

-----Original Message-----

From: Stephen Marks [mailto:steve.marks@utoronto.ca]

Sent: Tuesday, December 11, 2012 12:33 PM

To: Teresa Brinati

Subject: Informal proposal for a book on ISO16363 (TDR Demystified)

Hello Ms. Brinati--

My name is Steve Marks, and I am a Digital Preservation Librarian at the Ontario Council of University Libraries. I manage the preservation aspects of the Scholars Portal platform, where the consortial holdings of all 21 university libraries in Ontario are housed.

As part of my job, I coordinated Scholars Portal's submission for a formal audit under the ISO 16363 (TDR) standard by the Center for Research Libraries. While the process of preparing for and being audited was illuminating and made us far stronger as a preservation platform, it is certainly the case that coming to terms with the standard well enough to complete the audit was a lengthy and sometimes difficult process. In talking with other preservation professionals in the library and archives community, I have heard similar opinions expressed many times.

I was left wondering if there might be a place in the literature for a more gentle introduction to the standard. This could be particularly useful for organizations just waking up to issues or responsibilities around digital preservation, or for those thinking about an audit themselves, be it formal or informal.

I've attached to this email an informal proposal for a book I would like to write to fill this gap. I am wondering if the SAA publishing program would have any interest in seeing a formal prospectus for this book.

I've tried to include enough information to give you a feel for what I intend for the book, but if there is any additional information I can provide to help make it clear what the manuscript intends to accomplish, please do not hesitate to let me know.

Likewise, if I should be sending this to the Publications Board (or elsewhere) directly, then I apologize and please just let me know.

Hope you are headed into a nice holiday season.

Best regards,

Steve Marks

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Prospective Title: “TDR Demystified”

Book Proposal by Stephen Marks

Theme, purpose, and scope: Digital preservation is an increasingly important part of memory institutions’ ability to curate content for their users. With the recent certification of the revised TRAC checklist as ISO 16363, more organizations are seeking to evaluate their own operations according to this metric. One has only to look at the agendas for recent conferences to see evidence of this. Despite this level of interest, there is no easy introduction to the requirements of the standard. Organizations embarking on a journey of TDR discovery most often need to wade into the primary materials in order to come to grips with the standard and the concepts informing it. To those for whom these concepts are new, this can be a daunting prospect. This book seeks to ease this learning curve. By presenting the TDR standard in a friendly, jargon-free manner, it will help provide organizations just starting to embrace their digital preservation responsibilities with a more streamlined path to success. Organized to mirror the standard itself, this volume can serve not only as a stand-alone text, but also as a reference and companion to the ISO 16363 guidelines.

How it will be written: I will be using the experience I acquired during my organization's own TDR audit as the basis for this book. As preparation for this audit, I wrote individual responses to each point of the audit criteria, and authored a number of policy documents to document organizational compliance. This was done in collaboration with the Center for Research Libraries -- the foremost TDR auditor, and an important collaborator on the ISO 16363 standard. This documentation was judged as thorough and effective by CRL and has since been used as a model for other organizations to copy. I therefore believe it would serve as a useful basis for this manuscript.

The audience: This book is intended for anyone interested in digital preservation, especially if they are part of an organization seeking to undergo a TDR audit, either internally or through formal channels. It would also be useful for an individual who wants to build up a background in digital preservation, as the ISO 16363 standard provides a useful framework for understanding the full scope and complexity of digital preservation. In this, I anticipate the book would also be useful to library and archives students with an interest in the topic.

Competitive Analysis

Substantive published material in this area is largely absent. With regard to the standard itself, there is little interpretive material beyond the published standard. Some of the formative documents for digital preservation (including the OAIS model and the 2003 OCLC report “Trustworthy Digital Repositories: Attributes and Responsibilities”) address first principles of the approach that would come to be codified as ISO 16363, but some of these documents are dated at this point, and do not tie in to the specific requirements of the standard easily. They are also often quite technical, and do not lend themselves to an introductory understanding of the subject.

As far as material that provides point-by-point analysis of the standard, book-length work is nonexistent. There are a number of journal articles that provide overviews of the standard, but these lack the in-depth treatment possible in a manuscript. There are also a number of blogs who have undertaken a point-by-point response to the checklist, such as Bryan Beecher's *Tech at ICPSR* blog. These resources, besides being online-only, tend to be either a) specific to a single organization's compliance with the standard; or b) rely on a less-current version of the standard.

This book will address both of these gaps, providing a book-length treatment of the subject that specifically addresses each point of the standard, doing so in a way that is general enough to be understood by a beginner, but goes into enough depth on each point to be useful through the entire course of an audit. It will also provide this treatment in a manner that speaks to the material generally, rather than addressing issues specific to a single type of repository.

For a complete list of resources identified in the course of this analysis, please see the attached annotated bibliography.

Tentative Outline and Length Estimates

Introduction (10 pages) – This section will provide some basic background context for the material to follow. I will discuss the nature of digital preservation and its challenges, significant preservation initiatives, and the history of the TRAC checklist and its evolution into the ISO 16363 standard.

Planning for a TDR Audit (10 pages) – Before starting to address individual audit points, this section will talk about how to get organized and how to record your responses to the TDR criteria, whether for internal audit or in preparing for external audit. It will discuss the importance of policy and process documentation, and how these documents can be used to answer TDR guidelines and demonstrate compliance.

ISO 16363 Section 3: Organizational Infrastructure (50 pages) – The first section on TDR metrics focuses on Organizational Readiness, the first broad category in the ISO 16363 standard. In this section, the reader will learn how to gauge their organization's demonstrated commitment to digital preservation, as well as its ability to carry out these commitments in the long term.

This and the subsequent two chapters will follow the same format. Each TDR criterion will have its own small section (1 to 2 pages each). These sections will follow a standard format and will include a plain-language explanation of the requirement, a discussion of how it relates to other requirements or to the standard at large, and suggestions for how to demonstrate compliance. Where appropriate, we will also discuss common pitfalls in addressing the criteria in question.

ISO 16363 Section 4: Digital Object Management (100 pages) – This is the longest chapter, corresponding to the most extensive section of the standard. As opposed to Section 3 which discusses the repository's administrative context, Section 4 is a much more technical discussion of how the repository should manage digital objects. It addresses the entire preservation lifecycle: from ingest to preservation to dissemination.

ISO 16363 Section 5: Infrastructure & Security Risk Management (50 pages) – This final chapter again discusses the context in which preservation is taking place. This time, however, it talks about how the repository identifies and mitigates risks, largely around IT infrastructure. Answering the requirements in this section relies on documents that are often outside of the expertise (and responsibility!) of an archivist or librarian: things like formal risk analyses and disaster recovery plans. The creation of these documents is often the subject of texts of its own, and therefore beyond the scope of this book. However, we will discuss the audit requirements, and suggest ways for the librarian to locate or influence the creation of these documents, as well as provide a list of resources relating to their creation.

Draft Preface

It is no secret that libraries, archives, and other memory institutions are increasingly concerned with digital material. Whether it's content we are getting from depositors, copies of born-digital documents like websites and blogs, or even digital derivatives of physical materials in our collection, we are increasingly called to collect, provide access to, and preserve this material – in much the same way as we have done for years with physical collections. Yet, the skills necessary to provide our time-honored services to digital content have been slower to develop than the collections themselves.

In response to the rise in digital content, conversations have arisen around best practices for how to preserve digital content. Though it is still an early science, we are finally starting to see some standards emerge around how best to handle digital content in the long term. One such standard is ISO 16363 – Audit and Certification of Trustworthy Digital Repositories, an internationally recognized set of criteria for repositories purporting to provide robust preservation of digital content. This standard represents one of the most direct articulations yet of what constitutes a rigorous digital preservation program, and its codification as an ISO standard lends it validity outside of the library and archives community. Despite these positive traits, or perhaps because of them, the standard itself can present a significant learning curve for someone looking through it for the first time.

This was the position I found myself in when I set out to prepare my organization for our TDR audit. While all the pieces of the standard seemed to logically fit together, it was often far from clear how to implement those standards in the real world, or how to tie our existing practices and policies to the requirements. I was lucky enough to have an employer who allowed me to take enough time to sit down and really understand the standard and how it related to what we were doing. I was also lucky enough to have access to some amazing people, some of whom were directly involved in the creation of the specification. Both the time and the access helped me immeasurably in developing an understanding of ISO 16363. Unfortunately, I assume that other people setting out to do a TDR audit will often not have access to one or both of these luxuries. It is for these people that I thought a book like this might be useful – something to ease this learning curve, and make it easier to relate the concepts in the ISO 16363 standard to the real-world concerns of their institutions. Through this, I hope that it can not only help organizations meet the preservation requirements of their designated communities, but also to build a community of understanding around the standard so that we achieve the critical mass of people needed to push the conversation around the state of the art of digital preservation forward.

How this book is organized

This book is organized into the following chapters:

Introduction – This is a brief discussion of digital preservation history and terminology, as they relate to the TDR standard. Through a brief recap of the schools of thought and the documents that evolved to be codified as ISO 16363, we will build a starting point of common understanding for the discussions to

follow. This is particularly important for ISO 16363, as many terms and concepts come directly from these formative documents.

Planning for a TDR audit – One of the hardest things about completing any large project is getting started, and this is doubly the case when the project in question is as multifaceted and requiring of as much documentation as a TDR audit. This section will provide some suggestions, drawn from my own experience, on how to proceed with your own audit preparation, and some techniques you might use to organize your documentation to make the audit prep (and the audit itself) as efficient and painless as possible.

The next three sections represent the meat of this book. They deal with the three main sections of the ISO 16363 standard, which contain the actual requirements for the audit. Any organization doing a proper audit along the standard needs to have a ready answer for each and every point in these sections, and the purpose of these three chapters is to help you understand each point enough to write those answers. For every audit point (109 in total), we will provide a plain-language discussion that supplements the (sometimes quite terse) discussions in the standard itself. In recognition of the fact that consistency of documentation is important, we will also provide a list of related audit points, so that the reader can ensure that their own terminology and answers are consistent across the entirety of their audit response. Finally, we will suggest some real-world considerations for how an organization might be able to demonstrate compliance, or what compliant policy and procedures might look like – in many cases, it is entirely possible that you may already be compliant and just not realize it!

These three sections are:

ISO 16363 Section 3: Organizational Infrastructure – This section largely centers around the administrative characteristics of the institution being audited. It looks at practices around things like staffing, budget, and succession planning to ensure that risk to the organization serving as repository is being managed correctly.

ISO 16363 Section 4: Digital Object Management – This section discusses how the institution manages risk associated with the objects in the repository themselves. This is the longest section, which makes sense as much of what it discusses is the actual practice of digital preservation. This includes things like the assignment of identifiers and what/how preservation metadata is gathered.

ISO 16363 Section 5: Infrastructure & Security Risk Management – The final section of the standard deals specifically with risk management around the hardware and software infrastructure used in the institution's operations. Since this is a standard for *digital* preservation, there will necessarily be computer systems used in any sort of preservation activities. This section ensures that risks associated with the operations of these systems are being carried out appropriately, and encompasses things like security and disaster recovery.

Sample Pages from Chapter 3

Chapter 3: ISO 16363 Section 3: Organizational Infrastructure

The first “checklist” section of the standard is all about laying the organizational groundwork for preservation. In terms of our three broad areas of risk management, this section is concerned with risk to the organization doing the preservation. Obviously, in order to provide a stable and reliable environment for the preservation of digital objects, the organization needs to be stable and reliable itself! Looking back at our bank metaphor from the introduction, we can see that this is true: would you trust a bank that didn't clearly and explicitly tell you who was on its board of directors? What about one that had no clear procedures on how to put in or take out money? Or one that couldn't clearly tell you who was responsible for looking after your checking account, or your retirement funds?

As you can see, trust in a repository's managing organization plays a significant role in justifying trust in the repository itself. Through this chapter, we will look at the ways in which ISO 16363 asks you to demonstrate that your organization is stable, responsive, and responsible—that it is, in a word, trustworthy.

This chapter is divided into five sections. Each one looks at a different facet of your organization in order to determine its suitability to providing long-term digital preservation. They are:

Governance and Organizational Viability—Has your organization made a formal commitment to digital preservation? Has it done appropriate planning around this commitment? Is it clear what the criteria are for material to be included in the repository?

Organizational Structure and Staffing—Does your organization have a good grasp of the skill-sets necessary to do preservation? Is staffing at a level appropriate to the demands of the repository? Are those staff being kept up to date?

Procedural Accountability and Preservation Policy Framework—For whom are you preserving digital material? Is the organization properly accountable for its actions? What procedures do you have in place to ensure that your preservation strategy is translated into implementable procedures?

Financial Sustainability—Are you managing your money properly? Can you back up the commitments you are making to long-term preservation?

Contracts, Licenses, and Liabilities—What rights do you have to the material that is deposited in the repository? Do you have sufficient rights to enact your preservation plan? How do you negotiate the process of depositing something in the repository?

Taken together, these questions are meant to paint a picture of your organization to determine whether or not it is a robust enough foundation for long-term preservation. In actual fact, many of the attributes that are desirable in this section are directly applicable to a traditional library or archives. Watchwords for this section are: stability, planning, and accountability.

A note about points and sub-points:

While most criteria in the standard are numbered x.y.z, there are a number of criteria that are broken into sub-criteria below this level (e.g., x.y.z.1 - x.y.z.3). These exist in two types, which I have classified *sufficient* and *necessary*.

Sufficient sub-items are the most straightforward. Basically, if you can demonstrate compliance with all of them, you have then demonstrated compliance with the parent item. An example of this is 4.2.5, which explicitly states that 4.2.5.1 – 4.2.5.4 must be checked. Note that the inverse is true as well: without demonstrating that you comply with all sub-items, there is no way to comply with the parent item!

Necessary sub-items are less straightforward in that they generally highlight important aspects of the parent item, but do not constitute an acceptable answer on their own. A good example of this is 3.1.2, where the succession planning elements of the strategic planning process are highlighted in subcriteria 3.1.2.1 and 3.1.2.2. These are elements of the strategic planning process that are particularly important to a TDR, but they do not themselves represent a whole strategic plan.

Throughout the documentation, each instance of sub-points will be clearly described as either sufficient or necessary.

One final reminder: there are no optional criteria in the ISO 16363 standard. Every single point must be answered satisfactorily in order to be said to be fully compliant. That's not to say there aren't degrees of compliance – there certainly are, but you must be able to answer every criteria explicitly.

3.1 – Governance and Organizational Viability

3.1.1 – The repository shall have a mission statement that reflects a commitment to the preservation of, long term retention of, management of, and access to digital information.

Discussion: Stop right there. I know you just started reading the criteria, and you want to jump around and start collecting documentation on the amazing systems you have that you use to identify file formats and monitor your collections and what have you, but before you do any of that, I need you to

stop. You absolutely, positively, must have an answer for this criteria. So hold the phone on all of that other stuff, and take a moment to sit down and think about your answer. It really is that important.

Why the dramatics? It's simple: without a formal commitment to preservation, the best, most sophisticated repository system in the world is nothing more than a system for managing digital objects. It may be really good at managing those objects, but without this commitment, there's no way to prove that you're in it for the long haul. It sounds harsh, but it's part of building the trust necessary for a TDR. Your constituents need to know that the preservation mission of your repository is a core tenet of your organization. With this, there's an understanding that crises like shrinking budgets won't lead to a jettisoning of these responsibilities (and with them your community's precious content).

A clear-cut mission statement is also important in demonstrating that your organization takes preservation concerns into account when planning. We'll get into proving that this is the case later (around 3.3.4 or so), but for now, this is your chance to - in your organization's own words - clearly declare that preservation is an important part of what you do.

How to Demonstrate: This is a rare TDR criteria where the standard is simply asking you to produce a specific document. As such, it's probably not tricky *per se*, but actually doing it can either be pretty easy or extremely difficult. If you already have a mission statement in place, great. Commit it to memory, paste it into your answer, and move to the next criteria. If you don't, things just got a bit more difficult for you. The reason is that a statement like this, which is really a question of mandate, needs to flow from the person or persons to whom your organization is ultimately answerable. A good rule of thumb for determining the appropriate person to sign off on this is to look at the person who runs your organization and determine who gives him or her their marching orders. If your boss is a Head Librarian, this may be a trustee board or a chancellor. If your boss is a CEO, this is probably a board of directors. Whatever the case, these are the people who need to make this decision.

If this sounds daunting, good, it should. A true commitment to long-term preservation is not to be taken lightly. The good news is that once you have a proper mission statement in place, it represents a commitment from your organization at the highest level – a commitment that can be very useful when you need to change procedures to make them more preservation friendly....or when you need to schedule people to get information for a TDR audit!

A proper mission statement needn't even be that long or elaborate. For example, look at this one from HathiTrust, one of the first formally certified Trustworthy Digital Repositories:

"The mission of HathiTrust is to contribute to the common good by collecting, organizing, preserving, communicating, and sharing the record of human knowledge."

It's succinct, but above all it is clear. You'll note that it doesn't go into great detail about how any of this will be accomplished. That's not necessary here, and there are plenty of documents down the road where you can hold forth on that. You also don't need to have (and probably won't have) such an all-

encompassing scope to your mission statement. That's OK too. The TDR process is about you being clear with your Designated Community about what you're going to do, and the extent to which you are actually doing it. An example of a more constrained mission statement can be seen in this one from the Council of Prairie and Pacific University Libraries (COPPUL), in scoping their consortial preservation network:

"To preserve digital collections of local interest to COPPUL members that are not being preserved elsewhere."

This statement is much more limited in scope than the HathiTrust one, but it's no less compliant for it.

One final note: you may be in the position where, rather than having a mission statement, your organization has a mandate requiring you to collect and preserve digital content. This is especially likely to be the case if you work for a government entity. TDR considers mandates like this to be equivalent to a mission statement, especially when they are statutory or regulatory in origin.

Related criteria: If the beginning of this section wasn't clear enough, this criteria is the foundation for just about everything else. That said, it will be especially important when it comes time to talk about your Preservation Strategic Plan (3.1.2) and your definition of Designated Community (3.3.1). These two documents explain your strategic approach to digital preservation, and the group of individuals for whom you are doing the preservation, respectively. Both will be strongly informed by the understanding of what it is you're supposed to be doing in the first place.

3.1.2 – The repository shall have a Preservation Strategic Plan that defines the approach the repository will take in the long-term support of its mission.

Discussion: The Preservation Strategic Plan is another important piece of documentation the standard is directly asking you to produce. It's another very important one in the sense that it forms the basis for a lot of other documents that will come later: the Preservation Policy, the Preservation Implementation Plan, and any collection- or content type-specific preservation plans that might be used. Despite its importance, TDR doesn't really provide a great deal of guidance on what it should look like. In the glossary, we see that this is document is a requirement that comes directly from the OAIS Reference Model. OAIS defines it as:

A written statement, authorized by the management of the repository, that states the goals and objectives for achieving that part of the mission of the repository concerned with preservation. Preservation Strategic Plans may include long-term and short-term plans.

It's not the clearest definition, but what this means is that this document isn't really about the actual handling of digital objects at all – it's about the strategic directions your preservation division (whether

that's a team or just one person) is taking in support of its preservation mission (3.1.1). This includes things like capacity building, exploration of partnerships, and contingency planning. Really, the important word here is *strategic* rather than *preservation*. It's the Preservation Strategic Plan because it's around your preservation mission, not because it's supposed to contain information about how you plan to migrate content. That stuff goes into the Preservation Plan.

The Preservation Strategic Plan can be a stand-alone document, or it can be a part of an organization's broader strategic plan. Which option is appropriate to your organization will depend heavily on what your mission statement (3.1.1) looks like. If your organization is only concerned with preservation, then the Preservation Strategic Plan may be your entire strategic plan. But if you're like many organizations, where preservation is a piece of your mission but not the whole thing, then you need to determine what document serves as your Preservation Strategic Plan. If the other parts of your mission have a presence in a broader strategic plan, then your preservation mission probably should as well. If those functions have their own strategic plans, you can do that. Whatever the case, you should be able to show that your preservation mission is at parity with the other functions of your organization. Remember, in 3.1.1 we made the claim that preservation is an important part of what your organization does. Here, we start to demonstrate that this is in fact the case by showing that you have put thought into where this program is going over the next few years.

A final point to mention: there are two *necessary* sub-points to this criteria, and they both center around contingency planning for the end of the repository. Although it's very important to use the strategic plan as a place to talk about positive things, it is equally important, if not more so, to think about how you will ensure your content is protected even in the event that you are no longer able to do so.

How to Demonstrate: As in 3.1.1, you're being asked to produce a document here. We've already discussed what this document might look like, above. One thing to keep in mind is that the answer to this question can be the synthesis of multiple documents, which together paint a picture of your strategic plan. In particular, the documents that answer the two sub-criteria will likely be a separate document related only to succession planning.

Related Criteria: The Preservation Strategic Plan has threads that run through much of the first part of the checklist. It should go without saying that the strategic plan should be reflective of your mission statement (3.1.1). However, you also need to make sure that what you say in the 3.2 series (Staffing) and 3.4 (Financials) reflect a proper commitment to your stated strategic goals.

Bibliography

[Trusted Digital Repository Basics](#)

[Bailey, C. \(2011\). Digital curation and preservation bibliography 2010. Houston, TX: Digital Scholarship.](#)

This book is a great bibliographic source, has over 500 English-language articles, books, and technical reports that are useful in understanding digital curation and preservation.

"Charles W. Bailey, Jr. is the publisher of Digital Scholarship. He has over 30 years of information and instructional technology experience, including 24 years of managerial experience in academic libraries. From 2004 to 2007, he was the Assistant Dean for Digital Library Planning and Development at the University of Houston Libraries. From 1987 to 2003, he served as Assistant Dean/Director for Systems at the University of Houston Libraries." (<http://digital-scholarship.org>)

[Beagrie, N. & Jones, M. \(2008\). Preservation management of digital materials: The handbook Digital Preservation Coalition.](#)

The original content of this handbook was undertaken between July 1999 and September 2000, by Neil Beagrie and Maggie Jones on behalf of Art and Humanities Data Service (AHDS). It has been updated and maintained by the Digital Preservation Coalition (DPC) since then. While this handbook does not specifically mention TRAC or ISO 16363, it covers a large amount of information on digital preservation. It "provides an internationally authoritative and practical guide to the subject of managing digital resources over time and the issues in sustaining access to them".

[Giaretta, D., & Lambert, S. \(2009\). International audit and certification of digital repositories. UK: Science and Technology Facilities Council. Retrieved from \[http://www.sciops.esa.int/SYS/CONFERENCE/include/pv2009/papers/35_Giaretta_InternationalAuditAndCertificationOfDigitalRepositories.pdf\]\(http://www.sciops.esa.int/SYS/CONFERENCE/include/pv2009/papers/35_Giaretta_InternationalAuditAndCertificationOfDigitalRepositories.pdf\)](#)

The authors of this report, Giaretta and Lambert, are both heavyweights in the digital preservation world. At the time that this report was written, they were both on the Science and Technology Facilities Council (STFC). This paper basically gives a breakdown of the efforts to produce a standardized accreditation and certification process to prove the trustworthiness of archives for digital preservation. The closest thing, so far, to an ISO standard was TRAC, born of OAIS Reference Model and Report on Trusted Digital Repositories: Attributes and Responsibilities. This status report outlines the fundamental principles on which the metrics are based, and describes "the procedural, social and legal framework being created to support this effort".

[Kenney, A. R., McGovern, N., Entlich, R., Kehoe, W., & Buckley, E. \(2010\). Digital preservation management: Implementing short-term strategies for long-term problems](#)

This tutorial was developed by Cornell University Library (and various influential authors) and is now hosted and maintained by the Inter-university Consortium for Political and Social Research (ICPSR). Although this tutorial is extremely thorough and helpful on its own, it was developed to complement a workshop. The tutorial introduces concepts of digital preservation and champions an integrated preservation model that combines the organizational context, technological implementation and requisite resources. While much of this tutorial's content was added before TRAC became official, the model that is taught outlines the sections covered in TRAC. The tutorial "helps participants design a digital preservation program for their particular institutional setting".

Kenney, A. R. (2000). In Research Libraries Group. (Ed.), *Moving theory into practice: Digital imaging for libraries and archives*. Mountain View, Calif.: Research Libraries Group.

This book, while it was written before TRAC came into existence, was written around the same time that RLG and OCLC began working to establish a consistent articulation of the attributes of a trusted digital repository for digital research resources. It was published by RLG and mentions its Preservation Program, the Task Force on Archiving of Digital Information, and the Task Force on Policy and Practice for Long-term Retention of Digital Materials. *Moving Theory into Practice* "is intended as a self-help reference for libraries and archives that choose to retrospectively convert cultural resources to digital form." It discusses the establishment of a quality control program for the digital information, as well as metadata, and developing a Digital Preservation Policy.

[Open Archival Information System \(OAIS\) – Reference Model, ISO 14721:2003, \(2003\).](#)

Retrieved from <http://public.ccsds.org/publications/archive/650x0b1.pdf>

This document was created by the Consultative Committee for Space Data Systems and is ISO 14721:2003. It defines a technical Recommended Practice "to develop a consensus on what is required for an archive to provide permanent, or indefinite Long Term preservation of digital information." The document provides a framework of concepts and terms needed for the understanding and awareness of architectures and operations of existing and future archives. It also lays the foundation for the identification and production of OAIS-related standards.

[Preparation for a TRAC or ISO 16363 Audit](#)

Chen, R., & Downs, R. (2012). *Testing the international standard for audit and certification of trustworthy digital repositories*

The authors are both associated with the Center for International Earth Science Information Network (CIESIN) at Columbia University. This poster was prepared for presentation to Digital Preservation 2012 in Arlington, Virginia. It makes suggestions for "audit preparation, for being audited, and for addressing recommendations for improvement made by the test auditors". The poster is helpful because it is compact and to the point.

Conway, E., Giaretta, D., Lambert, S., & Matthews, B. (2011). *Curating scientific research data for the long term: A preservation analysis method in context*. *International Journal of Digital Curation*, 6(2) Retrieved from <http://www.ijdc.net/index.php/ijdc/article/view/182/264>

This paper tackles the issue of re-usability of scientific research data for future users. It presents an overview of preservation analysis methodology which was developed in response to the re-usability need on the CASPAR and DCC SCARP projects. This methodology is then related to other digital preservation practices, including TRAC, and is shown to inform audit and certification processes. The preservation analysis methodology presented in this paper interacts well with other practices and together they can provide a comprehensive preservation technique. All of the authors are influential figures involved in the standardization of digital preservation.

Giaretta, D. (2011). *Advanced digital preservation*. New York: Springer.

David Giaretta is the Director at SCIDIP-ES project, Alliance for Permanent Access, APARSEN EU FP7 project, and Giaretta Associates Limited. He is the Chairman at Repository Audit and Certification Working Group of CCSDS, and Deputy Chair at Data Archive Ingestion Working Group of CCSDS. He has played an integral role in the development and refinement of TRAC to get it formalized into ISO 16363. This book brings together the entire body of knowledge surrounding digital preservation, including the theoretical basis for preservation, consideration for many types of data from many disciplines and the tools to implement different techniques. It also discusses how to keep costs under control when "preparing one's archive for independent evaluation". Much of the information in this book is derived from the CASPER project. As a whole, the book addresses "advanced issues of digital preservation, beyond keeping the bits and the ability to render, bringing into play concepts of understandability, usability, knowledge and interoperability". Giaretta's argument is that "one must be able to

preserve many additional different digital objects if one wishes to really preserve any particular single digital object".

[PTAB \(Primary Trustworthy Digital Repository Authorization Body\). \(2012\). Preparing for an ISO 16363 audit: Steps for preparing the repository. Retrieved 08/08, 2012, from http://www.iso16363.org/assets/PREPARING-FOR-AN-ISO-16363-AUDIT.pdf](http://www.iso16363.org/assets/PREPARING-FOR-AN-ISO-16363-AUDIT.pdf)

PTAB or ISO-PTAB is the "anchor for the provision of ISO audit and certification of digital repositories and plays a major role in training and accrediting auditors". This article on their website breaks down what an ISO 16363 Audit is, the advantages of having an ISO 16363 certification, and the steps to take to get started and complete the repository self-assessment. The instructions are very factual and can be applicable to various types of institutions.

[Application of TRAC/ISO 16363 Checklist](#)

[Ambacher, B. \(2007\). Government archives and the digital repository audit checklist. Journal of Digital Information, 8\(2\)](#)

Bruce Ambacher is currently a Visiting Professor at the University of Maryland's iSchool. Prior to this position, he spent 31 years at the National Archives and records Administration in a variety of positions relating to electronic records, digital preservation, standards and archival education. This article examines the RLG/NARA draft Audit Checklist for the Certification of Trusted Digital Repositories from the perspective of publicly funded repositories, especially government archives. "It reviews the historical origins of the checklist, the comments received from government archives on the metrics in the draft document and the task force's adjudication of those comments. Finally it addresses some unresolved issues".

[Beecher, B. \(2012\). Technology at ICPSR.](#)

The author of this blog, Bryan Beecher, leads the team responsible for designing, producing, and operating technology solutions for ICPSR. This blog aims to cover "news and commentary about new technology-related projects under development at ICPSR". Once a week Bryan tackles one of the TRAC criteria, explains it in layman's terms, and answers it using ICPSR as a sample. Even though he is not using the most up-to-date criteria, his blog is helpful to compare to when preparing for the ISO 16363 audit.

[Chen, R., & Downs, R. \(2010\). Self-assessment of a long-term archive for interdisciplinary scientific data as a trustworthy digital repository. Journal of Digital Information, 11\(1\)](#)

The authors are both associated with the Center for International Earth Science Information Network (CIESIN) at Columbia University. This article covers the ISO 16363 self-assessment of Socioeconomic Data and Applications Center (SEDAC) and shares recommendations for additional steps that need to be taken in order for the long-term archive to become a trusted digital repository.

[Chen, R., & Downs, R. \(2011\). Audit of a scientific data center for certification as a trustworthy digital repository: A case study.](#)

With same authors as the previous entry, this series of slides briefly outlines the case study (described in the article above) of a scientific data center (Socioeconomic Data and Applications Center - SEDAC) being audited. It begins with a discussion of data stewardship, why it is important and how it can be improved. It then covers the ISO standard (16363 and 16919), why and how SEDAC prepared for the test audit, the issues and results of the text audit and the next steps to be taken. This is a progress report of ISO 16363 applied to a very specific type of data center.

Hank, C., Tibbo, H., & Barnes, H. (2007). Building from trust: Using the RLG/NARA audit checklist for institutional repository planning and deployment *Archiving 2007*, 62-66.

At the time this was written the authors were affiliated with the University of North Carolina, Chapel Hill. Tibbo is a Professor in the School of Information and Library Science. Hank is a Doctoral Fellow at the School of Information and Library Science and Barnes is a graduate student. They investigate the applicability of the RLG/NARA August 2005 draft of An Audit Checklist for the Certification of Trusted Digital Repositories (TDR) for institutional repository planning and implementation. "Overall, participants' perceived the TDR as a valuable framework for IR planning and high-level decision making but few used it. This study also investigated participants' perceptions of other IR planning documentation". Could not access full article without paying.

Kaczmarek, J., Hswe, P., Eke, J., & Habing, T. (2006). Using the audit checklist for the certification of trusted digital repositories as a framework for evaluating repository software applications. *D-Lib Magazine*, 12

At the time this article was written the authors were affiliated with University of Illinois at Urbana-Champaign. This article is a progress report chronicling the authors' evaluation of repository software applications using the 2005 RLG/NARA Audit Checklist for the Certification of a Trusted Digital Repository, Draft for Public Comment (Audit Checklist), in conjunction with a common software evaluation scoring methodology. Their goal is to "suggest a means of supporting the decision-making process of practicing archivists and librarians interested in establishing some degree of trustworthy digital repository services for their community users". This article is an example of the early adoption of the Audit Checklist (before even a final draft was created) as an evaluation tool.

Kroll, M., Minor, D., Reilly, B. & Witt, M. (2012). ISO 16363: Trustworthy digital repository certification in practice. Retrieved 08/09, 2012, from

http://docs.lib.purdue.edu/cgi/viewcontent.cgi?filename=0&article=1003&context=lib_fspress&type=additional

This presentation was created by four different authors from three different institutions. There are three sections to the presentation. The first is "PURR and ISO 16363 Preparation". PURR is the Purdue University Research Repository which was evaluated for 'trustworthiness' using the ISO 16363 criteria and a gap analysis tool. The second section is titled "Chronopolis and TRAC". Chronopolis is a certified Trusted Digital Repository. The presentation outlines the preparation and audit process. The Final section discusses the Centre for Research Libraries (CRL) and its certification program.

Steinhart, G., & Dietrich, D. (2009, Establishing trust in a chain of preservation: The TRAC checklist applied to a data staging repository (DataStaR). *D-Lib Magazine*, 15 Retrieved from <http://www.dlib.org/dlib/september09/steinhart/09steinhart.html>

DataStaR is a data staging repository at Cornell University. At the time of this article it was just being developed. In this article the authors "describe (their) experience applying the Trustworthy Repositories Audit & Certification Criteria and Checklist as a framework for specifying system, policy, and documentation requirements to ensure that DataStaR is an effective partner in the entire chain of preservation activities". It is a great case study using the checklist on a unique type of repository.