



# **FAST: Subject Headings for the Semantic Web**

Ed O'Neill

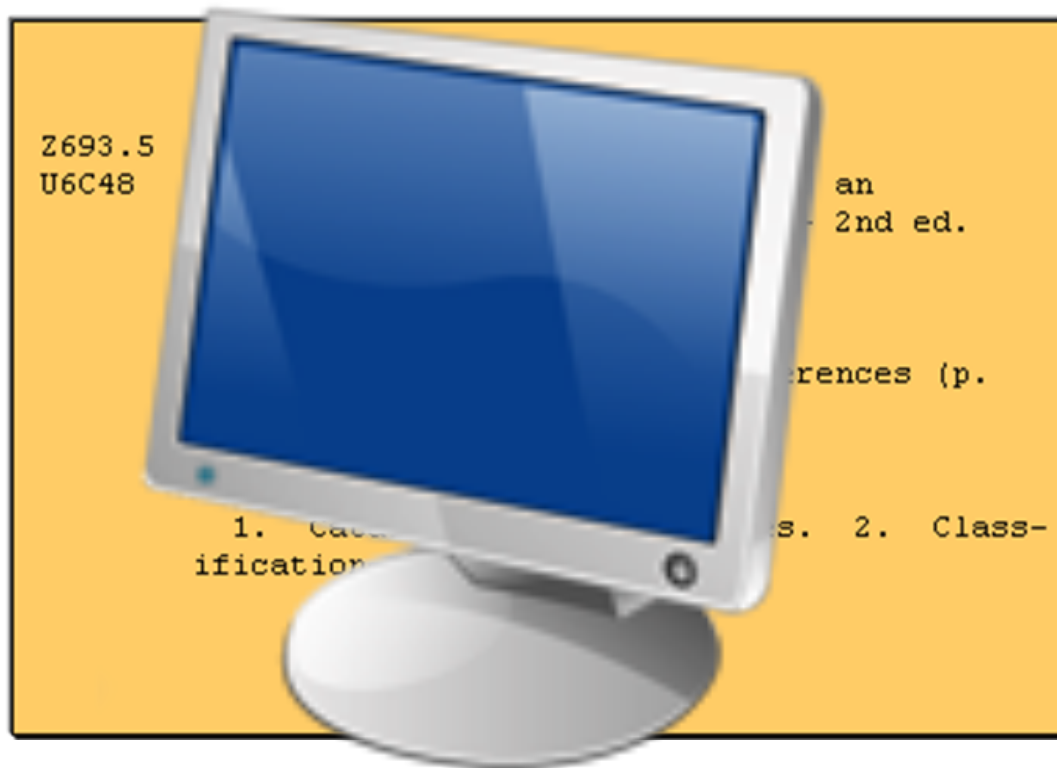
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Midwinter SAC Program

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# Changing Environment

19<sup>th</sup> Century    21<sup>st</sup> Century



Computerized  
Global Collections  
Automated  
Semantic Web  
End User Searches

Card Based  
Small Collections  
Manual  
Local Catalogs  
Intermediaries

# FAST's Origins

The SAC Subcommittee on Metadata and Subject Analysis(1997-2001) recognized that a new schema is required for Internet resources and other non-traditional materials. The options identified:

- Develop a new schema,
- Use an existing schema(s),
- Adapt or modify an existing schema.**

# Requirements

- Compatible with LCSH,**
- Simple in structure and syntax,
- Usable by non-catalogers and in non-library environments,
- Semantic interoperability,
- Compatible with MARC, Dublin Core, and other popular metadata schemas,
- Amenable to authority control,
- Linkable.

# Joint Project

- ❑ FAST was developed jointly by the Library of Congress and OCLC. The development team included:
  - OCLC staff,
  - Lois Mai Chan (Univ. of Kentucky, Consultant)
  - Lynn El-Hoshy (Library of Congress)
- ❑ SAC established the FAST Subcommittee to provide assistance and guidance.
- ❑ OCLC and LC have unrestricted non-exclusive rights to FAST except neither can sell FAST.

# The FAST Approach

- ❑ Retain LCSH's rich vocabulary
- ❑ Eights facets
- ❑ Established all headings

# Precoordination vs. Faceted

LCSH is precoordinated:

Cataloging—United States

FAST is faceted (postcoordinated):

Cataloging

United States

# Enumerative vs. Synthetic Languages

**LCSH is Synthetic:** Only a set of core terms is established but those terms can be combined or extended following the synthetic rules.

**FAST is Enumerative:** All terms are established and included in the authority file.



# Eight Facets

Topical

Subject headings  
—Evaluation

Geographic

Ohio—Dublin

Events

Olympic Games

Chronological

1939 - 1945

Personal Names

Kilgour, Frederick G.

Corporate Names

OCLC

Uniform Titles

Dead Sea Scrolls

Form/Genre

Guidebooks

# Geographic Facet

- ❑ Geographic names will be established and applied in indirect order and abbreviations are not used:

**Pennsylvania—Philadelphia**

- ❑ First level geographic names are limited to continents, countries, and other high level names (e.g., Ohio, Victoria, China, Europe, etc.). Other names are entered as subdivisions under the smallest first-level name in which it is fully contained:

**Europe—Curzon Line**

- ❑ Parts of large bodies of water (bays, gulfs, etc.) are established under the larger body of water:

**Atlantic Ocean—Chesapeake Bay**

# Event Headings

- ❑ An event is any activity that occurs during a limited period on time,
- ❑ Both single and reoccurring events are included,
- ❑ Non-reoccurring events are generally qualified by place and date.

Tailhook Scandal (1991-1993)

Great War (Uruguay : 1843-1852)

International Youth Year (1985)

Rose Bowl (Football game)

# Chronological (Period) Facet

Headings consist of either a single date or a starting and ending date but are formatted for display:

1945

1942 – 1945

Since 1987

221 B.C. - 220 A.D.

Chronological headings are an exception; they are only established when needed for cross-references.

# Uniform Title Facet

Uniform titles are entered directly and qualified by author:

## Anonymous

Beowulf

Dead Sea scrolls

## Personal Authors

Paradise regained (Milton, John)

Killers (Hemingway, Ernest)

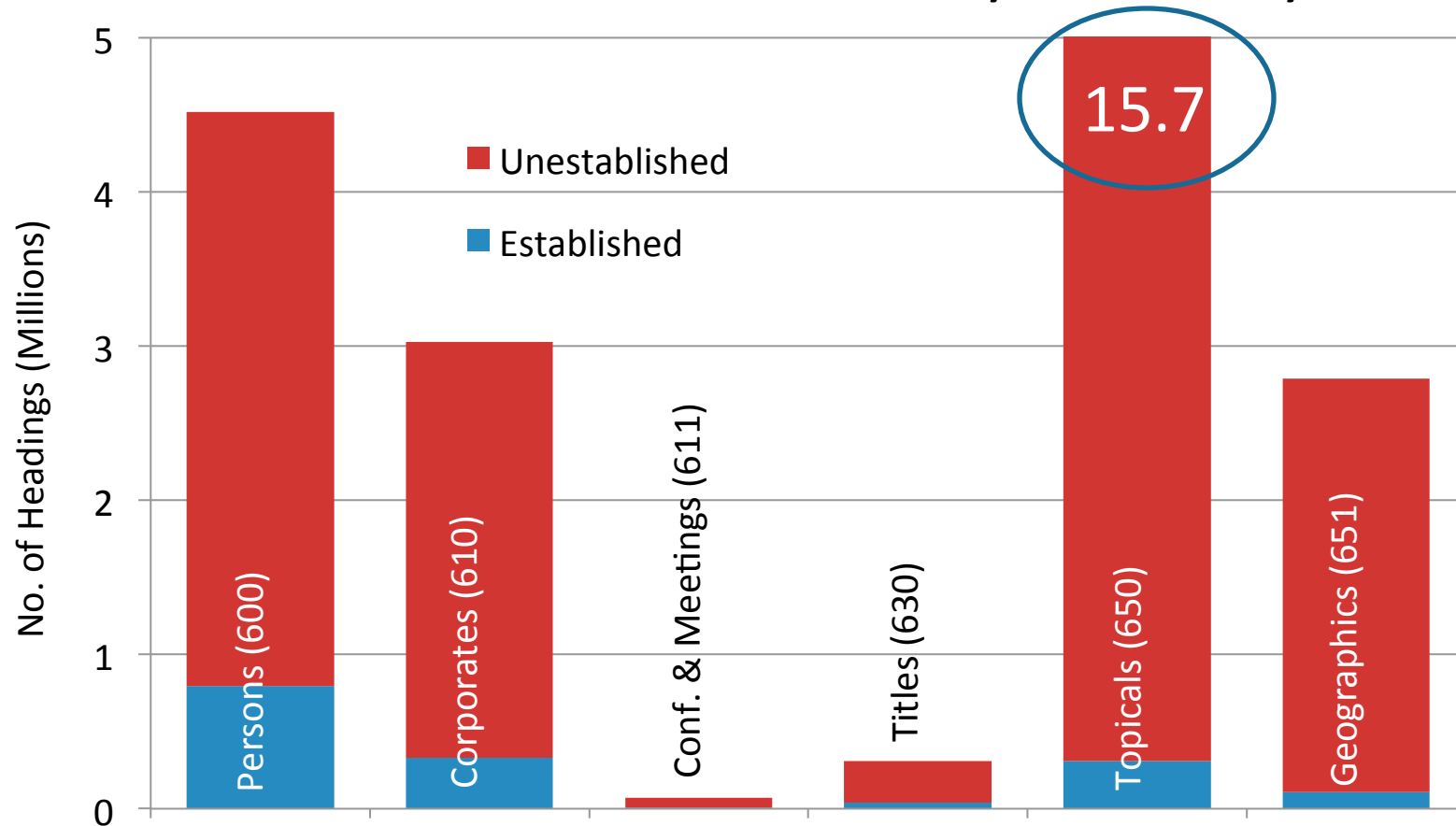
## Corporate Authors

Job Training Partnership Act (United States)

Basic law (Hong Kong)

# Most LCSH Headings are **Synthetic**

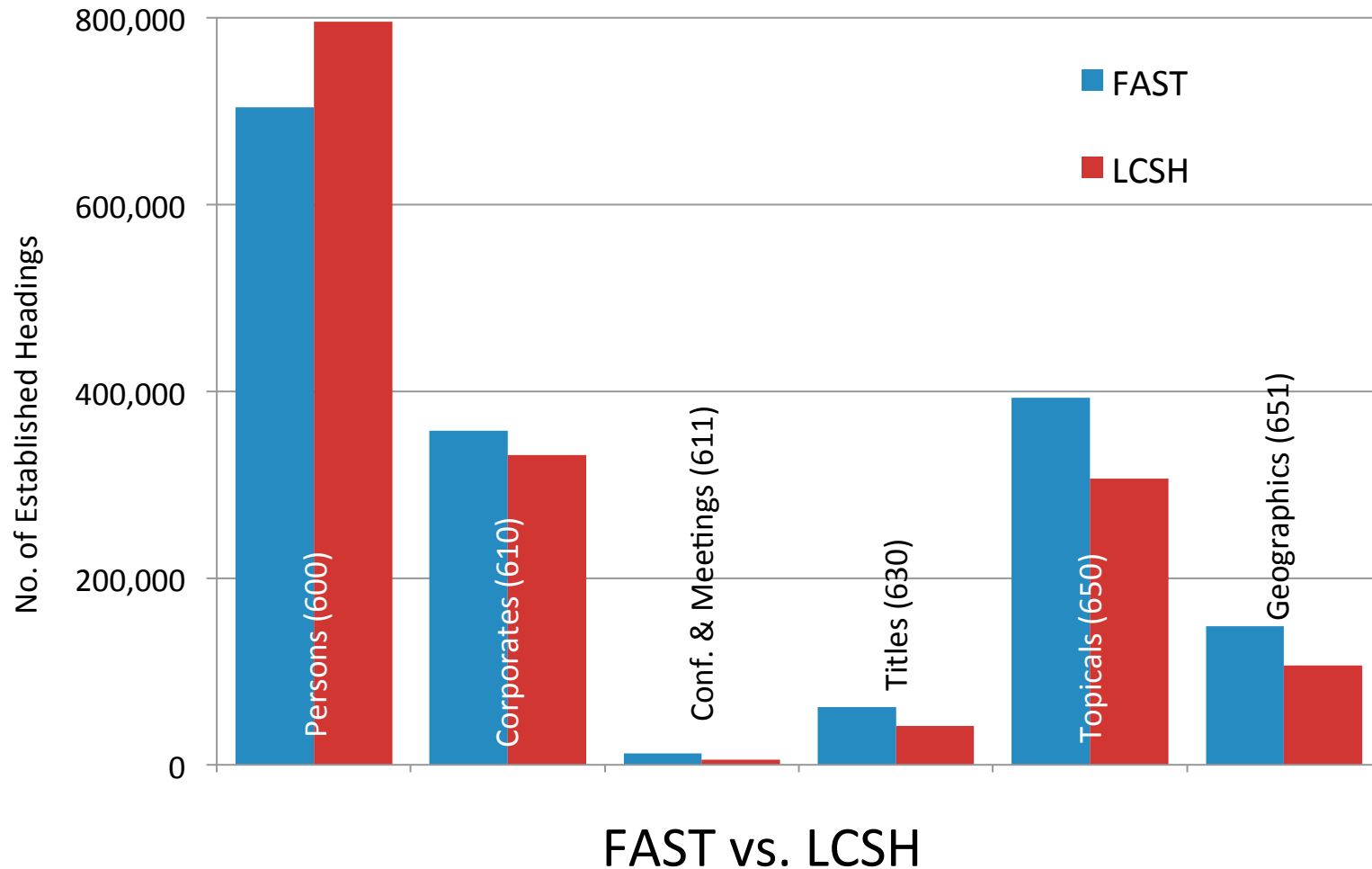
5.8% of LCSH Headings in WorldCat are established  
24.8M are not established but synthetically built



# LCSH Headings Stats

- ❑ 26,423,651 unique LCSH headings in WorldCat,
- ❑ 1,490,619 new LSCH headings were added to WorldCat in 2012,
- ❑ 1,586,961 of the unique LCSH headings are established,
- ❑ 59,895 of the LCSH headings were established in 2012.

# Number of Authority Records



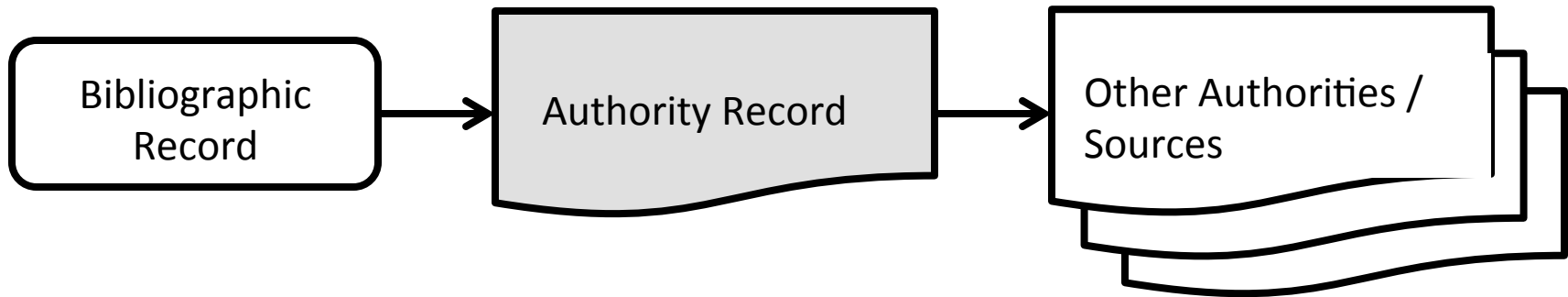


# Result of Faceting

26.5 million LCSH headings

→ 1.7 million FAST headings

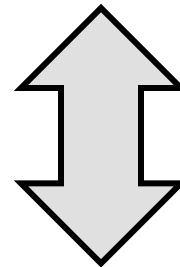
# Links: to & from



# Embedding vs. Linking

Embedding

**World Wide Web**  
**\$x Subject access**



Linking

**sh 00003176**

# Linking as MARC Fields

LCSH:

650 0 \$aWorld Wide Web \$x Subject access\$0(DLC)sh 0003176

↑ Source

↑ ID

Normalized Text as an Identifier  
→ world wide web\$subject access

FAST:

650 7 \$aWorld Wide Web \$x Subject access  
\$2fast \$0(OCOLC)fst01181332

↑ Source

↑ ID

# Linking; A Simplified Example

```
010      2010015675
050 00  Z695.Z8 $b F373 2010
100 1   Chan, Lois Mai.
245 10  FAST : $b Faceted Application of Subject
        Terminology : principles and applications / $c Lois
        Mai Chan and Edward T. O'Neill.
260     Santa Barbara, Calif. : $b Libraries Unlimited,
        $c c2010.
300     xvii, 354 p. : $b ill. ; $c 26 cm.
650 0  World Wide Web $x Subject access $0 (DLC) sh 0003176
700 1   O'Neill, Edward T.
```

# LCSH Linking; 3 cases

Bibliographic → Authorities

Simple Link  
5.8%\*

Advertising—  
Automobiles

sh 85001092

Advertising—  
Automobiles

No Link

Love—Religious  
aspects—Bahai Faith

sh 85078522

Love—Religious  
aspects—Buddhism,  
[Christianity, etc.]

Multiple Links

Burns and scalds—  
Patients

sh 85018164

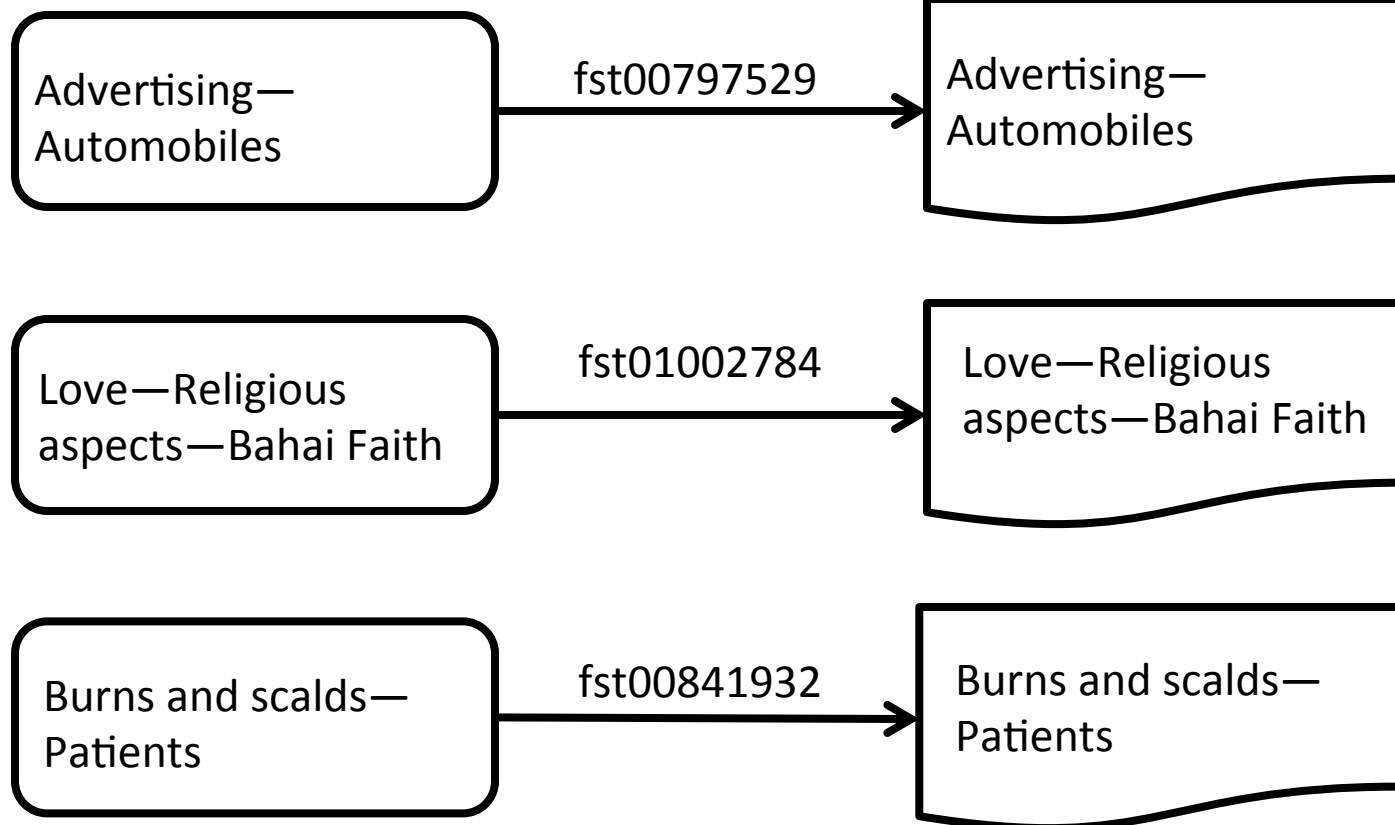
Burns and scalds

sh 00006930

Patients

# FAST Linking; only simple links

Bibliographic → Authorities



# Identifiers: Strings vs. Numeric

Traditionally normalized versions of the headings have been used as the link between headings in bibliographic records and the authority file:

Academic libraries \$xCirculation analysis

→ academic libraries \$circulation analysis

→ sh 85076590

O'Neill, Edward T.

→ oneill, edward t

→ n 87146135



# Identifying Jock Stein

On 2013-01-16 LC made the following changes to two name authority records:

n 78081636

**Stein, Jock** → Stein, Jock (Cleric)

no2012157653

Stein, Jock, Pulp fiction writer → **Stein, Jock**

stein, jock = n 780~~8~~1636    no2012157653

# Options for Simple Links

- Faceting
- Validation records (Create authority records for all valid headings)
- Hybrid (Link when possible, embedded otherwise)

# Problem with Strings as Identifiers

Name	Bibs on 1/1/2012	Bibs on 1/1/2013
Stein, Jock	30	28 (1 correct, 27 erroneous)
Stein, Jock, Pulp fiction writer	1	—
Stein, Jock (Cleric)	—	3

In 2012, 840 name authority records were changed such that the established form of a personal name was changed and the previous form reused for a different person.

# FAST Identifiers

- ❑ FAST initially used normalized strings as links to the authority file.
- ❑ FAST recently has switched to using identifiers.
- ❑ The recommended form of a FAST heading in a MARC bibliographic record is to include the authority record number.

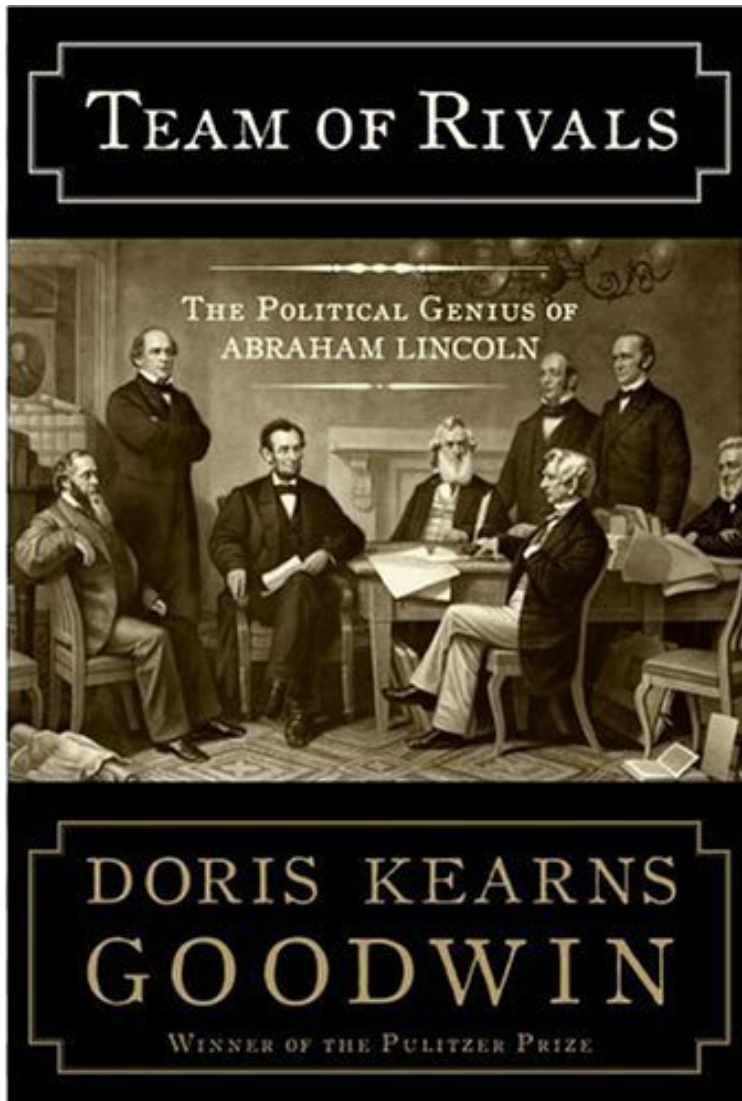
650 7 \$aWorld Wide Web \$x Subject access  
\$2fast \$0(OCOLC) fst01181332

Obsolete headings will be retained in the FAST authority file and FAST records numbers will not be reused for different entities.

# Adding FAST to WorldCat

- ❑ Beginning in September 2013, OCLC is systematically adding FAST headings to WorldCat bibliographic records that already have LCSH assigned.
- ❑ Initially, records will be excluded from FAST enrichment until at least six months from date of entry have elapsed.
- ❑ The processes performing this FAST enrichment work in WorldCat will run as background processes and should not adversely impact system performance.
- ❑ It's anticipated that the FAST enrichment of record batch process will take at least one year, and that FAST headings will be added to approximately 100 million records.
- ❑ WorldCat records containing member-assigned FAST headings will not be modified by the FAST enrichment process.

# LCSH to FAST Conversion



LCSH

600 Lincoln, Abraham, \$d 1809-1865

650 Political leadership \$z United States \$v Case studies

650 Genius \$v Case studies

600 Lincoln, Abraham, \$d 1809-1865 \$x Friends and associates

650 Presidents \$z United States \$v Biography

651 United States \$x Politics and government \$y 1861-1865

600 Lincoln, Abraham, \$d 1809-1865

648 1861 - 1865

650 Political leadership

650 Genius

650 Friendship

650 Presidents

650 Political science

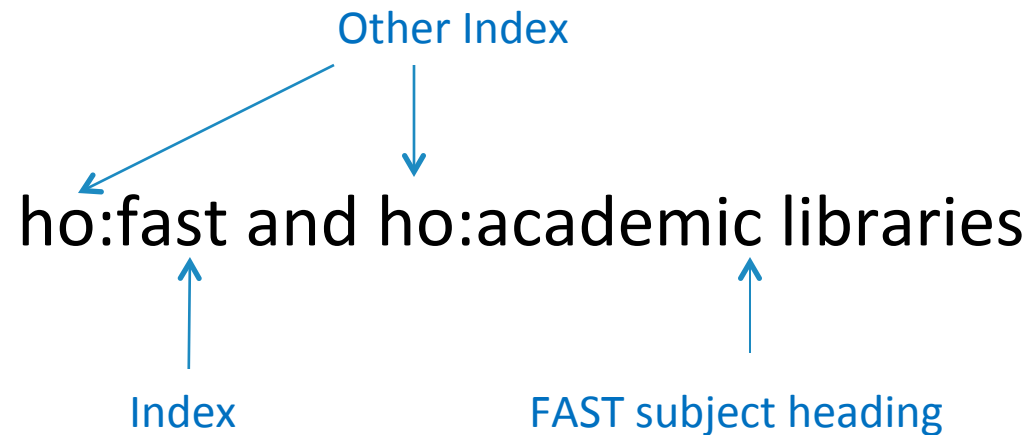
651 United States

655 Case studies

655 Biography

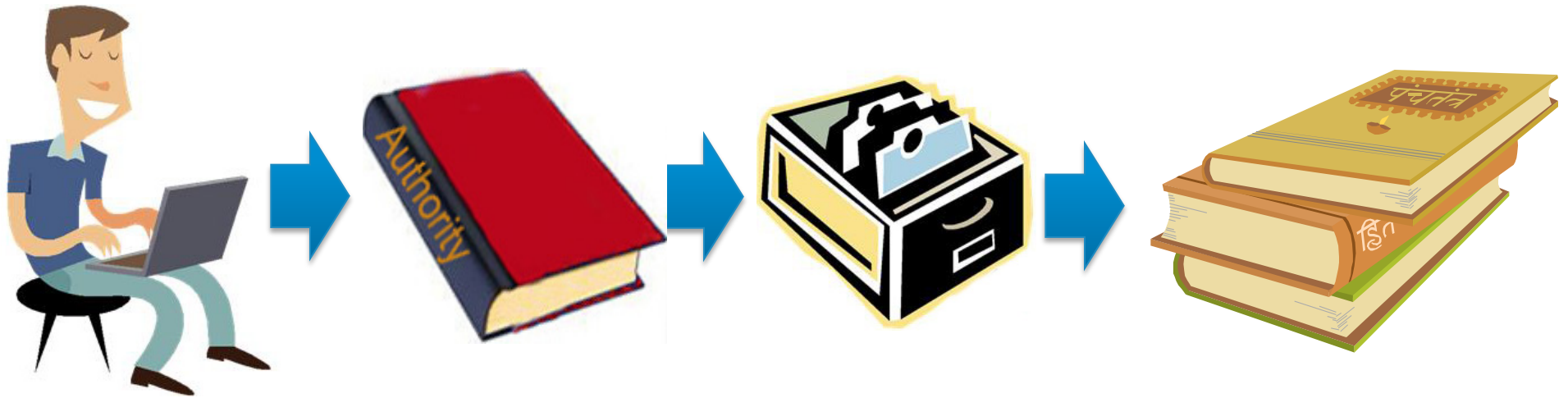
FAST

# Searching FAST in Connexion



The relevant index labels:  
**ho:** for the keyword index,  
**ho=** for the phrase index,  
**how=** for the whole phrase index.

# Using Authorities for Searching



- The authority file is first searched to find the appropriate subject heading(s).
- The bibliographic file is then searched to identify the resources with the subject heading(s).



# mapFAST

- Is a prototype that uses an authority file as the source of subject headings rather than the headings from bibliographic records.
- Uses the FAST subject headings.
- Uses the WorldCat.org bibliographic records.
- Complements other access methods.
- Is freely available at [fast.oclc.org/mapFAST](http://fast.oclc.org/mapFAST).

# mapFAST

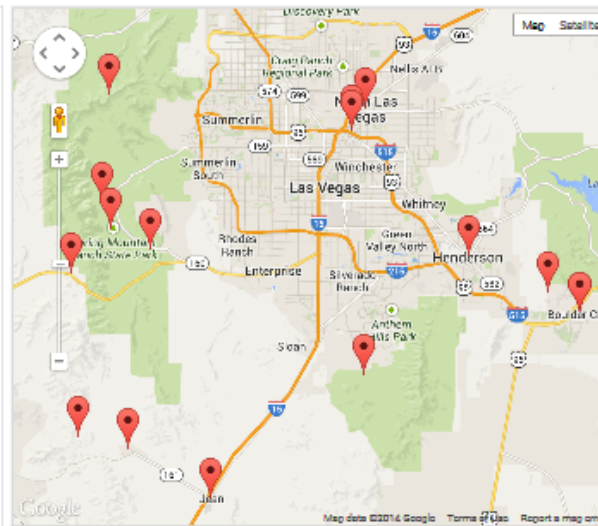
- ❑ When looking for information about a particular place, it is often useful to check surrounding locations as well.
- ❑ FAST geographic subjects provide access to information with a geographic aspect based on their latitude and longitude.
- ❑ A mashup with Google Maps allows users to see surrounding locations that have been FAST subjects.
- ❑ The map interface allows for simple selection of a location, with links to enter it directly as a search into either WorldCat.org or Google Books.

**Find FAST Geographic Subject Headings Near:** 

Radius: 30 km

Display: All


- [Nevada -- Las Vegas Valley](#)
- [Nevada -- Las Vegas](#)
- [Nevada -- Las Vegas Metropolitan Area](#)
- [Nevada -- Las Vegas Region](#)
- [Nevada -- Las Vegas Suburban Area](#)
- [Nevada -- Las Vegas Ranch](#)
- [Nevada -- Henderson](#)
- [Nevada -- Blue Diamond](#)
- [Nevada -- North Las Vegas](#)
- [Nevada -- Spring Mountain Ranch State Park](#)
- [Nevada -- Red Rock Canyon National Conservation Area](#)
- [Nevada -- Clark County](#)
- [Nevada -- Mountain Springs](#)

Share this Location: <http://fast.loc.org/mapfast/?geo=36.029414,-115.188;crs=wgs84&mq=&sortby=distance&max-results=20&box=35.8901,-115.387127,36.16775,-114.988873>**mapFAST is a project of OCLC Research.**

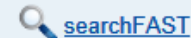
This prototype interface was developed to show the access opportunities created by using the fully enumerative faceted FAST subject headings. [Read more here.](#)

**Learn more about the FAST project.**

The FAST authority file was developed jointly by OCLC and the Library of Congress and is available online to support FAST applications and allow potential users and other interested parties to view the FAST authority records.

 The most recent update for FAST was 11/05/2013. The FAST database will be updated periodically. Our target is to update FAST at least twice each year.

For comments on the FAST authorities or this interface, please contact the [FAST Team](#)

**FAST Projects**

A full feature search interface to the FAST database.



mapFAST is a Google Maps mashup prototype designed to provide map based access to bibliographic records using FAST geographic and event authorities. Also available in Mobile versions.



The FAST Converter is a Web Interface for the conversion of LCSH headings to FAST headings.



FAST as a Linked Data service to Interact with the Semantic Web.



mapFAST data, providing FAST headings near a coordinate location, is also available as a Web Service.



A Web service that automates the manual selection of FAST Subjects based on autosuggest technology.



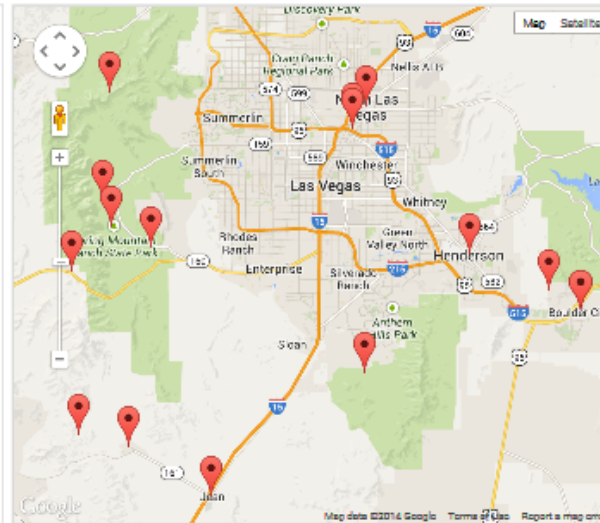
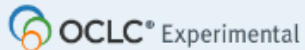
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Radius: 30 km

Display: All


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- [Nevada – Las Vegas Suburban Area](#)
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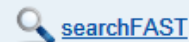
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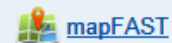
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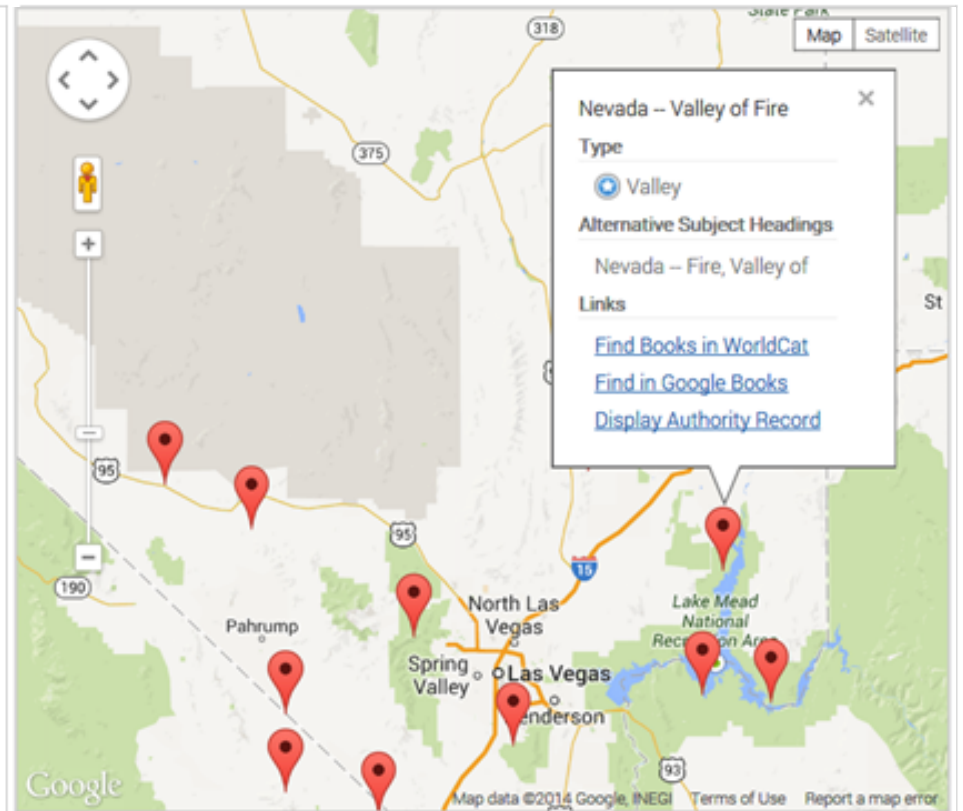
Find FAST Geographic Subject Headings Near:

las vegas

Radius: 100 km

Display: Land Feature

- [Nevada -- Las Vegas Valley](#)
- [Nevada -- La Madre Mountain](#)
- [California -- Mesquite Lake](#)
- [United States -- Pahrump Valley](#)
- [Arizona -- Detrital Valley](#)
- [California -- Kingston Range](#)
- [Nevada -- Arrow Canyon Range](#)
- [Nevada -- Valley of Fire](#)
- [United States -- Mojave Desert](#)
- [Nevada -- Spring Mountains](#)
- [Nevada -- Coyote Spring Valley](#)
- [United States -- Castle Mountains](#)
- [Arizona -- White Hills \(Mohave County : Mountains\)](#)



## Nevada--Valley of Fire

### INFORMATION ABOUT THE AUTHORITY

<a href="#">Leader</a>		00000cz a2200037n 45 0
<a href="#">001</a>		fst01334014
<a href="#">003</a>		OCoLC
<a href="#">005</a>		20091211104203.0
<a href="#">008</a>		060620nn anznnbabn    ana d
<a href="#">016</a>	7	‡a fst01334014 ‡2 OCoLC
<a href="#">034</a>		‡d W1142351 ‡e W1142351 ‡f N0362404 ‡g N0362404 ‡2 geonames
<a href="#">040</a>		‡a OCoLC ‡b eng ‡c OCoLC ‡f fast
<a href="#">043</a>		‡a n-us-nv
<a href="#">151</a>		‡a Nevada ‡z Valley of Fire
<a href="#">451</a>		‡a Nevada ‡z Fire, Valley of
<a href="#">550</a>		‡a Valleys ‡0 (OCoLC)fst01163841
<a href="#">551</a>		‡a Nevada ‡z Clark County ‡0 (OCoLC)fst01212877 ‡w g
<a href="#">670</a>		‡a GeoNames [algorithmically matched] ‡b valley;36°24'04"N 114°23'51"W
<a href="#">688</a>		‡a LC (2013) Subject Usage: 2
<a href="#">688</a>		‡a WC (2013) Subject Usage: 18
<a href="#">751</a>	0	‡a Fire, Valley of (Nev.) ‡0 (DLC)sh 85048448
<a href="#">751</a>	7	‡a Valley of Fire ‡0 (GeoNames)5504054 ‡2 geonames ‡w nna

### DIFFERENT FORMATS AVAILABLE

#### RECORD VIEWS

[Generic Document](#)

[MARC-21 \(MARC-21 raw data\)](#)

[RDF/XML \(RDF/XML raw data\)](#)

# Advantages of Authorities

- ❑ Increases the number of access points;
  - Latitude and longitude,
  - Feature type,
  - Cross references,
  - Subject classification,
  - Links to additional information,
  - etc.
- ❑ Easier to maintain the authorities than to embed the information directly in bibliographic records.

# FAST applications

Mixer, Jeffrey, and Eric Childress. *FAST (faceted Application of Subject Terminology) Users: Summary and Case Studies*. Dublin, Ohio: OCLC Research, 2013.

<http://oclc.org/research/publications/library/2013/2013-04r.html>

The study examined:

- How FAST is being utilized,
- Why those using FAST selected it,
- What benefits FAST provides,
- What can be done to enhance the value of FAST.





# Thank You!

Ed O'Neill

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