault until the vehicle is effectively transferred to a new owner on the record. Mandatory registration would help members of the public identify malefactors in the event of loss or injury, and encourage UAS owners to make sure their vehicles are flown responsibly and to keep registration records updated upon sale or transfer of the vehicle.

In the current federal budget environment, self-certification of small UAS appears to be the only practical alternative. It would be very difficult, if not impossible, for FAA to fund and staff up at the levels and within the time frames necessary to accommodate the tidal wave of UAS on the immediate horizon.