Challenges

Technical Data Packages (TDPs) issued to suppliers for sourcing typically include a 2-dimensional (2-D) PDF drawing, without three-dimensional (3-D) CAD models and supplemental manufacturing process information. This lack of digital manufacturing information often precludes suppliers from submitting bids. Typical challenges related to the sourcing of parts with insufficient TDPs include:

Providing 2-D information to suppliers for quoting requires non-recurring engineering (NRE) to be performed by the supplier. Suppliers will often “no-bid” a request for proposal (RFP) if the dollar amount of the proposal does not cover the invested NRE. This problem is especially prevalent with low volume, highly engineered legacy parts.

Providing 3-D models that are not fully annotated have limited value. All 3-D models are not the same. Based on the intended use, the model needs to be prepared in a way to make it useful for the supplier.

The organization has knowledge about how a part is manufactured, but no way to capture that knowledge. A typical organization may have 2-D drawings and 3-D models created from those 2-D drawings. It is unknown which comprises the “official” technical data.

The Solution

Advanced Technical Data Package (ATDP) Implementation

Providing an ATDP which includes a 3-D model and manufacturing process data, such as process sheets, routers and even machine code, provides the supplier with sufficient information to confidently respond to the RFP. The solution provides a template to create ADTPs and hands on consulting (if needed) to create fully annotated 3-D models (ready for manufacturing and quality control) with the associated manufacturing data for use by the supplier. This solution can be used with or without an existing Product Lifecycle Management (PLM) software solution. The ATDP can also leverage the use of the latest delivery tools, such as 3-D Adobe PDF files.
Solution Benefits

The following quantifiable business results are from work performed with the US Army on the implementation of ATDPs for low volume, highly engineered legacy parts. A copy of the case study is available upon request. The benefits to using the ATDP include:

Reduced cost
The implementation of ATDPs can reduce the cost by up to 29%.

Increased supplier response
Up to a 75% increase in suppliers responding to a sourcing request.

Improved time to qualify a supplier
44% decrease in the time to qualify suppliers.

Quality inspection improvements
100% of suppliers successfully completed “First Article Inspection” the first time with the use of ATDP information.

Implementation

The Professional Services required to implement this solution are as follows:

- **Phase 1 – Discovery**
  Determine the “as-is” state of the technical data, including review of the procedures/standards currently used to create 3-D models.

- **Phase 2 – Design**
  Based on discovery, provide a recommended “to-be” plan designed to enable the use of ATDPs. If a documented ATDP business case is desired, then the metrics needed for that ROI are determined. Executive Management approves the recommendations prior to proceeding with Phase 3.

- **Phase 3 – Implementation and Training**
  The implementation of the approved design starts with the creation of a repeatable business process. Once defined, the typical ADTP implementation is based on specific projects and sourcing RFPs. Training is performed to support those involved with real projects. In addition, the validation of the 3-D models with the legacy 2-D drawings is a critical issue from a data integrity perspective.

- **Phase 4 – Support**
  Professional Services can be provided for ongoing support.

This solution requires the underlying software products to create the digital artifacts needed to support the ATDP. Ideally a Product Lifecycle Management (PLM) tool can be used for configuration control. In addition, the distribution of those approved ADTPs for sourcing can be automated in a variety of ways.

About the Electro-Optics Center

The Electro-Optics Center (EOC), a proud part of The Pennsylvania State University, is a hybrid between the best components of a university and those of private industry. This relationship allows us access to the university’s researchers and scientists, its state-of-the-art facilities and leading edge research.

Our staff, comprised primarily of former industry and DoD personnel, brings experience in exceeding sponsor and corporate expectations. Through the application of this hybrid model, the EOC is able to provide its sponsors with solutions that combine leading edge research with on-time and on-budget deliveries. Learn more at
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