



DMSC 2020+ Roadmap

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Roadmap



Tasks by Category with Comments

Roadmap Categories

- Marketing
- External Communications (Blogs, Website, Newsletter)
- Member Expansion
- Ecosystem
- Liaise with Other SDOs/Consortiums
- Next QIF Version

Marketing

- Create a DMSC business mission, vision, products & objectives
- Develop case study portfolio from implementers and vendors
 - "To start to get the word out, implementers can contribute blog-posts."
 - "Mark Thomas (DMSC) can pull this together."
 - "Larry Maggiano (Mitutoyo) has a use-case with large aerospace companies with Dassault CATIA using QIF. Public demonstration through ISO TC-184"
- Reach out to all CAD companies
- Can we expand our name / charter to leverage Digital and Manufacturing?
- Create strategy for "Let's Go QIF Manifesto"
 - "Great for marketing and membership expansion"
- CAD & CAM vendors need to implement QPID aka ISO UUIDs
 - "The hard part is the politics. Technically not hard. To get agreement is hard. Not on the roadmap"
 - "What may be technically hard for vendors is the workflow questions from the CAD vendors"
 - "CAD vendors may not know the "Why"'"

External Communications (Blogs, Website, Newsletter)

- QIF is now officially an ISO standard
 - "Press release Communication 8/24/20: ISO QIF v3.0 is published as ISO 23952"
- Blogs on conference and papers for 2020/2021
 - "(1) Tom Kramer (NIST) wrote paper about Uncertainty Captured in QIF.
 - "(2) Jennifer Herron (Action Engineering) & Curtis Brown (DMSC President, Honeywell) QIF engineering changes use-case at GPDIS."
 - "Daniel Campbell (Capvidia) is a co-author of the paper on Uncertainty in QIF."
- NIST has developed a reporting tool for QIF MBD PMI
 - "better wording would be NIST has developed a reporting tool for QIF MBD PMI"
 - "Also for QIF files in general: rules, results, plans"
 - "This is an opportunity to communicate this. Promote the tool. Evaluate the tool, socialize it, identify the value. (Mitutoyo has used it). Provide feedback to NIST"
 - "Add to website. Add testimonials"
- The 2017 Roadmap had four thrusts:
 - 1) Grow the Consortium;
 - 2) Share the Message;
 - 3) Ready the Technology;
 - 4) Continue the Excellence.
 - "Are these still applicable for the 2020+ roadmap? Communicate to membership that we accomplished what we set out to do."
- QIF implementers and users should use QPIDs
 - "Create a buzz around the cute name QPIDs"
- Communicate better "What is QIF?"
 - "Executive summary that states this is a framework"
- The IDs that we use make it relational, but the basic structure is hierarchical



- "Communicate this"
- "Could use some refactoring but is a good data state. Makes implementation a lot easier."
- "For QIF 3.1 this could be a focus."
- **Need a DMSC, DMIS, and QIF Wikipedia pages.**
 - "already on Mark Thomas' list of things to do."
 - "Have links to downloads, papers, website, etc."

Member Expansion

- **Find workers**
 - "- Make requests of membership to donate time
 - Hire SME to complete work
 - Let out official RFPs"
- **Engage (build awareness) the Automotive market**
 - "There is an MBD group in AIAG. There could be an opportunity to build awareness. QIF came out of the automotive industry, maybe they need a reminder. This is a huge market and is the #1 market for many QIF member companies. Can we get help from NIST? Work through the consortiums"
- **Balance the user-base by industry**
 - "Add medical, automotive"

Ecosystem

- **QIF Exemplar models**
 - "Need QIF models. Elysium may have some to donate"
 - "Can update the QIF brackets. NIST CTC test parts"
 - "Make them available on their website"
 - "Need some QIF MBD v3.0 files for customers to download and use. (NIST, DMSC, and other public domain Models)"
- **Need new expert for QIF data architects that the DMSC can rely on**
 - "Create a training program. Become a QIF geek. Draw from the academic. Can NIST help?"
- **Provide Exemplar models in multiple Native CAD formats**
 - "The hard part is to establish what "good" is."
 - "Is there protocol with CAX-IF to stay aligned?"
 - "QIF reference models Have native CAD files and QIF versions that are confirmed by DMSC as correct"
- **Innovation Hub**
 - "AIC (Automotive Intelligence Center)"
 - "This is our MxD in the US. Build more synergy with MxD"
- **Certification**
 - "How do we certify to an automotive company that their data is compliant with QIF"
 - "There is a company called SQS that is working on QIF certification."
 - "Could use the NIST testing code"
 - "This can help us build our value proposition."
 - "For DMIS certification was for software"

Liaise with Other SDOs/Consortiums

- Alignment/Communication with ISO
- Alignment/Communication with MTConnect
- Alignment/Communication with ASME MBE SC
- Alignment/Communication with MxD
- Collaborative work between QIF MBD and STEP AP242 via QPID/UIID
 - "The CAX-IF has started work to correlate"
- Alignment/Communication with AIAG
 - "Attend/present at the AIAG Quality Summit in 2021"
 - "Daniel Campbell (Capvidia) and Annalise Suzuki (Elysium) are on the MBE WG within AIAG"
- Alignment/Communication with SNIA




- □ "https://www.snia.org/ Some Observations:
 - They are not associated with any standards body (ASME or ISO). In the storage business, large manufacturing tends to force the standards through the implementation of it. However, no company can do alone as you need cooperation from disk drive and controller companies to make a system work.
 - The members are the workgroups and have a strong influence on what becomes standards (power to influences)
 - SNIA is at least an example of one direction we could develop into if the board believes this is consistent with our mission.
 - I believe we could engage with them to build best practices and benchmark our own mission even though we are in different industries we both are trade associations (501 (c) 6)"

Next QIF Version

- **Product Characteristic WG is really important for QIF and MBE.**
 - □ "Work is underway"
 - □ "Add-in Model-Based Product Characteristic definitions and symbols practice"
- **Non-contact optical metrology**
 - □ "Working group with Japan Electronics and Information Technology Industries Association (JEITA) is underway"
- **Begin coordination effort to support content other than quality information such as manufacturing**
 - □ "Harmonize with MTConnect"
- **Improvement to Manufacturing Data**
 - □ "High impact, Hard to implement Measurement is the foundation of process control, tighter integration would aid in process improvement through association of measurands and manufacturing process parameters"
 - □ "There is a NIST working group (Tim Sprock) taking this on. DMSC should liaise."
 - □ "Need the QPid and Timing detail."
 - □ "Suggest we create a working group - include MTConnect and collect participants"
- **Data modeling & mapping to different representations of QIF (ontology mapping)**
 - □ "STEP and QIF mapping is started"
- **Create an SysML model of the QIF schema to aid in the interoperability with other SDO's**
 - □ "What level of SysML?"
 - □ "Tom Kramer (NIST) is a useful resource for EXPRESS (G) model"
- **Correlation of result data between metrology systems (e.g. gauges, on-machine & CMM)**
 - □ "Hard part to do is there is no good way from a hand-gauge to characterize the physical data. It would take a study of all the methodologies for hand-gauging to match a computer analyzed method."
- **Data Transport for point cloud data**
 - □ "QIF doesn't handle data well if you want to move the data around. Maybe we need a binary system?? Ryan Gelotte (Action Engineering) is working on this as a Creo Use-case"
 - □ "Some software companies are doing this. But the desire is to put in the standard "how to move the color map data around"
 - □ "Example problem: 3D results color map"
- **Cyber-security assurance**
 - □ "Traceability, verification of data integrity, right people are accessing the data at the right time"
 - □ "Requires research. Can we leverage existing standards."
 - □ "Cory Leland (Deere) has experience - has tried locking QIF files to a particular machine"
 - □ "Explore the NIST electronics manufacturing certificate toolkit to provide an element of authentication for the QIF once it is created."
- **Support of Gear Metrology, maybe through Gear Data Exchange XML format**
 - □ "Would require a new version of QIF"
 - □ "Existing gear data exchange standard: VDI / VDE 2610"
- **Method to digitize internal standards instead of references to pdf documents**
 - □ "Define Methods to "encode" localized standards into QIF that are now just specified on prints as references"
 - □ "High impact. Hard to implement. Enables implied standards to be expressed in a standard way supporting the digital twin."
- **Inclusion of fastening methods (welding, gluing, torque, ...)**



-  "Medium-high impact, Hard to implement. Products are made from assemblies which are fastened together in some way or another. Fastening requires process control so is measured in manufacturing and is vital part of the digital twin. It is also expressed in analytical tools such as FEA and weld simulation. Since there is no associativity with the model this information is manually re-added downstream of design... (XMCF, FAT-AK25 Fugetechnick Version 3.0, is the standard that is used to describe connections and joints. It is in XML, but is copyrighted so I can't share). The fastening standard is used by automotive so could be a way to provide additional value to QIF that may lead to more support from that industry. The Gear Data Exchange (GDE) standard that I shared last week is supported by gear measurement devices and gear manufacturing machines. I have pretty strong connections with a few of these companies and may be able to persuade them in joining or participating in development of an integration."



Ordered

Do Now

- QIF is now officially an ISO standard (Press Release sent 8/24/20)
- NIST has developed a reporting tool for QIF MBD PMI
- Need new expert for QIF data architects that the DMSC can rely on
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- Need a DMSC, DMIS, and QIF Wikipedia pages.
- Product Characteristic WG is really important for QIF and MBE.
- QIF implementers and users should use QPIDs
- The IDs that we use make it relational, but the basic structure is hierarchical
- Non-contact optical metrology
- Alignment/Communication with MTConnect
- Find workers
- Communicate better "What is QIF?"
- Blogs on conference and papers for 2020/2021
- Create a DMSC business mission, vision, products & objectives
- Alignment/Communication with ISO

Do Next

- Develop case study portfolio from implementers and vendors
- Create strategy for "Let's Go QIF Manifesto"
- Provide Exemplar models in multiple Native CAD formats
- Begin coordination effort to support content other than quality information such as manufacturing
- Engage (build awareness) the Automotive market
- Can we expand our name / charter to leverage Digital and Manufacturing?
- Innovation Hub
- Improvement to Manufacturing Data
- Alignment/Communication with MxD
- Alignment/Communication with ASME MBE SC
- Balance the user-base by industry
- Reach out to all CAD companies

Do Later

- CAD & CAM vendors need to implement QPID aka ISO UUIDs
- Collaborative work between QIF MBD and STEP AP242 via QPID/UUID
- Correlation of result data between metrology systems (e.g. gauges, on-machine & CMM)
- Data Transport for point cloud data
- Data modeling & mapping to different representations of QIF (ontology mapping)
- Cyber-security assurance
- Alignment/Communication with SNIA
- Create an SysML model of the QIF schema to aid in the interoperability with other SDO's
- Alignment/Communication with AIAG

Do Much Later



- Support of Gear Metrology, maybe through Gear Data Exchange XML format
- Method to digitize internal standards instead of references to pdf documents
- Certification
- Inclusion of fastening methods (welding, gluing, torque, ...)

