

# U.S. National Archives and Records Administration

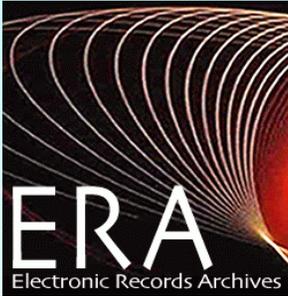
## The Development of the Electronic Records Archives Program at U.S. National Archives: A Case Study



Fynnette Eaton  
Change Management Officer  
*National Archives Records Administration*

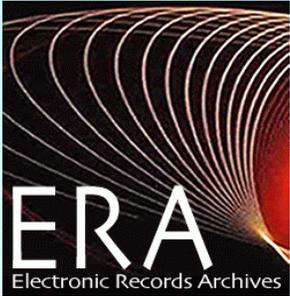
Trusted Repositories for Preserving Cultural  
Heritage

November 18, 2003



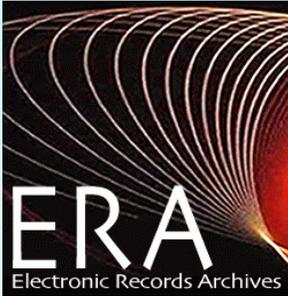
# Agenda

- Challenges posed by electronic records
- NARA's Strategic Response to Electronic Records
- ERA's Research Initiatives
- ERA's System Requirements
- Services ERA will provide
- ERA Timeline



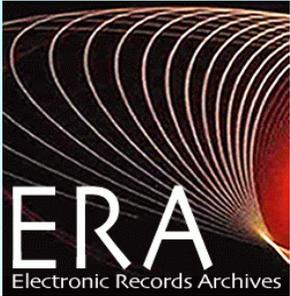
# The National Archives & Records Administration

- “The National Archives .... 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”



# NARA's Strategic Goals

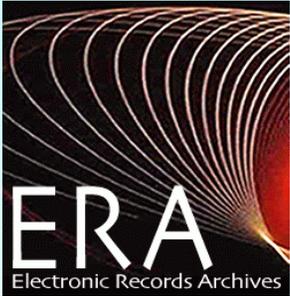
- 1. Essential evidence will be created, identified, appropriately scheduled, and managed for as long as needed.
- 2. Electronic records are controlled, preserved, and made accessible for as long as needed.
- 3. Essential evidence is easy to access regardless of where it is or where users are for as long as needed.
- 4. All records are preserved in an appropriate environment for use as long as needed.
- 5. NARA strategically manages and aligns staff, technology, and processes to achieve our mission.



# Record

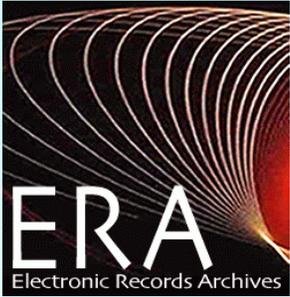
## Documentary material of any form

- **Made or received in the course of business or under law, and**
- **Kept because it**
  - **provides evidence of organization, functions, policies, decisions, procedures, operations, or other activities of their creators, or**
  - **contains valuable information**



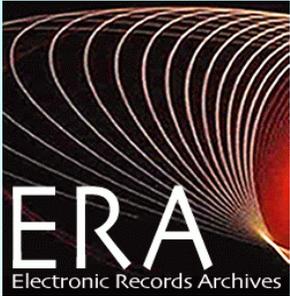
## What's an Electronic Record?

A record in a format that requires the use of a computer for access



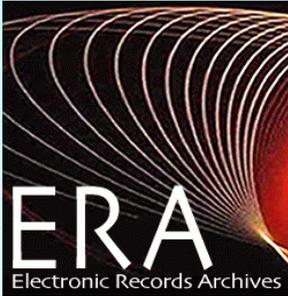
# The Electronic Records Challenge

- Scope
- Volume
- Variety
- Complexity



## The Challenge: Scope

- Preserve any type of 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



## The Challenge: Volume A Tidal Wave

**Clinton Administration (6 Terabytes)**

– 40 million email messages

**State Department (.5 Terabytes)**

– 25 million electronic diplomatic messages

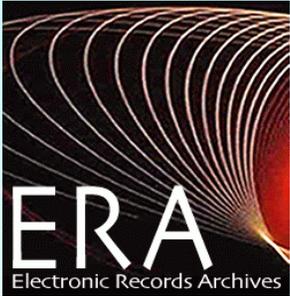
**Department of Defense (8 Terabytes)**

– 54 million images from electronic official  
military personnel files annually

**Census Bureau (44 Terabytes)**

– 600 to 800 million image files (2000  
census)

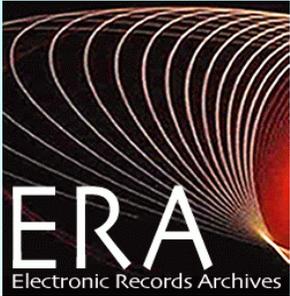




# The Challenge: Variety

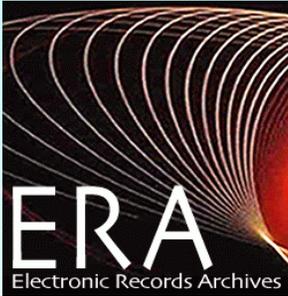
(examples from NARA's current holdings)

- White House e-mail from Presidents Reagan, Bush, and Clinton
- Casualty records from the wars in Korea and Vietnam
- The American Soldier in World War II
- National Collaborative Perinatal Project, 1959-1974
- Fishing, Hunting & Wildlife Recreation
- Abstracts of testimony, interviews, diaries from the Watergate Special Prosecution Force
- ....



# The Challenge: Complexity

- Databases
- Geographic Information Systems
- Web sites
- Digital photographs
- Computer Assisted Engineering Drawings
- Virtual Reality Models
- .....?????

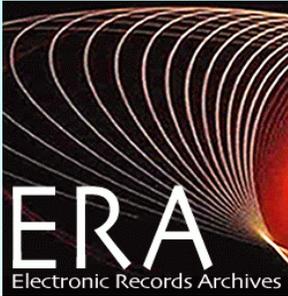


# **NARA's Strategic Response - ERA** ***Archivist's Directive***

## **NARA's Strategic Response**

The Electronic Records Archives (ERA) Program is NARA's strategic response to the problem of electronic records.

Its goal is to enable NARA to preserve and provide access to any type of electronic record created anywhere in the Federal Government.

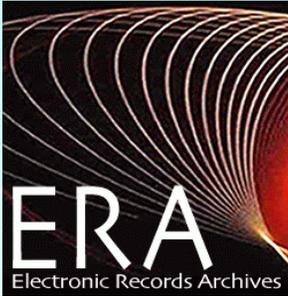


# NARA's Strategic Response - ERA *Archivist's Directive*

## ERA Vision Statement

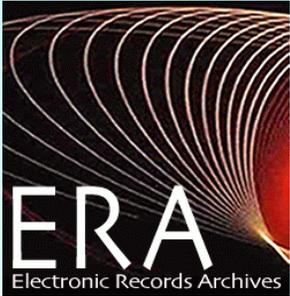
“ERA will *authentically preserve and provide access to any kind of electronic record*, free from dependency on any specific hardware or software, enabling NARA to carry out its mission into the future.”

*John W. Carlin*  
*Archivist of the United States*



## ERA's Goals

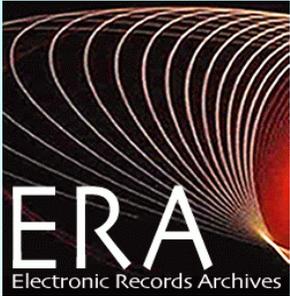
- Overcome technological obsolescence in a manner that preserves demonstrably authentic records
- Build a dynamic solution that incorporates the expectation of continuing change in information technology and in the records it produces.
- Find ways to take advantage of continuing progress in information technology so as to maintain and improve both performance and customer service



# Research

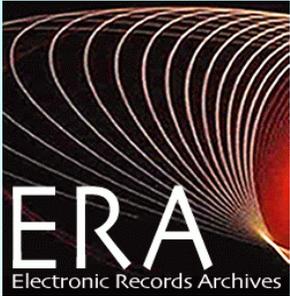
## *“Advanced Foundations for American Innovation”*

Included in this document is the identification of *“substantial technical issues – such as interoperability among file formats, indexing protocols, and interfaces; data management, storage and validation; networking bottlenecks; and long term preservation – that impede development of digital libraries”* reflecting *“urgent demands in every field for deep reservoirs of sharable knowledge of maximize the value of existing findings and enhance the potential for significant advances.”*



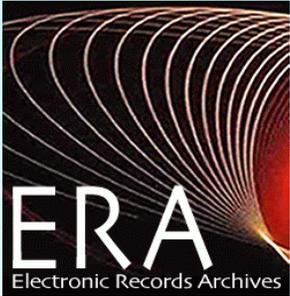
## Purpose of ERA Research

- Support accomplishment of NARA's strategic objectives in the domain of electronic records.
- Enriches the knowledge base required for life cycle management of electronic records
- Fosters the development and adaptation of information technologies to support records management requirements.



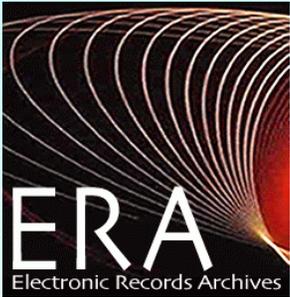
# ERA Research Outcomes

- Provide NARA with adequate knowledge to understand the technology needs for life cycle management of electronic records
- Evaluate existing and future options
- Promote transfer of relevant technology and expertise from research to operational environments



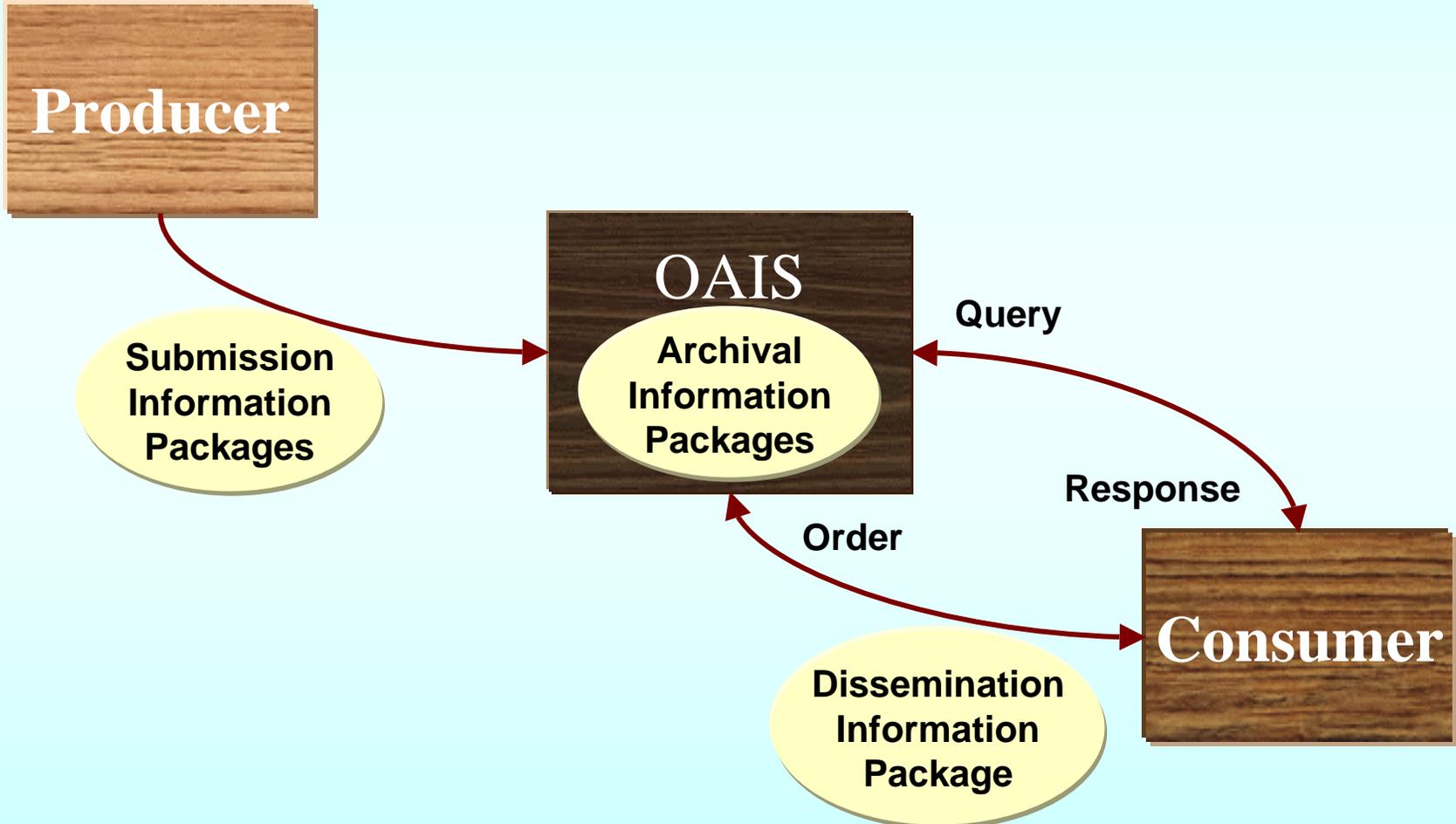
## Research Initiatives

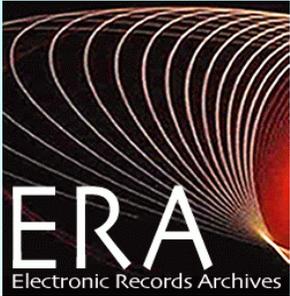
- Development of the Open Archival Information System (OAIS) in coordination with the National Aeronautics and Space Administration
- Research on possibility of persistent archives by San Diego Supercomputer Center,
- Identification of issues associated with the preservation of authentic records by InterPARES



# What is the ERA system?

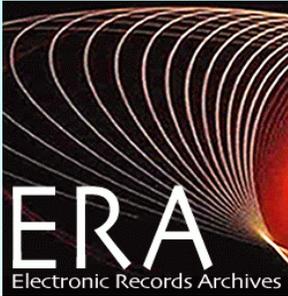
An Open Archival Information System





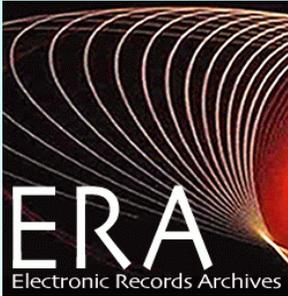
## Transformation Strategies

- Includes Persistent Object Preservation approach emerging from collaborative research in which NARA is participating.
- Does not preserve records in original technological state
- Requires precise specification of archival requirements related to context, context, structure and presentation of records and the collections to which they belong.



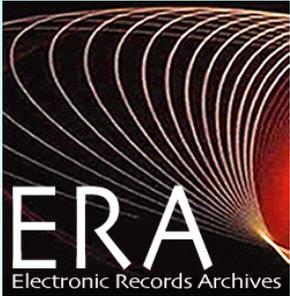
## Presidential Electronic Records Pilot System (PERPOS)

- Conducted by the Army Research Laboratory/George Tech Research Institute
- Focuses on issues such as the execution of court orders, management of information subject to special statutory provisions and/or requiring protection from unauthorized disclosure, such as security classified information
- Used to review digital materials from the George Herbert Walker Bush Presidential Library



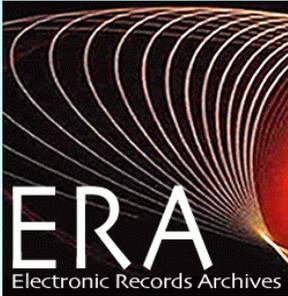
# InterPARES (International Research on Permanent Authentic Records in Electronic Systems)

- Composed of experts in archival and computer science, preservation and law drawn from national archives and academic, cultural and corporate institutions in North America, Europe, Asia and Australia
- Background
  - Research Project at University of British Columbia, in collaboration with Department of Defense Records Management Task Force “The Preservation of the Integrity of Electronic Records” (UBC Project)
  - Formulated requirements for creating, handling and maintaining electronic records in active systems
  - Led to the development of standard DoD 5015.2-STD, Design Criteria Standard for Electronic Records Management Software Applications



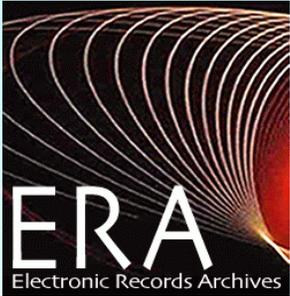
## InterPARES Research Program

- Divided research into four domains
  - Authenticity
  - Appraisal
  - Preservation
  - Strategy
- Each domain had a task force that developed specific set of research questions



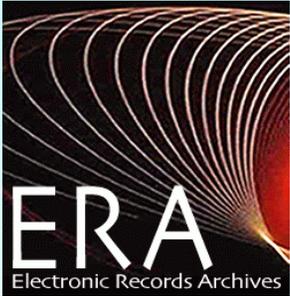
## Authenticity Task Force

- Goal was to identify conceptual requirements for assessing and maintaining the authenticity of electronic records
- Conducted case studies and evaluated data against a Template for Analysis
- Determined that most contemporary record systems are a hybrid of electronic and paper
- Found that few explicit measures are employed to ensure authenticity
- Authenticity is generally assured thru procedural means



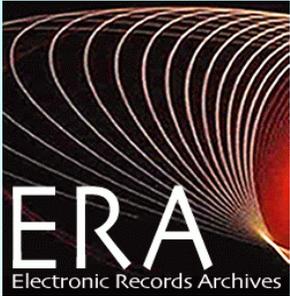
## Appraisal Task Force

- Asked the questions “Should electronic records be appraised differently from traditional records, when should they be appraised and who should do it.”
- Primary product was creation of functions models for the activity “Select Electronic Records”
- From this exercise developed recommendation that appraisal of electronic records takes into account an assessment of the authenticity of the records and the feasibility of their preservation
- Recommended early appraisal and regular monitoring of appraisal decisions



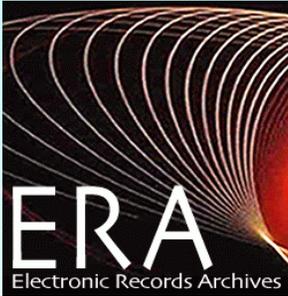
## Preservation Task Force

- Sought to identify and develop procedures and resources required for implementation of conceptual requirements and the criteria identified in the authenticity and appraisal domains
- Surveyed existing digital preservation programs
- Conducted a study of storage media
- Constructed a model of the preservation function



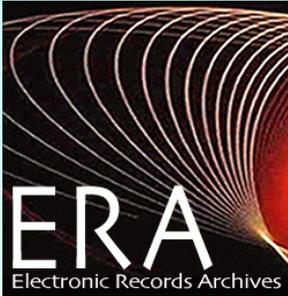
## Strategy Task Force

- Devised an intellectual framework to support development of policies, strategies and standards facilitating the long-term preservation of authentic electronic records
- Established a set of principles and criteria that should govern development of any records preservation policy, strategy or standard.



## Products from InterPARES 1

- *Benchmark Requirements Supporting the Presumption of Authenticity of Electronic Records*
- *Baseline Requirements Supporting the Production of Authentic Copies of Electronic Records*
- Activity models decomposing the archival functions of appraising electronic records and preserving authentic copies of archival electronic records

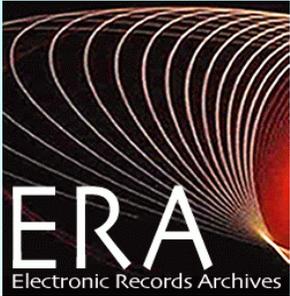


# NARA's Strategic Response - ERA

## *ERA Requirements*

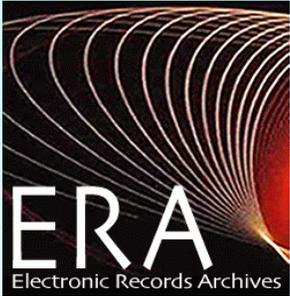


- **Persistent**
  - To manage and access the records over time.
- **Authentic**
  - To ensure that these are the original records
  - Records that are created with attached documentary information
- **Scalable**
  - To grow and adapt to increasing volumes and evolving types of electronic records
  - To serve a variety of user groups



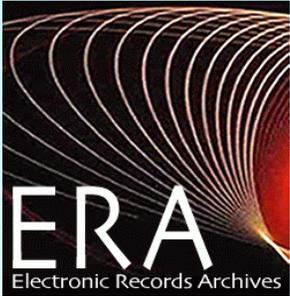
# Technical Challenges of ERA

- Receives, stores, preserves, and provides access to electronic records, regardless of type, format or media.
- Receives, preserves, and store electronic records in a manner and environment appropriate to their sensitivity level.
- Stores electronic records in a manner that allows for maximum possible independence from specific hardware and software infrastructures.
- Supports high availability.
- Provides viable long-term storage for electronic records.



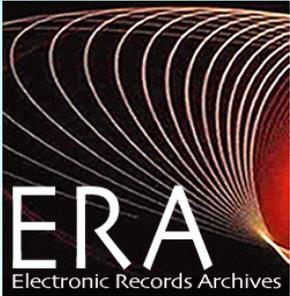
## What services will ERA provide?

- Store electronic records for producers and provide access and other services for specified periods of time.
- Bring electronic records into NARA & the Presidential Libraries, preserve them & provide access respecting legal restrictions.
- Help customers discover and access holdings.
- Provide authentic copies of electronic records exercising property & other rights that will hold up in court, if needed.
- Guide & assist federal agencies in lifecycle management of their records.
- Support transition to e-government.



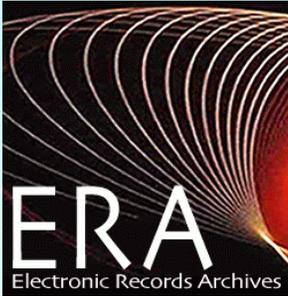
# Critical System Constraints

- ERA must be policy neutral.
- ERA must be in compliance with NARA's Target Architecture.
- ERA's architecture must be adaptable to changes in hardware, software, and communications technology.
- ERA's electronic holdings must be preserved in a state that is independent of specific hardware and software.
- ERA's design must balance the use of COTS, NDI, and newly developed software.



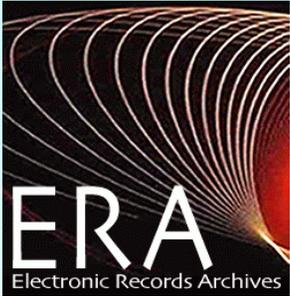
# ERA Requirements Categories

- Records Management
- Preservation
- Workflow
- Archival Storage
- Security
- Ingest
- Access
- User Interface
- Administration
- System Characteristics



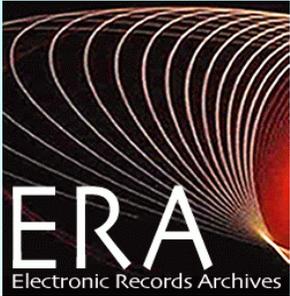
# Records Management

- Disposition of records
- Arrangement of records
- Archival descriptions
- Manage authority sources
- Manage record lifecycle data



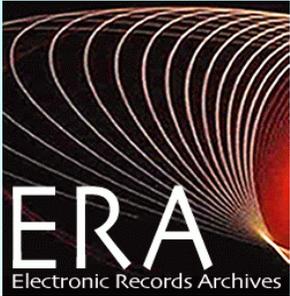
# Preservation Planning

- Use of templates
- Capability for preserving electronic records



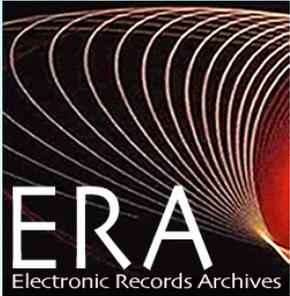
# Workflow

- Workflow management tools – forms, customization, . . .



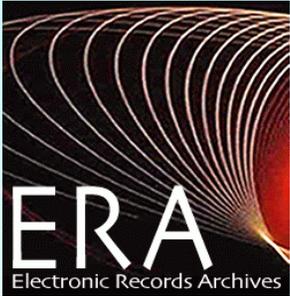
# Archival Storage

- Reliable storage
- Automated media handling
- Media management



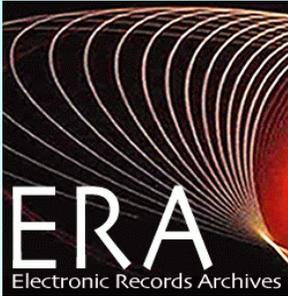
# Security

- Security of the electronic records
- Security of the system



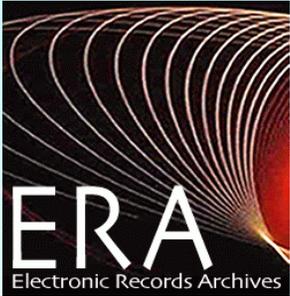
# Ingest

## ➤ Transfer of records



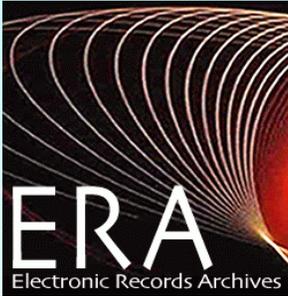
# Access

- Review for sensitive information
- Redaction of electronic records
- Search
- Access to holdings



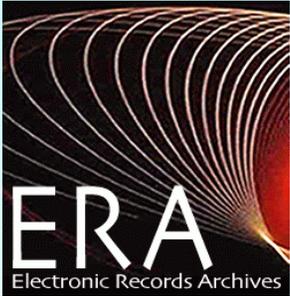
# User Interface

- Electronic access to ERA services
- User interface – workbenches, customization . . .



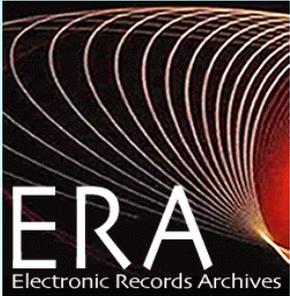
# Administration

- User registration
- User assistance
- Communications with users
- Event logs
- Reporting
- System Administration
- Logistics management



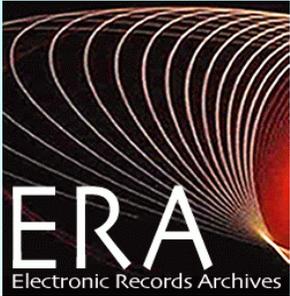
## What will the system do?

- Support the collection, integration, and sharing of information about records.
- Support the workflow associated with business processes.
- Interface with other systems.
- Maintain a complete audit trail.
- Accommodate substantial growth in volume & variety.
- Protect the system and the records with state-of-the-art security.



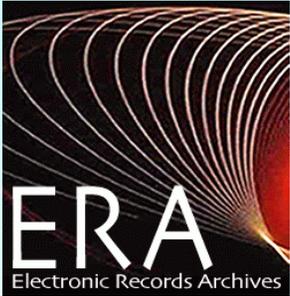
## What will the system do for NARA's customers?

- Process electronic records of all types, formats, and media.
- Manage unscheduled, permanent, and temporary electronic records.
- Maintain relationships among records.
- Store records reliably.
- Make electronic records independent of specific hardware and software.
- Manage records according to their sensitivity.



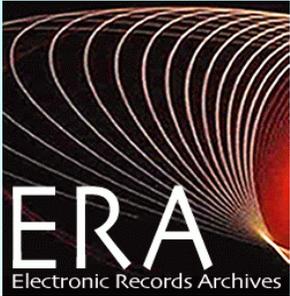
## What will the system do for NARA's customers?

- Provide access in NARA facilities and from other locations.
- Provide for registration of system users.
- Provide user interfaces appropriate to the skill level and research interests of users.
- Provide tutorials, training, help screens, and other state-of-the-art user assistance.
- Enable NARA staff to respond to user comments and requests.



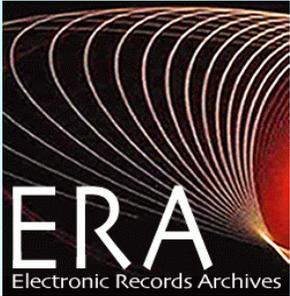
## What will the system do for Originators?

- Implement record schedule functionality.
- Support appraisal of electronic records.
- Support disposition of electronic records.
- Support transfer of electronic records to NARA
- Provide for accessioning of electronic records.
- Provide for review and redaction of sensitive information by authorized personnel.



## What will the system do for Record Users?

- Find records based on searches of descriptions of records
- Search the electronic records themselves.
- Accurately reproduce and output electronic records.
- Provide certified copies of electronic records.
- Manage requests for review of restricted materials.
- Implement the results of electronic records reviews.
- Enable users to request and receive assistance from NARA staff.

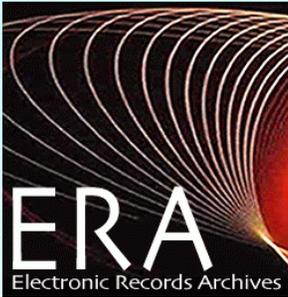


## ERA Timeline

### 1998 - 2001 (Research)



- The Archivist established the ERA Program
- Research partners are formed to find solutions to the electronics archiving challenge
- Contractor Team hired to assist with program management

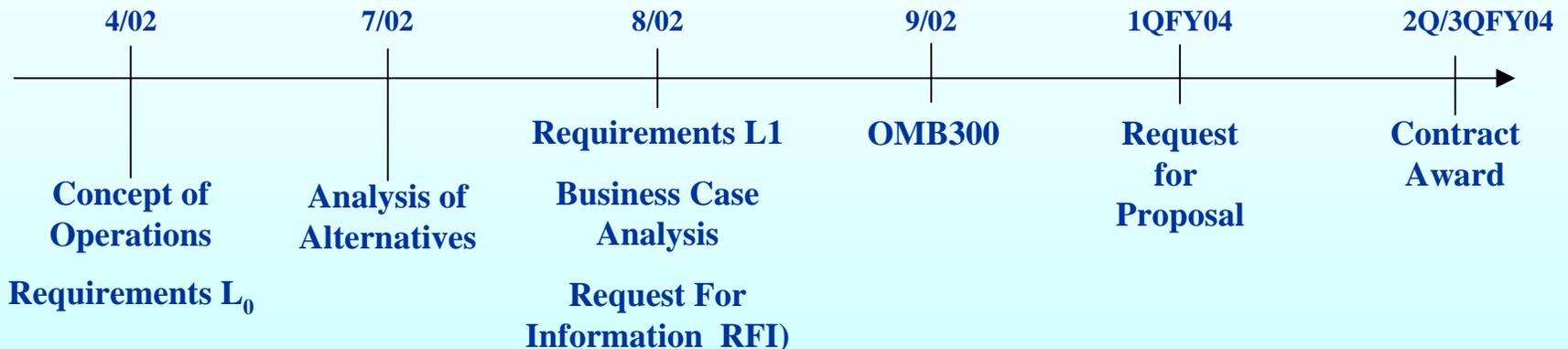


# ERA Timeline

## 2001 - 2003 (Program Development)



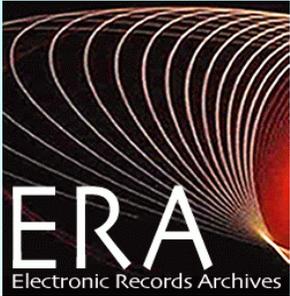
- Continued Research & Development
- Key Integrated Product Teams (IPTs) Chartered
- Key Program documents finalized
- Continued staffing of the Project Management Office (PMO)



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National Archives and Records  
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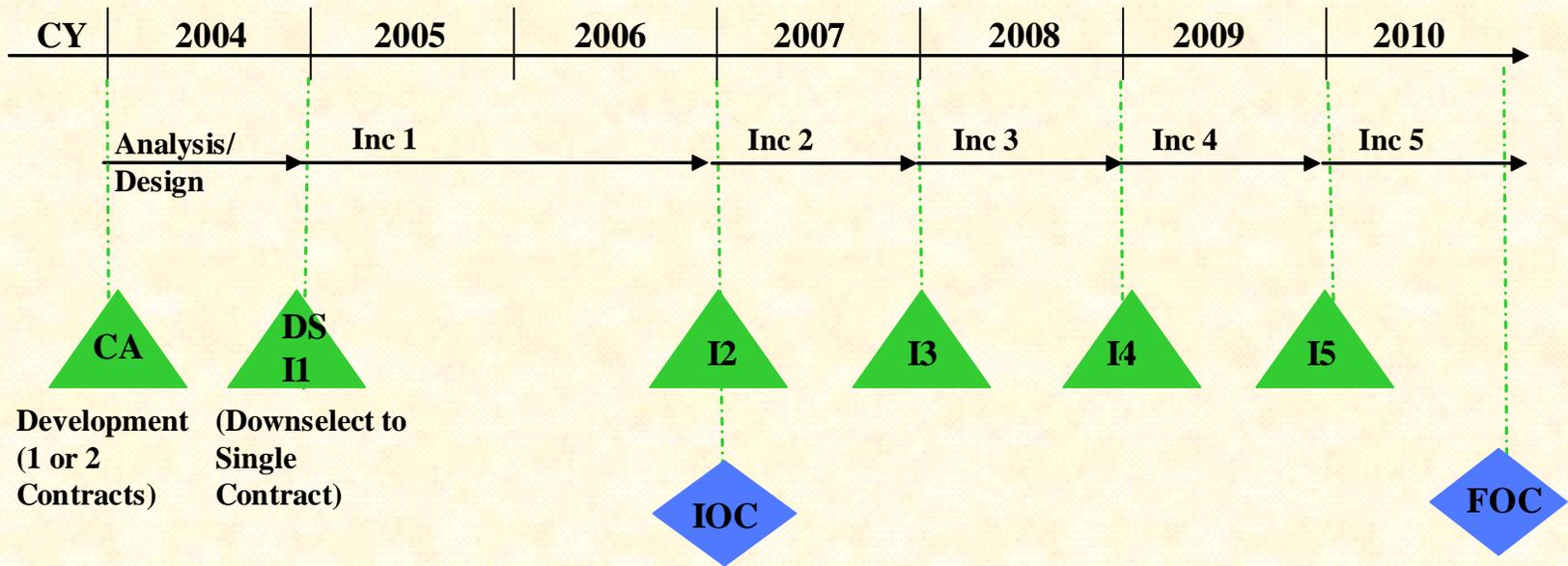


## ERA Timeline *2004-2007 (Future)*



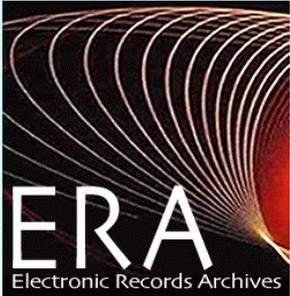
- Official Military Personnel Files
- Test online public access
- Continue Research and Development
- Census 2006 (Mountain Information)

# Program Milestones



Development (1 or 2 Contracts) (Downselect to Single Contract)

KEY	
	= NARA Milestone Decision
	= Other Milestone
CA	= Contract Award
DS	= Design Select
IOC	= Initial Operational Capability
FOC	= Full Operational Capability



## Contact Information

### **Electronic Records Archives Program Management Office**

**Fynnette Eaton  
(301) 837-2007**

#### **ERA Website:**

[http://www.archives.gov/electronic\\_records\\_archives/index.html](http://www.archives.gov/electronic_records_archives/index.html)