Real World MBD Use Cases with ISO QIF

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September 27, 2022

Presenter Bio – Daniel Campbell

- VP, Model-Based Definition for **Capvidia**
- 20 years in digital metrology, software design, and MBD
- Member of the Board of Directors, Digital Metrology Standards Consortium (DMSC)
- Chair, QIF Working Group for DMSC
- Member of Technology Advisory Committee (TAC) for MxD

Daniel Campbell

VP MBD

Capvidia Customer Profile

Global Product Data Interoperability Summit | **2022**

ISO QIF: What is it?

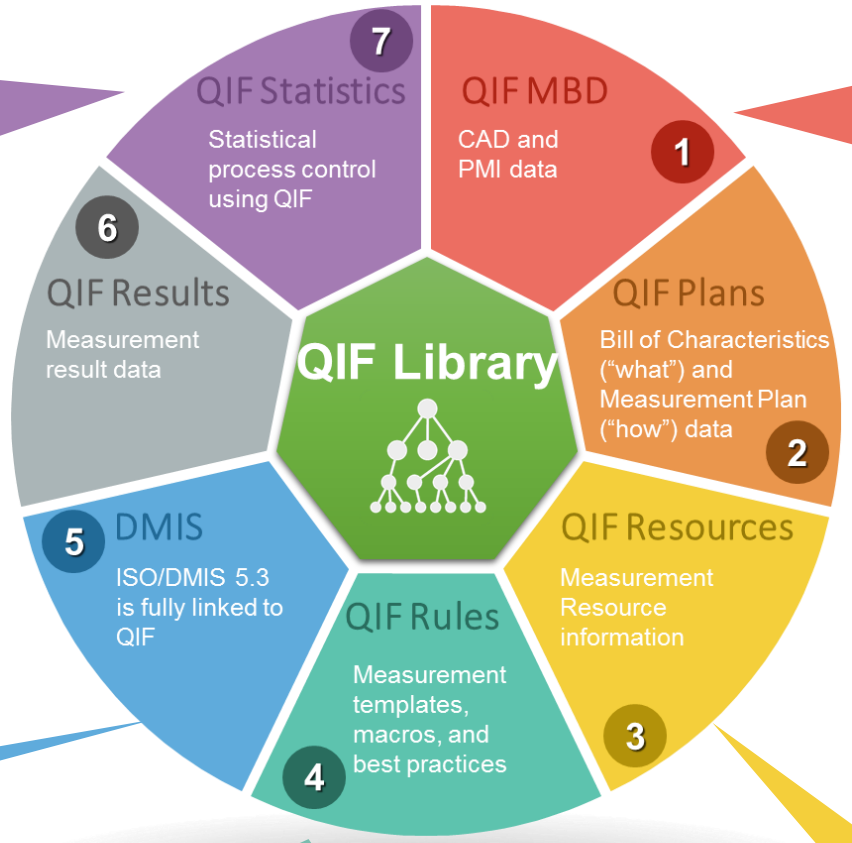
- ISO 23952:2020
- Data format for manufacturing quality information
- Contains semantic data model for machine-to-machine communication

ISO QIF: What is it?

Reference a bundle of QIF Results sets and specify a statistical analysis method to be carried out. Can optionally include the results of the statistical analysis as well

Measurement results data, associated with the MBD! This can be just tolerance evaluation results, and can even include all the point cloud data from the features

DMIS is <u>not</u> part of QIF, but it has been updated to harmonize with the data traceability mechanisms in QIF



QIF MBD is the base for providing traceability to authority CAD data. It is not required for basic QIF use cases. Considered to be the strongest semantic CAD+PMI standard available

Wide range of optional levels of detail for measurement plans:

- Bill of characteristics
- Assign measurement resources
- Specify sampling point locations

Specify basic or highly detailed information about available measurement equipment (e.g., CMMs, probes, calipers, gages, etc.). As always, this data is contextual and semantic

Create measurement templates—e.g.: *If a Surface Profile tolerance value is less than **x**, use at least **y** number of points/sq. in. for CMM measurement*

Getting Started with MBD: FAI

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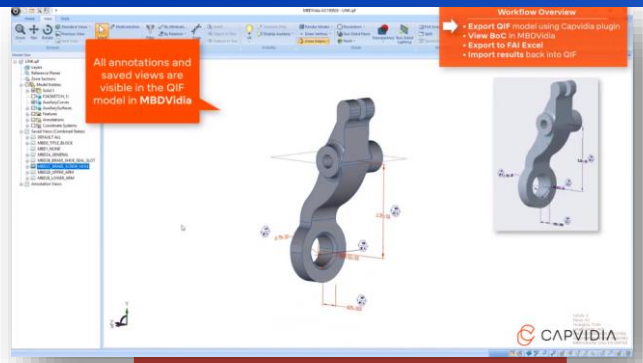
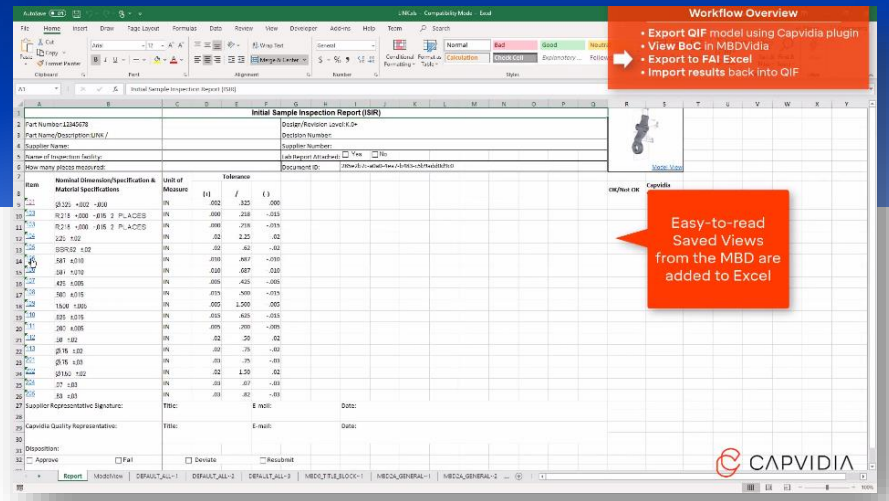
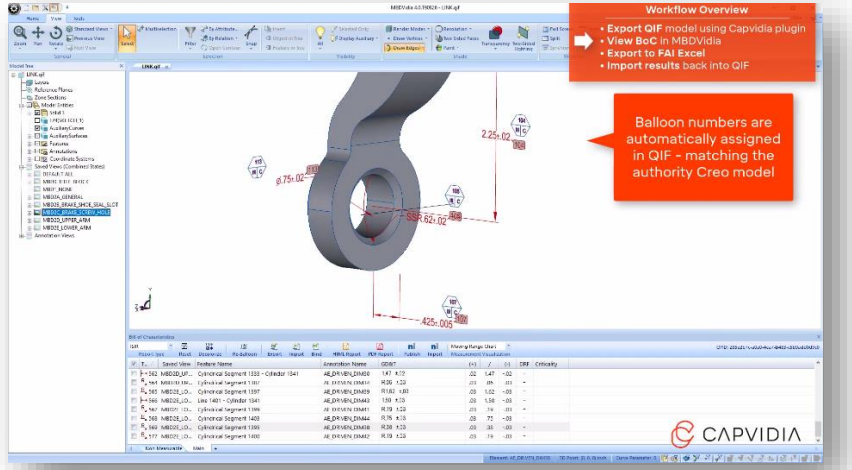




Publish MBD → Bill of Characteristics → Publish AS9102 FAI Report → Harvest Digital As-Built Data



Getting Started with MBD: FAI

Publish MBD → Bill of Characteristics → Publish AS9102 FAI Report → Harvest Digital As-Built Data

Click here to see the digital FAI video

Unified 3D/2D Workflow with QIF

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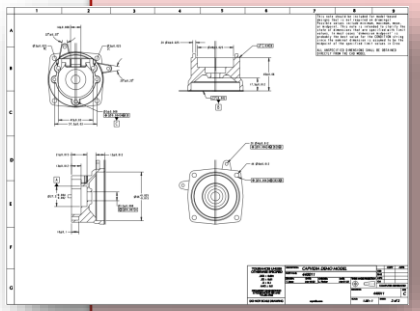
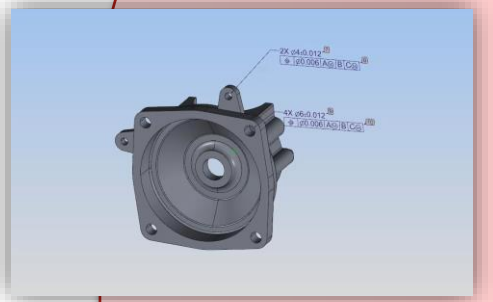
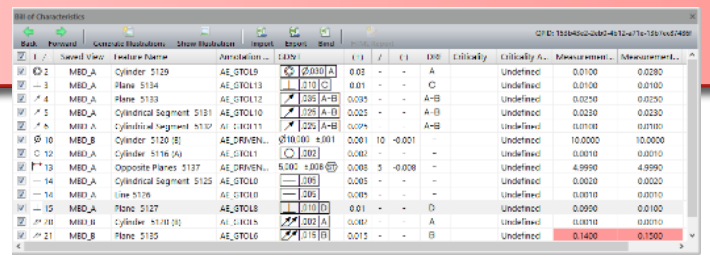


2D PDF Drawings

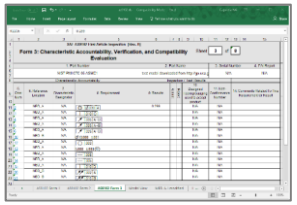


3D MBD

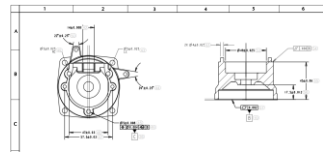
Machine-readable, QIF-based BoC



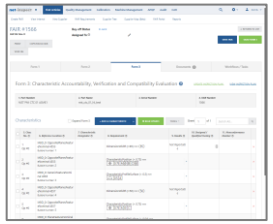
Excel Report



Ballooned Drawing

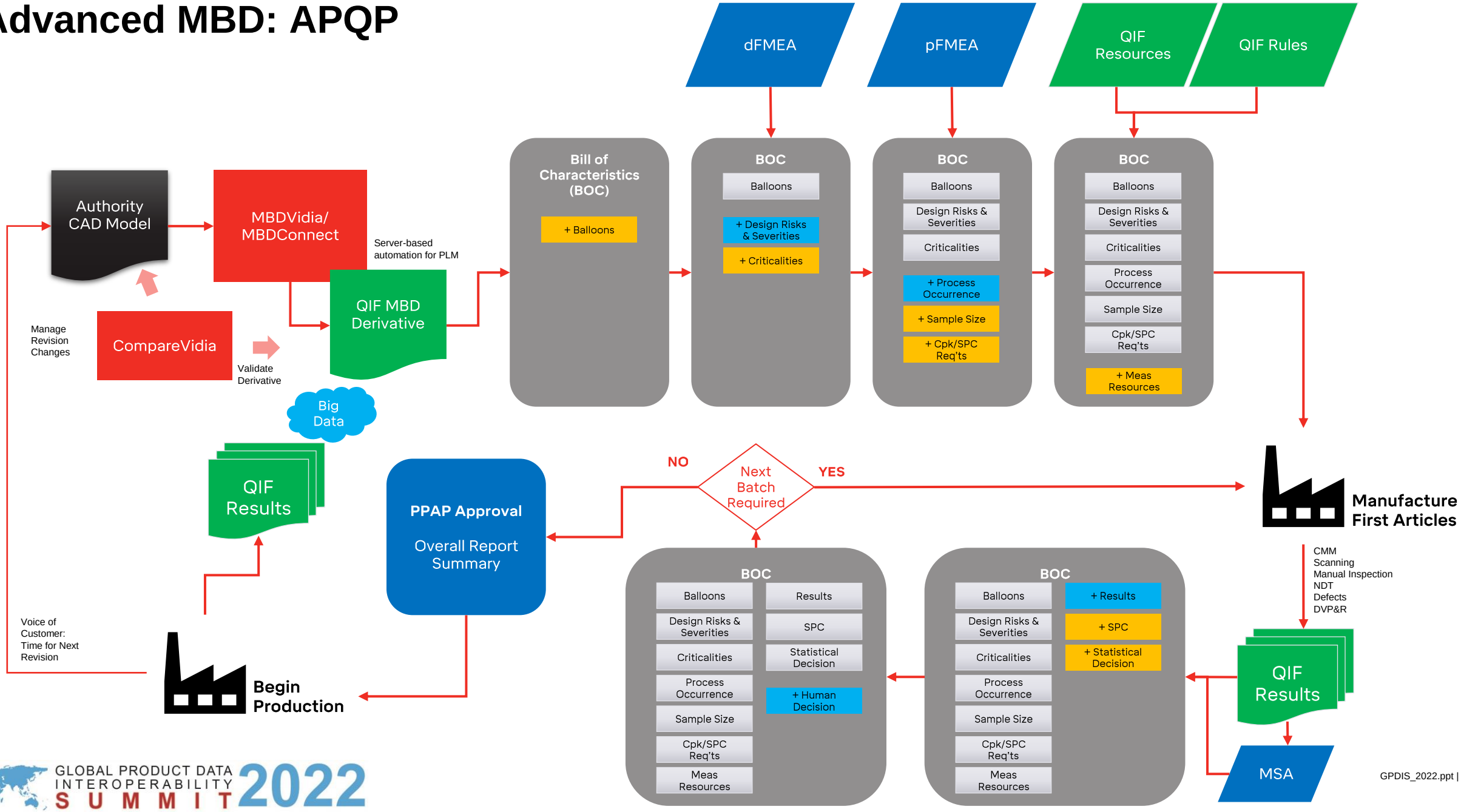


Net-Inspect FAIR



net-inspect

Advanced MBD: APQP



ISO QIF and APQP

QIF and APQP are a great fit.

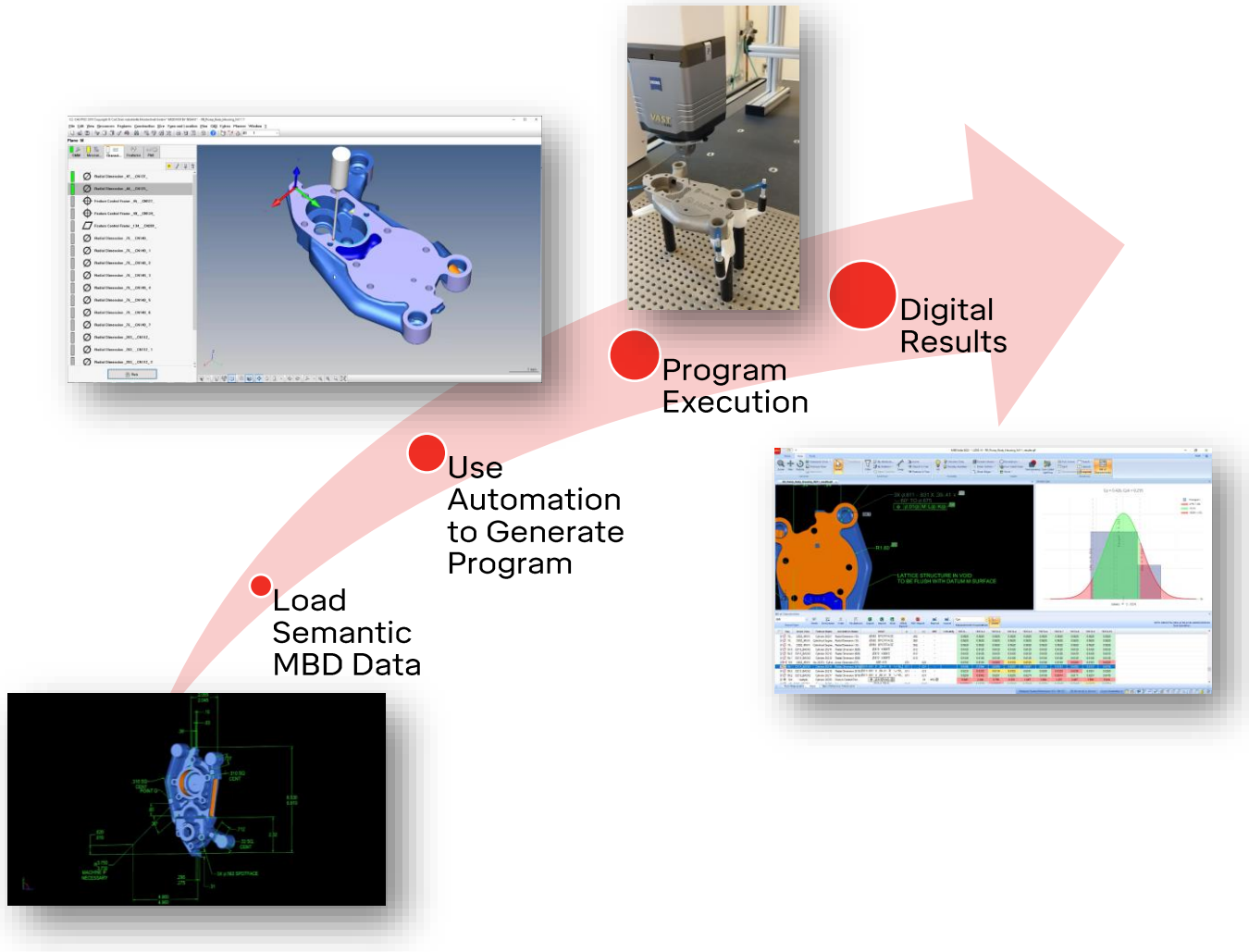
- **FMEA** is managed by QIF Plans.
- **PPAP** is a process that is managed by QIF Plans, QIF Resources, and QIF Results.
- **MSA** is managed by QIF Results.
- **SPC** is managed by QIF Statistics

And all this data is managed in the context of an ISO-standard, using Model-Based Definition with QIF.

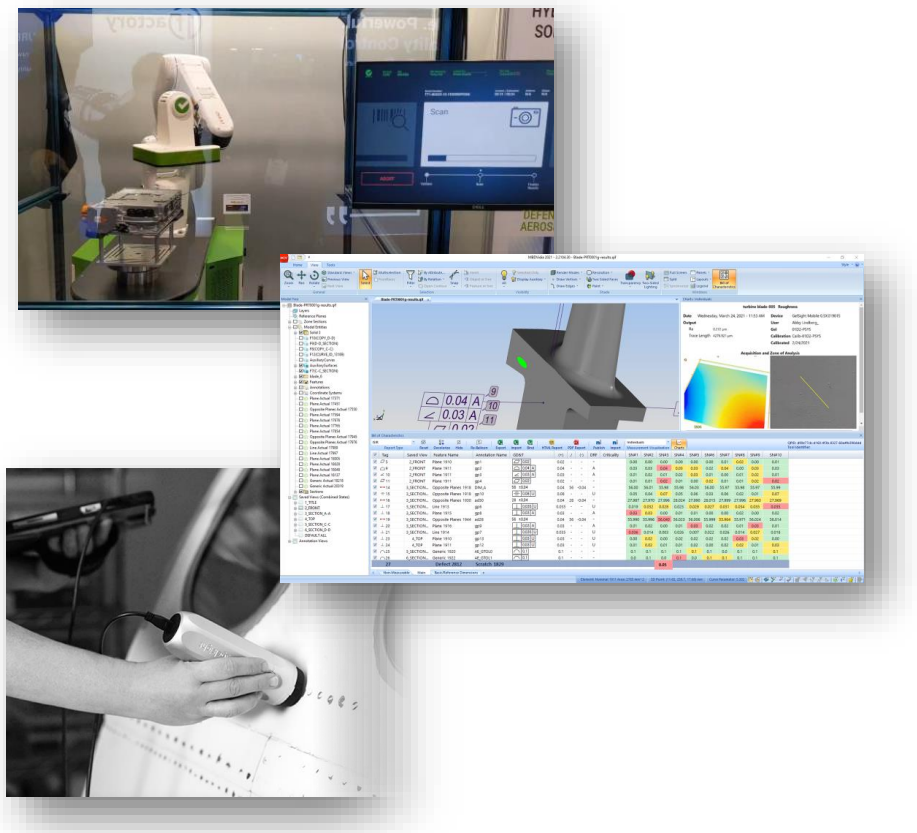
Coordinate Metrology: CMM and Scanning Workflows

- Use MBD to automate coordinate metrology.
- MBD-based CMM and Scanning extends the digital thread to your metrology department.

Webinar: Reducing Measurement Planning Time by 75%, Digital Thread Technique Series



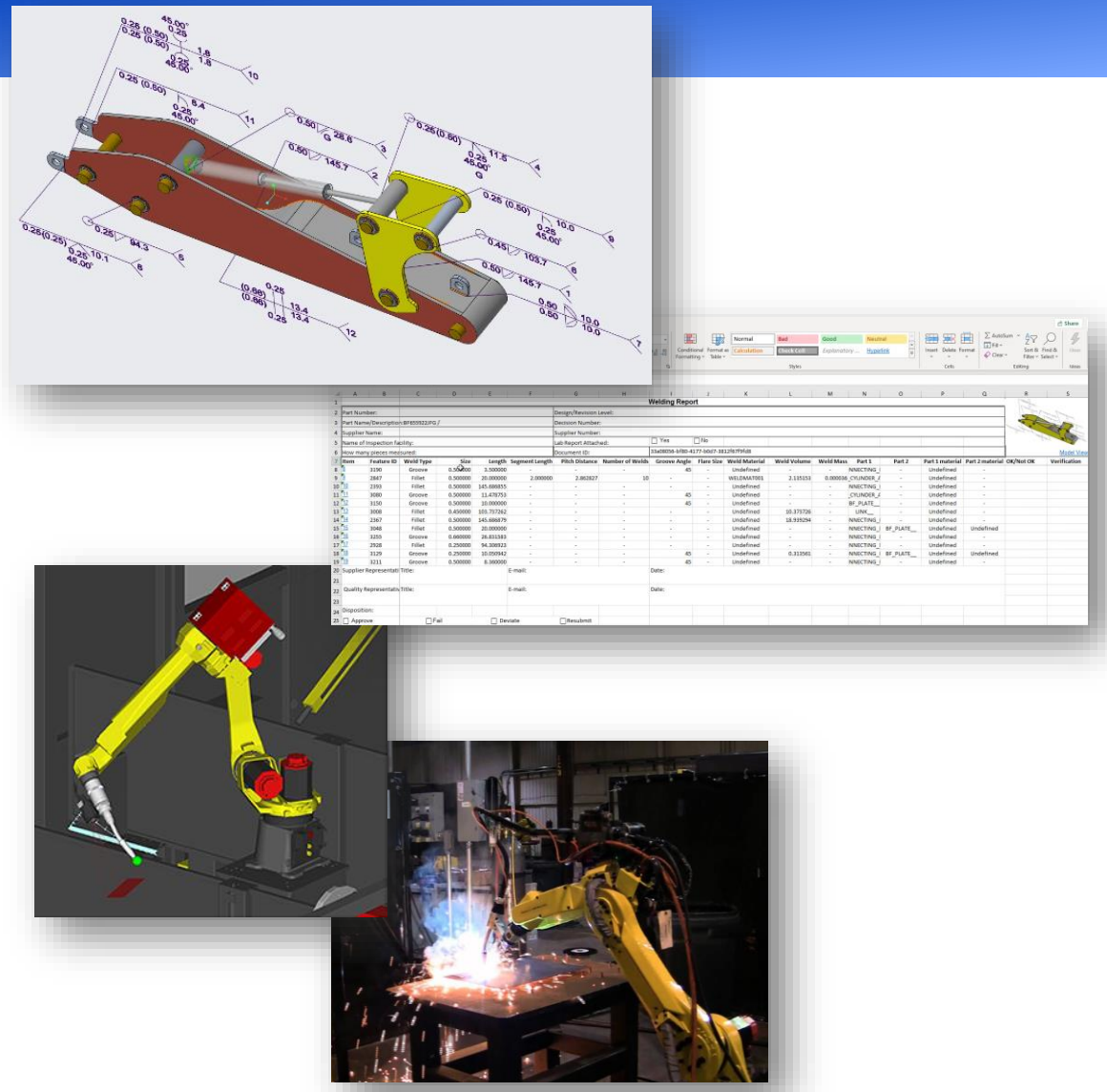
Non-Dimensional Quality



- Non-Dimensional has a big role to play too — and can be powered by MBD.
- Visual Inspection from MBD makes visual inspection better, faster, and lower cost.
- Gather non-dimensional quality data as part of your digital thread.

Welding

- Use Weld MBD for downstream automation.
- Generate weld work reports directly from MBD.
- Automate weld robot programming.
- Cost estimation.
- Weld QA becomes easy with MBD.

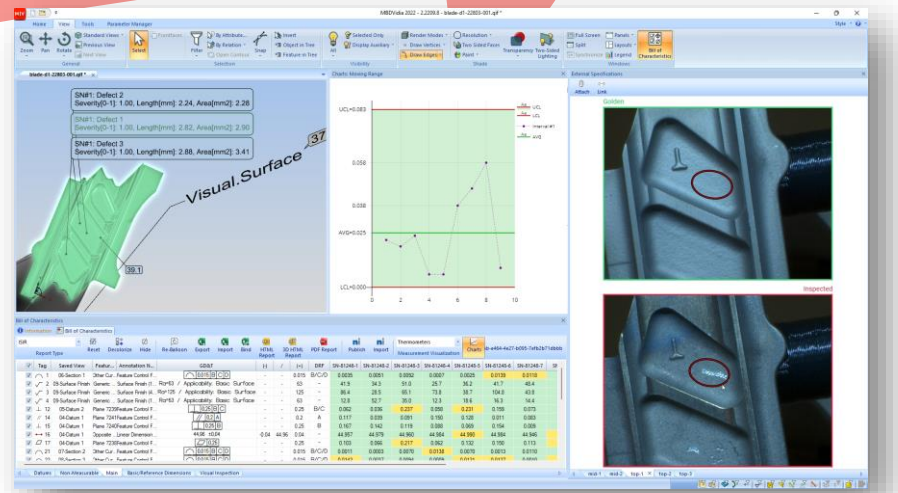


End-to-End MBD Workflow

Measure with PolyWorks

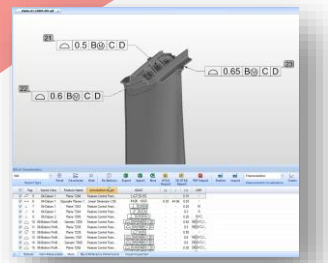
General Inspection

Gather As-Built Data in QIF with **MBDVidia**



Visual Inspection with Kitov

Balloon in MBDVidia



Publish QIF MBD from Native CAD

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Watch IMTS 2022 Workflow Video Here

MBD-Based FAI:
Some Private Industry ROI Anecdotes

Aerospace & Defense

FAIR creation from approx. 15-20 hours manual to 2 hours MBD.

Consumer Goods

60%+ savings on time spent for PPAP. Up to 2,400 parts processed every year.

Automotive

Process time in measurement for production parts from 8 weeks to 6 weeks.

CAPVIDIA

True MBD: Human & Machine
Readable CAD + PMI

Contact Us

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