"Putting Records First"
Addressing the Life Cycle Management and Preservation of Electronic Records

Records Management Service Components Program
Electronic Records Archives Program
National Archives and Records Administration

ERA
Electronic Records Archives

RMSC
Records Management Service Components

Model Driven Architecture in the U.S. Government
Object Management Group
November 15, 2005

Purpose of Today's Session

- Examine several converging concepts and strategies:
  - increasing volume and complexity of electronic records
  - the U.S. Government's approach to designing its information and computing infrastructure
  - the lifecycle of records and their management
  - the provision of services through software components
  - records preservation through software and hardware independence
- Overview the Electronic Records Archives Program and the Records Management Service Components (RMSC) at the National Archives and Records Administration

NARA's Mission

"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 help citizens to 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"

What is a Federal Record?

- Empirically: an instrument or byproduct of an activity, retained because of relevance to continued activity.

- Formally: Recorded information made or received during the course of agency business or under law
  - Regardless of medium or physical characteristics
  - Kept because it
    - Provides evidence of organization, functions, policies, decisions, procedures, operations, or other activities of their creators, or
    - Contains valuable information
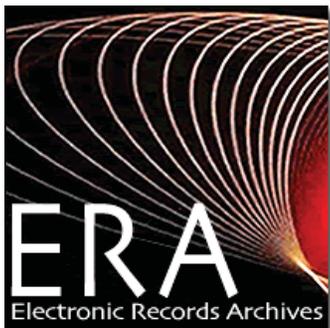   - Derived from 44 U.S.C. 3301
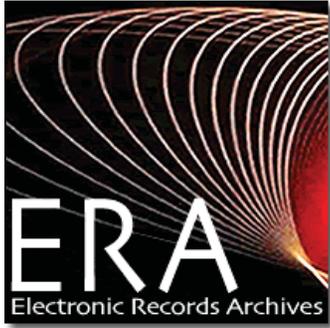
What is an Electronic Record?

A record in digital form, requiring the use of a computer for access


```
CGD: atm_scallop_sl.cgd
----------------------------
ZONE    1: PRI INFLOW
PICK ZONE
PICK I-PLANE
PICK J-PLANE
PICK K-PLANE
PICK VOLUME/SUBSET
DEFINE DISPLAY VOLUME
----------------------------
      IS  IE  JS  JE  KS  KE
SUB    1   1   1  31   1  15
VOL    1   9   1  57   1  33
```

Dimensions of an Electronic Record

- **Record**

  - Provenance

    - Relationship to Creator

    - Relationship to Creating Activity

  - Relationship to Other Records

    - Arrangement

    - Archival Bond

- **Document**

- Content

- Structure

- Presentation

AGENDA

- **Digital Object**

- Representation or encoding of data in binary form

- Logical Structure of encoded data

- Physical Inscription of the encoding on a medium of storage or transmission

Electronic Records
NARA's Challenges

- **Scope**   The Entire Federal Government

- **Variety**   Different Types of Records

- **Complexity**   Records in Different Formats

- **Volume**   Enormous Amounts of Records

- **Obsolescence**   Constantly Changing Technology

Anticipated Incoming Permanent Electronic Records within the next 15 years

Year	2007	2008	2009	2010	2011	2012	2013	2014	2018	2022
Projected Accumulated NARA Holdings in petabytes	**3.6**	5.5	7.8	10.6	14.1	19.0	25.8	35.8	131	347

How NARA Responded
The ERA Vision

ERA will be a comprehensive,
systematic, and dynamic means of

preserving and providing **continuing access**
to **any type** of electronic record
free from dependence
on any specific hardware or software,
created anywhere in the Federal Government.

Finding Solutions:
Research Partnerships

ERA — Electronic Records Archives

RMSC — Records Management Service Components

IEEE

OMG — OBJECT MANAGEMENT GROUP

MIT

SLAC — Stanford Linear Accelerator Center

SDSC — San Diego Supercomputer Center
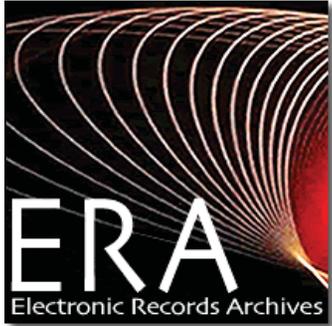
National Science Foundation

NASA

UNIVERSITY OF MARYLAND 1856

GGF — Global Grid Forum

NCSA — National Computational Science Alliance

Georgia Tech Research Institute

NIST

The Library of Congress

…and many other Federal Agencies and their Records Officers

Army Research Laboratory

ARL

INTERNET 2

NNSA — National Nuclear Security Administration

InterPARES Project — International Research on Permanent Authentic Records in Electronic Systems

DIGITAL LIBRARY FEDERATION

National Agricultural Library

CDL — CALIFORNIA DIGITAL LIBRARY

NPACI — National Partnership for Advanced Computational Infrastructure
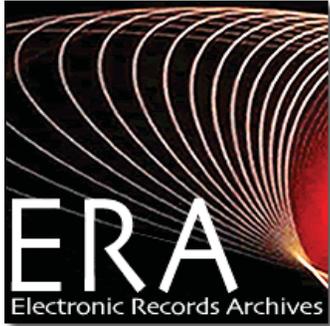
ERA Functional Overview

RMSC — Records Management Service Components

Common Services

Producers | **Consumers**

Messages

SIP → **Validate Transfers**

SIP

Extract Metadata

Manage Dispositions
- **Scheduling**
- Agency Relationship
- Appraisal

Perform Archival Processing
- **Persistent Archives**
- **Preservation Planning**
- Describe Records

Records & Metadata

Metadata

Perform Preservation Processing
- **Preservation Processing**

Records & Metadata

Records & Metadata

Perform Access Review and Redaction

Archival Storage

AIP

Disposition

Instructions

Destroy/Expunge

AIP

Manage Access
- **Research and Dissemination**

DIP

Identify | **Preserve** | **Make Available**

Legend:	OAIS Functions	ERA System-Level Packages	Service Oriented Architecture
	1 - Ingest	Ingest	Business Application Services
	2 - Archival Storage	Archival Storage	• Services
	3 - Data Management	Records Management	• Business Processes
	4 - Access	Dissemination	• Persistent Archives
	5 - Preservation	Preservation	
	6 - Common Services	Local Services & Control ERA Management	Common Infrastructure Services
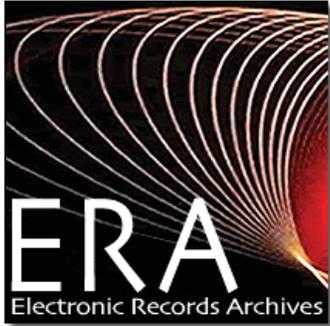
The ERA Program: Where we are now

- 12/ 03   Release of the RFP
- 8/3/04   Awarded Two Design Contracts
- **9/8/05   NARA Selects a Single Developer**

    2005 - 2011   Five Increments (Inc) w/ Multiple Releases:
- FY07   Initial Operating Capability
- 2011   Full Operating Capability

12/03	8/3/04	Sep 2005	FY 2007					2011

Inc 1 — 2 years
Inc 2 — 1 year
Inc 3 — 1 year
Inc 4 — 1 year
Inc 5 — 1 year

Release of the Request For Proposal (RFP)

Contract Awarded

NARA Selected Lockheed Martin Corporation

Initial Operating Capability

Full Operating Capability
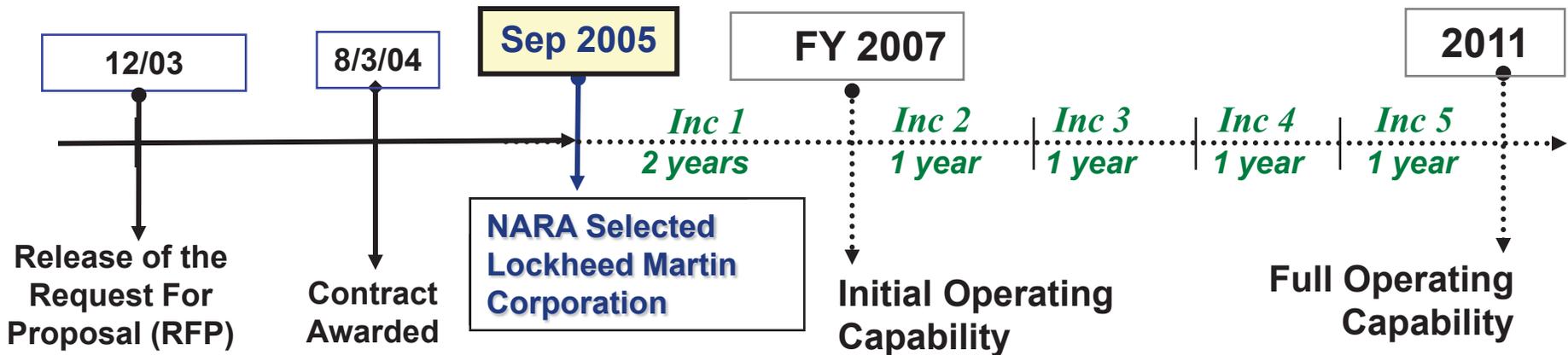
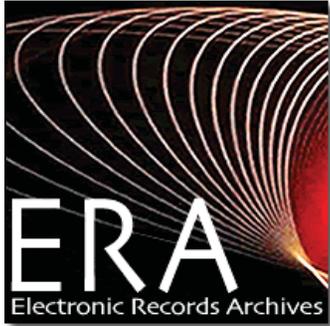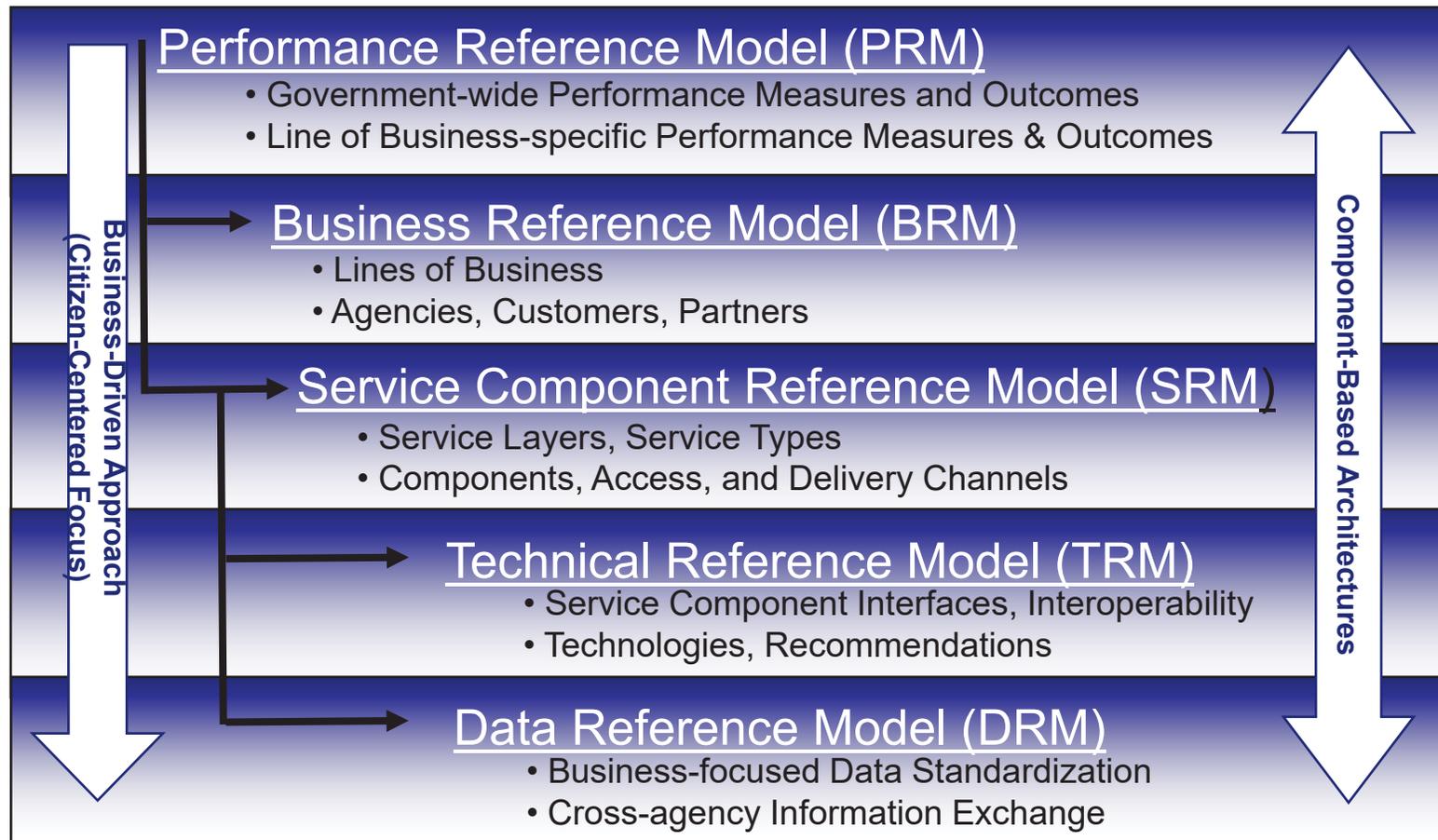# Federal Enterprise Architecture (FEA)

- A design framework and decision-making criteria for Federal information technology (IT) investment
- Describes the relationship between business functions and the technologies and information that supports them
- Funding preference is given to IT investments that promote re-use, save time and money, and improve quality
- Comprised of five (5) reference models

Federal Enterprise Architecture Reference Models

Performance Reference Model (PRM)
- Government-wide Performance Measures and Outcomes
- Line of Business-specific Performance Measures & Outcomes

Business Reference Model (BRM)
- Lines of Business
- Agencies, Customers, Partners

Service Component Reference Model (SRM)
- Service Layers, Service Types
- Components, Access, and Delivery Channels

Technical Reference Model (TRM)
- Service Component Interfaces, Interoperability
- Technologies, Recommendations

Data Reference Model (DRM)
- Business-focused Data Standardization
- Cross-agency Information Exchange

Business-Driven Approach (Citizen-Centered Focus)

Component-Based Architectures

Component-Based Architecture

ERA — Electronic Records Archives

RMSC — Records Management Service Components

Component-Based Architectures

- PRM
- BRM
- SRM
- DRM
- TRM

- Design of enterprise-wide IT solutions to business requirements through the use of modular service components.

- Services independent of applications and computing platforms

- Enables "swapping out" service layers and components, reuse of existing components, reduced duplication of effort

Component-Based Architecture

RMSC
Records Management Service Components

ERA
Electronic Records Archives

Component-Based Architectures

PRM

BRM

SRM

DRM

TRM

Service Component:
- • a piece of software that provides a **service** or function within a computing environment, and is defined by the interfaces it has with entities around it.
- • focus can be enterprise, project, or object level.

- • inherently modular and portable

- • designed to be useable by many applications requiring similar services

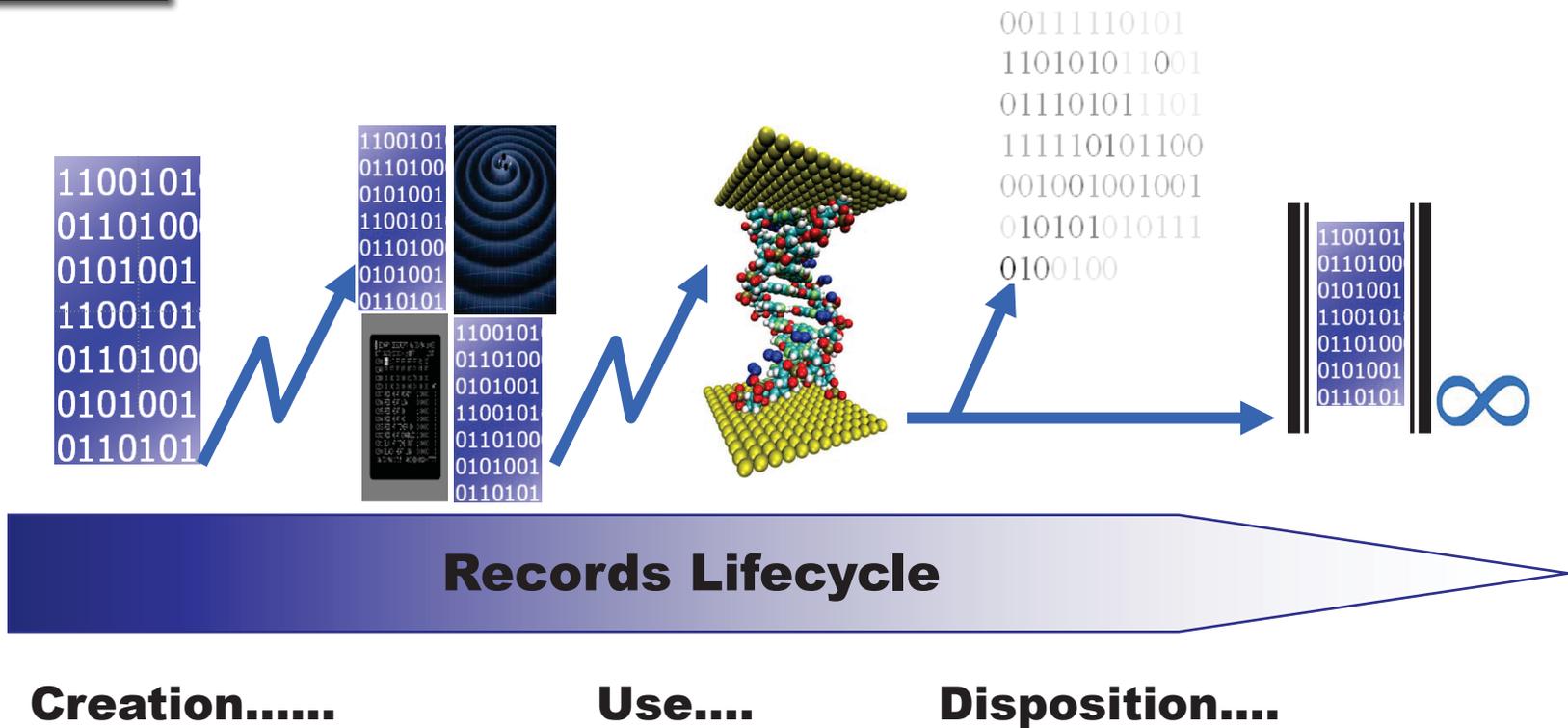# Component-based Services

- Basic Operating System service components:
  - System clock and date
  - Cursor movement and functions
  - Display
  - Clipboard
  - Print
  - Keyboard
- Common requirements met through central services at point of creation

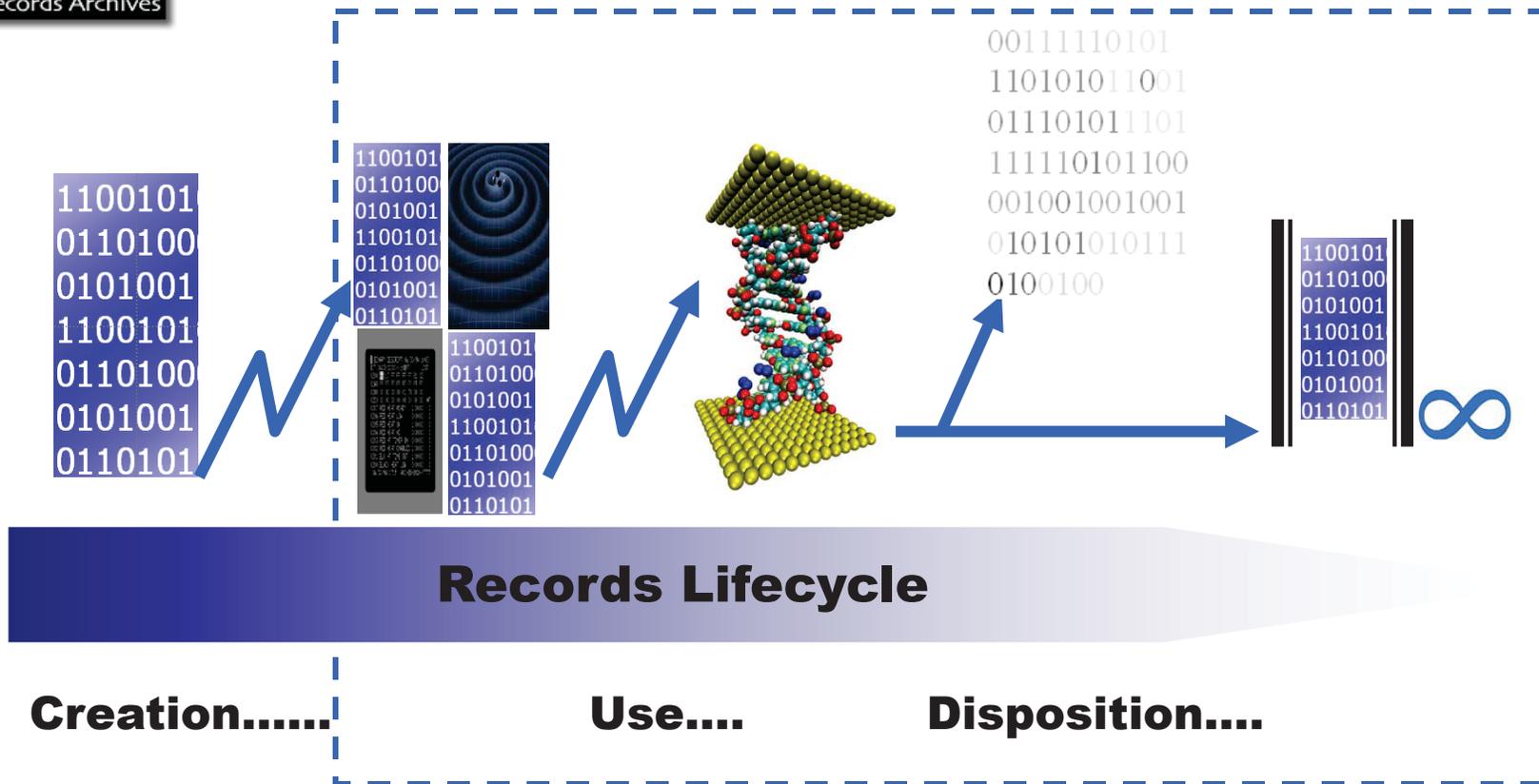# The Records Lifecycle
Federal Agency Viewpoint

Records Lifecycle

Creation......   Use....   Disposition....

The Records Lifecycle
NARA Viewpoint

Records Lifecycle

Creation......   Use....   Disposition....
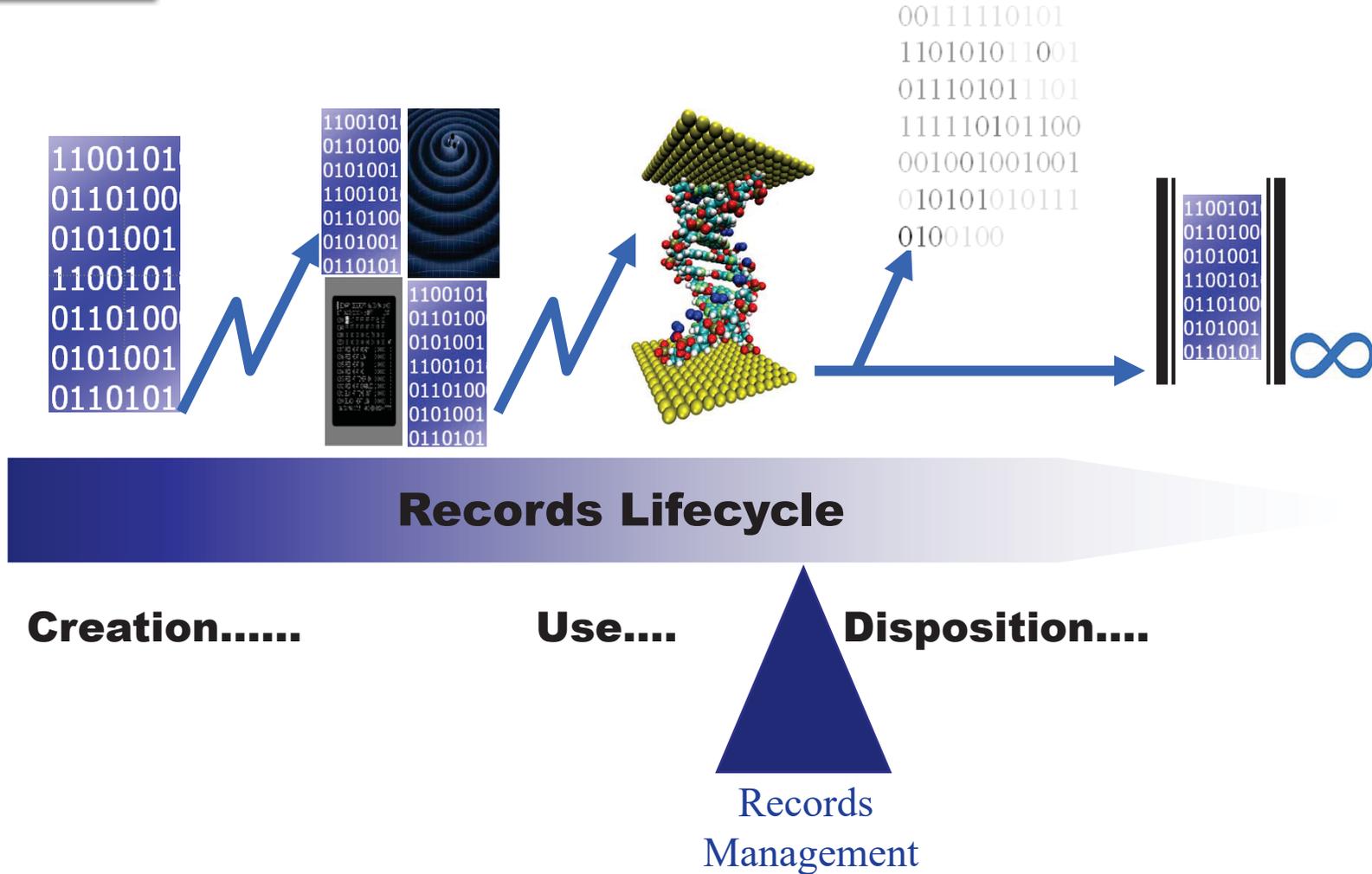
- schedule disposition
- transfer physical custody
- transfer legal custody
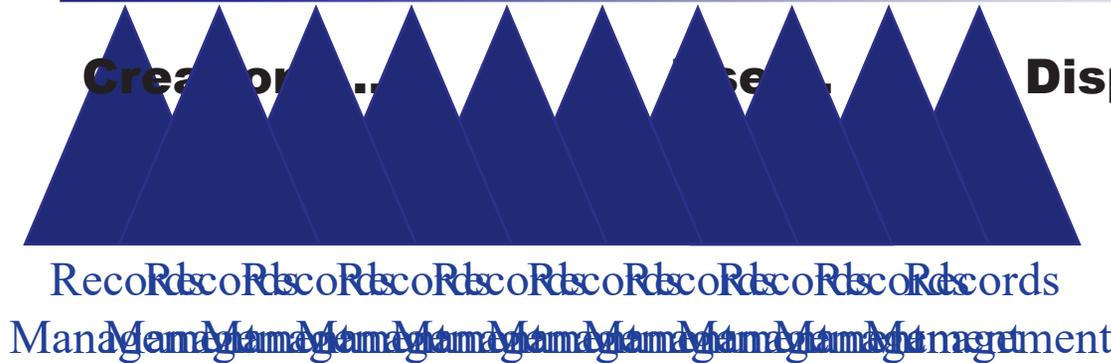
Where Records Management (usually) comes in

Records Lifecycle

Creation......　　Use....　　Disposition....

Records Management

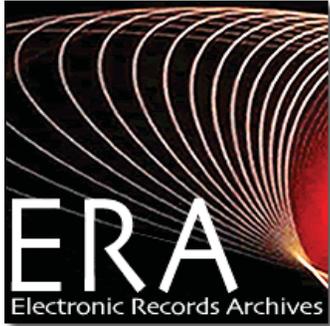# Where we want Records Management to come in…
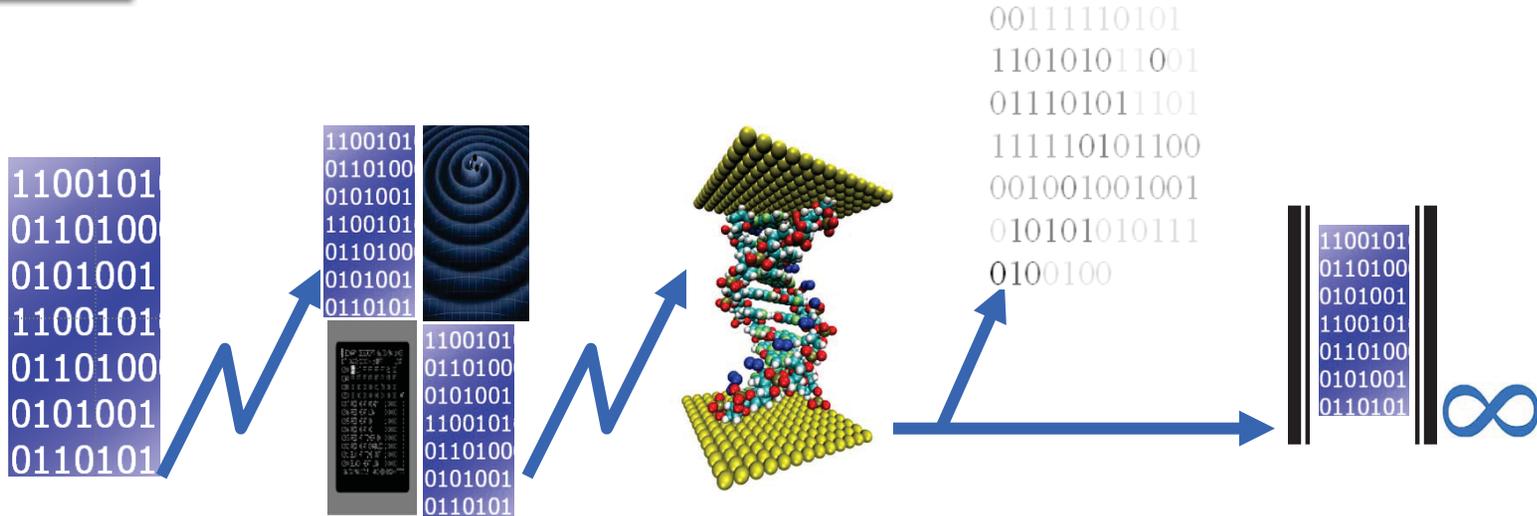
Making the Transition
to Tomorrow

- **Records Management Service Components (RMSC)**

- **What is an RMSC?**

   A records management service component is a piece of software that provides services that support the creation, management, transfer, and destruction of electronic records within a computing environment.

Making the Transition to Tomorrow

- **Records Management Service Components (RMSC)**
  - Front end of the business process
  - FEA and ERA compatible
  - Works with front end RMAs at agencies
  - Captures context of creation and relationship to other records at the point of creation
  - Information about the record is carried forward through the lifecycle
  - Establishes a baseline against which authenticity can be validated over time

RMSC
Requirements Development
Project

- ## Collaboration
  - 18 cabinet agencies, two universities, nine IT vendors
  - 11 NARA subject matter experts representing four offices
  - Use state-of-the-art collaborative technology
  - Offsite meetings led by experienced facilitators

- ## Objectives
  - Collect, prioritize, and document functional requirements for core records management activities that can be supported by software service components
  - Identify related attributes, metadata definitions, and constraints
  - Document the workshops output in session reports
  - Make the results available to wider audience

RMSC
Participating Agencies

- **18 agencies attended four sessions this spring**

RMSC
Participating Experts

- Over 30 experts in records management, enterprise architecture, e-Government, Privacy Act, FOIA
  - Departmental Records Officers
  - Deputy Chief Information Officers
  - Senior E-Government Architect
  - Chief, FOIA – Privacy Branch
  - Director, Policy and Planning
  - Division Chief, Directives & Records
  - Electronic Records Management Lead
  - Chief, Life Cycle Management Branch
 - Senior Records Analysts

RMSC
Scope and Constraints

- ## View Point
  - Records Management Activities

- ## Return on Investment Constraint
  - RM activities used the most often
  - RM activities used by government employees/business processes

- ## In Scope
  - *From:* Receipt, Identification, Declaration of a record
  - *To:* Disposition of a record

- ## Out of Scope
  - Document creation (what makes up a document/record and how, who, and why it was created)
  - Security, privacy, etc.
  - Systems maintenance
  - How it is stored and what it is stored on – storage media
  - Format e.g. .doc, PDF, TIFF
  - System management backup and recovery
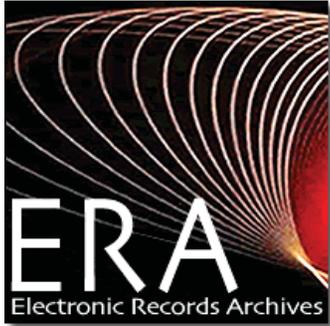
RMSC
- Results-
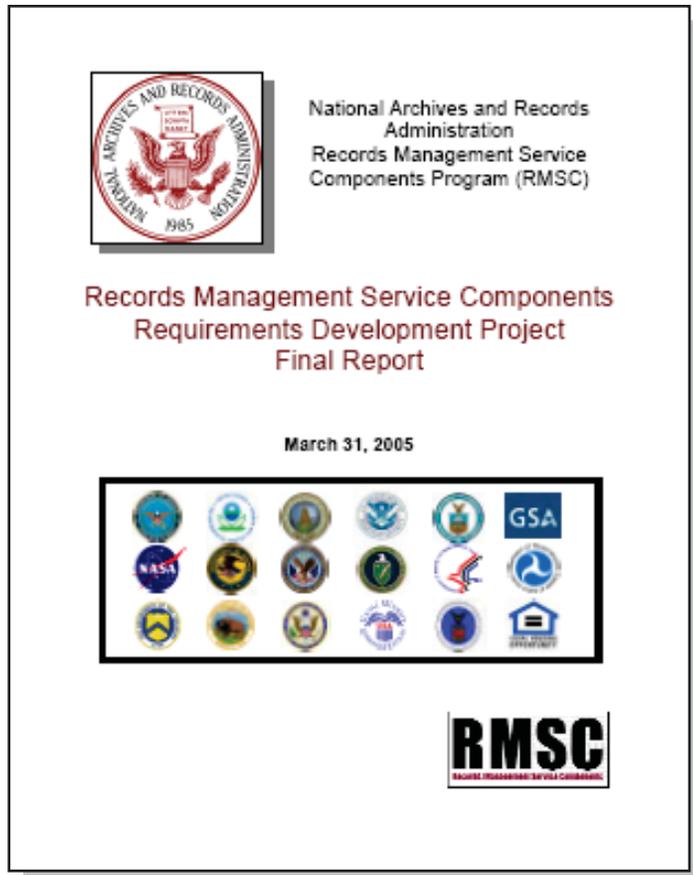
Requirements Development Project Final Report March 31, 2005

- Identified & defined eight RMSC components
- 21 functional requirements
- 33 RMSC attributes
- Prioritized RMSCs for acquisition
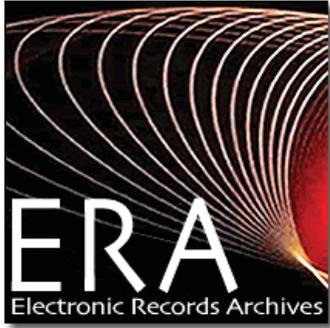
Making the Transition to Tomorrow
Use Case Development

- May – June 2005
- Widely accepted technical engineering notation
- Bridge from business to developer communities
- Documents purpose, conditions, flows, attributes, and functional requirements
- Normalizes granularity of components

RMSC
- Results-

Functional Requirements and Attributes for Records Management in a Component-Based Architecture Technical Report July 20, 2005

Functional Requirements and Attributes
for
Records Management
in a
Component-Based Architecture

by

Daryll R. Prescott
Kenneth Hawkins, Ph.D.

July 20, 2005

A Technical Report from the
Records Management Service Component
Program of the National Archives and Records Administration

- 7 RMSCs
- 22 Use Case
- 101 Functional Requirements

Making the Transition to Tomorrow
RMSC Use Case Technical Report

■ Seven components across the record life cycle

- **Record Capture**
- **Provenance**
- **Archival Bond**
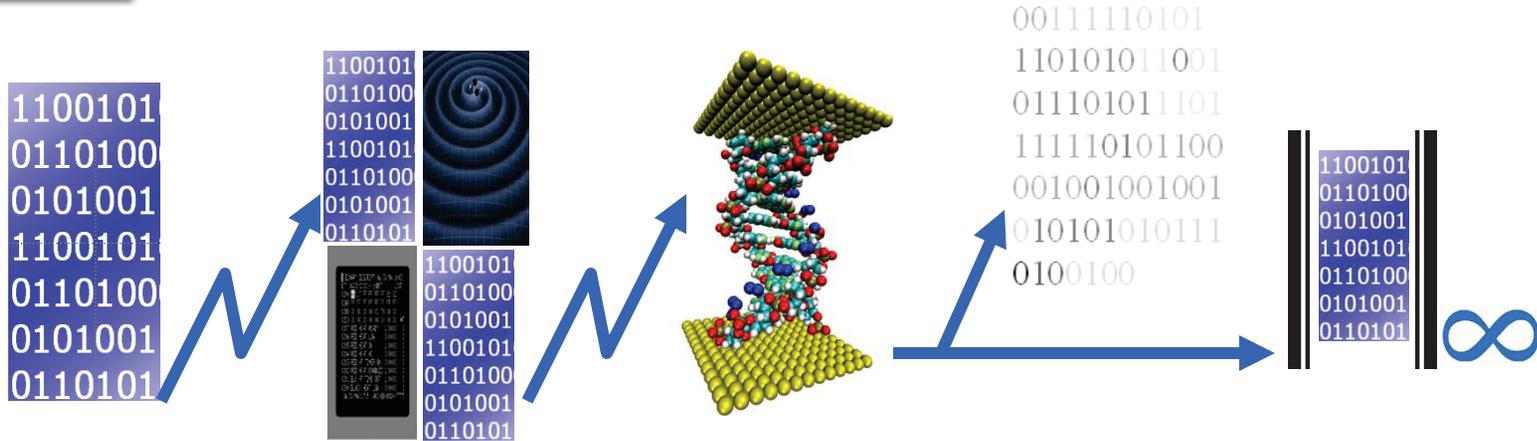- **Authenticity**

- **Case File**
- **Disposition**
- **Reference**

Reliability

DoD 5015.2 Standard
- Application
- Not a service
- Security class/declass

RM Services and the Record Life Cycle

Unscheduled Records — Temporary/Permanent Records
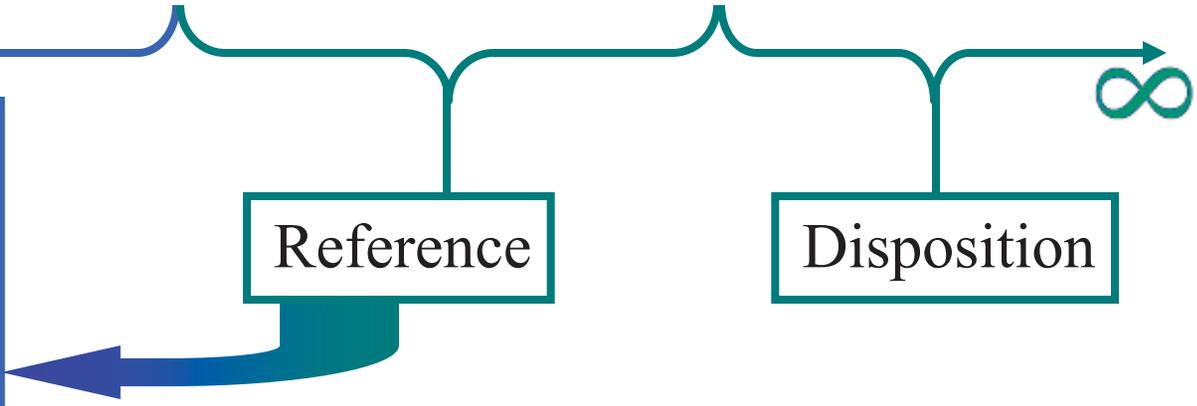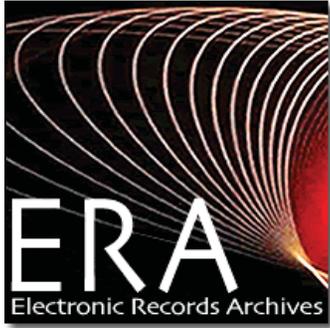
Record Capture
Provenance
Archival Bond
Reliability
Case File

Reference

Disposition

Making the Transition to Tomorrow
RMSC Next Steps
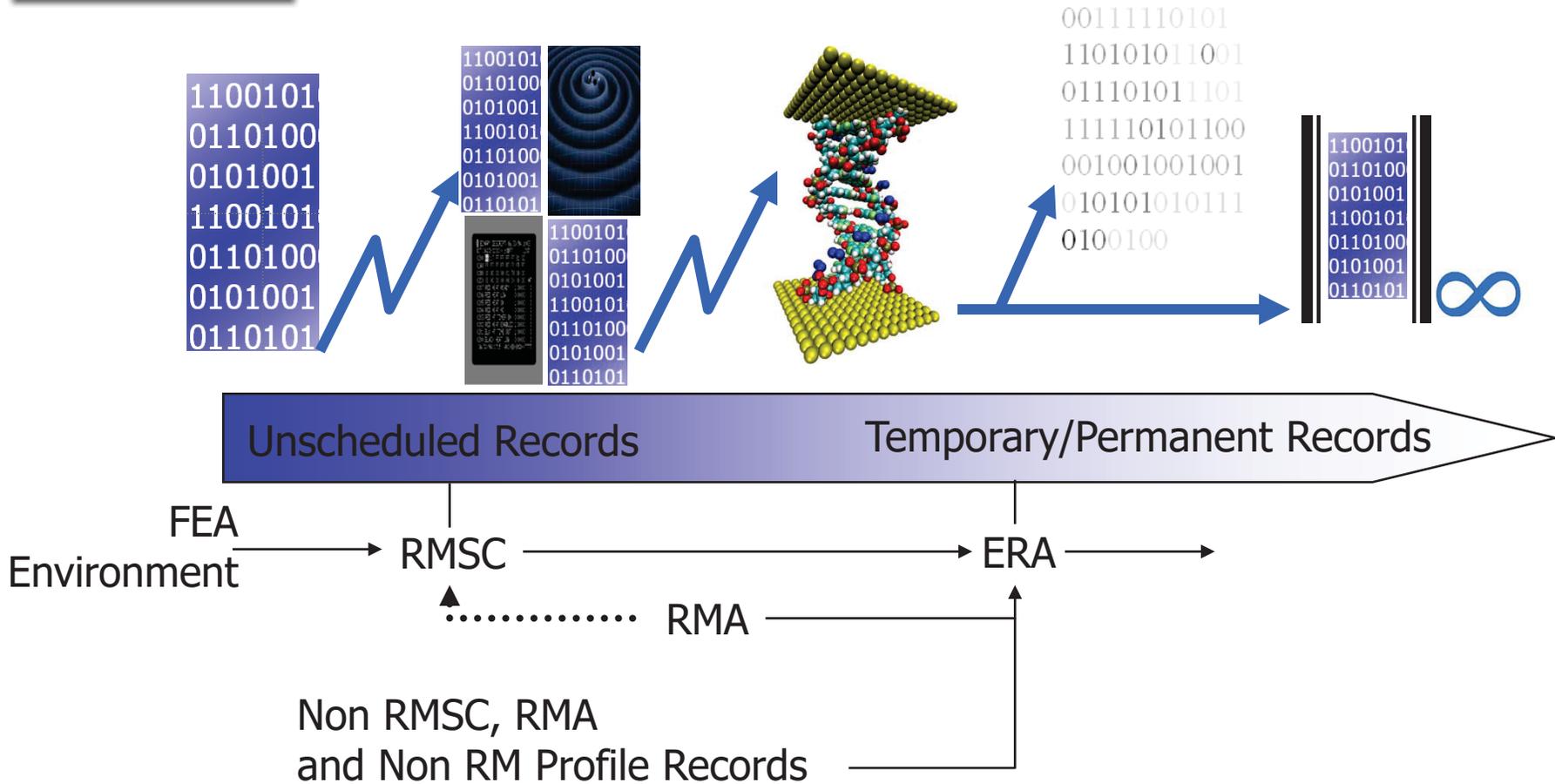
ERA Electronic Records Archives

RMSC Records Management Service Components

LGT Brief*

LGT Brief

RFI Release

RFI Responses Received

Session VIII Fed Agencies

Session outcome To NARA Reviewers

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Oct 27

Nov 2
- Session 8 Agenda
- Read Ahead Package
- RMSC : DoD 5015.2
- NARA participant identification

Nov 10

Nov 16 & 17

Nov 16

LGT Brief

Session IX Fed Agencies

LGT Brief

NARA Review & Return Comments

22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

Nov 18 – Nov 29

Dec 6 - 8

Nov 30
- Session 9 Agenda
- Read Ahead Package

Dec 14
- Session 9 outcome
- Proposed acquisition strategies
- Core.gov activities
- LGT decision on next activities

* NARA Leadership Guidance Team

Why is this important to you?

- All records are documents – not all documents are records – *Knowing the difference makes all the difference*
- Your "Stuff" can be scheduled and destroyed or transferred legally and legitimately
- Reduced electronic holdings;
  - Increases system efficiencies
  - Reduces system & disaster recovery time
  - Reduces media requirements (aerial density factor loss)
  - Supports regulatory and litigation activities

Why is this important to you?

- Today, we are all records managers
- Applying RM provides efficiencies
- MDA can support the identification of RM
  - ➢ Identifies business transaction "evidence"
  - ➢ Identifies points of records creation
  - ➢ Identifies where, when and how RM can be applied within the architecture
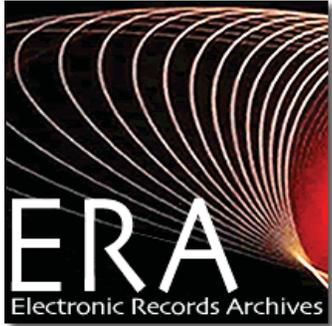 - ➢ Allows RM to be included in the solution

Records Lifecycle

Creation......   Use....   Disposition....
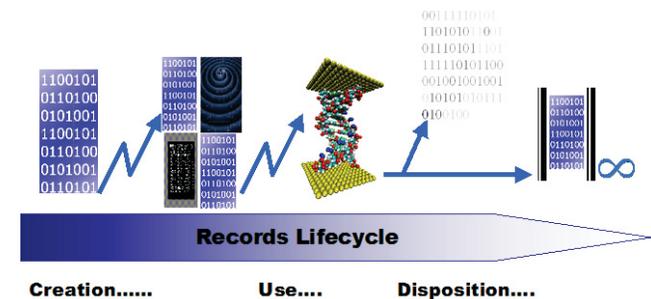
Questions?

Daryll R. Prescott
Assistant Program Director
ERA Program (NHE)
daryll.prescott@nara.gov
301-837-0974

- http://www.archives.gov/era/

- http://www.archives.gov/era/rmsc/

Definitions

<u>Provenance</u> – [1] Identifies the administrative entity within an agency directly responsible for the creation, use, and maintenance of the records. This identifies the legal custodian of the records consistent with 44 U.S.C. 3301. [2] The origin or source of something. Society of American Archivists (SSA), A Glossary of Archival and Records Terminology (Terminology).

<u>Archival Bond</u> – The interrelationships between a record and other records resulting from the same business activity, usually accomplished by associating the records to each other through a record category. The interrelationships between a record and other records resulting from the same activity. SSA Terminology

<u>Reliability</u> – A concept in archival theory whereby a person - or - a system at a predetermined point in the business process determines the evidence of the activities making up the transaction are complete and should be maintained and managed as a record. SSA Terminology. INTERPares, "Findings on the Preservation of Authentic Electronic records, "pp. 14-19; ISO 15489-2, 4.3.2.

<u>Authenticity</u> – [1] A condition that proves that a record is genuine based on its mode (i.e., method by which a record is communicated over space or time), form (i.e., format or media that a record has upon receipt), state of transmission (i.e., the primitiveness, completeness, and effectiveness of a record when it is initially set aside after being made or received), and manner of preservation and custody. Authenticated Record. DoD 5051.2 STD. [2] The quality of being genuine, not a counterfeit, and free from tampering, and is typically inferred from internal and external evidence, including its physical characteristics, structure, content, and context. SSA Terminology