



# Elementi di modellazione e programmazione di contenuti digitali

**Corso di Laurea Magistrale in Metodologie  
informatiche per le discipline umanistiche**

*Ing. Michela Paolucci*

Department of Systems and Informatics

University of Florence

Via S. Marta 3, 50139, Firenze, Italy

tel: +39-055-4796523, fax: +39-055-4796363

**Lab: DISIT, Sistemi Distribuiti e Tecnologie Internet**

<http://www.disit.dsi.unifi.it/>

[paolucci@dsi.unifi.it](mailto:paolucci@dsi.unifi.it)

<http://www.dsi.unifi.it/~nesi>, <http://www.dsi.unifi.it/~paolucci>,

<http://www.axmedis.org> <http://mobmed.axmedis.org/>





# Elementi di modellazione e programmazione di contenuti digitali

**Corso di Laurea Magistrale in Metodologie  
informatiche per le discipline umanistiche**

- **Metadati e standard per la descrizione dei contenuti digitali**
  - DC, MPEG-7, MARC, MODS, RDF
- **Metadati usati nel campo dei beni culturali**
  - OAI-ORE, SBN, MAG, FRBR





- | La Fondazione Rinascimento Digitale (<http://www.rinascimento-digitale.it/>), il MiBAC (Direzione Generale per gli archivi e Direzione Generale per i beni librari, gli istituti culturali ed il diritto d'autore) e la Library of Congress organizzano la conferenza:

### **CULTURAL HERITAGE on line**

15-16 December 2009, Florence - Italy  
Teatro della Pergola, Via della Pergola 30

- | La Conferenza intende analizzare :
  - ♣ stato dell'arte e le future linee di sviluppo della produzione di contenuti culturali nel web
  - ♣ diffusione della conoscenza del patrimonio culturale e del web interattivo
  - ♣ diffusione delle biblioteche digitali
  - ♣ cooperazione fra musei, archivi e biblioteche
  - ♣ conservazione digitale
  - ♣ l'utilizzazione delle tecnologie dell'informazione da parte delle diverse comunità di utenti



# Metadati e standard per la descrizione dei contenuti digitali - Introduzione -





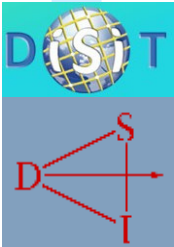
# MARC





# MARC (1)

- | **MARC** is an acronym for **MA**chine **R**eadable **C**ataloguing
- | The MARC format was primarily developed as a convenient way of storing and exchanging **bibliographic** records
- | It has been extended to include non-bibliographic forms of library material, such as maps and music scores
- | There is also a MARC format for the storage and exchange of **authority** records
- | MARC refers to a suite of related standards used for bibliographic control within the library science and 'digital libraries' communities
- | The MARC standards are based upon ISO 2709:1996, Format for Information Exchange (INEX)





# MARC Formats

## | MARC formats:

- ♣ handles resources of more complex structures, also for this reason are widely adopted for cataloguing of bibliographic information
- ♣ are not restricted to any particular type of information, so MARC-based catalogue will be able to handle collections of different medium

## | MARC refers to a suite of related standards:

- ♣ MARC 21
- ♣ UKMARC, UNIMARC, CNMARC, USMARC,... (country-specific MARC formats)
- ♣ etc.

| used for bibliographic control within the library science and 'digital libraries' communities

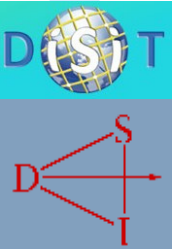
| The generic MARC 21 format, rather than country-specific MARC formats such as USMARC or CNMARC are used to ensure that the catalogue developed is not dependent on or limited by standards of any particular country





# MARC Standards: MARC 21 (1)

- | MARC 21 is a result of the combination of the United States and Canadian MARC formats (USMARC and CAN/MARC)
- | The MARC 21 formats are maintained by the Library of Congress in consultation with various user communities
- | The British Library adopted MARC 21 as its cataloguing format in June 2004 as part of the implementation of an integrated library system
- | The MARC 21 formats are used for “representation and communication of bibliographic and related information in machine-readable form”
- | MARC 21 allows the use of two character sets:
  - ♣ MARC-8
  - ♣ Unicode, encoded as UTF-8
- | MARC-8 is based on ISO 2022 and allows the use of Hebrew, Cyrillic, Arabic, Greek, and East Asian scripts. MARC 21 in UTF-8 format allows all the languages supported by Unicode





## MARC Standards: MARC 21 (2)

- | MARC 21 was designed to redefine the original MARC record format for the 21st century and to make it more accessible to the international community
- | There are five types of MARC 21 formats devised for different types of data:
  - ♣ Bibliographic
  - ♣ Authority
  - ♣ Holdings
  - ♣ Classification
  - ♣ Community Information
- | MARC 21 Format for Bibliographic Data is used for all types of bibliographic information, ranging from textual material, audio and visual material to computer files and mixed materials





# MARC record types

- | MARC prevede due tipi principali di record necessari per la catalogazione delle risorse:
  - ♣ **Bibliographic records**, che contengono informazioni su un libro, il numero di serie (ISBN), la registrazione di un suono o di un video, etc.
  - ♣ **Authority records**, che descrivono gli standard con cui devono essere memorizzati i nomi, i titoli, e in generale tutti i metadati bibliografici. Inoltre definiscono i riferimenti incrociati e danno la possibilità di aggiungere alcune note collegate alla risorsa in esame





# MARC Bibliographic record

- | A MARC record is a MACHine-Readable Cataloging record
- | **Cataloging record**, means a bibliographic record, or the information traditionally shown on a catalog card
- | The record includes (not necessarily in this order):
  - ♣ Description of the item
  - ♣ Main entry and Added entries
  - ♣ Subject Headings
  - ♣ Classification or call number(MARC records often contain much additional information)





# MARC Bibliographic record: Description

| Librarians follow the rules in Anglo-American Cataloguing Rules, 2nd ed., 2002 revision to compose the bibliographic description of a library item (AACR2)

| Description includes:

- ♣ Title
- ♣ Statement of responsibility
- ♣ Edition
- ♣ Material specific details
- ♣ Publication information
- ♣ Physical description
- ♣ Series
- ♣ Notes
- ♣ Standard numbers





# Bibliographic Record with textual "signposts"



"SIGNPOSTS"	DATA
Main entry, personal name with a single surname: The name:	Arnosky, Jim.
Title and Statement of responsibility area, pick up title for a title added entry, file under "Ra..." Title proper: Statement of responsibility:	Raccoons and ripe corn / Jim Arnosky.
Edition area: Edition statement:	1st ed.
Publication, distribution, etc., area: Place of publication: Name of publisher: Date of publication:	New York : Lothrop, Lee & Shepard Books, c1987.

Physical description area: Pagination: Illustrative matter: Size:	25 p. : col. ill. ; 26 cm.
Note area: Summary:	Hungry raccoons feast at night in a field of ripe corn.
Subject added entries, from Library of Congress subject heading list for children: Topical subject:	Raccoons.
Local call number:	599.74 ARN
Local barcode number:	8009
Local price:	\$15.00



# Marc Bibliographic Record

Same record with MARC tags

"SIGNPOSTS"	DATA
100 1# \$a	Arnosky, Jim.
245 10 \$a	Raccoons and ripe corn /
	\$c Jim Arnosky.
250 ## \$a	1st ed.
260 ## \$a	New York :
	\$b Lothrop, Lee & Shepard Books,
	\$c c1987.
300 ## \$a	25 p. :
	\$b col. ill. ;
	\$c 26 cm.
520 ## \$a	Hungry raccoons feast at night in a field of ripe corn.
650 #1 \$a	Raccoons.
900 ## \$a	599.74 ARN
901 ## \$a	8009
903 ## \$a	\$15.00





# MARC Bibliographic Tags used most frequently



**010 tag** marks the **Library of Congress Control Number** (LCCN)

**020 tag** marks the **International Standard Book Number** (ISBN)

**100 tag** marks a **personal name main entry** (author)

**245 tag** marks the **title information** (which includes the title, other title information, and the statement of responsibility)

**250 tag** marks the **edition**

**260 tag** marks the **publication information**

**300 tag** marks the **physical description** (often referred to as the "collation" when describing books)

**490 tag** marks the **series statement**

**520 tag** marks the **annotation or summary note**

**650 tag** marks a **topical subject heading**

**700 tag** marks a **personal name added entry** (joint author, editor, or illustrator)

Here is an example of a field. The number 100 is the tag, defining it as a personal name main entry (author) field.

```
100 1# $a Pirsig, Robert M.
```

## NOTES:

- In the MARC record, 10% of the tags are used over and over, and the other 90% are seen rarely
- It is not unusual to hear librarians speaking in "MARCese.": they memorize the numbers for the fields common to the materials they catalog



# MARC Bibliographic Indicators

- | Some fields are further defined by INDICATORS
- | Two character positions follow each tag (with the exception of Fields 001 through 009). One or both of these character positions may be used for indicators. All the following cases are used:
  - ♣ only the first or second position
  - ♣ both positions
  - ♣ neither
- | When an indicator position is not used, that indicator is referred to as "undefined" and the position is left blank. It is the convention to represent a blank, or undefined, indicator position by the character "#" (e.g. 100 1# , 24510,300 ##)
- | Each indicator value is a number from 0 to 9
- | Even though two indicators together may look like a 2-digit number, they really are two single-digit numbers

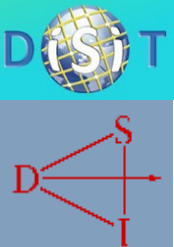




# MARC Indicators: example

```
245 14 $a The emperor's new clothes /  
$c adapted from Hans Christian Andersen  
and illustrated by Janet Stevens.
```

- | The first 3 digits (245) defines this as a title field
- | The next 2 digits are indicator values:
  - ♣ **first indicator** value (1):
  - ♣ **second indicator** value (4):
- | A **first indicator** value of 1 in the title field In the card catalog environment, this means that a title card should be printed for this item and an entry for "Title" added to the tracings. A first indicator value of 0 would mean that a title main entry is involved; the card would be printed with the traditional hanging indention, and no additional tracing for the title would be required (since it is the main entry).
- | **Nonfiling characters:** One of the more interesting indicators is the second indicator for the title field. It displays the number of characters at the beginning of the field (including spaces) to be disregarded by the computer in the sorting and filing process. For the title *The emperor's new clothes*, the second indicator is set to "4" so that the first four characters (the "T," the "h," the "e," and the space) will be skipped and the title will be filed under "emperor's."





# MARC Subfields

- | Most **Fields** (except Fields 001 through 009) contain several related pieces of data called **Subfields**, which are marked by Subfields codes and Delimiters
- | For example, the field for a book's physical description (tag 300) includes:

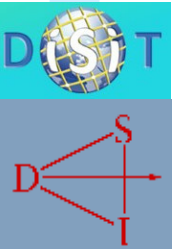
- ♣ a subfield (\$a) for the extent (number of pages)
- ♣ a subfield (\$b) for other physical details (illustration information)
- ♣ a subfield (\$c) for dimensions (centimeters)

- | 300 ## \$a 675 p. : \$b ill. ; \$c 24 cm.

- | **Subfield codes** are one lowercase letter (occasionally a number, eg. a,b,c) preceded by a delimiter (a character used to separate subfields, e.g. \$). Each subfield code indicates what type of data follows it. (For each field the MARC documentation lists and describes the valid subfield codes.)

- | **Delimiter:** Different software programs use different characters to represent the delimiter on the screen or on printouts. Examples are a double dagger ( † ), an "at sign" (@), a dollar sign (\$), an underline ( \_ ), or the graphic symbol " ".

- | In the example above, the subfield codes are \$a for the extent, \$b for other physical details, and \$c for dimensions.



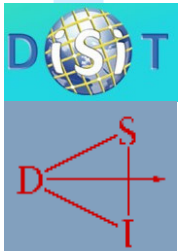


# MARC General Rules: Tags divided by hundreds

- | There are some general rules that help define what all the numbers used as field tags mean (the notation XX is often used to refer to a group of related tags; e.g. 1XX refers to all the tags in the 100s: 100, 110, 130, and so on. )

0XX	Control information, numbers, codes
1XX	Main entry
2XX	Titles, edition, imprint (in general, the title, statement of responsibility, edition, and publication information )
3XX	Physical description, etc.
4XX	Series statements (as shown in the book)
5XX	Notes
6XX	Subject added entries
7XX	Added entries other than subject or series
8XX	Series added entries (other authoritative forms)

- | The 9XXs have been left for locally-defined uses, such as local barcode numbers. Local libraries, vendors, or systems can define and use them for attaching other types of information to records
- | The list of the most common tags shows how each fits into one of these divisions: 100 is an author main entry, 520 is a summary note, and so on.





# MARC General Rules: Access Points (1)

| Access points (a main entry, subject added entries, and other added entries) are an important part of the bibliographic record. These are the headings for which separate cards were created for the traditional card catalog, and which a librarian can search in an online catalog

| Most of the access points are:

- 1XX fields (main entries)
- 4XX fields (series statements)
- 6XX fields (subject headings)
- 7XX fields (added entries other than subject or series)
- 8XX fields (series added entries)





## MARC General Rules: Access Points (2)

- | For **names**, the best authority is:
  - ♣ the **Library of Congress Name Authority**  
(<http://authorities.loc.gov>)
- | The form of the name used (personal name, corporate name, conference or meeting name, series title, or uniform title) can be checked against this authority
- | For **topics** or **geographic names**, the common subject authority lists are
  - ♣ the **Library of Congress Subject Headings**
  - ♣ the **Sears** List of Subject Headings.
- | The form of a subject heading should match one on the list or follow the rules for construction





# MARC General Rules: Parallel content (1)

- | The fields requiring authority control are also the fields that use parallel tag construction. In general, in the 1XX, 4XX, 6XX, 7XX and 8XX fields, a personal name will have the last two digits 00.

- | Examples:

- ♣ for a main entry (1XX) that is a personal name (X00), the correct tag is 100
- ♣ for a subject heading (6XX) that is a personal name, the tag is 600, and so on

This parallel content can be summarized as follows:

X00	Personal names
X10	Corporate names
X11	Meeting names
X30	Uniform titles
X40	Bibliographic titles
X50	Topical terms
X51	Geographic names

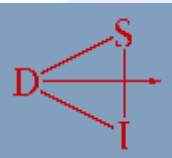




# MARC General Rules: Parallel content (2)

I By combining this chart with the rule "Tags divided by hundreds", it becomes evident that:

- ♣ if the subject of a book (6XX) is a person (Lincoln, Abraham), the tag will be 600;
- ♣ if the subject of the book is a corporation (Apple Computer, Inc.), the tag will be 610;
- ♣ if the subject of the book is a topic (Railroads), the tag will be 650;
- ♣ if the subject of a book is a place (United States), the tag will be 651
- ♣ An added entry (7XX) for a joint author (a personal name) will have tag 700



## **Parallel content**

X00 Personal names  
X10 Corporate names  
X50 Topical terms  
X51 Geographic names

## **Tags divided by hundreds**

6XX fields (subject headings)  
7XX fields (added entries other than subject or series)



# MARC Authority Fields are marked by Tags

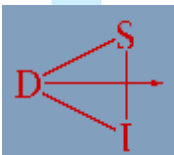
- | Each authority record (as described for the bibliographic records) is divided logically into **fields**
- | There is a field for the heading, fields for reference tracings, and so on
- | These fields are subdivided into one or more **subfields**
- | As previously noted, the textual names of the fields are too lengthy to be reproduced within each MARC record: they are represented by 3-digit tags

100 tag	marks a <b>personal name heading</b> (author)
400 tag	marks a personal name <b>see from reference tracing</b>
500 tag	marks a personal name <b>see also from reference tracing</b>
670 tag	marks a <b>source data found note</b>



```
100 1# $a Woolf, Virginia, $d 1882-1941
```

- | More details here:
- | <http://www.loc.gov/marc/uma/pt8-11.html#pt8>





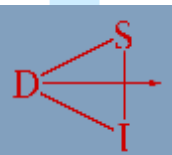
# MARC Authority Indicators

- | As in the bibliographic records, two character positions follow each tag (except of Fields 001 through 009): one or both of these character positions may be used for **indicators**
- | When an indicator position is not used, that indicator is referred to as "undefined" and the position is left blank (character #)
- | Each indicator value is a number from 0 to 9
- | Even though two indicators together may look like a 2-digit number, they really are two single-digit numbers

Example:

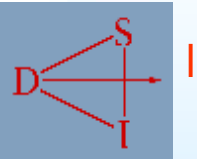
```
100 3# $a Guelf, House of
```

- | The **first indicator** value (3) in the personal name heading field indicates that the name is a family name, rather than an individual person's name
- | The **second indicator** value in field 100 is undefined (#)





# MARC Authority Subfields



Most fields contain several related pieces of data, each type of data within the field is called a subfield, and each subfield is preceded by a delimiter-subfield code combination (Fields 001 through 009 have no subfields)

Example: the field for a personal name heading includes a subfield for:

- ♣ Personal name (\$a)
- ♣ Numeration (\$b)
- ♣ Titles (\$t)
- ♣ Dates (\$d)

associated with the name, among several others

```
100 0# $a Gustaf  
      $b V,  
      $c King of Sweden,  
      $d 1858-1950
```



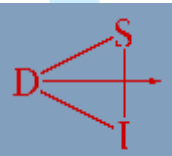
# MARC Authority record

- | An authority record includes three basic components:
  - ♣ Headings
  - ♣ Cross references
  - ♣ Notes. (MARC authority records often also contain additional information.)

- | **Heading:** The standardized "authoritative" form of a name, subject, or title that is used for access points on bibliographic records. The purpose of using standardized names and subjects on bibliographic records is to help related records be retrieved together

- | **Tracings and references:** References that direct a user from a variant form of a name or subject to the authoritative form (this is called a see reference) or from one authoritative form to another authoritative form because they are related to one another (this is called a see also reference)

- | **Notes:** Notes that contain general information about standardized headings or more specialized information, such as citations for a consulted source in which information is either found or not found about a heading.





# MARC Authority record: Headings (1)

- | An authority record is made for each authorized form of a heading
  - | For names, one of the most widely used authority files is the Library of Congress Name Authority File (or LCNAF, <http://authorities.loc.gov/>)
  - | For topics or geographic names, the most used subject authority file is the LCSH (Library of Congress Subject Headings)
  - | There are many other subject heading lists:
    - ♣ Sears List of Subject Headings
    - ♣ Art and Architecture Thesaurus
- The form of a subject heading should match one on these lists or follow their rules for construction





## MARC Authority record: Headings (2)

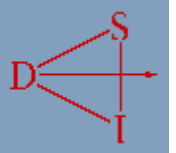
- | All headings are one of the following types: names, name/title combinations, uniform titles, or subjects
- | Examples of name headings include:
  - ♣ 1) A name heading (\$a) may be a personal, corporate, meeting, or jurisdiction (including geographic) name.

```
100 1#   $a Woolf, Virginia, $d 1882-1941
          (personal name heading)
110 2#   $a Association for Childhood Education International
          (corporate name heading)
111 2#   $a La Crosse Health and Sports Science Symposium
          (meeting name heading)
151 ##   $a Mexico
          (geographic name heading)
```





# MARC Authority record: Headings (3)



Examples of name headings include:

- 2) A name/title heading consists of both a name and a title of a work. The name portion (\$a) contains a personal, corporate, meeting, or jurisdiction name. The title portion (\$t) contains the title by which an item or a series is to be identified for cataloging purposes. It is especially used for classic works that have been published under different titles over time. An example of a name/title heading is:

```
100 1# $a Dostoyevsky, Fyodor,  
$d 1821-1881.  
$t Crime and punishment
```

- 3) A uniform title heading consists of a title not associated with a particular author. A familiar example is:

```
130 #0 $a Bible. $l Latin. $s Vulgate
```



# MARC Authority record: Headings (4)

I Examples of name headings include:

- 4) A subject heading may be a single term, phrase, or a group of terms. The tag for the subject is based on the first term or phrase in the heading -- topic, genre/form, geographic, chronological, personal name, corporate name, meeting name, or title. The other terms in the heading are in specific subfields that are called subdivisions.

```
100 1# $a Shakespeare, William, $d 1564-1616  
      $x Criticism and interpretation $x History  
      $y 18th century  
150 ## $a Books and reading $z Argentina
```





# MARC Authority record: Tracings and references

- | MARC authority records contain two types of cross references that either lead a user:
  - ♣ from an unauthorized heading to an authorized heading (these are called "see references" and use 4XX tags)
  - ♣ from one authorized heading to another (these are called "see also references" and use 5XX tags)

*Authority record information:*

100 1# \$a Twain, Mark, \$d 1835-1910

*[Standardized heading]*

400 1# \$a Conte, Louis de, \$d 1835-1910

*[See from tracing]*

500 1# \$a Clemens, Samuel Langhorne, \$d 1835-1910

*[See also from tracing]*





# MARC Authority record: Tracings and references examples

- | Tracing cross references rather than making separate authority records for references enables efficient and accurate display of authority information by catalogs and the users see the information in the form that is appropriate for them
- | Cross reference displays may then be generated by systems which combine the contents of a tracing reference field and the 1XX heading field of a record

*Display generated from the above record:*

**Twain, Mark, 1835-1910**

see also: Clements, Samuel Langhorne, 1835-1910

Clemens, Samuel Langhorne, 1835-1910

see also: Twain, Mark, 1835-1910

Conte, Louis de, 1835-1910

see: Twain, Mark, 1835-1910





# MARC Authority record: Notes

- | The MARC Authority record may contain notes  
These may be intended for display in the public catalog, or only for viewing by librarians using the records in their work

*Authority record information:*

670 ## \$a Phone call to National Register of Historic Places  
*[Note for cataloging use]*

680 ## \$i Surgery performed on an outpatient basis. May be  
hospital-based or performed in an office or  
surgicenter.  
*[Note for public catalog use]*

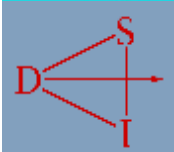




```
- <collection xsi:schemaLocation="http://www.loc.gov/MARC21/slim http://www.loc.gov/standards/marcxml/schema/MARC21slim.xsd">
  - <record>
    <leader>00834nw 2200193n 4500</leader>
    <controlfield tag="001">CF 91000008</controlfield>
    <controlfield tag="003">DLC</controlfield>
    <controlfield tag="005">19960528091722.0</controlfield>
    <controlfield tag="008">910215acaaaaaa</controlfield>
    - <datafield tag="010" ind1=" " ind2=" ">
      <subfield code="a">CF 91000008</subfield>
    </datafield>
    - <datafield tag="040" ind1=" " ind2=" ">
      <subfield code="a">DLC</subfield>
      <subfield code="c">DLC</subfield>
    </datafield>
    - <datafield tag="084" ind1="0" ind2=" ">
      <subfield code="a">lcc</subfield>
    </datafield>
    - <datafield tag="153" ind1=" " ind2=" ">
      <subfield code="a">HF1</subfield>
      <subfield code="c">HF6182</subfield>
      <subfield code="j">Commerce</subfield>
    </datafield> [ ... ]
  </record>
  - <record>
    <leader>00877nw 2200181n 4500</leader>
    <controlfield tag="001">CF 91000424</controlfield>
    <controlfield tag="003">DLC</controlfield>
    <controlfield tag="005">19960528091739.0</controlfield>
    <controlfield tag="008">910605acaaaaaa</controlfield>
    - <datafield tag="010" ind1=" " ind2=" ">
      <subfield code="a">CF 91000424</subfield>
    </datafield> [ ... ]
  </record>
</collection>
```

# MARC XML Instance

<http://www.loc.gov/standards/marcxml/Sandburg/sandburg.xml>





# MARC Conversion formats

## | Conversion from:

- ♣ MARC to SGML/XML (and the reverse)
- ♣ Dublin Core
- ♣ RDF
- ♣ FRBR
- ♣ OAI-ORE
- ♣ other metadata formats

| have been addressed





# MARC Dublin Core Transformation

```
- <dc>
  <title>Arithmetic / </title>
  <creator> Sandburg, Carl, 1878-1967. </creator>
  <creator> Rand, Ted, ill. </creator>
  <type/>
  <publisher>San Diego :Harcourt Brace Jovanovich,</publisher>
  <date>c1993.</date>
  <language>eng</language>
- <description>
  A poem about numbers and their characteristics. Features anamorphic, or distorted, drawings which can be restored to
  normal by viewing from a particular angle or by viewing the image's reflection in the provided Mylar cone.
  </description>
  <description>One Mylar sheet included in pocket.</description>
  <subject>Arithmetic</subject>
  <subject>Children's poetry, American.</subject>
  <subject>Arithmetic</subject>
  <subject>American poetry.</subject>
  <subject>Visual perception.</subject>
</dc>
```





## Link per Marc/ Marc21

- | <http://www.loc.gov/marc/uma/>
- | <http://www.loc.gov/marc/>
- | <http://www.bl.uk/bibliographic/exchange.html>
- | <http://www.loc.gov/marc/bibliographic/>
- | <http://www.loc.gov/marc/umb/um01to06.html>
- | <http://authorities.loc.gov/help/disphlp4.htm>
- | <http://www.loc.gov/marc/marcxml.html>





# MODS e MADS





# MODS e MADS

- | Metadata Object Description Schema (**MODS**) is an XML schema and guidelines for encoding a resource description
- | It supports discovery and management of resources, and access to them, as well as exchange and management of encoded descriptions, it is related to MARC bibliographic elements
- | Metadata Authority Description Schema (**MADS**) is an XML schema and guidelines for encoding an authority description
- | It supports control, normalization, and management of some types of data used in a resource description, as well as exchange and management of encoded descriptions, it is related to MARC authority elements





# MODS

- | The Network Development and MARC Standards Office, with interested experts, has developed a schema for a bibliographic element set that may be used for a variety of purposes, and particularly for library applications
- | As an XML schema, the Metadata Object Description Schema (MODS) is intended to carry selected data from existing MARC 21 records as well as to enable the creation of original resource description records
- | Conversion utilities between MARC (ISO 2709) and MODS (via MARCXML) are available





# MODS: Uses

- | MODS could potentially be used as follows:
  - ♣ an SRU (Search for Retrieval) specified format
  - ♣ an extension schema to METS (Metadata Encoding and Transmission Standard)
  - ♣ to represent metadata for harvesting
  - ♣ for resource description in XML syntax
  - ♣ for representing a simplified MARC record in XML
  - ♣ for metadata in XML that may be packaged with an electronic resource





# MODS: Advantages

- | MODS is intended to complement other metadata formats
- | For some applications, particularly those that have used MARC records, there will be advantages, such as:
  - ♣ The element set is richer than Dublin Core
  - ♣ The element set is more compatible with library data than ONIX (International standard for representing and communicating book industry product information in electronic form)
  - ♣ The schema is more end user oriented than the full MARCXML schema
  - ♣ The element set is simpler than the full MARC format





# MODS: Features

- | The elements generally inherit the semantics of MARC
- | Some data has been repackaged; in some cases what is in several data elements in MARC may be brought together into one in MODS
- | MODS does not assume the use of any specific cataloging code
- | Several elements have an optional ID attribute to facilitate linking at the element level





# MODS: Limitations

- | MODS includes a subset of data from the MARC 21 Format for Bibliographic Data
- | As an element set that allows for the representation of data already in MARC-based systems, it is intended to allow for the conversion of core fields while some specific data may be dropped.
- | As an element set for original resource description, it allows for a simple record to be created in some cases using more general tags than those available in the MARC record
- | However, an original MARC 21 record converted to MODS may not convert back to MARC 21 in its entirety without some loss of specificity in tagging or loss of data
- | In some cases if reconverted into MARC 21, the data may not be placed in exactly the same field that it started in because a MARC field may have been mapped to a more general one in MODS
- | In other cases the element in MARC may not have an equivalent element in MODS and then the specific data could be lost when converting to MODS





# MODS: Outline of Elements and Attributes (1)

- | MODS defines a list of elements and their related attributes
- | All **top-level elements** and all **attributes** are optional, but you must have at least one element
- | Subelements are optional, although in some cases you may not have empty containers
- | Attributes are not in a mandated sequence and not repeatable (per XML rules)
- | Elements are repeatable unless otherwise noted
- | For additional information about any MODS elements see the MODS User Guidelines (<http://www.loc.gov/standards/mods/v3/mods-userguide.html>)





# MODS: Outline of Elements and Attributes (2)

## Top Level Elements:

[titleInfo](#)

[name](#)

[typeOfResource](#)

[genre](#)

[originInfo](#)

[language](#)

[physicalDescription](#)

[abstract](#)

[tableOfContents](#)

[targetAudience](#)

[note](#)

[subject](#)

[classification](#)

[relatedItem](#)

[identifier](#)

[location](#)

[accessCondition](#)

[part](#)

[extension](#)

[recordInfo](#)

## Root Elements:

[mods](#)

[modsCollection](#)





# MODS Top Level Elements: titleInfo

**Name:** titleInfo

**Subelements:**

- ♣ title
- ♣ subTitle
- ♣ partNumber
- ♣ partName
- ♣ nonSort

**Attributes:**

- ♣ ID; xlink; lang; xml:lang; script; transliteration
- ♣ type (enumerated: abbreviated, translated, alternative, uniform)
- ♣ authority (see: [www.loc.gov/marc/sourcecode/authorityfile/authorityfilesource.html](http://www.loc.gov/marc/sourcecode/authorityfile/authorityfilesource.html))
- ♣ displayLabel





# MODS Top Level Elements: name

## | Name: **name**

## | Subelements:

- ♣ namePart, attribute: type (date, family, given, termsOfAddress)
- ♣ displayForm
- ♣ affiliation
- ♣ role
  - roleTerm, attributes:
    - type (code, text);
    - authority  
(see: [www.loc.gov/marc/sourcecode/relator/relatorsource.html](http://www.loc.gov/marc/sourcecode/relator/relatorsource.html))
- ♣ description

## | Attributes:

- ♣ ID; xlink; lang; xml:lang; script; transliteration
- ♣ type (enumerated: personal, corporate, conference)
- ♣ authority (see: [www.loc.gov/marc/sourcecode/authorityfile/authorityfilesource.html](http://www.loc.gov/marc/sourcecode/authorityfile/authorityfilesource.html))





# MODS Top Level Elements: name - Example

Author = "T. L. Blundell and L. N. Johnson"

Converted to MODS:

```
<name type="personal">  
  <namePart type="given">T.</namePart>  
  <namePart type="given">L.</namePart>  
  <namePart type="family">Blundell</namePart>  
  <role>  
    <roleTerm authority="marcrelator" type="text"> author  
  </roleTerm>  
  </role>  
</name>
```





# MODS Top Level Elements: typeOfResource

| **Name:** typeOfResource

| **Enumerated values:**

- ♣ text
- ♣ Cartographic
- ♣ notated music
- ♣ sound recording-musical
- ♣ sound recording-nonmusical
- ♣ sound recording
- ♣ still image
- ♣ moving image
- ♣ three dimensional object
- ♣ software, multimedia
- ♣ mixed material

| **Subelements:** [none]

| **Attributes:**

- ♣ collection (yes)
- ♣ manuscript (yes)

```
<typeOfResource>text</typeOfResource>
```





# MODS Top Level Elements: genre

**Name:** genre

**Subelements:** [none]

**Attributes:**

- ♣ lang; xml:lang; script; transliteration
- ♣ authority (see: [www.loc.gov/marc/sourcecode/genre/genresource.html](http://www.loc.gov/marc/sourcecode/genre/genresource.html))
- ♣ type (e.g. class, work type, or style)

**Examples:**

- ♣ `<genre authority="marc">periodical</genre>`
- ♣ `<genre>academic journal</genre>`





# MODS Top Level Elements: originInfo

**Name:** originInfo

**Subelement:**

♣ Place

→ placeTerm, attributes: type (code, text); authority (marcgac, marccountry, iso3166)

♣ publisher

♣ dateIssued

♣ dateCreated

♣ dateCaptured

♣ dateValid

♣ dateModified

♣ copyrightDate

♣ dateOther

♣ edition

♣ issuance

♣ frequency

**Attributes:**

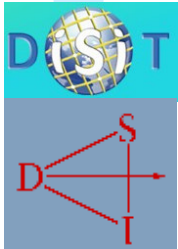
♣ lang; xml:lang; script; transliteration

Look here to see the complete attributes list

<http://www.loc.gov/standards/mods/mods-outline.html>

Example:

```
<originInfo>
  <dateIssued>1976</dateIssued>
  <publisher>Academic Press</publisher>
  <place>
    <placeTerm type="text">
      New York
    </placeTerm>
  </place>
</originInfo>
```





# MODS Top Level Elements: language

| **Name: language**

| **Subelements:**

♣ languageTerm, **attributes:**

→ type (code, text)

→ authority (iso639-2b, rfc3066, iso639-3, rfc4646)

| **Attributes:**

♣ objectPart

| **Example:**

```
<language>
```

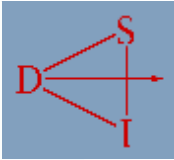
```
  <languageTerm authority="iso639-2b">
```

```
    eng
```

```
  </languageTerm>
```

```
</language>
```





# MODS Top Level Elements: physicalDescription



| **Name:** **physicalDescription**

| **Subelements:**

♣ form, attribute:

→ authority (see: [www.loc.gov/marc/sourcecode/form/formsource.html](http://www.loc.gov/marc/sourcecode/form/formsource.html));

♣ type

(e.g.: material, technique)

♣ reformattingQuality (access, preservation, replacement)

♣ internetMediaType

♣ extent

♣ digitalOrigin (born digital, reformatted digital, digitized microfilm, digitized other analog)

♣ note, attributes:

→ xlink; lang; xml:lang; script; transliteration; displayLabel; type

(For a list of implemented note types, see:

[www.loc.gov/standards/mods/mods-notes.html](http://www.loc.gov/standards/mods/mods-notes.html))

| **Attributes:**

♣ lang xml:langscripttransliteration



# MODS Top Level Elements: physicalDescription example

## | Example:

```
<physicalDescription>  
  <internetMediaType>text/html</internetMediaType>  
  <internetMediaType>image/jpg</internetMediaType>  
</physicalDescription>
```





# MODS Top Level Elements: abstract

| **Name:** **abstract**

| **Subelements:** [none]

| **Attributes:**

♣ xlink;

♣ lang;

♣ xml:lang;

♣ script;

♣ transliteration

♣ displayLabel

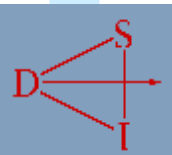
♣ type (Examples: review, scope and content)

| **Example:**

```
<abstract lang="eng">
```

Web site promoting the candidacy of Fran Ulmer,  
Democratic candidate for Governor, Alaska, 2002. [...]

```
</abstract>
```





# MODS Top Level Elements: tableOfContents

| **Name:** **tableOfContents**

| Subelements: [none]

| Attributes:

- ♣ xlink; lang; xml:lang; script; transliteration
- ♣ displayLabel
- ♣ type (Examples: incomplete contents, partial contents)

## Examples:

```
<tableOfContents displayLabel="Partial Contents">
```

```
    Honey Boy – Hiawatha Song – Her Boy in Blue
```

```
</tableOfContents>
```

```
<tableOfContents xlink:href="http://www.ojp.usdoj.gov/bjs/toc/cchrie98.htm" />
```





# MODS Top Level Elements: targetAudience



| **Name:** targetAudience

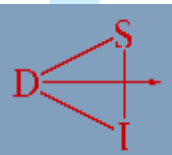
| **Subelements:** [none]

| **Attributes:**

- ♣ lang; xml:lang; script; transliteration
- ♣ authority (see:  
[www.loc.gov/marc/sourcecode/target/targetsource.html](http://www.loc.gov/marc/sourcecode/target/targetsource.html))

## Examples:

```
<targetAudience authority="marctarget">specialized</targetAudience>  
<targetAudience>Genealogists</targetAudience>  
<targetAudience>English as a second languages (ESL) students  
</targetAudience>
```





# MODS Top Level Elements: note



| **Name:** **note**

| **Subelements:** [none]

| **Attributes:**

- ♣ ID; xlink; lang; xml:lang; script; transliteration
- ♣ displayLabel
- ♣ type (For a list of implemented note types, see: [www.loc.gov/standards/mods/mods-notes.html](http://www.loc.gov/standards/mods/mods-notes.html))

## Examples:

```
<note> Digital file includes a piano score composed by [...]</note>
```

```
<physicalDescription>
```

```
  <internetMediaType>image/jpeg</internetMediaType>
```

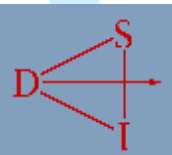
```
  <digitalOrigin>reformatted digital</digitalOrigin>
```

```
  <note> Original 35mm slide was digitized in 2003 as a TIFF image.
```

```
    Display versions in JPEG format in three sizes are  
    available.</note>
```

```
  <note> 100 f 6.3 tl</note>
```

```
</physicalDescription>
```





# MODS Top Level Elements: subject

**Name:** **subject**

**Subelements:**

- ♣ topic
- ♣ geographic
- ♣ Temporal, attributes..[...]
- ♣ titleInfo
- ♣ Name
- ♣ geographicCode
- ♣ genre
- ♣ hierarchicalGeographic
  - ➔ [...]
- ♣ cartographics
  - ➔ [...]
- ♣ occupation

**Attributes:**

- ♣ ID; xlink; lang; xml:lang; script; transliteration
- ♣ authority (see: [www.loc.gov/marc/sourcecode/subject/subjectsources.html](http://www.loc.gov/marc/sourcecode/subject/subjectsources.html))

More details here:

<http://www.loc.gov/standards/mods/mods-outline.html>

**Examples:**

```
<subject authority="lcsch"><topic >
Gettysburg, Battle of, Gettysburg, Pa.,
1863 </topic> </subject>
<subject authority="lcsch">
  <topic>Railroads</topic>
  <geographic>West
(U.S.)</geographic>
  <topic>Maps</topic>
</subject>
```





# MODS Top Level Elements: classification

| **Name:** **classification**

| **Subelements:** [none]

| **Attributes:**

♣ lang; xml:lang; script; transliteration

♣ authority (see:  
[www.loc.gov/marc/sourcecode/classification/classificationsource.html](http://www.loc.gov/marc/sourcecode/classification/classificationsource.html))

♣ edition

♣ displayLabel

| **Example:**

| Library of Congress classification:

| `<classification authority="lcc">TH6493</classification>`





# MODS Top Level Elements: relatedItem

- | **Name:** **relatedItem**
- | **Subelements:** (Any MODS element may be used as defined in the schema with appropriate subelements, see <http://www.loc.gov/standards/mods/mods-outline.html> for more details)

- ♣ titleInfo
- ♣ Name
- ♣ [...]

- | **Attributes:**

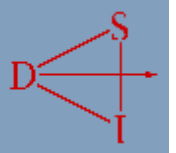
- ♣ ID; xlink
- ♣ displayLabel
- ♣ type (enumerated: preceding, succeeding, original, host, constituent, series, otherVersion, otherFormat, isReferencedBy)

```
<relatedItem
  displayLabel="Preceding"
  type="preceding"
  xlink:href="http://hdl.loc.gov/umich.dli.moa/AGE3371"
/>
```





# MODS Top Level Elements: identifier



| **Name:** identifier

| **Subelements:** [none]

| **Attributes:**

- ♣ lang; xml:lang; script; transliteration
- ♣ type (suggested values: hdl, doi, isbn, isrc, ismn, issn, issue number, istc, lccn, local, matrix number, music publisher, music plate, sici, uri, upc, videorecording identifier, stock number)
- ♣ displayLabel
- ♣ invalid (yes)

## Examples:

```
<identifier type="uri">http://hemi.es.its.nyu.edu/journal/2_1/ramalho_por.html</identifier>
```

```
<identifier type="lccn">00694010</identifier>,
```

Note: lccn (Library of Congress Control Number)



# MODS Top Level Elements: location

| **Name:** location

| **Subelements:**

♣ physicalLocation, attributes:

→ authority

→ displayLabel; type (Examples: current, discovery, former, creation); lang; xml:lang; script; transliteration; xlink

♣ url, attributes:

→ dateLastAccessed; displayLabel; note; access (preview, raw object, object in context); usage (primary display)

♣ [...]

| **Examples:**

<location>

<physicalLocation>New York University, E. H. Bobst Library,  
Middle East Cataloging (New York, NY)

</physicalLocation>

</location>

More details here:

<http://www.loc.gov/standards/mods/mods-outline.html>





# MODS Top Level Elements: accessCondition

| **Name:** **accessCondition**

| **Subelements:** [none]

| **Attributes:**

- ♣ xlink; lang; xml:lang; script; transliteration
- ♣ displayLabel
- ♣ type (suggested values: restriction on access; use and reproduction)

| **Example:**

| `<accessCondition type="useAndReproduction">`  
For rights relating to this resource, visit  
<http://hemi.nyu.edu/rights.html>  
`</accessCondition>`





# MODS Top Level Elements: part

More details here:

<http://www.loc.gov/standards/mods/mods-outline.html>

**Name:** part

**Subelements:**

♣ detail

→ number

→ caption

→ title, attributes:

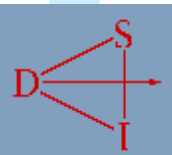
- type (suggested values: part, volume, issue, chapter, section, paragraph, track); level

♣ extent [...]

**Attributes:** ID; type (volume, issue, chapter, section, paragraph, track, ...); order

**Example:**

```
<titleInfo>
  <title>Washington observer</title>
</titleInfo>
<part>
  <detail type="volume">
    <number>1</number>
  </detail>
</part>
```





# MODS Top Level Elements: extension

- | **Name:** extension
- | **Subelements:** [none]
- | **Attributes:** [none]

## | **NOTE:**

The DLF MODS Implementation Guidelines recommend against the use of the MODS <extension> element because any subelements within it will likely not be understandable by OAI service providers.





# MODS Top Level Elements: recordInfo

More details here:

<http://www.loc.gov/standards/mods/mods-outline.html>

**Name:** recordInfo

**Subelements:**

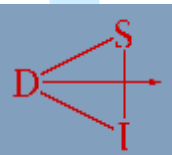
- ♣ recordContentSource
- ♣ recordCreationDate
- ♣ recordChangeDate
- ♣ recordIdentifier
- ♣ recordOrigin
- ♣ languageOf Cataloging
- ♣ descriptionStandard

**Attributes:**

- ♣ lang; xml:lang; script; transliteration

**Example:**

```
<recordInfo>
  <recordContentSource>Indiana University Digital Library
  Program</recordContentSource>
  <recordCreationDate encoding="w3cdtf">2004-09-09
  </recordCreationDate>
  <recordIdentifier>archives/cushman/P07803</recordIdentifier>
</recordInfo>
```





# MODS Root Elements: mods, modsCollection

- | **Name: mods** (A single MODS record)
- | **Subelements:**
  - ♣ All Top Level Elements
- | **Attributes:**
  - ♣ ID
  - ♣ version
- | **Name: modsCollection** (A collection of MODS records)
- | **Subelements:** mods
- | **Attributes:** [none]



# MODS: Examples

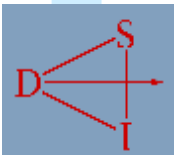
Converted to MODS, it looks like the following:

```
<mods ID="bandj">
  <titleInfo>
    <title>Protein Crystallography?</title>
  </titleInfo>
  <name type="personal">
    <namePart type="given">T.</namePart>
    <namePart type="given">L.</namePart>
    <namePart type="family">Blundell</namePart>
    <role>
      <roleTerm authority="marcrelator" type="text">author</roleTerm>
    </role>
  </name>
  <name type="personal">
    <namePart type="given">L.</namePart>
    <namePart type="given">N.</namePart>
    <namePart type="family">Johnson</namePart>
    <role>
      <roleTerm authority="marcrelator" type="text">author</roleTerm>
    </role>
  </name>
  <originInfo>
    <dateIssued>1976</dateIssued>
    <publisher>Academic Press</publisher>
    <place>
      <placeTerm type="text">New York</placeTerm>
    </place>
  </originInfo>
  <typeOfResource>text</typeOfResource>
  <genre>book</genre>
  <identifier type="citekey">bandj</identifier>
</mods>
```



```
<mods ID="C003">
  <titleInfo>
    <title>Different base/base mismatches are corrected with
    different efficiencies by the methyl-directed DNA mismatch-repair
    system of E. coli</title>
  </titleInfo>
  <name type="personal">
    <namePart type="given">B.</namePart>
    <namePart type="family">Kramer</namePart>
    <role>
      <roleTerm authority="marcrelator" type="text">author</roleTerm>
    </role>
  </name>
  <name type="personal">
    <namePart type="given">W.</namePart>
    <namePart type="family">Kramer</namePart>
    <role>
      <roleTerm authority="marcrelator" type="text">author</roleTerm>
    </role>
  </name>
  <name type="personal">
    <namePart type="given">H.</namePart>
    <namePart type="given">J.</namePart>
    <namePart type="family">Fritz</namePart>
    <role>
      <roleTerm authority="marcrelator" type="text">author</roleTerm>
    </role>
  </name>
  <typeOfResource>text</typeOfResource>
  <relatedItem type="host">
    <titleInfo>
      <title>Cell</title>
    </titleInfo>
    <originInfo>
      <issuance>continuing</issuance>
    </originInfo>
    <genre authority="marc">periodical</genre>
    <genre>academic journal</genre>
    <part>
      <date>1984</date>
      <detail type="volume"><number>38</number></detail>
      <extent unit="page">
        <start>879</start>
        <end>887</end>
      </extent>
    </part>
  </relatedItem>
  <identifier type="citekey">C003</identifier>
</mods>
```

# MODS Example





# MADS (Metadata Authority Description Schema)

- | MADS, the Metadata Authority Description Schema:
  - ♣ has been developed by the Library of Congress' Network Development
  - ♣ Provides XML schema for an authority element set that may be used to provide metadata about agents (people, organizations), events, and terms (topics, geographics, genres, etc.)
  - ♣ was created to serve as a companion to the Metadata Object Description Schema (MODS): As such, MADS has a relationship to the **MARC 21 Authority format**, as MODS has to MARC 21 Bibliographic

| dfgdfg





# MADS Records

- | MADS is a MARC21-compatible XML format for the type of data carried in records in the MARC Authorities format
- | Each record is contained within <mads></mads>, and groups of MADS records can be contained within a MADS Collection (<madsCollection></madsCollection>)
- | Consistency with MODS was a goal as much as possible
- | MADS Record is composed of the following three parts:
  - ♣ Authoritative Heading (<authority>)
  - ♣ Reference Headings (<related>)
  - ♣ Other elements (Notes, <variant>)





# MADS Record structure

- | Each MADS Record part is an xml element
- | Each element has the same following structure:

| **<authority>/ <related> / <variant>**

- ♣ **<name>**
- ♣ **<titleInfo>**
- ♣ **<topic>**
- ♣ **<temporal>**
- ♣ **<genre>**
- ♣ **<geographic>**
- ♣ **<hierarchicalGeographic>**
- ♣ **<occupation>**





# MADS Authoritative Heading: <name>

- | Used for personal, corporate, event, or geographic names, corresponding to MARC Bibliographic and Authority fields 100, 110, and 111, respectively

- | **Name: <name>**

- | **Subelements:**

- ♣ <namePart>, attribute:

- type (date, family, given, termsOfAddress)

- ♣ <role>

- <roleTerm>, attributes:

- type (code, text);
    - authority (see: [www.loc.gov/marc/sourcecode/relator/relatorsource.html](http://www.loc.gov/marc/sourcecode/relator/relatorsource.html))

- ♣ <description>

- | **Attributes:**

- ♣ ID, xlink, lang, xml:lang, script, transliteration

- ♣ type (personal, corporate, conference, geographic)

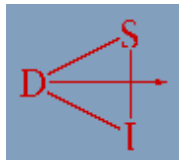
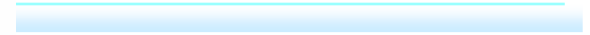
- ♣ authority (see: [www.loc.gov/marc/sourcecode/authorityfile/authorityfilesources.html](http://www.loc.gov/marc/sourcecode/authorityfile/authorityfilesources.html))





# Sample MADS Documents: Personal Name

```
<mads xsi:schemaLocation="http://www.loc.gov/mads/ mads.xsd">
- <authority>
  - <name>
    <namePart>Smith,John</namePart>
    <namePart type="date">1995-</namePart>
  </name>
</authority>
- <variant type="other">
  - <name>
    <namePart>Smith, J</namePart>
  </name>
</variant>
- <variant type="other">
  - <name>
    <namePart>Smith, John J</namePart>
  </name>
</variant>
<note type="history">Biographical note about John Smith.</note>
- <affiliation>
  <organization>Lawrence Livermore Laboratory</organization>
  <dateValid>1987</dateValid>
</affiliation>
</mads>
```





# MADS: Authoritative Heading



- | Used in library cataloging for uniform titles
- | This field includes titles equivalent to MARC Authority fields 100 \$t, 110 \$t, 111 \$t, and 130, which relate to MARC Bibliographic fields 130, 240, and 245

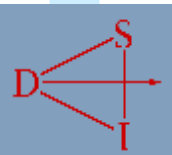
| **Name: <titleInfo>**

| **Subelements:**

- ♣ <title>
- ♣ <subTitle>
- ♣ <partNumber>
- ♣ <partName>
- ♣ <nonSort>

| **Attributes:**

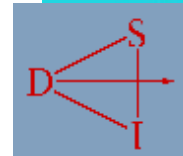
- ♣ ID, xlink, lang, xml:lang, script, transliteration
- ♣ displayLabel
- ♣ authority (see: [www.loc.gov/marc/sourcecode/authorityfile/authorityfilesource.html](http://www.loc.gov/marc/sourcecode/authorityfile/authorityfilesource.html))





# Sample MADS Documents: name/title

```
<mads xsi:schemaLocation="http://www.loc.gov/mads/ mads.xsd">
- <authority>
  - <name authority="naf">
    <namePart>Bach, P D Q</namePart>
  </name>
  - <titleInfo>
    <mods:title>Symphony in C</mods:title>
    <mods:partName>Adaggio</mods:partName>
  </titleInfo>
</authority>
- <variant type="other">
  - <name>
    <namePart>Bach, Pretty D Q</namePart>
  </name>
  - <titleInfo>
    <mods:title>Symphony in Sea</mods:title>
    <mods:subTitle>the drowning symphony</mods:subTitle>
    <mods:partName>Rapidissimo</mods:partName>
  </titleInfo>
</variant>
<note>This guy is nuts.</note>
</mads>
```





# MADS Authoritative Heading: topic

- | Used for subject authorities, which may be from a variety of thesauri
- | It includes topical subjects, equivalent to MARC Authority field 150, which relates to the 650 field in the MARC

Bibliographic format

- | **Name:** <topic>
- | **Subelements:** [none]
- | **Attributes:**
  - ♣ ID, xlink, lang, xml:lang, script, transliteration
  - ♣ authority (see: [www.loc.gov/marc/sourcecode/subject/subjectsourc.html](http://www.loc.gov/marc/sourcecode/subject/subjectsourc.html))





# MADS Authoritative Heading: temporal

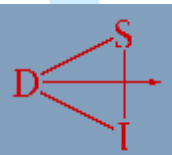
- | It is used for subject authorities, which may be from a variety of thesauri
- | It includes temporal/chronological subjects, equivalent to MARC Authority field 148, which relates to the 648 field in the MARC Bibliographic format

| **Name:** <temporal>

| **Subelements:** [none]

| **Attributes:**

- ♣ ID, xlink, lang, xml:lang, script, transliteration
- ♣ authority (sources: coming soon)
- ♣ encoding (w3cdtf, iso8601, marc)
- ♣ point (start,end)
- ♣ keyDate (yes)
- ♣ qualifier (approximate, inferred, questionable)





# MADS Authoritative Heading: genre

- | Used for genre headings, which may be from a variety of thesauri. It includes genre terms, equivalent to MARC Authority field 155, which relates to the 655 field in the MARC Bibliographic format

- | **Name:** <genre>

- | **Subelements:** [none]

- | **Attributes:**

- ♣ ID, xlink, lang, xml:lang, script, transliteration
- ♣ authority (see:  
[www.loc.gov/marc/sourcecode/genre/genresource.html](http://www.loc.gov/marc/sourcecode/genre/genresource.html))





# MADS Authoritative Heading: geographic

- | Used for the authoritative names of geographic entities
- | It is equivalent to MARC Authority field 151, which relates to the 651 field in the MARC Bibliographic format

- | **Name:** <geographic>

- | **Subelements:** [none]

- | **Attributes:**

- ♣ ID, xlink, lang, xml:lang, script, transliteration

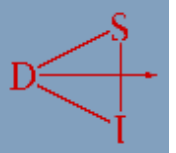
- ♣ authority (see:

- [www.loc.gov/marc/sourcecode/authorityfile/authorityfilesources.html](http://www.loc.gov/marc/sourcecode/authorityfile/authorityfilesources.html))





# Sample MADS Documents: temporal, genre, geographic



```
<mads xsi:schemaLocation="http://www.loc.gov/mads/ mads.xsd">
```

```
– <authority>
```

```
  <genre authority="lcs" >Hymnals</genre>
```

```
  <geographic>Massachusetts</geographic>
```

```
  <temporal>18th century</temporal>
```

```
</authority>
```

```
</mads>
```

```
<mads xsi:schemaLocation="http://www.loc.gov/mads/ mads.xsd">
```

```
– <authority>
```

```
  <geographic authority="naf" >Ceylon </geographic>
```

```
</authority>
```

```
– <related type="later">
```

```
  <geographic>Sri Lanka</geographic>
```

```
</related>
```

```
</mads>
```

## Source Codes for genre:

<http://www.loc.gov/marc/sourcecode/genre/genresource.html#codes>

“lcs” = Library of Congress subject headings

Source Codes for geographic: “Naf” = NACO authority file



# MADS Authoritative Heading: hierarchicalGeographic



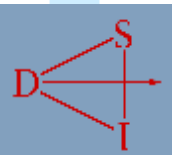
- | Used to provide an authoritative form for hierarchical geographic names
- | It does not have an equivalent in the MARC Authority format, but relates to the 752 field in the MARC Bibliographic format
- | **Name: <hierarchicalGeographic>**

## Subelements:

- ♣ <continent>
- ♣ <country>
- ♣ <province>
- ♣ <region>
- ♣ <state>
- ♣ <territory>
- ♣ <county>
- ♣ <city>
- ♣ <island>
- ♣ <area>

## Attributes:

- ♣ ID, xlink, lang, xml:lang, script, transliteration authority (sources: coming soon)





# MADS Authoritative Heading: occupation

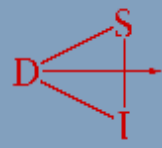
- | It is used to provide an authoritative form for names of occupations
- | It does not have an equivalent in the MARC Authority format, but relates to the 656 field in the MARC Bibliographic format
- | **Name: <occupation>**
- | **Subelements: [none]**
- | **Attributes:**
  - ♣ ID, xlink, lang, xml:lang, script, transliteration
  - ♣ authority





# Sample MADS Documents: Corporate Name

```
<mads xsi:schemaLocation="http://www.loc.gov/mads/  
http://www.loc.gov/mads/mads.xsd">  
  - <authority>  
    - <name type="corporate" authority="naf">  
      <namePart>Unesco</namePart>  
    </name>  
  </authority>  
  - <related type="parentOrg">  
    - <name>  
      <namePart>United Nations</namePart>  
    </name>  
  </related>  
  - <variant type="expansion">  
    - <name>  
      - <namePart>  
        United Nations Educational, Cultural, and Scientific  
        Organization  
      </namePart>  
    </name>  
  </variant>  
</mads>
```





# Link per MODS and MADS

- | <http://www.loc.gov/standards/mods/>
- | <http://www.loc.gov/standards/mods/v3/mods-userguide-intro.html>
- | <http://www.loc.gov/standards/mods/mods-outline.html>
- | <http://www.loc.gov/standards/mods/design-principles-mods-mads.html>





# METS





# METS, Metadata Encoding and Transmission Standard (1)

| The METS, Metadata Encoding and Transmission Standard schema is a standard for encoding:

- ♣ descriptive
- ♣ administrative
- ♣ and structural

metadata regarding objects within a digital library, expressed using the XML schema language

| The standard is

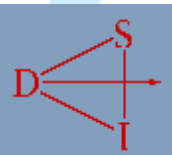
- ♣ is maintained in the Network Development and MARC Standards Office of the Library of Congress (<http://lcweb.loc.gov/marc/ndmso.html>),
- ♣ is being developed as an initiative of the Digital Library Federation





# METS, Metadata Encoding and Transmission Standard (2)

- | METS é stato creato con lo scopo di gestire in modo efficace librerie di oggetti digitali
- | I metadati necessari, ad una gestione e ad un uso efficace degli oggetti digitali, sono diversi rispetto a quelli usati per mantenere collezioni di lavori a stampa o di altri oggetti fisici:
  - ♣ metadati strutturali: necessari ad esempio per collegare immagini e pagine, etc
  - ♣ metadati tecnici:
    - Relativi al processo di digitalizzazione di una risorsa (che garantiscano la correttezza della fonte e del processo per ottenere la risorsa digitale)
    - Necessari per la gestione interna delle risorse, ovvero per rinnovare e migrare periodicamente i dati, assicurando che la risorsa abbia un valore durevole
- | Un documento METS e' costituito da sette sezioni principali:
  - ♣ Intestazione METS
  - ♣ Metadati Descrittivi
  - ♣ Metadati Amministrativi
  - ♣ Sezione File
  - ♣ Mappa Strutturale
  - ♣ Link Strutturali
  - ♣ Comportamento





# METS: sezioni (1)

## | Intestazione METS

- ♣ contiene i metadati che descrivono il documento METS stesso (es: autore, editore etc.)

## | Metadati Descrittivi

- ♣ potrebbe :

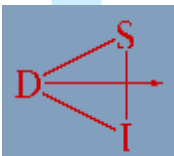
- puntare ad un documento METS esterno (es: un record MARC in un OPAC, On line Public Access Catalogue)
- contenere metadati descrittivi inclusi internamente oppure includerli entrambi (sono ammesse anche ripetizioni multiple di entrambi i metadati descrittivi, sia interni che esterni)

## | Metadati Amministrativi

- ♣ Contiene:

- informazioni sui file che sono stati creati e che conservano i diritti di proprietà intellettuale
- metadati riguardanti l'oggetto di origine da cui deriva l'oggetto della biblioteca digitale
- informazioni riguardanti la provenienza dei file e le relazioni degli oggetti della biblioteca digitale (es. le relazioni dei file master e di derivazione, e le informazioni riguardo la migrazione e la trasformazione).

Allo stesso modo dei metadati descrittivi, i metadati amministrativi potrebbero essere sia esterni al documento METS, o codificati internamente 92





# METS: sezioni (2)

## Sezione File:

- ♣ e' una lista di tutti i file (<file>) con il contenuto della risorsa (comprende le versioni elettroniche dell'oggetto digitale)
- ♣ Gli elementi <file> potrebbero essere raggruppati all'interno di elementi <fileGrp>, per fare una suddivisione in base alle diverse versioni degli oggetti.

## Mappa Strutturale

- ♣ e' il cuore del documento METS
- ♣ mette in evidenza la struttura gerarchica a cui appartiene l'oggetto della biblioteca digitale e collega gli elementi di quella struttura ai file di contenuto ed ai metadati appartenenti ad ogni elemento

## Link Strutturali

- ♣ permette ad un autore METS di memorizzare l'esistenza di hyperlink tra nodi nella gerarchia definita nella Mappa strutturale (importante per archiviare siti web)

## Comportamento

- ♣ serve per associare comportamenti al contenuto dell'oggetto METS





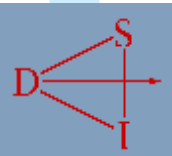
# FRBR





# FRBR, Functional Requirements for Bibliographic Records

- | FRBR is a 1998 recommendation of the International Federation of Library Associations and Institutions (IFLA, <http://www.ifla.org/>)
- | **FRBR** definisce uno schema concettuale:
  - ♣ realizzato tramite modello entità-relazione allo scopo di dare una rappresentazione semi-formale alle informazioni bibliografiche
  - ♣ basato su: entità, relazioni, attributi, metadati





## FRBR: scopi (1)

- | Delineare le funzioni svolte da un record bibliografico rispetto ai vari mezzi di comunicazione, le varie applicazioni e i vari bisogni dell'utente
- | proporre un record bibliografico per la descrizione di tutti i tipi di materiali e attività degli utenti associati alle risorse bibliografiche descritte nei cataloghi, bibliografie e altri strumenti bibliografici
- | Il record bibliografico è inteso nella sua accezione più ampia e comprende:
  - ♣ Elementi descrittivi
  - ♣ Punti di accesso (nome, titolo, soggetto, etc.)
  - ♣ Altri elementi organizzativi (classificazione, etc.)
  - ♣ Note





## FRBR: scopi (2)

I Il record realizzato con i requisiti funzionali proposti da FRBR deve poter essere adattato a ogni tipo di materiale e finalità:

- ♣ cataloghi editoriali
- ♣ cataloghi delle biblioteche
- ♣ bibliografie nazionali
- ♣ database bibliografici

I FRBR definisce 10 entità classificate in tre gruppi:

- ♣ Group 1: Work, Expression, Manifestation, Item
- ♣ Group 2: Person, Corporate Body.
- ♣ Group 3: Concept, Object, Event, Place





# FRBR – Attributi, Relazioni

- | Ciascuna entità ha associato un insieme di **attributi** attraverso cui gli utenti formulano richieste e interpretano i risultati della ricerca bibliografica nel momento dell'interrogazione su una determinata entità:
  - ♣ attributi direttamente collegati alla entità: si riferiscono alle caratteristiche fisiche, aspetti formali che caratterizzano una manifestazione
  - ♣ attributi esterni alle entità: comprendono gli identificativi della entità e le informazioni contestuali
- | FRBR definisce anche il concetto di **relazione** bibliografica che:
  - ♣ descrive, precisa e nomina i rapporti tra le entità;
  - ♣ contribuisce e facilita la *distinzione* e l'*identificazione delle entità*
  - ♣ serve come strumento per assistere l'utente nell'esplorazione una bibliografia, un catalogo o una base di dati bibliografica
- | Un utente che effettua una ricerca bibliografica su risorse descritte tramite FRBR:
  - ♣ formula la ricerca utilizzando uno o più attributi dell'entità che sta cercando
  - ♣ trova le entità desiderate tramite l'attributo





# FRBR Entities: Group 1

- | The first two are entirely abstract and reflect intellectual or artistic content:
  - ♣ **work**: a distinct intellectual or artistic creation
  - ♣ **expression**: the intellectual or artistic realization of a work
- | The next two are concrete and reflect physical form (although physical should not be taken too literally, as it includes remote electronic resources):
  - ♣ **manifestation**: the physical embodiment of an expression of a work
  - ♣ **item**: a single exemplar of a manifestation
- | The way these relate to each other is expressed in a well-known diagram which shows their “primary” or inherent relationships



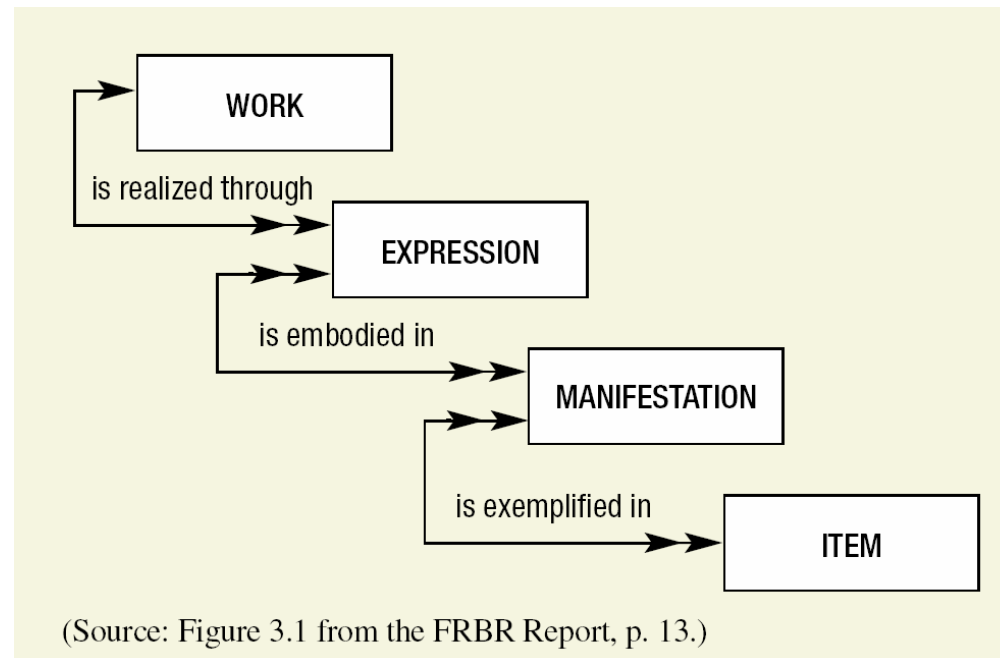


# FRBR Entities: Group 1 Relationships

I The links:

- ♣ go both ways
- ♣ are not always 1:1.

I As the study was intended to model bibliographic data, the Group 1 entities are treated in the most detail both in listing their attributes and in analyzing the relationships among them

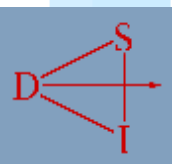




# FRBR Entities: work/expression example

The following cases are viewed as as expressions of the same work:

- ♣ texts incorporating revisions or updates to an earlier text
- ♣ abridgements or enlargements
- ♣ addition of parts or an accompaniment to a musical composition
- ♣ translations from one language to another
- ♣ musical transcriptions and arrangements
- ♣ dubbed or subtitled versions of a film
- ♣ Etc.
  - $w_1$  Henry Gray's *Anatomy of the human body*
    - $e_1$  text and illustrations for the first edition
    - $e_2$  text and illustrations for the second edition
    - $e_3$  text and illustrations for the third edition
    - . . . .
  - $w_1$  J. S. Bach's *The art of the fugue*
    - $e_1$  the composer's score for organ
    - $e_2$  an arrangement for chamber orchestra by Anthony Lewis
    - . . . .
  - $w_1$  *Jules et Jim* (motion picture)
    - $e_1$  the original French language version
    - $e_2$  the original with English subtitles added
    - . . . .





# FRBR Entities: work/expression example

| By contrast, when the modification of a work involves a significant degree of independent intellectual or artistic effort, the result is viewed as a new work:

- ♣ Paraphrases
- ♣ Rewritings
- ♣ adaptations for children
- ♣ Parodies
- ♣ musical variations on a theme
- ♣ free transcriptions of a musical composition

w<sub>1</sub> John Bunyan's *The pilgrim's progress*

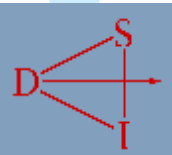
w<sub>2</sub> an anonymous adaptation of *The pilgrim's progress* for young readers

....

w<sub>1</sub> William Shakespeare's *Romeo and Juliet*

w<sub>2</sub> Franco Zeffirelli's motion picture *Romeo and Juliet*

w<sub>3</sub> Baz Lurhmann's motion picture *William Shakespeare's Romeo and Juliet*





# FRBR Entities: manifestation example

A product is considered a new manifestation when:

- ♣ the production process involves changes in physical form
  - change in display characteristics (size of font, page layout, etc.)
  - change in physical medium (from paper to microfilm)
- ♣ the production process involves a publisher, producer, distributor, etc.:

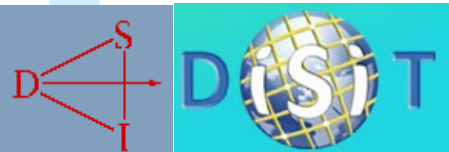
→ there are changes signaled in the product that are related to publication, marketing, etc. (e.g., a change in publisher, repackaging, etc.),

**w<sub>1</sub>** Jean Jolivet's *Vraie description des Gaules...*

- **e<sub>1</sub>** the cartographer's original rendering
  - **m<sub>1</sub>** the map issued in 1570
  - **m<sub>2</sub>** a facsimile reproduction published in 1974 by Hier et demain

**w<sub>1</sub>** *The Wall Street Journal*

- **e<sub>1</sub>** the Eastern edition
  - **m<sub>1</sub>** the print format of the Eastern edition
  - **m<sub>2</sub>** the microfilm of the Eastern edition
- **e<sub>2</sub>** the Western edition
  - **m<sub>1</sub>** the print format of the Western edition
  - **m<sub>2</sub>** the microfilm of the Western edition





# FRBR Entities: item example

- | Item identifies individual copies of a manifestation and to describe those characteristics that are unique to that particular copy
- | Variation, viewed as the result of actions external, may occur from one item to another:
  - ♣ damage occurring after the item was produced
  - ♣ binding performed by a library
  - ♣ etc.

## w<sub>1</sub> Ronald Hayman's *Playback*

- e<sub>1</sub> the author's text edited for publication
  - m<sub>1</sub> the book published in 1973 by Davis-Poynter
    - i<sub>1</sub> copy autographed by the author

## w<sub>1</sub> Allan Wakeman's *Jabberwocky*

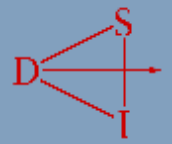
- e<sub>1</sub> the author's design for the game and text for the notes
  - m<sub>1</sub> the game and accompanying notes for teachers issued in 1974 by Longman
    - i<sub>1</sub> copy lacking notes for teachers





# FRBR Group 1 Attributes: work (1)

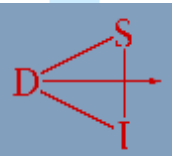
- | All the FRBR entities have attributes. As example we list that relates to work and expression.
- | For more details see:  
[http://archive.ifla.org/VII/s13/frbr/frbr\\_current\\_toc.htm](http://archive.ifla.org/VII/s13/frbr/frbr_current_toc.htm)
- | List of work attributes:
  - ♣ **title**
  - ♣ **form**: the class to which the *work* belongs,
    - e.g. novel, play, poem, essay, etc.
  - ♣ **date**: may be a single date or a range of dates
  - ♣ **other distinguishing characteristic**: useful to differentiate the *work* from another *work* with the same title
  - ♣ **intended termination**: finite end or continue indefinitely
  - ♣ **intended audience**: class of users grouped by
    - age: children, young adults, adults, etc.
    - educational level: primary, secondary, etc.
    - or other categorization. )





## FRBR Group 1 Attributes: work (2)

- ♣ **context for the work:** the historical, social, intellectual, artistic, or other context within which the *work* was originally conceived:
  - e.g. the 17th century restoration of the monarchy in England, the aesthetic movement of the late 19th century, etc.
- ♣ **medium of performance:** it is referred to a musical work and defines the medium of performance instrumental, vocal
  - e.g., piano, violin, orchestra, men's voices, etc.
- ♣ **numeric designation:** it is referred to a musical work and is assigned to a musical *work* by the composer, publisher, or a musicologist,
  - e.g. serial number, opus number, thematic index number
- ♣ **key:** it is referred to a musical work and establishes a single pitch class as a tonal centre
- ♣ **coordinates:** cartographic work
- ♣ **equinox:** cartographic work, is the year that serves as the point of reference for a celestial chart or model



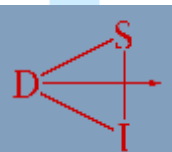


# FRBR Group 1 Attributes: expression (1)



I List of expression attributes:

- ♣ **title**
- ♣ **form:** means by which the *work* is realized
  - E.g. alpha-numeric/musical notation, spoken word, photographic image / sculpture/ video, etc.
- ♣ **date**
- ♣ **language**
- ♣ **other distinguishing characteristic:** serves to differentiate the *expression* from another *expression* of the same *work*
- ♣ **extensibility:** reflects the expectation that the *expression* will have additional intellectual or artistic content added to it (e.g., an *expression* that is completed one part at a time, segment by segment, issue by issue, etc.).
- ♣ **revisability:** used in case the content of the expression will be revised
  - a draft or interim report, a directory that is expected to be updated periodically, etc.
- ♣ **extent:** a quantification of the intellectual content of the *expression*
  - e.g., number of words in a text, statements in a computer program, images in a comic strip, etc.

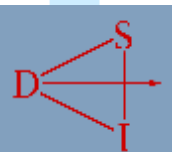




# FRBR Group 1 Attributes: expression (2)



- ❖ **summarization** (of content):
  - e.g. an abstract, summary, synopsis, etc., or a list of chapter headings, songs, parts, etc.
- ❖ **context**: historical, social, intellectual, artistic, or other context within which the *expression* was realized
  - e.g.: the Art Deco period, etc.
- ❖ **critical response**: reception given to the expression by reviewers, critics, etc., as encapsulated in an annotation
  - e.g., “Critically acclaimed for its use of...”
- ❖ **use restrictions**:
  - e.g. protections guaranteed in law to the owner of the copyright, etc.
- ❖ **sequencing pattern**: is a serial used in designating volumes/issues, etc. and/or dates for the individual units of the serial
  - e.g. Volume ..., number ...
- ❖ **expected regularity of issue**:
  - e.g. the release is expected to be regular or irregular





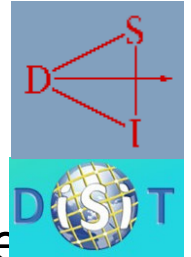
# FRBR Group 1 Attributes: expression (2)

- ♣ **expected frequency of issue:** interval at which individual issues of the serial are anticipated to be released
  - e.g., weekly, monthly, quarterly, annually, etc.
- ♣ **type of score** (musical notation)
  - e.g., short score, full score, condensed score, close score, etc.
- ♣ **medium of performance** (musical notation or recorded sound): is the instrumental and/or vocal medium of performance represented in the *expression* of a musical work:
  - e.g., two pianos, soprano and alto, etc.
- ♣ **scale** (cartographic image/object): is the ratio of distances in a cartographic expression
- ♣ **projection** (cartographic i/o): is the method or system used to represent the surface of the Earth
  - e.g., transverse mercator, azimuthal equidistant, etc.





# FRBR Group 1 Attributes: expression (3)

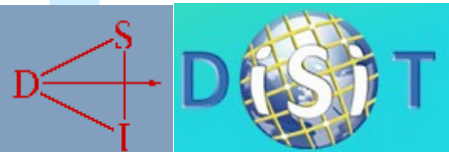


- ♣ **presentation technique** (cartographic i/o): method used to represent geographic or other features in a cartographic image
  - e.g., anaglyphic, diagrammatic, pictorial, etc.
- ♣ **representation of relief** (cartographic i/o): is the technique used to depict the elevations or the inequalities of a land surface or of the bed of a body of water in a cartographic image
  - e.g., contours, shading, hachures, spot heights, bathymetric tints, etc.
- ♣ **geodetic, grid, and vertical measurement** (cartographic i/o) [..]
- ♣ **recording technique** (remote sensing image) [..]
- ♣ **special characteristic** (remote sensing image) [..]
- ♣ **technique** (graphic or projected image): is the method used to create a graphic image or to realize motion in a projected image:
  - e.g. animation, live action, computer generation, 3D, etc.



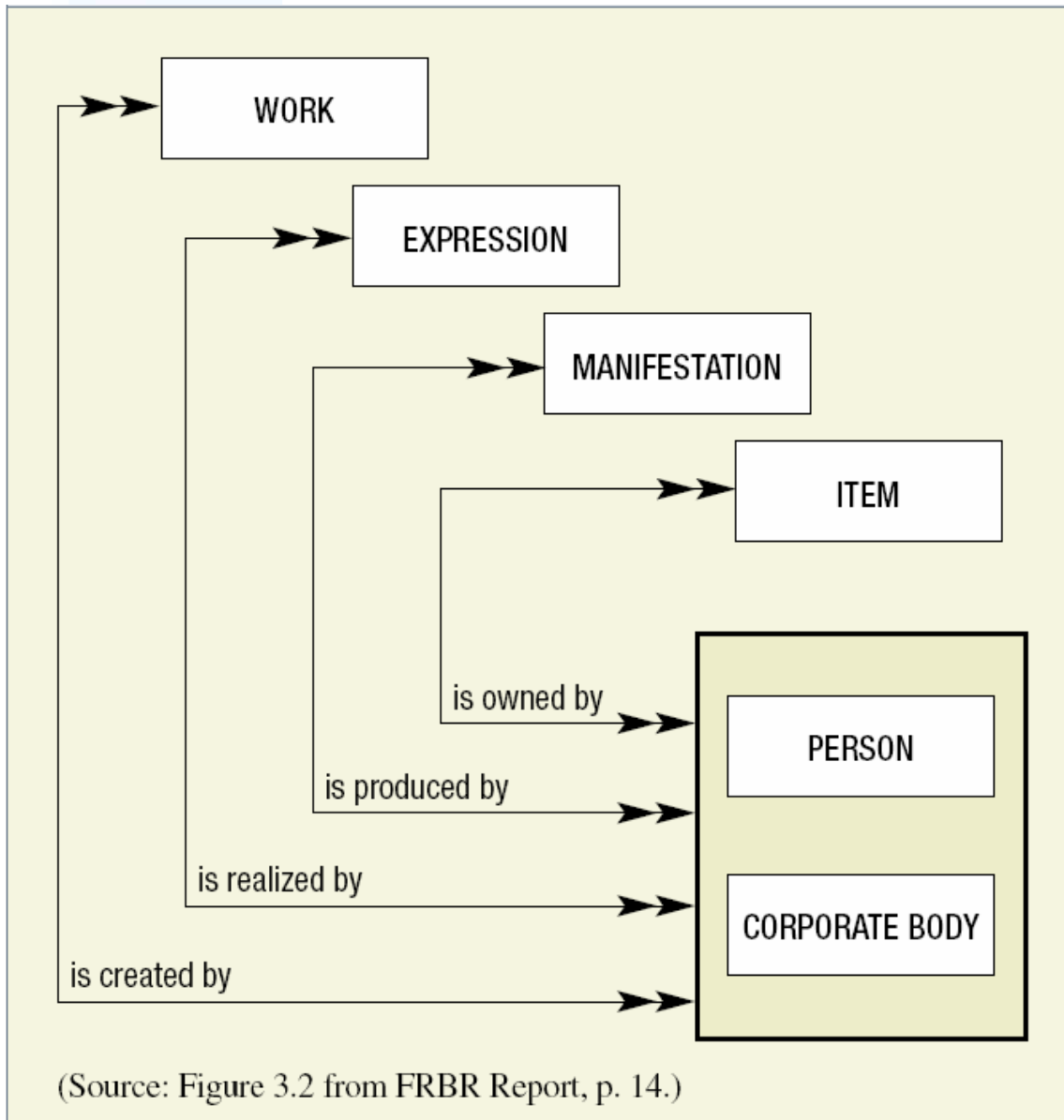
## FRBR Entities: Group 2

- | These entities are responsible for the intellectual or artistic content, the physical production and dissemination, or the custodianship of the entities in the first group:
  - ♣ **person**: an individual
  - ♣ **corporate body**: an organization or group of individuals and/or organizations
- | Group 2 entities are relevant to modeling bibliographic data because they enter into responsibility relationships with the entities in the first group





# FRBR Entities: Group 2 Relationships



- | For instance:
  - ♣ a work may be created
  - ♣ An expression may be realized
  - ♣ A manifestation may be produced
  - ♣ An item owned
    - | by one or more than one person and/or one or more than one corporate body





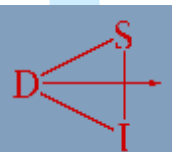
# FRBR Entities: Group2 examples

person:

- p<sub>1</sub>** Margaret Atwood
- p<sub>2</sub>** Hans Christian Andersen
- p<sub>3</sub>** Queen Victoria
- p<sub>4</sub>** Anatole France

corporate

- cb<sub>1</sub>** Museum of American Folk Art
- cb<sub>2</sub>** BBC Symphony Orchestra
- cb<sub>3</sub>** Symposium on Glaucoma
- cb<sub>4</sub>** Regional Municipality of Ottawa-Carleton





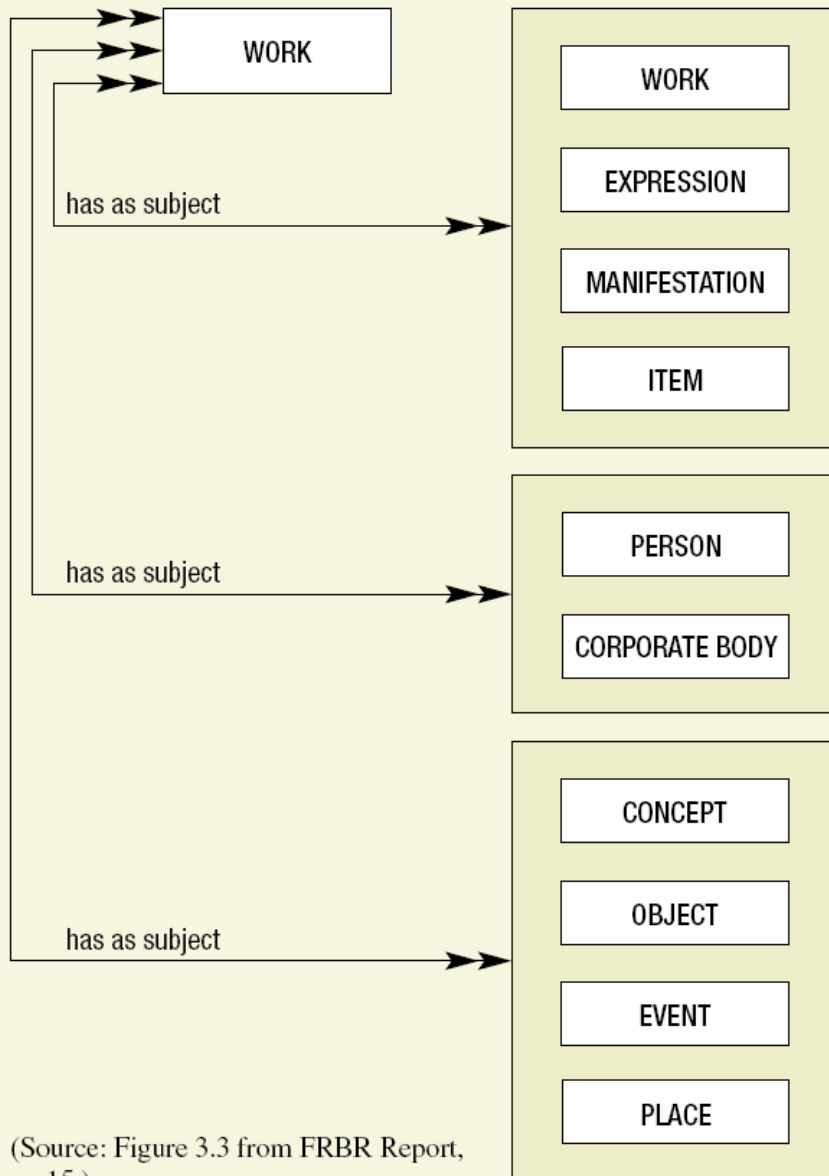
## FRBR Entities: Group 3

- | Group 3 entities represent an additional set of entities that serve as the subjects of works:
  - ♣ **concept:** an abstract notion or idea
  - ♣ **object:** a material thing
  - ♣ **event:** an action or occurrence
  - ♣ **place:** a location





# FRBR Entities: Group 3 Relationships



(Source: Figure 3.3 from FRBR Report, p. 15.)

- | For example, you can have:
  - ♣ a work about another work
  - ♣ a work about a person or corporate body
  - ♣ etc.





# FRBR Entities:

## concept:

- c<sub>1</sub>** Economics
- c<sub>2</sub>** Romanticism
- c<sub>3</sub>** Hydroponics
- c<sub>4</sub>** Supply-side economics

## event:

- e<sub>1</sub>** The Garment Workers' Strike
- e<sub>2</sub>** The Battle of Hastings
- e<sub>3</sub>** The Age of Enlightenment
- e<sub>4</sub>** The Nineteenth Century

## object:

- o<sub>1</sub>** Buckingham Palace
- o<sub>2</sub>** *The Lusitania*
- o<sub>3</sub>** *Apollo 11*
- o<sub>4</sub>** The Eiffel Tower

## place:

- pl<sub>1</sub>** Howard Beach
- pl<sub>2</sub>** The Alacran Reef
- pl<sub>3</sub>** Morey Peak Wilderness Study Area
- pl<sub>4</sub>** Bristol





# FRBR Bibliographic Relationships



| Additionally to the **relationships** among the entities in the Group 1 hierarchy of work, there are many other rich content relationships that enable collocation of related items and navigation through the sometimes complex network of the bibliographic universe:

- ♣ **Content relationships**

- ♣ **Whole/part and part to part relationships**

| These relationships are significant in that they build up, through a network of links, the fabric of the bibliographic universe

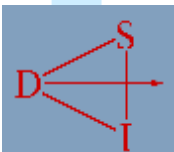
| Examples:

- ♣ Works are linked to other works that may supplement them, may be adaptations of them or may be parts of a larger work

- ♣ Expressions can be related as revisions, translations or musical arrangements

- ♣ Manifestations of a single expression of a work can be related to each other as reproductions, alternate formats or simultaneously released editions

- ♣ etc.





# FRBR Bibliographic Content Relationships (1)

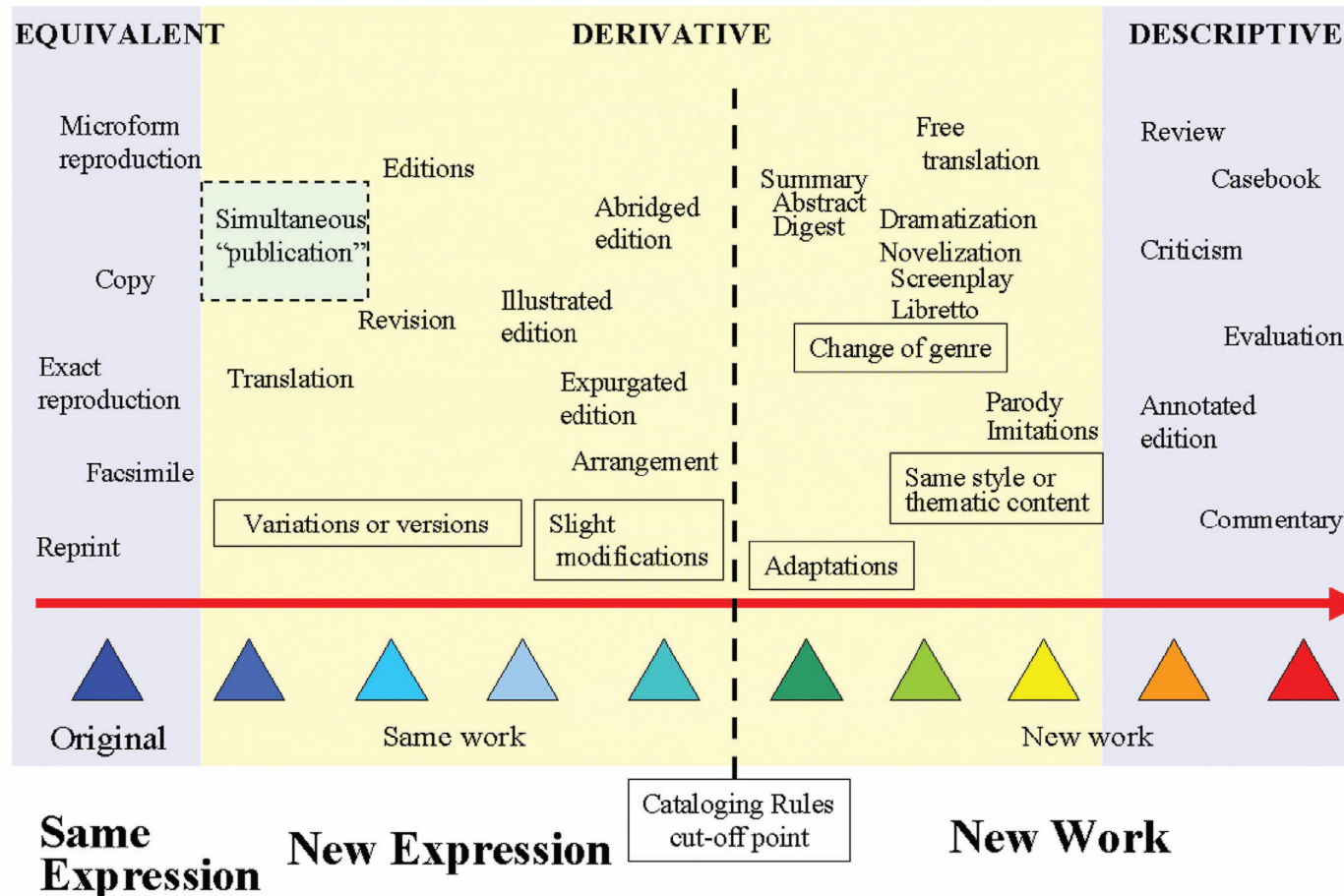
- | Original work and related works and expressions and manifestations that can be considered:
  - ♣ **equivalent**: they share the same intellectual or artistic content
  - ♣ **derivative**: comprise a range of new expressions (i.e. translations, different performances, slight modifications and editions, etc.) that become a new work
  - ♣ **descriptive**: involve new works describing some original work (i.e. Review, Criticism, evaluation, Annotated Edition, etc.)





# FRBR Bibliographic Content Relationships (2)

## Family of Works





# FRBR Bibliographic

## Whole/part and part to part Relationships

- | When we provide bibliographic control for electronic digital resources, the whole/part and part to part relationships are relevant

---

- | Example:
  - ♣ A Web site may be viewed as the whole and the components as its parts
  - ♣ A digitized resource may be viewed the whole and its components as the parts
- | All the parties will need to be tracked through technical metadata for storing and displaying that digital information.

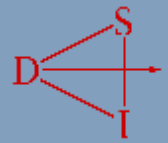




# FRBR user activities

There are four basic user tasks:

- ♣ to find **entities** that correspond to the user's stated search criteria (i.e., to locate either a single entity or a set of entities in a file or database as the result of a search using an attribute or relationship of the entity);
- ♣ to **identify** an entity (i.e., to confirm that the entity described corresponds to the entity sought or to distinguish between two or more entities with similar characteristics);
- ♣ to **select** an entity that is appropriate to the user's needs (i.e., to choose an entity that meets the user's requirements with respect to content, physical format, etc., or to reject an entity as being inappropriate to the user's needs)
- ♣ to **acquire** or **obtain access** to the entity described (i.e., to acquire an entity through purchase, loan, etc., or to access an entity electronically through an online connection to a remote computer)



FRBR also recognizes the importance of being able to navigate the resources

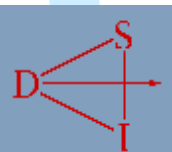


# FRBR: Conclusioni

- | **FRBR Non è un data model ma un modello concettuale**
- | FRBR è un modello generico, astratto: nessun database pratico potrebbe effettivamente essere sviluppato esclusivamente sulla base dell'entità, attributi e relazioni che sono definite in FRBR

## Esempio:

- |
  - ♣ FRBR semplicemente dice che un'istanza dell'entità espressione ha l'attributo **titolo**, ma non ne impone ulteriori dettagli (a quale titolo si fa riferimento, se è una stringa e che forma deve avere, etc). Aspetti che devono essere presi in considerazione al momento della implementazione (in base alle regole di catalogazione)
- | FRBR can be implemented, but it first has to be "translated" into a data model and a format such as:
  - ♣ **Marc format** (anche se la descrizione delle relazioni è limitata )
  - ♣ **Xml-based format** (e.g. MODS)



# FRBR entity in MODS

Ogni **entità** puo' essere descritta  
come un record bibliografico  
Eccone l'esempio in mods  
<http://www.frbr.org/categories/openfrbr>

```
<work>
  <mods:name type="personal">
    <mods:namePart>Davies, Robertson</mods:namePart>
    <mods:role>
      <mods:text>creator</mods:text>
    </mods:role>
  </mods:name>
  <mods:titleInfo>
    <mods:title>World of wonders</mods:title>
  </mods:titleInfo>
  <expression>
    <mods:typeOfResource>text</mods:typeOfResource>
    <manifestation> <imprint>
      <mods:titleInfo>
        <mods:title>World of wonders</mods:title>
      </mods:titleInfo>
      <mods:note type="statement of responsibility">Robertson Davies.
      </mods:note>
      <mods:originInfo>
        <mods:publisher>Penguin books</mods:publisher>
        <mods:dateIssued>1977</mods:dateIssued>
      </mods:originInfo>
      <mods:physicalDescription>
        <mods:extent>315 p ; 20 cm.</mods:extent>
      </mods:physicalDescription>
      <mods:identifier type="ISBN">0-14-016796-X (pbk)</mods:identifier>
    </imprint> </manifestation>
  </expression>
</work>
```



# Link METS/FRBR

## | METS:

- | <http://www.loc.gov/standards/mets/>
- | <http://lcweb.loc.gov/marc/ndmso.html>

---

## | FRBR:

- | <http://www.ifla.org/>
- | <http://www.ifla.org/en/publications/functional-requirements-for-bibliographic-records>
- | [http://archive.ifla.org/VII/s13/frbr/frbr\\_current\\_toc.htm](http://archive.ifla.org/VII/s13/frbr/frbr_current_toc.htm)
- | <http://www.frbr.org/categories/examples>
- | <http://www.frbr.org/categories/openfrbr>
- | [http://www.oclc.org/research/publications/library/2003/lavoie\\_frbr.pdf](http://www.oclc.org/research/publications/library/2003/lavoie_frbr.pdf)





## **Altri standard e istituti di ricerca**



# ICCU

- | Istituto **C**entrale per il **C**atalogo **U**nico delle Biblioteche Italiane e per le informazioni bibliografiche. Si occupa, a livello nazionale, di attività relative all'utilizzo dei metadati usati in particolare in biblioteche, musei e archivi
- | Ha costituito, tra le varie attività, un gruppo di studio che si occupa di:
  - ♣ Metadati descrittivi:
    - Ottenuti facendo riferimento al modello logico e alle indicazioni fornite dallo studio dell'IFLA "Functional Requirements for Bibliographic Records" (FRBR). Ovvero ha applicato la lista di attributi e relazioni FRBR alla descrizione delle risorse digitali
  - ♣ Metadati amministrativi gestionali – MAG, creando uno schema xml basato su:
    - Open Archive Information System (OAIS)
    - Set di metadati usato nei progetti di digitalizzazione della Library Of Congress (METS)





# OAIS, Open Archival Information System

- | Il modello **OAIS** è adottato come modello di riferimento da:
  - ♣ biblioteche ed archivi: NEDLIB e CEDARS in Europa, e PANDORA in Australia
- | Scopo: fornire una 'cornice' concettuale di riferimento: si tratta di uno standard ISO in fase di elaborazione, coordinato dal CCSDS (Consultative Committee for Space Data Systems) della NASA
- | È fortemente orientato al trattamento dei documenti elettronici, tuttavia è applicabile a qualsiasi tipo di archivio - digitale o analogico
- | La funzione svolta dal modello OAIS nel contesto dei metadati gestionali-amministrativi e strutturali può essere paragonata alla funzione svolta da FRBR per i metadati relativi alla ricerca e al recupero delle risorse informative:
  - ♣ Non specifica nessun tipo di implementazione
  - ♣ Propone un **modello logico di riferimento** per gli oggetti digitali e i metadati loro associati, che comprende:
    - creazione e l'uso dei metadati per gestire il materiale elettronico dalla fase di acquisizione a quella dell'accesso, fino alla conservazione delle risorse

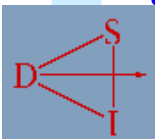




# MAG, Metadati Amministrativi Gestionali



- | Ambito di più immediata applicazione:
  - ♣ insieme di attività di documentazione digitale che intendono condividere determinati standard e possono essere in questo senso certificate
  - ♣ Metadati amministrativi gestionali – MAG, creato con gli obiettivi di stabilire:
    - modalità e politica di accesso alle risorse digitali
    - aspetti organizzativi e di gestione degli oggetti digitali con i relativi servizi
    - strategie di conservazione di lungo periodo degli oggetti medesimi
- | il Gruppo MAG ha prodotto uno schema xml ed ha predisposto un set minimo di metadati gestionali. Lo Schema è composto dalle seguenti sezioni:
  - ♣ **gen**: informazioni generali sul progetto e sul tipo di digitalizzazione
  - ♣ **bib**: metadati descrittivi sull'oggetto digitalizzato
  - ♣ **img**: metadati specifici relativi alle immagini fisse
  - ♣ **ocr**: metadati specifici relativi al riconoscimento ottico del testo
  - ♣ **stru** metadati strutturali
  - ♣ **doc**: sezione utilizzata per descrivere ad esempio un file in formato pdf o rtf
  - ♣ **audio**: metadati specifici per file audio
  - ♣ **video**: metadati specifici per file video
  - ♣ **dis**: metadati specifici per la distribuzione di oggetti digitali





# OPAC SBN

- | **OPAC, On line Public Access Catalogue - Servizio Bibliotecario Nazionale**
- | Tramite l'OPAC SBN è possibile:
  - ♣ identificare i documenti di interesse
  - ♣ individuare le biblioteche che possiedono tali documenti ed accedere alla scheda anagrafica della singola biblioteca
  - ♣ accedere ai cataloghi locali per informazioni aggiuntive sulla disponibilità del documento
  - ♣ accedere al servizio in linea di prestito da remoto o fornitura di documenti in riproduzione (ILL SBN, Inter Library Loan SBN) se la biblioteca partecipa a tale servizio
  - ♣ accedere alle "Voci d'autorità", voci controllate finalizzate a garantire l'univocità di alcuni punti di accesso del catalogo; attualmente sono presenti e ricercabili le schede relative ad una porzione dell'archivio "Autori"



# ICCD, Istituto Centrale per il Catalogo e la Documentazione

- | ICCU, all'interno del **Ministero per i Beni e le Attività Culturali (MIBAC)**, definisce **gli standard e gli strumenti** per la Catalogazione e la Documentazione del patrimonio archeologico, architettonico, storico artistico e etno-antropologico nazionale in accordo con le Regioni
- | Gestisce il **Sistema Informativo Generale del Catalogo** e svolge funzioni di alta **formazione** e ricerca nel settore della catalogazione
- | **Scopi:**
  - Catalogazione: registrazione, descrizione e classificazione di tutte le tipologie di beni culturali (per fornire servizi di ricerca evoluta: multilingua, ambiti di applicazione delle risorse, etc.)
  - Documentazione: attività che affiancano la catalogazione per fornire una rappresentazione del bene attraverso immagini, grafici, etc.
  - Formazione: stesura di testi normativi e formativi inerenti l'intero processo catalografico, elaborazione di percorsi didattici e formativi, etc.





## Link

- | MAG:  
<http://www.iccu.sbn.it/upload/documenti/manuale.html>
- | <http://www.iccu.sbn.it/upload/documenti/MetaAGVZintroduzione.pdf>
- | OAIS:  
<http://public.ccsds.org/publications/archive/650x0b1.pdf>
- | SBN:  
<http://opac.sbn.it/>
- | MiBAC:  
<http://www.beniculturali.it/mibac/export/MiBAC/index.html>
- | ICCU:  
<http://www.iccu.sbn.it>
- | ICCD:  
<http://www.iccd.beniculturali.it/>





# Elementi di modellazione e programmazione di contenuti digitali

**Corso di Laurea Magistrale in Metodologie  
informatiche per le discipline umanistiche**

*Ing. Michela Paolucci*

Department of Systems and Informatics

University of Florence

Via S. Marta 3, 50139, Firenze, Italy

tel: +39-055-4796523, fax: +39-055-4796363

**Lab: DISIT, Sistemi Distribuiti e Tecnologie Internet**

<http://www.disit.dsi.unifi.it/>

[paolucci@dsi.unifi.it](mailto:paolucci@dsi.unifi.it)

<http://www.dsi.unifi.it/~nesi>, <http://www.dsi.unifi.it/~paolucci>,

<http://www.axmedis.org> <http://mobmed.axmedis.org/>

