ANSI/NISO Z39.2-1994
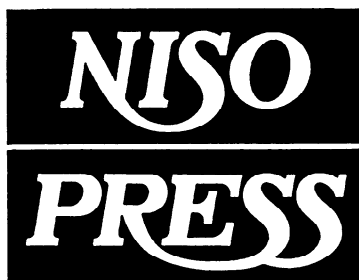(Revision of ANSI Z39.2-1985)

Information Interchange Format

Abstract: This standard specifies the requirements for a generalized interchange format that will accommodate data describing all forms of material. It describes a generalized structure designed specifically for exchange of data between processing systems and not necessarily for use as a processing format within systems. It may be used for the communication of records in any media.

**An American National Standard
Developed by the
National Information Standards Organization
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American National Standards Institute**

**NISO
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ANSI/NISO Z39.2-1994

Contents

Foreword

(This foreword is not part of the American National Standard for Information Interchange Format, ANSI/NISO Z39.2-1994. It is included for information only.)

Z39.2 is one of the standards that is critical to the implementation of automation for storing, transferring, and retrieving bibliographic information. It was first issued in 1971. This 1994 edition introduces two changes: (1) removal of restrictions on character positions 07-09 in the record leader; and (2) a reduction of references to "bibliographic" data because the standard is used for many other types of data, even within the information community.

This standard was originally prepared in 1966 by Subcommittee 2 on Machine Input Records of the American National Standards Committee Z39. The Subcommittee on Machine Input Records was organized in February 1966 to define a format for the interchange of bibliographic records on magnetic tape. In its work, the subcommittee sought to ensure that: (1) the format would be hospitable to all kinds of bibliographic information and related data; (2) the format would be hardware independent; (3) the structure of all records would be basically identical and would include sufficient control information to specify unique characteristics; and (4) methods of recording and identifying data would provide for maximum manipulability leading to ease of conversion to other formats. The completed standard, ANSI Z39.2-1971, was approved by the Z39 Standards Committee in March 1969 and by the American National Standards Institute on July 14, 1970.

The Subcommittee on Machine Input Records was reconvened in 1974 for the purpose of conducting the required periodic review and revision of this standard. The principal change introduced in that revision, approved as ANSI Z39.2-1979, was the addition of an optional user-defined portion to the directory entry and the concomitant withdrawal of the requirement that entries have a length of 12 characters. This change was motivated by consideration of the problem of expressing relationships within a record. Redefinition of the directory entry did not render nonstandard any existing implementation of ANSI Z39.2-1971.

The other changes made to the format in 1979 included: (1) the reservation of additional tags for control fields; (2) the restriction of characters that may be used in tags to alphanumeric characters; (3) the specification of characters for the delimiter, the field terminator, and the record terminator (these specifications were given in Appendix A1 of ANSI Z39.2-1971); and (4) the use of a field terminator and a record terminator after the final variable field. The appendixes on implementations that were published with the original version of the standard were deleted in 1979 as unnecessary because of the appearance of extensive documentation for various implementations since the standard was first approved.

In 1985, in response to a review of the standard, the following changes were made: (1) removal of the restriction on the use of 003; and (2) expansion of the possible leader and data element identifier code values from ASCII basic characters to any ASCII graphic character (described in American National Standard Code for Information Interchange, ANSI X3.4-1977). These changes brought the standard into conformity with the existing International Standard ISO 2709, Documentation-Format for Bibliographic Information Interchange on Magnetic Tape.

NISO acknowledges with thanks and appreciation the contributions of Sally H. McCallum, Chief, Network Development and MARC Standards Office, Library of Congress, in revising this standard.

Suggestions for improving this standard are welcome. They should be sent to the National Information Standards Organization, P.O. Box 1056, Bethesda, MD 20827, telephone (301) 975-2814.

This standard was processed and approved for submittal to ANSI by the National Information Standards Organization. NISO approval of this standard does not necessarily imply that all Voting Members voted for its approval. At the time it approved this standard, NISO had the following members:

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Information Interchange Format

1. Scope and Field of Application

This standard specifies the requirements for a generalized information interchange format that will accommodate many types of data, especially bibliographic description of all forms of materials and related data such as authority, holdings, circulation, etc.[1] It describes a generalized structure, a framework, designed specifically for exchange of data between processing systems and not necessarily for use as a processing format within systems. This standard does not specify the content of a record and does not, in general, assign meaning to tags, indicators, or data element identifiers. Such specifications shall be provided by particular implementations of the standard. The format may be used for the interchange of records using various communication media.

2. Referenced 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, Inc., the revision shall apply:

ANSI X3.4-1986 (R 1992), Coded Character Sets — 7-Bit American National Standard Codes for Information Interchange (7-Bit ASCII)

ANSI X3.27-1987 Magnetic Tape Labels and File Structure for Information Interchange

3. Definitions

Base address of data—A parameter whose value specifies the character position of the character following the field terminator of the directory, where the origin is the first character of the leader. (For example, if the directory contains two 12-character entries, the leader occupies positions 0-23; the two directory entries, positions 24-35 and 36-47; the directory field terminator, position 48. Consequently the base address of data for the record is 49.)

Character—A pattern of bits of a determined length (depending on the system) treated as a meaningful unit.

Communications format—See information interchange format.

Control field—A variable field containing parametric or other data which may be required for the processing of the record.

Control number—A character string uniquely associated with a record by the organization transmitting the record.

Data element—A defined unit of information.

Data element identifier—A code consisting of one or more characters used to identify individual data elements within a variable field.

Data field—A variable field containing data generally not intended to supply parameters for the processing of the record. See also **control field.**

Delimiter—ASCII character 1/15, which is used in this standard as an initiator, a separator, or a terminator of individual data elements within a variable field. (The notation given for the delimiter is that prescribed by ANSI X3.4, in which this character is named "unit separator.")

Directory—An index to the location of the variable fields (control and data) within a record. The directory consists of fixed fields called entries.

Entry—A field within the directory giving information about a variable field. (Within the text of this standard, the word "entry" always refers to a field in the directory. Since the word has other meanings, the phrase "directory entry" may be required for clarity in general use.)

Entry map—A set of parameters specifying the structure of the entries in the directory.

Field—A defined character string that may contain one or more data elements. See also **control field, data field, fixed field,** and **variable field.**

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[1] The standard accommodates the description or identification of an entity independently or in relation to other entities. It does not specify a particular method for recording such relationships. For bibliographic data, for example, many types of relationships may exist, among them vertical or hierarchical relationships between a whole and its parts (for example, the relationship of a series to its individual volumes); horizontal relationships between versions of a work in different languages, formats, or media; and chronological relationships between issues of a work (for example, the relationship of a serial to its predecessors and successors). Relationships may also be recorded between different types of units: bibliographic, holdings, items, documents, etc.