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ANSI Pubs Go Electronic

ANSI’s two major publications, Standards Action, the bi-weekly newsletter announcing standards development activities, and the ANSI Reporter, ANSI’s quarterly newsletter, will be available exclusively in electronic form as of January 1, 1999. The online version of the ANSI Reporter will focus on editorial content and opinions. Time-sensitive news will be posted to ANSI Online. Recent copies of the ANSI Reporter are available in PDF format at: web.ansi.org/reporter. Standards Action will be available via ANSI Online at: web.ansi.org/standardsaction/
Issues in Crosswalking Content Metadata Standards

by Margaret St. Pierre, Blue Angel Technologies, Inc.
Bill LaPlante, Bureau of the Census

Metadata is one of the key links required for search and discovery. What is required to harness the variety of metadata sets that are beginning to proliferate? The authors explore some of the issues that surface in considering the harmonization of metadata standards. This paper originally appeared on the NISO website as the First NISO White Paper. The authors extend their thanks to Jim Restivo of Blue Angel Technologies for his help in illuminating key ideas and reviewing early drafts.

Introduction

This paper describes the general issues involved in the harmonization of metadata standards and in the development of crosswalks between related metadata standards. We begin by enumerating a set of simple procedures for harmonizing metadata standards. Next we describe the set of criteria needed to develop a fully specified crosswalk. Finally, we propose future steps for simplifying crosswalk implementation through the use of formal specifications and automation.

A content metadata standard is an open specification that itemizes a set of elements and their meanings [1]. Each element is tagged with an identifier (e.g., "Title," "Author") that distinguishes the element from other elements within the standard. Each element has a set of constraints or rules specifying the allowable content of the element and its relationship to other elements within the standard. For example, a "Country" element may be restricted to a standard vocabulary of country codes, and may have a subordinate relationship to an "Address" element.

A content metadata standard, hereafter referred to as a metadata standard, is typically developed to support a specific community of interest. A large number of metadata standards have been developed, and many more are underway. Examples of popular standards include Dublin Core [2], USMARC [3], Federal Geographic Data Committee (FGDC) [4], Global/Government Information Locator Service (GILS) [5], Directory Interchange Format (DIF) [6], Inter-University Consortium for Political and Social Research (ICPSR) [7], and Survey Design and Statistical Methodology (SDSM) [8,9,10], Consortium for the Computer Interchange of Museum Information (CIMI) [11], and the Information Resource Dictionary System (IRDS) Content Model Standard [12].

To reach the broadest community of users, information must be made available in accordance with a number of related metadata standards. As the number, size, and complexity of metadata standards continues to grow, supplying the metadata for each standard becomes more and more time-consuming and tedious. In order to minimize the amount of time needed to create and maintain the metadata, and to maximize its usefulness to the widest community of users, there is a mounting need for the metadata maintained in one standard to be accessible via alternate standards.

A crosswalk is a specification for mapping one metadata standard to another. Crosswalks provide the ability of make the contents of elements defined in one metadata standard available to communities using related metadata standards. The specification of a crosswalk is a difficult and error-prone task requiring in-depth knowledge and specialized expertise in the associated metadata standards. Obtaining the expertise to develop a crosswalk is particularly problematic because the metadata standards themselves are often developed independently, and specified differently using specialized terminology, methods and processes. Furthermore, maintaining the crosswalk as the metadata standards change becomes even more problematic due to the need to sustain a historical perspective and ongoing expertise in the associated standards.

Harmonization is the process of enabling consistency across metadata standards. Harmonization of metadata standards is essential to the successful development of crosswalks between metadata standards. Harmonization results in the ability to create and maintain only one set of metadata, and to map the metadata to any number of related metadata standards. The use of harmonization
vastly simplifies the development, implementation and deployment of related metadata standards through the use of common terminology, methods and processes.

**Harmonization**

The first step toward harmonization is to extract the common terminology, properties, organization, and processes used by many of the metadata standards, and create a generic framework in which to develop new or revise existing metadata standards. Because similar procedures can be applied to related metadata standards, the implementation of the standards and the development of new crosswalks are simplified. This section highlights several key steps for obtaining harmonization among metadata standards.

**Terminology**

A lack of common terminology currently exists among the different metadata standards. For example, USMARC metadata is identified using the terms: $\langle$tag$\rangle$, $\langle$indicator$\rangle$ and $\langle$subfield code$\rangle$, whereas Dublin Core identifies its metadata using the term $\langle$label$\rangle$.

As a starting point for harmonization, it is essential to agree on a common set of terminology to be used in the specification of metadata standards. As part of the task of identifying common terminology, it is crucial to also establish a formal definition for each term. A shared vocabulary prevents misinterpretation of the standards, and lays the foundation for subsequent harmonization efforts.

**Properties**

Many of the metadata standards use similar properties in the definition of their metadata. The similarities need to be extracted and the concepts generalized and used in a common way across all metadata standards. Examples of common metadata properties include:

- a unique identifier for each metadata element, e.g., tag, label, identifier, field name
- a semantic definition of each metadata element
- whether or not a metadata element is mandatory, optional, or mandatory based on certain conditions
- whether or not a metadata element may occur multiple times
- the organization of metadata elements relative to each other, e.g., hierarchical, parent-child relationships
- constraints imposed on the value of the element (e.g., free text, numeric range, date, or a controlled vocabulary)
- optional support for locally defined metadata elements

The shared properties can then be expressed and used in a similar fashion within each metadata standard. This step is important for simplifying crosswalk development.

**Organization**

The development of a crosswalk is often complicated by the fact that each metadata standard is organized differently. To ease the ability to find information within any given metadata standard, each document should be organized in a similar manner, so that a given section of one standard can be found in an analogous section of another standard. The generic metadata document organization should also accommodate the content-specific requirements of different metadata standards.

**Process**

During the development of a metadata standard, there may be occasions where the choice of mechanism or process selected for use in the metadata standard is arbitrary, and there is an analogous process in another related standard. Harmonization is achieved when the analogous processes are chosen to be the same. The primary benefit of unifying the selection process is in simplifying crosswalk development. For example, because CIMI metadata incorporates the elements defined by Dublin Core metadata, in addition to a large number of content-specific museum metadata, developing a crosswalk between the two metadata standards is simplified.

**Semantic Mappings**

Foremost in the harmonization effort and eventual crosswalk development is the intellectual task of determining the semantic mapping of elements between the source and target metadata standards. The task involves specifying a mapping of each element in the source metadata standard with a semantically equivalent element in the target metadata standard. The prerequisite to a meaningful mapping requires a clear and precise definition of the elements in each standard.

Many metadata standards already provide a semantic mapping to related metadata standards. These mappings are often tabulated in informative appendices to the metadata standard. Although a semantic mapping is an essential piece of the crosswalk, a number of additional issues must also be resolved to obtain a complete crosswalk. These additional components are discussed in the following section.

**Crosswalks**

A crosswalk is a set of transformations applied to the content of elements in a source metadata standard that result in the storage of appropriately modified content in the analogous elements of a target metadata standard. A complete or fully specified crosswalk consists of both a semantic mapping and a metadata conversion specification. The metadata conversion specification contains the transformations required to convert the metadata record content compliant to a source metadata standard into a record whose contents are compliant with a target metadata standard.

A fully specified crosswalk requires that all implementations of the crosswalk on a specific source content result in the same target content. If two different implementations of a crosswalk operating on the same source content result in different target content, the crosswalk is not fully specified. This section describes the metadata conversions that must be addressed in a fully specified crosswalk.
Element to Element Mapping

All metadata standards specify a number of properties associated with the specification of the various metadata elements. Some standards, such as USMARC, qualify each element as repeatable or non-repeatable. Some metadata standards indicate whether or not an element is mandatory or optional. Others, such as FGDC, incorporate both these attributes into a single property by indicating a lower and upper bound on the number of times an element may occur. An inclusive lower bound of zero indicates an optional element, whereas an inclusive lower bound of one indicates that the element must occur at least once and thus is mandatory.

For crosswalk development, these properties must be taken into consideration for the mapping of each element. The trivial case is mapping elements that have identical properties, e.g., mapping mandatory, non-repeatable elements to mandatory, non-repeatable elements of identical data content types. There are a number of interesting cases that require more complex resolution.

“One to Many”

In most cases, a one-to-many map is trivial; an occurrence of the source element maps to a single occurrence in the target element. There are cases where the mapping requires more explicit resolution. For example, the source standard may contain a non-repeatable “keywords” element. The element definition specifies that its element value is restricted to a controlled vocabulary. The element may map to a repeatable element in the target standard where each keyword must occur as a repeated element. In this case, the mapping requires specialized knowledge of the composition of the source element, and how it expands into multiple target elements.

Another interesting case is that of mapping one source element to two unique target elements. For example, a crosswalk for GILS to DIF would need to map the GILS “Contact Name” element to the “First Name” and “Last Name” elements in DIF. In this case, general rules must be specified to correctly extract the first and last name from the GILS element and map them to the corresponding DIF elements.

“Many to One”

The many-to-one map must specify what to do with the extra elements. If the resolution is to map all values of the source element to a single value in the target element, explicit rules are required to specify how the values will be appended together. Alternatively, if the resolution is to only map one source element value to the target, with the possible consequence of information loss, the resolution must indicate the criteria for element selection, e.g., the first element, or the most recently added element.

Another important case that requires resolution is the handling of a source element that does not map to any appropriate element in the target standard. Since many metadata standards provide the ability to capture additional information, the resolution must specify precisely how the element value is to be added.

In some cases, there may be mandatory elements in the target that have no corresponding mapping in the source metadata standard. Because the target requires a value for the mandatory elements, the crosswalk must provide a resolution for their values.

Hierarchy, Object, and Logical View Resolution

The crosswalk must address how to resolve differences in the hierarchy, object, and logical view orientation of the different metadata standards. Most metadata standards organize their metadata hierarchically. In some cases, the depth of the hierarchy may be fixed, as in the USMARC and GILS standards. In other cases, standards such as SDSM and FGDC are recursively defined where the depth of the hierarchy is unlimited.

A few standards, such as SDSM and IRDS, are multiple object metadata standards. Multiple object metadata means that the metadata concerns more than one item. For example, USMARC, despite its size and complexity, is a single object metadata standard, in that the metadata is always associated with only one item per use. FGDC, CINI, and ICPSR are all single object metadata standards, specifying the metadata associated with a geospatially referenced dataset, physical artifacts or their electronic derivatives, and the data resulting from political or social research, respectively. On the other hand, in both IRDS and SDSM, the metadata for many objects may be associated together in various ways depending on the perspective with which the metadata is being retrieved. IRDS objects include system, program, and data, for example; while in the SDSM some of the objects include survey documentation, dataset, and frame. In a multiple object metadata standard, the hierarchy for retrieving or manipulating the metadata is dependent on the object of interest.

Standards such as SDSM and IRDS also specify multiple logical views of their metadata elements. A logical view enables users to see a specific set of metadata elements of the metadata standard organized in a specific way. The standards that provide multiple logical views enable different user communities access to the same metadata elements using different organizations, hierarchy, or representations of those metadata elements.

Content Conversion

Metadata standards typically restrict the contents of each metadata element to a particular data type, range of values, or controlled vocabulary. Conversions are required between text and numeric values or text and date values. Often the needed conversions are based not only on the defining properties of the source and target metadata elements, but also on the contents of the source metadata elements. Resolution rules are required between a source element whose value is specified as free text and a target element whose value is restricted to a controlled vocabulary. Resolution rules are also necessary, for example, between a source and target element using different controlled vocabularies.

Conversion Combinations

When conversion properties are considered independently, the metadata conversions may appear to be straightforward to specify and process. In practice, however, several
conversion issues often surface in combination, which significantly complicate the conversion specification and process. For example, converting a source metadata element that is both hierarchical and repeatable to a target metadata element that is not repeatable and does not share the same hierarchy is not a straightforward process. Consideration must be given to the transformations needed for converting to a target metadata element where multiple properties are substantially different from the source.

Future Steps

If several metadata standards were harmonized and a fully specified crosswalk between related standards was developed, the next step would be to work toward the goal of automating the crosswalk process. Toward this goal, if the metadata and crosswalk transformations could be captured in a formal way that is consistent throughout the many metadata standards, the implementation of the standards and their crosswalks would be vastly simplified. Fully automated crosswalks would also enable search engines to function with any given family of metadata standards. This section proposes the idea of generalizing and formalizing metadata and their crosswalks.

Formal Content Metadata Specification

There is currently no common established means for specifying metadata and its associated properties. Most metadata standards use an arbitrary combination of free text descriptions, lists and tables. More complex metadata standards, such as FGDC, use a set of production rules to specify their metadata properties.

It may be possible to generalize and formalize the specification of metadata using a canonical representation or metadata specification language (MSL). This procedure is analogous to specifying the syntax of a programming language using the popular Backus-Naur Form (BNF). The purpose of an MSL would be to establish a consistent means for specifying metadata and its many properties. The result of using a generic MSL for all metadata standards is simplification of the metadata specification process and attainment of a concise and more precise representation of each metadata standard. Like BNF, the use of an MSL would not capture the semantics of the metadata elements.

A straight syntactic description of a given metadata standard is inadequate for capturing all the information needed to automate a crosswalk. A minimum set of data types would also need to be defined. This minimum set would be used to derive all other data types needed to represent metadata elements in a target metadata standard.

Formal Crosswalk Specification

Like content metadata specification, there is no standard method of specifying all the transformations required for crosswalk development. Most of the crosswalks that are provided with the metadata standards are no more than a semantic mapping of elements. A fully specified crosswalk must also provide a metadata conversion specification, which includes rules for element to element mappings, hierarchy and object resolution, and metadata content conversions.

To automate the implementation of a crosswalk, it may be possible to formalize the specification of a crosswalk. For example, research has shown that it is possible to formally specify a set of transformations to convert a source metadata standard to a target standard using the theory of tree automata. For example, if the source and target metadata standards are specified using a Standard Generalized Markup Language (SGML) Document Type Definition (DTD), the crosswalk could specify a set of transformations for converting the source DTD to the target DTD [13].

References


1 In GILS, "Contact Name" is subordinate to "Point of Contact."
2 In DIF, the "First Name" and "Last Name" elements are subordinate to the "Technical Contact" element.
The July 1998 ISO featured reports on the other TC46 groups that the U.S. supports. The following reports complete NISO’s coverage of the TC 46 meetings held in 1998.

**Subcommittee 11: Archives/Records Management**
*by Marie Allen (National Archives and Records Administration)*

The first meeting of the new Subcommittee (SC 11) of TC 46 was held May 12-14, 1998 in Athens. The purpose of Subcommittee 11 is to draft an international records management standard perhaps modeled on the Australian national standard for records management. The Australians had initially proposed this new international standard activity and are providing the Secretariat (Standards Australia) and the Subcommittee Chair (David Moldrich).

Delegations from eight member bodies attended: Australia (David Roberts), France (Genevieve Drouhet), Sweden (Anki Steen), Ireland (Marion Gunn), Canada (Catherine Zongora), U.K. (Susan Healy), Denmark (Klaus Son), and the U.S. (Diane Carlisle/ARMA and Marie Allen).

The meeting resulted in a number of specific resolutions, as well as general agreements on the basis on which the work of the Subcommittee will be conducted. The Australian standard will not be used as the basis for the new standard, but only as a reference tool. The name of the standard will probably be amended for clarity. Four ad hoc groups were established to draft language for the standard based on general outlines agreed to at the meeting. Each national representative is responsible for identifying organizations or individuals in their countries who would be interested in monitoring the standard and establishing a process for sharing information and receiving input.

In May 1999 the subgroups will report to the members of SC 11 with draft language, or a plan for drafting the language of a standard. SC 11 may then establish formal working groups to complete the drafting process. Once a working group is formally established, its work must be completed in 12-18 months. SC 11 will next meet May 18-20 in Paris. SC 11 has a password-protected website at: www.isotc46c11.eyemedia.com.au/

**TC46/SC4/WG8 Library Codes**
*by Randall K. Barry (Library of Congress)*

SC4/WG8 met on Thursday, May 14, 1998 in Athens to discuss the preliminary comments on ISO/CD 15511 (International Standard Identifier for Libraries and Related Organizations). Although the official ballot period had not closed the WG had a sufficient response in hand to conduct useful discussions and resolve several issues surrounding the draft. In early 1999 a revised draft incorporating the modifications agreed upon at the meeting will be circulated for DIS ballot. The text of the revised draft should address problems such as scope of the standard, the length of identifiers, clarity of the language describing the structure, and details on maintenance. The WG agreed to change the initialism to be used in conjunction with ISO 11551 identifiers to “ISIL.” WG8 will next meet May 18, 1999 in Paris.

**ISO TC46/SC4/WG6 Electronic Publishing**
*by Randall K. Barry (Library of Congress)*

Working Group 6 (Electronic Publishing) met in Paris, France on May 17, 1998 in conjunction with the annual XML/SGML Europe Conference. The chief topic of discussion was the future of ISO 12083 (Electronic manuscript preparation and markup), an implementation of Standard Generalized Markup Language (SGML). ISO 12083 has a significant user base but the standard is not totally fit to meet the needs of these users. WG 6 would like to revise the standard to meet new needs, including the need to embrace XML, the Extendable Markup Language. Plans were made to revise ISO 12083 within the next year to support XML requirements. WG6 will also investigate the need to enhance the coverage of math formulae by the standard and perhaps improved support...
for the encoding of bibliographic citations. Since the use of SGML is still new to many, the work of WG6 in developing ISO standards in this area has been difficult. The scope of potential users is great, however, and WG6 intends to continue its work. SC4/WG6 plans to meet November 14, 1998 at the GCA's XML/SGML Conference in Chicago. The WG 6 website is: www.xmlxperts.com/12083.htm

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**TC46/SC9**

**Presentation, Identification and Description of Documents**

by Pat Harris (NISO)

SC 9 is one of the largest and most active groups in TC 46. The SC 9 Secretariat, managed by Jane Thacker at the National Library of Canada, maintains an excellent website: www.nlc-bnc.ca/iso/tc46sc9

Thirty-four delegates from 16 member countries and 3 liaison organizations attended the 1998 meetings of SC 9 in Athens held May 13-14. Work progressed efficiently on a number of projects:

- Working Draft 5966 — Guidelines For The Presentation Of Technical Reports. An ad hoc group met on 1998-05-14 to discuss the Working Draft. Among the changes suggested were that the text should be modified to further broaden its applicability to technical reports in electronic formats. The Working Draft will be revised for submission as a Committee Draft.

- Survey Of User Requirements For ISO/DTR 11015 - List of abbreviations of typical bibliographic terms. Sten Hedberg (Sweden) gave an update on the responses to the survey of requirements for a possible Web database of bibliographic abbreviations based on DTR 11015. The next step will be to analyze the data and make appropriate additions and corrections to the current file of abbreviations.


- Proposed Reorganization And Review Of ISO/TC 46/SC 9 Activities. SC9 members discussed two options presented by the Secretariat for a reorganization and review of the SC’s activities. Participants agreed that the Secretary should circulate draft terms of reference and a request for nominations for new Working Groups for the following subject areas:
  - Information and document identifiers
  - Bibliographic data and description
  - Presentation of documents
  - Subject analysis and description (possibly to be combined with the WG on “Bibliographic data and description”)

  The first task of the proposed WGs will be to review the SC 9 standards within their scope in terms of their actual use, to determine whether any existing work should be withdrawn, and to develop an action plan for increasing the recognition and implementation of any standards retained in the programme of work.

  The proposed terms of reference and call for nominations to the new WGs will be distributed in early 1999.

- International Standard Work Code (ISWC). The work item focuses on an ISWC for musical works. Possible expansion of the ISWC system to other types of works, as envisioned in the original proposal, may be addressed in future parts. WG 2 (ISWC) will meet in New York in October 1998 hosted by ASCAP, to finalize the text that will be presented for distribution as a Committee Draft in late 1998. (Note: U.S. Balloting on CD 15707 closes 2/16/99)

- Revision of ISO 8:1977 Presentation of periodicals.

  Pending the results of the restructuring and review of SC 9’s activities, the project to revise and update ISO 8 was suspended. SC 9 expressed its appreciation to Nancy Selinger (USA) for her work as project editor in preparing the working draft revision for this project.

- SICI Standard For Possible Fast-Tracking.

  George Richardson (UK) reminded participants that at the 1996 meeting SC 9 withdrew ISO 9115 (Biblid), with the intention to replace the Biblid with the U.S. SICI standard (ANSI/N ISO Z39.56-1991 - Serial Item and Contribution Identifier) using ISO’s “fast track procedure.” SC 9 expressed continued interest in submitting Z39.56 as a new SC 9 work item under ISO’s fast track procedure as soon as the withdrawal of ISO 9115 has been confirmed. Pat Harris reported that NISO, which developed the SICI standard, would be reluctant to do this under ISO’s current policies. When national standards are adopted by ISO under the fast-track procedure, the copyright is assigned to ISO. Then, if the national standards body wants to adopt the international standard as its national version, it has to pay a royalty to ISO even though the work was originally developed by that national body. Although there have been some exceptions, this ISO policy does not encourage the developers of national standards to put their work forward as the basis for an international standard. It was agreed that this problem should go to the TC46 Advisory Group to be discussed and to submit a statement to ISO Central Secretariat, based on the SICI example, that this policy discourages the submission of national standards for international adoption.

**Next Meeting**

The next SC 9 meeting will be held May 18 and 19, 1999 in Paris.

**Post-Meeting Developments**


ISO 3166-1 Country Codes: Annual Report

Country Codes
Annual Report

The international standard for Country Codes ISO 3166 is one of the most widely used standards maintained by ISO TC 46. It provides a standard numeric and 2-letter and 3-letter alphabetic codes for 237 countries or areas of special sovereignty. First released in 1974, ISO 3166 has grown to encompass three parts, including two new sections on codes for subdivisions (states, regions, major cities, etc.,) and a listing of retired codes.

A new section of the NISO homepage, located in the Standards Resources section, is devoted to ISO 3166. This section will soon be linked to the full-text of the ISO standard.

It is easy to assume that the world of country codes is static and dull. Nothing is farther from the truth! Country code standards, as this report reveals, are a reflection of world events and international politics.

ISO 3166-1 Country Codes: Status

Since the publication of ISO 3166-1 in October 1997 only one change has been made to the Standard: the official name of the Independent State of Western Samoa was changed to Independent State of Samoa as of 1998-02-05. However, the need for information on the standard and the demand for new code elements has remained high. Some of the most frequently asked questions to be addressed by the ISO 3166 maintenance agency include:

Are There Codes for Serbia and Montenegro?

The creation of five new countries in the territory covered by the former Socialist Federal Republic of Yugoslavia has prompted many to assume that Serbia and Montenegro have been assigned unique country codes. However, Serbia and Montenegro are part of the new Federal Republic of Yugoslavia. Therefore they are not listed in ISO 3166 and no ISO 3166 code elements are assigned to them.

The Socialist Federal Republic of Yugoslavia was divided into five countries:
- Bosnia and Herzegovina (BA, BIH, 070)
- Croatia (HR, HRV, 191)
- Federal Republic of Yugoslavia (YU, YUG, 891)
- Slovenia (SI, SVN, 705)
- The Former Yugoslav Republic of Macedonia (MK, MKD, 807)

Did Hong Kong Get a New Code?

On July 1, 1998 Hong Kong became a special administrative region of China ending 150 years of British rule. The ISO 3166 Maintenance Agency considered if there should be a revision to the ISO 3166-1 entry for Hong Kong given this change. The MA decided to retain the established entry for Hong Kong. Why? The code elements for Hong Kong (HK and HKG) are very widely used. In addition, China had not requested that Hong Kong be removed from the standard or that there be any change to the name.

EU and the Euro?

1 January 1999 marked the introduction of the Euro as the new currency for eleven member countries of the European Union. The Currency Code (ISO 4217) Maintenance Agency has announced a new currency code “EUR.” Although a currency code exists, no country code elements for the European Union have been assigned in ISO 3166-1.

Why? Because the context of ISO 3166-1 the European Union is not a country. The countries listed in ISO 3166-1 are taken from United Nations lists of country names. The European Union is an organization of independent, sovereign countries and not a country itself.

If the countries making up the European Union should at some time in the future decide to give up their sovereignty and form a new country, ISO 3166-1 country codes will be assigned.

What Is the Code for the Areas under Palestinian Authority?

The implementation of the Oslo Agreement between Israel and the PLO has lead to the need for ISO 3166-1 code elements for the areas under the authority of the Palestinian Authority. However, without a UN-approved name for these areas they cannot be included in ISO 3166-1. In 1996 the ISO 3166/MA reserved the code elements PS (Alpha-2 code) and PSE (Alpha-3 code) for the areas under Palestinian Authority. These code elements were selected on the assumption that the area would have a name containing the component “Palestine” or “Palestinian.”

By the end of 1998 no UN-official name for the areas under the Palestinian Authority exists. For the time being the ISO 3166/MA advises users of ISO 3166-1 to use PS and PSE. An ISO 3166-1 code element for the area in question will be issued if and when the UN officially includes the area in its lists of country names.
ISO 3166-2
"Country Subdivision Code" Published

On 15 December 1998 the ISO Central Secretariat published Part 2 of ISO 3166: Country subdivision code. The new standard lists administrative subdivisions for all countries listed in ISO 3166-1. The Code elements used consist of the alpha-2 code element from ISO 3166-1 followed by a separator and a subdivision code element of up to three alphanumeric characters, for example:

DK-025 for the Danish county Roskilde
LV-RI for the Latvian district Rīgas Aprīkins
MG-T for the Antananarivo province in Madagascar

Geographical information can now be coded in a standard and more detailed way. Companies or institutions that deal with large amounts of geographical data, such as libraries, airlines, shippers, statisticians, researchers, customs authorities, travel agents, or tour operators are likely users of this new standard. ISO 3166-2 will be continuously updated by the ISO 3166/MA. Updates of the code list will be published regularly.

ISO 3166-3
"Codes for Formerly Used Names of Countries" to Be Published

Part 3 of ISO 3166 titled, Codes for formerly used names of countries, was approved in November 1998. ISO 3166-3 lists, in English and French, all country names withdrawn from ISO 3166-1 since its first publication in 1974. It lists a four-character code for these outdated country names, gives the old ISO 3166-1 code elements and lists the new country name.

Formerly used ISO 3166-1 code elements may be reassigned after a five year period so the Part 3 list is very useful to users of ISO 3166-1 who keep archive records on country-related information.

ISO 3166-3 will be published in early 1999.

ISO 3166-1 and the Internet

In early 1999 the authorized code lists from ISO 3166-1 will be made accessible on the WWW. The code list will be linked to the web pages of the ISO 3166/MA at DIN, the German Institute for Standardization, where more detailed information, e.g., on updates of the standard, will be available. The code list on the ISO WWW server will be accessible free of charge. This new service will be announced in ISQ and on the NISO Website.
**Ballot Results**

**Z39.79 Environmental Conditions for the Exhibition of Library and Archival Materials**

Ballot period: November 23, 1998-January 4, 1999

- Total ballots returned: 37
- Yes: 16
- Yes, with comments: ALA, AJL, INCOLSA, LC, MedLA, NAL, NLM, RLG, STC, SAA
- No: 0
- Abstentions: 11

The standard was approved. Standards Committee MM, chaired by Cathy Henderson, will evaluate and respond to the comments. The standard will be published by NISO Press in 1999.

**Z39.78 Library Binding and Library Prebound Books**

Ballot period: December 15, 1998-January 31, 1999

- Total ballots returned: 34
- Yes: 21
- Yes, with comments: AJL, MedLA, MusicLA, NLM, STC
- No: 0
- Abstentions: 8

The standard was approved. Standards Committee ZZ, chaired by Barclay Ogden, is evaluating and responding to the comments. The standard will be published by NISO Press in 1999.

**Z39.82 Title Pages for Conference Proceedings**

Ballot period: October 5-November 15, 1998

- Total ballots returned: 35
- Yes: 23
- Yes, with comments: ALA, LC, MedLA, Minitex, NLM, OCLC, RLG, STC, SLA
- No: ACS
- Abstentions: 2
- Comments from interested parties.

Standards Committee AO, chaired by Beacher Wiggins, is evaluating and responding to the comments and resolving the negative vote.

**Balloting Calendar**

**March 1999**

- Reaffirmation Ballot: ANSI/NISO Z39.43-1993 Standard Address Number

**April 1999**


**May 1999**

- Revised Standard: ANSI/NISO Z39.29-199x Bibliographic References

**Meeting Calendar**

**NISO’s Dublin Core Activity**

In late 1998 the NISO members voted to adopt the Dublin Core Metadata Set as a new work item. NISO will coordinate formal balloting and adoption with other standards bodies and the expected release of the next version of Dublin Core set.

**Nancy Knight Joins NISO Staff**

Nancy Knight joined the NISO staff as of January 4, 1999 in the newly created position of Associate Director. She will be responsible for membership development and promotion, marketing the NISO Press, and facilitating standards development work.

Prior to joining NISO, Knight has held several senior management positions within the information industry. Most immediately she was vice-president of client relations at mark Technologies, a pioneering e-commerce...
company, where she was responsible for developing marketing and licensing relationships with electronic publishers and technology companies. Before Imark, Knight served as vice president of information provider relations for SilverPlatter Information, Inc. At SilverPlatter she created and managed the department responsible for providing content for SilverPlatter products and expanded both the number and scope of information products for the academic and medical communities. Prior to this appointment, Knight worked for PsyclINFO at the American Psychological Association where she was responsible for the launch and market acceptance of PsycLIT, APA's highly successful CD-ROM product.

Knight has a masters degree in library science from the University of Chicago and a bachelor of science degree from Simmons College, Boston, Massachusetts.

Five Industry Leaders Join NISO


Academic Press is one of the largest commercial publishers in the United States for scientific information both in print and through its IDEAL online library and it is known throughout the international scientific community. Kenneth Metzner and Edward Pentz are Academic's representatives to NISO.

Ex Libris Ltd. is a privately held company based in Israel which produces the ALEPH integrated library system, now installed in over 450 sites worldwide; John Kolman and James Steenbergen will represent Ex Libris in NISO work.

Broadcast Music Inc. (BMI) is a performing rights organization that represents more than 200,000 songwriters, composers and music publishers with a repertoire of over three million works in all genres of music. Edward Oshanani and Robert Barone are the BMI's reps to NISO.

Baker and Taylor is a privately held information and entertainment services company. Headquartered in Charlotte, NC and operating worldwide, it distributes a wide range of products, including books, video, audio, software, and related services to libraries and retail stores. Bob Doran is B&T's representative to NISO.

Book Industry Communication (BIC) is a United Kingdom-based organization sponsored by publishers, bookellers and library associations to develop and promote standards for the communication of information and commercial transactions throughout the book and serials industries. NISO welcomes BIC as its first non-US domiciled Voting Member. Brian Green serves as BIC's NISO voting representative.

Circ Protocol Committee Appointed

NISO Standards Committee AT, tasked to draft a national standard to define a set of transactions to support circulation activities among independent library systems has been appointed. Patricia Stevens (OCLC) is the committee chair. Committee members are: John Bodfish, Ameritech; Bob Daugherty, Univ. of IL-Chicago; Patrick Gignac, GEAC, Mary Jackson, ARL; Jerry Karel, 3M; Sally McCallum, LC; Mark Needleman, DRA; Julie Nye NC State Library, Pat Renfro, UPenn; Jim Rush, Palinet; Bill Schickling, Gaylord; Barbara Shuh, National Library of Canada; John Wardell, CPS; Sandra Westall, III; Mark Wilson, TLC. Karen Anspach is the SDC liaison to the committee.

CIMI to Test DC Metadata

Museums, corporations, and other organizations that produce and distribute digital object descriptions are invited to participate in Phase II of the Consortium for the Interchange of Museum Information (CIMI) testbed implementation of Dublin Core (DC) metadata.

This testbed offers participants an opportunity to explore advanced methods for describing, communicating, and accessing metadata records. Activities in this testbed include:

- the completion and publication of the Guide to Best Practice: Dublin Core (DC 1.0/RFC2413),
- examination of the proposed qualifier elements with recommendations about the use of those elements within the museum context,
- use of Resource Description Framework (RDF) for enabling interoperability between applications that exchange metadata,
- mapping the DC element set to the CIMI Access Points.

A complete Project Description is available at: http://www.cimi.org/documents/meta_011899 pdi1 final.html
For further information contact Angela Spinazze (atspin@mindspring.com).

Guidelines for OPAC Displays

New Guidelines for OPAC Displays, developed by an IFLA task force, are now out for review on the IFLA website: http://www.ifla.org/iflaVI/s13/guide/opac.htm

Existing OPACs (online-public-access-catalogs) differ greatly in the range and complexity of their functional features. These guidelines recommend best practices in OPAC design. Comments should be sent to Dorothy McGarry (dmcgarry@library.ucla.edu) by April 30, 1999. Following this review the document will be sent on to the appropriate IFLA groups for a vote and formal adoption.
STATE OF THE STANDARDS: 1999

Standards development is not static. NISO standards are reviewed regularly and revised to keep them responsive to implementors’ needs. The following summary details the state of the standards that are now on NISO’s agenda or standards or work items that were pursued by NISO but did not result in a consensus standard. This comprehensive report on NISO’s standards program appears in the January issue of ISQ to keep you informed of the scope and status of NISO’s program on an annual basis. If you have any questions on the following reports contact the NISO office at 301-654-2512 or via email: nisohq@niso.org.

1999: NISO Standards Being Revised

The following standards are published and approved NISO standards that are now at some stage of revision. Information noted includes: the designation of the standard and its title, the designation of the Standards Committee assigned to complete the revision (for example, SC O0), the name of the committee chair and email address, the corresponding or related international standards (for example, ISO 4), and notes on the status of the revision process.

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<td>ANSI Z39.29-1977 ISO 690 SC O0</td>
<td>Bibliographic References</td>
<td>AWD Draft to be balloted in 1999. SC chair: M.E. Brennan, email: <a href="mailto:mollyb@lucent.com">mollyb@lucent.com</a></td>
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New NISO Standards in Development

The following standards activities describe the new standards now in development by NISO. Information noted includes: the designation of the standard and its title, the designation of the Standards Committee assigned to develop the standard (for example, SC AJ), and notes on the status of the development process. Email addresses for committee chairs are noted.

<table>
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<td>ANSI/NISO Z39.77-199x SC SS</td>
<td>Preservation Product Information</td>
<td>Balloted 11/15/97. Negative being resolved. SC chair: Mark Roosa, email: <a href="mailto:mroo@loc.gov">mroo@loc.gov</a></td>
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<td>SC AJ Z39.80-199x</td>
<td>Format for Downloading Records from Bibliographic and Abstracting Indexing Databases</td>
<td>Draft in development. Chair: Mary Engle, email: <a href="mailto:mary.engle@ucop.edu">mary.engle@ucop.edu</a></td>
</tr>
<tr>
<td>SC AO</td>
<td>Title Pages of Conference Proceedings</td>
<td>Draft balloted. Negative being resolved. Committee Chair: Beacher Wiggins, email: <a href="mailto:bwig@loc.gov">bwig@loc.gov</a></td>
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<tr>
<td>SC AP</td>
<td>Book Item and Contribution Identifier</td>
<td>Draft in development. Chair: Julia Blixrud, email: <a href="mailto:jblx@arl.org">jblx@arl.org</a> To be balloted in 1999.</td>
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<td>SC AQ</td>
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<td>Draft in development. Chair: Michael Moodie, email: <a href="mailto:mmoo@loc.gov">mmoo@loc.gov</a></td>
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<td>SC AR</td>
<td>DOI Syntax</td>
<td>Draft in development. Chair: Ed Pentz, email: <a href="mailto:epentz@harcourtbrace.com">epentz@harcourtbrace.com</a> To be balloted in 1999.</td>
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<td>SC AS</td>
<td>Dublin Core Metadata Set</td>
<td>Draft to be balloted in late 1999.</td>
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<td>SC AT</td>
<td>Circulation Protocol</td>
<td>Draft in development. Chair: Patricia Stevens, email: <a href="mailto:pat_stevens@ocic.org">pat_stevens@ocic.org</a></td>
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### Published and Approved NISO Standards

The following NISO standards are approved and published. Information noted includes: the designation of the standard and its title, the corresponding or related international standards (for example, ISO 2709), and the year when the standard is scheduled for its regular five year review.

<table>
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<th>DESIGNATION</th>
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Withdrawn NISO Standards

In accordance with ANSI Procedures all American National Standards that are not revised or reaffirmed within ten years following ANSI BSR approval are automatically administratively withdrawn. These standards are no longer official ANSI American National Standards and are withdrawn as active standards. Copies of these standards are available from the NISO office.

<table>
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<th>DESIGNATION</th>
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<td>ANSI Z39.4-1984 ISO 999</td>
<td>Basic Criteria for Indexes</td>
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<td>ANSI Z39.5-1983 ISO 4</td>
<td>Abbreviations of Titles of Publications</td>
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<td>ANSI Z39.6-1983</td>
<td>Trade Catalogs</td>
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<td>ANSI Z39.15-1980 ISO 1086</td>
<td>Title Leaves of a Book</td>
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<td>ANSI Z39.16-1979 (R1985)</td>
<td>Preparation of Scientific Papers for Written or Oral Presentation</td>
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<td>ANSI Z39.24-1976</td>
<td>Romanization of Slavic Cyrillic Character</td>
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<td>ANSI Z39.25-1975</td>
<td>Romanization of Hebrew</td>
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<td>ANSI Z39.33-1977 (R1986)</td>
<td>Development of Identification Codes for Use by the Bibliographic Community</td>
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<td>Synoptics</td>
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<td>System for the Romanization of Lao, Khmer, and Pali</td>
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<td>ANSI Z39.42-1980</td>
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<td>ANSI Z39.44-1986</td>
<td>Serial Holdings Statements (Replaced by Z39.71-199x)</td>
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<td>ANSI Z39.49-1985</td>
<td>Computerized Book Ordering</td>
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<td>ANSI Z39.52-1987</td>
<td>Standard Order Form for Multiple Titles of Library Materials</td>
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<tr>
<td>ANSI/NISO Z39.63-1989 ISO 8459-1</td>
<td>Interlibrary Loan Data Elements</td>
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A Guide to Alphanumeric Arrangement and Sorting (NISO TR-03)
by Hans H. Wellisch
One of the world’s leading indexing experts outlines the seven basic rules for alphabetical arrangement. How to place symbols in an alphanumeric sequence is also covered. Examples illustrate each rule.

Z39.20-1999 Criteria for Price Indexes for Print Library Materials
These instructions on how to prepare and compile price indexes will help you measure the extent of price changes on a periodic basis for a variety of library materials including hardcover trade and technical books, paperback books, periodicals, and microforms. A budgeting and planning essential.

Z39.56-1996 Serial Item and Contribution Identifier (SICI)
The SICI is a variable length code which can be used to identify both print and electronic serial publications. This new edition introduces significant changes such as the ability to identify if the serial is electronic, paper, or microformat and the identification of derivative parts of a serial. It will also accommodate proprietary numbering schemes. Changes in the title code algorithm make it easier to use, and improve the uniqueness of the SICI code for contributions.

Z39.71-1999 Holdings Statements for Bibliographic Items
Describes how to create holdings statements for bibliographic items in any medium—paper, microform, electronic. This new standard replaces both the Serial Holdings Standard Z39.44 and the Non-Serials Holdings Standard Z39.57

Up and Running: Implementing Z39.50
Proceedings of a Symposium Sponsored by the State Library of Iowa
edited by Sara L. Randel
Leaders in the development and implementation of Z39.50 report on where NISO’s networking standard is headed and give their views on the strengths and benefits of Z39.50. Also includes a summary of the panel discussion on implementations by vendor representatives.
1998 54 pp ISBN 1-880124-33-5 Price: $35.00

Understanding SGML and XML Tools
by Peter Flynn
This practical guide to implementing SGML and XML will help you make the most of the many electronic publishing tools now available commercially and in the public domain. The various tools you might use are explained in the context of the lifecycle of the document. The accompanying CD-ROM features ready-to-use SGML and XML tools including editors, parsers, and databases.

Computer Support to Indexing
by Gail M. Hodge and Jessica L. Milstead
Hodge and Milstead, two indexing pros, report on the conclusions of an in-depth NFAIS-commissioned survey of twenty-seven major database producers from government and private industry. This insider’s view of the industry describes the current world of database indexing, existing corporate policies on indexing strategy and design, and tracks how things have changed with the advent of the Web. Includes an appendix, bibliography, and index.

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