

Making a Difference: NHPRC Electronic Records Projects

The Indiana University Electronic Records Project

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Office of Information Technologies
Indiana University

Society of American Archivists August 25 - September 1, 1996
San Diego, California

Project Participants

- NHPRC
- Indiana University
 - » University Archives
 - » Office of Information Technologies
 - » University Libraries
 - » IU Departments: Financial Information and Student Information

Project Highlights

- Information Systems...Recordkeeping Systems
- “Functional Requirements for Evidence in Recordkeeping”
- Data Administration Methods

Project Overview: 4 Stages

- Analysis
 - » of business functions
- Evaluation
 - » of information/recordkeeping systems
- Implementation
 - » of recommendations for improvement
- Critique
 - » of project methods and results

Beginning with the Business

- Business Functions
 - » Functional Decomposition
 - » Functional Narrative
- Business Transactions
 - » Conceptual Model of Business Activities
- Information/Evidence
 - » Conceptual Model of Record Content
- Information/Recordkeeping Systems

Identifying a Transaction

- *Record*: Evidence of a transaction.
- *Transaction*: A conceptual tool to...
...organize business activities and
...give them meaning.

Defining a Transaction

- Official action
 - » related to the business of the institution
- Public action
 - » not private, involving more than one person
- Action undertaken
 - » having a beginning
- Action completed
 - » defined end-point

Describing a Transaction

- Who is taking or initiating the action?
- What is the official action?
- What objects are being acted on?
Or, what individuals are interacted with?
- *Examples:*
 - » Faculty member assigns a grade to a student for a course.
 - » Trustees establish student tuition and fee schedule for academic year.

Information System Structure

- Primary Databases
- Audit Files
- Application & System Software
- Policies, Procedures, Practices

Evaluating Information Systems

- *De Facto* Recordkeeping Systems
- Business Requirements: Content
- “Functional Requirements...”
- Preliminary Findings

Other Observations

- Interdisciplinary Collaboration
- In-Depth Analysis: Time, Cost, Value
- Appraisal and Pre-appraisal

For More Information:

<http://www.indiana.edu/~libarche>

Questions?

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Project Status

- Functional Decomposition
 - » (9 business functions)

- Business Transactions
 - » (9 transactions in 2 business functions)

Project Status - cont.

- Information Items
- Information Systems
- “Functional Requirements...”

(for 2 business transactions)

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NHPRC is key partner...

- > Funding
- > Electronic Records research agenda

Indiana University...

- > Archives: Phil Bantin, University Archivist
 - > Office of Information Technologies and UCS
 - > University Libraries (joint sponsor with Archives & OIT)
 - > IU Departments: Financial & Student Information
- ...subject area experts and key partners

Project Highlights

- Information Systems...Recordkeeping Systems
- “Functional Requirements for Evidence in Recordkeeping”
- Data Administration Methods

Three aspects of the project I want to highlight. Our project...

looks at existing Information Systems
and the process by which information systems are designed
to determine their suitability as Recordkeeping Systems

uses the “Functional Requirements for Evidence in Recordkeeping”
developed at the University of Pittsburgh,
as a tool to evaluate Information Systems as Recordkeeping Systems

is also applying methods from the field of data administration
to analyze and evaluate Information Systems
from an archives & record management perspective

Project Overview: 4 Stages

- Analysis
 - » of business functions
- Evaluation
 - » of information/recordkeeping systems
- Implementation
 - » of recommendations for improvement
- Critique
 - » of project methods and results

Briefly, the project has four stages

Analysis of business functions: using the methods of data administration and information systems design.

Evaluation of an information system: using (primarily) the “Functional Requirements...” from Pittsburgh.

Implementing recommendations for improvement in recordkeeping based on the analysis and evaluation.

Critique of the methods used in our project and the results achieved.
> expect some critique of the “Functional Requirements...”
> also critique methods of analysis from data administration
> and some evaluation of information systems as recordkeeping systems.

Beginning with the Business

- Business Functions
 - » Functional Decomposition
 - » Functional Narrative
- Business Transactions
 - » Conceptual Model of Business Activities
- Information/Evidence
 - » Conceptual Model of Record Content
- Information/Recordkeeping Systems

Business analysis forms the foundation and starting point of our work

- > not a review of existing information systems or existing records
- > with a goal of understanding what records **should** be maintained.

Methodology is largely from I.S. design, information management, etc.

- > functional decomposition and narrative: a conceptual picture of business activities
- > data model: a conceptual picture of business information

Added to this traditional I.S. methodology are

- > transactions, as a way to organize and describe business activities
- > information as evidence of a transaction

Given this conceptual picture of business activities and information

- > then we look for (and look at) the information systems that
- > support the business activities or manage the business information

Identifying a Transaction

- *Record*: Evidence of a transaction.
- *Transaction*: A conceptual tool to...
...organize business activities and
...give them meaning.

Our work encompasses a fairly general definition of “record” as...

> Information created in the conduct of business.

And a more focused definition of “record” as...

> Evidence of a transaction.

An early difficulty in the project was establishing a usable definition of “transaction” and a method of identifying what is or isn’t a transaction.

Finally recognized that

> “transaction” was a tool of analysis (like “function” or “process”)

> ...was a way to organize business activities into meaningful groupings

> ...and to establish boundaries around a group of related activities.

In other words, that the transactions we would be interested in would also be the product of our own analysis of business activities.

Defining a Transaction

- Official action
 - » related to the business of the institution
- Public action
 - » not private, involving more than one person
- Action undertaken
 - » having a beginning
- Action completed
 - » defined end-point

The working definition for “transaction” that we have used has 4 parts:

- > It is an official action, related to the business of the institution.
- > It is a public action, not private, involving more than one person.
- > It is an action undertaken, having a definite beginning time.
- > It is an action completed, having a defined end-point.

This helps eliminate some activities as “transactions”...

- > Not official, not public, not bounded by time, not completed.

It still leaves room for decisions about what is or isn't a transaction.

In particular, it allows transactions to be defined at varying levels of detail, or with varying levels of specificity.

This is helpful, allowing us to adjust the size/scope of our analysis, based on the business-significance of the activities being considered.

Describing a Transaction

- Who is taking or initiating the action?
- What is the official action?
- What objects are being acted on?
Or, what individuals are interacted with?
- *Examples:*
 - » Faculty member assigns a grade to a student for a course.
 - » Trustees establish student tuition and fee schedule for academic year.

As a guideline for describing each transaction, we identify three questions to be answered:

- > What is the official action being taken?
- > Who is taking or initiating this action?
- > What objects are acted on, or what individuals are interacted with?

The resulting transaction description (actor-action-object) provides the basis for specifying information items associated with the transaction.

These, in turn, specify requirement for record content (as it should be), and help identify which information systems may contain evidence of this transaction.

Information System Structure

- Primary Databases
- Audit Files
- Application & System Software
- Policies, Procedures, Practices

Our preliminary reviews of information systems identifies multiple parts:

> Primary databases.

- both the 'master-files' or subject-area databases and
- the 'table-files' or reference databases.

> Audit Files. Also called 'journal files' or 'history files' these contain data from specific system events (e.g., before- and after-images of computer records that are updated).

> Application and System Software.

> Policies, Procedures and Documentation.

One observation: Audit Files often exist primarily for technical backup-and-recovery purposes. They may contain essential evidence, but may not be scheduled and preserved as carefully as Primary Databases.

Also: All four system components are valuable; any of them may help the information system satisfy recordkeeping requirements.

Evaluating Information Systems

- *De Facto* Recordkeeping Systems
- Business Requirements: Content
- “Functional Requirements...”
- Preliminary Findings

Information systems are not necessarily good recordkeeping systems, but some of them are *de facto* the systems in which institutional records are created and maintained, to the extent records are kept at all.

Our work has been to evaluate the information systems

> In terms of business requirements: Do they create and maintain the record content expected, based on an analysis of business functions and transactions?

> In terms of the “Functional Requirements for Evidence...”: Are the several formal requirements for recordkeeping systems (Consistent, Identifiable, Accessible, etc.) satisfied by the information system?

Some preliminary findings or observations...(read these)

Some Preliminary Findings and Observations: Information Systems and Recordkeeping Systems

First, that a set of requirements like those from the Pittsburgh project are a necessity. Determining if an information system is actually able to capture, maintain and preserve records requires this type of guideline or checklist of required system characteristics.

Second, that approaching existing information systems with a conceptual model of business activities (business transactions and the information items that should be contained in records) has led to a greater focus on record content than initially anticipated.

Third, that records in an existing information system are more likely to exist as a 'virtual documents' assembled from information dispersed across multiple databases and computer files than as discrete entities that can be easily located or named. And so, that a system may capture, preserve (and even provide access to) every information item needed to assemble a record, but lack the software to bring those information items together to actually display or present the record.

Fourth, that an information system may capture all the information items associated with a transaction but may not preserve all the items equally, such that a record that exists at one point in time may decay over time. This may result from different retention and disposition schedules for different computer files, or from information items that are stored only in the form of "current values" for which no history of prior values is maintained (e.g., the practice in many systems of storing only a current value for Address, but no history of previous Addresses an individual may have had).

Finally, our experience to date suggests that the "Functional Requirements for Evidence in Recordkeeping" will need to be expanded in order to serve as an evaluation model for existing information systems. On the positive side, many of the requirements have been useful in identifying shortcomings in an existing system, for example the requirement of an inviolate record or the importance of use-history metadata. On the other hand, we see the need for guidelines which pay more attention to business activities themselves, of which the record is meant to be evidence, and thus provide more guidance in the evaluation of record content.

All these observations are preliminary, and will be refined through our evaluation of additional business activities and their information systems, and through our attempts to use the results of these evaluations to influence change in the information systems themselves.

Other Observations

- Interdisciplinary Collaboration
- In-Depth Analysis: Time, Cost, Value
- Appraisal and Pre-appraisal

Collaboration

Evaluating the recordkeeping characteristics of information systems can only be done through collaboration between the Archives and IT.

Unlikely that either discipline could “take a dip” into the other’s field of work and come up adequately prepared to engage in this alone.

In-Depth Analysis: Time, Cost, Value

Project staff at IU have spent a great deal of time and effort so far on a relatively small number of analyses and evaluations. Time was spent learning, or was spent developing and refining the methodology.

We will need to evaluate the time required on future analyses, when learning is subtracted. And we will evaluate the time required to train new staff in the project methodology.

But...if future analyses require the same or similar levels of resource, it will be difficult to justify this depth of analysis on a broad scale.

Appraisal and Pre-appraisal

It may be necessary to prioritize business areas for evaluation, though some process of appraisal or pre-appraisal of potential record value.

Or to apply some other value-system to the selection of business areas for analysis (e.g., opportunity to influence a new system design).

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Questions?

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Project Status

- **Functional Decomposition**
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- **Business Transactions**
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- Information Items
- Information Systems
- “Functional Requirements...”

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