

Transportability of Digital Artifacts across the DoD Services and Vendor Enterprise

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ABSTRACT

The ability to use STEP AP242 protocol for the transportability of digital artifacts across the DoD Services and vendor Enterprise is a highly valuable commodity for the DoD. This capability will give the DoD confidence to derive a STEP AP242 file from an authoritative source of truth, send that file to a vendor knowing that that data is accurate, and the vendor can in turn send back accurate models or parts. The question, however, is do current STEP AP242 files have the functionality and interoperability to achieve this goal? Specifically, this research studies the transferability of product and manufacturing information (PMI). RGBSI Aerospace and Defense LLC (RGBSI A&D) studied the STEP AP242 file across four CAD platforms, Autodesk Inventor, Dassault Systèmes SolidWorks, PTC Creo, and Siemens NX, to obtain the quantity and quality of the 3D technical data that is transferred during the import and export processes. To augment the baseline testing on the CAD platforms, additional research was done on third-party software programs to see if any turnkey solutions are readily available. The third-party software tested were TransMagic, Capvidia's MBDVidia, and Core Technologie's 3D Evolution. The most surprising result found from this study was that even within CAD platforms, there was still data loss by translating PMI to and from STEP AP242. The data that was collected in this study correlated with the results of the research done by NIST and shows that on average, between platforms, only 42.75% of PMI is transferred.