NATIONAL INSTITUTES OF HEALTH

enterpriseARCHITECTURE

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Update on EA
July 13, 2011

NIH Enterprise Information Technology Architecture
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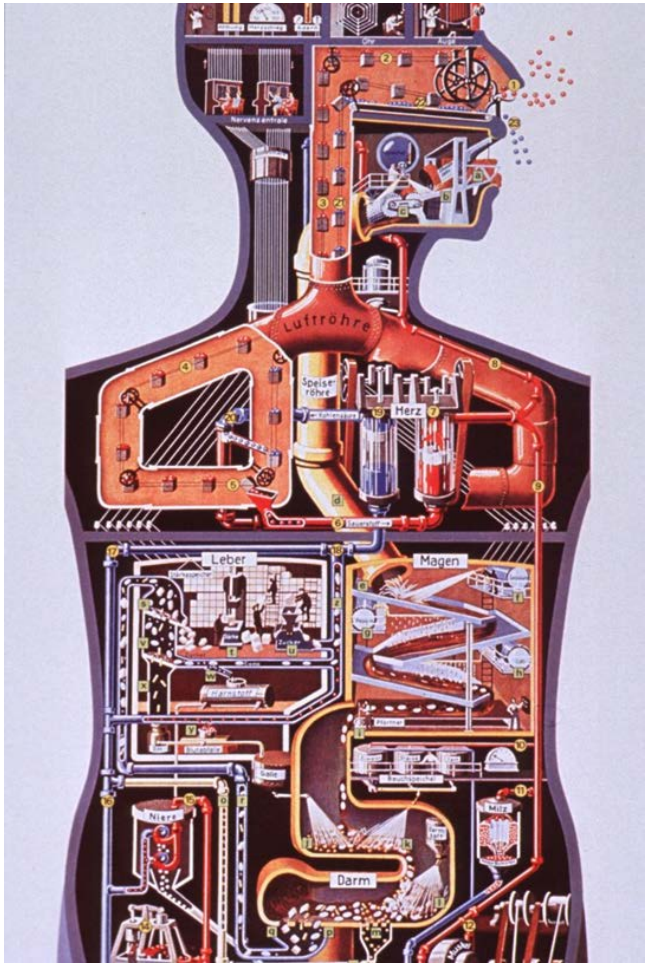
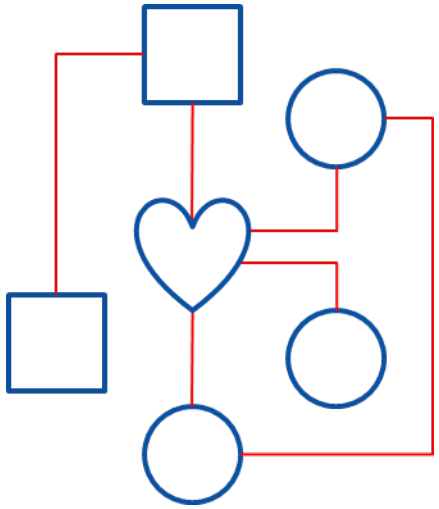
Agenda

- What is Enterprise Architecture (EA)?
- What are the benefits?
- What comprises EA?
  - Framework
  - Architectures
  - Target architecture
- Examples
- What does this mean to you?
  - Re-use
  - When to meet with us

NIH Enterprise Architecture Vision

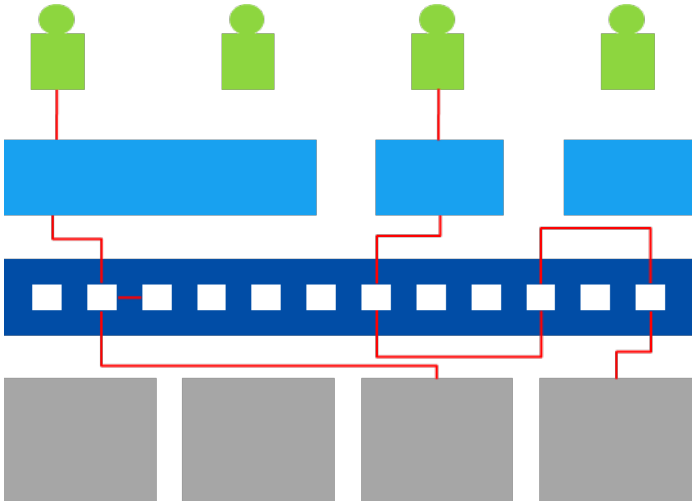


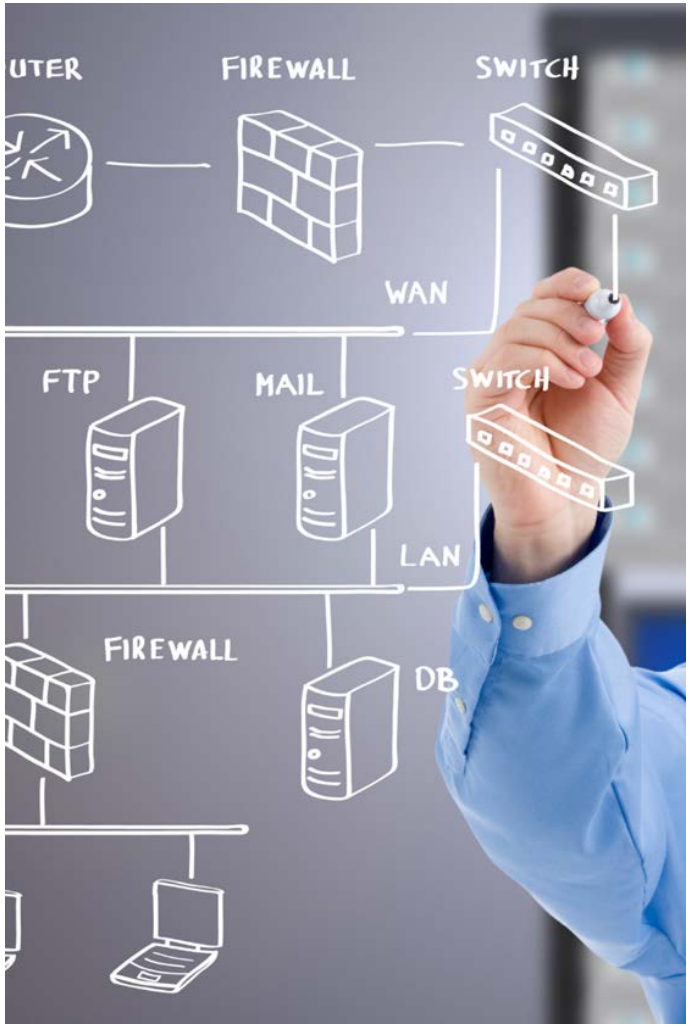
Much like a healthy body requires interdependent organs working together as one system …



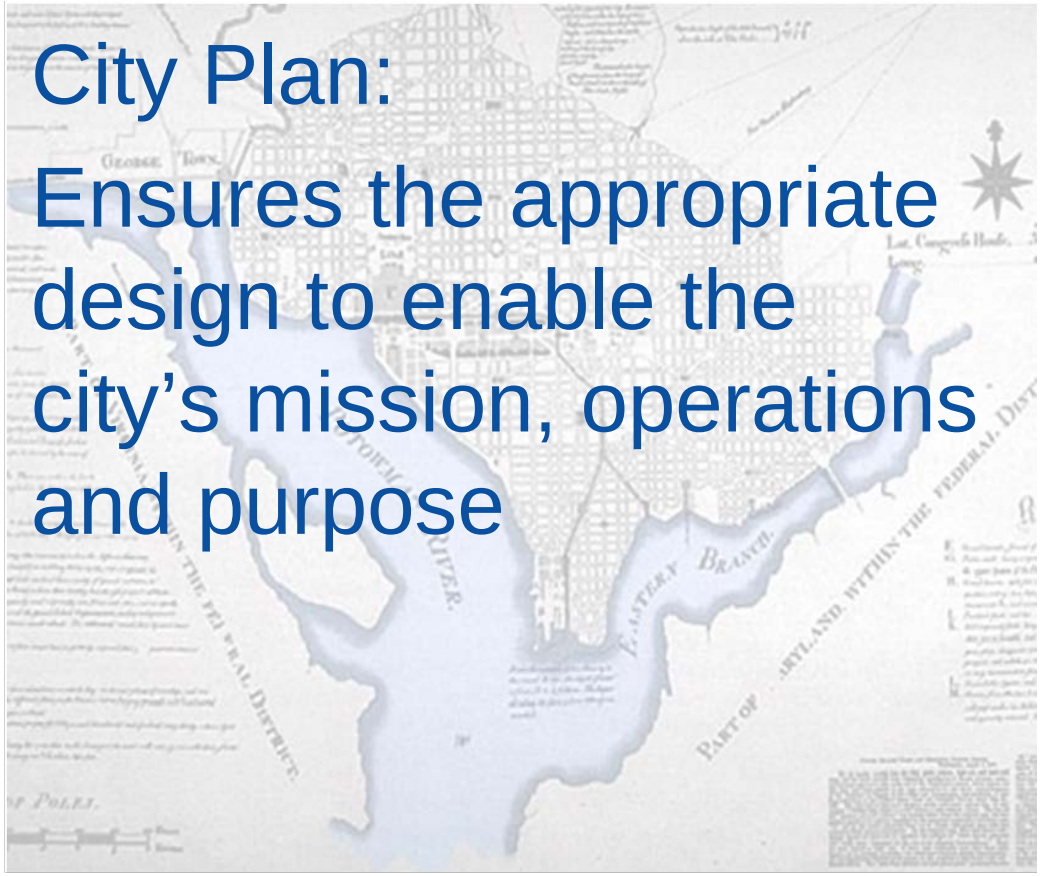
NIH Enterprise Architecture Vision

… interdependent IT components, including systems, services, databases and infrastructure, work together as one system in order for IT to support optimal performance of NIH as a whole





Understanding Enterprise Architecture



L'Enfant's Plan of Washington DC – 1792

- Supports the mission of the **city**
- Long range
- Over-arching
- Can be modified
- Provide for reuse

Understanding Enterprise Architecture

Enterprise Architecture:

Provides the appropriate business, information and technical design to enable the organization's mission, operations and purpose

- Supports the mission of the **organization**
- Long range
- Over-arching
- Can be modified
- Provide for reuse

L'Enfant's Plan of Washington DC – 1792

Benefits of EA

The overall NIH Enterprise Architecture offers many benefits to the enterprise. These desired benefits, along with Federal regulations and legislation, drive the development of the enterprise architecture program.

The six most important benefits include:

1. **Links information technology (IT) to the mission of NIH**
2. **Improves interoperability and integration**
3. **Enables agility**
4. Reduces costs
5. Improves security
6. Reduces technical risk

Architecture Components

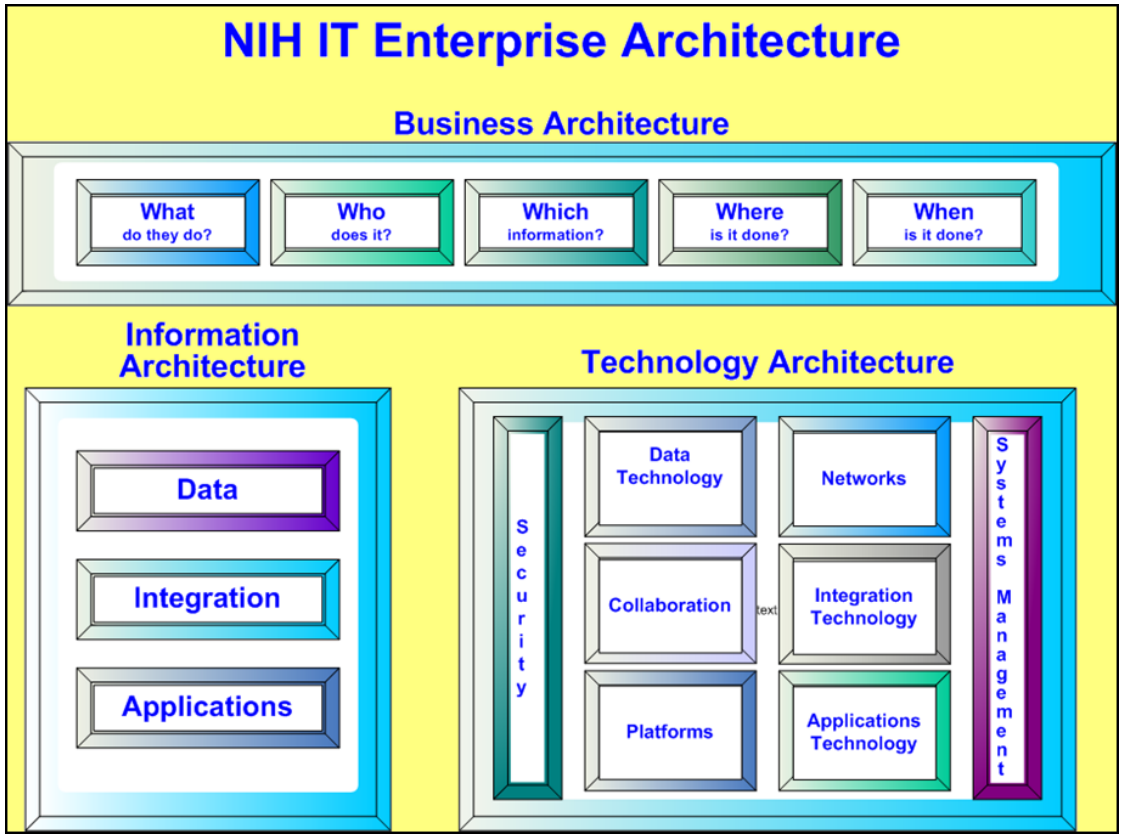
- Capture and analyze what **business** needs to achieve NIH's mission
- Determine **information** necessary to support the business needs
- Decide appropriate **technology** to enable achievement of those needs

Office of the Chief IT Architect provides structured processes and methodologies to establish the Enterprise Architecture.

NIH Enterprise Architecture Framework

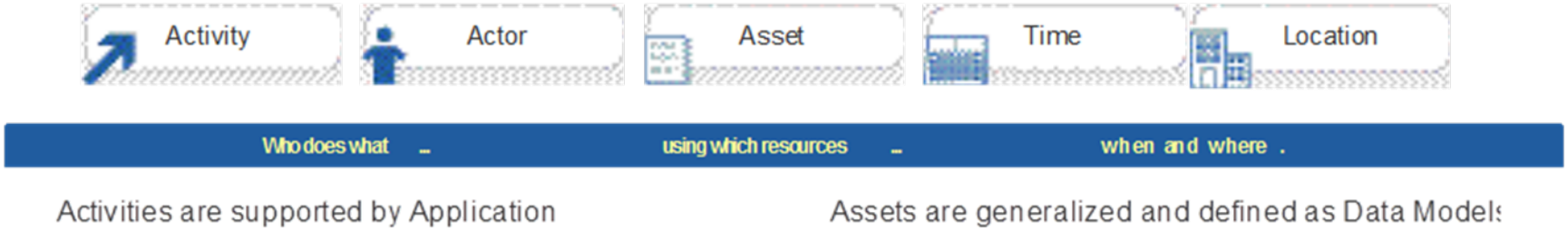
Used to structure the EA effort and to classify the EA components:

- Business Architecture
- Information Architecture
- Technology Architecture



Architecture is a process, not a one-time event

Business Architecture



Why it matters…

- You can identify existing design for all or part of your system.
- You can understand environment around you, and participate in the enterprise plan.
- You can achieve efficiency at the global level.
- You can share data more easily because data are represented in a standardized way.

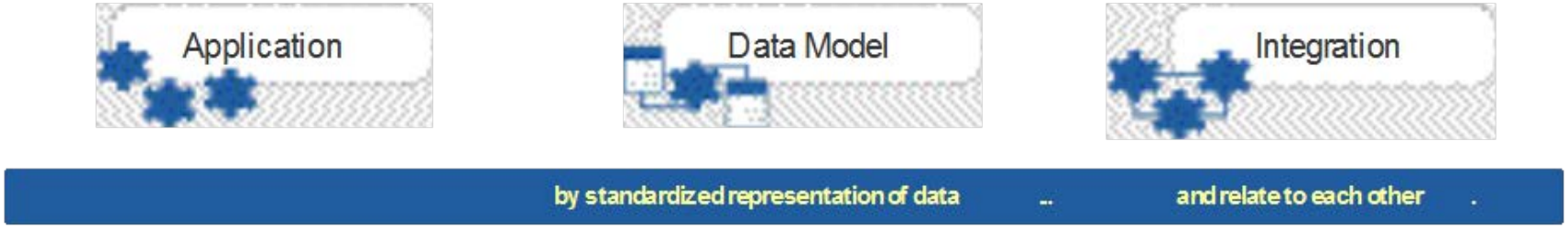
When…

- You are defining technical design specification.
- You are working through the detailed design.

and you are…

- IT project managers
- Solution architects

Information Architecture



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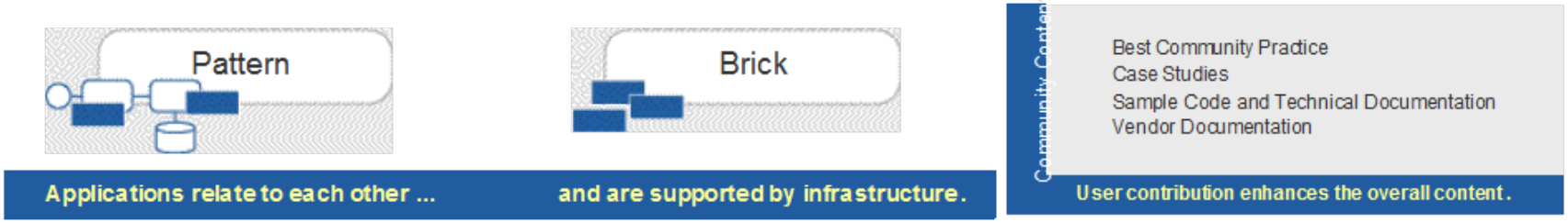
Technology Architecture



Why it matters…

- You don't need to spend time figuring out viable technical components and solutions used at NIH
- You can reduce time and improve quality of your proposal
- You can reduce variants in solutions, and save money on development and training

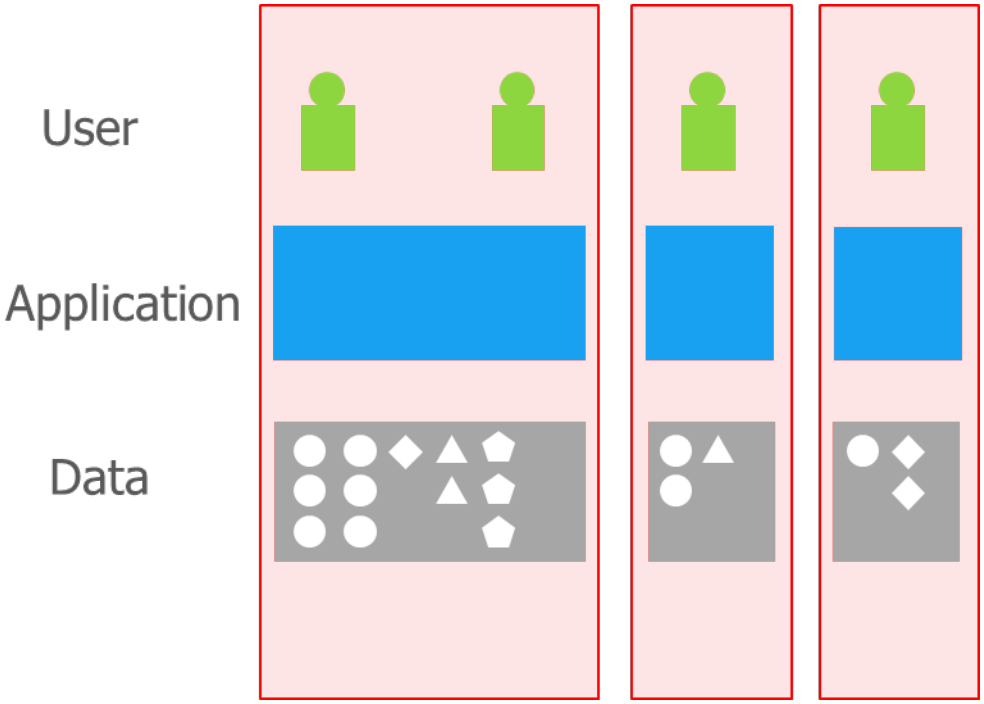
When…

- You are selecting a specific technical component to support the design

and you are…

- Solution architects
- Developers and designers
- Contractors

SOA Target Architecture

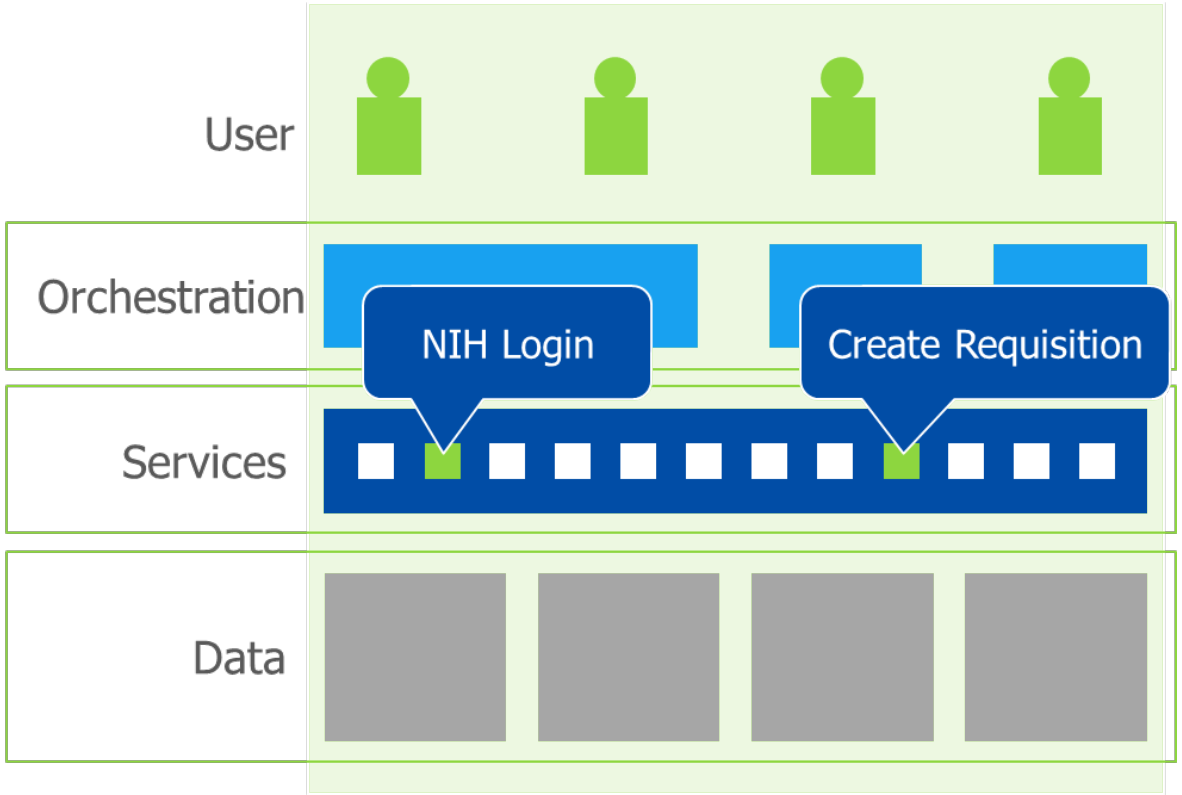


Instead of

uncoordinated efforts that make it difficult for various IT components to

- talk to each other
- share data
- provide facts

Services



Unique to serve particular needs and utilize common services

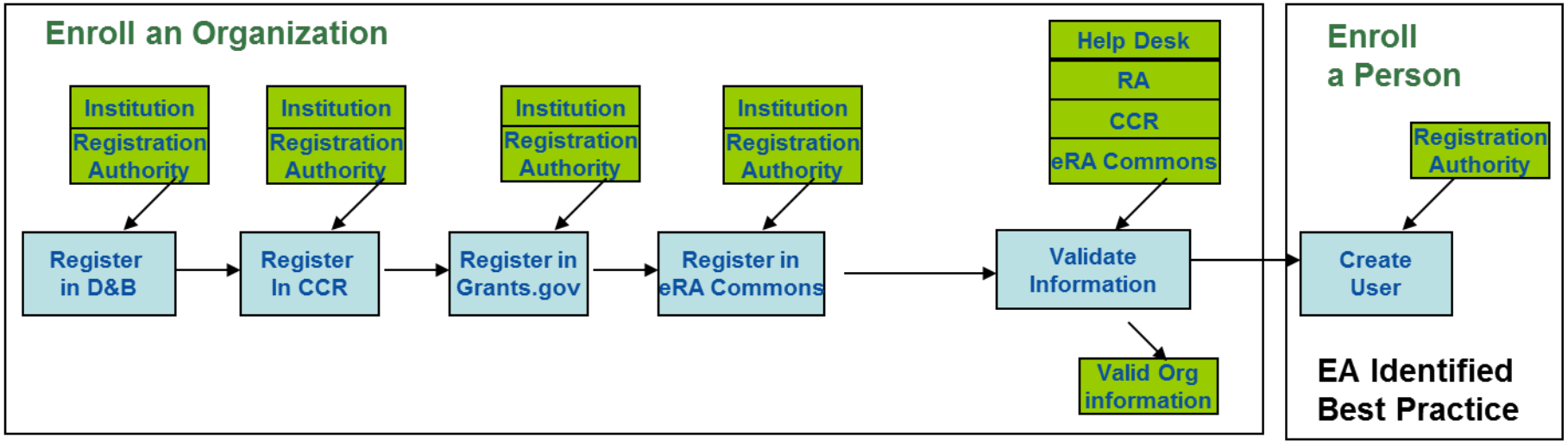
Non-redundant, available for applications across NIH enabling reuse, cost savings, agility and flexibility

Segmented, consistent and available to various services without redundancies

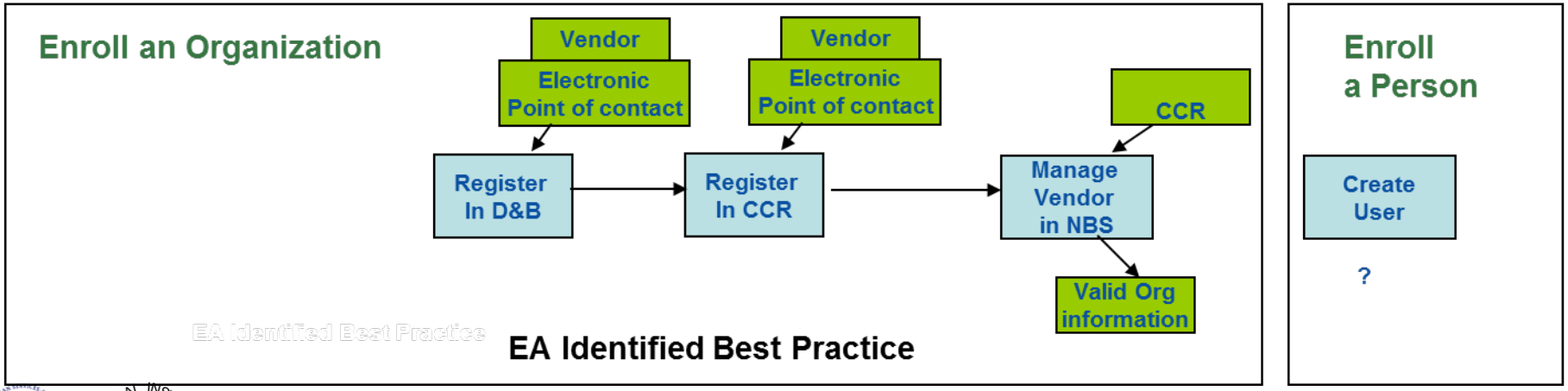
Business Process and Business Case Examples

Process Commonalities

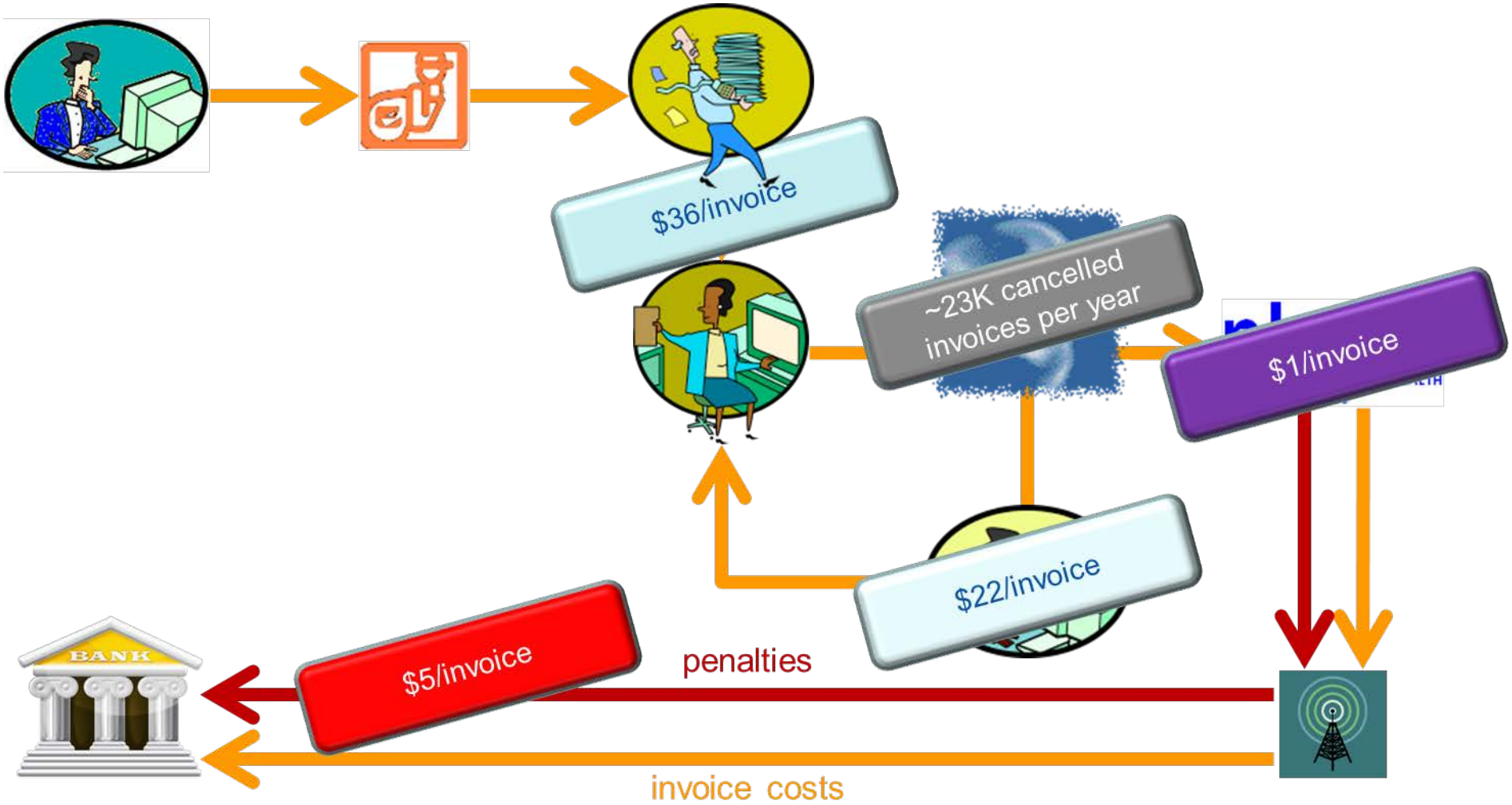
Extramural - eRA



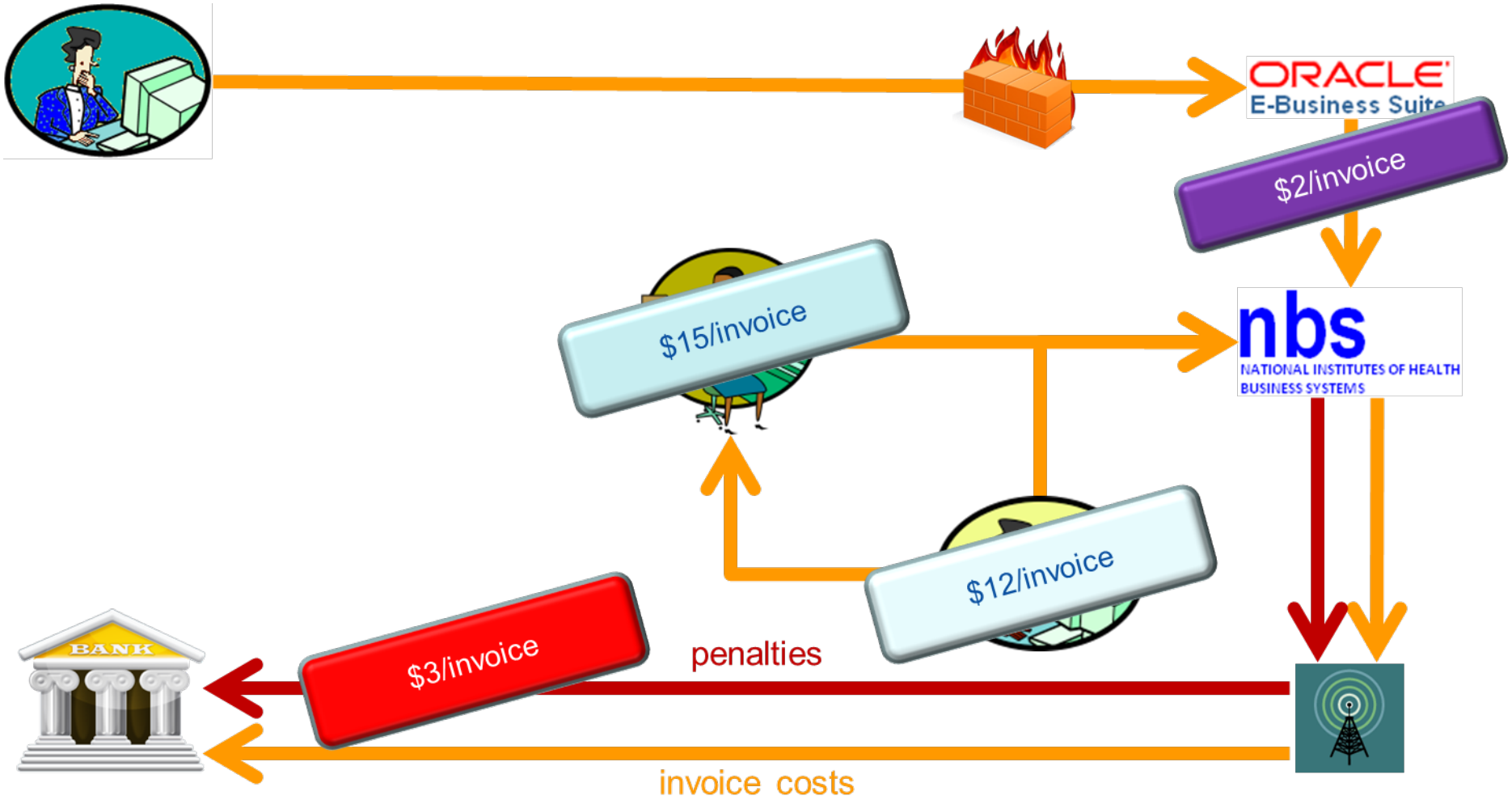
Administration - eVIP



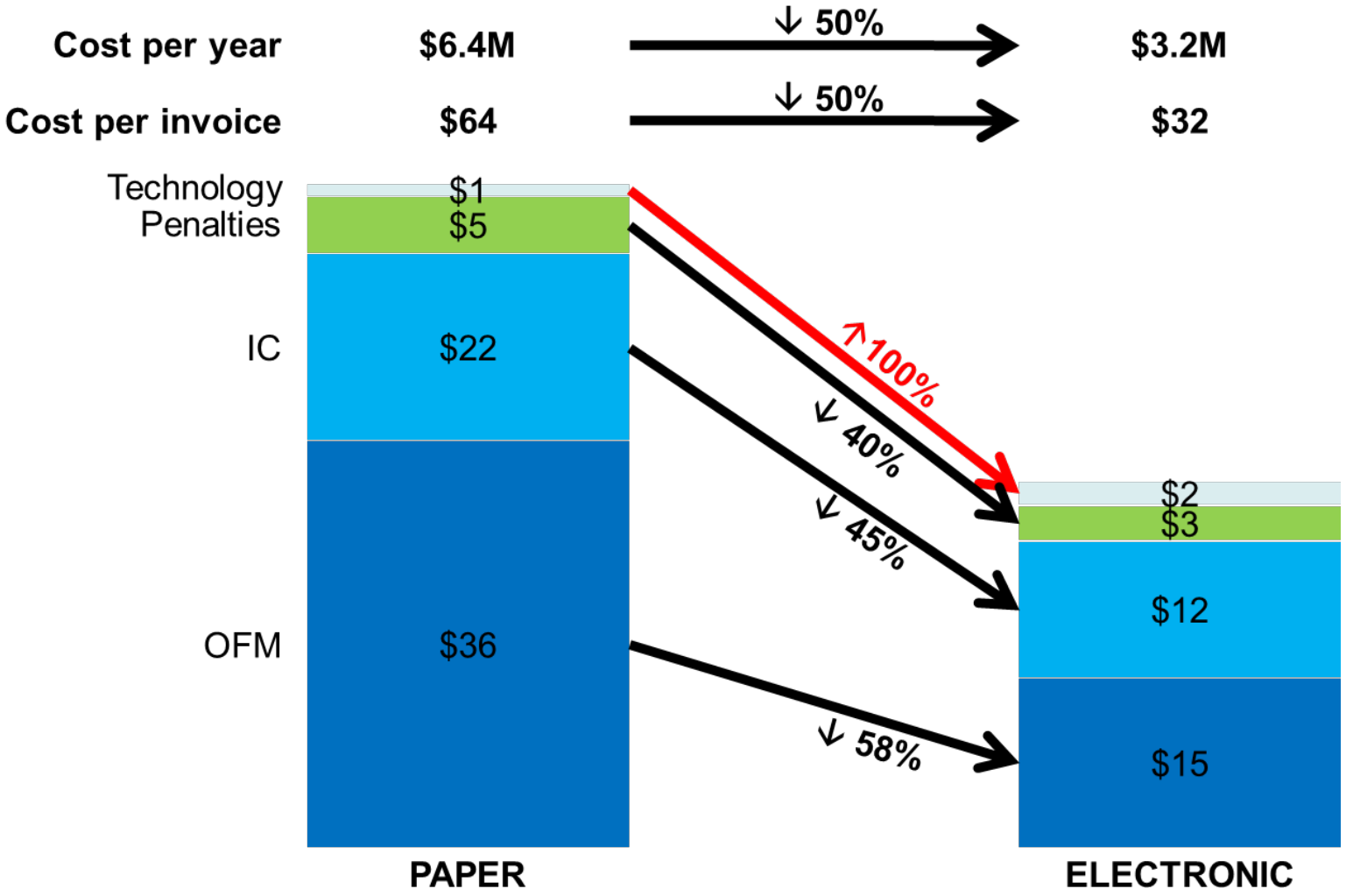
BEFORE eVIP & EVG: Cost of processing paper invoices



After eVIP & EVG: Cost of electronic invoicing



Invoicing Costs: Before eVIP vs. after eVIP & EVG



The Value of EA

- EVG saved eVIP ~$1.7M per year ($8.5M over five years)
- EVG helped reduce the number of incorrect invoices handled per year by almost 23% (eliminating 23K of 100K)

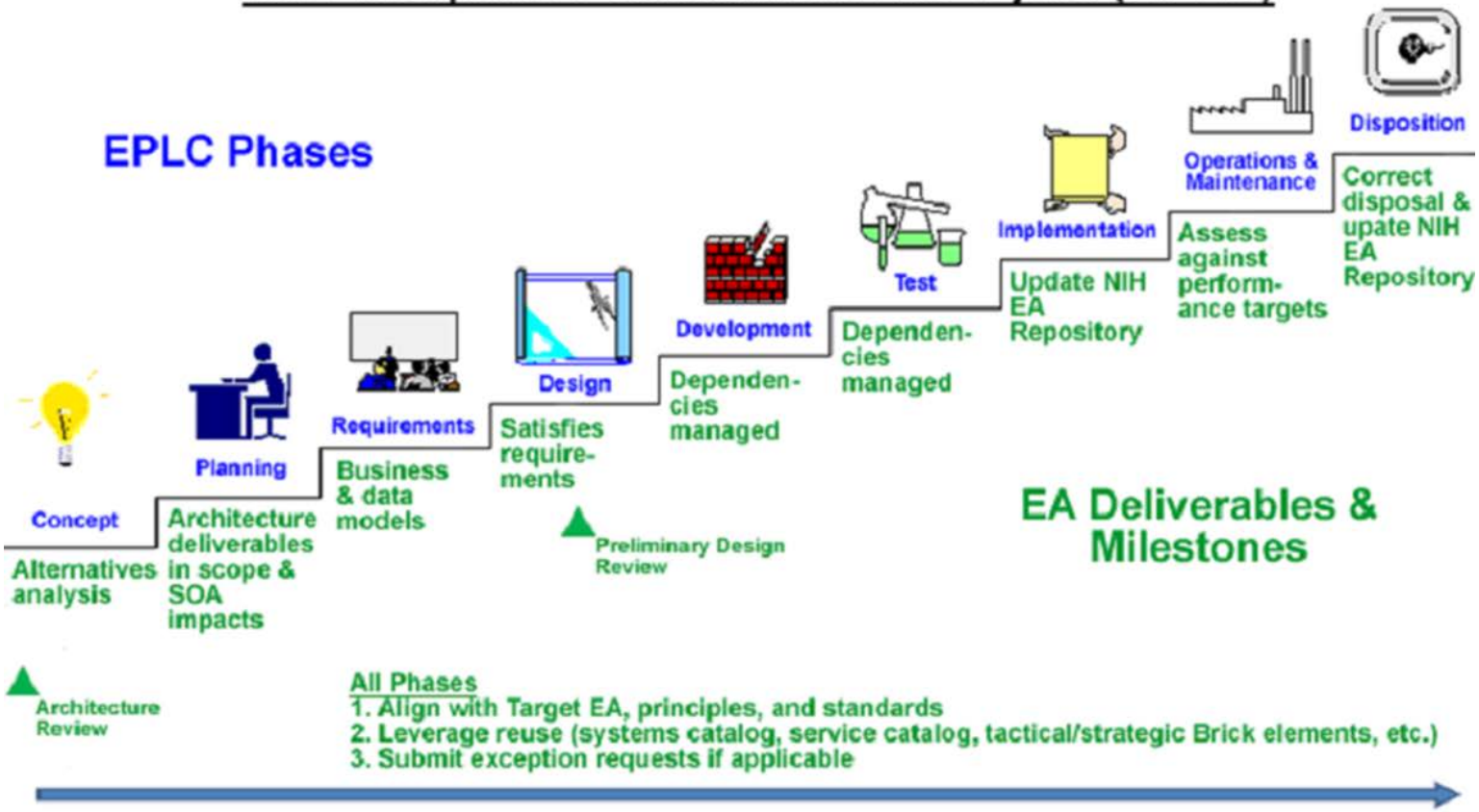
PIV and NED

- Modeled enrollment of NIH staff for HSPD-12
- Took 2 years with AOs, EOs, physical security, HR, FIC
- When NED went live, there were no issues with these processes. We forgot to model other processes such as transfer from one IC to another.

Compliance

- **EPLC**
  - Enterprise Performance Life Cycle (EPLC) is a project lifecycle framework which provides a consistent and effective way to do project management across Health and Human Services (HHS). It aligns the project with business needs to ensure products or services are delivered within approved cost and schedule limits. Enterprise Architecture serves as a Critical Partner in this process and has specific guidelines to which enterprise projects should adhere.
- **Business and Information Architecture Alignment**
  - Every NIH-developed or acquired information system, or update should be supported by appropriate business architecture and information architecture artifacts such as business process models and data models respectively.
- **Technology Architecture Alignment**
  - Every NIH-developed or acquired information system will use technology components categorized as either “Tactical” or “Strategic” in their design.
- **Office of the Architect Engagement**
  - It is helpful for NIH application development teams to contact OCITA at the key steps of the system development lifecycle.

EPLC and EA


Enterprise Architecture Impact on
the Enterprise Performance Life Cycle (EPLC)
EPLC Phases
Concept
Alternatives analysis
Planning
Architecture deliverables in scope & SOA impacts
Requirements
Business & data models
Design
Satisfies require-ments
Preliminary Design Review
Development
Dependen-cies managed
Test
Dependen-cies managed
Implementation
Update NIH EA Repository
Operations & Maintenance
Assess against perform-ance targets
Disposition
Correct disposal & upate NIH EA Repository
EA Deliverables & Milestones
Architecture Review
All Phases
1. Align with Target EA, principles, and standards
2. Leverage reuse (systems catalog, service catalog, tactical/strategic Brick elements, etc.)
3. Submit exception requests if applicable

What can you re-use?

- **NIH Login and Federated Authentication** - Today more than 320 sites are protected with NIH Login, which now can authenticate people from universities using their local user ID and password and accept PIV cards for increased security. NIH leads the Federal Government on use of additional credentials.
  - Enabled easy conversion to PIV access to systems. If saved $25,000 development for each, this saved NIH $8M.
- **Services** - Over 3.5 million service invocations have been recorded over the last three years. Use of common published services increased nearly 440%, with monthly service invocations increasing from over 67,638 in September of 2009 to 364,895 in February 2010. Highly used services include:
  - Purchase Order services - used by POTS and AMBIS . NINDS process twice the number of orders per year with 2 less purchasing agents (From 10 purchasing agents to 8.) 25 ICs use POTS.
  - Because the Patient Travel System re-used existing services, it took only 12 weeks to develop.
- **Business process models** –
  - NHLBI used the EA R&D Contracts models and further decomposed them to develop detailed 'as-is' and 'to-be' models. Through this modeling, NHLBI sees the opportunity to save re-engineer contracting processes and save significant funds.
  - Grants process models
  - Enrollment models
- **Data Models**
  - Grants
  - R&D Contracts
  - People
- **Technical Standards and Best Practices**

Other work to help you

- Business Process Modeling class quarterly
- Working on updating the browser standard so that you don’t need to develop and test for so many browsers for NIH internal desktops and hand-held devices.
- Database of systems and services
- Coordinating Cloud domain team - solution is required to be the first alternative in alternative analysis

What does this mean to you?

- Recommend you meet with us as soon in the process as possible
  - Ensure re-use of technologies, data, services, systems
  - Use data and business process models as a beginning

- Our goal is to help you be successful

Contact Information

- On the Web
  - Enterprise Architecture Website
  - Email Address: EnterpriseArchitecture@mail.nih.gov
- Subscribe to the EA LISTSERV