Deploying a Common 3D MBE

within a

Multi-CAD, Multi-PLM, Multi-Source

Enterprise Environment

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Anark Corporation

GLOBAL PRODUCT DATA INTEROPERABILITY
SUMMIT
2014

ELYSIUM Parker NORTHROP GRUMMAN BOEING

Ride the 3D MBE Wave !!

Anark Company Overview

Global Product Data Interoperability Summit | **2014**

Leading provider of advanced visualization and PLM software and solutions to industry leaders since 2000.

Empowering 3D Model Based Enterprise revolution within Aerospace, Defense, Automotive, Energy, Industrial, Communications, and Furniture Sectors

Growing company, with world-wide network of technology, integration, and channel partners

Anark Corporation HQ in Boulder, Colorado

Our PLM Integration Partner: Geometric LTD.

Global Product Data Interoperability Summit | **2014**

- World's leading solutions provider with **exclusive focus on Product Realization** – the engineering to manufacturing domain
- Public listed company
- **Over 4500 people globally**
- Global delivery model with delivery centers in **US, Europe, China and India**
- Software Solutions portfolio including **DFMPro, CAMWorks, Glovius**
- Engineering services, embedded systems and technologies.

Global Presence

PLM Integration Partnerships

DASSAULT SYSTEMES

SIEMENS
Siemens PLM Software

PTC®

Cross Industry Customer Footprint

- 8 of the Global Fortune Top 10 **Automotive OEMs**
- 7 of the world's leading **Aerospace OEMs and suppliers**
- 5 of the world's leading **Machine tool players** in their respective segments
- 5 of the top 10 **Off-highway OEMs**

Terms we will use today…

- **3D MBD/PMI – Model Based Definition (aka. Product Manu Info)=**

  Engineering Product Definition inside native CAD which captures Design Intent (associative 3D GD&T, 3D +/- Tolerances) ***without 2D Drawings***

- **3D MBE – Model Based Enterprise =**

  Reuse of 3D MBD outside of CAD, combined with additional information from PLM, ERP, MES, CRM… (***The Complete Product Definition***) in Open 3D HTML or 3D PDF

- **3D TDP – Technical Data Package =**

  DOD Release Document which defines The Complete Product Definition in 3D (in accordance with MIL-STD-31000 Rev A)

- **Data Sources for *The Complete Product Definition* –**

  PLM= Assembly Configuration, ***some manufacturing*** data (Enovia, TC, Windchill)
  ERP= ***More manufacturing*** data, Inventory, Work Processes…(Microsoft, SAP, Oracle)
  MES= ***Real time manufacturing*** data (SAP, Epicore, Apriso, JobBOSS…)
  CRM= Manages ***Customer and Supplier manufacturing*** data (Microsoft, Oracle, Salesforce)

Why the move to 3D Model Based Enterprise

TOYOTA

50% Reduction Tooling design & fabrication
33% Reduction Overall assembly hours
30% Reduction Rework

BOEING

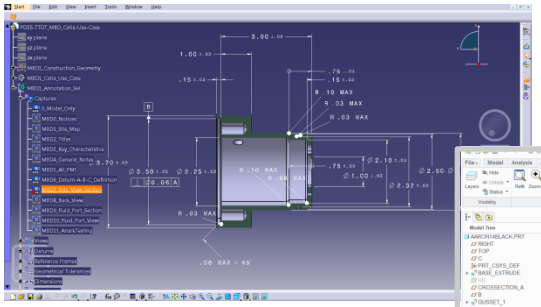
50% Reduction Tooling design & fabrication
30% Reduction Overall assembly hours
50% Reduction Rework

30% Reduction	Engineering Overhead
20% Reduction	Scrap and Rework
50% Reduction	Supplier Response Time

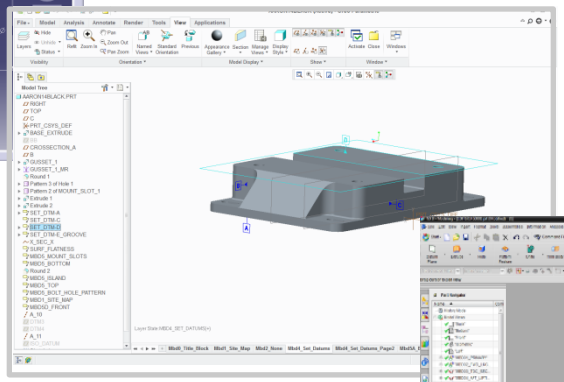
Source :http://model-based-enterprise.org/Starting-Model-Based-Enterprise/default.aspx

DOD Report: http://model-based-enterprise.org/2012-assessment.aspx

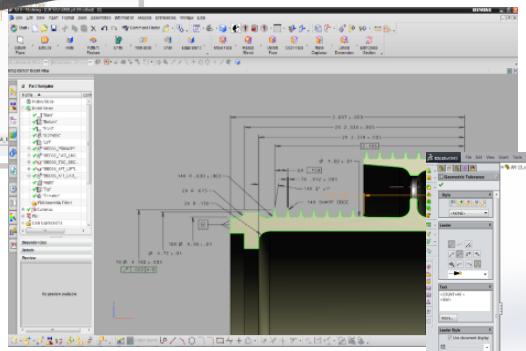
Many Enterprises use multiple Proprietary CAD Systems



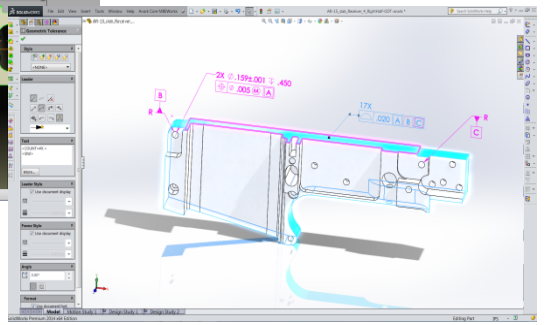
Native ***CATIA + MBD***



Native ***Creo + MBD***



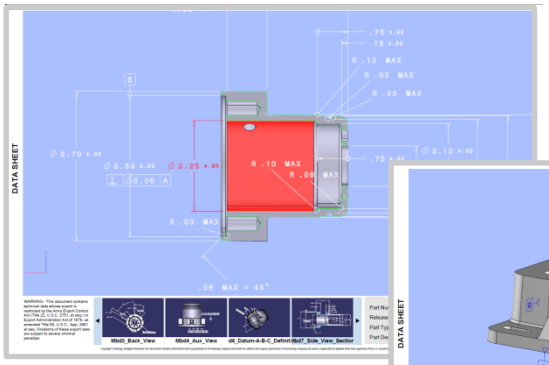
Native ***NX + MBD***



Native ***SW + MBD***

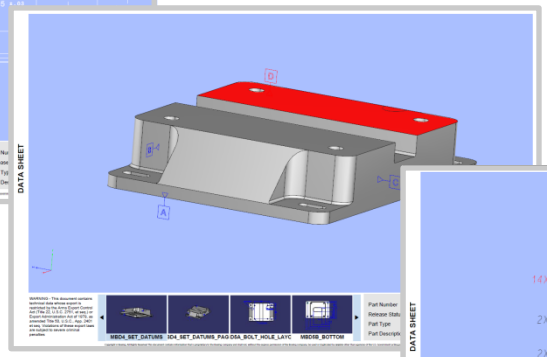
Designers want to use the Best CAD tool for their Design Requirement

Anark creates a Common 3D-MBE from multi-CAD



From Native
CATIA + MBD

to Native
3D PDF – 3D HTML



From Native
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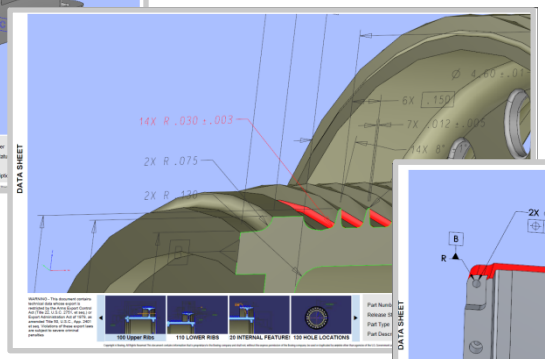
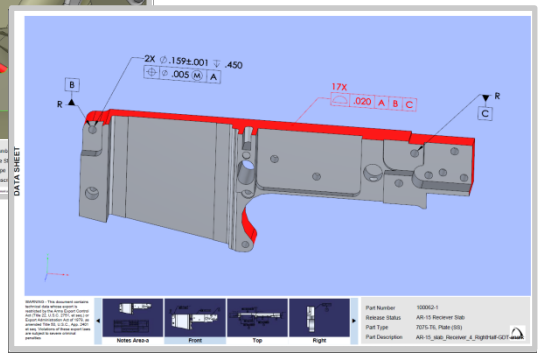


From Native
NX + MBD

to Native
3D PDF – 3D HTML



From Native
SW + MBD

to Native
3D PDF – 3D HTML

Consumers of Engineering Data want low-cost Open Platforms

to Native
3D PDF – 3D HTML

Some Enterprises use multiple Proprietary PLM Systems

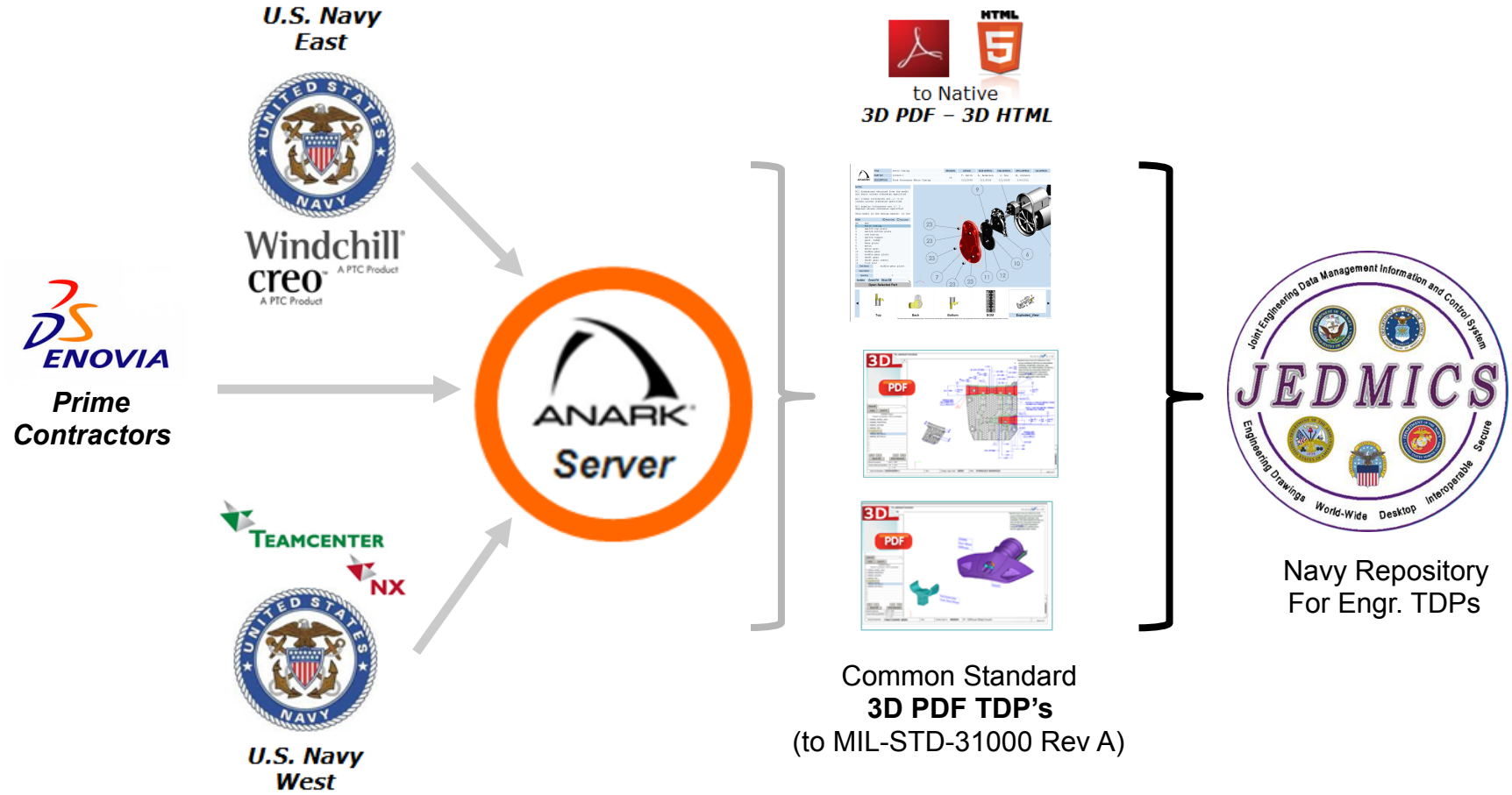
Dassault Enovia
CATIA + MBD

PTC Windchill
Creo + MBD

Siemens Teamcenter
NX + MBD

Enterprises want to avoid high cost of migrating PLM data to a single software platform

Anark creates Common 3D-MBE from multi-PLM



Consumers of Enterprise Data want low-cost Open Platforms

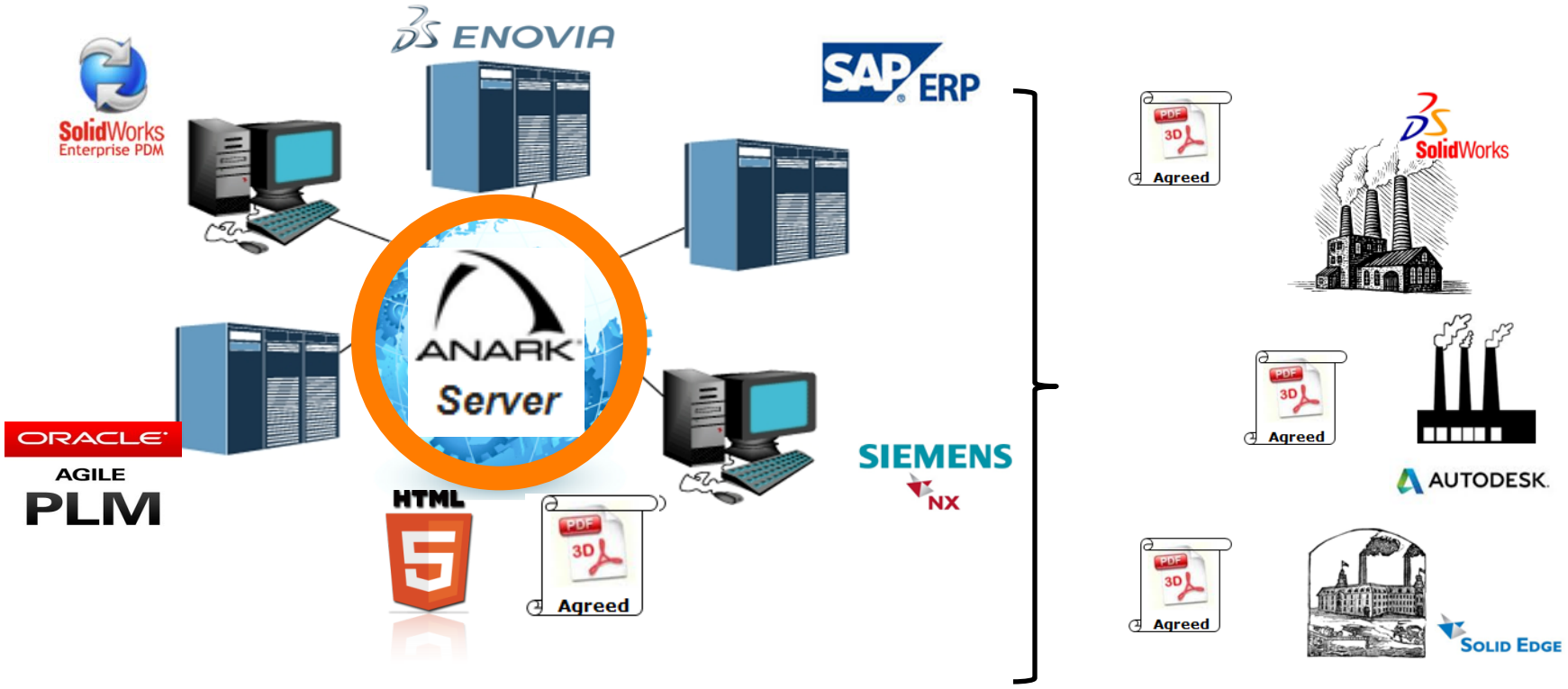
HTML
to Native
3D PDF – 3D HTML

The Complete Product Def…is stored in many places

…Most Manufacturing data is stored in ERP, MES, CRM
…Most Engineering data is stored in Multi-CAD & Multi-PLM Environments

PLM is good for Engr. data but ERP is Best for Manufacturing data

Anark creates Common 3D-MBE from multi-Source



Suppliers

Consumers of Manufacturing Data want low-cost Open Platforms

to Native
3D PDF – 3D HTML

Not all Open 3D PDFs / 3D HTML Docs are created equal…

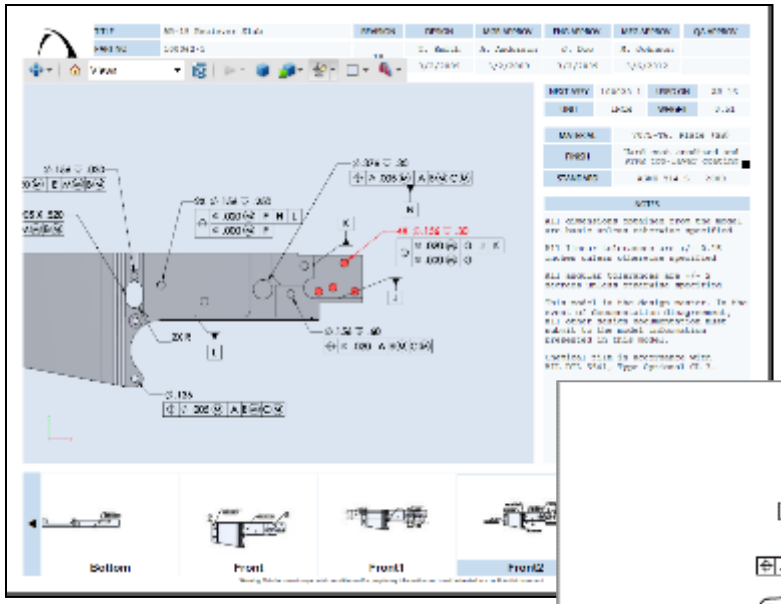
PIXEL PERFECT
3D MBE DOWNSTREAM

TRANSFORMS COMPLETE PRODUCT DEFINITION

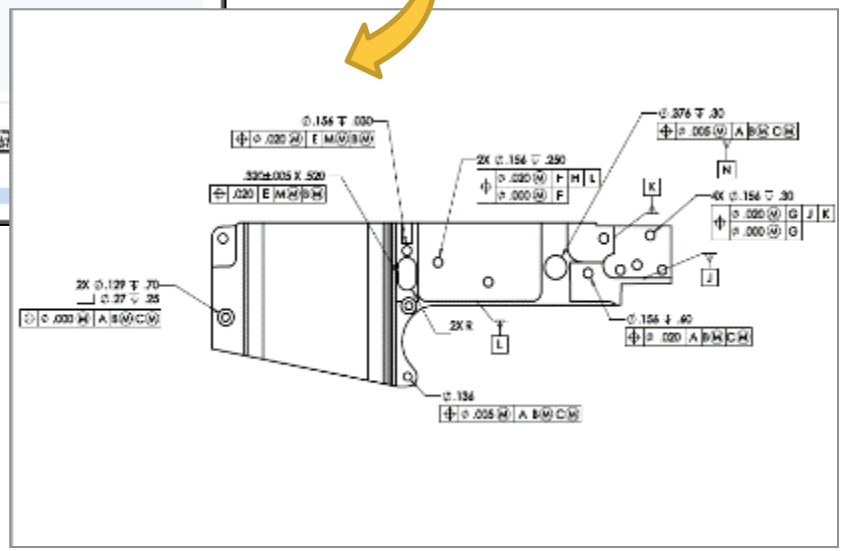
TEMPLATE DRIVEN, FIT FOR PURPOSE

EBOM-MBOM SYNCHRONIZED, COMMON 3D VIEW

AUTOMATIC UPDATES & ALWAYS IN-SYNC



3D MBD for 3D MBE Processes



High Quality 2D Vector MBD for Paper-Based Processes

3D MBE to 2D MBD

Transforms 3D MBD to 3D MBE & 2D MBE Process Docs

Common 3D MBE Deployment on Open Platforms (demo)

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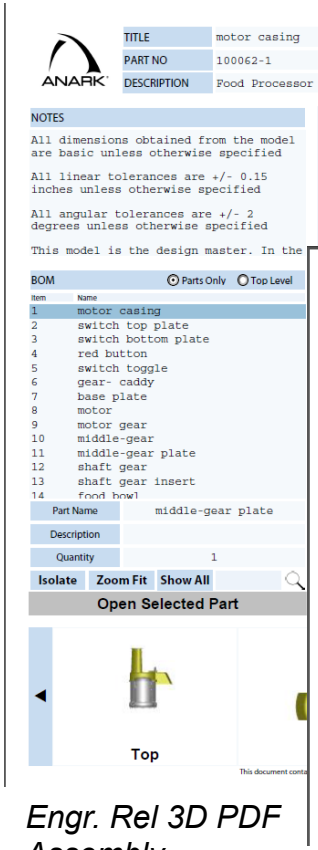
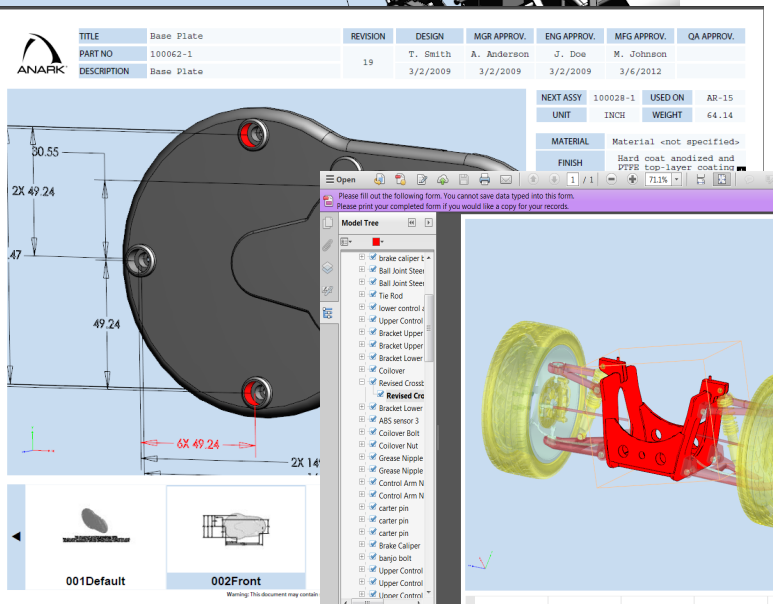


Engr. Rel 3D PDF Assembly Technical Data Packages



Engr. Rel 3D PDF and 2D PDF Part Level TDPs

MBOM-EBOM Alignment Make-Buy Bill of Materials

3D MBE NC Machining Animated Work Instr.

Deploying a Common 3D MBE Open Platform (Summary)

- **3D MBE will be the preferred information exchange method**
  - **For Design to Manufacturing and the Supply Channel**
  - **Over 2D Drawings and Paper Based Processes**
- **The value is clear**
  - **With savings of 30% Engr, 20% Scrap & 50% Supplier time common.**
- **Many Enterprises chose to use Multiple CAD Design Software**
  - **Use the Best CAD tool for the Design Requirements**
- **Many Enterprises must continue to use Multiple PLM Systems**
  - **Cost of migration is prohibitive if even possible**
- **All Enterprises have Enterprise data stored in multiple databases**
  - **Design Data is best stored in PLM, Manufacturing Data best stored in ERP**
- **Anark Unleashes the Model Based Enterprise on Low-cost Open Platforms**

Ride the 3D MBE Open Platform Wave…

…Don't just sit on the boat

Thank you for joining us today!!

For a copy of this presentation and/or the 3D PDFs used…

Leave us your Business Card

or send email to either
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chris.garcia@anark.com