

The Private Sector Role in UTM¹

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NASA's Unmanned Aircraft System Traffic Management (UTM) activity seems to be proceeding on the assumption that private industry will build and operate the UTMs on a pay-for-service model. Lots of money and effort are being spent on this premise. But FAA, regulator of the navigable airspace, has never formally decided this. Meanwhile, Congress is getting worried about this lack of clarity. In the 2018 reauthorization legislation, FAA is directed to "outline the roles and responsibilities of industry and government in establishing UTM services...." We agree.

There are plenty of good options for bringing private sector resources to UTM. These range from FAA itself operating UTMs with contract support, to contracting out operation of UTMs under FAA rules and procedures, to full franchise privatization of UTMs. Along the entire spectrum of possibilities however, the following items at minimum will have to be addressed.

Safety. If FAA itself operates UTMs as an extension of its air traffic control functions, it would assure safety under its own specified internal standards and processes. It could contract out operation of some, or all aspects of UTMs, assuring safety through those same FAA specifications and procedures, as it does with federal contract towers today. Whatever FAA standards and safety assurance processes are applied, however, will have to be updated for technologies that, for the first time, don't rely on humans as the fail-safe.

If FAA franchises private companies to build and/or operate UTMs, self-certification would be an option for assuring safety. The UTM operator would itself design and implement its own safety standards and policing system. Third-party liability insurance or self-insurance would compensate the public injured or damaged by mishaps. This sort of safety assurance is not unprecedented. The public already accepts a similar paradigm when it comes to the cars and consumer products they buy. (For example, auto manufacturers self-certify compliance with an extensive set of safety standards from the National Highway Traffic Safety Administration—NHTSA.)

There may be a middle ground wherein FAA would approve industry-consensus safety standards for privately equipped and operated UTMs. But this approach already has been unsuccessfully attempted with the RTCA Drone Advisory Committee. And FAA would still have to staff up a shadow technical group to approve and oversee the consensus standards, including minimum levels of safety.

Consistency and Interoperability. Most UAS operators will contemplate operations in multiple UTMs, with extension into the *non-UTM* National Airspace System (NAS). It will be important for operators to have a uniform set of equipment to fly anywhere. Should FAA equip and run the UTMs, it can itself assure this consistency. But if diverse private entities equip and operate the UTMs, there will have to be some mechanism to assure uniformity or interoperability among interfaces. The mechanism could be FAA- or industry-consensus technical specifications or functional requirements sanctioned by FAA. Or there might be established an independent professional architectural board that would, under confidentiality, review and approve individual UTM implementation plans for consistency and interoperability with the rest of the NAS. This construct would be analogous to community architectural

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boards that review and approve building plans for consistency with local historical preservation or aesthetics objectives.

Access. Assuring fair access to public assets such as the national airspace is inherently a government function. Whether FAA itself or private companies operate the UTM, there will have to be an air traffic prioritization regime approved by regulators as consistent with the public interest, and not left solely to private-sector decision making. The regime would have to protect military, EMS, and public aircraft operations, and provide access for occasional operators and new entrants, while at the same time honoring the investments of legacy and regular commercial operators, especially those providing common carriage. And whereas UTMs will be highly or entirely automated, the prioritization mechanism will have to perform automatically and integrally with the UTM traffic management automation.

Finance. Having FAA itself operate the UTMs could have some cost advantages, such as economies of scale and leveraging its own or other agency knowledge and capabilities. On the other hand, private-sector UTM operators could move more quickly, could more easily employ cost-saving innovations such as high levels of automation, and could more flexibly manage labor and administrative resources. To assure rigorous comparative financial analysis, FAA's Air Traffic Organization (ATO) might be a regular bidder in all FAA UTM franchising competitions, and be prepared to operate UTMs where the private sector is not offering the best value.

On the pricing side, it is being assumed that private UTMs will be financed through user fees. UTMs will be monopolies whose prices are not disciplined by competition. Therefore, private UTMs will need some sort of rate oversight for reasonableness and fairness among operators. This oversight need not be governmental, but could be performed by aircraft operator boards.

In conclusion, it is past time to engage everyone—FAA, private sector companies, aircraft operators, and the general public—in a formal discussion of whether, and how, to include the private sector in building and operating UTMs. Without clarity on this issue and an official pathway to implementation, UTM will dissolve into chaos. We suggest that an appropriate forum for this discussion would be an FAA Contracting Opportunity market survey proceeding, open to the public for comment. The products would be comprehensive policies and guidelines for potential UTM franchising and oversight, and a model UTM franchising agreement.