Embedding Electronic Records Management Into the Fabric of Your Agency

L Reynolds Cahoon
CIO
National Archives
And
Records Administration

OUR PAINFUL REALITY

THE RECORDS MANAGEMENT WORLD WE HAVE PREPARED FOR NO LONGER EXISTS

Take Aways

Effective Records Management requires:

- Simultaneous attention to People, Process and Technology

- Integrating Records Management into Agency Business Processes and IT Governance and Applications

- A Persistent E-Records Preservation and Access Capability-- critical to the future of Government and Society.

Records and Information Management From 30K Ft.

- Decline in number of staff specializing in filing
- Investment in Software functionality that creates records is growing
- Mission critical records are often not sharable, retrievable or useable
- Copies proliferate; data conflicts or is unreliable
- Email often replaces phone conversations, meetings and formal written communication
- Instant Messaging increasingly replaces email
- Litigation and discovery costs skyrocketing
- Authenticity is questioned
- Premature destruction
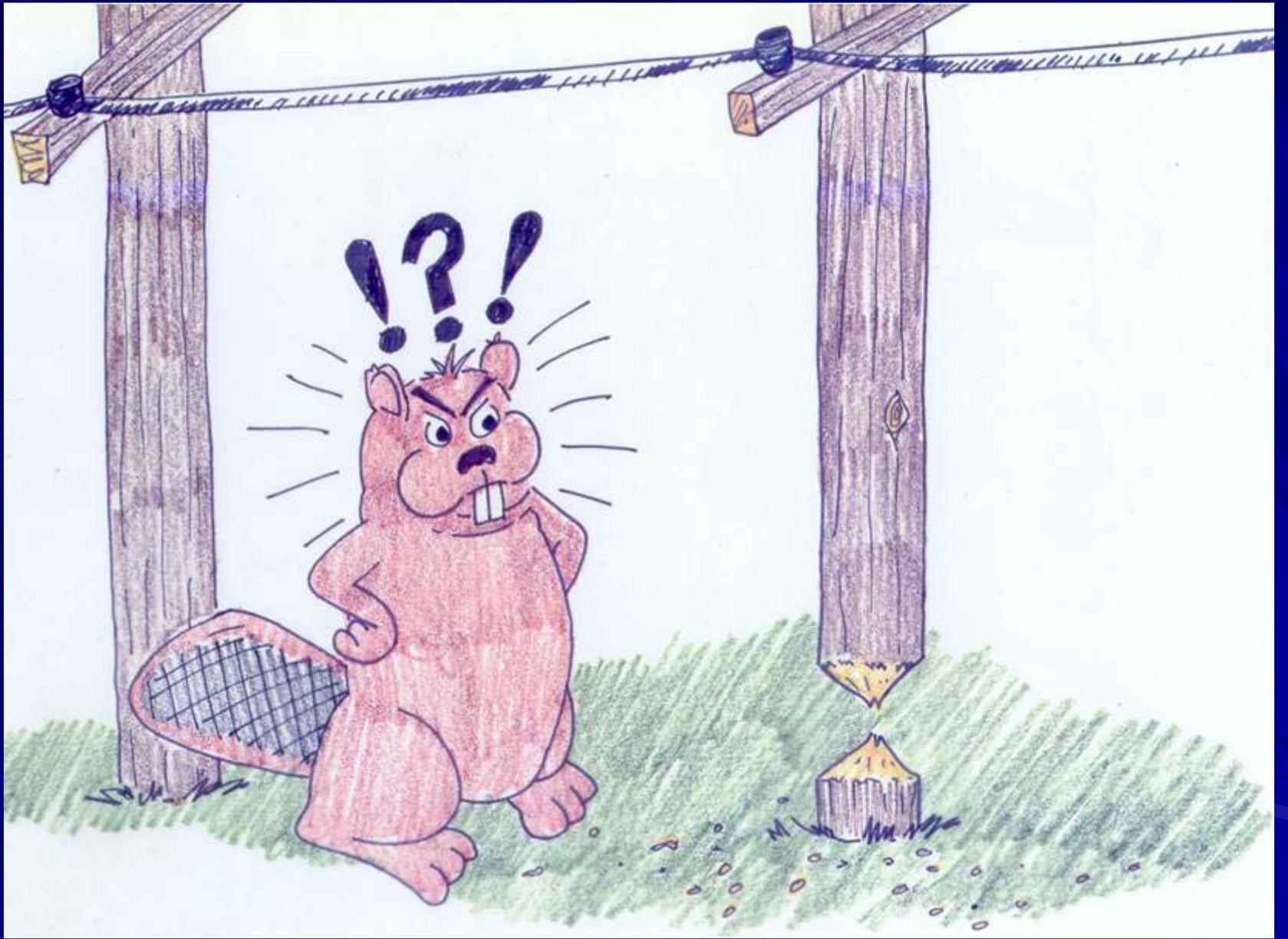- Tools to manage electronic records lag far behind
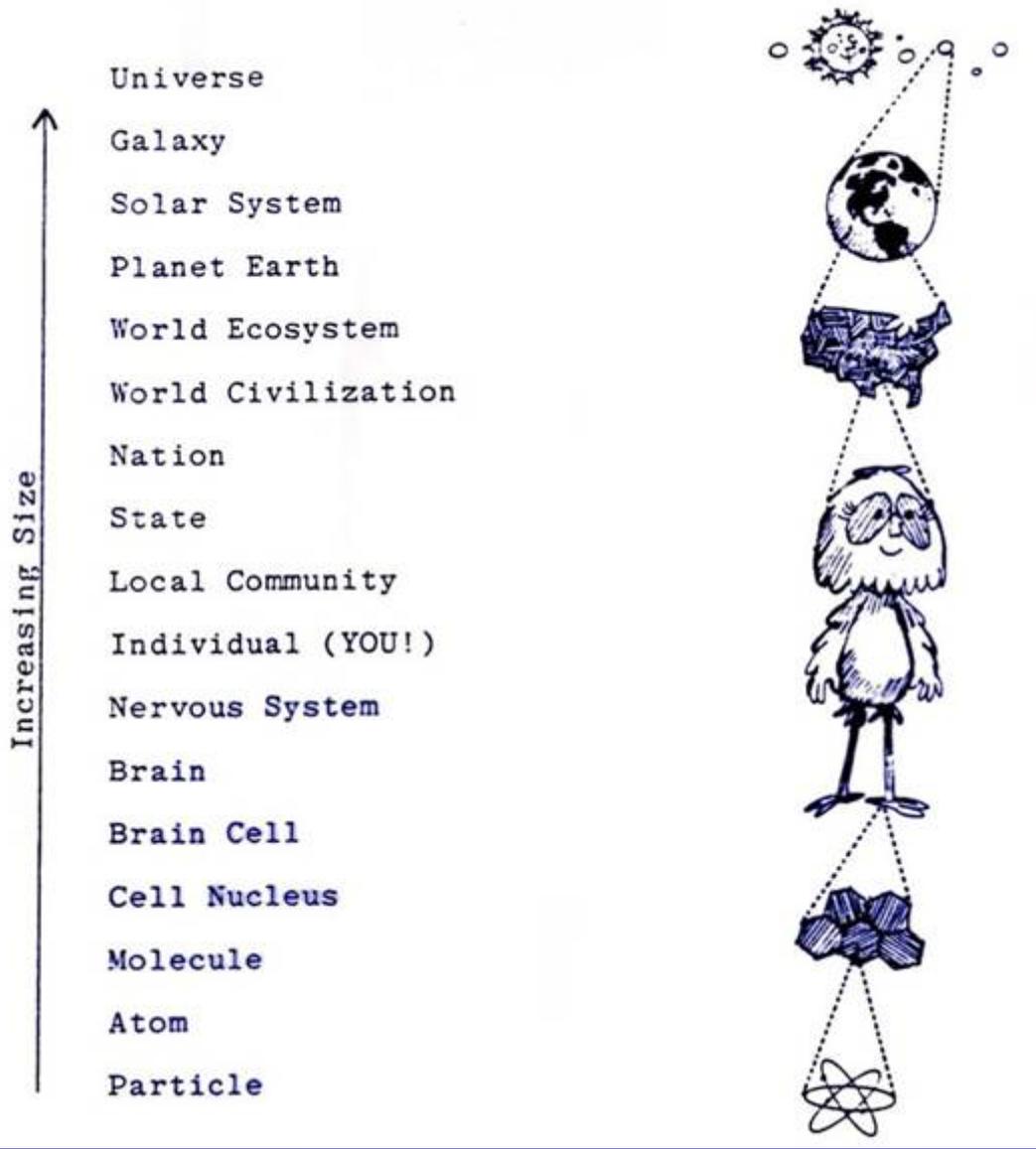
The Challenge of Electronic Records

- Authenticity – Over Time

- Variety – 4,800+ Different Types of E-Record Formats

- Complexity – Increasingly Sophisticated Formats

- Volume – Vast Quantities of Records

- Obsolescence – Constantly Changing Technology

- User Expectations –Evolving, Unrelenting
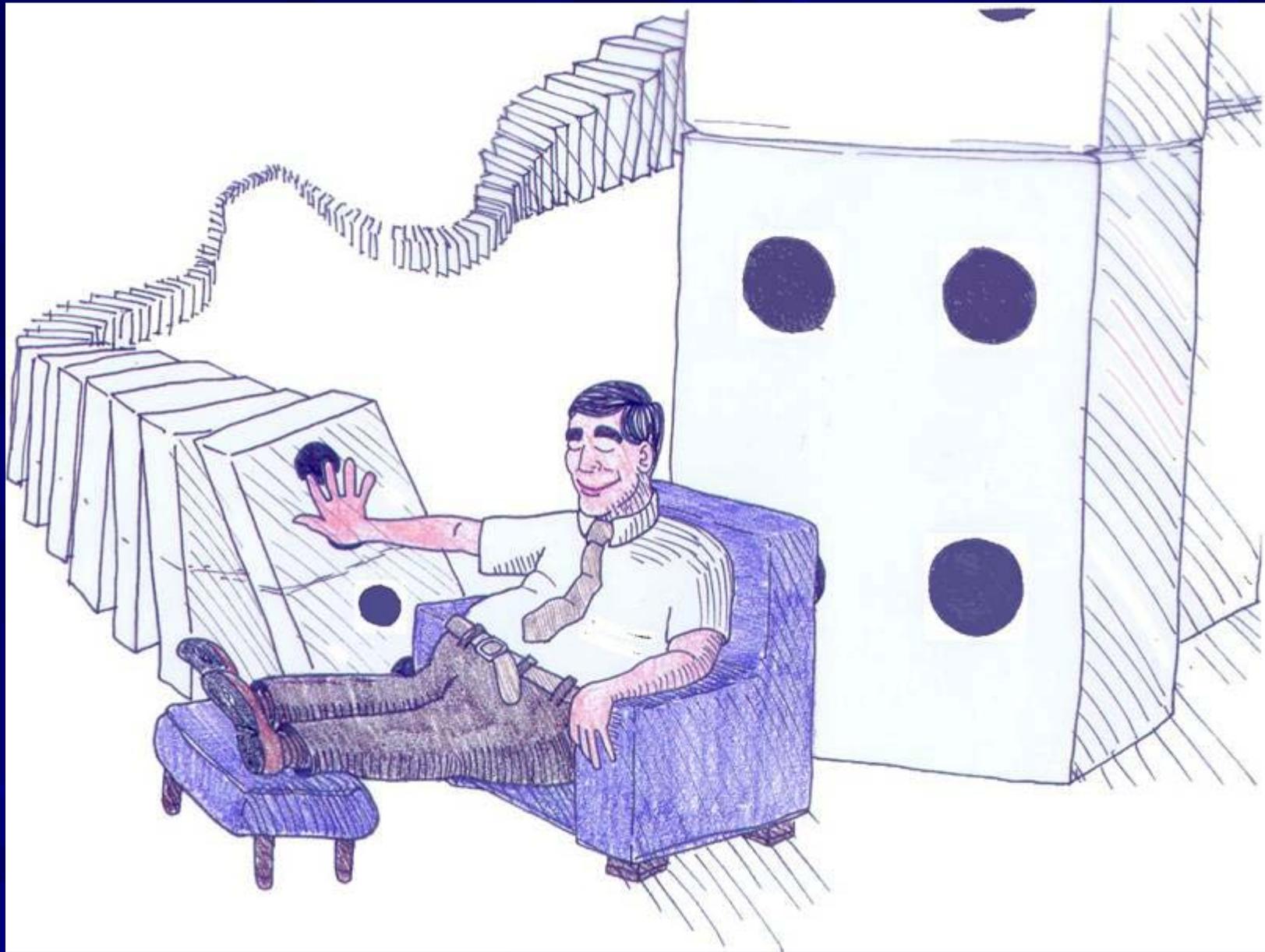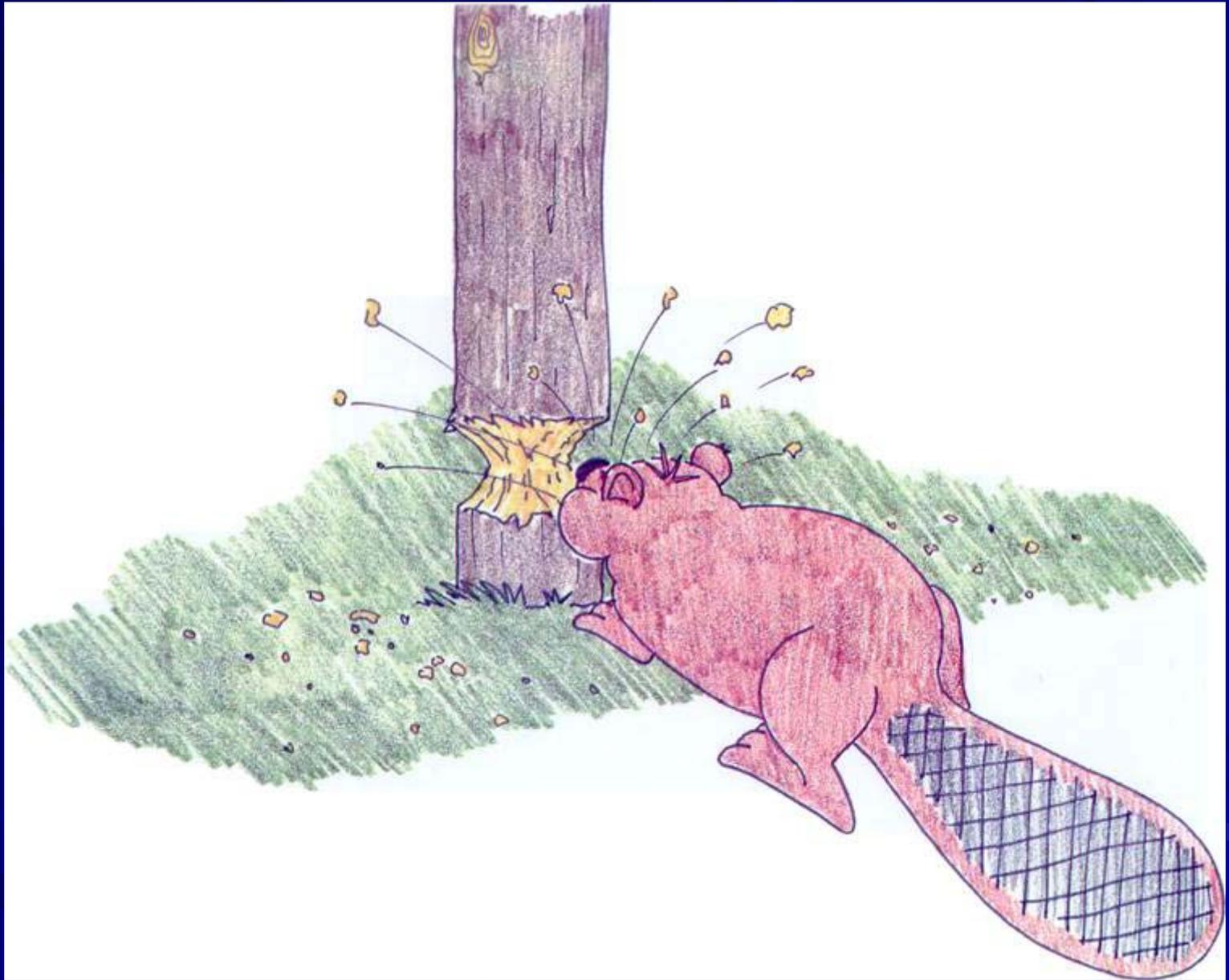
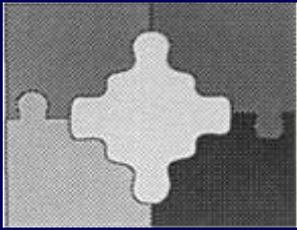# A System

A collection of two or more parts which interact with each other to function as a whole. Systems have three fundamental properties:

- The performance of any part affects the performance of the whole
- How any part affects the performance of the whole depends on what one or more of the other parts are doing
- Group the parts in any way and the groups will possess the first two properties

Profound Conclusions

- A system is not the sum of its parts but a product of the part's interactions.

- The essential properties that define any system are properties of the whole and none of the parts have those properties.

- When we take a system apart it loses its defining characteristics.
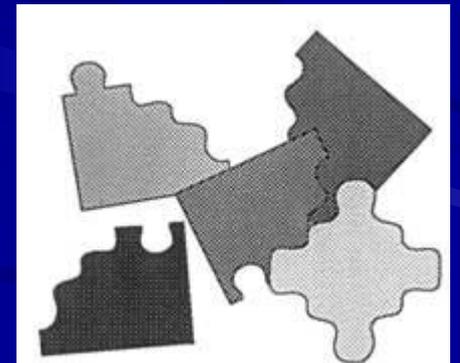
So What?

- Can not understand the whole system just by understanding the parts
- Obvious interventions often produce non-obvious consequences
- Cause and effect are not closely related in time and space
- Dividing an elephant in half does not produce two small elephants

So What?

- Today's problems come from yesterday's solutions

- There is no "Blame"

- If the parts are all trying to optimize themselves, the whole is sub-optimized
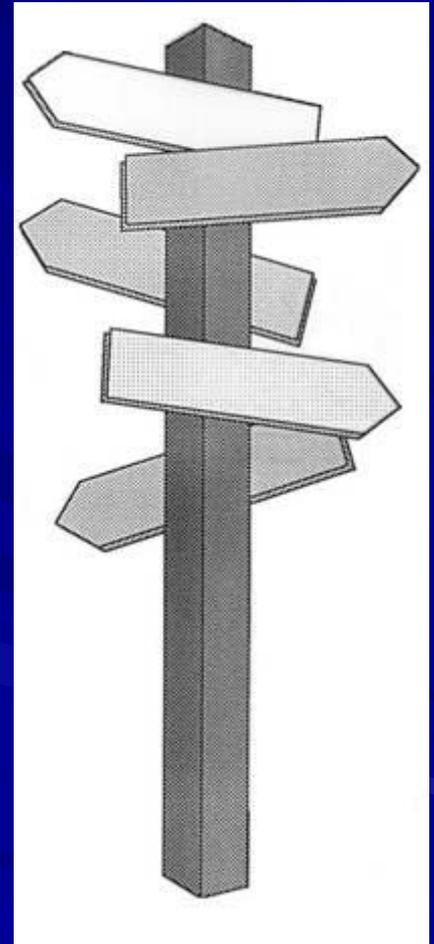
Systems Thinking

- Seeing interrelationships rather than linear cause-effect chains

- Seeing processes of change rather than snapshots

- Helps us see how we create our reality

Systems Thinking

- Points to higher leverage solutions to problems

- Helps us understand and describe complex issues

- A discipline for seeing structures underlying seemingly diverse personal, organizational and societal issues

Events, Patterns, and Structure

Structure is Harder to See

Events

Increased leverage and opportunity for learning

Trends and Patterns

The "Water Line"

Like an iceberg, the big, important structure is hidden.
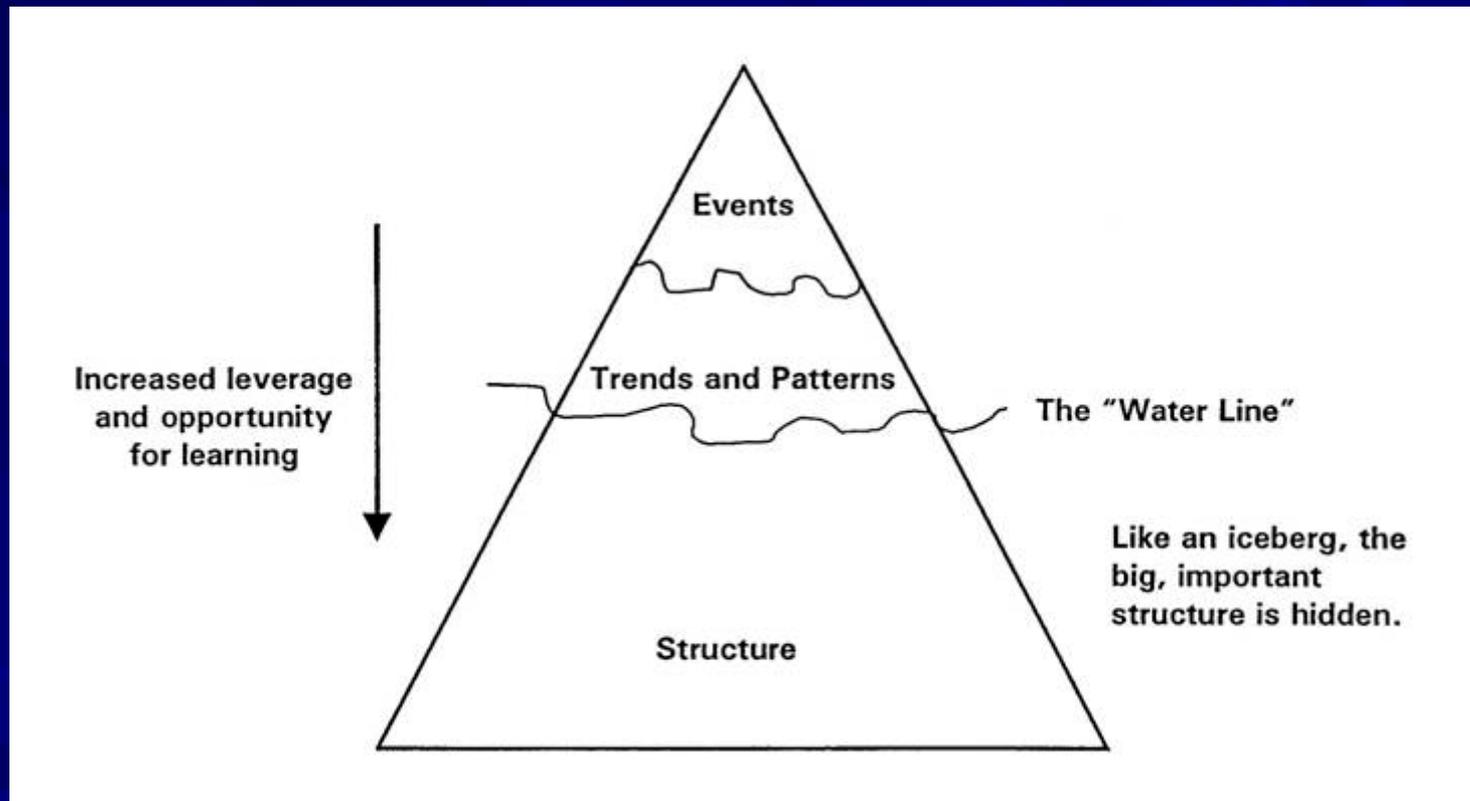
Structure

Structure is Harder to See

- Move from thinking about events to observing history and on to uncovering structures.
- If we see the world as events causing further events, we can react.
- If we see trends and patterns, we can anticipate.
- But if we can understand the underlying structure, we can change it. This is the opportunity to influence the events and patterns in our favor.

Exploring Structure and Relationships

Program Requirements

General Counsel

People Process Technology

Information Technology

Records Management

The Big Picture Goals

- Enterprises economically and effectively create and manage records necessary to meet business needs,

- Records are kept long enough to protect rights and assure accountability, and

- Records of archival value are preserved and made available for future generations

Creating The Balance

Order   Deliver

Bill
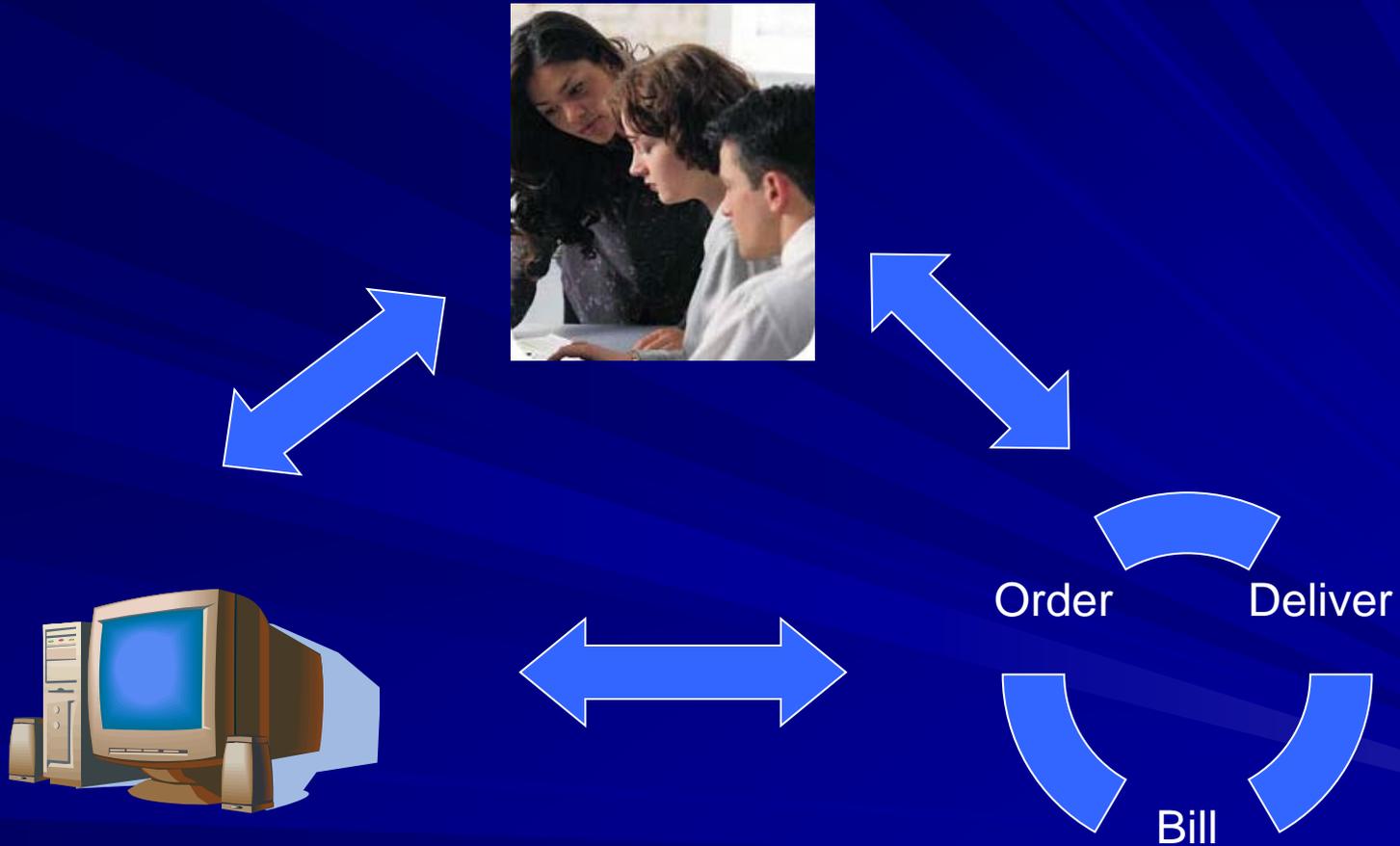
People Dynamics

Program Managers

General Counsel Staff

Information Technology Staff

Records Management Staff

The People Dimension
Records Managers

- **Structure**
  - Authority
  - Position Levels
  - Reporting Relationships
  - Development Team Composition
- **Competencies**
  - Electronic Records Management
  - Language
  - Risk Assessment & Management
  - Business Process Design
  - Systems Analysis
  - Requirements Development
  - Project Management

The People Dimension

Performance Management
- Expectations Management
- Incentives/Rewards
- Performance Plans

Continuous Training
- Evolving Development Plans
- Evolving Curriculum

Change Management

Process

- Capital Planning and Control

- Enterprise Architecture

- Business Process Design

- Solution Development Lifecycle

Order   Deliver

Bill
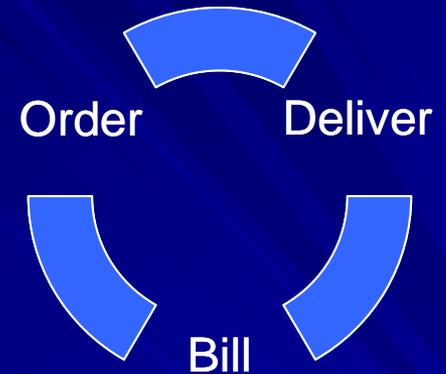
Records Management
In Capital Planning

- Will proposed system create records?

- Will proposed system be required to support electronic recordkeeping ?

- Who will represent records management on team?

- Will execution of system business processes result in the generation, management/distribution of intellectual capital, other products, or electronic files across the business and/or extended enterprise?

- Are resulting outcomes/products used in making business decisions?

Federal Enterprise Architecture Reference Models

Performance and Business Driven

Performance Reference Model (PRM)
- Inputs, Outputs, and Outcomes
- Uniquely Tailored Performance Indicators

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

Service Component Reference Model (SRM)
- Service Domains, Service Types
- Business & Service Components

Data Reference Model (DRM)
- Business-focused Data Standardization
- Cross-Agency Information Exchanges

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

Component-Based Architectures

NARA Enterprise Architecture Framework

Critical Drivers

- NARA Strategic Planning
- NARA Risk Management
- NARA IT Projects & Programs
- Business Requirements
- IT Capital Planning
- Law, Policy, Directives, & Guidance
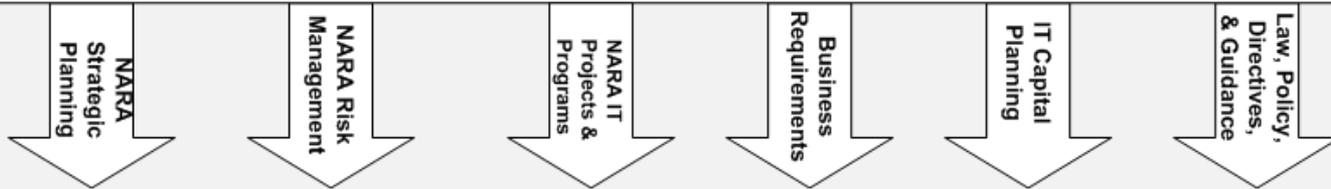
Enterprise Architecture

Architecture Overview	Principles, Constraints, & Assumptions	Federal Oversight Alignment

Business Architecture	Data Arch.	Application Arch.	Systems Arch.	Operations Arch.	Sequencing Plan

Technical Reference Model and Standards Profile

Records Management Services

Security Architecture

Foundational Elements

- Glossary
- IT Governance, Organizations, & Staffing
- IT Management Processes
- IT Industry Standards & Good Practices
- NARA Enterprise IT Repository

Specify Records During Business Process Design
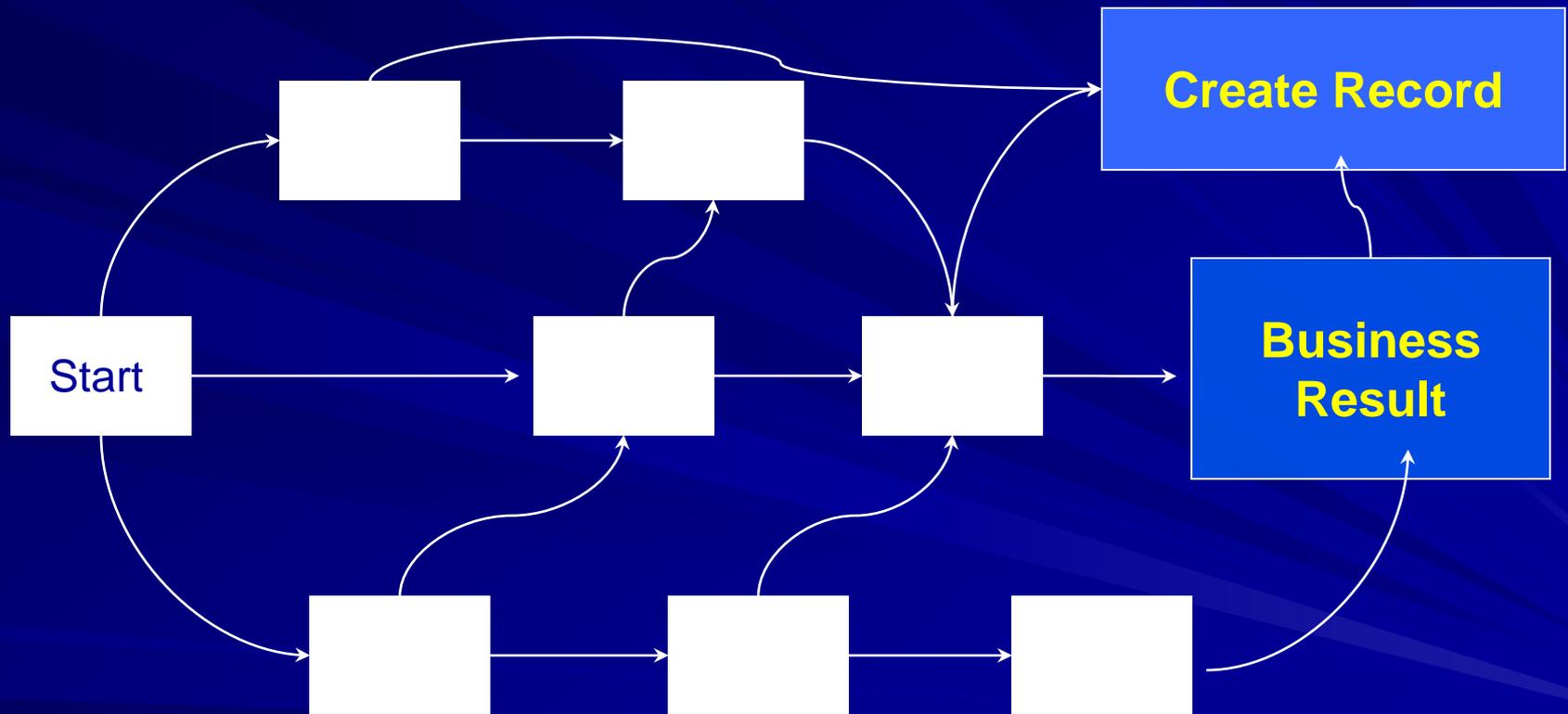
Business Process Design

Does this transaction require:

- Evidence of decisions or action?

- Evidence of performance?

- Compliance with applicable statutes, regulations, orders, and other directives that require business unit to create records?

- Documentation to enable business unit to protect its interests?

- Accountability for the use of resources?

Business Process Design (cont.)

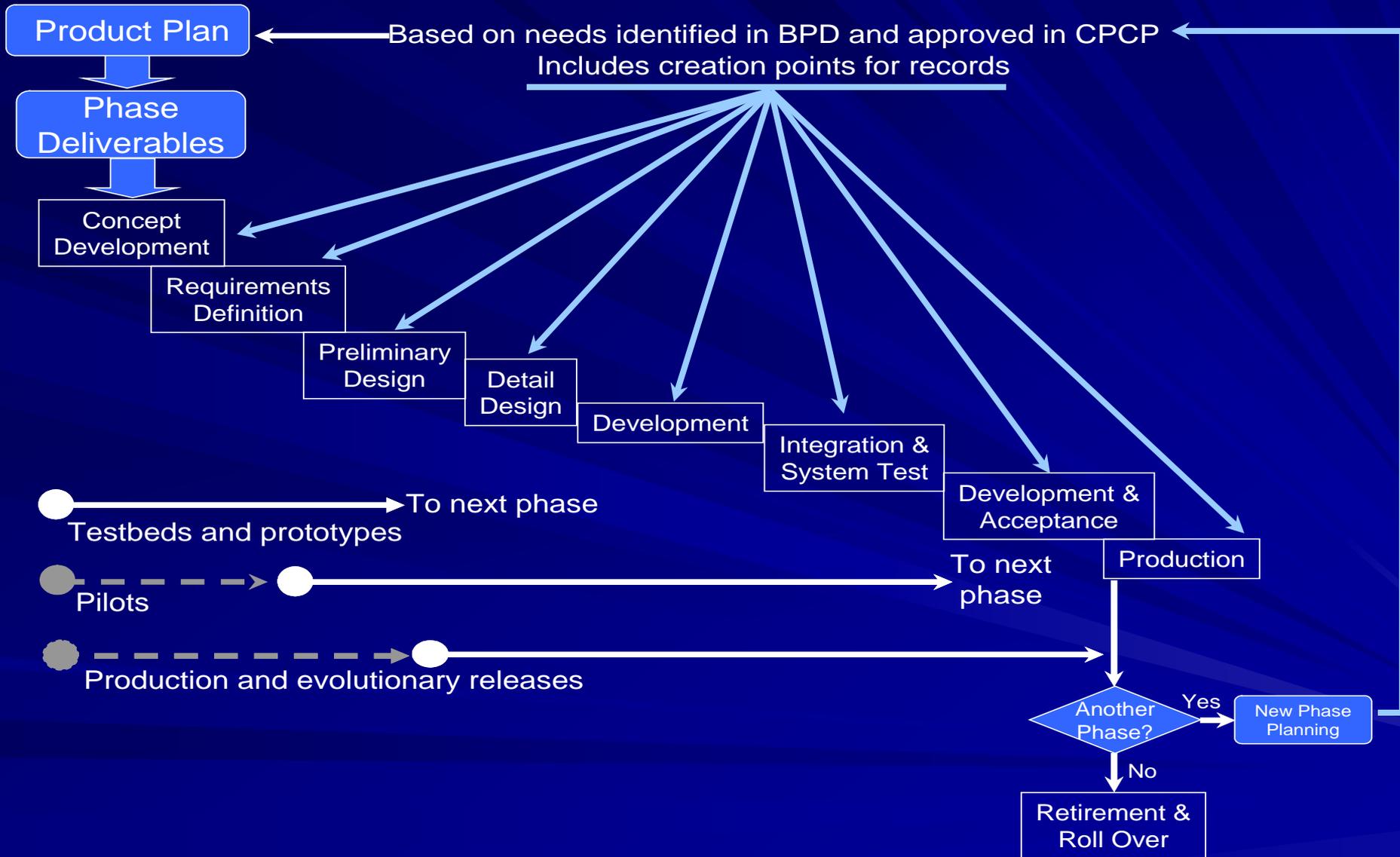Does this transaction require:

- Documentation of decision-making processes consistent with the law?

- Preservation of the agency's corporate memory, and a capability for tracking business transactions over time?

- Creation of records of significant government policies and activities that must be kept for posterity?

- A record of communications within/between agencies, and between the agency and the general public (as applicable)?

Solutions Development Life Cycle Method

Product Plan

Phase Deliverables

Based on needs identified in BPD and approved in CPCP
Includes creation points for records

Concept Development

Requirements Definition

Preliminary Design

Detail Design

Development

Integration & System Test

Development & Acceptance

Production

To next phase

Testbeds and prototypes

Pilots

To next phase

Production and evolutionary releases

Another Phase?

Yes

New Phase Planning

No

Retirement & Roll Over

RM in Solutions Development Life Cycle Methods

- Ensure records creation points in the Business Process Design are in the system design
- Re-evaluate records creation points at each iteration of system development/re-design
- Migrate records at system upgrade
- Manage records, including meta-data definitions & attributes at system retirement and roll over
- Transfer records, including meta-data definitions & attributes as appropriate

Technology
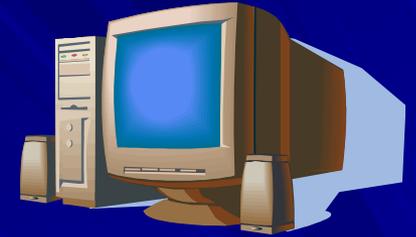
- Enterprise Architecture

- Service Components

- Persistent Object Preservation

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Component-Based Architectures

Records Mgt Policy, Transaction Outcomes, Records Components, Functions

Component Definition

A self-contained

business process or service

with

predetermined functionality

that may be exposed through a

business or technology interface.

Component Attributes

- A software component should be well documented to promote understanding of its capabilities, and encourage its consumption.

- A component should clearly separate the definition of the services that it provides from its implementation of those services.

- A true component can be independently developed, delivered, and installed without complex interdependencies on other external components.

Core RM Capabilities

- A "core" set of records management capabilities might include:
    - Record Organization/classification scheme and file plan
    - Record capture, declaration, and management
    - Record search, display and presentation
    - Record retention and disposal
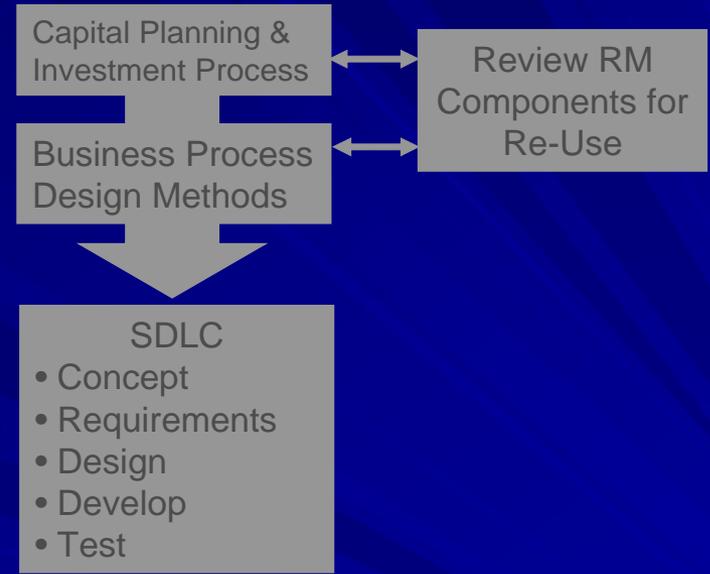   - Access control

Core RM Capabilities Provide

- Audit

- Reporting

- Usability

- Design & Performance

- Compliance with statutes, regulations, and standards
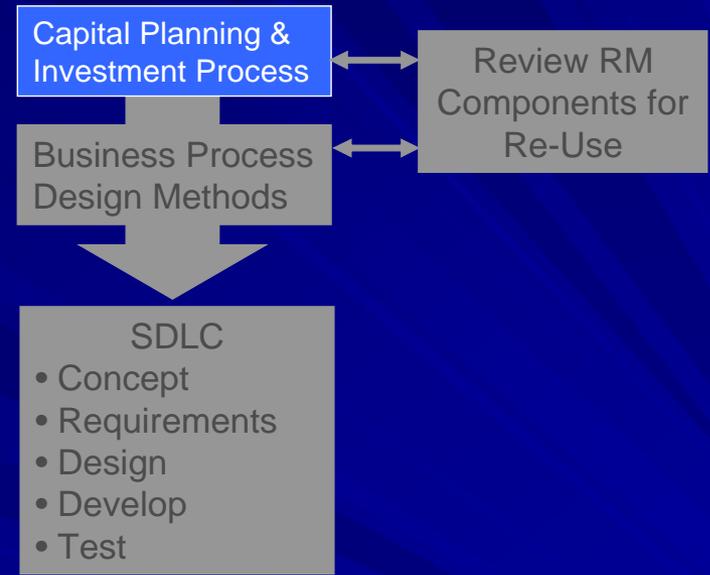
Bringing It All Together

Enterprise Architecture

– Aligns people, technology, and business goals

– Establishes the process for
- documenting lines of business
- funding review
- technology implementation

– Exposes business functions common to all agencies such as Records Management

Capital Planning & Investment Process

Review RM Components for Re-Use

Business Process Design Methods

SDLC
• Concept
• Requirements
• Design
• Develop
• Test

Bringing It All Together

■ **Capital Planning & Investment Process**

– Ensure RM requirements are in the budget

– Fund/approve systems upgrade or initial purchase

– Include funding of RM components

– Ensure IT solution satisfies EA requirements

– Adjust/readjust ROI for re-used components

Capital Planning & Investment Process	↔	Review RM Components for Re-Use

Business Process Design Methods

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Bringing It All Together
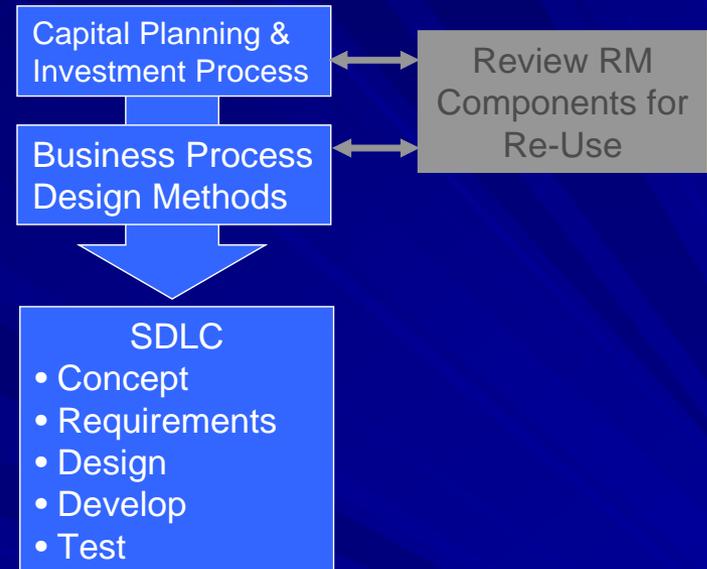
- **Business Process Design Methods**
  - Identify business transactions
  - Identify points for record creation
  - Identify records management functions to be supported
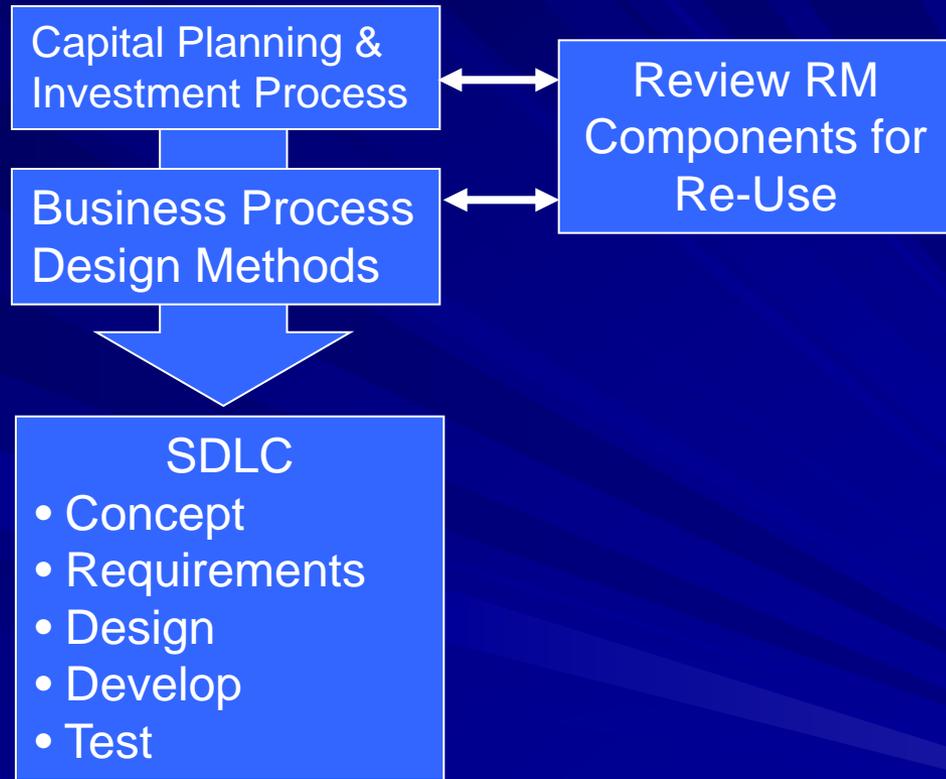 - Identify RM components for re-use

Capital Planning & Investment Process

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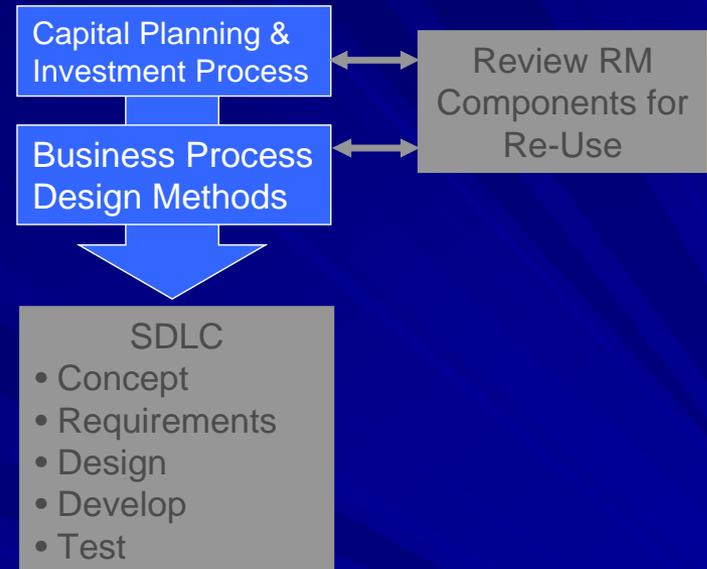
Bringing It All Together

Solution Development Life Cycle

- Procure/acquire system
- Ensure BPDM & CP requirements are met
- Determine system life cycle review
- Initiate review, upgrade process
- Identify RM components for re-use

| Capital Planning & Investment Process | ←→ | Review RM Components for Re-Use |

Business Process Design Methods ←→

SDLC
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Bringing It All Together

Capital Planning & Investment Process ←→ Review RM Components for Re-Use

Business Process Design Methods ←→

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IT Management Processes

Capital Planning & Investment Process

Enterprise Architecture

Business Process Design Methods

SDLC
- Concept
- Requirements
- Design
- Develop
- Test

Records Management Components

The Challenge of Electronic Records

- **Authenticity – Over Time**

- **Variety – 16,000+ Different E-Record Formats**

- **Complexity – Increasingly Sophisticated Formats**

- **Volume – Vast Quantities of Records**

- **Obsolescence – Constantly Changing Technology**

- **User Expectations – Evolving**

The Electronic Records Archives

NARA's Current Electronic Records System

- NARA has 30 years of experience with electronic records
- Simple Files
  - Comma delimited
  - ASCII
  - Flat Fixed Length
- Does not meet the need

Electronic Records Archives

The Archivist's Directive:

ERA is NARA's Strategic Response

The Electronic Records Archives (ERA) is a comprehensive, systematic, and dynamic means of preserving and providing continuing access to authentic electronic records over time.

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

ERA's 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

Who Faces This Challenge?

Any enterprise that creates information that **must endure longer** than the **technology** that **created** it!

Who Else Needs This Capability?

- Aerospace
- Pharmaceuticals
- Energy
- Transportation
- Electronics
- Services
- Actually, every enterprise and individual who has need to access electronic materials beyond 5-10 years.

Create a Capability That Will:

- **Preserve authentically any type of electronic record,**

- **Created using any type of computer 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 and beyond**

ERA Requirements

- **Persistent**
  - To <u>manage</u> and <u>access</u> 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
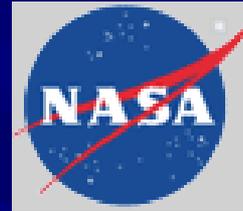 - To serve a variety of user groups

Government and Private Sector Partners

National Science Foundation

Global Grid Forum

NASA

University of Maryland

SDSC
San Diego Super Computer Center

InterPARES Project
International Research on Permanent Authentic Records in Electronic Systems

IEEE

NCSA
National Computational Science Alliance

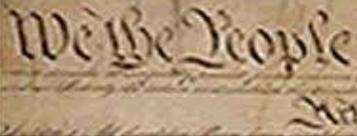Georgia Tech Research Institute

ARL
Army Research Laboratory

NIST
National Institute of Standards & Technology

NPACI
National Partnership for Advanced Computational Infrastructure

The Library of Congress

Defense Advanced Research Projects Agency DARPA

DIGITAL LIBRARY FEDERATION
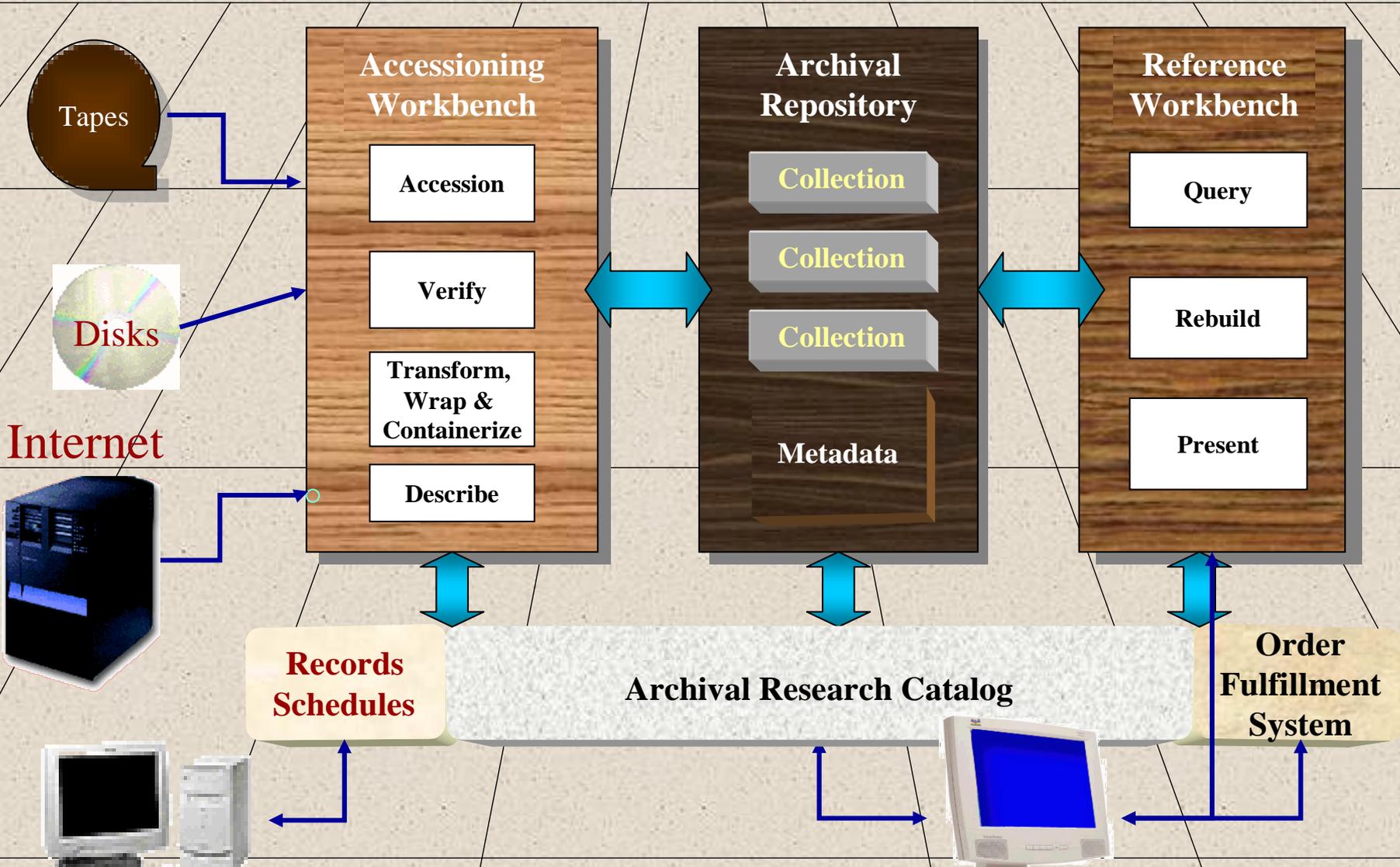
What Will the System Do?

- **Protect the system and the records with state-of-the-art security.**

- **Accommodate substantial growth in volume & variety.**

- **Support the collection, integration, and sharing of information about records.**

- **Support the workflow associated with business processes.**

- **Interoperate with other systems.**

- **Maintain a complete audit trail.**
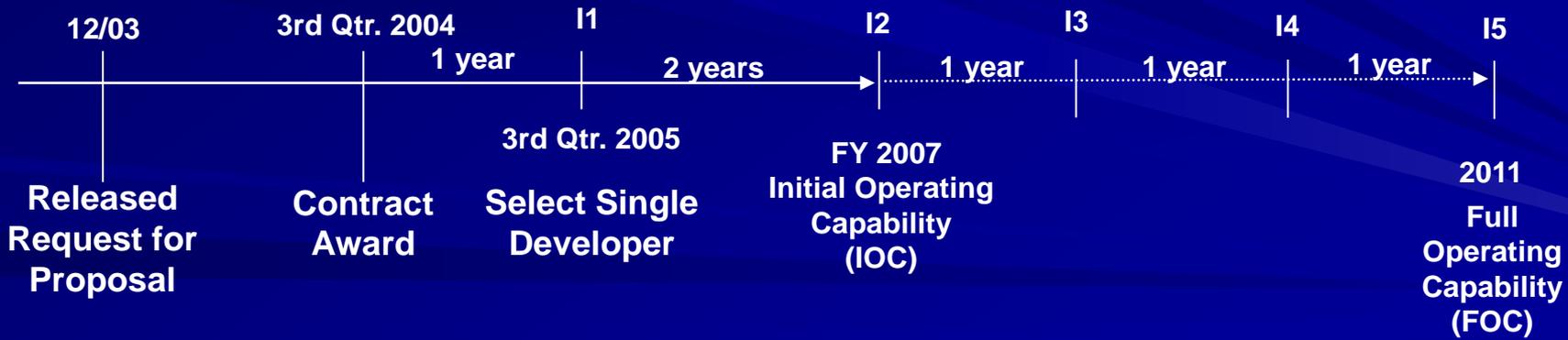
Architecture Requirements

- Open Event Driven Architecture (ESB)
- Evolvable
- Integrated COTS
- Central Business Rule Repository
- Distributed / Grid Centric / Self-managing
- Secure / Classified As Well As Unclassified
- Highly Scaleable In All Dimensions
- HW / SW Independent Component Intermediation
- Highly Reliable

The Electronic Records Archives
Major Milestones

Where are we now?

- Awarded Two Design Contracts – 3Q04
- Select a Single Developer – 3Q05
- Initial Operating Capability – FY 2007
- Five Increments w/ Multiple Releases
- Full Operating Capability - 2011

ERA
Electronic Records Archives

12/03	3rd Qtr. 2004	I1	I2	I3	I4	I5
	1 year	2 years	1 year	1 year	1 year	

Released Request for Proposal   Contract Award   3rd Qtr. 2005 Select Single Developer   FY 2007 Initial Operating Capability (IOC)   2011 Full Operating Capability (FOC)

NARA

...ready access to essential evidence...

We the People

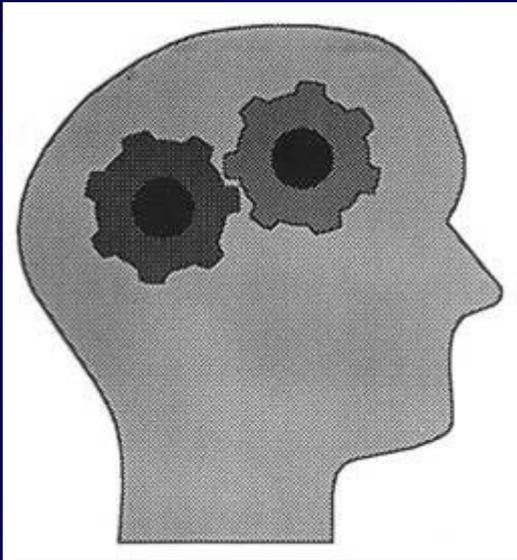Electronic Records Archives

The Seven Processes

Rigorous Systems Thinking

■ A state of mind

■ Tools

– Casual Loop Diagrams

– Templates

– Computer models