

Online Surveys for Collecting, Analyzing, Tracking and Evaluating User Responses on FocusOn Search and CategoryMap

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ABSTRACT

FocusOn Search and CategoryMap are tools that will enable integrated access and discovery of the university resources and libraries on the Web. They will also track faculty research activities through university resources and libraries on the Web. The paper will illustrate how to evaluate such system capabilities within existing information management infrastructure at St. John's University and Libraries strategically and technically under Zachman Architecture Framework. User feedback and corresponding processes for gathering, analyzing and reporting critical info about the users via online surveys will be briefly described.

Categories and Subject Descriptors

H.3.7 [Digital Libraries]: User Issues.

General Terms

Management, Measurement, Human Factors.

Keywords

Digital Libraries, Evaluation, Zachman Architecture Framework, Case Study, FocusOn Search, CategoryMap, user studies

1. Online Surveys

Surveys are considered as an effective way to “gather information about respondents’ previous or current behaviors, attitudes, beliefs, and feelings” [10]. However, who are the users that we are going to distribute the survey questionnaires? How can we solicit reliable responses from the survey participants? How can we ensure that data collected are user-friendly and ready for machine processing? Without understanding different perspectives of users it is not possible to design questionnaires that are user-centered, and specific for decision-making.

This position paper discusses the design of surveys using the Zachman Framework for requirements gathering as a guide will elicit in-depth responses from participants. Data collected are more credible, and response choices can be mostly known in advance as the questionnaires are designed with users’ perspectives in mind.

2. FocusOn Search and CategoryMap

It is almost a cliché to say that information is currency to today's businesses. However, due to its 1) quantity; 2) quality; 3) variety of manifestations and expressions; 4) degree of granularity; 5) degree of specifics and domains; 6) mutability in terms of types of content, carriers and medias; 7) relativity in terms of context and state; 8) timeliness; 9) ubiquitous to access; 10) subjective to personalization, 11) ambiguity in terms of linguistics, 12) easiness and fastness in terms of creation, dissemination and manipulation, it has challenged the notion of information management systems for decision support for any business. It has also challenged the field of library and information science with vast amount of information to be sifted through for collection development, and faculty and student engagement. Manually processing the information and disseminating them to faculty and students is no longer adequate.

Tracking research activities, evaluating performance, making decisions for funding, budgeting and promotion, and bench marking TOC (total cost of ownership) within and across the boundaries of academic disciplines strategically, tactically, and operationally for multidisciplinary and interdisciplinary research using quantitative data analysis are difficult tasks for many library stakeholders, including researchers at all levels, and librarians and library administrators.

FocusOn Search and CategoryMap are tools that sit on top of the discovery layer within the information infrastructure of the university resources and the Libraries on the Web. The systems traverse the Web, identify and harvest Web of things, people, events and communities for pre-processing. They will then tag, categorize, and store discovered Web of things in relational database management systems¹. The systems track wants and needs of faculty and students through an iterative process of identification, differentiation, engagement and customization, and then matches them to a collection of Web of things automatically and collaboratively through self-organization and dissemination of the information.

¹ <http://arc.semsol.org/features>

3. Design Survey Questionnaires Using Zachman Framework

In 1992, J.F. Sowa and J.A. Zachman [1] introduced a framework for information systems architecture (ISA) that has been widely adopted by IT industry. The concept of Zachman architecture framework is to show how everything fits together for the enterprise and its surrounding environment. It also offers the taxonomy to describe artifacts of the information systems architecture. The framework consists of matrix in which rows represent perspectives different people have on systems like FocusOn Search and CategoryMap, and columns represent what they are seeing from each perspective. Zachman's framework for information systems architecture provides a systematic taxonomy to describe an information system from the perspective of six types of users, namely planner, owner, designer, builder, integrator, and end users, and help digital librarians in the role of system analysts and database administrators understand how their activities are related when they are interacting with the systems. Figure 1 (at end of paper) diagrams the framework in detail [2].

It is my experience that everything the digital librarians want to know about information system development process is contained in one or more of the cell in the matrix. The framework can serve as a good starting point for evaluation for digital librarians as it puts them into the shoes of different people involved in the systems development. If online surveys are developed based on the framework, digital librarians can collect, analyze, track, and evaluate user feedbacks from the perspectives of each of these users in the context of his/her problem solving domains.

By selecting the perspectives of planners, owners, designers, builders, integrators and users, digital librarians can look at the systems through each of the users' eyes, and address the questions such as:

- What data are involved with the systems?
- How and what are expected systems behavior?
- Where are the logistics of the network for the systems?
- Who are the users, and what are their access rights and privileges for the systems?
- When and what system procedures will be generated for what business activities?
- Why or what are purposes for the system functions to be built?

These questions are represented in as six columns, consisting of data (What), function (How), network (Where), people (Who), time (When), and motivation (Why).

An example profile, based on certain features of the FocusOn Search and CategoryMap tools, is as follows:

Planner's View

- *Data (What) - List things important to the enterprise*
Planner regards FocusOn Search and CategoryMap as the enabler to:
 - Provide fine-grained search and categorization of university resources and library on the Web;
 - Track faculty research activities;
 - Identify, differentiate, engage, and customize collections and services to be tailored to the needs and wants of faculty and students;

- *Function/Activities (How) – List of functions the enterprise performs*
Planner sees that library enterprise performs the functions of:
 - Buyers / Collection Acquisitions
 - Gateways / Information Dissemination
 - Archives / Preservation
 - As a place to provide access to information, embrace social learning and networking, and engage scholarly communication
- *Network /Locations (Where) – List of enterprise locations*
Planner knows that there are physical locations and virtual locations of the enterprise.
- *People (Who) – List of organizations important to the enterprise*
Planner values people in the organizations, e.g. faculty and students, researchers, administrators, and other library supporters within the community.
- *Time (When) – List of events significant to the enterprise*
Planner knows list of events important to the community.
- *Motivation (Why) – List of enterprise goals/strategies*
The planner wants to reach the following goals:
 - Support multidisciplinary and interdisciplinary research using quantitative data analysis
 - Support integrated access and discovery of the university resources and libraries on the Web covering structured and unstructured contents
 - Slice and dice the data better for reporting, tracking, and informed decision making
 - Leverage reusability and interoperability components and best practices

We can use the Zachman framework to evaluate the systems such as FocusOn Search and CategoryMap. When they check the rows against six columns in the framework, digital librarians can find corresponding terminologies, concepts, and a diagram within the cell. User feedback function of the systems have been designed, developed, implemented and tested. Further work need to be done in the Web tier so that the user feedback can be handled as online surveys, including emails. Tying survey questionnaire design with Zachman Framework serves the purpose of a checklist for critical questions to be asked from each of the users' views. Data collected from the responses will be more reliable than those from non-users. More closed questions can be designed, and responses are easy for machine-processing.

4. Next Steps

After walkthrough the systems through a user's eyes under Zachman framework, corresponding survey questionnaires for FocusOn Search and CategoryMap will be developed. Online surveys will be carried out by digital librarians via emails without compromising the provisioning use of information in terms of quality, fiduciary, and security², and the processes to collect, analyze, track and evaluate user responses can be summarized as the following:

- Perform user base assessment and competitive analysis

² See references for information criteria defined by COBIT Conceptual Framework, and ISACA Model Curriculum

- Design survey questionnaire with user involvement using Zachman Framework
- Define survey distribution plans, and collection processes, e.g. distributing the URL link of SurveyMonkey via emails, checking data accuracy, and exporting data from SurveyMonkey to excel, csv, text and other formats for further advanced statistical calculations.
- Select online survey tools, e.g. SurveyMonkey. The reason SurveyMonkey is chosen because it provides industry standard survey templates, a platform for hosting data collection, automatic notifications, and advanced suite of analysis tool for analyzing the data.
- Perform survey data analysis, e.g. SPSS will be used to perform the statistical analysis of survey data, and present survey results with tabular and graphical outputs.

5. CONCLUSION

The paper introduces Zachman's Framework for information systems architecture (ISA) to evaluate digital library application development, and online surveys as the evaluation follow-ups using FocusOn Search and CategoryMap as case study.

Since the systems are simple in the interface, but require heavy lifting of legacy data, processes, and resources in the backend, the analysis part took a little longer than expected. Given support, funding, resources, time and access, the construction phase of the systems should be shorter than normal.

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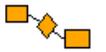
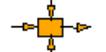
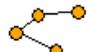
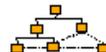
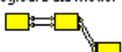
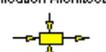
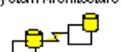
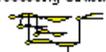
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Figure 1: Zachman Framework Tutorial Diagram by U.S. Department of Veterans Affairs [2]

	Data	Function	Network	People	Time	Motive
Planner's View	Business Things  Entity = Class of Business Thing	Processes Performed  Function = Class of Business Process	Business Locations  Node = Major Business Locations	Organizations  People = Major Organizations	Significant Events  Time = Major Business Event	Goals and Strategy  Ends/Means = Major Business Goals
Owner's View	Semantic Model  Ent = Business Entity Rel = Relationship	Process Model  Proc = Process I/O = Resources	Logistics System  Node = Location Link = Linkage	Work Flow Model  People = Organization Work = Work Product	Master Schedule  Time = Business Event Cycle = Business Cycle	Business Plan  End = Objective Means = Strategy
Designer's View	Logical Data Model  Ent = Data Entity Rel = Relationship	Application Architecture  Proc = Function I/O = User Views	System Architecture  Node = IS Function Link = Line Properties	Interface Architecture  People = Role Work = Deliverable	Processing Structure  Time = System Event Cycle = Processing	Business Rule Model  End = Structure Means = Action
Builder's View	Physical Data Model  Ent = Segment/Table Rel = Pointer/Key	System Design  Proc = Function I/O = Data Elements	Technology Architecture  Node = Hardware/Software Link = Line Specs	Screen Architecture  People = User Work = Screen Format	Control Structure  Time = Execute Cycle = Component	Rule Design  End = Condition Means = Action
Integrator's View	Data Definition  Ent = Field Rel = Address	Program  Proc = Statement I/O = Control Block	Network Architecture  Node = Addresses Link = Protocols	Security Architecture  People = Identity Work = Job	Timing Definition  Time = Interrupt Cycle = Machine Cycle	Rule Design  End = Sub-Condition Means = Step
User's View	Data  Ent = Rel =	Function  Proc = I/O =	Network  Node = Link =	Organization  People = Work =	Schedule  Time = Cycle =	Strategy  End = Means =