

State Library of Iowa

Z39.50 Symposium

Z39.50 Technical Issues

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Z39.50

Brief Historical Overview

(early)

1984: NISO Z39.50 ballot failed

1984: ISO SR introduced

**1987-8: Z39.50 re-balloted
ANSI Z39.50-1988**

1991: ISO SR Approved

Z39.50

Brief Historical Overview

(more recently)

1990: ZIG

1990: Maintenance Agency

1992: ANSI Z39.50-1992

1992-4: SR amended

1995: ANSI Z39.50-1995

1996?: ISO 23950

SR (1991) Z39.50-1992

Init

Search

Present

Delete

Init

Search

Present

Delete

Access Control

Resource Control

(Proximity)

Z39.50-1995

Init

Search

Present

Segment

Delete

Access Control

ResourceControl

Sort

Scan

Explain

Extended Services

Close

Z39.50-1992

Init

Search

Present

Delete

Access Control

Resource Control

Additional Miscellaneous Features of 1995

- **Attribute Set Enhancements**
- **Extensive Retrieval Tools**
 - **schemas**
 - **dynamic element specification**
 - **variant specifications**
- **Extensibility mechanisms**
- **Multiple Present Ranges**
- **Concurrent Operations**

Z39.50 Versions

Published version

Protocol version

ANSI/NISO Z39.50-1988

ANSI/NISO Z39.50-1992

2

ANSI/NISO Z39.50-1995

2 + 3

ISO SR (1991)

1

ISO SR + amendments

1 + 2

ISO 23950

2 + 3

Z39.50 Operations

Origin

Target

Initialization Operation

Init request >
< Init response

Search Operation

Search request >
< Search response

Present Operation

Present request >
< Present response

Z39.50

Operation Types

Initialize

Search

Present

Scan

Sort

(and others)

Scan Example

Scan request >
"Scan the title index for the Music
database; begin scan with ' mozart
chamber music', as the fifth term;
return ten terms "

< Scan response
mozart & beethoven
mozart & prague
mozart & salieri
mozart & the archbooby
---> mozart chamber music
mozart im hurenhaus
mozart in new york
mozart speaks
(-->) mozart symphonies
mozart und hayden in London

Search

Search request >

"Search the music database for records with 'mozart symphonies' in the title."

< Search response

"27 records found."

Present

Present request >

"Present the first three records; in MARC format, Brief records."

< Present response

**1. Mozart, Wolfgang Amadeus, 1756-1791. Symphonies.
Saint-foix, Georges de, 1874-1954**

The Symphonies of Mozart, 1968

LC Call Number ML410.M9S172 1968 68-55994

**2. Mozart, Wolfgang Amadeus, 1756-1791. Symphonies.
Dickinson, A.E.F. (Alan Edgar Frederick)**

**A study of Mozart's last three
symphonies / 1978**

LC Call Number MT138.M8D4 73-181142

**3. Mozart, Wolfgang Amadeus, 1756-1791. Symphonies.
Dearling, Robert, 1933-**

**The Music of Wolfgang Amadeus
Mozart, the Symphonies / 1982**

LC Call Number MT130.M8D33 1982 78-68625

Present

Present request >
"Present the second record; in MARC format, Full record."

< Present response

001	73-181142 MN r952
050	MT130.M8D4
082	785.1/1/0924
100	Dickinson, A.E.F. (Alan Edgar Frederick)
245	A study of Mozart's last three Symphonies / by A.E.F. Dickinson.
260	St. Clair Shores, Mich.: Scholarly Press, 1978.
300	58 p. : music ; 22 cm.
440	The Music Pilgrim
500	Reprint of the 1927 ed. published by Oxford University Press, london.
---> 600	Mozart, Wolfgang Amadeus, 1765-1791. Symphonies.
040

Scan Again

Scan request >

"Scan Subjects (personal name); begin scan with 'Mozart, Wolfgang Amadeus, 1765-1791. Symphonies' as the fifth term; return ten terms"

< Scan response

Mozart, Wolfgang Amadeus, 1756-1791. Quintets

Mozart, Wolfgang Amadeus, 1756-1791. Requiem

Mozart, Wolfgang Amadeus, 1756-1791. Serenade

Mozart, Wolfgang Amadeus, 1756-1791. Sonatas

----> Mozart, Wolfgang Amadeus, 1756-1791. Symphonies

Mozart, Wolfgang Amadeus, 1756-1791. Variations

Mozart, Wolfgang Amadeus, 1756-1791. Vocal Music

Mozart, Wolfgang Amadeus, 1756-1791. Works --

Mozart, Wolfgang Amadeus, 1756-1791. Works, chamber

Mozart, Wolfgang Amadeus, 1756-1791. Zaide

eight Z39.50 Operation Types

Init

Search

Present

Scan

Sort

Delete

Resource-report

Extended-services

The Essence of a Search

Search request >

Database(s) to search

name to give to new result set

Query

< Search response

**How many records were identified by
the query**

Z39.50 Query Types

private:

Type-0 query

required for conformance:

Type-1 query

Also included:

Type-2 query

Type-100 query

Type-101 query

Plus some Under development:

Type-102 query

Ranked List Query

Type-103 query

SQL

Type-1: "Reverse Polish Notation" (RPN) query.

examples:

1. Query : A

Records in database for which A is true

2. Query : A B C AND OR

Records in database for which both B and C are true, or A is true

3. Query : A B AND C OR

Records in database for which both A and B are true, or C is true

4. Query : (Result set R) AND A

Records in result set R for which A is true

Bib-1 Attributes

Use	1	Structure	4
Relation	2	Truncation	5
Position	3	Completeness	6

<u>Use</u>	<u>Value</u>	<u>Use</u>	<u>Value</u>
Personal name	1	Name and title	57
Corporate name	2	Name geographic	58
Conference name	3	Place publication	59
Title	4	Abstract	62
Title series	5	Note	63
Title uniform	6	Name	1002
ISBN	7	Author	1003
Subject heading	21	Editor	1020
Date of publication	31	Music-key	1025

<u>Relation</u>	<u>Value</u>	<u>Relation</u>	<u>Value</u>
less than	1	greater than	5
equal	3	not equal	6

<u>Structure</u>	<u>Value</u>	<u>Structure</u>	<u>Value</u>
phrase	1	date	5
year	4	string	108

Bib-1 Use Attributes

Personal name	1	PA subject	26
Corporate name	2	LC subject heading	27
Conference name	3	RVM subject heading	28
Title	4	Local subject index	29
Title series	5	Date	30
Title uniform	6	Date of publication	31
ISBN	7	Date of acquisition	32
ISSN	8	Title key	33
LC card number	9	Title collective	34
BNB card no.	10	Title parallel	35
BGF number	11	Title cover	36
Local number	12	Title added title page	37
Dewey classification	13	Title caption	38
UDC classification	14	Title running	39
Bliss classification	15	Title spine	40
LC call number	16	Title other variant	41
NLM call number	17	Title former	42
NAL call number	18	Title abbreviated	43
MOS call number	19	Title expanded	44
Local classification	20	Subject precis	45
Subject heading	21	Subject rswk	46
Subject Rameau	22	Subject subdivision	47
BDI index subject	23	No. nat'l biblio.	48
INSPEC subject	24	No. legal deposit	49
MESH subject	25	No. govt pub.	50

No. music publisher	51	Body of text	1010
Number db	52	Date/time added	1011
Number local call	53	Date/time modified	1012
Code-- language	54	Authority/	
Code-- geogr. area	55	format id	1013
Code--institution	56	Any	1016
Name and title	57	Server-choice	1017
Name geographic	58	Publisher	1018
Place publication	59	Record-source	1019
CODEN	60	Editor	1020
Microform gen.	61	Bib-level	1021
Abstract	62	Geographic-class	1022
Note	63	Indexed-by	1023
Author-title	1000	Map-scale	1024
Record type	1001	Music-key	1025
Name	1002	Related-periodical	1026
Author	1003	Report-number	1027
Author-name --		Stock-number	1028
personal	1004	Thematic-number	1030
Author-name --		Material-type	1031
corporate	1005	Doc-id	1032
Author-name --		Host-item	1033
conference	1006	Content-type	1034
Identifier	1007	Anywhere	1035
Subject --		Author-Title-	
LC children's	1008	Subject	1036
Subject name --			
personal	1009		

Back to the Present

Present request >

Result set

range

syntax

composition

**Example: Retrieve records 1-10
from result set R; retrieve 'brief'
records, in USMARC format**

Syntax

Object Identifier 1.2.840.10003.5.x

Marc Record Formats:

Unimarc	1
Intermarc	2
CCF	3
USmarc	10
UKmarc	11
Normarc	12
Librismarc	13
Danmarc	14
Finmarc	15
MAB	16
Canmarc	17
SBN	18
Picamarc	19
Ausmarc	20
Ibermarc	21

OPAC Record Syntax

102

MARC record

+

1 or more holdings

and/or

holdings + circ records

Record Syntaxes

Content Specific

- **Marc** **1-23**
- **OPAC** **102**

Facility Specific

- **Explain** **100**
- **Extended Services** **106**

Generic

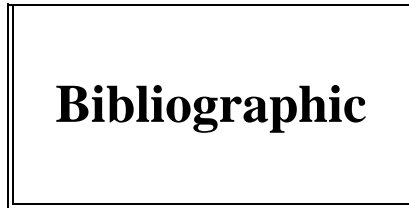
- **SUTRS** (*unstructured*) **101**
- **GRS-1** (*structured*) **105**

And Now:

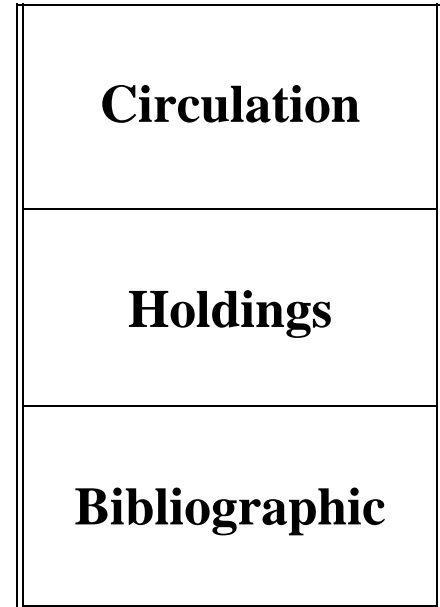
- **HTML** **108**

Syntax and Element Sets

MARC



OPAC



Element Sets

MARC

Full

Brief

Brief-1

OPAC

Full

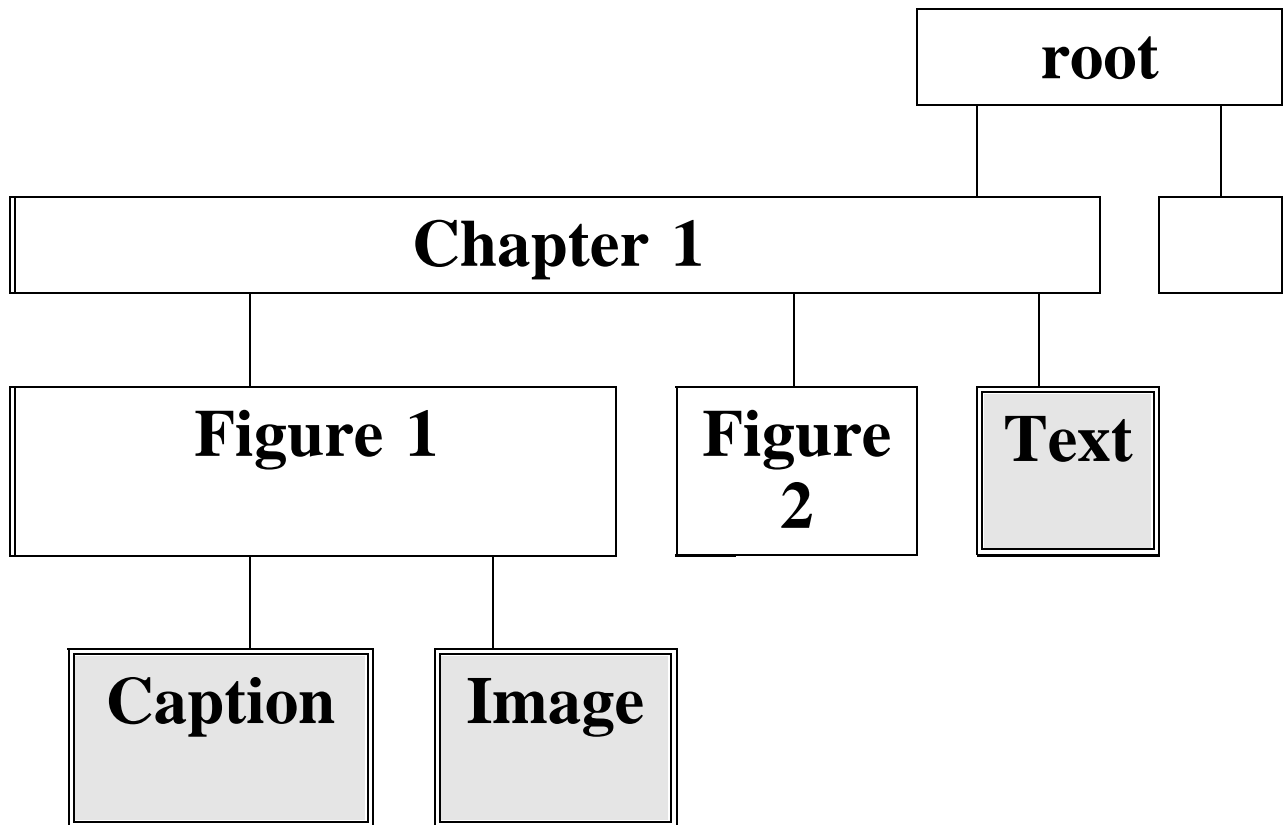
Circ

holdings

circ+holdings

bib+circ

Version 3 Dynamic Element Specification



Chapter 1, figure 1, caption: ascii

Chapter 1, figure 1, image: tiff

Chapter 1, text: postScript

database record

**Database
Schema**

abstract database record

**Element
Specification**

abstract database record

**Record
Syntax**

Retrieval Record

Access and Resource Control

Origin

Target

Search request >

< *Access Control Request*

Access Control response >

< Search response

Origin

Target

Search request >

< *Resource Control Request*

Resource Control response >

< **Search response**

Origin

Target

Search request >

< **Resource Control Request**

"Search will probably:

- *take at least an hour, or*
- *cost at least \$100, or*
- *result in more than 10,000 records*

Want to continue?"

Resource Control response . . . >

"Sure"

< **Search response**

Trigger-resource Control

Origin

Target

Search request >

**Trigger-resource-
control-request >**

< **Resource
Control Request**

**Resource Control
response >**

< Search response

<u>Facility</u>	<u>Service(s)</u>	<u>Operation</u>
Initialization	Init	Init
Search	Search	Search
Retrieval	Present Segment	Present
Delete	Delete	Delete
Sort	Sort	Sort
Browse	Scan	Scan
Access Control	Access Control	
Resource control	Resource Control Trigger-Resource control Resource report	Resource Report
Extended Services	Extended Services	Extended Services
Explain		
Termination	Close	

Z39.50 Explain Facility

- Uses Z39.50 Search and Present facilities
- Explain database
- exp-1 attribute set
- explain-1 record syntax

Example:

Search the Explain database for records where 'explainCategory' = 'databaseInfo'

Record Syntaxes

Content Specific

- Marc 1-23
- OPAC 102

Facility Specific

- Explain 100
- Extended Services 106

Generic

- SUTRS (*unstructured*) 101
- GRS-1 (*structured*) 105

And Now:

- HTML 108

Explain **Target-Info** Record

- **Server name**
- **Description**
- **Recent news**
- **"Welcome" message**
- **Icon**
- **Maximum size of a result set**
- **Timeout interval**
- **Contact information**
- **Restrictions**
- **Hours of operation**
- ***(and more)***

Explain Database-Info Record

- **Database name**
- **Icon**
- **Description**
- **News**
- **Disclaimers**
- **Currently available for access?**
- **How many records**
- **Biggest record**
- **Hours of operation**
- **Best time to access**
- **Update interval**
- **Restrictions**
- **Cost information**
- **Attribute sets supported**
- **Record syntaxes supported**

- *(and more)*

Extended Services Facility

- **the Extended-services *service***
- **The extended *services***
- **The ES *database***

The Extended Services *Service*

Origin **Target**

Init request **>**
< **Init response**

Search request **>**
< **Search response**

Extended Service
request **>**
< *Extended Services*
response

Extended services

- **Save a result set**
- **Export**
- **Periodic Query**
- **Order an item**
- **Update a database**

Maintenance Agency Web Page

**[http://
lcweb.loc.gov/z3950/agency](http://lcweb.loc.gov/z3950/agency)**

- **Z39.50-1995 Text**
- **Register of Implementors**
- **Objects and Definitions**
- **Implementor agreements**
- **ZIG Information**
- **Profiles**

(and more)

Profiles

- **WAIS**
- **GILS**
- **ATS (Author-title-subject)**

In Development

- **Collections**
- **CIMI (Musuems)**
- **Digital library**
- **CIP**
- **ZSTARTS**
- **Item Order/ILL**
- **Union Catalog**
- **Geo-spatial**

Two proposed profiles for use of Z39.50 Extended Services

- **Z39.50 Cataloguing Profile**

World 1 (joint project of National Libraries of Australia and New Zealand) will include a centralised national bibliographic database.

Profiles Z39.50 for catalogue update transactions, using **Z39.50 Update Extended Service**.

- **Profile for the Use of Z39.50 Item Order Extended Service for Interlibrary Loan**

"Z39.50 Profile for Simple Distributed Search and Ranked Retrieval"

ZDSR

(formerly ZSTARTS formerly Zlite)

Features:

- **Documents.**
- **Document descriptors (metadata).**
- **Search by author, title, language, within body of text, url, date-last-modified.**
- **Relevance feedback.**
- **stem, phonetic, proximity searching.**
- **Result ranking.**

ZDSR Document Metadata

- **title**
- **abstract**
- **publication date**
- **creation date**
- **date last modified**
- **size**
- **score**
- **frequency and weight per term**
- **url**

Z39.50 Metadata

- **Search access points**
- **Retrieval elements**
- **Transient metadata**
(e.g. score)
- **Variant information**
(e.g. size, format)
- **User dependent**
(e.g. terms/conditions)
- **Server/database level metadata**
- **Collection level metadata**

Dublin Core

Meta Data Elements

- **Title**
- **Subject**
- **Author**
- **Publisher**
- **Other Agent** (*editor, ...*)
- **Date** (*in present form*)
- **Object Type**
- **Genre** (*home page, novel, ...*)
- **Form**
- **Identifier** (*url ...*)
- **Source** (*from which derived*)
- **Language**
- **Relationship** (*to other objects*)
- **Coverage** (*spatial/temporal*)

**Shared
Index**

V

**Distributed
Searching**

V

**Navigation
(*collections
Model*)**

A Collection is a:

group of related objects and collections.

- **Organized thematically (e.g. by subject, creator, historical period),**
- **with diverse objects;**
- **with associated description(s);**
- **hierarchical;**
- **distributed.**

Navigation

**Support for navigation generally
Requires:**

- **Semantic interoperability**
 - search semantics
 - meta-structures
- **Intellectual resources**
 - aggregation
 - organization
 - description
- **Cataloging Resources**

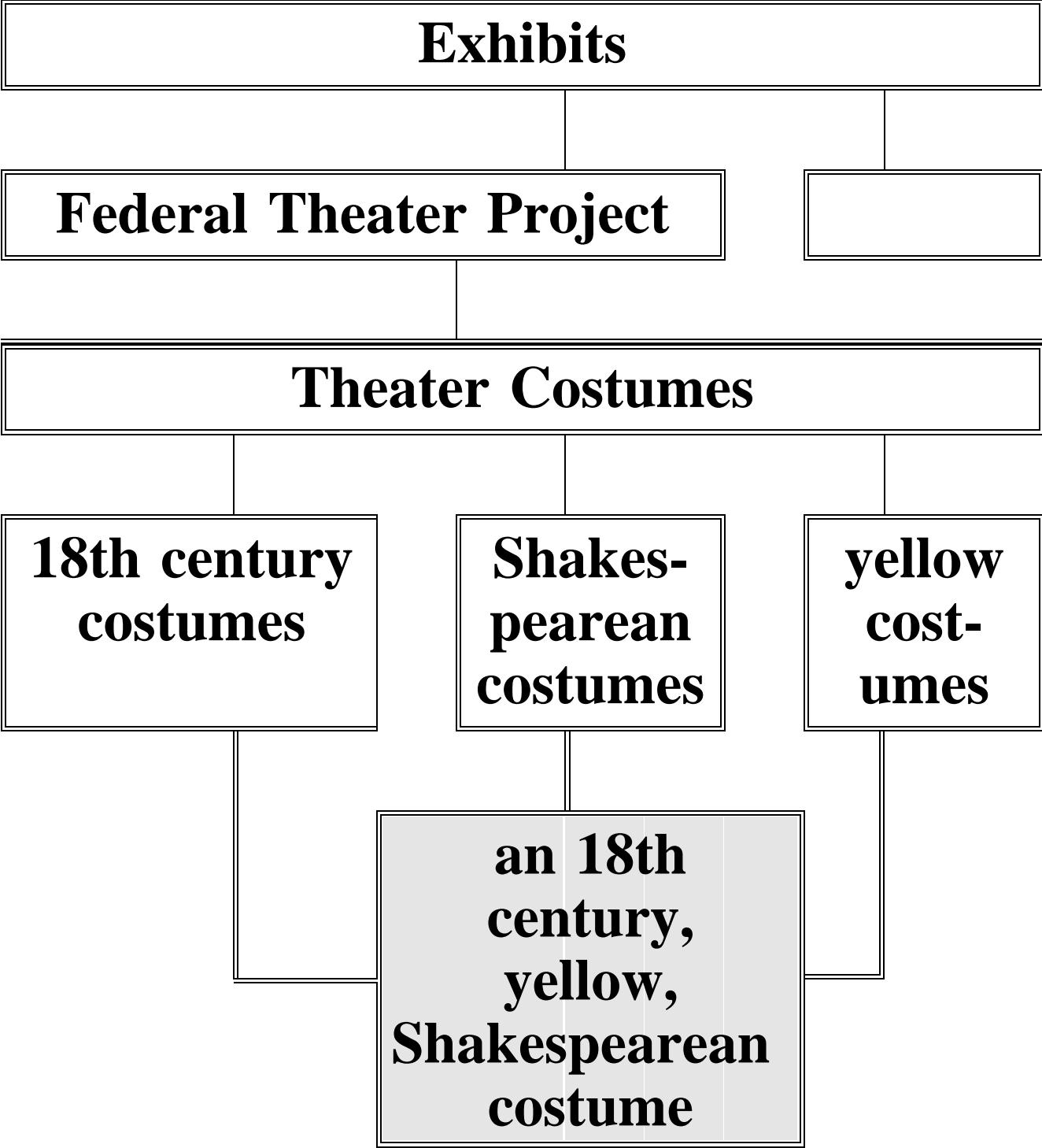
Library of Congress

Exhibits

**Re-
search**

**Copy-
right**

**Government,
Congress, and
laws**



Collection
Descriptive Record

Brief text Description

Associated Description

Related Collections

Enumerated Members

An object or a collection may have one or more Associated Descriptions:

- **Finding Aid**
- **EAD**
- **Cataloging Record**
- **Exhibition catalog**
- **GILS Record**
- **Web Page**

Collection Descriptive Record

Brief text Description

Associated Descriptions

- **brief description**
- **type**
- **size**
- **format**
- **pointer**

Related Collections

Enumerated Members

Related Collections: Relationships

- **Parent (or Superior)**
- **Child (or Subordinate)**
- **Sibling**
- **"might be of interest"**

Collection Descriptive Record

Brief text Description

Associated Descriptions

Related Collections

- **relationship**
- **pointer to collection
descriptive record**

Enumerated Members

Enumerated Members

First Object

Brief description

pointer

Second Object

Brief description

pointer

Third Object

Brief description

pointer

Collections Suite of Z39.50 Profiles

