

ZIG Tutorial
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Z39.50
Overview

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Z39.50

Information Retrieval Protocol

ANSI/NISO Z39.50

ISO 23950

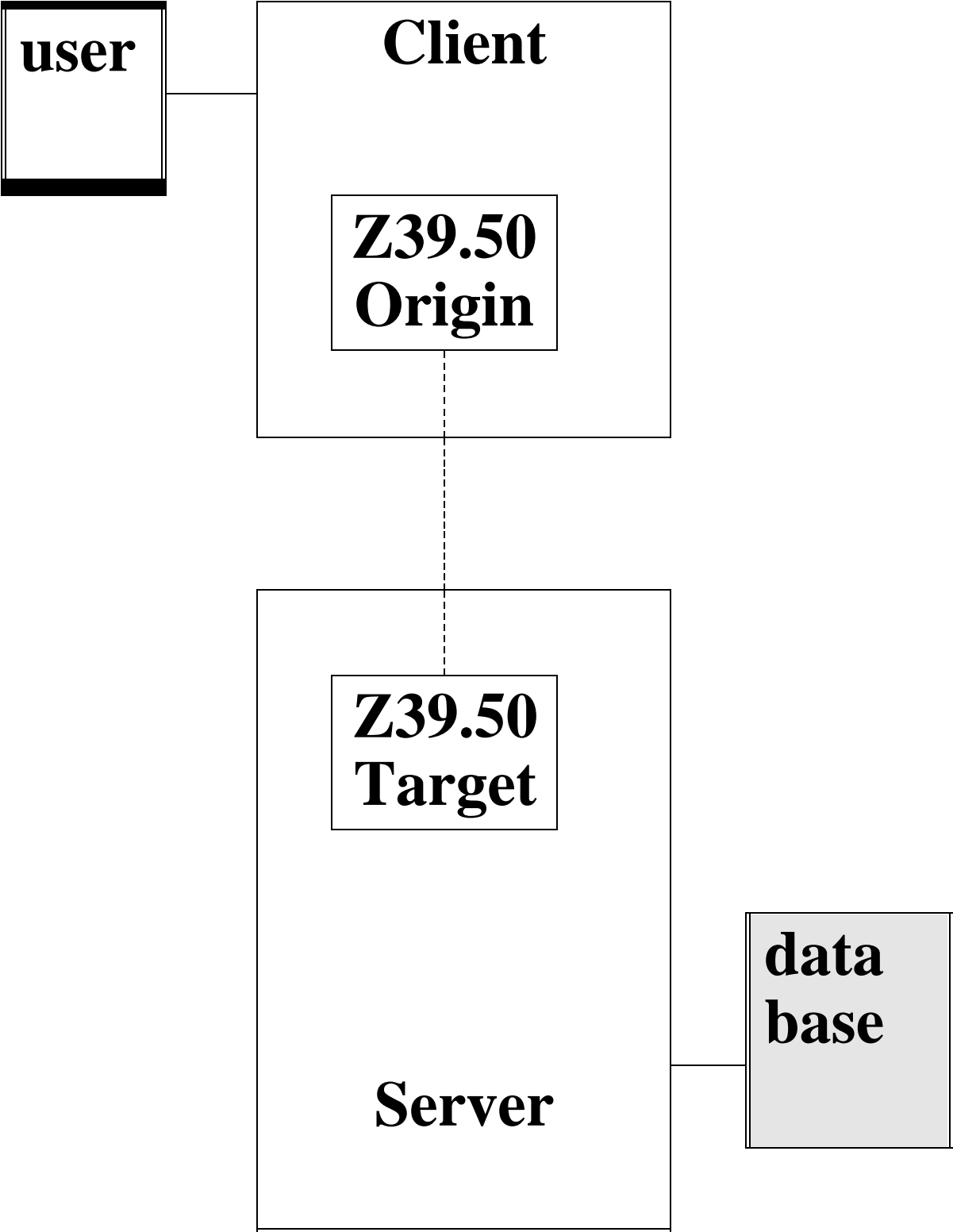
ANSI/NISO Z39.50-1988

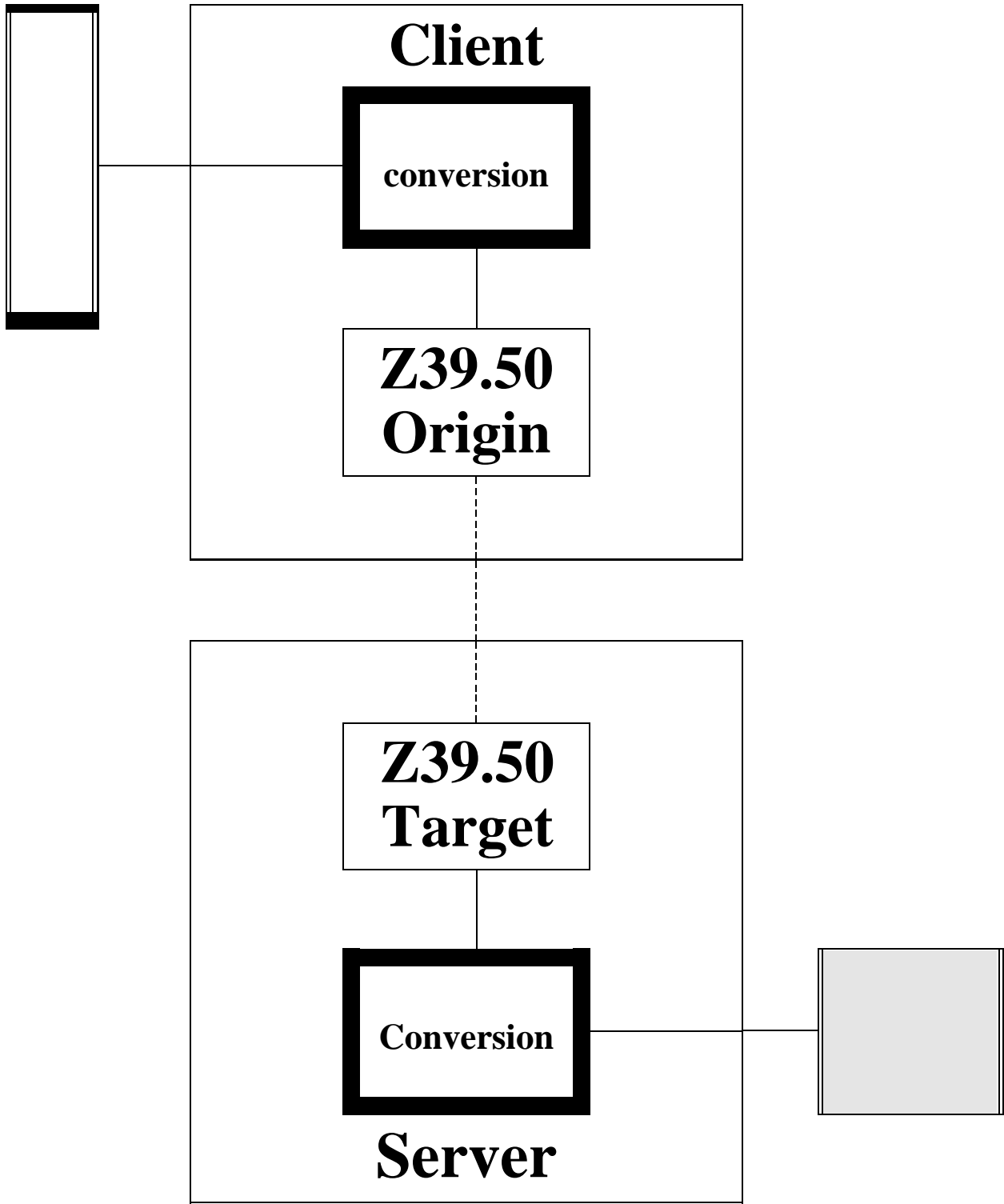
ANSI/NISO Z39.50-1992 (2)

ANSI/NISO Z39.50-1995 (2 + 3)

ISO 10162/10163 1991 (1 + 2)

ISO 23950 1997 (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)

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**

The Essence of a Present

Present request >

Result set from which to retrieve records

range of records

**How you want them:
composition
syntax**

< Present response

records

The Essence of a Scan

Scan request **>**

**Index (or "term-list") from
which to obtain terms**

**Where to start scanning (what
term)**

How many terms

< **Scan response**

Terms

Example

1. Scan

Scan request >

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

< Scan response

mozart & beethoven

mozart & prague

mozart & salieri

mozart & the archbooby

---> mozart chamber music

mozart in new york

mozart speaks

(-->) mozart symphonies

mozart und haydn in London

2. Search

Search request >

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

< Search response

"27 records found."

3. 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**

4. 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

5. 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

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**

Record Syntaxes

(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

Record Syntaxes (continued)

Content Specific

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

Facility Specific

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

Generic

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

And others

- **e.g. HTML**

OPAC Record Syntax

102

MARC record

+

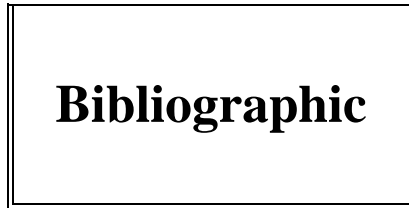
1 or more holdings

and/or

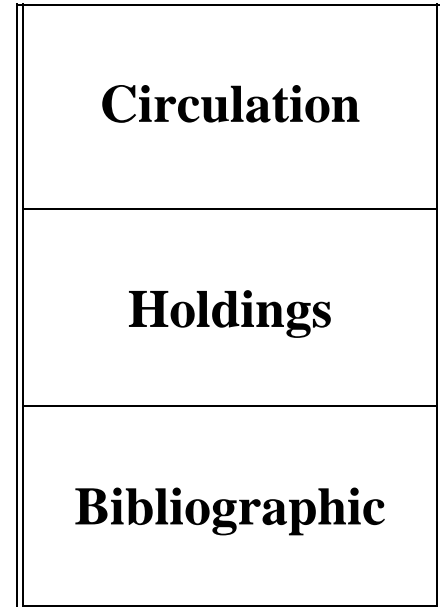
holdings + circ records

Syntax and Element Sets

MARC



OPAC



Element Sets

MARC

Full

Brief

Brief-1

OPAC

Full

Circ

holdings

circ+holdings

bib+circ

Schema Definition

Opac Record

- (1): circulation**
- (2): holding**
- (3): bibliographic**

Element Specification

"return result set record 1, assuming the "Opac" schema, circulation, first two holdings, bibliographic information in USMARC, all packaged in the 'GRS' record syntax".

Retrieval Record

(1)	circulation		
(2)	holding	first	
(2)	holding	second	
(3)	bibliographic		usmarc

Abstract Record Structure: Schema Elements for GILS Schema

<u>Tag (Path)</u>	<u>Element</u>
(2,1)	title
(2,6)	abstract
(4,51)	purpose
(4,70)	availability
(4,70)/(4,90)	distributor
(4,70)/(4,90)/(2,7)	Name
(4,70)/(4,90)/(2,10)	Org.
(4,70)/(4,25)	linkage
(4,94)	pointOfContact
(4,94)/(2,7)	Name
(4,94)/(2,10)	Organization
(4,97)	crossReference
(4,27)	recordSource

Access Control

Origin

Target

Search request >

< *Access Control Request*

Access Control response >

< Search response

Resource Control

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 >

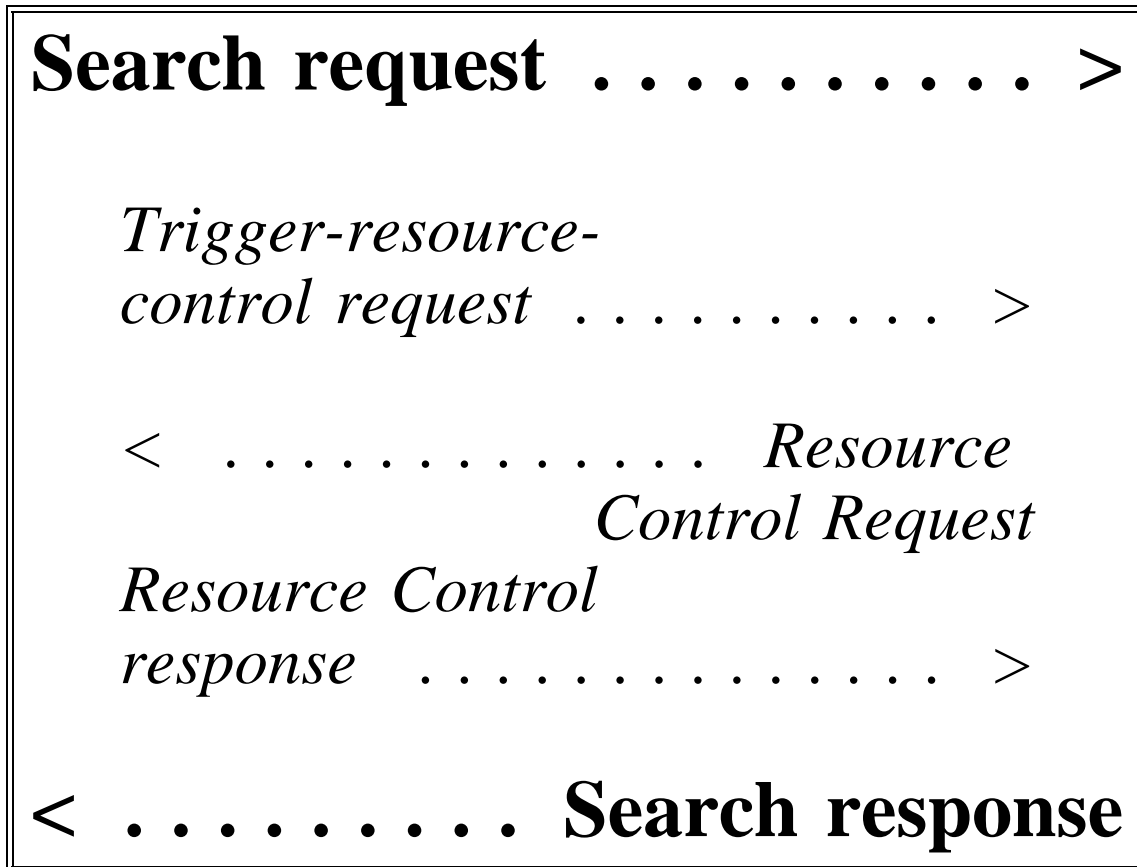
**Trigger-resource-
control-request >**

< **Resource
Control Request**

**Resource Control
response >**

< Search response

Search Operation



Resource-report Operation



Z39.50 Explain Facility

- Uses Z39.50 Search/Present facilities for Information about:
 - the Target
 - Databases
 - Attributes
 - Record Syntaxes (etc.)
- Explain database
- exp-1 attribute set
- explain-1 record syntax

Example

Search *Explain database:*
'explainCategory' =
'databaseInfo'

Present *Records 1 through n using*
Explain-1 record syntax.

Extended services

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

Extended Services Facility

- the Extended-services *service*
- The extended *services*
- The ES *database*
- Also uses Search/Present
- ES Attribute set
- ES Record Syntax

<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	

Profiles

- **WAIS**
- **GILS**
- **ATS (Author-title-subject)**
- **ZDSR**
- **Collections**
 - **CIMI (Museums)**
 - **Digital library**
- **CIP**
- **Geo**
- **Union Catalog**
- **Item Order/ILL**
- **ONE**

Maintenance Agency web Page

<http://lcweb.loc.gov/z3950/agency>

- **The Z39.50 Document**
- **Register of Implementors**
- **Profiles**
- **Registered Objects and definitions**
- **Implementor Agreements**
- **ZIG**
- **Clarifications/commentaries**
- **Hosts available for testing**
- **Articles, tutorials, etc.**