Unmanned Aircraft: Turning Potential into Reality

Unmanned Aircraft (UA) hold tremendous promise for providing social benefit. Potential applications range from humanitarian—search and rescue missions, monitoring conditions during emergencies (both man-made and naturally occurring), delivering medicine to remote areas, community mapping, etc.—to economic—advancing precision agriculture, pipeline monitoring, real-estate, etc.—to research—measuring conditions in relatively dangerous locations like thunderstorms, volcanic eruptions, etc.—to military—monitoring troop movements, etc. While many potential military applications have been realized, the use of UA in other areas has been limited owing to multiple barriers. The primary barrier is safety. Because UA are fundamentally different from manned aircraft, they exhibit different performance and capability characteristics relative to manned aircraft. These include, for instance, airworthiness and sense and avoid capabilities. Another barrier is privacy. Because UA are such efficient tools for gathering information, privacy concerns have arisen. Despite these barriers, members in many communities, including aviation, atmospheric sciences, computer science, engineering, law and law enforcement, physics, and psychology have been driven by the potential social benefits of UA to overcome them. Herein, the promise of UA, challenges, and efforts to overcome these challenges will be discussed. This includes FAA rules, airspace integration timelines, and recent developments regarding UA and privacy issues.