

ANSI/NISO Z39.18-2005

ISBN: 1-880124-66-1

Scientific and Technical Reports – Preparation, Presentation, and Preservation

Abstract: This Standard outlines the elements, organization, and design of scientific and technical reports, including guidance for uniform presentation of front and back matter, text, and visual and tabular matter in print and digital formats, as well as recommendations for multimedia reports.

An American National Standard
Developed by the
National Information Standards Organization

Approved: July 27, 2005
by the
American National Standards Institute

Published by the National Information Standards Organization



NISO Press, Bethesda, Maryland, U.S.A.

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Published by:

NISO Press
4733 Bethesda Avenue, Suite 300
Bethesda, MD 20814
www.niso.org

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ISSN: 1041-5653
ISBN: 1-880124-66-1

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Foreword

(This Foreword is not a part of ANSI/NISO Z39.18-2005, *Scientific and Technical Reports – Preparation, Presentation and Preservation*. It is included for information only.)

This Standard provides guidelines about the preparation, presentation, and preservation of scientific and technical reports. Its purpose is to foster uniformity in these reports for ease of information retrieval while permitting diversity in presentation based on the rapidly changing environment driven by the growing digital environment. It also provides guidelines to aid in assuring permanent access to digital documents. The Standard does not provide guidance on other typical technical information products, such as journal articles, proposals, technical specifications, or technical and consumer manuals. This publication is a standard rather than a report and, therefore, does not follow in every particular the report format described. Moreover, the language of the Standard is couched in the indicative rather than the subjective mood ("is," not "shall" or "must"), which is typically used in standards.

Previously this Standard only addressed reports produced with paper and ink. While many reports are still produced in this manner, a growing number are "born digital" and distributed electronically. Additionally, scientific and technical reports may be created combining text, data streams, audio, video, and other media to produce complex, multimedia documents that can only exist digitally.

In developing this Standard, Committee AW recognized that the way a Technical Report is organized has evolved over the past 30 years from a content-based organization pattern to a user-based one. This Standard presents alternatives that should be used based on report purpose and presentation.

Committee AW recognizes that presentation is an important consideration. Reports that are in digital format, unlike paper and ink reports, can be presented in several ways depending on individual preferences and capabilities.

In the development of this Standard, Committee AW examined existing practices and conventions from a wide variety of organizations, institutions, and associations as reflected in the annotated *Bibliography* (Appendix A). These sources were chosen because they represent a variety of report producers and are available to the report-producing public. Where practices vary, committee members resolved the differences based on their collective experiences. Where appropriate, options are recommended to accommodate the widely varied needs of report producers. Because of this variety, not all the elements described are mandatory for a report, although the placement and sequence of report elements should be consistent. For example, federal agencies use a Report Documentation Page, but many academic and industrial report producers do not. The use and placement of Report Documentation Pages is considered optional by the Standard to accommodate local practices; therefore instructions for preparing them are given in Appendix E.

The Standard provides explicit guidance about bibliographic data elements that appear on covers and title pages (and, if used, Report Documentation Pages) of reports when they are printed or presented in image form. Compliance with these guidelines ensures thorough, consistent, and uniform bibliographic description and control of data essential to libraries, abstracting services, and other technical information organizations that acquire, store, and provide access to information resources. The Standard also provides explicit guidance about bibliographic data elements needed for reports produced in formats not requiring covers and title pages.

The Standard also describes the scope of each section of a report and offers principles for the effective communication of textual, visual, and tabular material. The establishment of technical writing standards is beyond the scope of this Standard; however, it does provide an extensive annotated bibliography of materials about technical writing and language usage and style (Appendix A).

The Standard includes basic requirements for publication formats, the use of figures and tables, and the presentation of numbers and units, formulas and equations, symbols, and abbreviations and acronyms. It does not offer specific advice about electronic publishing systems that enable users to design and produce reports using a computer, appropriate software, and a laser or laser-quality printer. Because report production and reproduction techniques use rapidly changing software products, they are not specified. Most software packages for page and report production provide instruction manuals for users. On the other hand, guidelines and considerations regarding digital publications are provided.

Suggestions for improving this Standard are welcome. They should be sent to the National Information Standards Organization, 4733 Bethesda Avenue, Suite 300, Bethesda, MD 20814 USA, telephone: (301) 654-2512, email: nisohq@niso.org.

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Scientific and Technical Reports – Preparation, Presentation, and Preservation

1 General Information

1.1 Rationale for Revision

The previous version of this Standard, although recognizing the potential impact of electronic access and delivery of digital documents, was based on paper-based publication of scientific and technical reports. Changes in recent years have necessitated a shift in focus. The electronic milieu that the Internet offers cannot be viewed as only an extension of the paper-oriented world. In the past 30 years, the way a scientific or technical report is organized has evolved from a content-based to a user-based organization pattern. This evolution has been affected not only by advances in technology but also by changes in user requirements. In addition to recording the results of scientific and technical research, reports increasingly are used for management decision making. This use means the potential audience for technical reports and needed report production time may be far different than in the past. It also means that there is no single format that authors should use. Thus, this revised Standard presents alternatives based on report purpose and presentation.

Even the definition of what constitutes a scientific or technical report in terms of both content and format may vary from previous experience. Videos or other audio-visual media without written accompaniment may be considered scientific or technical reports. Multimedia presentations (e.g., PowerPoint™) are often submitted as reports and may include written remarks for each slide. Many reports now "born digital" include links to other documents, which creates a need for a persistent identifier (e.g., a Uniform Resource Name, URN) linking a report to a location even though the location may change. Significant differences in the publication process require consideration of issues like versioning and integrity of material in the digital environment.

Presentation of reports is an important consideration; those in digital format, unlike paper, can be presented in several ways depending on preferences and capabilities. This revision of the Standard recognizes that guidelines for presenting digital documents differ from those applicable to ingesting digital objects into a repository. This Standard recognizes that archiving of digital documents requires a different model and new terminology.

A further problem is that paper and electronic documents have different design constraints not easily reconciled in a single standard. Insofar as it is possible to do so, this Standard recommends a Document Type Definition (DTD), a set of rules for establishing the structure of reports that may be electronically processed through systems that include document imaging, optical character recognition, compression/decompression, and optical media storage of full text. The DTD provides suggested eXtensible Markup Language (XML), designed to improve an electronic publication's functionality by providing more flexible and adaptable information identification, delivery, and presentation.

1.2 Role of Standard

The guidelines in this Standard address issues related to creating, discovering, presenting, publishing, disseminating, maintaining, and preserving reports. Previous editions of the standard focused on reports printed on paper, but, with the increased availability of computers, paper is only one of the many media of publication a report can have. In addition, reports can now include digital sections as well as traditional printed text. This revised Standard attempts to accommodate the diverse forms reports can take. Report writers should refer to the many examples throughout the Standard as models to follow rather than using the Standard as a model.

1.3 Scope of Standard

This Standard will guide individuals and organizations in preparing reports. It is generally couched in terms of the traditional printed report because that medium is the most concrete and common example for readers to consider and visualize. However, the Standard is expressed in such a way that adapting to other means of publication (for example, electronic formats on the Web and CD-ROMs) is recognized.

Although this Standard necessarily has to consider means of distribution, facilitate methods of literature control, and accommodate methods of accessibility, it is not a standard for cataloging, describing, or preserving publications. Those roles are fulfilled by other standards, such as those associated with using MARC 21 records, Dublin Core, and evolving standards for persistent identification.

1.4 Audience of Standard

This Standard will prove valuable to researchers, scientists, and academics to document their research and results, provide consistent guidelines for creating reports, and assist in collaboration among organizations. Writers, editors, and publishers can use the Standard to provide consistency throughout their organizations and adopt uniform practices as needed. Information specialists in areas such as libraries, depositories, databases, and archives will find it helpful in categorizing, discovering, and maintaining information in a consistent fashion.

1.5 Best Practices

In keeping with quality standards and practices, this Standard contains examples of best practices used by authors who produce exemplary reports—that is, reports that provide information the user needs in a form and format the user can easily understand. Authors, however, must be aware that the best practices identified by this Standard are those judged to be so at the time the Committee developed it, and they should seek to identify other practices, not only within the user's organization but also within the user's discipline.

2 Referenced Publications

2.1 American National Standards

This Standard is intended for use in conjunction with the following American National Standards. When these standards are superseded by a revision approved by the American National Standards Institute, consult the revision.

ANSI/NISO Z39.9-1992 (R2001), *International Standard Serial Numbering (ISSN)*

ANSI/NISO Z39.14-1997 (R2002), *Guidelines for Abstracts*

ANSI/NISO Z39.23-1997 (R2002), *Standard Technical Report Number (STRN) Format and Creation*

ANSI/NISO Z39.84-2000, *Syntax for the Digital Object Identifier*

ANSI/NISO Z39.85-2001, *Dublin Core Metadata Element Set*

2.2 Other Standards

In addition to the ANSI standards, the following standards provide useful information for preparing reports:

IEEE/ASTM SI-10-2002, *Use of the International System of Units (SI): The Modern Metric System*

ISO 2108, *Information and documentation – International standard book numbering (ISBN)*

2.3 Other Publications

The following publications provide additional useful information for preparing reports.

Americans With Disabilities Act (ADA) of 1990. Public Law 101-336, 101st Congress.

Environmental Data Standards Council (EDSC). *Glossary*.
Available from: <http://www.envdatastandards.net/section/glossary/>

National Technical Information Service. *Report Documentation Page, Standard Form 298*. Washington, D.C.: NTIS, August 1998. Available from: <http://www.ntis.gov/pdf/rdpform.pdf>

Privacy Act of 1974. 5 U.S.C. § 552a.

Electronic and Information Technology, Section 508 of the Rehabilitation Act of 1973. 29 U.S.C. § 794 (d). [Popularly referred to as "Section 508."]

3 Key Concepts Incorporated in This Standard

3.1 Metadata

This Standard advocates provision for the capture of appropriate metadata in report preparation. Metadata refer to information about information or, equivalently, data about data. In current practice, the term has come to mean structured information that feeds into automated processes, and this definition is currently the most useful way to think about metadata. This definition further applies whether the publication that the metadata describes is in print or electronic form. In publishing, metadata can be classified according to a variety of specific functions, such as technical metadata for technical processes, rights metadata for rights resolution, preservation metadata for digital archiving, and descriptive metadata (metadata that characterizes the content itself).

3.2 Persistence

This Standard addresses the need for persistence in links that are incorporated in reports. A key component of the digital information infrastructure is a mechanism for addressing and locating digital objects on a network or in an archival system. The current addressing structure for the World Wide Web is based on the Uniform Resource Locator (URL). While the URL provides direct, efficient access, URL-only naming fails whenever the resources are moved or reorganized. The lack of persistence leads to “404” (file not found) errors, inhibiting access to information and causing problems when archiving material for long-term preservation and permanent access. These links should also be documented for accessibility in print format.

3.3 Interoperability

This Standard encourages the achievement of interoperability in report presentation. In paper-based publication of scientific and technical reports, interoperability, except for language differences and visual challenges, is achieved through a single publication medium. In the digital environment with its multiple types of media, even defining the concept of publishing is a challenge. Interoperability can be achieved at three levels: technical, content, and organizational. At the technical level, protocol and format should be consistent so messages can be exchanged. Content agreements cover data and metadata and include semantic agreements on interpreting messages. The organizational level of interoperability includes rules for access, for changing collections and services, payment, authentication, etc. While the URL protocol permits interoperability in addressing, it offers no interoperability regarding content.

3.4 Creation

This Standard recognizes that certain critical actions must be taken at the time a report is created. The initial stage of creating a report should include a thorough review of intellectual property rights, security issues, ease of repurposing the information, and consistent guidelines for software and file naming conventions. Given the collaborative nature of many reports, copyright should be established at the outset, and permission for using pre-existing material should be consistent with U.S. Copyright Office regulations. Potentially classified

material may require authentication for release to a limited audience. If the report is best served by being released through multiple channels and repurposed into multiple formats (for example, print and Web) or parsed for repurposing in other collaborative projects, production should include standards for coding the information for such use. Creators should capture metadata tied to producing the report, such as platform, operating system, software version, and consistent file-naming conventions and extensions when they create the report.

3.5 Discovery

This Standard emphasizes the importance of ensuring that reports will be discovered. Traditionally, the ability for the target audience to find and use scientific and technical reports produced solely in print format depended on governmental and commercial bibliographic databases or specific, specialized knowledge of primary resource producers. Reports produced in digital format should also enable discovery and access through the incorporation of appropriate associated metadata. Producers of reports should ensure that the report production workflow provides for metadata capture. Discovery is also enhanced by populating metadata with published, controlled vocabularies rather than ad hoc terminology for subjects.

Another discovery issue in a digital environment is the ability of a report to allow access to all potential audiences, including those with physical restrictions. A 1998 amendment to the Rehabilitation Act (29 U.S.C. 794d), popularly referred to as “Section 508,” requires U.S. Federal agencies to make their electronic and information technology accessible to people with disabilities. Other producers of scientific and technical reports should follow guidelines provided for this requirement for greatest accessibility. A further limit to access to be avoided is using proprietary software not commonly used by the primary target audience.

3.6 Presentation in Digital Format

This Standard recommends that reports in digital form be presented in a structured way. Some methods for structured representation of reports in digital form are the DTD, XML, and XSL. The DTD defines the format that reports should follow; XML maintains the report’s contents and structures; and XSL defines how to represent the report for different vehicles of display (e.g. desktop computer or PDA). Two main advantages of this approach are its automatic validation and its flexibility of representation. Also, the XML format is widely used and can be easily processed by computer programs. Figure 1 shows the relationship between an XML document, the DTD, and XSL.

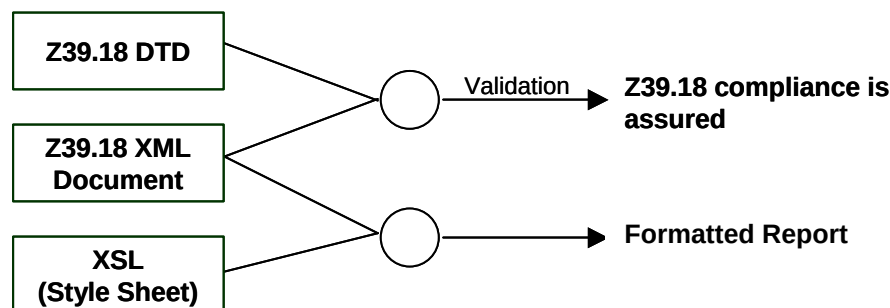


Figure 1: Components used in digital format representation

3.6.1 Document Type Definition (DTD)

A DTD defines the building blocks of a document using eXtensible Markup Language (XML). XML improves the functionality of the Web by providing more flexible and adaptable information identification, delivery, and presentation.

3.6.2 XML Document

The XML document contains the report with its metadata. Elements in an XML document should comply with the DTD provided (see Appendix F), which validates the document.

3.6.3 XSL (Style Sheet)

The XSL (eXtensible Style Sheet) provides a mechanism for presenting data available in an XML document. It provides formatting information and ordering of presentation (not always the same order as in the XML document) and can generate extra metadata, such as a table of contents, list of figures, etc. Multiple XSL sheets can be used for the same document to accommodate the needs of various communities: Web publication of reports, printed reports, etc.

3.7 Presentation

This Standard is cognizant of and reflects the requirements and limitations of different methods of publication. The concept of publication (literally, to make known to the public) changed drastically in the 1960s when computers were applied to the typesetting process. Suddenly, machine-readable electronic records were being produced along with traditional print. The subsequent development of new media, recording devices, codes of expression, and means of transmission made these electronic records eminently usable. Scientific, business, military, and government communities found these new media to be a convenient and economical means for distributing and storing information, including reports. As a result, we now see diverse ways of publishing data and information, from printed pages to CDs to analog and digital tapes to files accessible over the World Wide Web.

The prescriptions of this Standard are flexible enough to be adapted to a great variety of publication methods, both extant and yet to be discovered. However, it also recognizes that many users of a report find a printed version more convenient, portable, or permanent. Therefore, the Standard states that electronic publications be formatted so that standardized, usable print copies can be produced from any medium through common or specialized software. The Standard suggests producing reports that can be converted from medium to medium and format to format to allow ease of use and future migration.

3.8 Dissemination

This Standard encourages the effective dissemination of reports. It is important that scientific and technical reports be readily available to as broad an audience as allowed to facilitate research and to promote general education goals. Online access to information opens new arenas to find reports. Reports that can be easily identified and ordered by libraries and the general public through a variety of distribution channels (for example, wholesalers, library jobbers, and online retailers) support the sustainability of the information. Archiving reports on the Web with a unique identifier, and with an agency that can support their presence over

time, improves their long-term value. Therefore, creators of reports should envision a dissemination strategy at the outset of the project.

3.9 Access and Distribution

This Standard recognizes the importance of controlling access to some reports. Originating organizations have specific responsibilities to determine the distribution of reports. Classification/distribution information is provided by electronic labeling or in print. If physical marking of a report is not possible, identifying information must be accomplished by other means, such as metadata schema. Marking is the means of informing users of classified, or otherwise controlled, information about specific protection requirements for reports (for example, for internal use only). For print materials, this information should be easily visible on the cover or title page. For reports in a digital format, this information should be on the opening screen or other points of initial access.

Examples:

Approved for public release; distribution is unlimited.

Distribution authorized to DoD components only (reason, date). Other requests for this document shall be referred to (controlling office information).

3.10 Maintenance and Preservation

This Standard advocates adopting practices that ensure long-term preservation of reports. Compilers and publishers of scientific and technical reports can and should take action to ensure their efforts will be appreciated for as long as the reports have value to users. This requirement means that reports should be prepared using techniques and materials that enable discovery and usability over the long term. Continuing discovery is assured by associating a report with clear, distinct, and unchanging identifying information (descriptive metadata). Continuing usability is assured by adopting an easily navigated and navigable structure, including maintenance of internal and external links, and by using publishing techniques that withstand the test of time. Time-tested publishing techniques involve the appropriate choice of publishing medium, such as acid-free paper or polyester-based silver gelatin film. However, publishing increasingly involves producing digital products that can be migrated and shared across media, platforms, applications, and organizations. At the time the Committee developed this Standard, the most promising method for assuring continuing migration is employment of an XML DTD to encode electronic reports when produced.

Many complex, electronic scientific and technical reports are used to produce multimedia publications and presentations. In such cases, it is particularly important to use presentation standards and practices that not only enable the widest possible access at the time of report creation, but also ensure continuous availability of content and structure despite changes in the delivery environment. In cases of multimedia reports, it is desirable to preserve the original presentation media as well as the original content. When this preservation cannot be achieved, it is most important to preserve the content so that the original source material is preserved.

4 Components of Reports – Overview

4.1 Introduction

There are many possible patterns for organizing the components of reports. Some of these are referenced in Appendix D, *Model Formats for Organizing a Scientific or Technical Report*. These model formats allow for presenting information about the creation, structure, content, and availability of reports in a readily comprehensible manner. When not using traditional publishing channels, the author/creator should ensure this information is captured and available to potential readers/users.

4.2 Metadata

A scientific or technical report is an important information resource and, as such, requires effective information management. The body of the report, with its discussion of methods, results, and conclusions, is content. Any information that helps the user find, assemble, and properly attribute the report are metadata.

Metadata are a significant matter for this Standard because of the large amount and diversity of data represented. The quantity and diversity of report content and format presented information management challenges in an era when reports were published exclusively on paper; in the digital age these challenges have multiplied considerably. A scientific or technical report that does not take metadata into account has no readily-found identity and will not be used. To avoid this problem, compilers of reports must provide metadata in three broad classes: descriptive, structural, and administrative.

4.2.1 Descriptive Metadata

Descriptive metadata, such as cataloging information prepared following standards such as Dublin Core or MARC 21, convey information that helps the user find a report and distinguish it from other similar ones. Descriptive metadata are commonly used for resource discovery, such as author/title/subject searching, or grouping like objects for browsing. Such metadata include the title and creator (author), as well as any keywords or subject references.

4.2.2 Structural Metadata

Structural metadata explain the relationship between parts of multipart objects and enhance internal navigation. Such metadata include a table of contents or list of figures and tables.

4.2.3 Administrative Metadata

Administrative metadata support maintaining and archiving reports and ensure their long-term availability. Administrative metadata are needed for migration of data from one format to another and contain rights information used for access control. Such metadata include type and version of software used in preparing the report and rights-management requirements.

4.3 Components

The author/creator of a scientific or technical report must keep all metadata requirements in mind throughout report creation and should prepare the components to enable ready recognition of key descriptive, structural, and administrative information about the report.

Table 1 presents the standard components of scientific and technical reports in the traditional order of presentation. In reports organized in this manner, the listed components from cover through acknowledgments are commonly referred to as front matter, the components from summary through references are referred to as the body or text matter, and components from appendices through distribution list are referred to as back matter.

In the **Inclusion Status** column, the table indicates which components are *required* by this Standard, which are *optional*, and which are *conditional*. Finally, in the column headed **Function**, the table indicates the primary role served by the information conveyed in each component.

Table 1: Components of reports

	Component	Inclusion Status	Function
Front Matter	Cover	Optional	Descriptive metadata
	Title Section	Required	Descriptive metadata, such as Dublin Core elements: Identifier, Title, Creator, Publisher, Contributor, Date, and Language
	Notice Section	Conditional (include when needed to specify intellectual property rights or state restrictions on access or use)	Administrative metadata, such as the Dublin Core elements: Rights Management and Format
	Format Information Section	Conditional (include when the original is created in digital format)	Administrative metadata, such as Dublin Core element: Format
	Report Documentation Section	Conditional (include in reports prepared for federal governmental agencies)	Descriptive metadata, such as the Dublin Core elements: Title, Creator, and Publisher Source of administrative metadata, such as the Dublin Core element: Rights Management
	Abstract Section	Required	Descriptive metadata, such as the Dublin Core elements: Description, Subject, and Coverage
	Contents Section	Required	Structural metadata
	List of Figures and Tables	Conditional (include when there are more than 5 figures and/or tables)	Structural metadata
	Foreword	Conditional (include when background and context is needed)	Descriptive metadata
	Preface	Conditional (include when background and context is needed)	Descriptive metadata
	Acknowledgments	Conditional (include when significant)	Content

Table 1 (continued)

	Component	Inclusion Status	Function
Body or Text Matter	Summary	Required	Content
	Introduction	Required	Content
	Methods, Assumptions, and Procedures	Required	Content
	Results and Discussion	Required	Content
	Conclusions	Required	Content
	Recommendations	Conditional (include when purpose of report is to suggest a course of action)	Content
	References	Conditional (use if references are provided)	Structural metadata, such as the Dublin Core element: Relation
Back Matter	Appendices	Conditional (include when needed to supplement Results and Discussion)	Structural metadata
	Bibliography	Conditional (include when needed to amplify references)	Structural metadata
	List of Symbols, Abbreviations, and Acronyms	Conditional (include if symbols, abbreviations, or acronyms appear in any other component of the report; this section might appear as part of the front matter)	Structural metadata
	Glossary	Conditional (include if report incorporates terms unfamiliar to the intended audience)	Structural metadata
	Index	Conditional (include when needed to ensure that a user locates all references to a concept)	Structural metadata
	Distribution List	Conditional (include when needed to control access)	Administrative metadata, such as the Dublin Core element: Rights Management

5 Components of Reports – Details

This section provides guidance on organizing the following report components:

- Required elements, which are compulsory or mandatory when exchanging data
- Conditional elements, which are used under specified conditions when exchanging data
- Optional elements, which may be used when exchanging data [*definition from EDSC Glossary*]

5.1 Front Matter

Front matter consists of all materials preceding the main content and provides:

- a general idea of the purpose and scope of reports;
- background about, or a context for, reports; and

- lists for finding specific chapters, headings, figures, and tables.

It also provides information needed for cataloging in bibliographic databases and digital libraries. A discussion of the purpose and scope of each element of front matter follows and suggests best practices for the location of such information.

5.1.1 Cover

Although considered an optional component, a cover provides physical protection for a print report and displays major metadata elements for resource discovery. Electronic versions of reports, especially in PDF, often include a cover to replicate the look of the print version. A cover identifies the report number, title, author(s), and any distribution limitations. If classified or proprietary information appears in a report, a notice on the cover indicates that such material is included. The best practices for including data elements of a report cover are as follows:

- Report number (can also be on the back cover, or on both)
- Report title and subtitle, if used (should be the same on the cover, title page, and report documentation page)
- Title and numbering of series, if the report is issued in a series (can also be on the back cover, or both)
- Author, principal investigator, editor, and/or compiler
- Publisher (the organization that assumes responsibility for publication, which may or may not be the same as the sponsoring organization)
- Date of publication (optional; can defer to the title page or to the copyright page)
- Distribution limitations
- Sponsoring organization of published research
- A bar code or other indication of the International Standard Book Number (ISBN) or International Standard Serial Number (ISSN) and the price (optional). This information is usually included on the back cover of the report as well and may facilitate managing inventory.
- Technical requirements (for example, video, audio, digital)
- Subject

Legal or policy considerations of the sponsoring organization may require using additional data elements.

5.1.2 Title Section

The required title section indicates the subject and content of the report and provides information needed for description and bibliographic control of, and access to, a report. These data are critical to discover, acquire, store, and provide access to information resources. If the performing and sponsoring organizations are different entities, the title section clearly identifies the different responsibilities (that is, performance and sponsorship). The information in the cover and title section must be consistent; if an optional Report Documentation Page is used, its bibliographic data must also be consistent with the information in the cover and title section. The recommended data elements of a title section are as follows:

- Report number
- Report title and subtitle, if used (should be the same on the cover, title page, and report documentation page)
- Title and numbering of series, if the report is issued in a series
- Author, principal investigator, editor, and/or compiler, with the primary creator listed first, per standard library cataloging practice
- Performing organization (author/creator affiliation)
- Publication data, including place of publication, publisher (which may or may not be the same as the sponsoring organization), and date (may also defer to the copyright page)
- Type of report and period covered, where applicable (conditional)
- Contract or grant number, where applicable (may defer to the copyright page)
- Sponsoring or issuing organization (if different than the performing organization)
- Subject descriptors (e.g., keywords)

Figures 2a and 2b show a sample cover and title page for which the performing and sponsoring organizations are the same. Figures 3a and 3b show a sample cover and title page for which the performing and sponsoring organizations are different. Legal or policy considerations of the organization for which a report is prepared may require using additional data elements in these sections.

CARDIVNSWC-TR-93/013	DD 21A—A Capable, Affordable, Modular 21st Century Destroyer	Carderock Division Naval Surface Warfare Center Bethesda, MD 20084-5000	Performing and sponsoring organization
		CARDIVNSWC-TR-93/013 December 1993 Machinery Research and Development Directorate Technical Report	
DD 21A—A Capable, Affordable, Modular 21st Century Destroyer by William J. Levedahl, Samuel R. Shank, and William P. O'Reagan			
		Approved for public release; distribution is unlimited.	

Figure 2a: Sample cover page for which the performing and sponsoring organizations are the same

Performing and
sponsoring organization



Carderock Division
Naval Surface Warfare Center
Bethesda, MD 20084-5000

CARDVNSWC-TR-93/013 December 1993
Machinery Research and Development Directorate
Technical Report

**DD 21A—A Capable, Affordable, Modular
21st Century Destroyer**

by
William J. Levedahl, Samuel R. Shank, and William P. O'Reagan

Approved for public release; distribution is unlimited.

**Figure 2b: Sample title page for which the performing and
sponsoring organizations are the same**

NASP CR-1137
 REF WBS 2.5.02

UNCLASSIFIED

NASP Contractor Report 1137

Damping of Thermal Acoustic Oscillations in Hydrogen Systems

Youfan Gu and Klaus D. Timmerhaus

Grant NAG3-1018

September 1992

Notice

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UNCLASSIFIED

Sponsoring organization
 ↓
 Performing organization

Figure 3a: Sample cover for which the performing and sponsoring organizations are different

H I T G L	Final Technical Report
	LASER DIAGNOSTICS FOR REACTING FLOWS
	Grant AFOSR F49620-01-1-0145
	Prepared for AIR FORCE OFFICE OF SCIENTIFIC RESEARCH ← Sponsoring organization
	For the Period January 1, 2001 to December 31, 2003
	Submitted by R. K. Hanson, Principal Investigator
	HIGH TEMPERATURE GASDYNAMICS LABORATORY Mechanical Engineering Department Stanford University ↓ Performing organization

Figure 3b: Sample title page for which the performing and sponsoring organizations are different

5.1.2.1 Report Number

Each report requires a report number unique within the organization that appears in a consistent location for each document in a series. A report number is composed of an alphanumeric report code (2-16 characters) and, if desired, a numeric sequential group (1-14 digits indicating the year and sequence of report issuance). Different sponsoring and performing organizations usually assign separate report numbers; so a report may have multiple numbers. These numbers should appear together in a prominent location in the front matter. ANSI/NISO Z39.23-1997 (R2002), *Standard Technical Report Number (STRN) Format and Creation*, provides guidance on establishing and using standard scientific and technical report numbers.

5.1.2.2 Title and Subtitle

The title is especially important in abstracting, cataloging, indexing, and referencing a report and for informing potential readers of the content. A subtitle may be added to further define the contents. The words of the title and subtitle define and limit the topic of the report and appear on the cover, title section, and optional Report Documentation Page, using exactly the same wording. In creating the title of a report, a creator using best practices:

- selects words that distinguish the report from any other on the same general topic rather than writing, "Report on..."
- uses a distinctive subtitle for clarity if the report is one in a series or a supplement to previously published work (information about the period covered—for example, month, quarter, or year—may be included in the subtitle of reports in series); and
- spells out abbreviations and acronyms.

When a report consists of more than one volume (or binding), the title is repeated in a separate title section, and each separate volume is identified by an Arabic number and a volume title or subtitle.

Example:

Interstellar and Interplanetary Dust
Volume 2: Supernova Isotopic Enrichments

5.1.2.3 Author(s) / Creator(s)

The author/creator of a report is reserved for the person or persons responsible for originating the scientific or technical information or the text of the report and who can effectively defend the content of the report to a peer group. The primary author/creator is always identified first. Identifying an editor is justified when the editor has applied subject matter expertise in preparing the report.

An author's/creator's name appears on the cover (see 5.1.1) and title section (see 5.1.2) and, if used, the Report Documentation Page in identical form. The preferred order is first name, middle name or initial, surname. Academic degrees are not given. However, authors/creators or contributors can identify themselves by their job titles in the organization (Jane R. Doe, Cost Analyst; Jack T. Doe, Head, Research and Development Division) or by their functions as contributors (Jane R. Doe, Principal Investigator; Jack T. Doe, Compiler). If these titles are used, they should be used consistently within an organization or series. In cases of multiple authors/creators from different organizations, the names appear with their organizational affiliations.