



CAPABILITY STATEMENT

Action Engineering, LLC
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(720) 900-1984
www.action-engineering.com

13701 W Jewell Ave, Suite 265
Lakewood, Colorado 80228

ABOUT ACTION ENGINEERING

Action Engineering offers strategic services aimed at modernizing technical data for manufacturing organizations. As a globally recognized consulting firm specializing in 3D data transformations, we have decades of experience and a significant influence on standards committees that shape the approach to Model-Based Enterprise (MBE). Our services include developing strategic plans to implement MBE across the product lifecycle and designing workflows and standardized methods for acquiring and delivering technical data. We provide the industry's only CAD-agnostic training in Geometric Dimensioning and Tolerancing (GD&T) based on Model-Based Definition (MBD). Our knowledge platform, OSCAR, offers a curated toolkit that includes 3D standards-compliant CAD models, tutorials, and a free dictionary of common MBE terms.

CORE COMPETENCIES

Action Engineering guides customers to meet their Digital Engineering and Manufacturing goals through process improvements for 3D data, interoperability tools, and technologies, MBD modeling guidelines consistent with industry standards, and, most importantly - uplifting the people who implement.

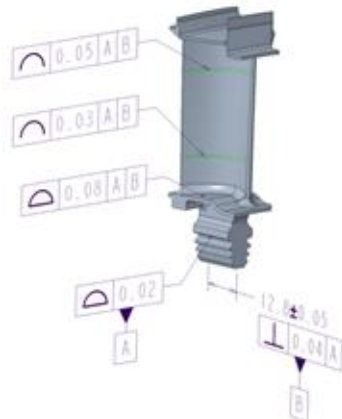
- Executive Strategic Advisement in using MBD for Digital Engineering
- 3D Transformation and MBE Implementation
- 3D Data MBD Proof of Concepts and Piloting
- MBD & GD&T Training
- Tool Selection
- MBD Guidelines
- Adoption & Organization Change Management

NAICS Primary: 541330
Engineering Services

Additional: 513210,
541511, 541512, 541519,
541611, 541614, 541618,
541690, 541990, 611420,
611430

UEI QFFTX25NBPNI

CAGE 3TKH2



SBA WOSB
Woman Owned Small Business



Jennifer Herron
Founder & CEO

CREDENTIALS

Active leadership and participation within industry standards groups:



Active participation and voting membership in the following ASME Committees:

- Aerospace and Advanced Engineering Product Definition (AED) Standards Committee
- MBE & Y14 Harmonization Committee
- Model-Based Enterprise (MBE) Standards Committee
- Y14 Engineering Product Definition and Related Documentation Practices Standards Committee, including: Y14.5, Y14.6, Y14.24, Y14.35, Y14.38, Y14.41, Y14.44, Y14.46, Y14.47, Y14.100



Active participation in ISO/TC 184/SC 4 Working Groups:

- ISO 10303-238: Model-based integrated manufacturing (STEP-NC AP 238)
- ISO 10303-242: Managed model-based 3D engineering (STEP AP 242)

Digital Metrology
Standards Consortium



- DMSC Board of Directors
- QIF 4.0 Working Group
- QIF Training & Certification Working Group
- Model-Based Characteristics Working Group



3D Model Technical Data Package (TDP)
Exchange Work Group



DoD Engineering Drawing
and Modeling Working Group (DEDMWG) for
MIL-STD-31000, Technical Data Packages



MxD Solution Provider



PAST PERFORMANCE

Action Engineering has guided 3D data transformations for commercial and military organizations since 2008.

- MBD proofs of concept and pilot programs
- Full-scale MBE implementations
- Organizational change management for MBD adoption
- MBE strategy roadmaps and Concepts of Operations (CONOPS)
- MBD and GD&T training courses
- MBD & PLM tool architecture and technology selection
- MBD guidelines consistent with industry standards
- Technical Data Packages (TDP)
- Supplier readiness assessments
- Applying Agile Scrum techniques within complex MBE and MBD initiatives

FEATURED CLIENTS



DEFENSE



Newport News Shipbuilding
A Division of Huntington Ingalls Industries



Collins
Aerospace



PRATT & WHITNEY

2016-2023



- MBE strategy, road mapping, planning
- MBD/MBE implementation guidance
- Communication plans for MBE adoption
- Training MBD and GD&T at scale (270 students trained)
- MBD proof of concept modeling in Siemens NX
- Model-based standards and guidelines
- MBD pilot coaching
- MBE tool architecture and selection
- MBE training strategy
- Agile Scrum implementation for MBD pilots
- Online MBE training through Action Engineering's online MBE knowledgebase, OSCAR

NATIONAL SHIPBUILDING RESEARCH PROGRAM (NSRP) AND NEWPORT NEWS SHIPBUILDING



NATIONAL SHIPBUILDING RESEARCH PROGRAM™
Taking Shipbuilding and Repair to the Next Level
Newport News Shipbuilding
A Division of Huntington Ingalls Industries

2017-2026

- Working to improve the adoption of digital shipbuilding standards for the Navy
- Analyzed minimum standards needed to deliver 3D data to the U.S. Navy's Model-Based Product Support (MBPS) environment
- Delivery of an NX assembly that includes all minimum data needed for a shipboard sailor
- Native NX CAD assembly of a ship door with model-only data represented
- Derivatives (3D PDF, JT, STEP, QIF) of the native ship door assembly
- Use-case analysis, user analysis, and persona generation
- Mapping of 3D data model-based artifacts with the use cases and personas

KANSAS CITY NATIONAL SECURITY CAMPUS

2016-2026



- Customized PTC Creo software plug-ins for machine-readable Model-Based Product Characteristics (MBPC) symbology and inspection processes
- Identify safety-critical items
- Export Quality Information Framework (QIF) data
- Redact sensitive data

3D DATA TRANSFORMATION YOU CAN TRUST



Calming the chaos at the intersection of people and technology

Let Action Engineering chart your 3D path from requirements to sustainment. With over 50 years of combined MBD/MBE experience, we guide your cross-functional team using our expertise to blend 3D technology mastery and cross-functional adoption.

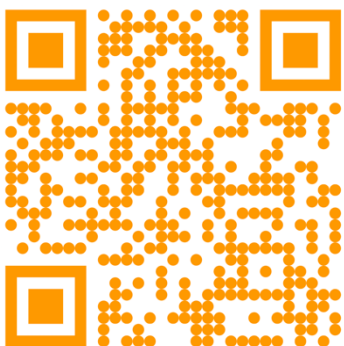
Our Strategic Program creates manufacturing resiliency tailored to the unique attributes of your organization.

1. Assess Your Readiness
2. Prove Your Case
3. Form Your Team
4. Plan Your Rollout
5. Build Your Foundations
6. Get Rolling
7. Pilot & Learn
8. Scale & Expand



3D data transformations are complex transitions that go beyond simply implementing new technology and standards.

3D data transformation is a continuous improvement process. Organizations that succeed take the time and effort to facilitate cultural change along with tool enhancements.



START YOUR DIGITAL TRANSFORMATION

Contact us for a free consultation to discuss your 3D Data Transformation goals and how we can assist.

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READY TO JUMP INTO MODEL-BASED CAD TRAINING?

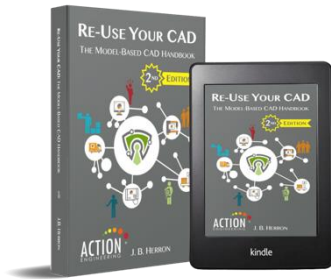


You've come to the right place.

Action Engineering specializes in training and process improvements for Model-Based Definition (MBD), Product and Manufacturing Information (PMI), Geometric Dimensioning and Tolerancing (GD&T), digital manufacturing, and 3D CAD modeling.

MBD USING MODERN GD&T

For good MBD, you need proper GD&T. Our GD&T and MBD experts guide you through the *What*, *Why*, and *How* of Model-Based Definition and the right way to apply GD&T for MBD. This course is for anyone who authors or consumes MBD data packages, including hands-on instruction for SOLIDWORKS, Creo, NX, and Inventor. Register for training: action-engineering.com/training/mbd-using-modern-gdt



RE-USE YOUR CAD: THE MODEL-BASED CAD HANDBOOK, J. B. HERRON

Ready to understand why **Model-Based Definition (MBD)** is so important to your organization? The discussions around tools, processes, standards, and most importantly, the people who use MBD are updated to match current industry practice. MBD is the foundation for Model-Based Systems Engineering (MBSE), Industry 4.0, and creating digital twins.

Buy the book: action-engineering.com/re-use-your-cad

MBE DICTIONARY

The nature of today's manufacturing sector mandates that accurate terminology around Model-Based Enterprise continues to expand as technologies and methods evolve. The MBE Dictionary is a powerful database-driven resource supporting Model-Based Definition applications throughout the entire Model-Based Enterprise workflow.

Discover the dictionary: dictionary.action-engineering.com

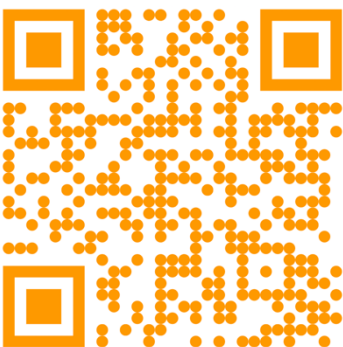


EMPOWER YOUR TEAM

Elevate your model-based knowledge with our training courses and resources.

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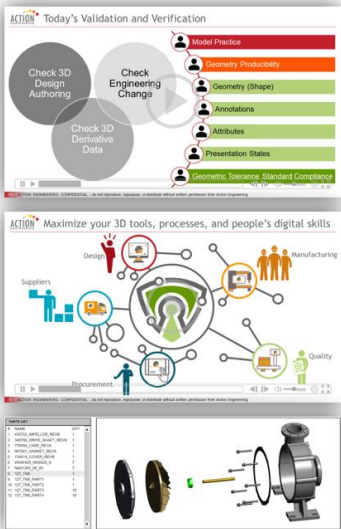
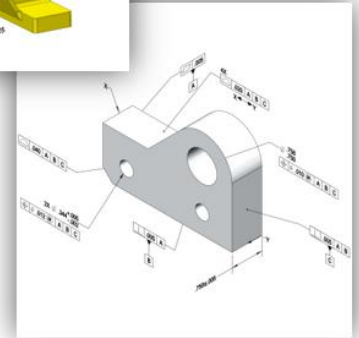
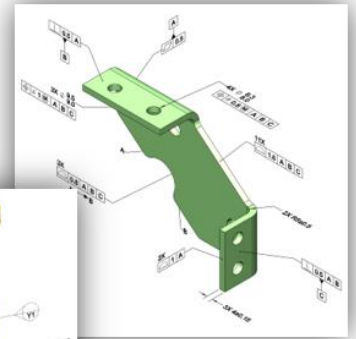
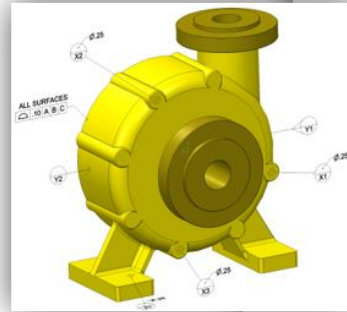


OSCAR, THE CURATED MBE TOOLKIT

Turn Your Model-Based Enterprise TALK into ACTION with OSCAR

Model-Based Definition (MBD) is the key to meeting your organization's goals and staying competitive in the market, but it's not that simple. You have an entire organization to educate, train, and onboard. Conventional 3D CAD training is inadequate, and skills degrade quickly when they're not backed up by real-world practice.

OSCAR solves this problem by providing engaging on-line MBD training and expert MBD GD&T examples in native and neutral 3D CAD formats. Users learn the what, why, and how of MBD with 3D CAD templates that put their training to practical use.

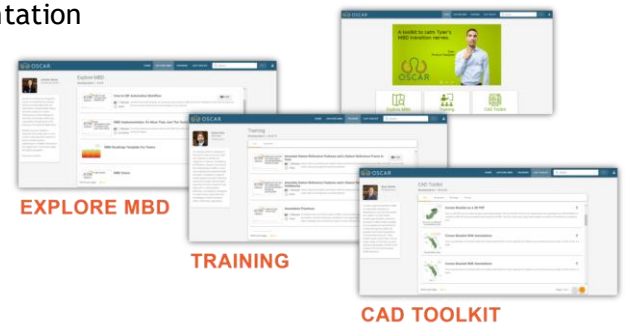


OSCAR content brings MBD within reach:

1. Video training courses for MBD authors and consumers
2. Gold-standard 3D CAD start parts in SOLIDWORKS, NX, and Creo
3. MBD examples per ASME Y14.5-2018 as native CAD & 3D PDF
4. 3D PDF templates
5. MBD guidelines established by Action Engineering experts
6. Guidance for Agile MBD implementation

Who is OSCAR for?

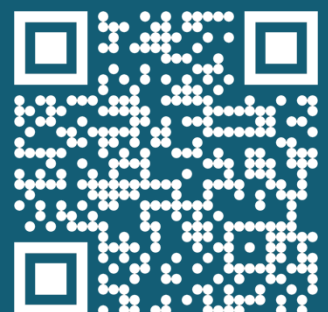
- MBD Leaders
- Design Engineers
- Manufacturing Engineers
- Quality Engineers
- Supply Chain Leaders
- Procurement Specialists



**SIGN UP FOR A FREE OSCAR ACCOUNT
TO BRING MBD WITHIN REACH TODAY.**

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ASSESSING READINESS FOR FACTORIES, SUPPLIERS, AND MBE ORGANIZATIONS

We guide industry leaders through Model-Based Definition (MBD) readiness assessments across the full span of their products' lifecycles:

- Supplier surveys are expertly curated from real-world supply chain interviews and history.
- User-focused collaboration with Procurement
- Meeting suppliers where they are today through video demonstrations, including 3D PDFs authored in your company's own MBD system and Technical Data Package (TDP) definition, benefits, and resultant 3D data digital thread.
- Establish baselines for your current operational state and capabilities. Set realistic goals for your future plans and benefits agreement.

ARE SMALL TO MEDIUM MANUFACTURERS (SMM) READY FOR YOUR 3D DATA?

Leverage our user experience expertise to evaluate *your* suppliers using *your* data.

- Data-based System Usability Scale (SUS) scores
- Reveal insights into supplier use of:
 - MBD Components
 - MBD Assemblies
 - Attributes & Annotations
 - Navigation & Views
 - 3D Parts List
 - Title Block
- Discover key factors hindering Model-Based Definition adoption, including file formats, models in the quoting process, overall process, GD&T challenges, and computer access.

SUPPLIER EVALUATION ACROSS FULL LIFECYCLE

ENGINEERING

- CAD software tools used
- Process knowledge of how to generate manufacturing and quality instructions from the design data (e.g., Drawing)



MANUFACTURING & QUALITY

- Manufacturing software (e.g., CAM) tools used
- Quality software (e.g., CMM) and measurement equipment used
- Process knowledge of manufacturing planning, work instructions, travelers, operation instructions, and tool programming (e.g., CNC)
- Process knowledge of First Article Inspection (FAI), in-process inspection, final inspection, and tool programming (e.g., CMM)



SUBJECT MATTER EXPERT (SME) INPUT & REVIEW

- RFQ Receiver
- Engineering Lead
- Manufacturing Lead
- Quality Lead



The Digital Manufacturing
& Cybersecurity Institute

