

Improving a Trustworthy Data Repository with ISO 16363

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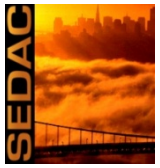
NASA Socioeconomic Data and Applications Center (SEDAC)
Center for International Earth Science Information Network (CIESIN)
The Earth Institute, Columbia University

Research Data Alliance (RDA) 10th Plenary

Session: IG RDA/WDS Certification of Digital Repositories
Thursday, 21 September 2017; 9:00 a.m. - 10:30 a.m.



ISO 16363



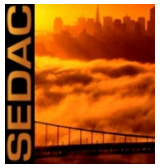
- ISO 16363:2012 Space Data and Information Transfer Systems – Audit and Certification of Trustworthy Digital Repositories
 - Published by the International Organization for Standardization (ISO)
- Developed by the Consultative Committee for Space Data Systems as CCSDS 652.0-M-1
 - Under review by the CCSDS Data Archive Interoperability (DAI) WG
 - Being reviewed in conjunction with review of the Open Archival Information System (OAIS) Reference Model (ISO 14721:2012)
 - Proposed revisions will be reviewed simultaneously by CCSDS and ISO

Freely available from [ccsds.org](https://public.ccsds.org):

<https://public.ccsds.org/Pubs/652x0m1.pdf>



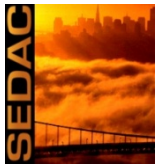
Impetus of ISO 16363



- Need for criteria to assess OAIS compliance
 - OAIS is a reference model and does not address implementation issues
 - Many repositories self-reported as OAIS compliant without evidence
 - OAIS Reference Model published as ISO 14721:2003 & ISO 14721:2012
- Need for an international standard for digital repositories
 - Digital resources, including research data, recognized as being at risk
 - Various digital repositories established with limited guidance
 - Guidance needed for [depositors, staff, funders] to select a digital repository



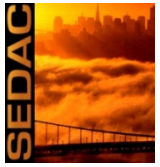
ISO 16363 Development



- Initiated in 2007 within CCSDS
 - Repository Audit and Certification (RAC) Working Group
- Reference documents:
 - Open Archival Information System (OAIS) Reference Model (ISO 14721:2003)
 - Trustworthy Repositories Audit & Certification: Criteria and Checklist (TRAC)
 - Catalogue of Criteria for Trusted Digital Repositories (Nestor Working Group)
 - Digital Repository Audit Method Based on Risk Assessment (DRAMBORA)
 - OECD Guidelines for the Security of Information Systems and Networks
- Reviews
 - CCSDS and ISO communities' comments received and revisions applied
 - Test Audits Conducted at 6 repositories (3 in Europe, 3 in US)
- ISO 16363:2012 Published



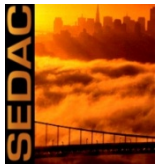
Organization of ISO 16363



- **Organizational Infrastructure**
 - Governance and Organizational Viability
 - Organizational Structure and Staffing
 - Procedural Accountability and Preservation Policy Framework
 - Financial Sustainability
 - Contracts, Licenses, and Liabilities
- **Digital Object Management**
 - Ingest: Acquisition of Content
 - Ingest: Creation of the AIP
 - Preservation Planning
 - AIP Preservation
 - Information Management
 - Access Management
- **Infrastructure and Security Risk Management**
 - Technical Infrastructure Risk Management
 - Security Risk Management



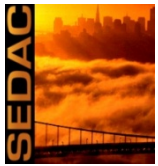
Adoption and Use of ISO 16363:2012



- Endorsement by the Society of American Archivists Council
 - August 6, 2012
- Used for self-assessments and preparation
 - Data centers, institutional repositories, government agencies
- Used by professional development services
 - Training courses, workshops, presentations, consulting, and guidance
 - Audience: data creators, curators, repository managers, funders, consultants
- Used for Audits by PTAB
 - Conducted test audits of 6 repositories using draft ISO 16363 (2011)
 - Accredited for ISO 16363:2012 audit and certification (2017)
 - Offers training, conducts audits, reviews applications, and answers inquiries



SEDAC Assessment: Path to WDS Certification



ICSU World Data System Regular Member Application 2014-2015

NASA ESDIS Data Archive Risk Analysis 2011-2012

ISO 16363 (draft) External Test Audit by PTAB (2011)

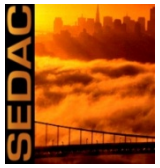
ISO 16363 (draft) Self-Assessment (2010-2011)

Trusted Repository Audit Checklist (TRAC) Self-Assessment (2008-2009)

NASA Security Audits (regular and continuing)



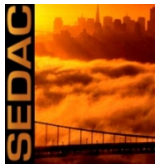
Selected Improvements at SEDAC based on ISO 16363, WDS Certification, and other Resources



- Dissemination Information Packages derived from Archival Information Packages
- Improvement of data review process and procedures
- Assignment of DOIs for disseminated data products and documentation
- Conducting tests for data transfer
- Standardization of rights declaration statements
- Portfolio approach to sustainability
- CC By license applied to data sets developed internally
- Data Documentation Template
- Open Data Policy



SEDAC Documentation Template



Suggested citation for documentation
Contact to provide feedback on documentation

Table of Contents

Documentation for
<Dataset Title>
<Documentation Publication Date>
<Authors>
Abstract
Data set citation

- I. Introduction
- II. Data and Methodology
- III. Data Set Description(s)
- IV. How to Use the Data
- V. Potential Use Cases
- VI. Limitations
- VII. Acknowledgments
- VIII. Disclaimer
- IX. Use Constraints
- X. Recommended Citation(s)
- XI. Source Code
- XII. References

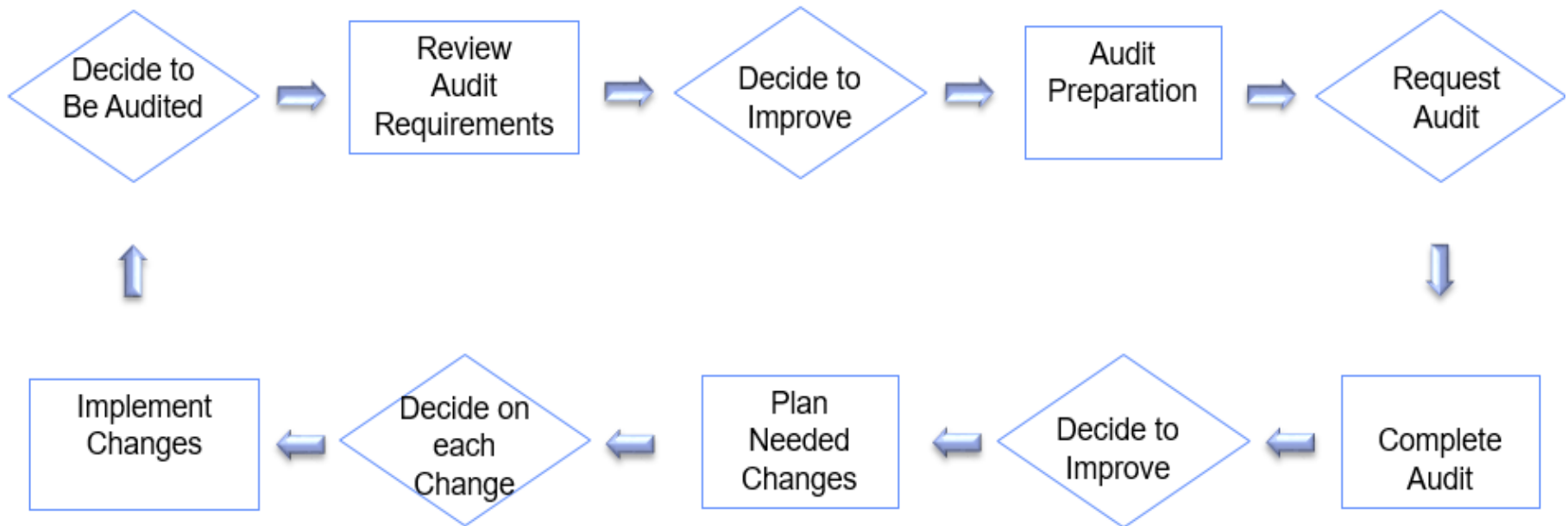
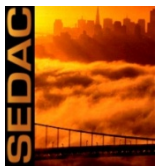
XIII. Documentation Copyright and License

Appendix 1. Contributing Authors & Documentation Revision History

Appendix 2. Data Revision History

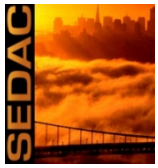


SEDAC Continuous Improvement





ISO 16363 – CoreTrustSeal Relationship



- Complementary messages to increase awareness of instruments
 - Informing diverse communities on requirements for trustworthy repositories
- Mutually-informed development of instruments
 - Both instruments based on OAIS framework
- Self-Assessments for Repository Preparation
 - ISO 16363 Self-Assessment to prepare for CoreTrustSeal Certification
 - CoreTrustSeal Certification to prepare for ISO 16363 Audit
- Shared pathway for improving repository practices
 - CoreTrustSeal Certification -> ISO ISO16363 Certification
- Improvement of certification processes
 - Experiences conducting audits can inform auditing practices
- Improvement of Requirements
 - Experiences with audit instruments can inform improvement of instruments

