

# Learning from 20+ Years of Interoperability Challenges in Libraries

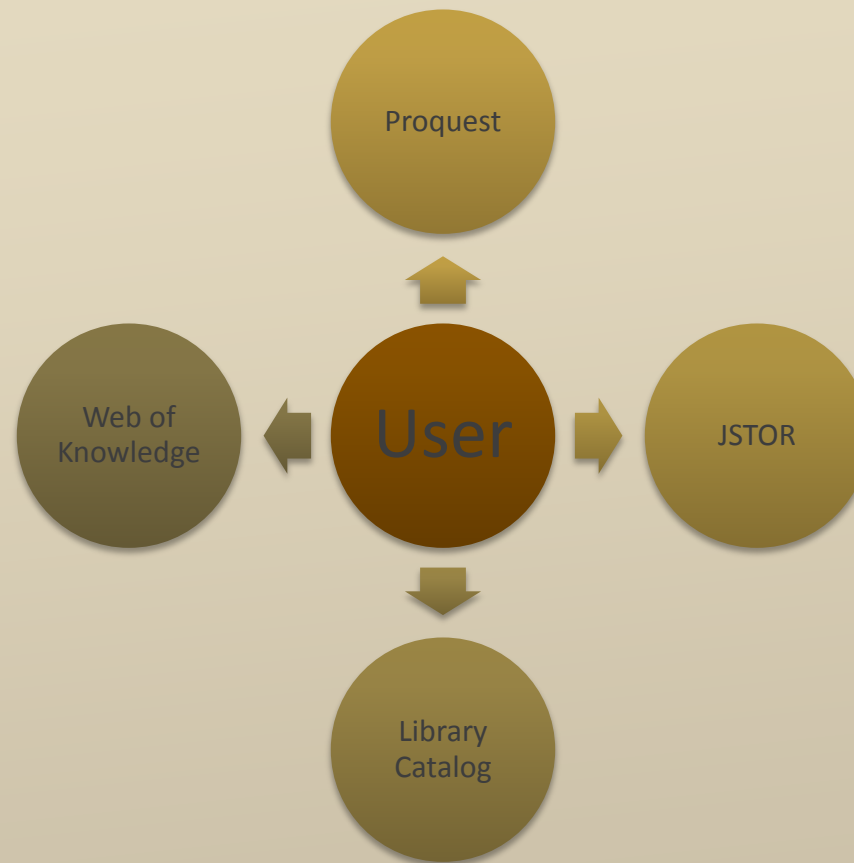
Adam Brin  
**Digital Antiquity**

# Back in Time

How did you do your research?

- Spirs
- WebSpirs
- Z39.50
- Telnet
- Pazpar2
- XML Gateways
- SOAP
- SRW/SRU
- Metasearch
- Google Scholar
- Journal Indexes
- OpenURL

# Broadcast Search



# Broadcast

## Benefits

- Always up-to-date
- Better overview of results
- Gets user quickly to more advanced interfaces
- Full-text

## Challenges

- Slow
- Only see top x results from any provider
- Have to learn lots of interfaces
- Only keyword searching

# Tag Gateway

**TAG**

Transatlantic Archaeology Gateway  
Searching digital archives in the UK and the USA



QUERY

**WHAT** Agriculture and Subsistence

AMEND QUERY

RESULTS

**ADS Archive Web Service [UK]:**



**tDAR TAG Gateway Service [USA]:**

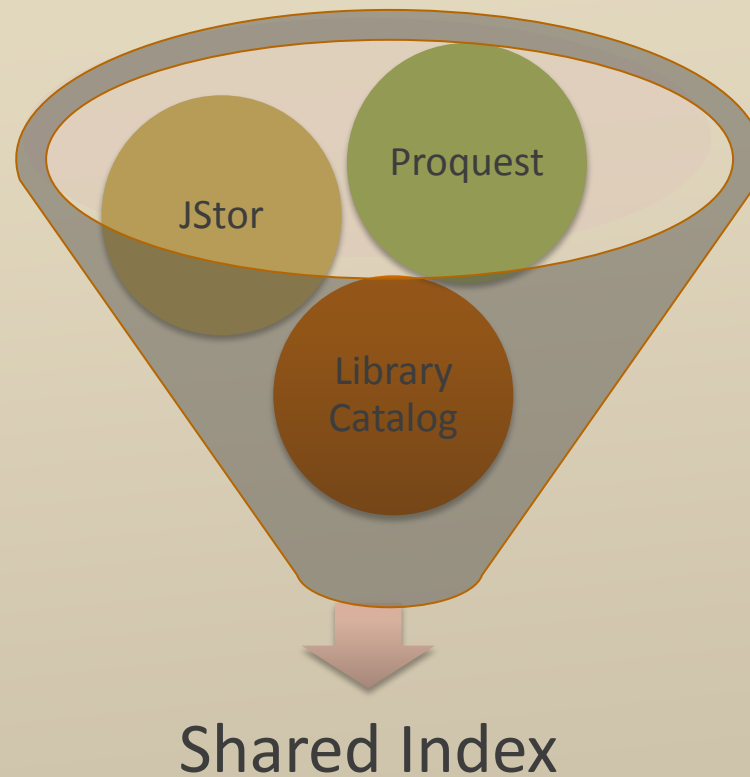


TAG is hosted by the Archaeology Data Service | [Legal statements and disclaimers](#)

[Help](#)



# Shared Index



# Shared Index


## Benefits

- Faster
- Single interface
- Search often supports more features
- Search can be enhanced with better matching and results because metadata is local

## Issues

- Often not as recent (data loads may be nightly/weekly/monthly)
- Harder to maintain
- Search may not have access to full-text
- One provider may overwhelm results

# Shared Index



**Scholar** About 22,000 results (0.07 sec) My Citations

**Articles**

Legal documents

Any time

Since 2012

Since 2011

Since 2008

Custom range...

Sort by date (1 year)

☒ include patents

☒ include citations

☐ Create alert

[The definition of ancient manured zones by means of extensive \*\*sherd\*\*-sampling techniques](#) [Find it@UNSW](#)

TJ Wilkinson - *Journal of Field Archaeology*, 1982 - ingentaconnect.com

Abstract: Thin carpets of worn and abraded sherds frequently occur over many square kilometers of ground around **archaeological** sites in the Middle East. **Sherd** scatters around three sites in Iran, Oman, and Syria are described. It is suggested that the artifacts arrive ...

[Cited by 100](#) - [Related articles](#) - [All 3 versions](#)

[Extensive \*\*sherd\*\* scatters and land use intensity: Some recent results](#) [ksu.edu.sa \[PDF\]](#) [Find it@UNSW](#)

TJ Wilkinson - *Journal of Field Archaeology*, 1989 - ingentaconnect.com

Abstract: Offsite artifact scatters are described in relation to sites in SE Turkey and northern Iraq. Examples of similar scatters are cited from Western Europe, the Middle East, and Asia, and are interpreted as being the result of the distribution of urban-derived refuse, manure, ...

[Cited by 69](#) - [Related articles](#) - [All 5 versions](#)

[\[PDF\] The use of \*\*sherd\*\* weights and counts in the handling of \*\*archaeological\*\* data](#) [jstor.org \[PDF\]](#) [Find it@UNSW](#)

WG Solheim - *Current Anthropology*, 1960 - JSTOR

IT HAS LONG BEEN customary to rely primarily on artifact counts when quantifying **archaeological** data. Relatively little attention has been paid to the mass of the artifacts. This disregard has resulted in the loss of much information otherwise inferable from potsherds, ...

[Cited by 19](#) - [Related articles](#) - [All 2 versions](#)

[Analysis of organic residues of \*\*archaeological\*\* origin by high-temperature gas chromatography and gas chromatography-mass spectrometry](#) [jonathandgough.com \[PDF\]](#) [Find it@UNSW](#)

RP Evershed, C Heron... - *Analyst*, 1990 - xlink.rsc.org

... compositional information that would be lost if the more conventional degradative approach to acyl lipid analysis was adopted. Keywords: High-temperature gas chromatography; mass spectrometry; lipid; **archaeology**; **sherd** ...

[Cited by 92](#) - [Related articles](#) - [All 6 versions](#)



# Automated Linking

## Benefits

- More dynamic
- Protocol often built around less precision
- More customized to user

## Challenges

- User may end up in a blank screen
- User may go in circles

# Linking







**Title:** Extensive sherd scatters and land use intensity: Some recent results  
**Source:** Journal of field archaeology [0093-4690] Wilkinson, T J yr:1989 vol:16 iss:1 pg:31

## Full text available

**Via** [JSTOR Arts & Sciences](#)

Year:  Volume:  Issue:  Start Page:

## Users interested in this article also expressed an interest in the following:

- ☐ 1. Wolfe, M. ["Rural Settlement Patterns and Social Change in Latin America."](#) Latin American research review 1.2 (1966): 5-.  
- ☐ 2. Wilkinson, TJ. ["The Definition of Ancient Manured Zones by Means of Extensive Sherd-Sampling Techniques."](#) Journal of field archaeology 9.3 (1982): 323-333.  
- ☐ 3. Wilkinson, T J. ["Regional approaches to Mesopotamian archaeology: the contribution of archaeological surveys."](#) Journal of Archaeological Research 8.3 (2000): 219-267.  

[View More...](#)

[Select All](#) [Clear All](#) [Save Citations](#)

[More Options](#) ▼

# Technologies go in Cycles

Centralized



```
graph TD; A[Centralized] --> B[Broadcast]; B --> C[Centralized]; C --> D[Broadcast]; D --> E[Centralized];
```

Broadcast

Centralized

Broadcast

Centralized

# Shared Issues

- Metadata Mapping
- Shared Vocabularies
- Granularity of Objects
- Security/Permissions
- Protocols
- Updates
- Performance

# Success Stories

- Google / the web
- RSS
- Linking
- OAI-PMH

Why are these successful? Simplicity, ubiquity.

# What can we learn?

- Use industry standards wherever possible.
- Keep the technology as simple as possible.
- Develop a shared data standard with both a grammar and a vocabulary.

# More Lessons

- Keep data at same level of granularity.
- There is a direct relationship between the complexity of what you want to do with interoperability and the success of reliably doing it.
- Build in assumption for error.
- Linking works, but we have to be careful in how we link.

# Thanks



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**Humanities**

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