Identity Management at the National Institutes of Health

THE NATIONAL INSTITUTES OF HEALTH (NIH)

The NIH, an operating division (OP-DIV) of the US Department of Health and Human Services, is the primary Federal agency for conducting and supporting medical research, investing over $28B annually. The NIH is comprised of 27 Institutes and Centers, employing over 18,000 employees with roughly another 18,000 contractors or scientists visiting the premises annually. Managing identity and access to NIH systems and facilities securely has long been a major challenge for the organization.

MEETING THE CHALLENGES

The Homeland Security Presidential Directive 12, entitled "Policy for a Common Identification Standard for Federal Employees and Contractors," mandated a federal standard for secure and reliable forms of identification. This mandate was much more complex than printing a badge. It affects the thousands of people on NIH premises and systems each day and involves multiple stakeholders and systems that are internal and external to NIH. NIH needed a "big picture" view to support strategic changes required for NIH's business processes, organizational structure, and technology.

The Chaos Study has shown that in the last 20 years, not much has changed – 80% of new software implementations fail. And the #1 reason they fail has repeatedly been stated by the study participants as *poor business requirements*. While the main goal was to achieve compliance with the Federal mandate of HSPD-12, a truly successful implementation of HSPD-12 standards required more than changing the business policies. It required an agreement of business policies, roles, and systems all working together in concert. NIH knew it must minimize the administrative burden by improving operations and infrastructure along with meeting the HSPD-12 compliancy standards.

The NIH OCIO had implemented an NIH Enterprise Directory (NED). The IT leadership knew that NED needed to be revised to comply with HSPD-12 and knew there was little consistency in the approaches to automation in the various Institutes and Centers. Rather than putting in place activities that would provide a "bandaid" to meet the Directive, the Chief Information Architect chose to model the Directive and model their compliance with the directive. She saw the PIV badge issuance as a component of the complete people management process. She wanted to bridge the gap between the business and IT and thus assembled a team of subject matter experts (SMEs) who covered every aspect of the legislation; i.e.,

- Administrative officers, Human Resources, Public Health Service, Contracting Officers – responsible for bringing people "on-board" at NIH
- Division of Personal Security and Access Control (DPSAC) – responsible for applicant registration, background investigations, badge issuance, and physical security
- Office of the Chief Enterprise Architect – responsible for NIH enterprise systems including NED and NIH Login (Single sign-on implementation)

- HHS Identity – Responsible for the IDMS/SCMS used to manage the PIV registration and badge issuance processes

This team of SMEs was brought together into facilitated sessions to better understand the overall process, rather than looking at only their part of the process. The results were dramatic: clarifications in the policies and procedures, the transformation of NED, and a new understanding of (and removal of duplication) for the process across the NIH.

THE METHODOLOGY

While there are many modeling tools (and a few "methodologies") on the market, the NIH had successfully used the eXtended Business Modeling Language (xBML) to model their grants process. They knew that the significant difference between xBML and the others (UML, etc) was that these were business models in business language and were easily understood by business people rather than by technical people.   The language breaks complex business initiatives into dimensions for a more thorough understanding of them; i.e.,

What activities must the business perform to achieve its purpose?

Who performs each activity?

Where are the activities performed?

When are they performed?

Which information is used to perform each activity?

How do all the above interrelate to yield a business processes?

Use of the methodology and its companion software results in graphical models of each dimension and the resultant process view (HOW). Snippets of the HSPD-12 models are shown in this document. The models can be viewed at the NIH EA website, http://enterprisearchitecture.nih.gov/ArchLib/AT/BA/PH1HSPD12MODELEXPLANATION.htm

ACTIVITIES

Central to the understanding of any initiative is the activity model – WHAT must be done in order to accomplish the goal?   In this case, the purpose of the modeling was to "Provide Secure Access to NIH Resources." As the activity model shown following illustrates, the cross-functional team was able to develop a model that each of them could understand and agree with.
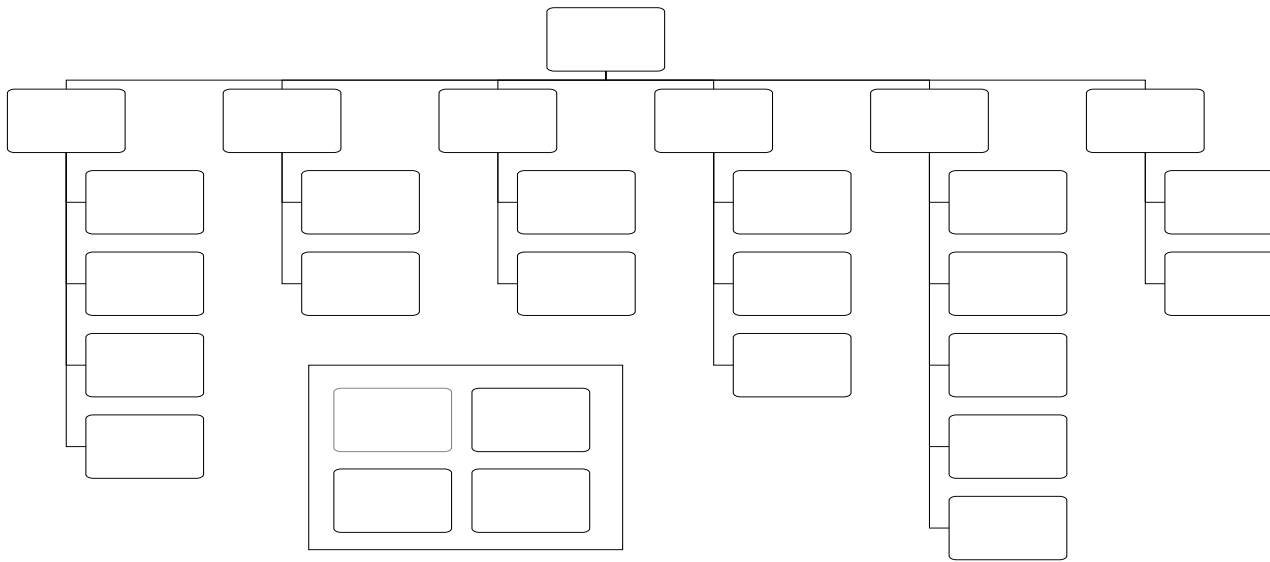
RESPONSIBILITIES

While the model shown below isn't readable at this size, it clearly shows why new initiatives how important it is to understand ALL of the roles, organizations, and systems critical to the initiative. Using the xBML methodology it's almost impossible to miss an aspect of an initiative. All of the systems, organizations, and roles are modeled in the xBML WHO dimension.
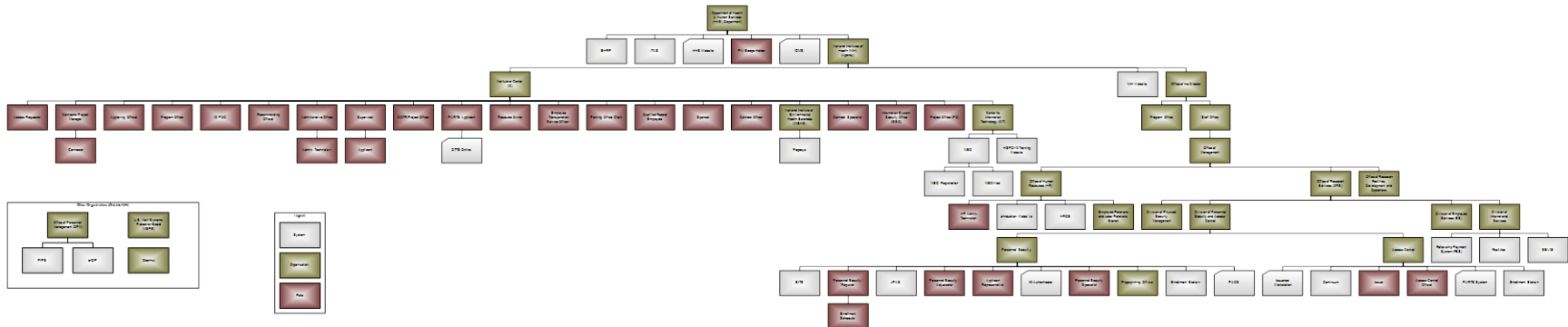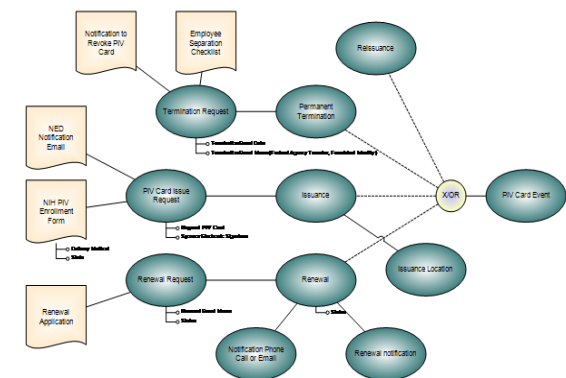

FIGURE 2: WHO (SYSTEM, ORGANIZATION, ROLE) IS RESPONSIBLE?

INFORMATION

The WHICH model shows the information that will be used or produced in the business. Typically there is a current state (as-is) model and a future state (to-be) model. A "snippet" of the information model from the HSPD-12 work is shown for illustration:

FIGURE 3: BUSINESS INFORMATION MODEL

WHICH MODEL shows the **Data** needed to perform business activities.

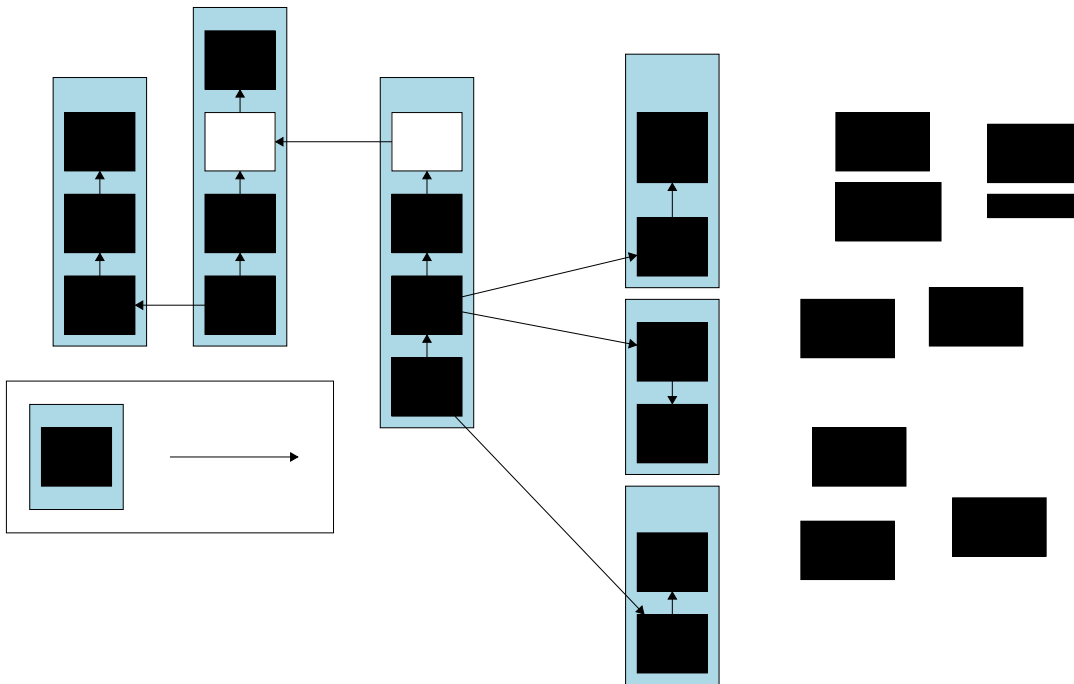Another dimension of critical importance is WHEN the activity must be done. Within 10 days? At the end of every day?

LOCATION

Location can be very important to a major initative. It can represent how work is done differentlyin a field office versus a headquarters facility. (While modeling the activities of a major bank, xBML helped them discover they even used terms basic to their industry in different ways at headquarters versus field offices.)
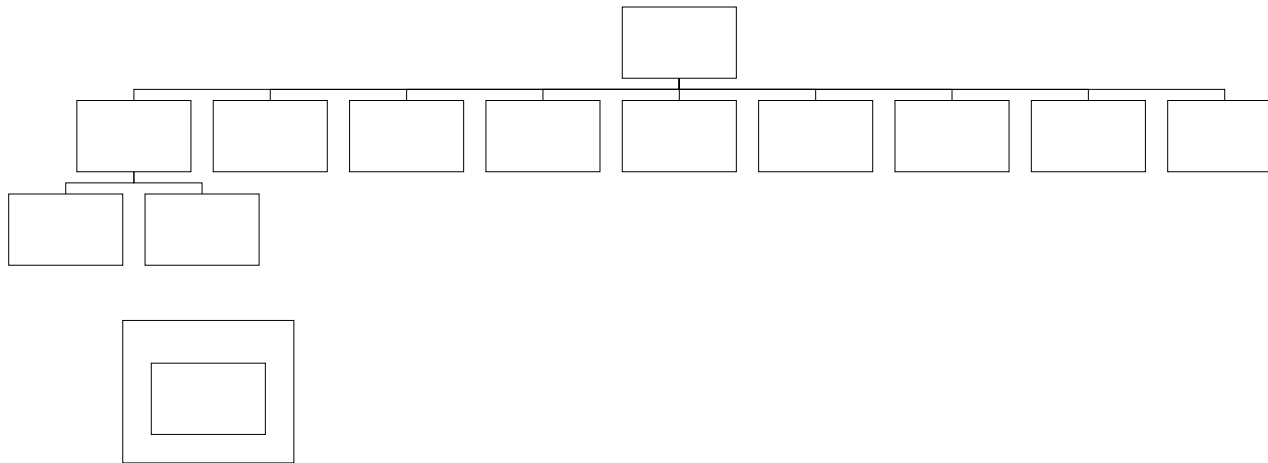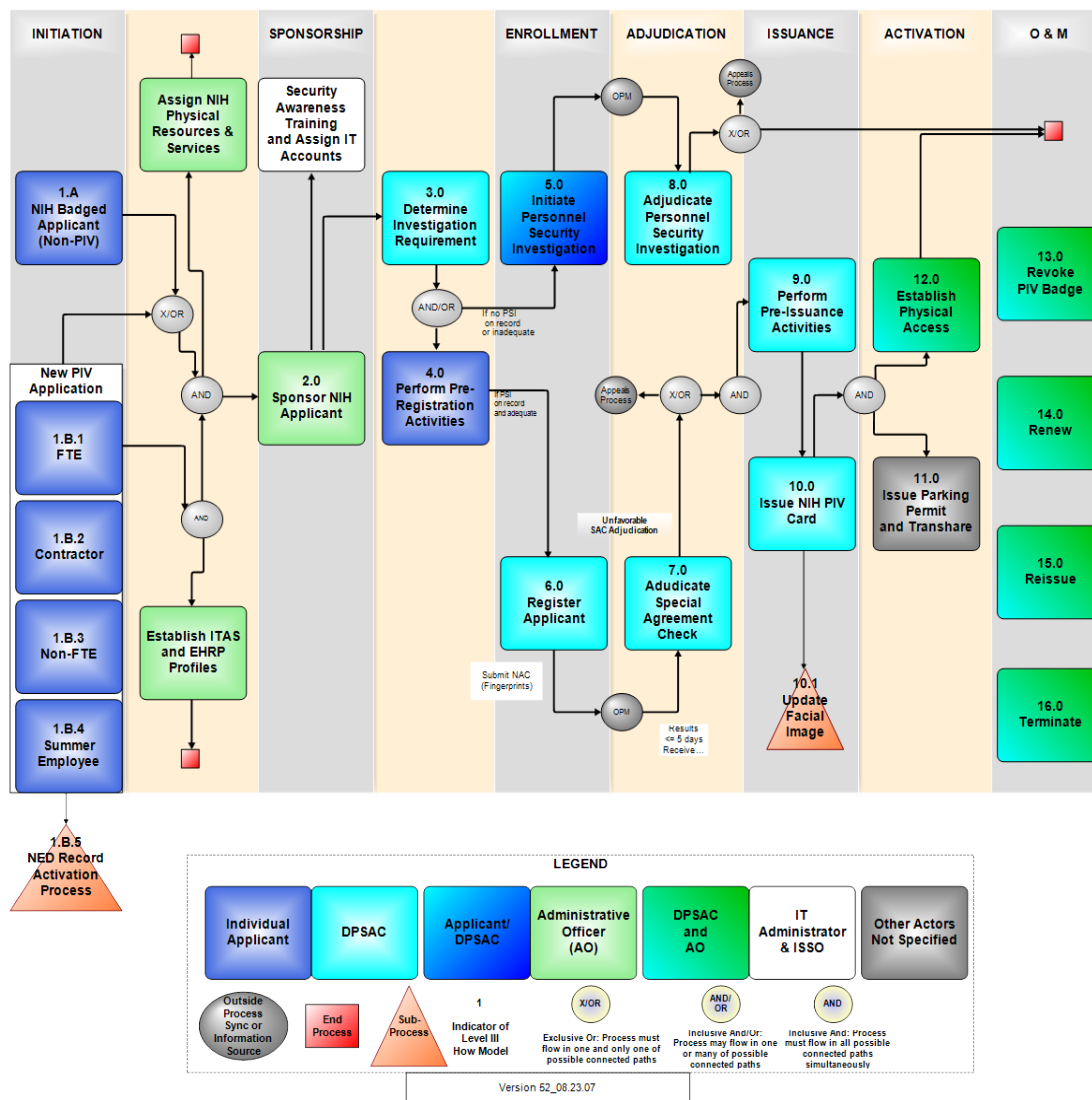

FIGURE 5: WHERE IS THE WORK DONE?

FIGURE 6: HOW MODEL

WHAT ARE THE PROCESSES?

The HOW model pulls together elements from each of the dimensions into a process view. This is where the rest of the industry starts. There are three important differences about the xBML "HOW" model: 1) each box in a process map must already be correctly defined in its individual dimension so that it is clearly understood; 2) all modeling has been done using a strict methodology that is explicit and repeatable; and 3) the process model is shown at the same level so that there is no mixing of insignificant items with the critically important.

Further, HOW models can be generated at different levels for different audiences – yet all of the models are part of a cohesive whole. (The HOW models are frequently exported to BPMN, BPEL, or XMI tools for additional study and/or automation.)

SUMMARY

As the NIH has shown, xBML extends a business architecture offering into one that meets many needs: process improvement, gathering requirements for IT, communicating complex plans and programs, developing and defending staffing plans, providing information for audit, and for consistent, clear training.

The NIH found that the people around the table were amazed to discover the level of redundancy in the organizations. The enterprise architect was successful at developing a business model that completely transforms the on-boarding/off-boarding processes and software development is underway. The organization also met their communication goal with clear models that can be used at the Department level, both to prove compliance and to show how they can work with other OP-DIVs across the HHS. The business can truly be modeled, in that tasks can be added and removed and analysis on staffing analyzed as a result of the changes.