Moving MBD from OEM to Supplier: Is There a Ringmaster Somewhere in This Circus?

Jennifer Herron, Action Engineering

ACTION ENGINEERING

The Supply Chain Handoff is Chaotic

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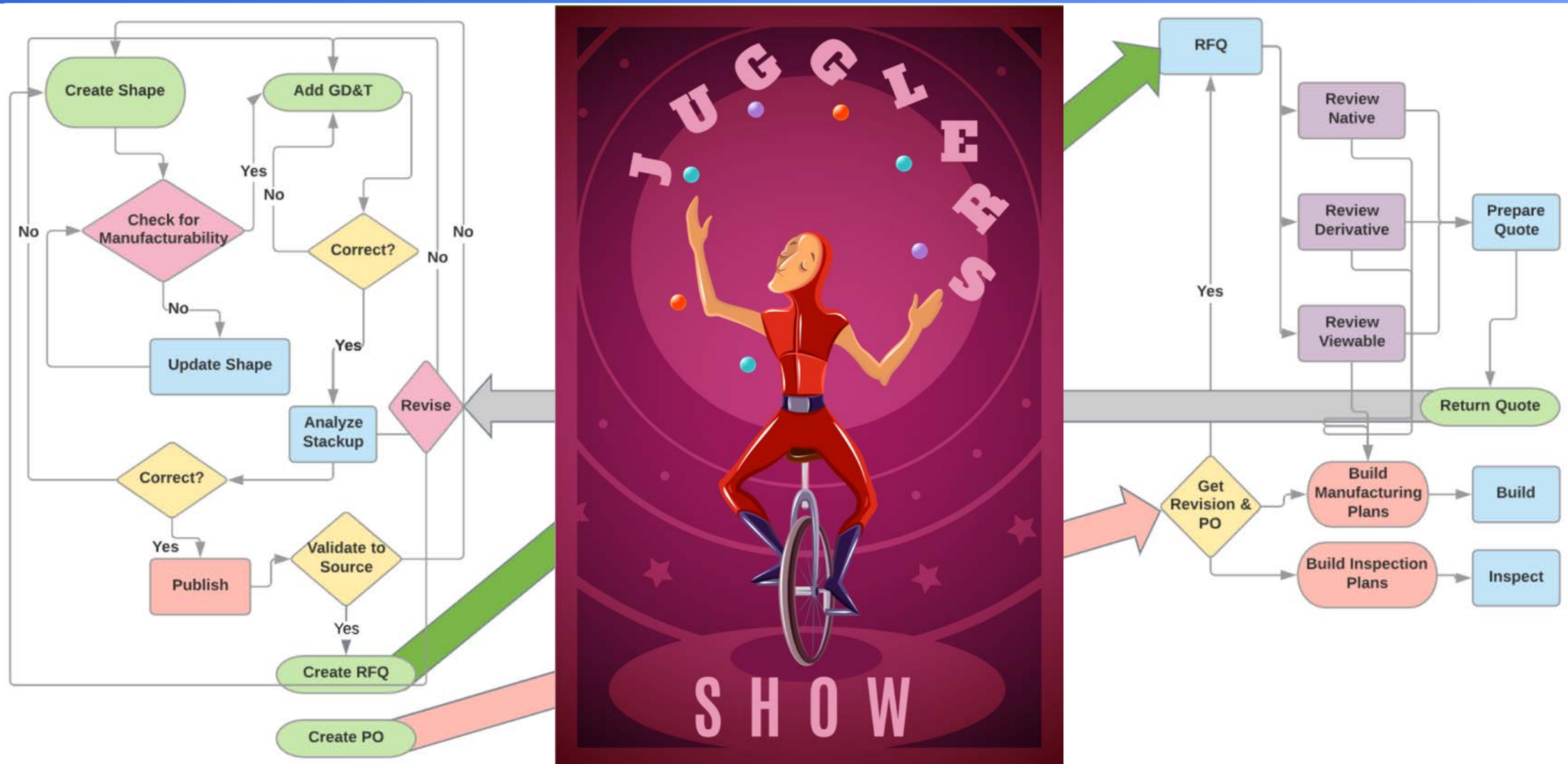

Manual Supply Chain Handoff

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Drawings, Models, Process Requirements Specifications, RFQ

- 6-20 data exchange handoffs
- Most rely on human reading and re-entry.
- Suppliers should not re-create drawings or models.

Quote, Clarification Requests, FAI, End item, Process Verification

CIRCUS

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MBD ... MBD ... Model-Based Definition ... MBD ... MBD

Supply Chain Handoff Needs:

1. **Model-Based Definition (MBD)**
2. **Traceability**

Avoid the Status Quo

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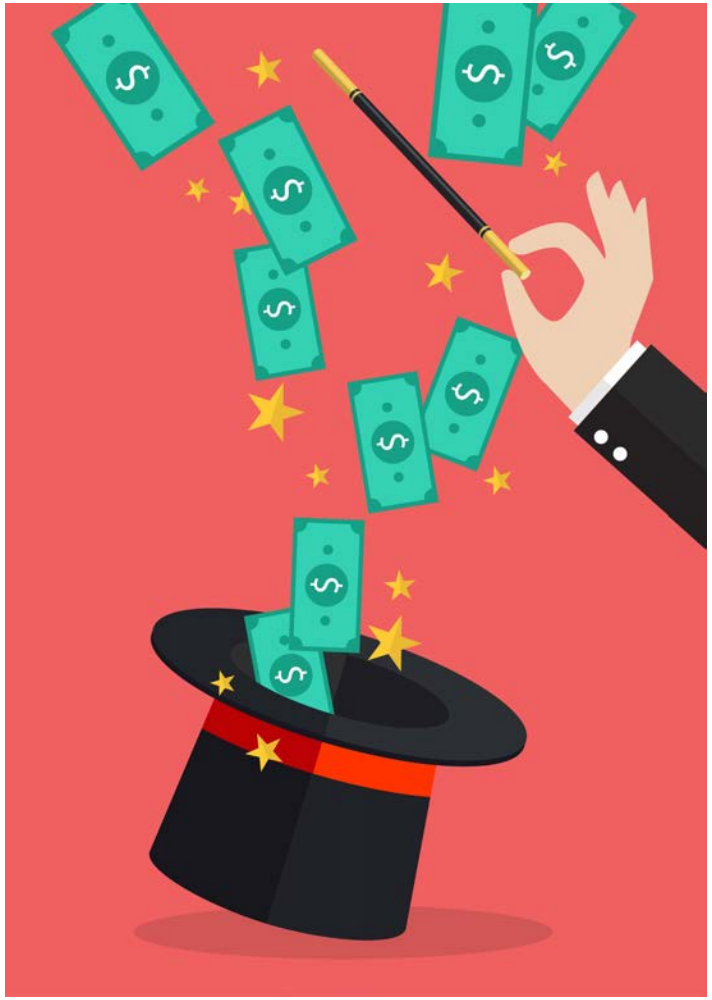

Model-Based Definition Supports the Digital Thread

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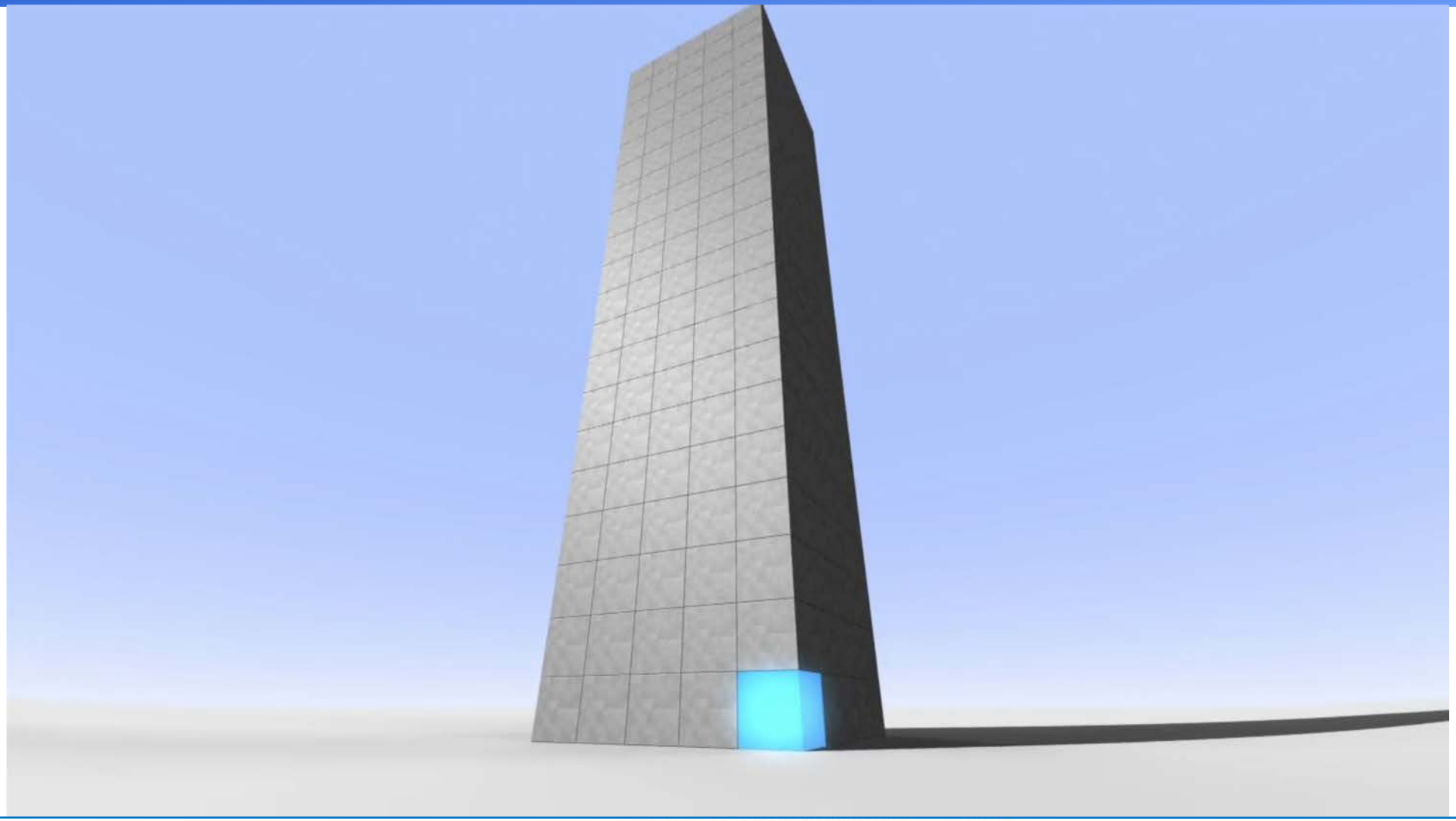
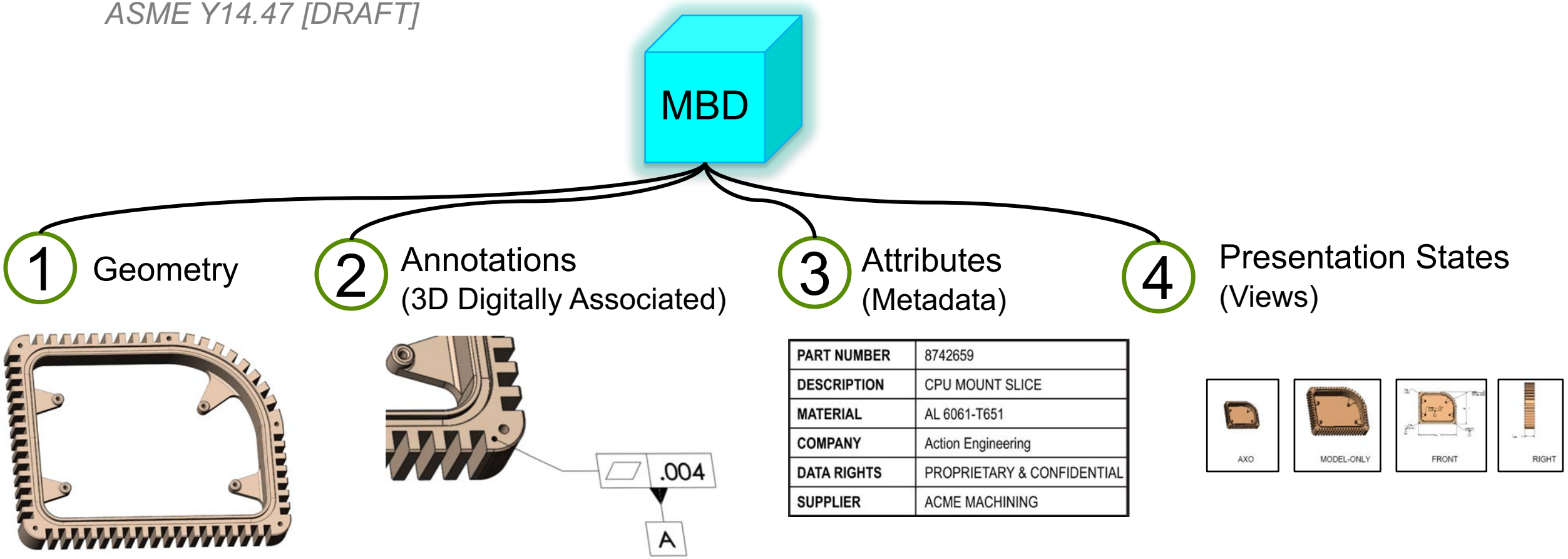


What is MBD

Model-Based Definition (MBD): An annotated model and its associated data elements that define the product in a manner that can be used effectively without a drawing graphic sheet.

ASME Y14.47 [DRAFT]



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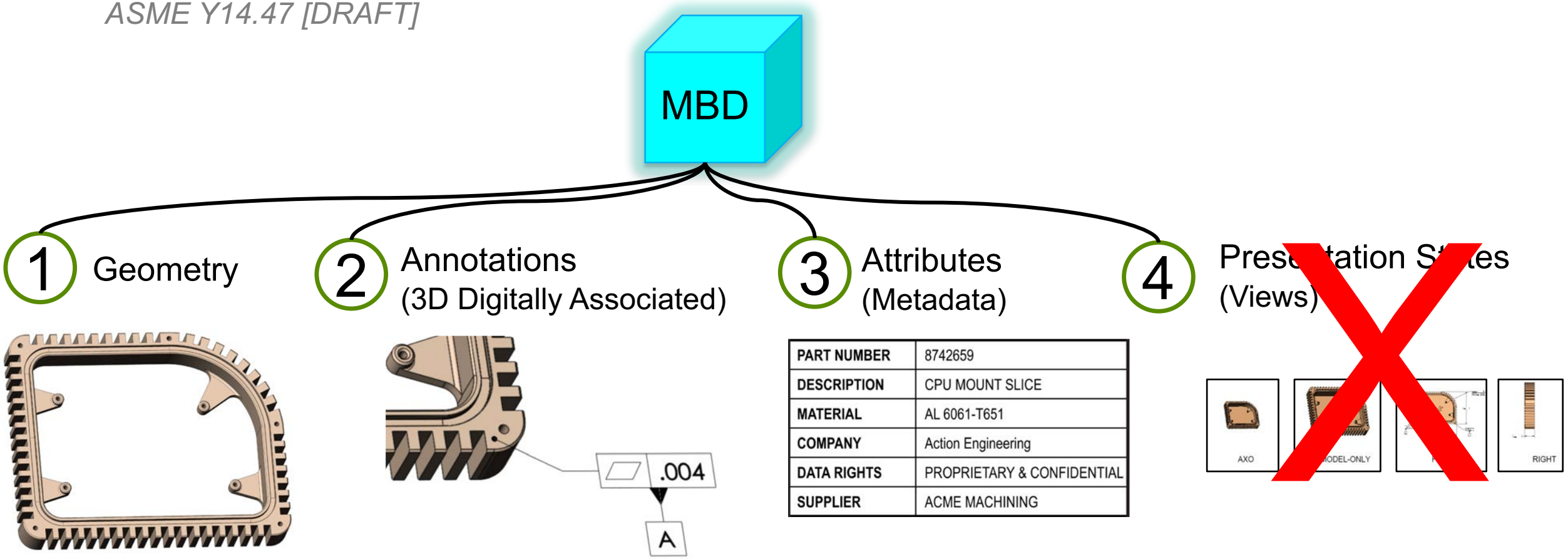

Why MBE is Needed

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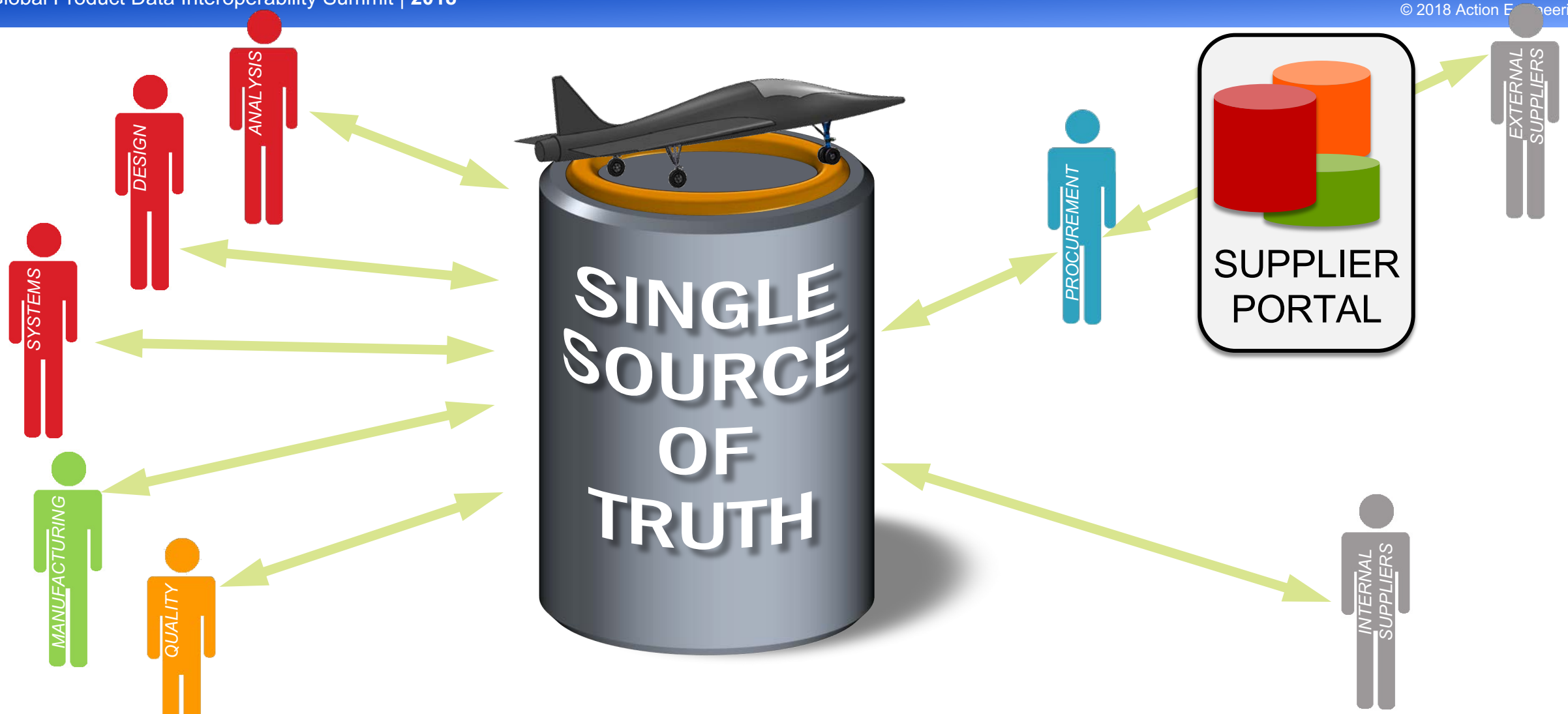

How Information Flows from Design, Manufacturing, Inspection

Global Product Data Interoperability Summit | **2018**

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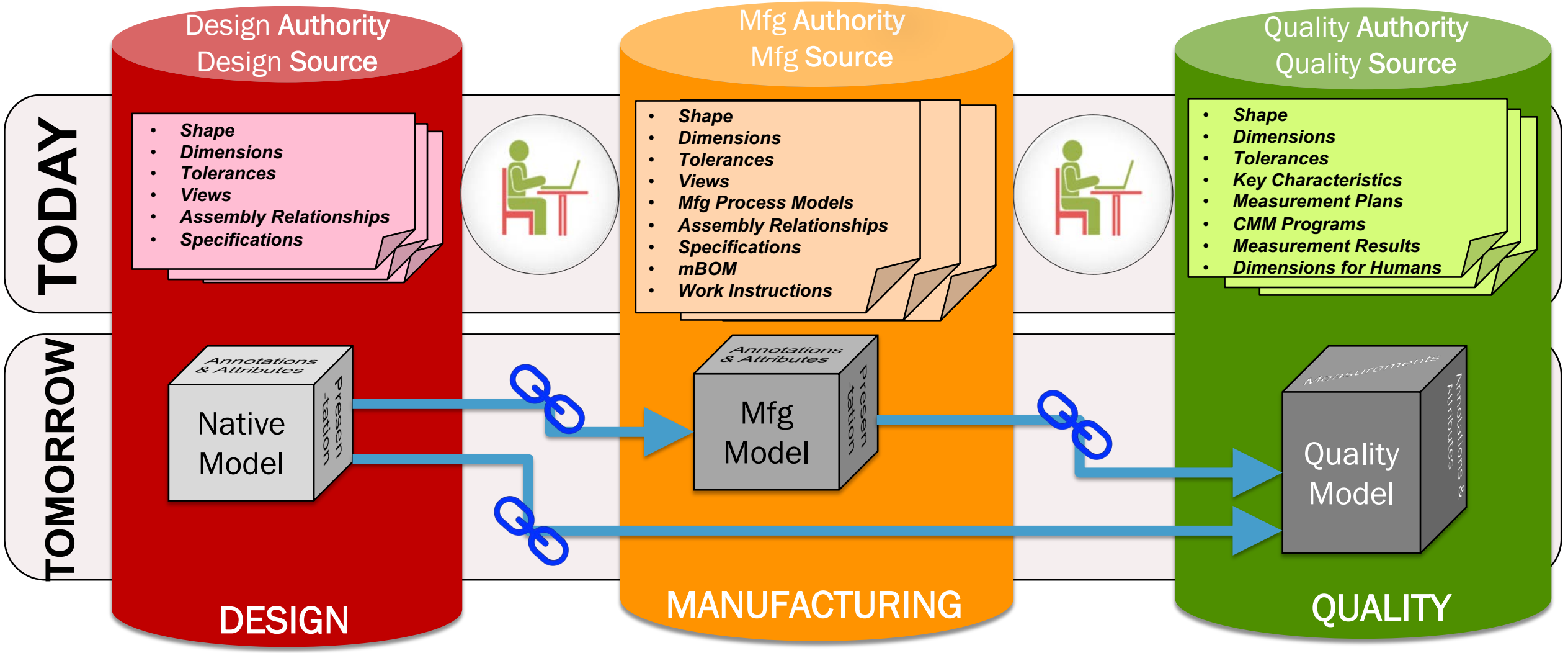
Manual Entry Linked

Presented Content



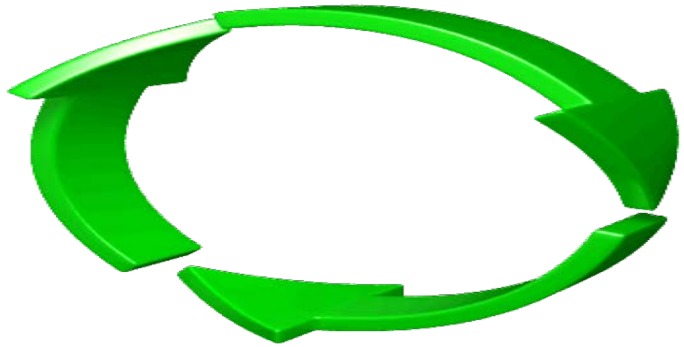
ELYSIUM Parker NORTHROP GRUMMAN BOEING

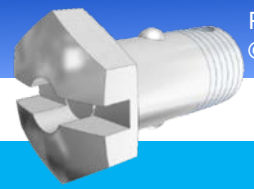
GLOBAL PRODUCT DATA INTEROPERABILITY SUMMIT 2018

Supply Chain Handoff of 3 Buckets

ACTION ENGINEERING

Presented Content





PARTS

TIER 3

TIER 2

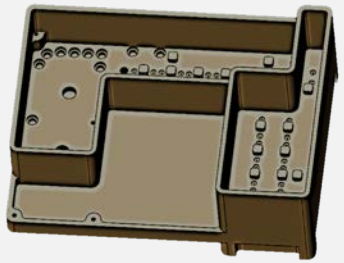
TIER 1

OEM

Transition from Reduced Content Drawing to Model-Based

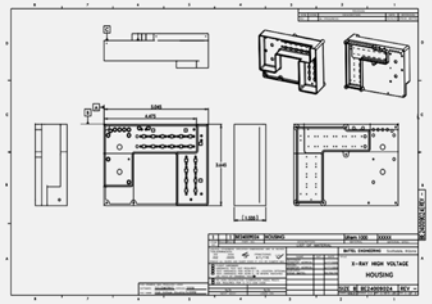
MODEL + DRAWING

Authority for 3D Shape



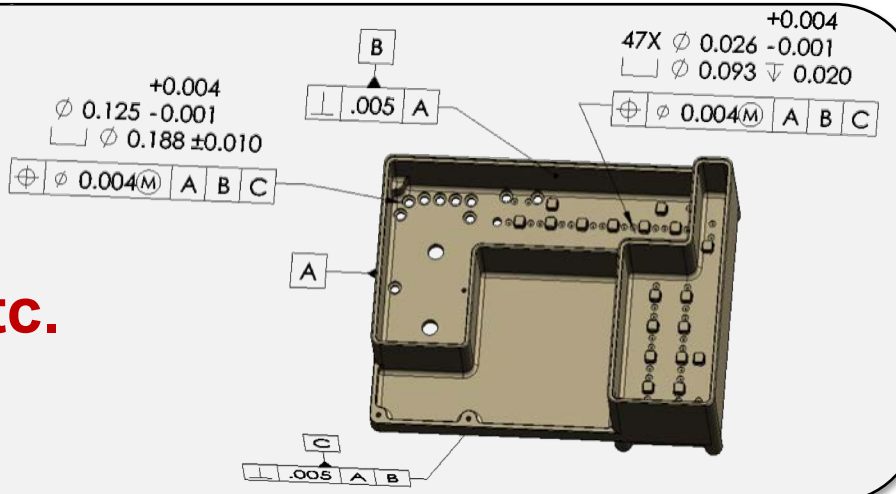
+

Authority for Notes, Tolerances, Material, etc.



MODEL ONLY

Authority for 3D Shape, Notes, Tolerances, Material, etc.



MBD Maximizes Data Traceability

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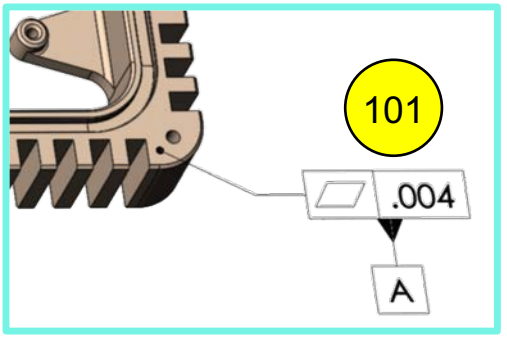
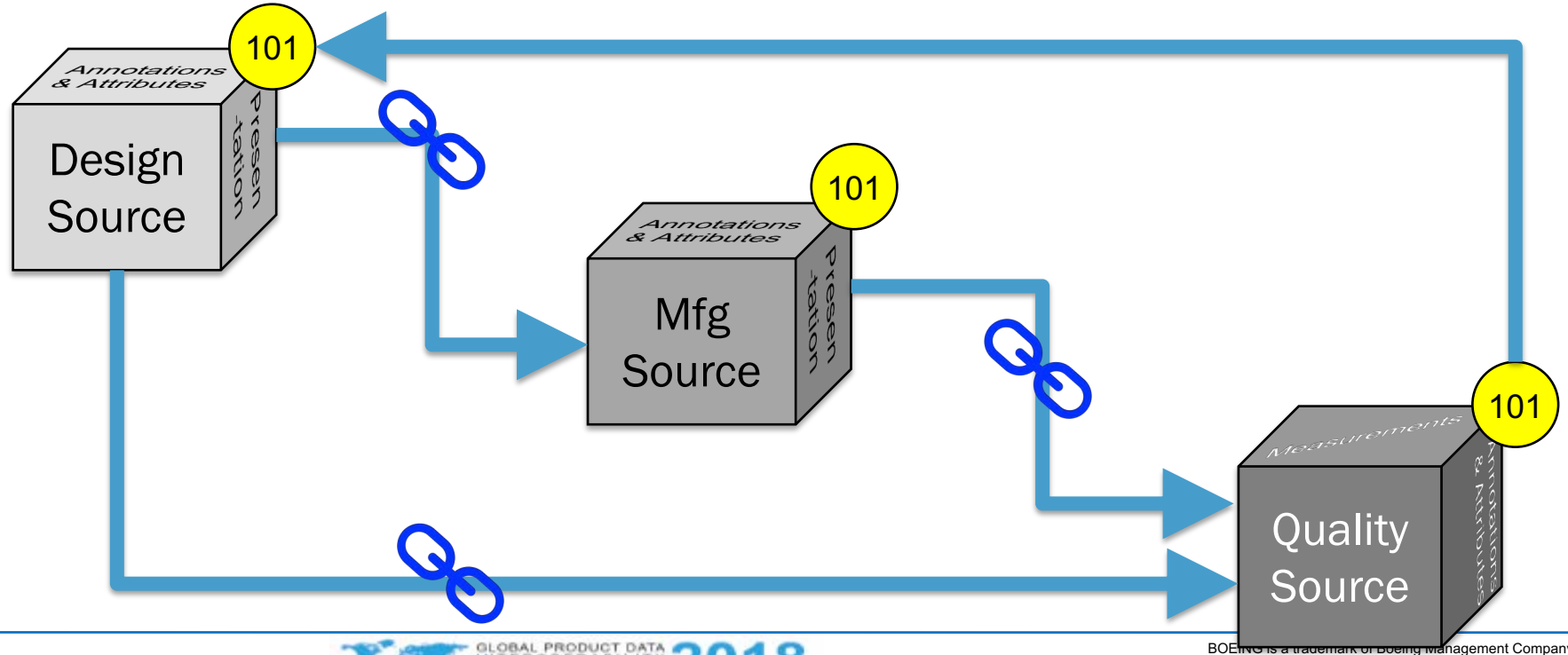
Trusted Models are Authenticated, Authorized, and Traceable





Author Trusted Data

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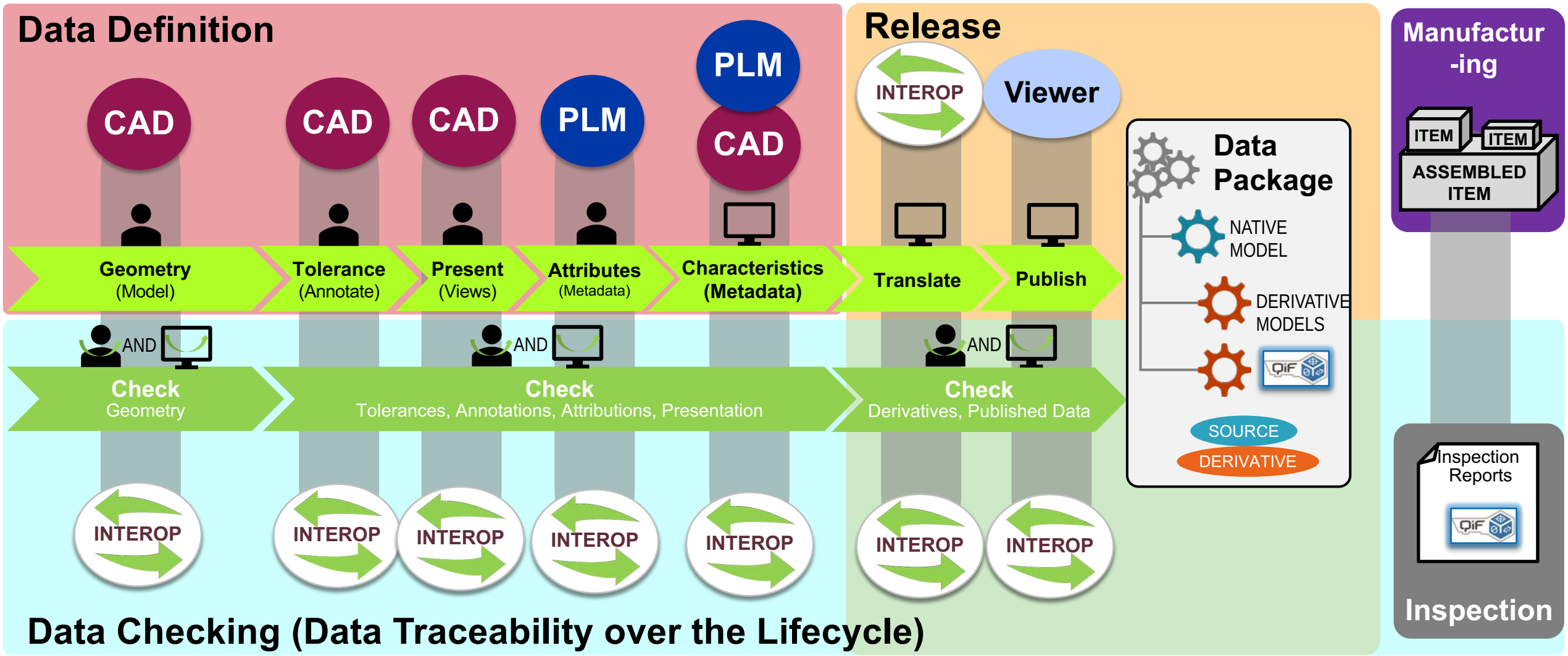
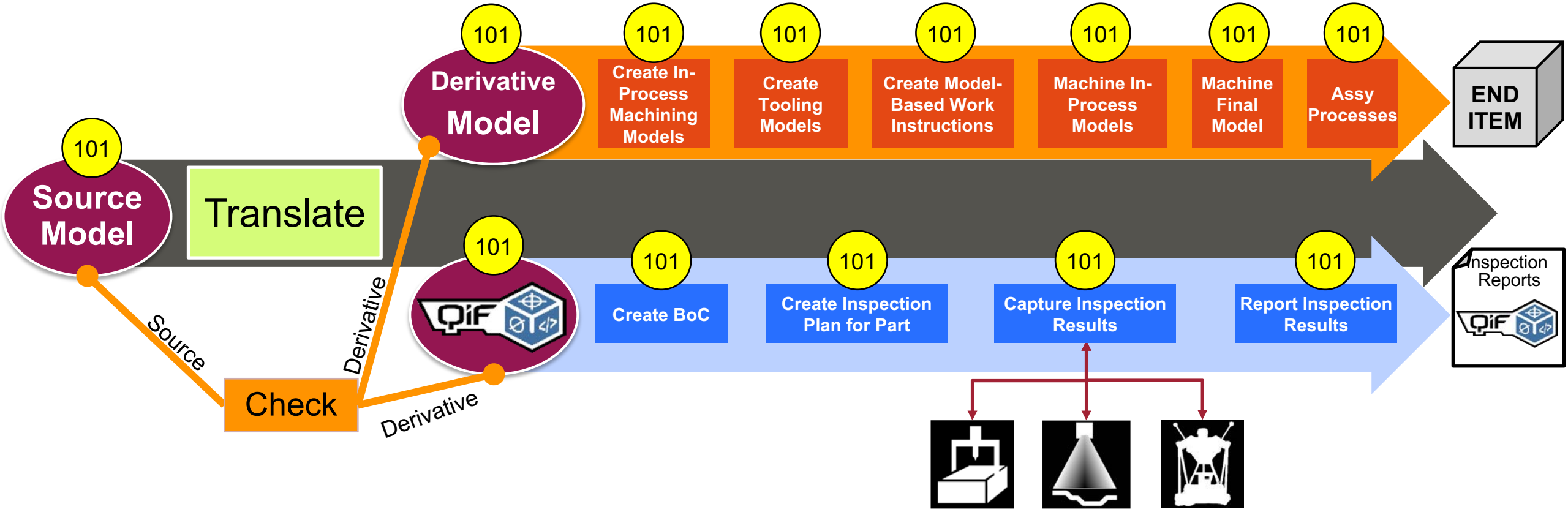


Traceability through the Supply Chain Handoff



MBD Stays Connected

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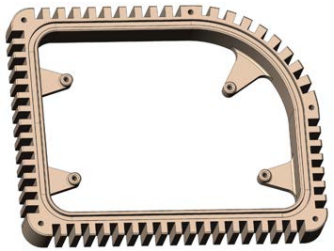
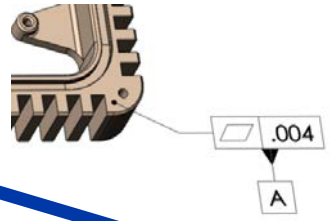
1 Geometry



2 Annotations
(3D Digitally Associated)

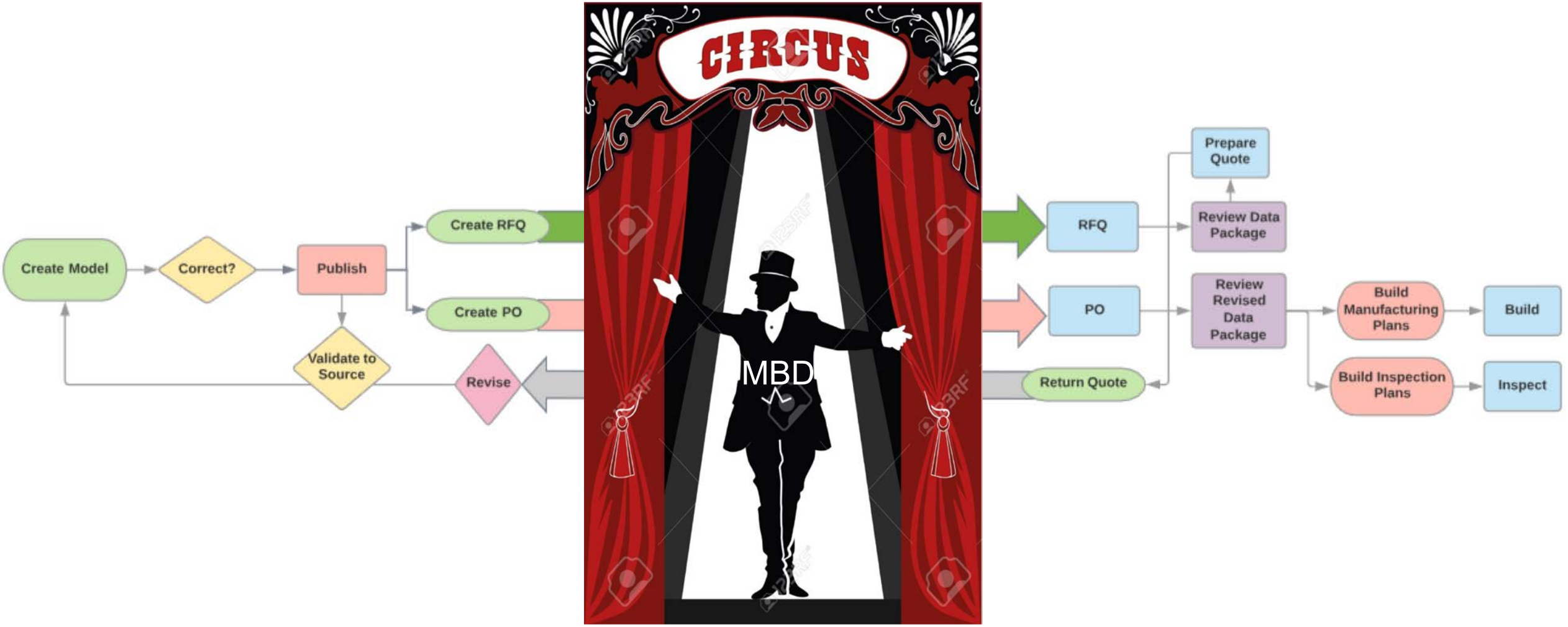


3 Attributes
(Metadata)

PART NUMBER	8742659
DESCRIPTION	CPU MOUNT SLICE
MATERIAL	AL 6061-T651
COMPANY	Action Engineering
DATA RIGHTS	PROPRIETARY & CONFIDENTIAL
SUPPLIER	ACME MACHINING

Machine Readable Data Moves

MBD Tames the Supply Chain Handoff Circus



MBD Supplier Readiness Study

ACTION ENGINEERING

Purpose: Assess the readiness of suppliers (internal or external) in the adoption of Model-Based Definition (MBD) across all phases of the product development process. These processes include: quoting, machining, tooling design, inspection, and engineering change functions.

Study Closed Shortly

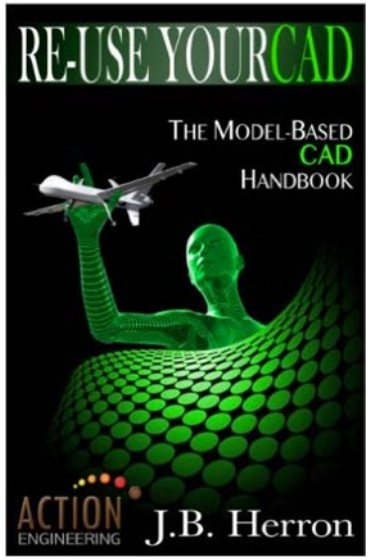
CALL TO ACTION:

Provide this survey link to your suppliers. Often the suppliers are busy making your parts and do not have resources to research industry trends. Please enable them to support your data.

http://www.lifecycleinsights.com/mbd-supplier-readiness-study/

Jennifer Herron // jennifer@action-engineering.com

- Founder & CEO
- Principal Consultant and Trainer
- Author: Re-Use Your CAD: The Model-Based CAD Handbook (2013)
- Standards Work
  - Board of Directors (BoD) for Digital Metrology Standards Consortium (DMSC) - Quality Information Framework (QIF)
  - Chair for ASME Y14.46 – Product Definition for Additive Manufacturing
  - ASME Y14.47 – Model Schema, Member
  - ASME Y14.37 – Product Definition for Composites, Member
  - MIL-STD-31000 – Committee Member
- Hardware Design for Aerospace & Defense Industries and Military Robot Platforms
- MS-Computer Engineering, BS-Mechanical Engineering

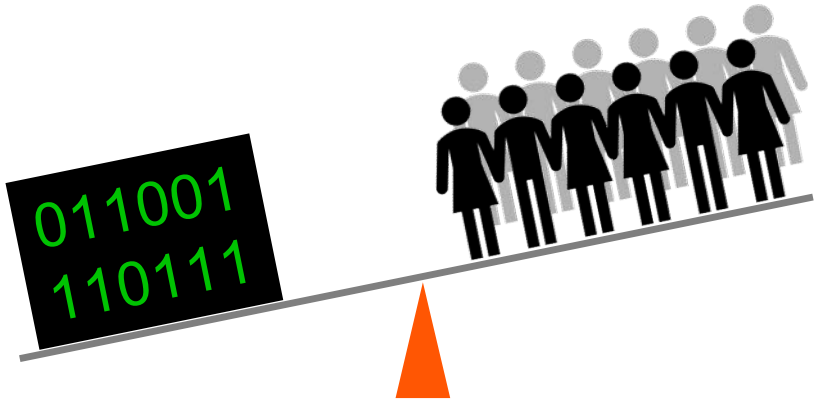


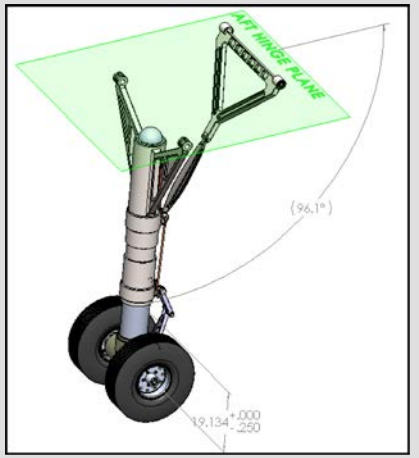
About Action Engineering

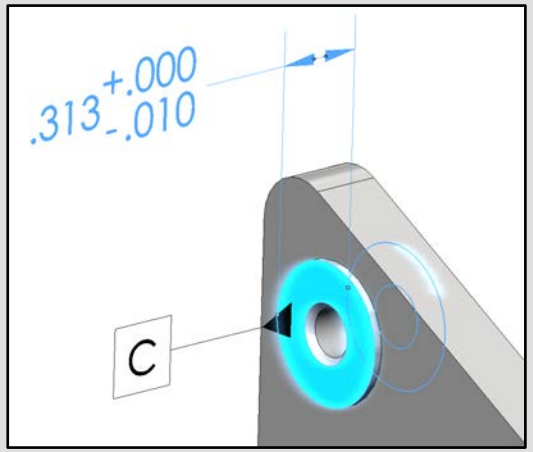
www.action-engineering.com

ACTION ENGINEERING

Balancing Technology and People







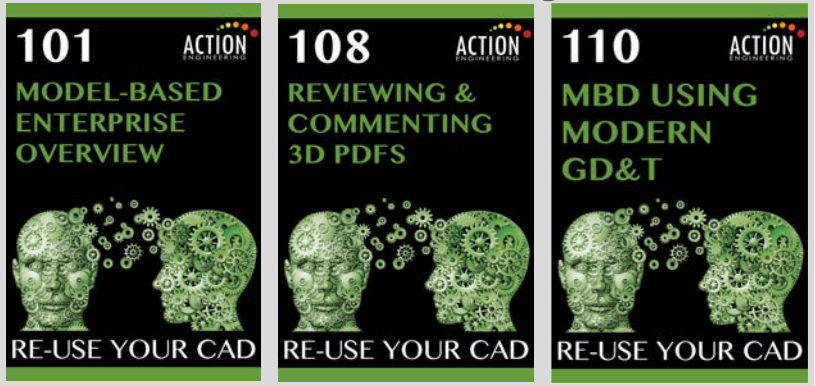
Company Information – Based in Golden, Colorado

Coaching you from the status-quo to a Digital Enterprise

Services:
https://www.action-engineering.com/services

TAKE ACTION TO BUILD YOUR DIGITAL ENTERPRISE™

Re-Use Your CAD University



Full Course Listings:
https://www.action-engineering.com/courses

3D CIC

Oct 15-18, 2018

Golden, Colorado

Enterprise Accountability

Agenda:
https://www.action-engineering.com/cicagenda

Industry Organization Memberships

ASME — SETTING THE STANDARD — Y14.46 Chair

QIF — Dimensional Metrology Standards Consortium DMSC — BOD

PURDUE UNIVERSITY — PLM PURDUE CENTER — Education Partner

PTC user — MBE Technical Committee Chair

2018-2019 Events in Golden, CO

TECHNICAL CONSULTANTS INCORPORATED

ACTION ENGINEERING

MBD Using Modern GD&T

February 11-13, 2019 ⌖ Golden, Colorado

Hands-on course instructed by
Scott Neumann & Jennifer Herron

20 seats

More info on Action Engineering website

https://www.action-engineering.com/event/mbd-using-modern-gdt

"Enterprise Accountability"
Culture & Champions,
Quality, and Manufacturing

Includes MBD user groups

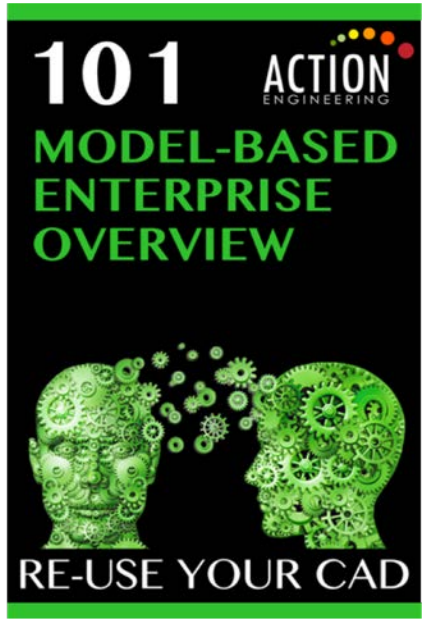
70 seats

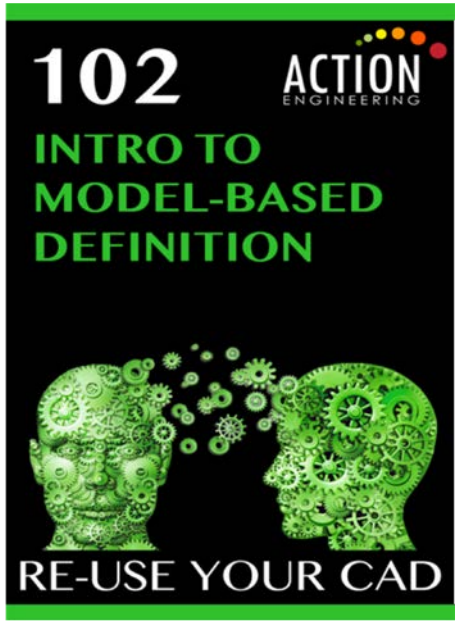
https://ww3dcic.com

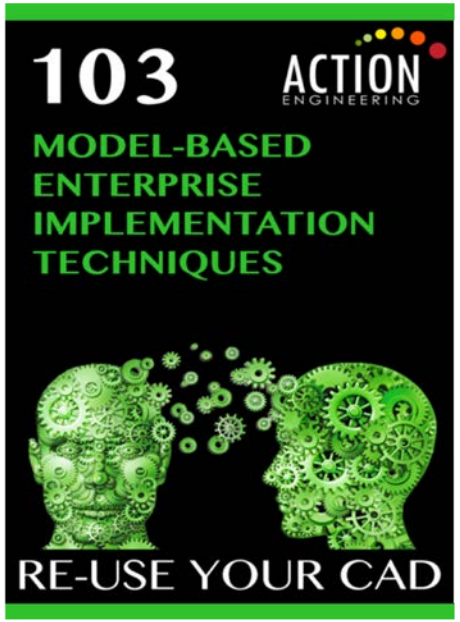
Success with Digital Data Requires the Entire Enterprise

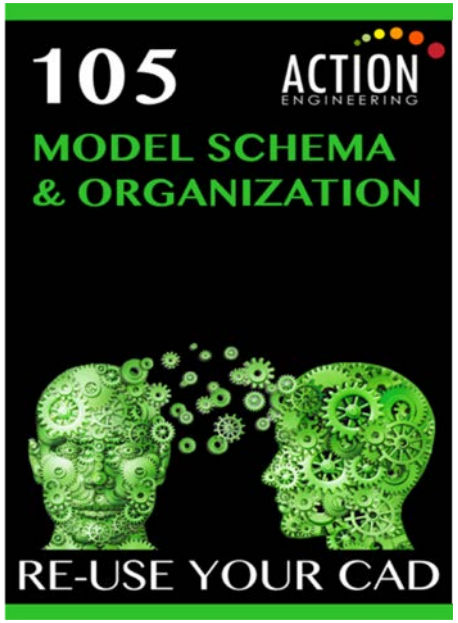
	Design	Manufacturing	Quality	Procurement	Data Management
Standards	• ASME Y14 • ASME MBE Committee	• STEP • ASME Y14	• QIF • ASME Y14	• QIF • ASME Y14 • STEP	Defined Method to Manage Information Throughout Enterprise
Processes	CAD Agnostic Modeling Processes	Part-Specific Process Specifications & Derivative Models	Part-Specific Process & Derivative Models	Defined Methods to Acquire MBD Parts	ASME Y14 Series
Tools	CAD Software	CAM Software	Metrology Software	Viewer Software	PDM and PLM
People & Culture	Defined, Commonly Understood & Executed Methods Culture Fosters Adherence to Updated Rules and Methods				

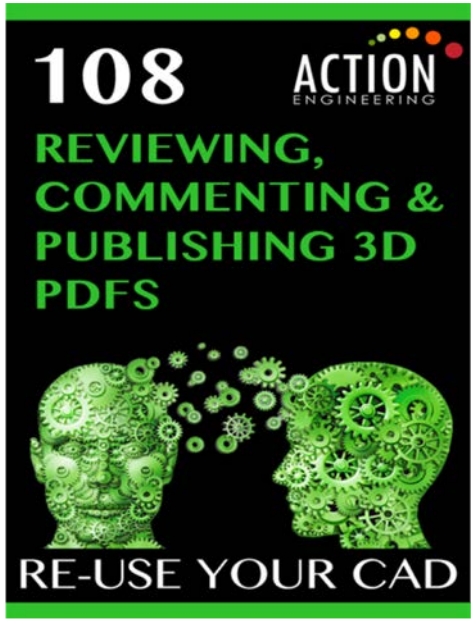
CAD Agnostic Course Offerings











101: *Learn the fundamentals of model-based business processes.*

102: *Orientation to MBD data sets, annotation types, PMI, and GD&T.*

103: *Techniques for implementing a fully integrated model-based environment.*

105: *Learn the purpose, rules, and recommended practices for using model schema.*

108: *How to use 3D PDFs to enable MBD sharing.*

https://www.action-engineering.com/courses