

## C16 A Study on Unmanned Aircraft Systems Forensics Framework (UAS FFWK)

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**Learning Overview:** After attending this presentation, attendees will recognize the need for a standard UAS FFWK across digital forensic disciplines and aircraft accident investigation for use by investigators to produce admissible evidence for litigation in the United States courts. This presentation is based on research to identify common criteria in UAS forensics, across digital forensics and aircraft accident investigation guidelines, to determine if a single framework is needed for UAS forensic examiners.<sup>1</sup>

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by contributing to diligent forensic investigations in the justice system. This presentation will impact the UAS forensic community by relaying the results of research conducted on the use of the UAS forensics framework.

Few studies exist on the need for a standard UAS framework, and FAA UAS Regulations and Policies (2017a) are relatively new for consumer drones.<sup>1</sup> As consumer UAS or drones are used more commonly in public areas, an approach for a UAS FFWK is needed to guide forensics investigators in analyzing recovered drones that entered the unauthorized National Airspace System (NAS). With the increased use of small Unmanned Aerial Vehicles (UAVs) in public areas, a framework is needed to analyze the recovered consumer drones that trespass into the NAS.<sup>2</sup> Increased drone presence in the common airspace will force the integration of UAS into the NAS, which poses a risk to public safety.<sup>3</sup>

This research study focused on whether a single framework and multiple frameworks for UAS forensics was needed. The data collected through an online survey provided detailed descriptions of the participants' most commonly used forensics frameworks or guidelines. The data collected from participants in the United States measured the occurrences of the type of guidelines forensics examiners used. The study identified and evaluated existing frameworks, tools, and regulations investigators used to perform UAS forensics. The study results identified a need for a standard UAS forensic framework across digital forensic disciplines and aircraft accident investigation for use by investigators to produce admissible evidence for litigation in the United States courts. This research led to a proposed basic UAS FFWK, which can be improved upon in future research by building onto the existing aircraft accident investigation and digital forensics models reviewed in this presentation.<sup>4</sup> Future research should include detailed processes for each area of the proposed UAS FFWK. The UAS FFWK may also apply to other unmanned vehicles on land or sea by adapting the general framework.

### Reference(s):

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2. Jain U., Rogers M., Matson E.T. Drone forensic framework: Sensor and data identification and verification. *SAS 2017 - 2017 IEEE Sensors Appl Symp Proc*. Published online 2017. doi:10.1109/SAS.2017.7894059.
3. Sullivan-Nightengale D. Unmanned Aerial Systems: Risks & Opportunities in the Workplace. *Prof Safety; Des Plaines*. 2015;60(3):34-42. Accessed January 15, 2018. <https://search.proquest.com/docview/1660300227/abstract/EEFE954F600E4C32PQ/6>.
4. Mei N. An Approach to Unmanned Aircraft Systems Forensics Framework—ProQuest. *ProQuest Dissertations and Theses*. Published 2019. Accessed October 11, 2020. <https://search.proquest.com/openview/786003a868268a7abe002df4a01509f0>.

### UAS Forensics Framework, Drones, Unmanned Aircraft