

Building the Archives of the Future:

The National Archives & Records Administration's
Electronic Records Archives Initiative

Kenneth Thibodeau, Ph.D.

Director

Electronic Records Archives Program

National Archives and Records Administration



National Archives & Records Administration (NARA)

- An independent agency in the Executive Branch
- Provides direction and assistance for lifecycle management of records of all federal agencies
- Preserves historically valuable federal records in the National Archives
- Provides courtesy storage for records of the Congress and the Supreme Court in the National Archives
- Preserves Presidential records in the Presidential Libraries
- Operates Federal Records Centers
- Publishes the Federal Register

NARA Mission

- “The National Archives and Records Administration (NARA).... is a public trust on which our democracy depends.
 - It enables people to inspect for themselves the record of what government has done.
 - It enables officials and agencies to review their actions and helps citizens hold them accountable.
 - It ensures continuing access to essential evidence that documents:
 - the rights of American citizens
 - the actions of Federal officials
 - the national experience”

“Archive” v. “Archives”

- An “archive” stores bits
- An “archives” preserves and enables delivery of authentic records
 - Over long periods of time: “permanently”

“Record”

- A unit of information
- Made or received in the course of an activity and kept on a presumption of value or relevance in subsequent activity or as a source of information about what was done or what happened
- With a known context of creation: who created it, when, in what activity or for what purpose

The Challenge NARA Faces in Preserving Electronic Records:

- Preserve any type of electronic record,
 - ✓ Created using any type of application,
 - ✓ On any computing platform
 - ✓ From any entity in the Federal Government, and any donor
 - ✓ Provide discovery and delivery to anyone with an interest and legal right of access
 - ✓ Now and for the life of the Republic

Facets of the Challenge of Preserving Electronic Records

- Obsolescence – constantly changing technology
- Variety – different types of records
- Complexity – records in different formats
- Volume – enormous amounts of records
- Scope – the entire federal government
- Time Frame – forever
- Authenticity – assuring the record is what it purports to be

The Challenge: Obsolescence

- Data Types (aka “format”)
 - Access to electronic records entails processing stored bits
 - Data types depend on specific applications software
 - Applications depend on operating systems
 - Operating systems make assumptions about hardware
 - Software, operating systems and hardware become obsolete
- Storage media
 - Finite lifespan
 - Rapid succession of newer media and related hardware
 - Continuing benefits in cost/performance

The Challenge: Variety

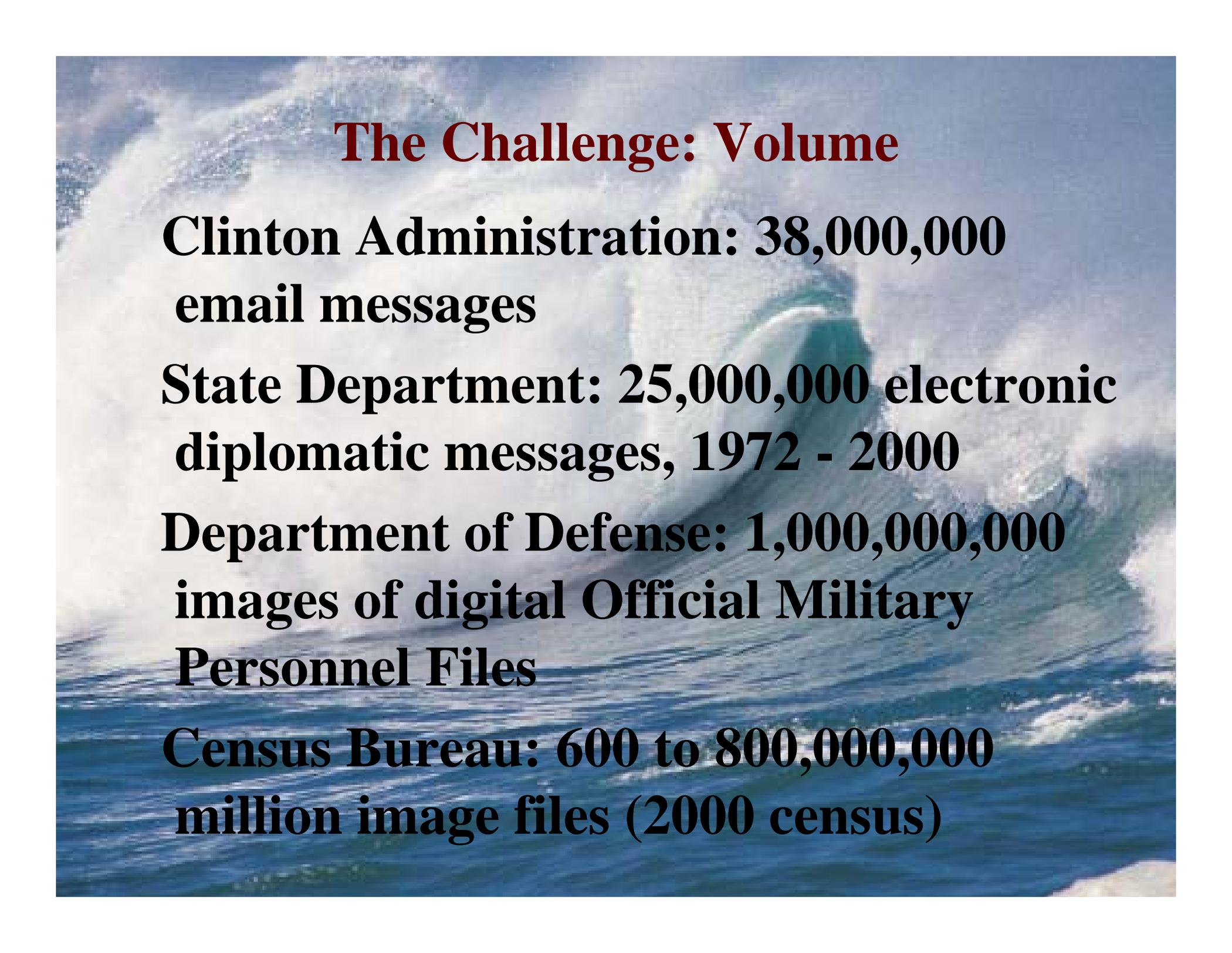
“Any type of electronic record”

Some examples

- | | |
|---|---|
| <ul style="list-style-type: none">• Office Automation Files<ul style="list-style-type: none">– Word processing documents– Spreadsheets– Presentations– E-mail,<ul style="list-style-type: none">• with attachments– Scanned paper documents | <ul style="list-style-type: none">• Digital Photography• Satellite Imagery• Digital audio files• HDTV• Web pages• Databases• Geographic Information Systems |
|---|---|

The Challenge: Complexity

- Documents with embedded or linked objects
- Databases with hundreds of tables, forms, reports, views
- XML files with Schemas, Style Sheets, Forms, namespaces, extensions
- Interactive Web pages
- Virtual Reality Models



The Challenge: Volume

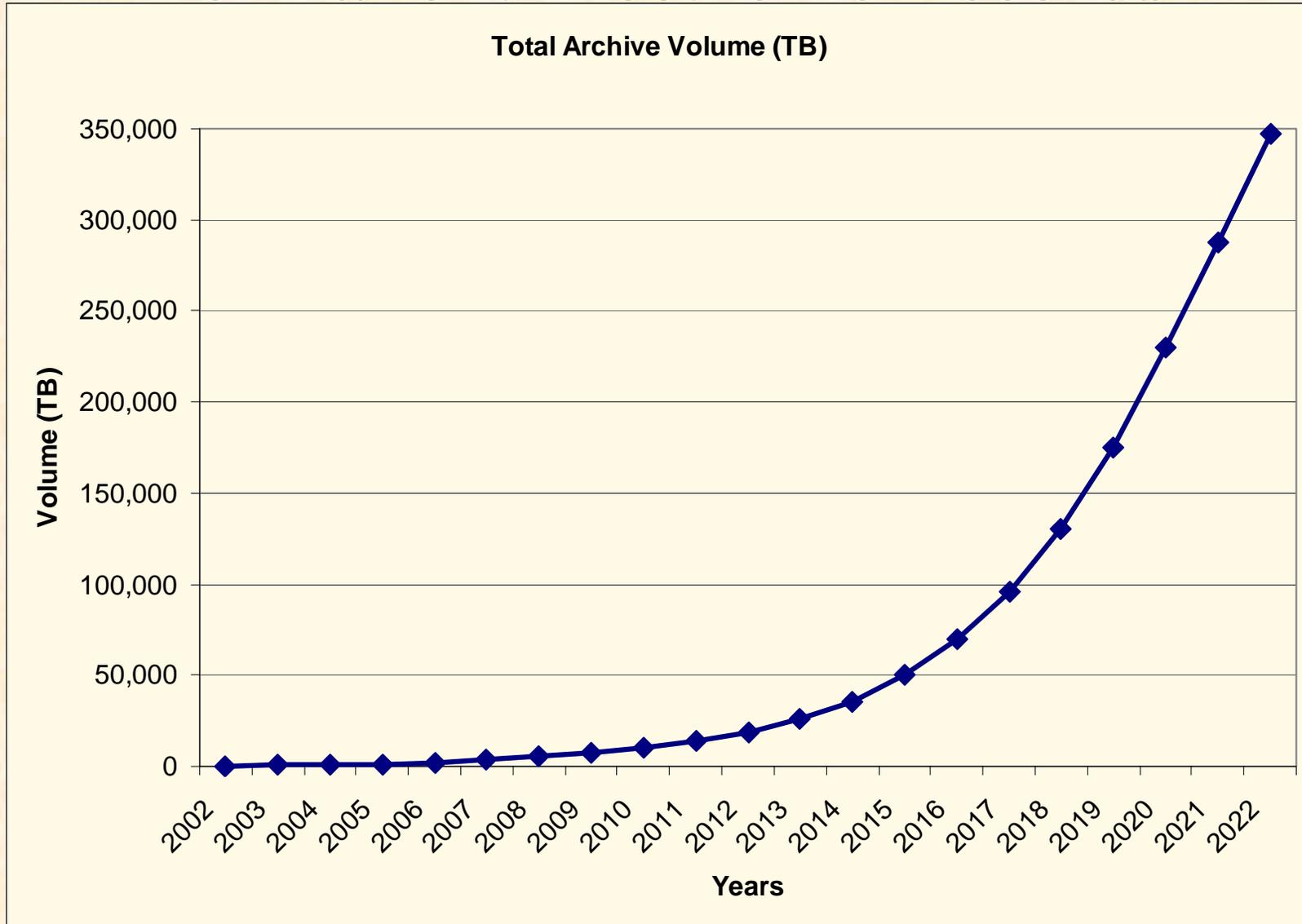
**Clinton Administration: 38,000,000
email messages**

**State Department: 25,000,000 electronic
diplomatic messages, 1972 - 2000**

**Department of Defense: 1,000,000,000
images of digital Official Military
Personnel Files**

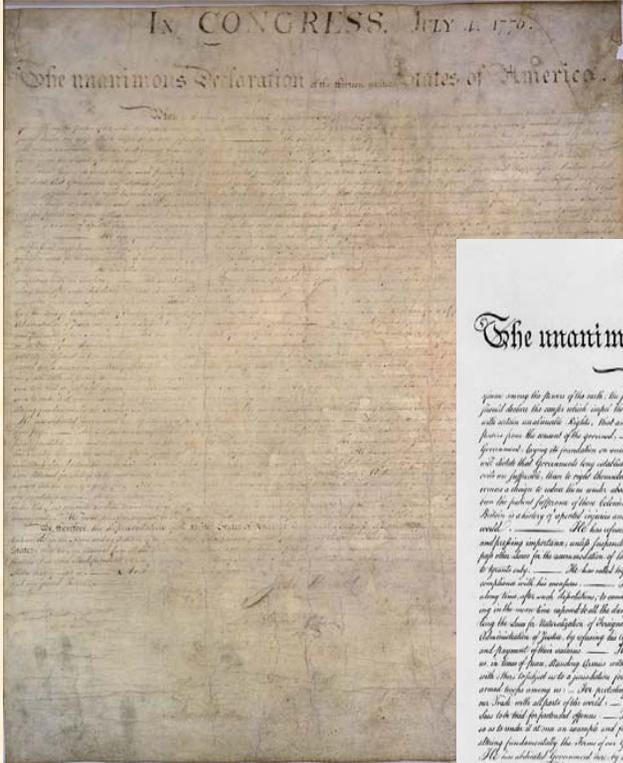
**Census Bureau: 600 to 800,000,000
million image files (2000 census)**

Projected Storage Volumes: Permanent Electronic Records

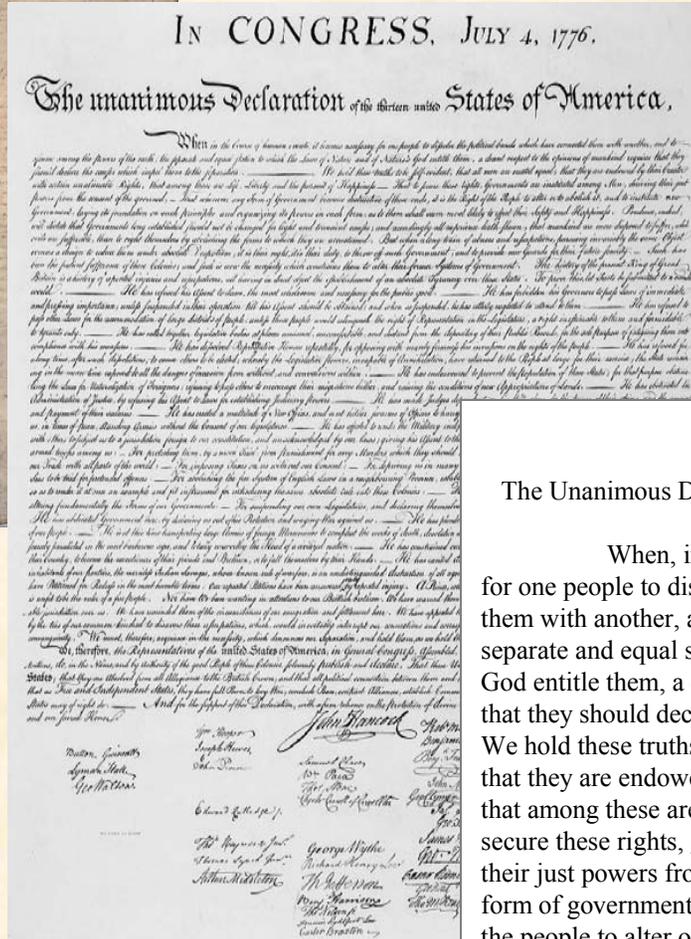


The Challenge: Authenticity

- Conceptual perspective:
 - An authentic record is what it purports to be and is free from corruption
- Operational perspective:
 - An authentic record is one which remains as reliable as it was when first created



Authenticity & Corruption

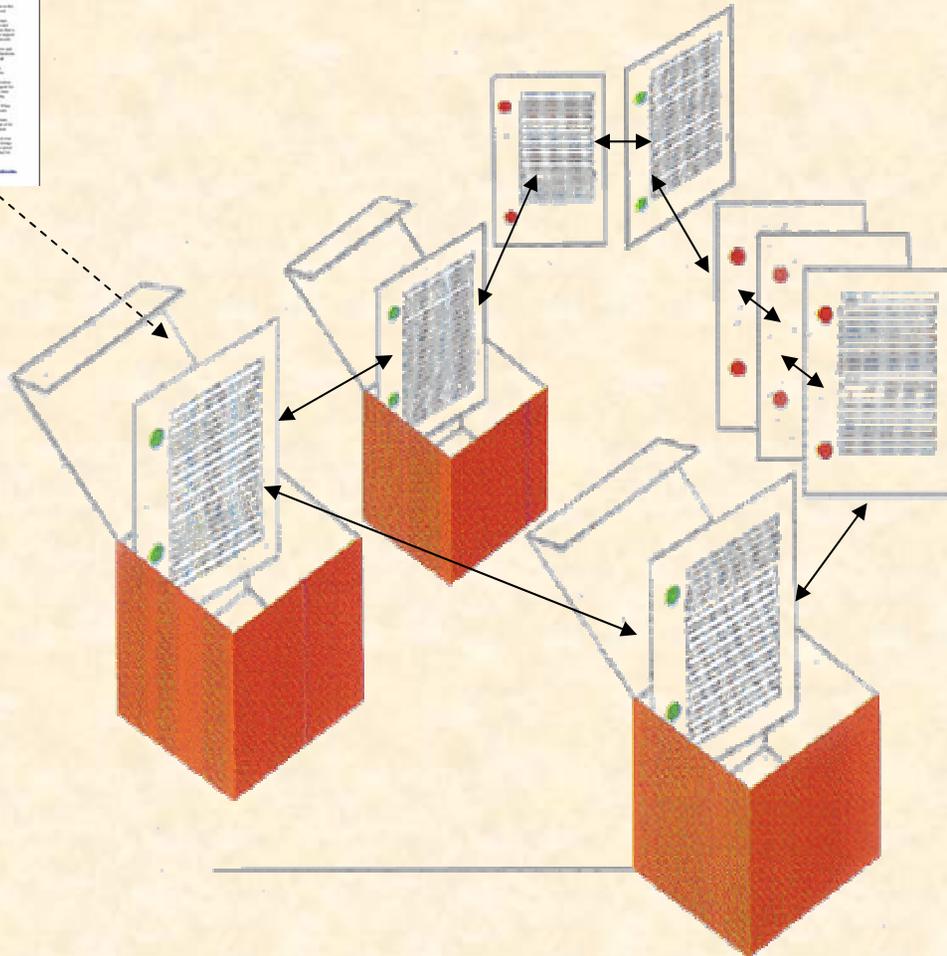


In Congress 4 July 1776

The Unanimous Declaration of the Thirteen United States of America

When, in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the laws of nature and of nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation. We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty and the pursuit of happiness. That to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed. That whenever any form of government becomes destructive to these ends, it is the right of the people to alter or to abolish it, and to institute new government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their safety and happiness. Prudence, indeed, will dictate that governments long established should not be changed for light and transient causes; and accordingly all experience hath shown that mankind are more disposed

Archival Basis for Affirming Authenticity: Documentary Context



Operational Context



Reliability of a Record

- The records ability to stand for the acts and facts it describes
 - For the purposes for which it was created and kept.
 - Or other uses derived from the original purpose
 - *Use of records preserved in archives is often for purposes independent of those for which it was created and preserved.*

Electronic Records Archives Vision

“The Electronic Records Archives will authentically preserve and provide access to any kind of electronic record, free from dependency on any specific hardware or software, enabling NARA to carry out its mission into the future.”



NARA's Strategy

1. Attack the critical preservation problem
2. Find solutions in commercially viable, mainstream technologies being developed to support e-commerce, e-government and the next generation national information infrastructure
3. Align with overall direction of Information Technology in the U.S. Government
4. Define the requirements in terms of the lifecycle management of records



The Electronic Records Archives Program Management Office

- Acquisition of the ERA system
- Organizational change management
 - Enable NARA to implement the system successfully
- Research and Exploratory Development
 - Address new challenges posed by
 - Continuing change in Information Technology
 - Its use in government
 - Capitalize on progress in technology

Strategic Alignment



“Strategies to assure long-term preservation of digital records constitute another particularly pressing issue for research....”

The ERA System Will Support:

- Workflow and collaboration tools for lifecycle management of all types of records, temporary and permanent
 - within NARA
 - between NARA and other agencies
- Ingestion, preservation, management, and access to electronic records
 - In the National Archives,
 - Federal Records Centers, and
 - Presidential Libraries

ERA in Geographic Space

- NARA's nationwide system to support the lifecycle management of all records and donated materials in

National Archives

Presidential Libraries

Federal Records Centers



ERA in Cyberspace



Anywhere it's needed

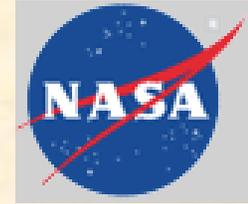
as close as your desktop
or laptop

for the life of the Republic

<http://research.lumeta.com/ches/map/>



Research Partnerships



National
Science
Foundation



San Diego
Supercomputer
Center



National Computational
Science Alliance



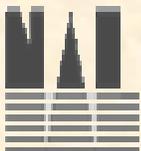
Global
Grid
Forum



The Library of Congress



Army Research
Laboratory

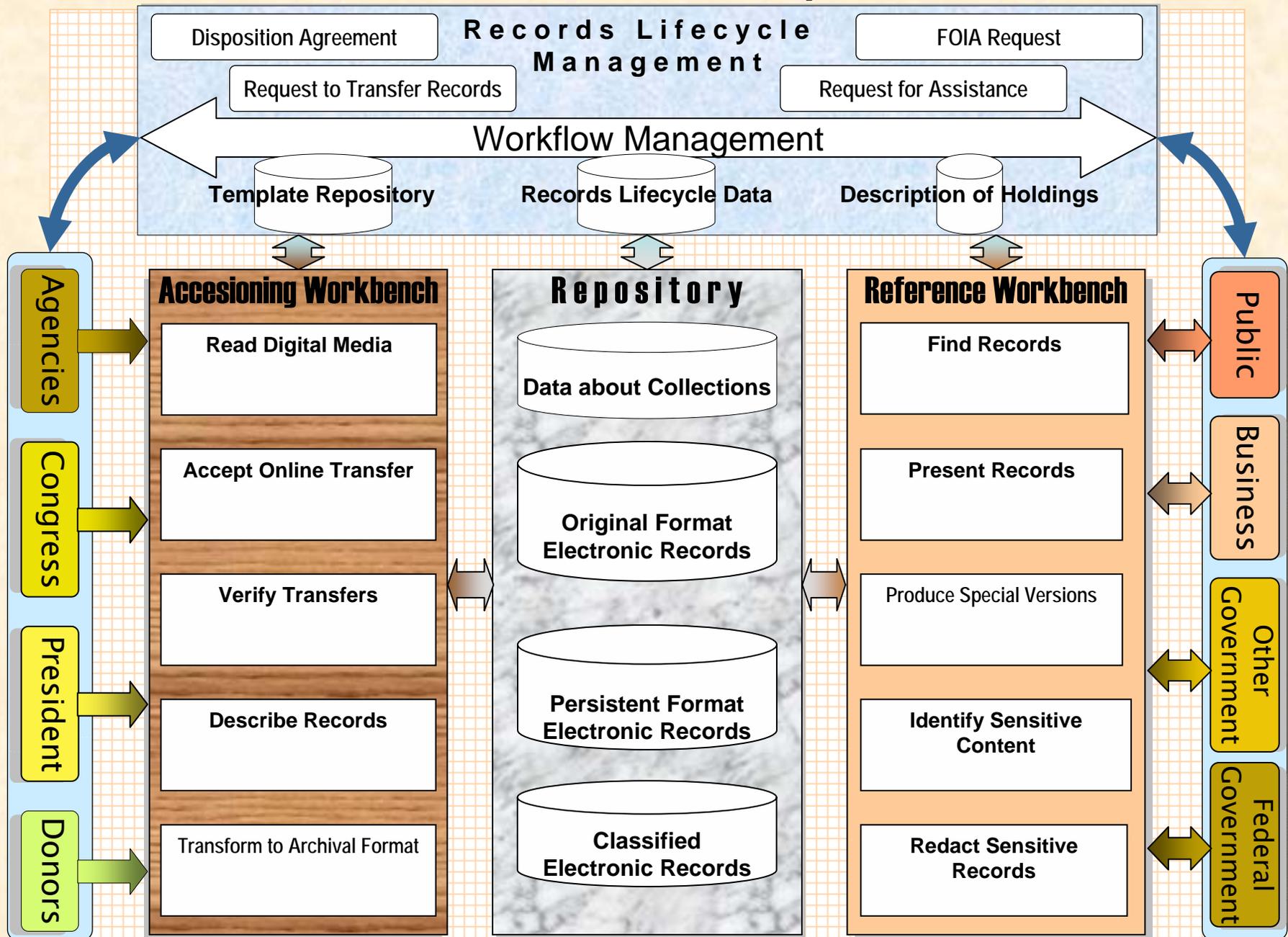


National Agricultural Library

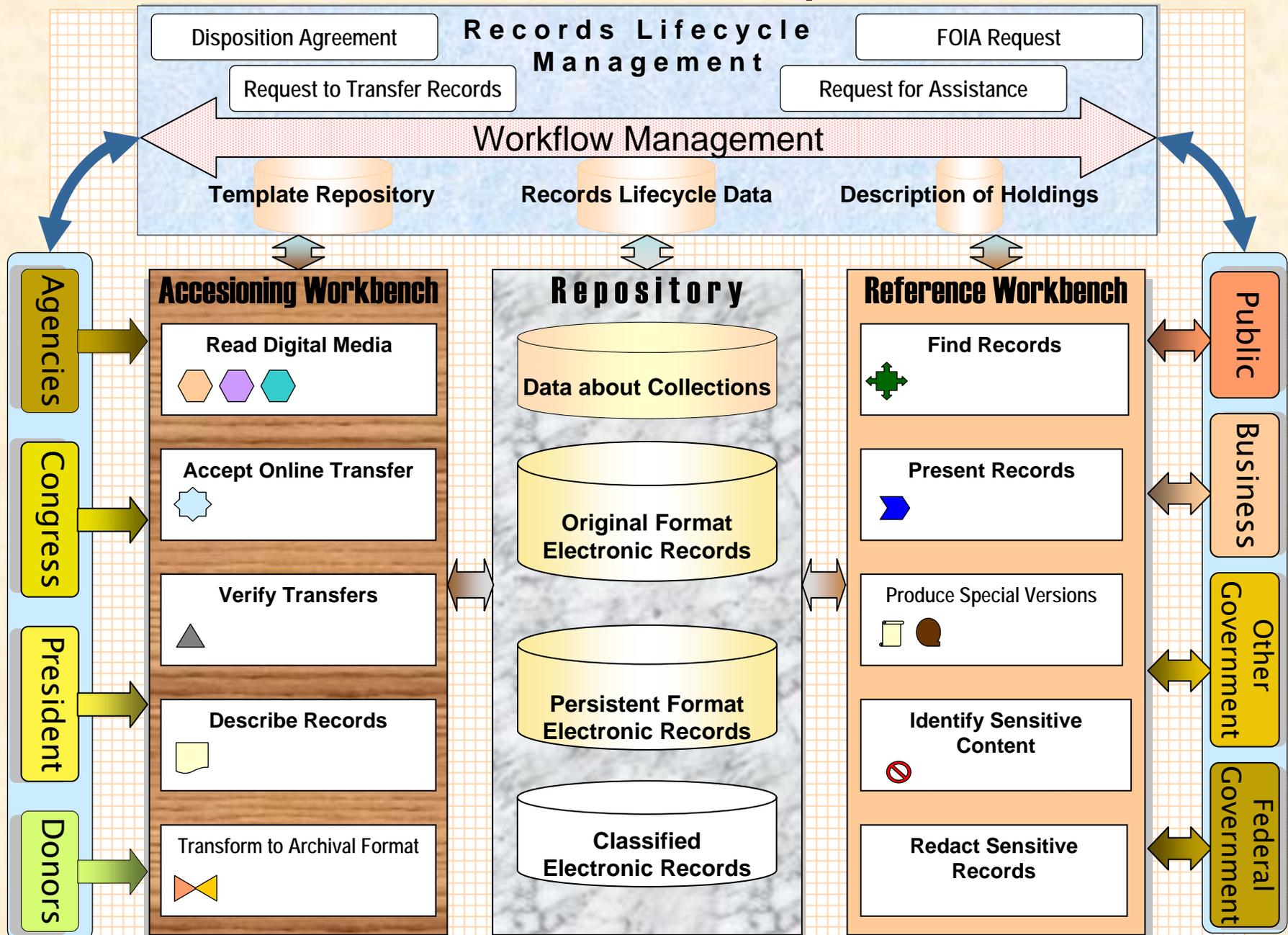


National Partnership for Advanced Computational Infrastructure

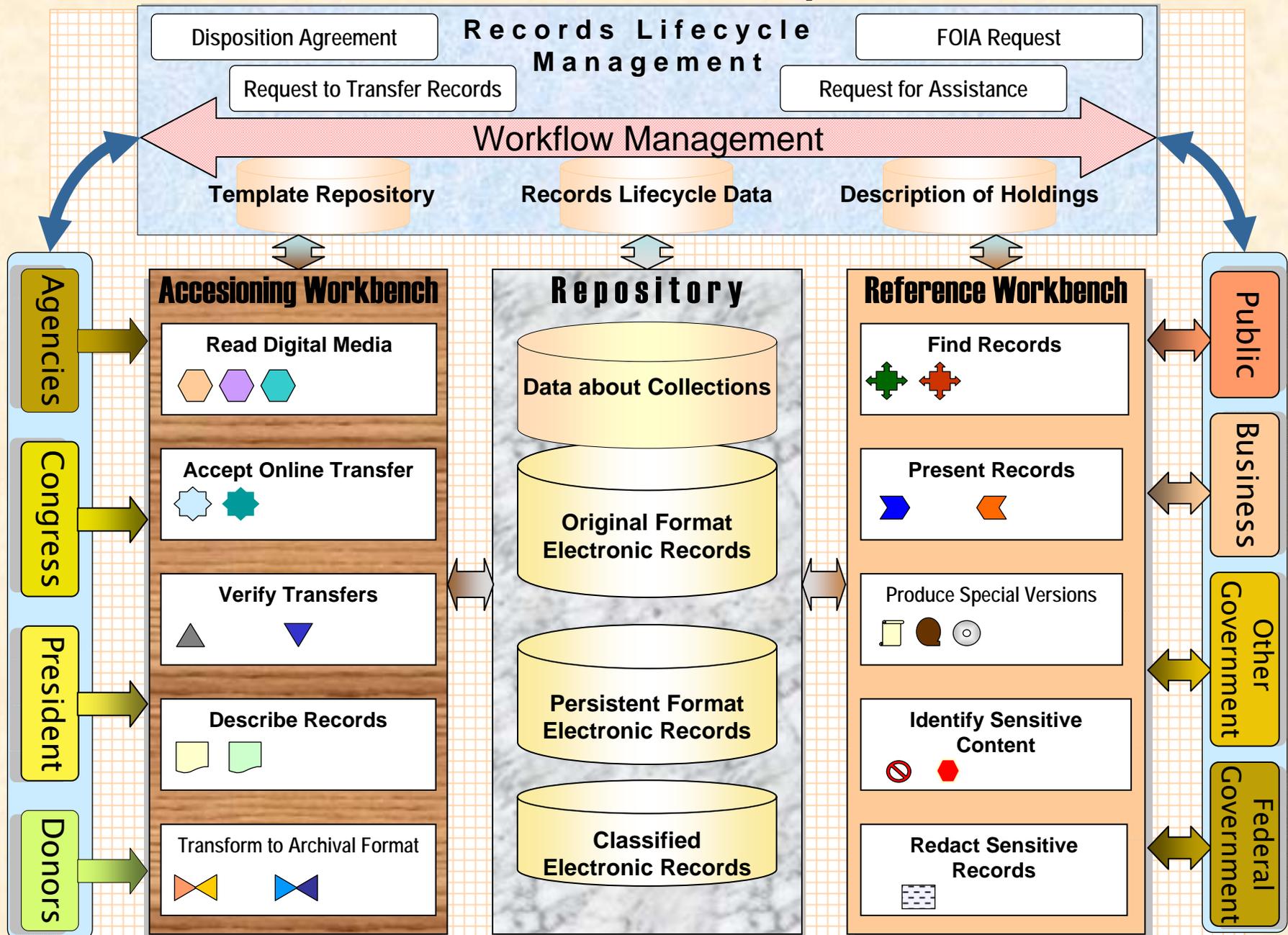
ERA Virtual Workspaces



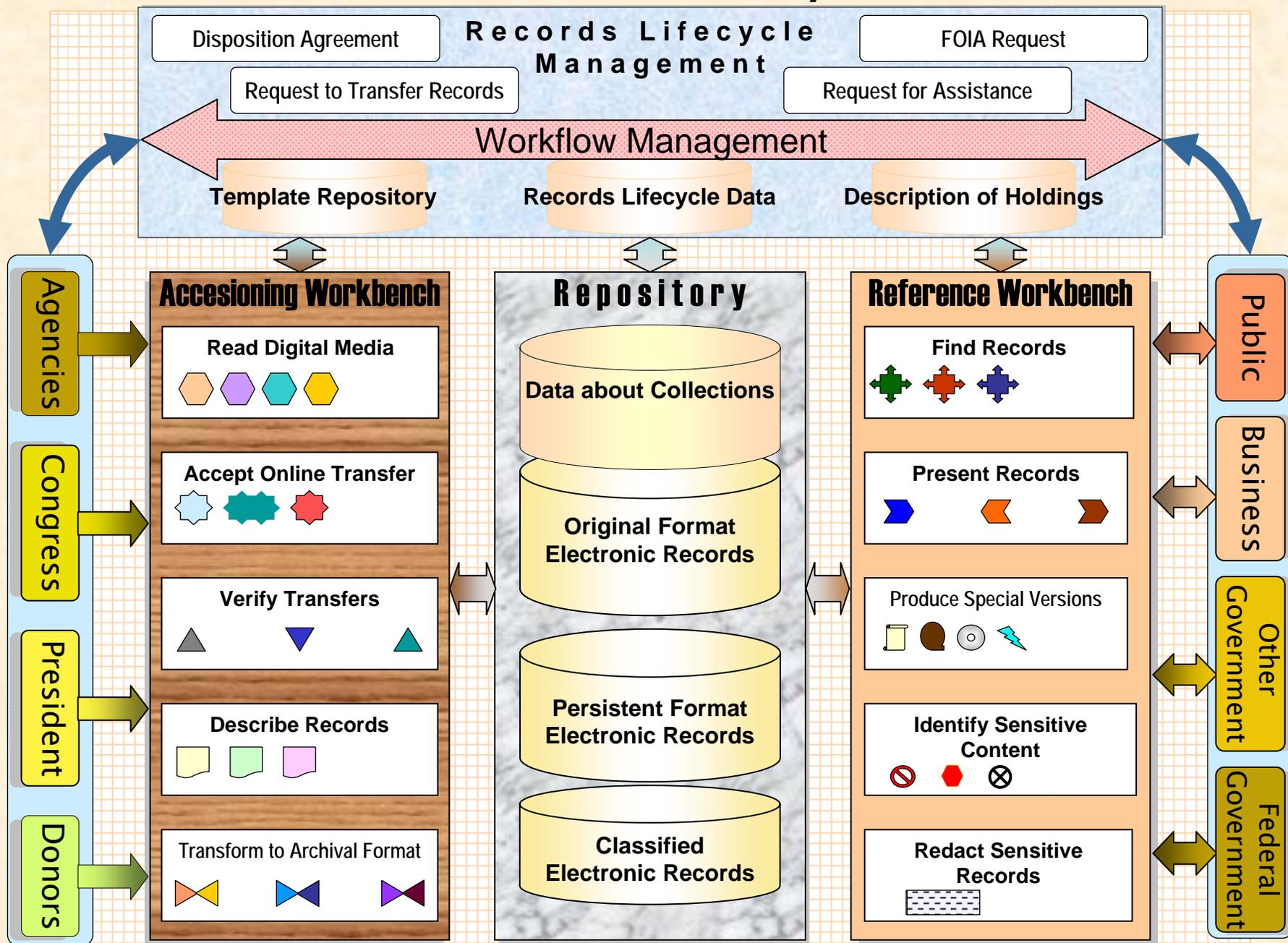
ERA Virtual Workspaces Increment 1



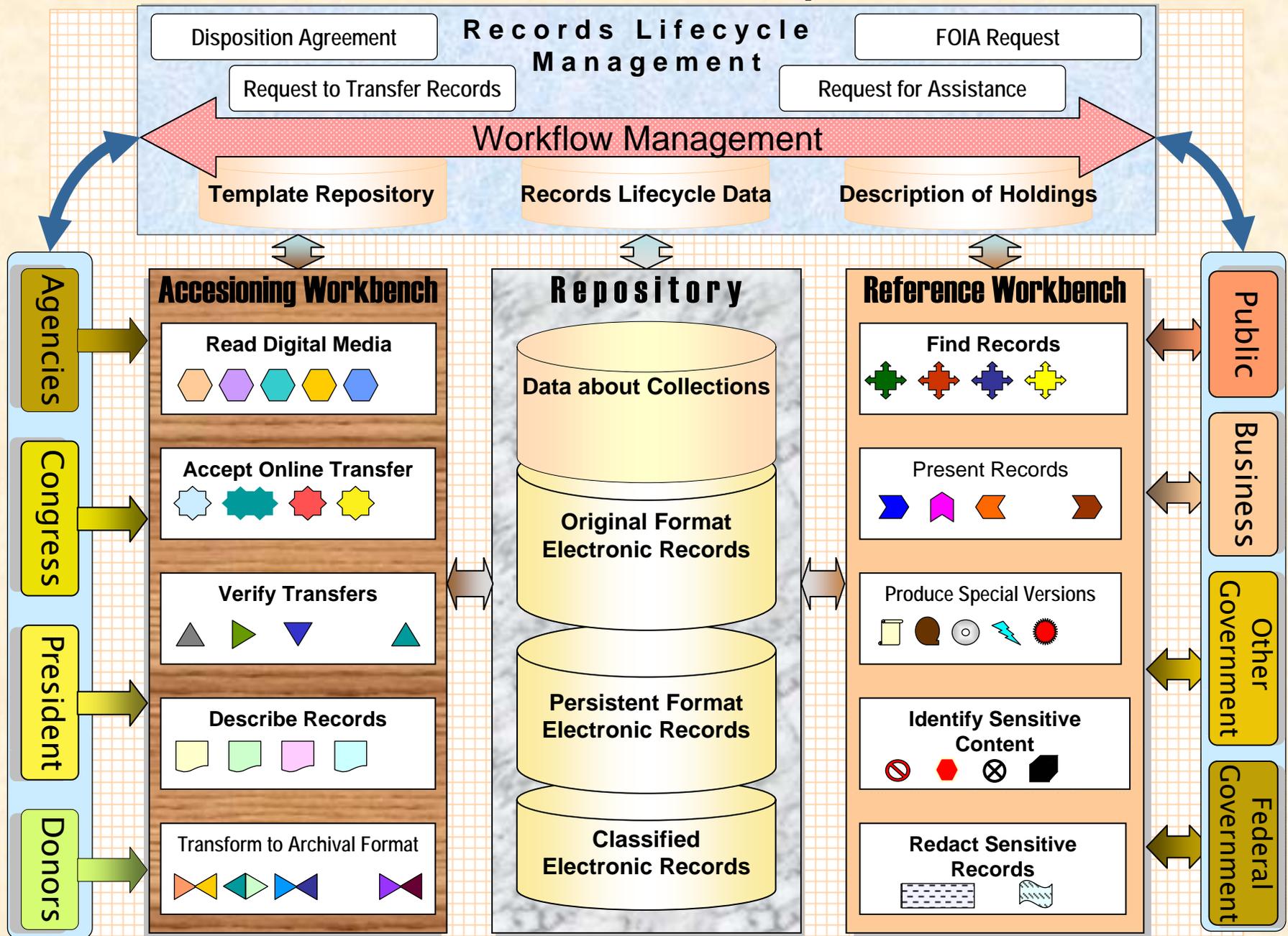
ERA Virtual Workspaces Increment 2



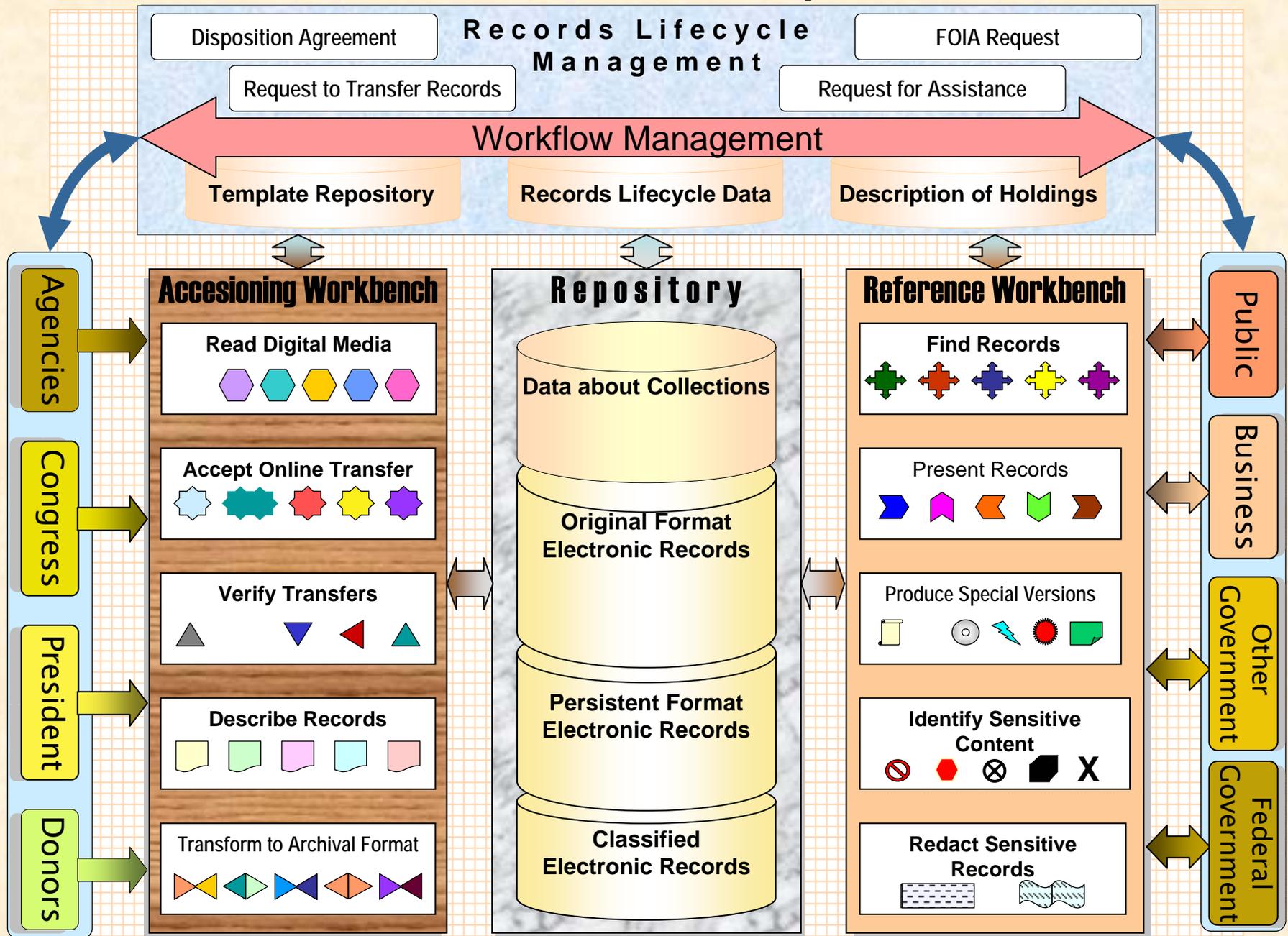
ERA Virtual Workspaces Increment 3



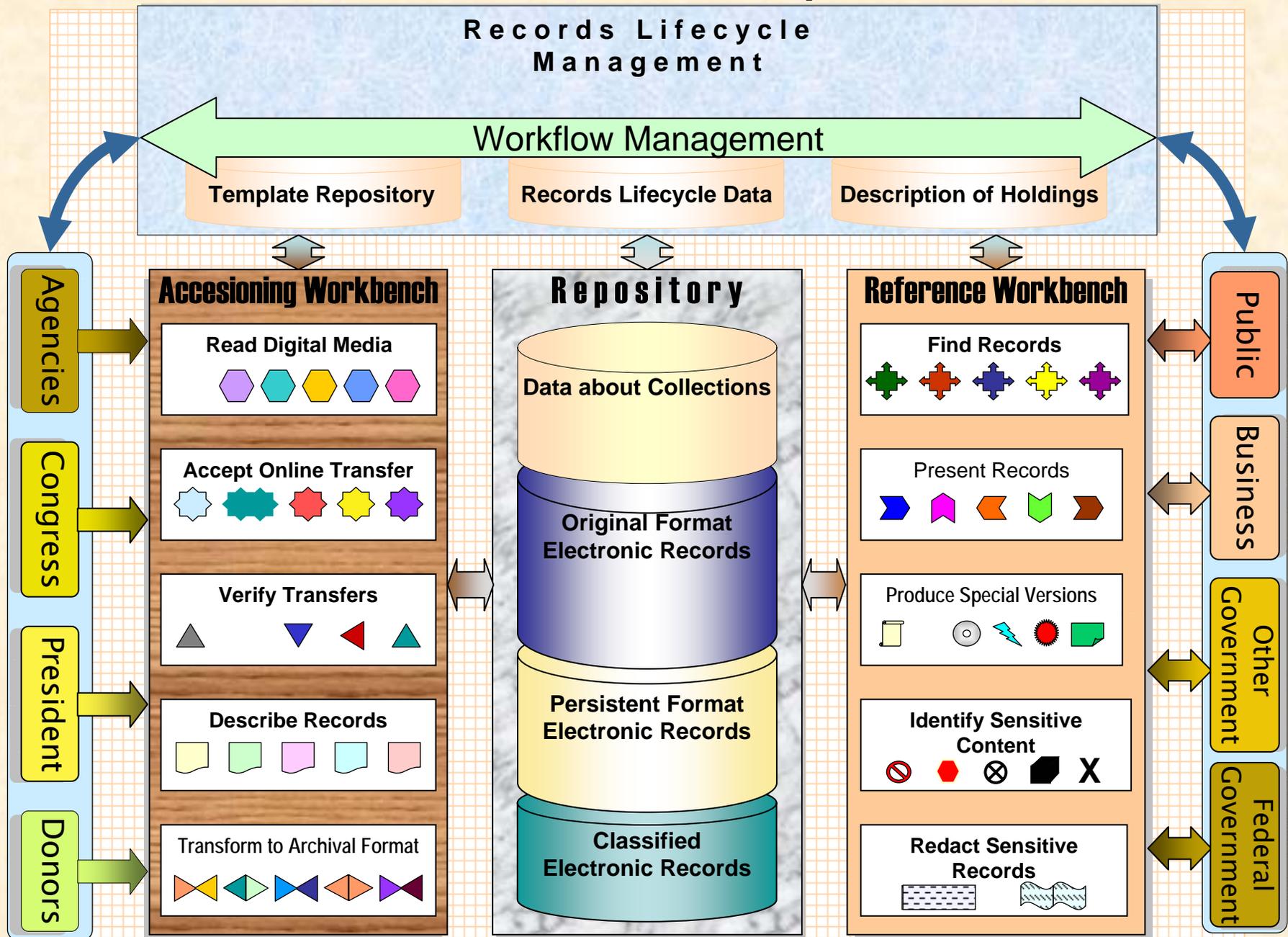
ERA Virtual Workspaces Increment 4



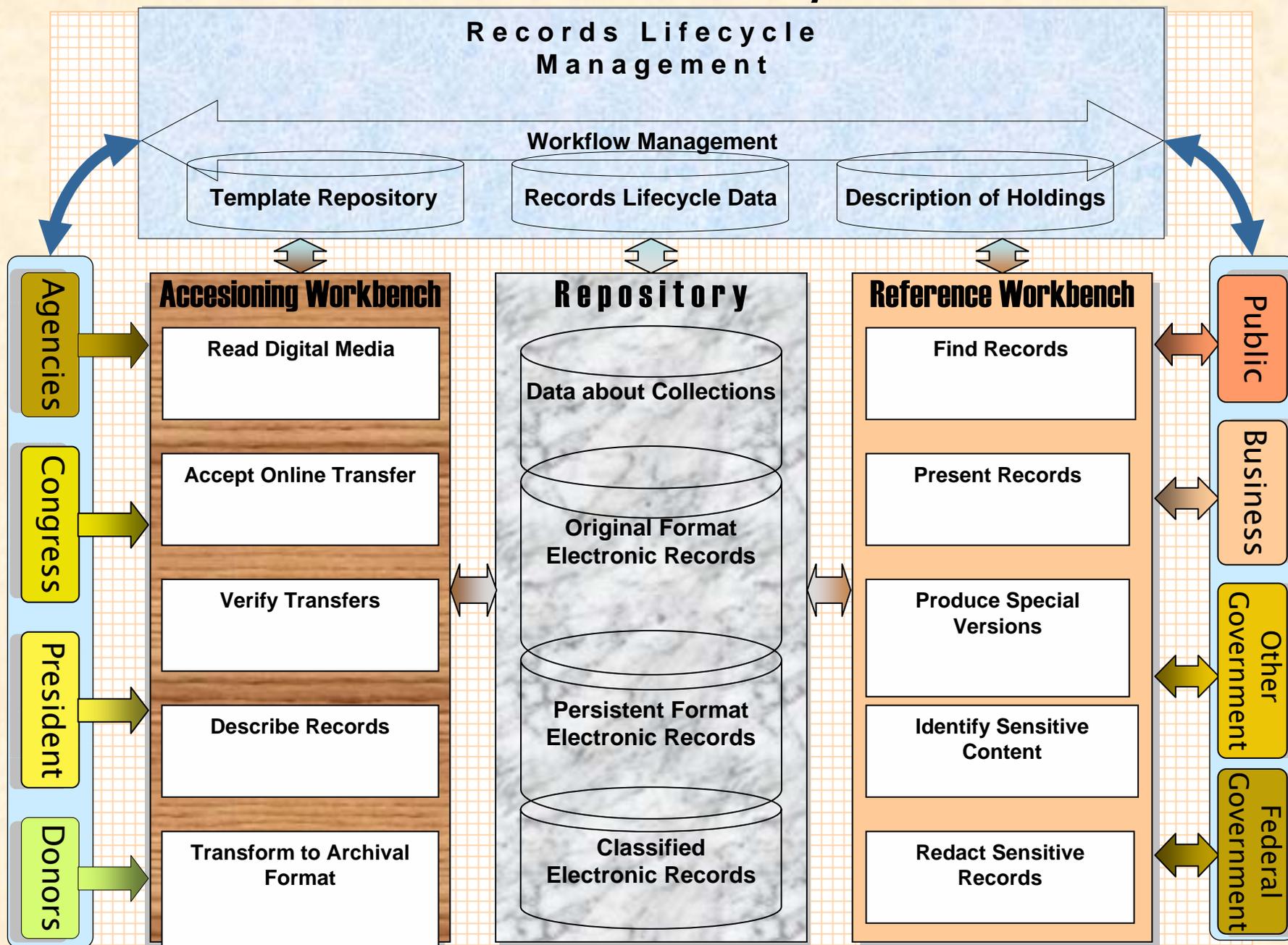
ERA Virtual Workspaces Increment 5



ERA Virtual Workspaces



ERA Virtual Workspaces



System Design Drivers

- Obsolescence + Improved Technology + Time Frame →

Evolvability

- Growing Volumes + Special Needs →

Scalability, up and down

- New Data Types + Increasing Complexity →

Extensibility

- Authenticity + Accessibility →

Persistent Preservation

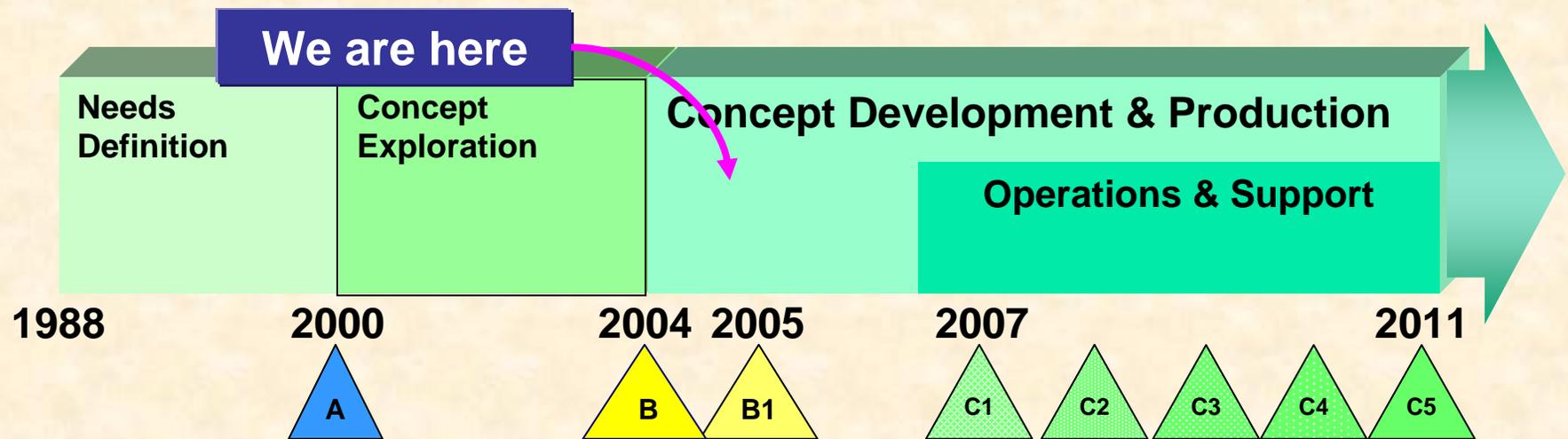
Procurement Approach

- Solicitation strives to define the electronic records challenge without prescribing implementations or techniques that address the issues
 - Very little design specifics within the procurement documents
 - OAIS Reference Model and some DoD and NIST standards are included
- Goal is to challenge industry to propose innovative solutions to the electronic records challenge
 - Preservation
 - Authenticity
 - Support for variety of Record Types and Data Types

Design and Deployment Goals

- NARA must own and control at least one set of all holdings of electronic records entrusted to it
- The ERA system is one of NARA's contributions to the Federal Enterprise Architecture (FEA)
- NARA must produce a highly reliable system design
- NARA must take a long term view for the system's operation and its required scalability, reliability and cost effective operations
 - Support outsourcing of potential processing, hosting services, and value added processing
 - While ensuring NARA 's stewardship of the records trusted to it.

ERA System Acquisition

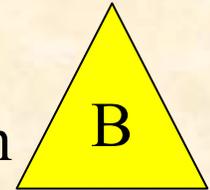


Milestones

- A Establish Mission Need & Vision
- B Award Contracts for System Design & Development
- B1 Exercise one option for development & deployment
- Cx Deploy Increments 1 to 5

System Analysis & Design Phase

- August 2004: Selected Harris and Lockheed Martin Corporations as prime system integrators to develop competing architectures and designs for the ERA system
- Major Milestones:
 - Integrated Baseline Reviews of each contractor's management of the project
 - Systems Requirements Reviews:
 - ERA System Design Reviews
 - ERA Prototype Demonstrations
 - Contractors' Final Proposals
- August 2005: Select one contractor to develop and implement the system



For Additional Information:

NARA | Electronic Records Archives | ERA Main Page - Microsoft Internet Explorer provided by NARA

File Edit View Favorites Tools Help

NARA *...ready access to essential evidence...*

We the People **Electronic Records Archives** Where Is...? / How Do I...? February 9, 2005

WELCOME
ABOUT US
RESEARCH ROOM
RECORDS MANAGEMENT
RECORDS CENTER PROGRAM
FEDERAL REGISTER
NHPRC & OTHER GRANTS
EXHIBIT HALL
DIGITAL CLASSROOM
RECORDS OF CONGRESS
PRESIDENTIAL LIBRARIES
SEARCH
SITE INDEX

Sections

- [ERA Main Page](#)
- [Welcome Message](#)
- [About ERA](#)
- [Program Management Information](#)
- [ERA Research](#)
- [ERA Acquisition Information](#)
- [What's New](#)

ERA News and Events

- The [Records Management Service Component \(RMSC\)](#) Program's materials and schedule are now available online.
- [Presentations](#) from the [Partnerships in Innovation: Serving a Networked Nation](#) conference are now available online.

NARA News and Events

- [Festival of Academy Award®-Nominated Documentaries and Short Subjects](#) at the McGowan Theater in Washington, DC, February 23–27. [Reserve now.](#)
- The exhibit, "[The American Presidency: Photographic Treasures of the National Archives](#)," is in Washington, DC, until February 21.
- **The NARA web site will be unavailable between 1 a.m. and 5 a.m. eastern standard time on Friday, February 11, to allow for scheduled maintenance. We apologize for any inconvenience.**

Resources

- [NARA Papers and Presentations](#)
- [Electronic Records and NARA](#)
- [Electronic and Special Media Records Services Division](#)
- [Related Websites](#)
- [User Questions](#)

What's New with ERA

- [New ERA Website content](#)
- [ERA Conferences](#)
- [ERA Press Kit](#)
- [ERA News Articles](#)



The National Archives
EXPERIENCE
ourdocuments

www.archives.gov