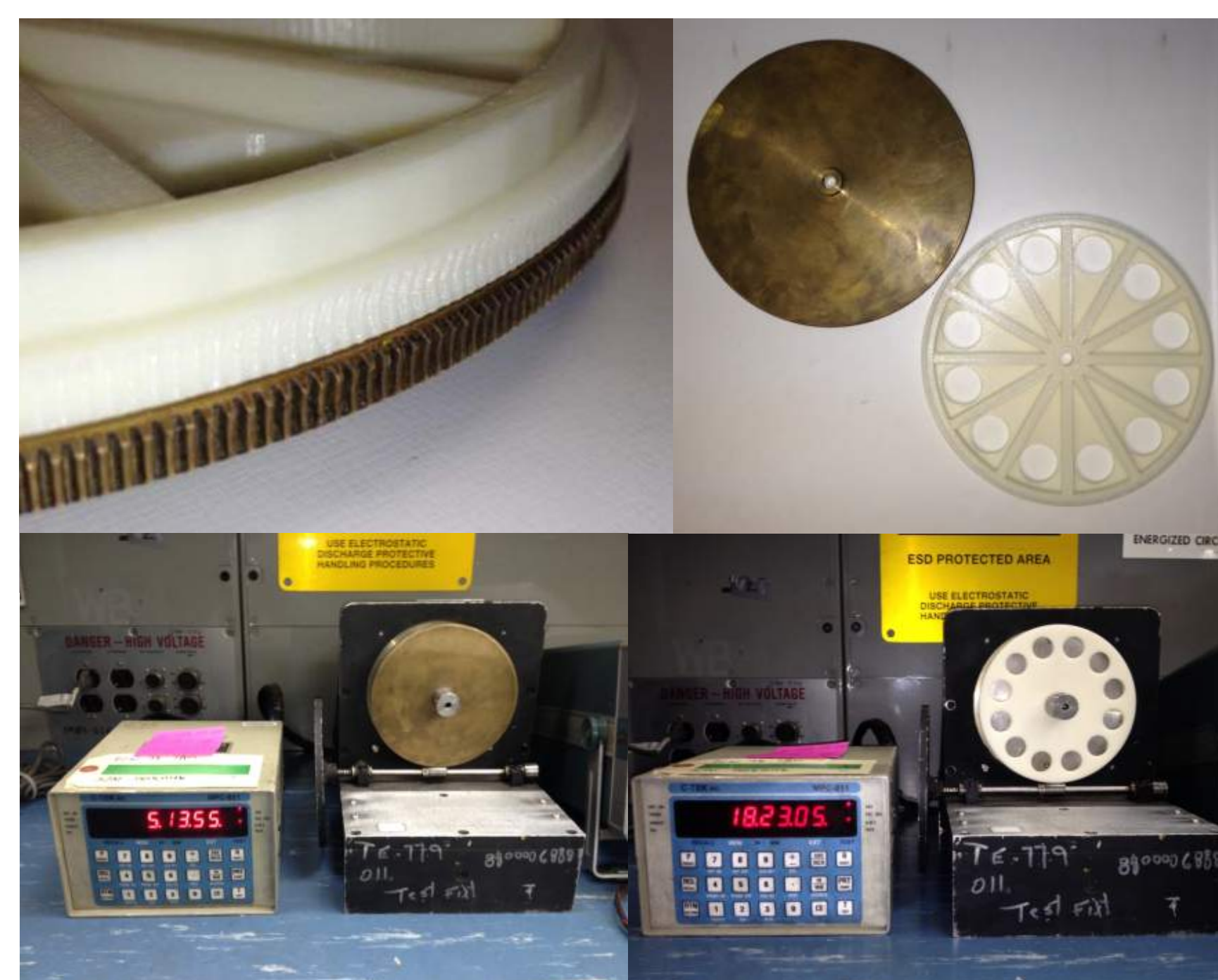


## Abstract

- This study examines the challenges and opportunities faced in utilizing additive manufacturing (AM) by DOD as identified in the GAO Report dated June 2015 pertaining to supply chain management and methods used to obtain intellectual property and patent rights. The study examines the current state of the technology, DOD challenges and current applicable laws to formulate recommendations on how the DOD can quickly integrate AM technology and gain the superior benefits it provides.



*Original brass gear and the ABS plastic replacement printed onboard the USS ESSEX while deployed. This part repaired the TE-779 Test Fixture used to calibrate stick position sensors on the CH-53 helicopters. This is the first known example the Navy using an AM technology to meet its mission requirements.*

## Methods

- Research was conducted by analyzing current technology and processes used in both cradle-to-grave logistics of additive manufacturing materials and private sector approaches to obtaining intellectual property rights for continuous internal use. These methods are analyzed for compatibility with government operations.
- An extensive literature review was conducted to understand the progress and current state of AM technology
- A review of U.S. government efforts to implement AM and pilot programs was conducted
- Interviews with seven private sector and government leaders involved with AM completed the picture of what actions are required to move forward

## Results

To realize the maximum supply chain benefits of AM, the DOD must:

- Develop the digital supply chain
- Build trust in the process
- Push 3D print capability forward
- Build the database of 3D CAD files
- Consolidate and share information
- Train the AM workforce of the future
- Vertically integrate into design, troubleshooting and disposal

To realize the full potential of AM, the DOD must alter its acquisition strategy to encourage innovation while complying with all applicable IP laws. Specifically, we must:

- Contract for digital data required for AM technology
- Protect proprietary data using the latest anti-counterfeiting technology
- Utilize alternative procurement methods such as Other Transaction Authority (OTA)