

Improved Design Effectiveness through Next Generation Visualization (IDEV)

PROBLEM / OBJECTIVE

Long acquisition cycles, development cost overruns, and field support issues are problems that continue to impact DoD procurement. Design and producibility related issues require the real-time visibility of being resolved during the design approval process. Computer Aided Design (CAD) systems used within the supply chain has limited ability in integrating designs for collaborating on functionality and approval.

The goal of this effort is to create commercial software to integrate design tools with immersive visualization. This will allow teams to more effectively implement innovative solutions to demanding performance requirements using visual prototypes. The result will be fewer design iterations (**reduced acquisition time**), fewer hardware prototypes, (**reduced development costs**), and more robust fielded designs, (**fewer support issues**).

ACCOMPLISHMENTS / PAYOFF

Team members Raytheon Missile Systems, Rockwell Collins, Mechdyne, Iowa State University, and In Tolerance have successfully completed the first part of this challenge. Recently the team demonstrated the ability to pull models created in separate CAD systems into a 'MasterCAD' format, combine them into a

top level assembly, display that top level unit in a virtual reality (VR) environment, and make basic changes to the top level model within VR.

Models from ProE and Catia were translated into an NX format using STEP and then combined with an NX generated model to create a top level model. Mechdyne's Conduit software was used to translate the CAD models into VR real time. Within the VR environment, a prototype interface called VRNC was utilized to make basic changes to the CAD model. The achievements of IDEV Phase I provide the foundation for realizing the anticipated benefits of the project as a whole - reduced acquisition time due to fewer design iterations, reduced development cost due to the need for fewer hardware prototypes and more robust fielded designs with fewer support issues.

Expected Benefits and Warfighter Impact:

- More robust designs due to virtual prototypes providing the designer a way to identify producibility issues early in the design phase, thus allowing faster deployment to the field.
- Reduced product cost through virtual versus physical prototyping.
- Stable designs approved and released prior to LRIP reduce life-cycle sustainability costs.

POINT OF CONTACT

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