Problem Definition Review

Value Re-engineering for Additive Manufacturing

Customer: LMI

9/14/17
Agenda

- Team Introductions
- Project Background
- Problem Statement & Deliverables
- Use Scenarios
- Customer Requirements
- Draft of Project Plan
Team Introductions

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Project Background

▶ Defense Logistics Agency (DLA) is assisting its Military Service partners in better understanding appropriate application of additive manufacturing (AM) for production of spare and replacement parts for weapon system.

▶ Many of these parts were originally designed decades ago and produced in large lot sizes, and call for manufacturing processes that made sense at the time, but are inefficient in much smaller-scale replacement part production.

▶ In particular, DLA is seeking to develop/identify a business case that supports redesign of a legacy part/assembly to optimize AM processes to provide an alternative means for manufacturing hard-to-source items.
Theory of Operation
Problem Statement

- **Current State**
  - Many weapon systems that are being used today are using parts that used to be mass produced, however times have changed and these parts are no longer being manufactured on a large scale. When the parts break down they must be replaced, but it is inefficient to replace the parts on a part by part basis because they need to be manufactured on a smaller scale, which can also be expensive.

- **Desired State**
  - Additive manufacturing is a possible solution to this problem since many of the parts can be 3D printed on a small scale and at a low cost.

- **Project Goals**
  - The objective of this project is to be able to produce parts on a low budget and small scale while still meeting current specs and performance requirements.

- **Constraints**
  - Producing a new model-based, vendor-neutral, technical data package, and testing the manufactured prototypes are within the scope of the project. The data packages must meet customer requirements, function as purposed and must be cost effective for production of a variety of low volume productions.
Key Deliverables

- Optimized Additive Manufacturing processes
- Same functionality as traditionally manufactured assembly
- Complete, accurate, and vendor-neutral Technical Data Package
- Cost-effective for 1/10/100/1000 parts
- Transferrable process
- Easy to understand and complete documentation
Additional Project Deliverables

- Conduct cost analysis of current state vs. AM process
- Establish weekly communication with customers
- Learn about how each part will be used by the end user
- Look for any improvements that could be made to existing parts
Use Scenarios

- Scenario 1: Normal product wear and tear
  - Lifespan of the product ends and a new part has to be produced and replaced in a time-sensitive manner

- Scenario 2

- Scenario 3
Draft Project Plan