

Computer-Aided Design (CAD) Measurement Techniques



S&T Campaign: Assessment & Analysis
Modeling techniques to enable interactive visual analyses

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Research Objective

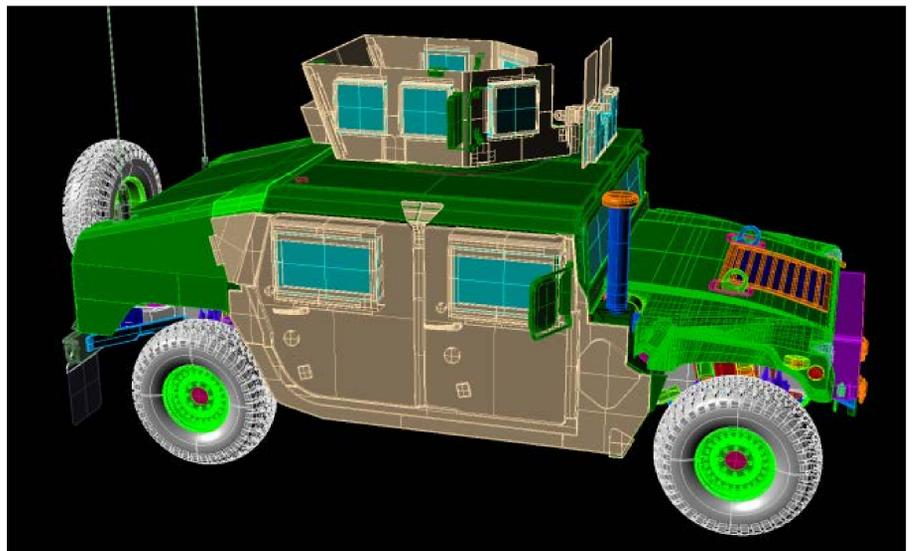
- Use state-of-the-art measurement and scanning technologies to create 3-D CAD geometry of military systems for ballistic and blast analyses
- Improve and enhance measurement and modeling tools to collect and export data into to end-user's preferred formats for use in modeling and simulation environments



Coordinate Metrology Technology:
FARO Articulated Arm and Line Scanner

ARL Facilities and Capabilities Available to Support Collaborative Research

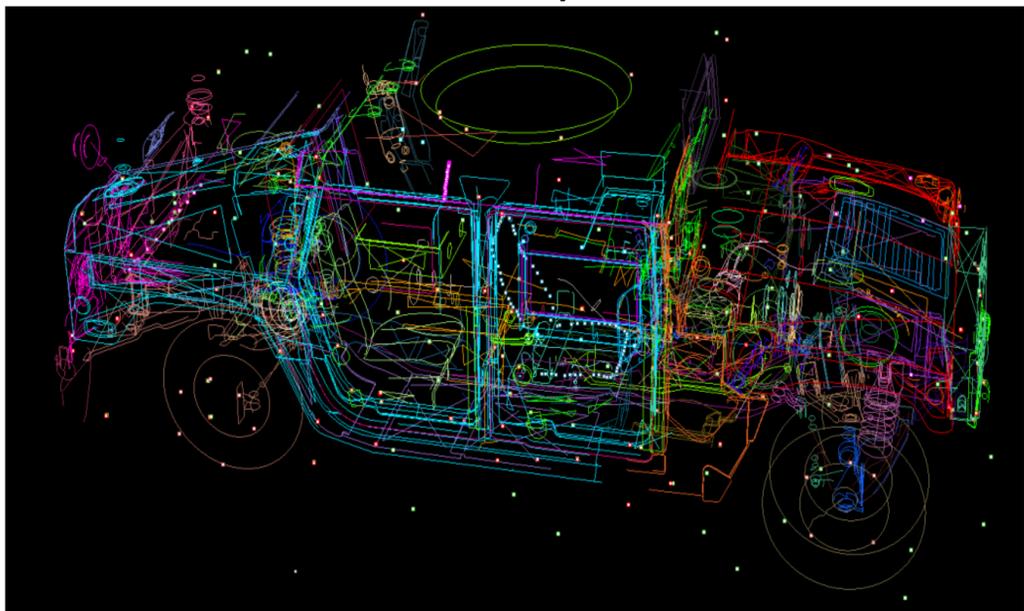
- Extensive range facilities that enable stable data-collection opportunities
- Collaborative relationships with Aberdeen Test Center (ATC) and various program managers (PMs) in the US Army provide access to physical assets for data capture
- CAD modeling team that has extensive experience within the field of coordinate metrology as well as commercial and in-house CAD packages (BRL-CAD)



Component-Level CAD Model of M1151 HMMWV

Expanded Metrology Resource Challenges

- The rapidity of the evolution of measurement technologies within private industry makes it difficult for DoD users to procure and maintain the latest and greatest hardware and software for broad applications
- The rapidity of data collection and data reduction techniques that influences efficient creation and conversion to 3-D CAD in multiple formats



Data-Point Capture of M1151 HMMWV

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Expertise in 3-D geometric modeling and experience in creating and visualizing CAD data formats for use in modeling and simulation environments
- Access to new data-capture tools
- Expertise in specialized software and hardware development that will enable the expansion of applications within this technology