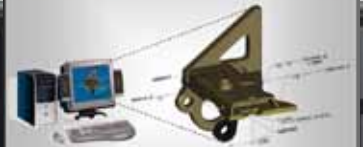


The Model Based Environment



An Overview of MBE and How it
Can Aid in Weapon Systems
Development

MBE
Model Based Environment



The Next Generation of Business



2008 Model Centric Design, MTO Team



The Journey



Drawing Based

Master 2D Drawing

Model Centric

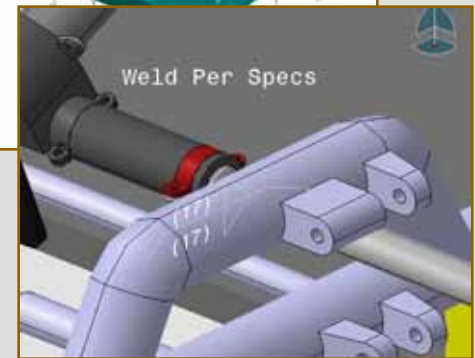
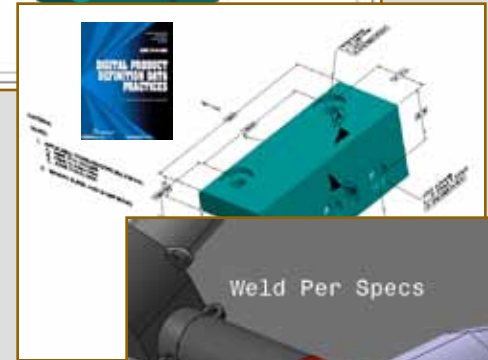
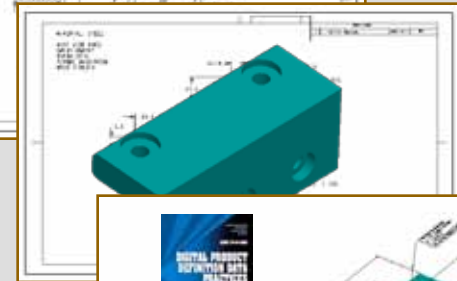
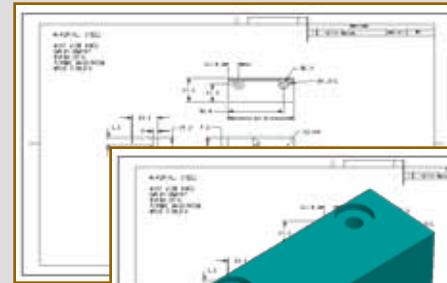
3D CAD Model with
Master 2D Drawing

Model Based Definition

Master 3D CAD Model with 3D
Drawing, 2D Drawings by
exception

Model Based Environment

Master 3D CAD Model with 3D
Drawing fully leveraged by the
Enterprise



What is Model Based Environment?

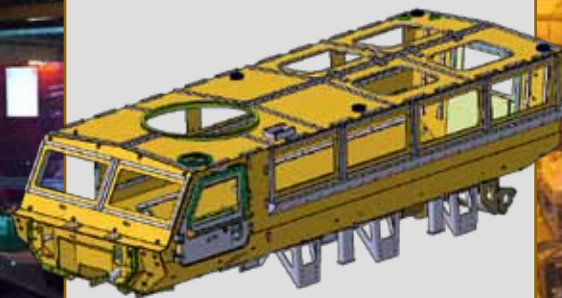


MBE
Model Based Environment



The Next Generation of Business

A fully integrated and collaborative environment founded on 3D product definition detail and shared across the enterprise; to enable rapid, seamless, and affordable deployment of products from concept to disposal.



The Basic MBE

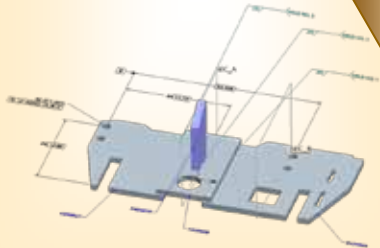


Many software tools make up the MBE. Some of those are listed below:

Model Based Environment (MBE)

Model Based Definition (MBD)

- Pro/Engineer Wildfire



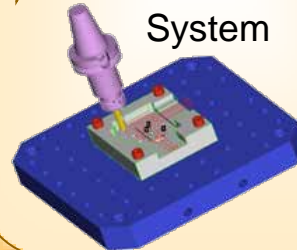
Product Lifecycle Management (PLM)

- Windchill
- Project Link
- Product View



Manufacturing Process Definition And Documentation

- Delmia
- PPR Hub
- Manufacturing Execution System



The Core Models are reused by many other downstream users:

- Tech Pubs
- Field Maint.
- Marketing

MBE Tools

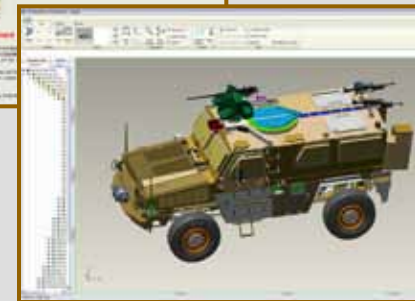
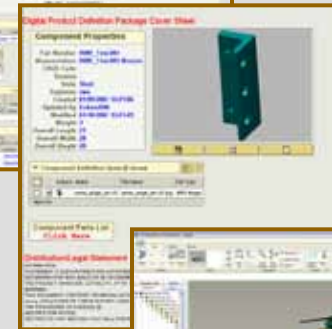


- Product definition completely within the CAD model
 - Parts and assemblies defined with “3D drawings”
- TDP information
 - PLM system is used to store & present all of the data that a TDP consists of.
- Light Viewers for MBD
 - Adobe, Product View, 3D Via, JT

3D Drawings imbedded in CAD model



PLM

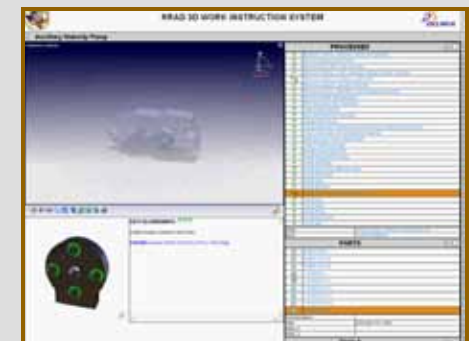


Lightweight Viewer Capability

Model Centric MTO Team's MBE Activities



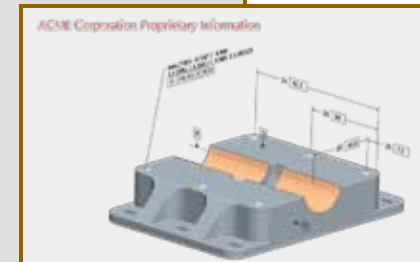
- CAD Interoperability.
 - Working with CAD vendors to communicate translation needs.
 - Working with translation software vendors to communicate needs.
 - Developing translation managers.
- Manufacturing Process Definition
 - Working closely with DELMIA, communicating needs
 - Sub-contracting to DELMIA to develop scripts
 - Specifying 3D interactive Work Instruction layout



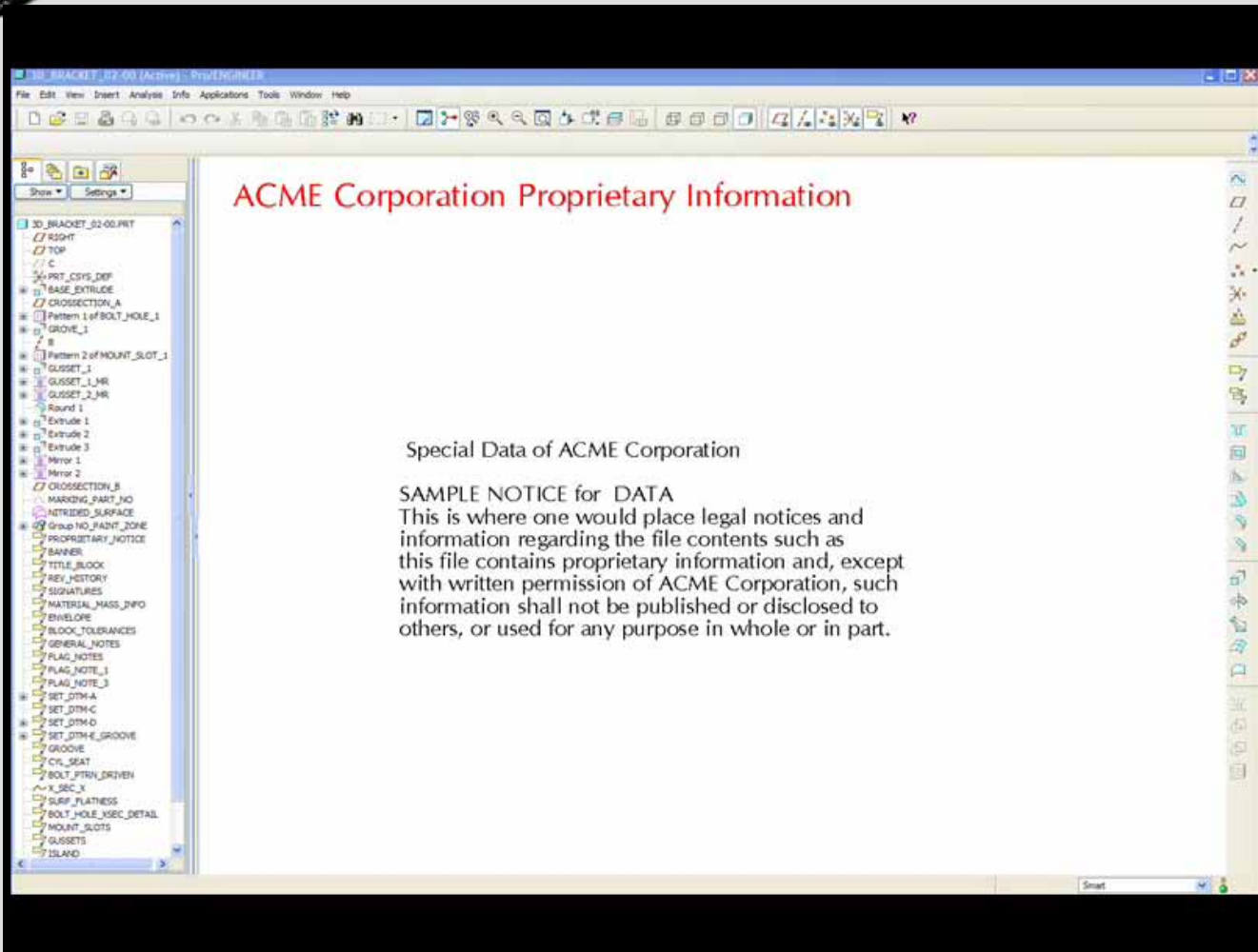
Model Centric MTO Team's MBD Activities (Continued)



- Product Definition within the CAD model.
 - CAD Model Schema (Documented methods for storing info in models)
 - Influencing Light viewing capability
 - PLM Schema for storing TDP information
- Update / modify MIL-DTL-31000
 - Paul Huang leading sub-team (Army, Air Force, Navy, Coast Guard, NIST, PTC, Adobe, GDLS, BAE Systems)



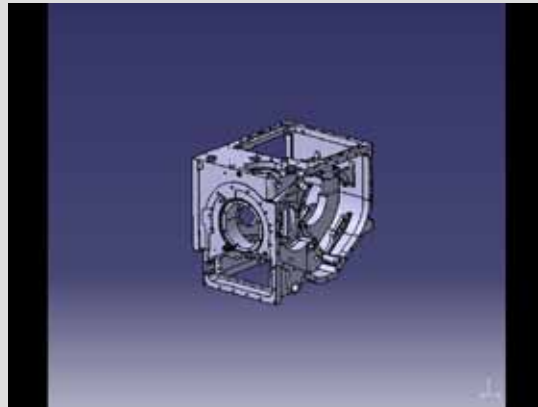
MBD, what it looks like



Transition to Depots



- MBE Manufacturing Planning Processes Transitioned to Red River Army Depot 2007, 2008



- Letterkenny Army Depot transition project planned to start Dec. 2008 and continue 2009

Questions?



The End?

MBE
Model Based Environment



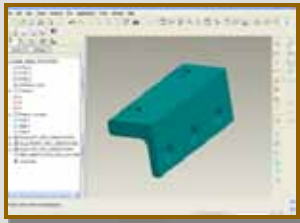
The Next Generation of Business



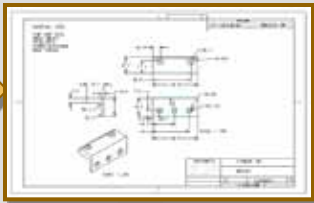
While we have traveled far there is still a long way to go.



Conventional Design to Manufacturing Process



The design is created in a 3D CAD Modeler



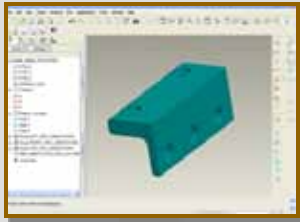
**But requires a drawing to provide the product Definition
It is then re-keyed for Use by downstream users**



- The conventional processes are inefficient
- They rely on the manual re-keying or re-creation of the product definition
- Delivery of the product definition is also paper base
- In process changes that may or may not get incorporated into the model results in confusion and a high error rate

The conventional process has reached its functional limits

Conventional Design to Manufacturing Process



The design is created in a 3D CAD Modeler



**A 3D annotated model is created as the model is made
It is then used by downstream customers streamlining the time needed to access the product definition**



- The MBE approach streamlines the process by eliminating the traditional 2D Drawing
- It also incorporates the needed downstream interfaces so the product definition can be reused vs. re-created
- This approach also allows for a single source master reducing confusion and errors

MBE is key to our future ability to reduce our time to market and lean our processes