Handles at LC as of July 1999

for

DLF Forum on Digital Library Practices

July 18, 1999

Sally McCallum (Network Development and MARC Standards Office, LC), smcc@loc.gov
Ardie Bausenbach (Automation Planning and Liaison Office, LC), abau@loc.gov
Caroline Arms (Digital Library Program & Information Technology Services, LC), caar@loc.gov

Summary of Handle use at LC

- Supporting direct, persistent links to materials from multiple sources
  - using today, as a resolution server
- Applying only to content LC creates
- Running a handle administration server
  - LC's server is part of a global resolution system
  - Handle example: urn:hdl:loc.gmd/g3824p.pm008321
- Considering additional uses
  - Copyright Office - general ideas, no **firm** plans - expect to take advantage of DOIs and other managed namespaces to facilitate registration and deposit
  - LCCN namespace? CDNL cooperation?
- Using handles despite lack of URN deployment

LC's Implementation of Handles

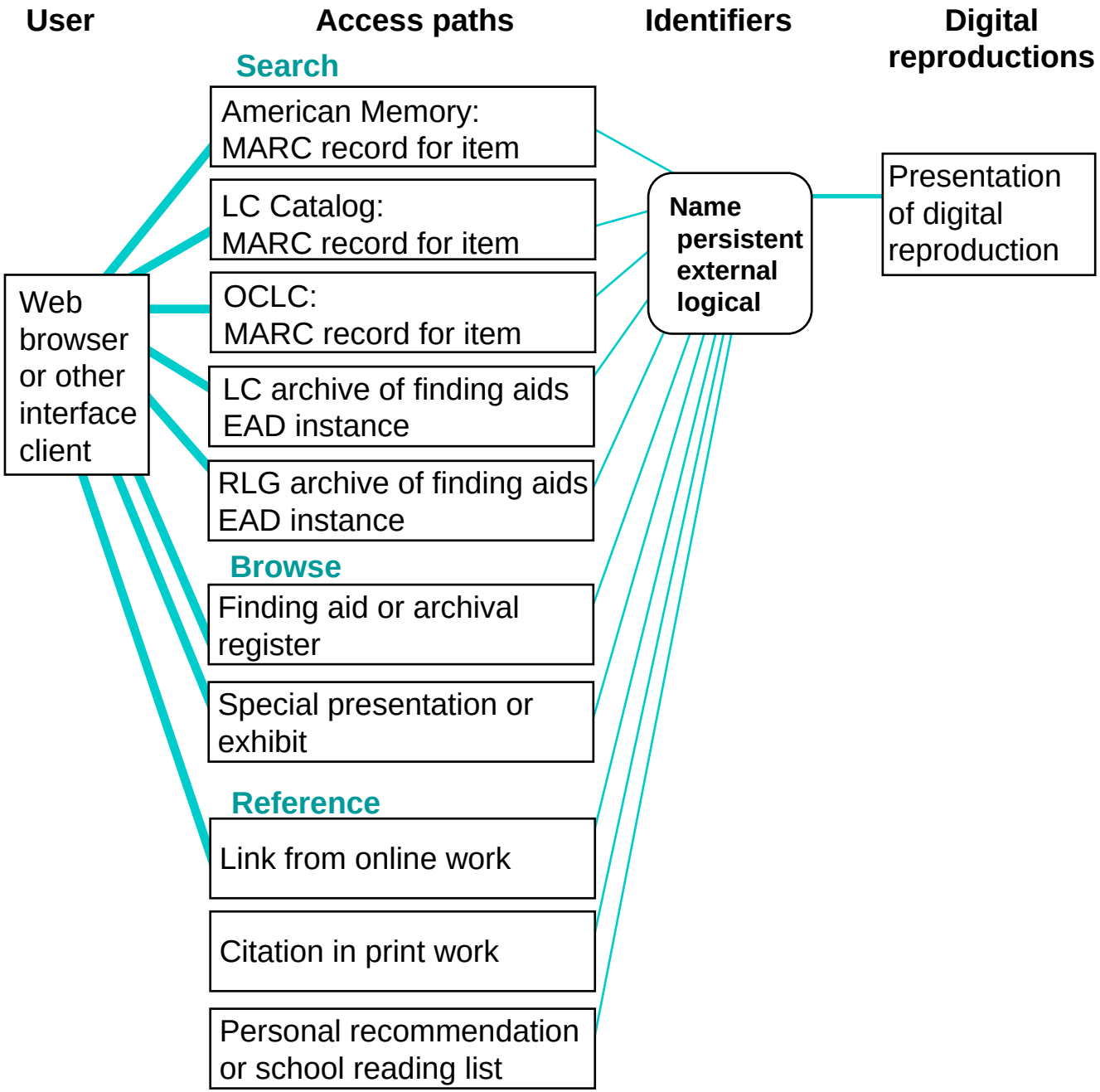
- Running two servers:
  - handle server - used as a resolution server (like a Purl server)
  - "proxy handle server" as gateway for regular web browsers and URN to URL resolution
    - urn:hdl:loc.gmd/g3824p.pm008321
    - http://**hdl.loc.gov**/loc.gmd/g3824p.pm008321
- Any application that can "talk" to handle system can use these handles
  - URLs through **any** proxy server, such as:
    - http://dx.doi.org/loc.gmd/g3824p.pm008321
  - CNRI browser extension or handle client library
  - LC's new "integrated library system"
- Handles added to MARC records and EAD finding aids
  - 856 $g and $u, SGML/XML external link/references

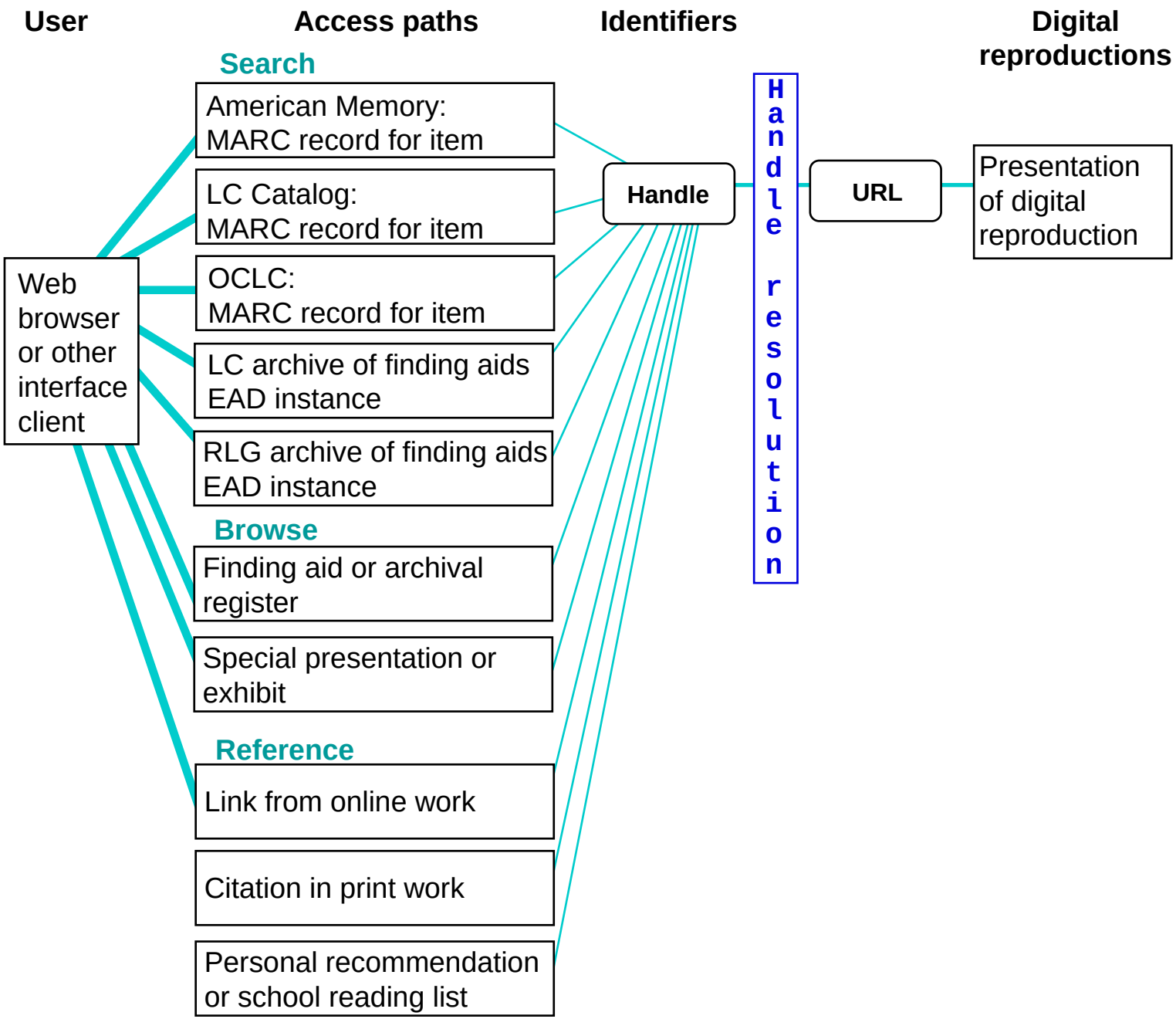
LC Handle Administration Server

- Part of global system
- Independent of other applications or systems
- Almost no constraints on handle syntax beyond URN compatibility
- No associated metadata in handle system
- Minimal services -- registration and resolution
  - registration
    - need more administrative tools
    - need integration into workflow
  - resolution
    - get resource identified (in URN jargon, N2R)
- Challenges are not technical, but organizational and economic

LC Applying Handles to content LC creates

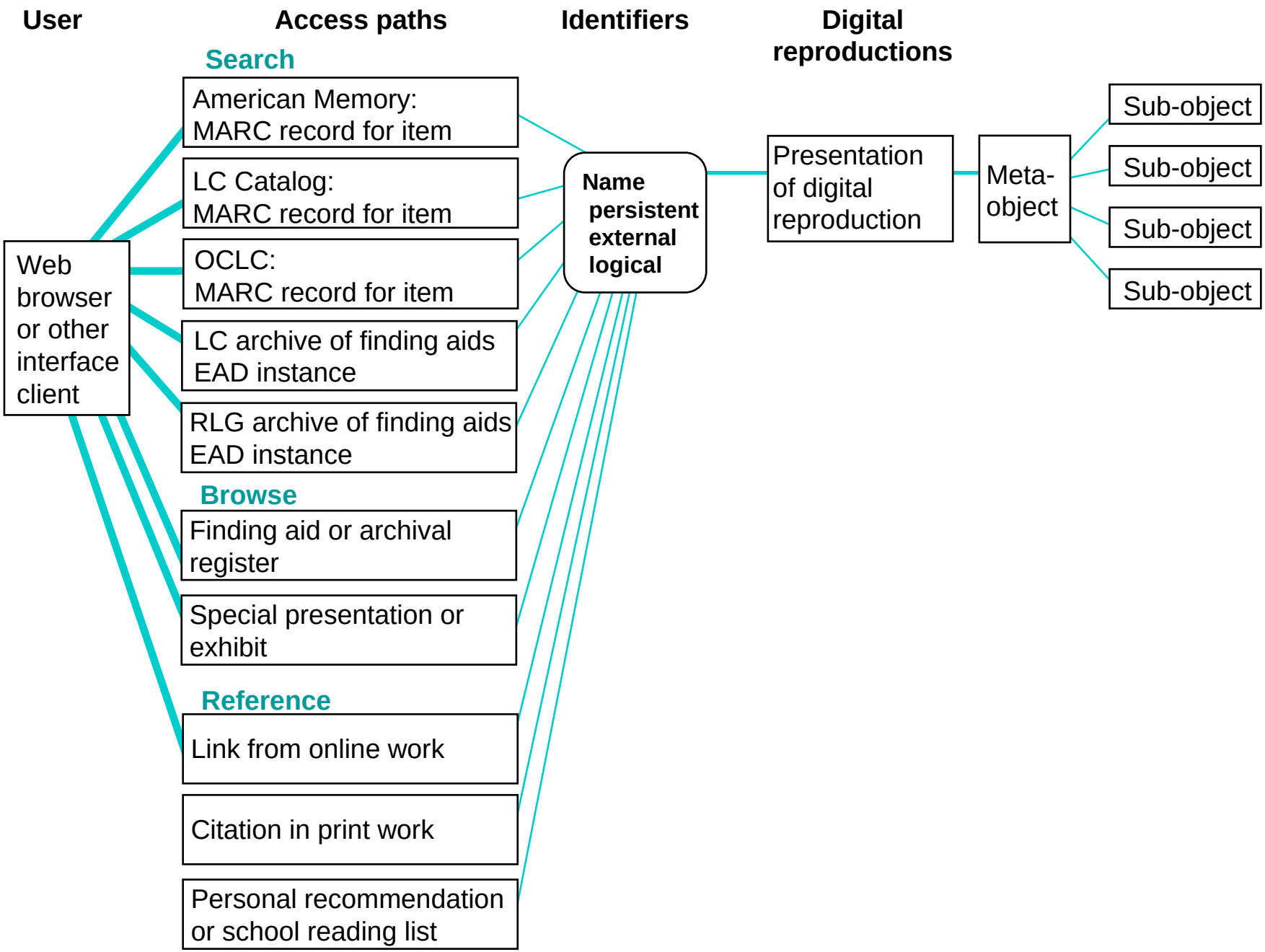
- Handle example:
  - **urn:hdl:loc.gmd/g3824p.pm008321**
- Naming consists of:
  - name for custodial divisions or other units: *loc.gmd*
  - two-part logical name: *g3824p.pm008321*
    - semantics not required for resolution
    - but proves convenient for production tracking, storage management, and human use
- Resolves to presentation of resource - digital reproduction, finding aid, etc.
  - “target” is known item query (e.g., in American Memory)
  - granularity varies with level/type of bibliographic description
- Proxy form usable anywhere a URL can be used
  - in MARC record, in EAD finding aid
  - in citations


User
Access paths
Identifiers
Digital reproductions
Search
American Memory: MARC record for item
LC Catalog: MARC record for item
OCLC: MARC record for item
LC archive of finding aids EAD instance
RLG archive of finding aids EAD instance
Browse
Finding aid or archival register
Special presentation or exhibit
Reference
Link from online work
Citation in print work
Personal recommendation or school reading list
Web browser or other interface client
Name
persistent
external
logical
Presentation of digital reproduction


User
Access paths
Identifiers
Digital reproductions
Search
American Memory: MARC record for item
LC Catalog: MARC record for item
OCLC: MARC record for item
LC archive of finding aids EAD instance
RLG archive of finding aids EAD instance
Browse
Finding aid or archival register
Special presentation or exhibit
Reference
Link from online work
Citation in print work
Personal recommendation or school reading list
Web browser or other interface client
Handle
Handle resolution
URL
Presentation of digital reproduction

Other uses for Handles under consideration by LC

- Under serious consideration
  - use of **handles** within complex objects in repositories
    - for ID and resolution
      - for different digital manifestations
      - for individual components, granularity may be as fine as individual page-image
      - supports content management **and** citation (reference-linking)
  - use of **IDs structured like handles** within complex objects in repositories
    - for system IDs but not for resolution


User
Access paths
Identifiers
Digital reproductions
Search
American Memory: MARC record for item
LC Catalog: MARC record for item
OCLC: MARC record for item
LC archive of finding aids EAD instance
RLG archive of finding aids EAD instance
Browse
Finding aid or archival register
Special presentation or exhibit
Reference
Link from online work
Citation in print work
Personal recommendation or school reading list
Web browser or other interface client
Name persistent external logical
Presentation of digital reproduction
Meta-object
Sub-object
Sub-object
Sub-object
Sub-object

Ideas floated recently

- LCCN namespace
  - identifies catalog or authority record
  - “target” for handle can be known-item Z39.50 search
  - no additional content management needed
  - responsibility for policies on scope, practice guidelines, etc. already in place
  - consistent with LC’s mission and current practices
  - do benefits outweigh costs?
- CDNL proposals
  - Separate persistent identifiers for bibliographic descriptions and content
  - monitoring NBN namespace
- LC hopes to take advantage of DOI - e.g., for journal citation linking

CDNL Task Force

- Conference of Directors of National Libraries (CDNL)
  - Task Force on Persistent Identifiers
  - US (chair), Australia, Finland, Canada, Netherlands, Germany

- Variety in National Library roles
  - Mandate to collect, provide access to, and preserve their country's "literature"
    - maintain a national bibliography
    - deposit library
    - union catalog
  - Digitizer of content
  - Agency for ISBN, ISSN, ISMN
  - Publisher of content

Characteristics of Identifiers and Resolvers

- Persistent
  - 1 identifier to 1 entity
  - identifiers never reassigned
  - link between identifier and “URL” kept up-to-date
- Universal
  - universally recognizable
  - incorporate authority under which assigned
  - unique within universe of identifiers
  - structure established for identifier scalable
- Resolution
  - transparent linking to resource
  - may link to proxy

NBN Namespace

- Registered by National Library of Finland
- Syntax of Identifier
  - URN:NBN:<ISO country code>-<assigned string>
  - URN:NBN:<registered string>-<assigned string>
- Example:
  - URN:NBN:fi-fe19981001
- LC registrar of “registered string”

Results

- Endorsed principles:
  - ID architecture to be persistent, sustainable, extensible, effective
  - PIDs need support of international community of information providers
  - PID architecture based on open international standards available with out prejudice and at reasonable cost
  - ID scheme in public domain
  - use of resolution service for IDs universally accessible (although resources resolved to may have associated charges)
  - charges for assignment, if any, on not-for-profit basis

Next Steps

- Explore whether technical schema and common rules for PIDs can be developed for use of National Libraries
  - technical working group
  - liaison with others working on the issues

- Use existing implementations as testbeds