

# **Information Management and the Future of the Internet**

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**Robert E. Kahn  
Corporation for National Research Initiatives  
<http://www.cnri.reston.va.us/>**

# Architectural Components

## – Digital Objects (DOs)

- Structured data, independent of the platform on which it was created
- Consisting of “elements” of the form <type,value>
- One of which is its unique, persistent identifier

## – Resolution of Unique Identifiers

- Maps an identifier into “**state information**” about the DO
- Handle System is a general purpose resolution system

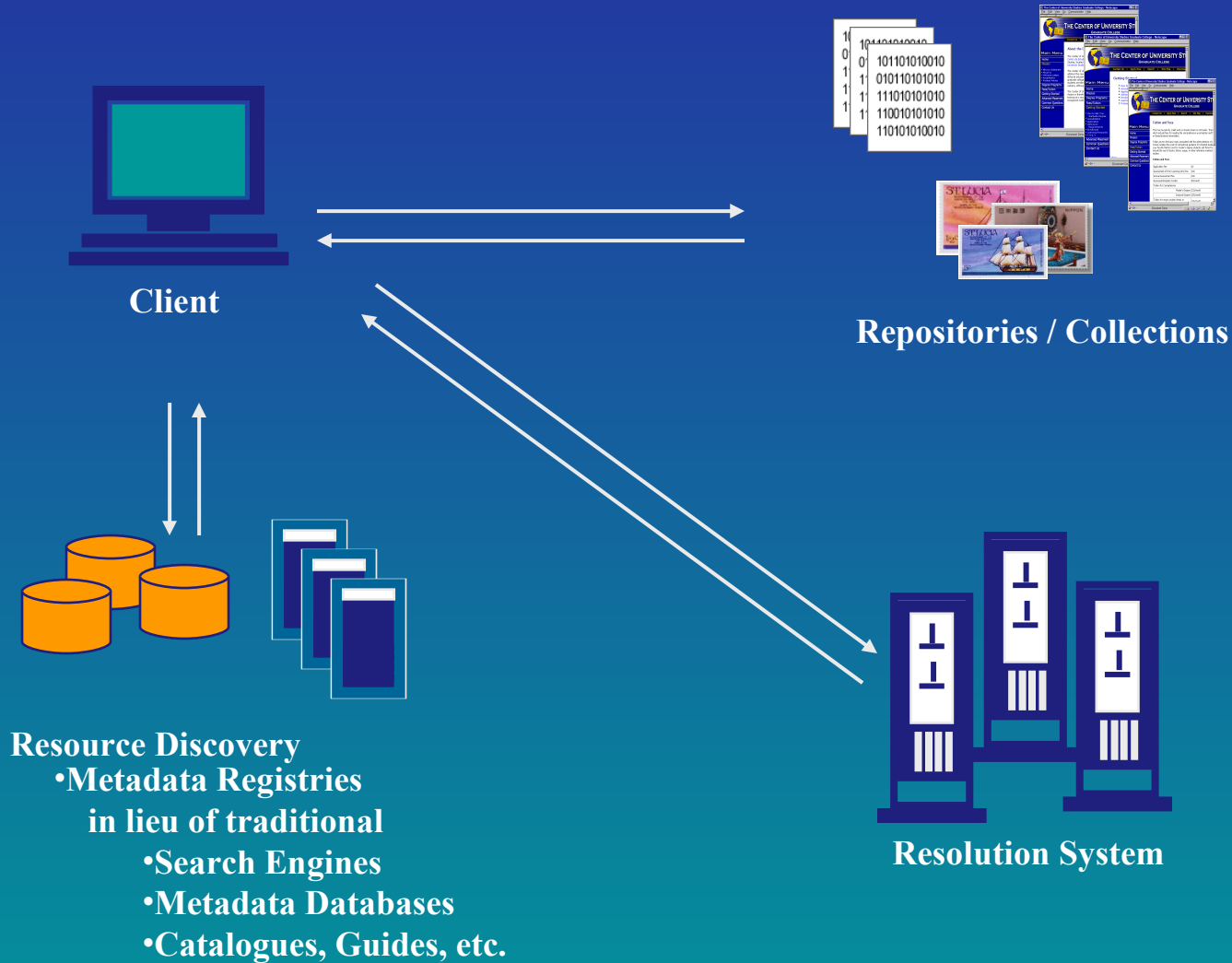
## – Repositories from which DOs may be accessed

- And into which they may be deposited

## – Metadata Registries

- Repositories that contain general information about DOs
- Supports multiple metadata schemes
- Can map queries into unique DO specifications (via handles)

# Digital Object Architecture



# Resolution Mechanism

Handle



Handle  
Record

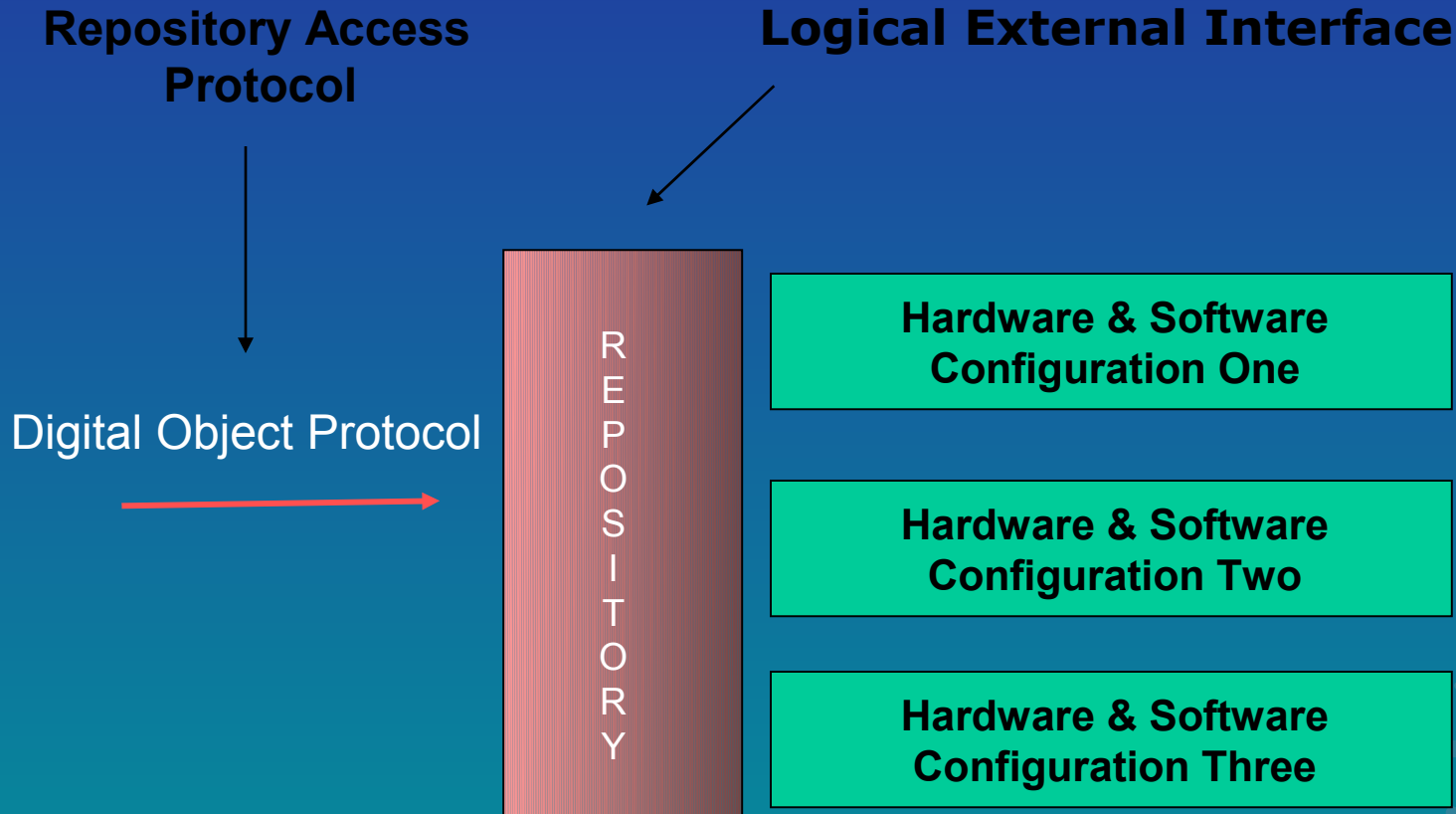


Handle System

[www.handle.net](http://www.handle.net)

- System is non-nodal
- Scalable & Distributed
- Supports global (and local) resolution
- With backup for reliability, mirroring for efficiency

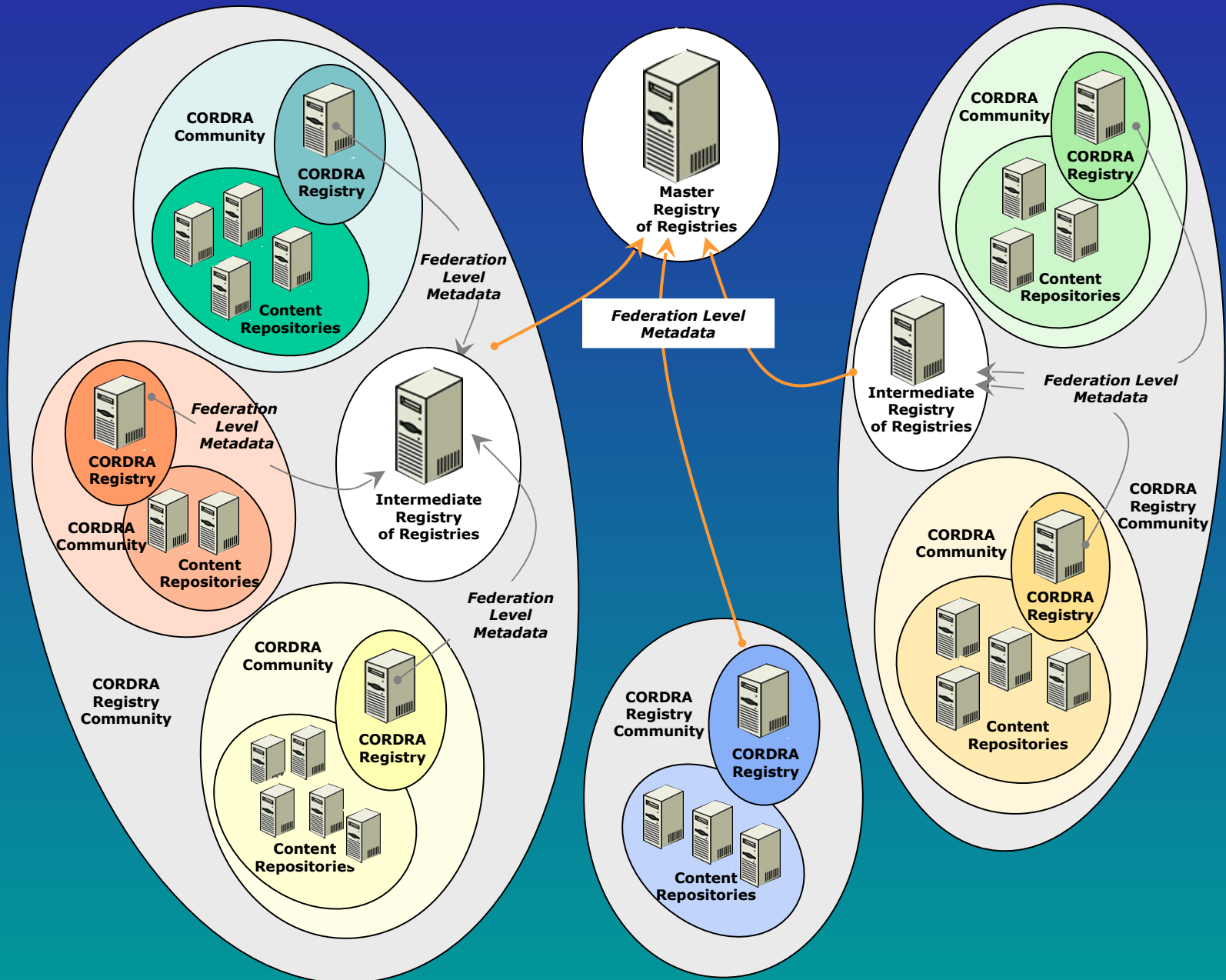
# Repository Notion



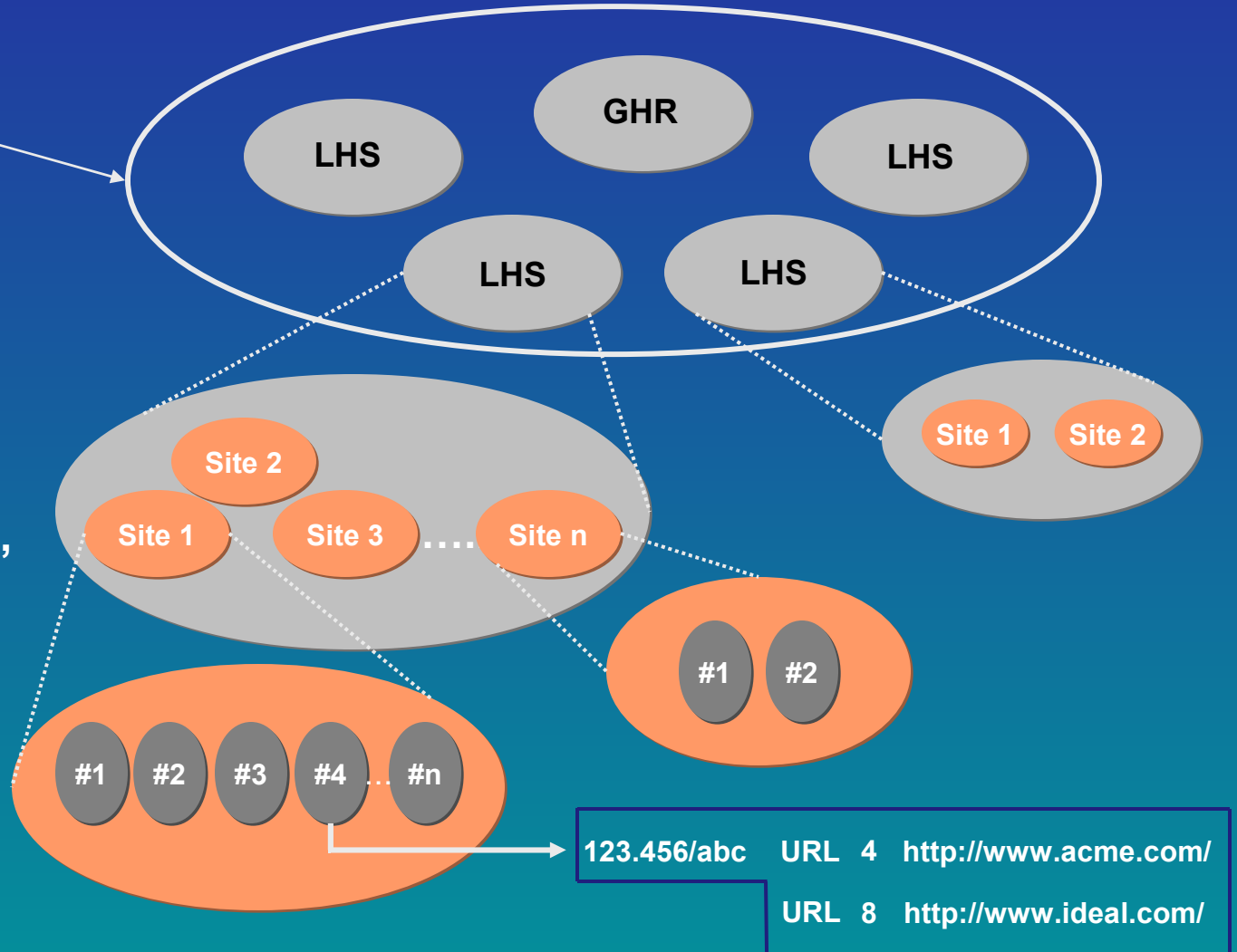
# Metadata Registry

- **Technological and Organizational Infrastructure**
  - Registers the existence and access conditions for Digital Objects
  - Provides a user interface to search the registry
  - Provides an API for other programs to search the registry
- **Integrates existing technologies**
  - Handle System for identification and access
  - XML for object description and submission
  - Choice of Metadata Schema
  - Digital Object Repository for metadata object storage and access
- **Currently running at CNRI**

# CORDRA



# Handle Resolution



The Handle System is a collection of handle services, each of which consists of one or more replicated sites, each of which may have one or more servers.

# Handles Resolve to Typed Data

Handle



10.123/456

Data type



URL

URL

RAP

HS\_ADMIN

XYZ

Index



1

2

9

100

12

Handle data



http://acme.com/....

http://a-books.com/....

acme/repository

acme.admin/jsmith

1001110011110

# Handle System Usage

- Library of Congress
- DTIC (Defense Technical Information Center)
- IDF (International DOI Foundation)
  - CrossRef (scholarly journal consortium)
  - CAL (Copyright Agency Ltd - Australia)
  - MEDRA (Multilingual European DOI Registration Agency)
  - Nielsen BookData (bibliographic data - ISBN)
  - R.R. Bowker (bibliographic data - ISBN)
  - Office of Publications of the European Community
  - German National Library of Science and Technology'
  - Wanfang Data
- Various Countries (France, Australia, China, etc.)
- DSpace (MIT + HP)
- ADL (DoD Advanced Distributed Learning initiative)
- Los Alamos National Laboratory
- Numerous Digital Library Projects