So You Want to Be Trustworthy: A Repository's Guide to Taking Reasonable Steps Towards Achieving ISO 16363

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Trustworthy Repository

To be trustworthy is to be reliable, dependable, honest, principled, ethical, incorruptible, and more. A trustworthy person demonstrates these qualities over time and under all circumstances.

A trustworthy repository demonstrates these qualities through the team that manages the repository and the responsible organization.

The requirements in ISO 16363 can be tough to reach and tough to maintain. Challenges include: limited funds, limited resources and/or skills, and an unclear path to successfully achieve the requirements.

Each requirement is defined separately in the standard, but successful implementation recognizes that there are dependencies with other requirements.

Understanding these dependencies leads to an efficient path towards success.

At AGU we recognize that reaching the goal of the Trustworthy Digital Repository standard, or any set of data management objectives defined by an organization, has a better chance at success if the organization clearly knows their current capability, the improvements that are needed, and the best way to make (and maintain) those changes.

AGU has partnered with the CMMI® Institute to adapt their Data Management Maturity (DMM)SM model within the Earth and space sciences. Using the DMM, AGU developed a Data Management Assessment Program aimed at helping data repositories, large and small, domain-specific to general, assess and improve data management practices to meet their goals – including becoming a Trustworthy Digital Repository (TDR).

The requirements to achieve the TDR ISO standard, are aligned to the data management best practices defined in the Data Management Maturity (DMM)SM model. Using the DMM as a process improvement tool in conjunction with the Data Management Assessment method, a team seeking the objective of the TDR ISO standard receives a clear road map to achieving their goal as an outcome of the assessment.

No matter what data management goals a team is striving for, using a Data Management Assessment to determine current capability and the changes needed to address any weakness or missing capabilities gives the team the clear guidance to move towards their goals quickly and efficiently.

Better Data Management results in Better Science.

Establishing trust with your research community includes demonstrating:

- proper curation for each data submission including validation of metadata and assignment of persistent identifiers.
- good stewardship is in place documenting provenance and managing changes to the data.
- good customer service is available to researchers by setting and communicating expectations and methods.
- a reliable technical infrastructure has been designed to provide long-term access to data and provides the necessary features for proper data citation.

All of these capabilities implemented and performed in a transparent, consistent, and sustainable manner.

ISO 16363 - Trustworthy Digital Repository compared to the Data Management Maturity (DMM) Process Framework

This matrix shows the mapping between the elements of the ISO 16363 standard (left) and a full set of data management processes (top) as included in the Data Management Maturity (DMM) framework. The green boxes show the coverage of the ISO 16363 requirements. The color green indicates that there is full or nearly full coverage of the DMM process area.

The ISO standard as compared to the DMM has full or nearly full coverage for all but two process areas. Not all boxes need to be filled in for coverage to be full. For organizations that choose the ISO 16363 standard as a goal, they should be aware that the standard does not recognize partial completion. An organization either has or has not fully implemented each requirement. The DMM recognizes partial implementation as valuable and depending on the organization's resources and goals, partial implementation might be good enough.

DSA-WDS Core Trustworthy Data Repository Requirements compared to the Data Management Maturity (DMM) Process Framework

This matrix shows the mapping between the DSA-WDS Core Trustworthy Data Repository Requirements (left) and a full set of data management processes (top) as included in the Data Management Maturity (DMM) framework. The yellow boxes show the coverage of the DSA-WDS requirements. The color yellow indicates that there is partial coverage of the DMM process area.

Nearly all process areas have some level of coverage. For organizations that choose the DSA-WDS certification as a goal, they should be aware that as they adjust their operations to be compliant, the certification itself doesn't have the processes necessary for sustaining those new processes and maintaining consistency over time. This can be observed by the few yellow boxes in the 15 columns on the right. The burden is on the organization to maintain those services and capabilities.

Quantifying Improvement
Building Trust and Capability

AGU's Data Management Assessment Program can help you move up the curve.

Ability to Improve and Manage Change

AGU helps with reasonable steps toward improvement

ISO 16363 - Trustworthy Digital Repository

ISO audit performed by a credentialed auditor.

As Your Organization Moves Up the Curve, the Benefits are:

- Ongoing Improvement
- Refined Practices
- Better Risk Management
- Better Alignment with Changing Needs of Community
- Better Ability to Handle Operational Stress

Continuous Trust Building

DSA-WDS Certification

A light weight certification, using self-assessment with a validation step as the primary means to determine compliance with the requirements.

Ability to be Consistent, Sustainable, and Repeatable

By using the DMM as a tool to meet goals like DSA-WDS, ISO 16363, or any other data management goal, you benefit from a rich set of processes and practices that help determine level of current implementation, dependent activities, and is inclusive of processes that are designed to maintain consistency, sustainability, and repeatability. The DMM as a tool provides an efficient way to determine what gaps exist towards meeting your objective. Used in conjunction with a Data Management Assessment, your organization receives a customized road map with the steps you need to be successful. You also have access to your facilitator for any follow-on questions, templates, examples, or discussion on best approach.

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