Unmanned aerial vehicles (UAVs) have a high risk of damage during operation, especially during the initial design phase. Replacement parts and materials needed to make repairs are often affected by supply chain disruptions, making it difficult to repair the system in a timely manner. The availability and ease of using 3D object scanners or computer-aided design (CAD) in combination, called additive manufacturing, is one way in which time and cost constraints can be alleviated. The Intelligent Radiation Awareness Drone (iRAD) is a customized affordable drone designed to efficiently and autonomously detect radiation levels. While performing a flight test of iRad, a flaw was discovered in the design of the arm mount which resulted in a repeated failure of the mount, destroying the connection between the arm and the drone. Obtaining the ~$15 replacement part would have taken roughly 14 d. Using the CAD program Solidworks, a replacement part was created. In this revised design, the flaw which caused the original part to fail was removed. Prototypes were rapidly produced using an Ultimaker S5 fused filament fabrication 3-D printer. At roughly $0.02, the cost of the printed part was approximately 0.1% of the cost of a replacement part and took ~6 h to print. This accelerated repair, development, and testing significantly. The potential application of additive manufacturing to UAVs is not limited to the repair of a single part. Using additive manufacturing, drone frames and payload systems can potentially be redesigned and fabricated as needed while keeping the cost of the system, designed primarily for outreach to high schools, low.