Process Analysis on University General Catalog and Graduate Bulletin Production—a Case Study

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ABSTRACT

This paper describes the detailed processes of producing the General Catalog and the Graduate Bulletin at San Diego State University and the future options for their production.

INTRODUCTION

The graduating MBA students as a part of their program at San Diego State University (SDSU) must complete a "real life" consulting project, in which at least two faculty members participate and provide guidance. An interesting project which was handled by our team was put forward by SDSU's Enrollment Services. The goal of this particular project was to analyze the current processes and future options for the production of SDSU's General Catalog and Graduate Bulletin.

Background

San Diego State University (SDSU) is the largest university in San Diego with approximately 34,000 students and 6,400 faculty and staff. The University offers 84 bachelor degrees, 76 master's degrees and 16 doctorate degrees. With a large student body and so many degree programs, the University's General Catalog and Graduate Bulletin are a valuable resource for both students and faculty. SDSU Enrollment Services is responsible for publishing the General Catalog and the Graduate Bulletin. Within Enrollment Services, this responsibility is born by the Communications department which coordinates the annual production of these two publications. This effort requires the direct participation and interactions of its staff with faculty and staff from other SDSU departments. The process of updating and publishing these documents also includes coordination with participants from community colleges located throughout the state. Currently, the production for the two publications run in parallel and takes place continuously through most of the year. The major steps of the two production cycles are very similar if not identical and involve numerous emails and mail deliveries – consuming nearly 4 million sheets of paper and the expenditure of $60,000 in printing costs.

Project Objectives and Methodology

One of the objectives of this project was to identify usage patterns. After identification of five primary user groups, a comprehensive survey analysis was developed to solicit information relevant to usage patterns and preferences. The analysis was primarily from data collected from a series of online surveys. User groups received individually designed surveys that helped identify specific usage patterns within each group. Wufoo, a web application, was used to build and administer the survey. Each survey contained 10-11 questions and was designed to take less than three minutes to complete. Usage data compiled from the survey was used to determine alternative publication methods and approaches. The

project team conducted research and gather detailed data aimed at identifying other available mediums for catalog publication.

The primary goal was to evaluate the current production processes and to provide recommendations designed to improve the overall catalog production process. The project team analyzed process factors and elements such as time, cost; production methods, catalog usage, process flexibility, and alternative production, publication and usage models. The first step in this undertaking was to analyze and evaluate the current production processes. In order to capture the actual practices, the key staff was trained on the use of process mapping as a tool for documenting the existing processes. The team then collected the documents produced from the staff and created formal process maps electronically.

Once the production system was fully documented, the team began interrogating the activities within the processes. Typically, production systems contain both Valued Added and Non Value Added activities. The purpose for identifying them was to better understand the process requirements as they relate to the clients' expectations, and to eliminate or reduce the non-value added activities.

Usage Survey Results

A total of 3,600 questionnaires were sent out, among which 722 were returned (20.1% response rate). Among them 597 were SDSU faculty and staff, 25 postgraduates, 80 undergraduates, and 20 none-SDSU advising personnel.

Printed Versus Online Usage

Data usage for each category was collected and summarized. The number of faculty and staff who utilize the printed resources account for 87.42% while the number of users who utilize the electronic resources account for 79.36%. The number of non-SDSU advising staff who utilize the printed resources account for 86.96%. The overall average percentage of General Catalog and Graduate Bulletin use of the printed version is 84.78% and the overall average percentage of General Catalog and Graduate Bulletin use of the online version is 68.40%.

Format Preference

Faculty and Staff were split in almost equal thirds with 31.66% preferring both formats, 32.33% preferring the online format, and 28.98% preferring the printed format. Graduate students preferred the online version 40.00%, while the undergraduate students preferred the printed version 52.50% of the time.

Duration and Frequency of Use

Both graduate and undergraduate students used the General Catalog and Graduate Bulletin either monthly or less than twice a year. Overall, for the most part, all users are utilizing the resources for an average of less than fifteen minutes each time. SDSU faculty & staff, and non-SDSU advising staff use the resources more frequently than the student population.

Evaluation of User satisfaction

The Average Score of user satisfaction with the catalog indicate that by and large the printed versions have higher satisfaction score than the online versions for every user group in regards to ease of use, usefulness of information, amount of time spent finding information, and ease of navigation.

How General Catalog or Graduate Bulletin was acquired
83.75% of undergraduate students acquire their General Catalog at the orientation, while graduate students and SDSU faculty and staff acquire their General Catalog and Graduate Bulletin by other means and at other times than during the orientation.

Publication Alternatives

In addition to survey collection, the project team conducted research aimed at identifying other available mediums for catalog publication. Usage data compiled from the survey was used to determine alternative publication methods and approaches. These included: providing abridged catalog formats; using recycled paper; using on-demand print services; expanding and improving the user experience with the online catalog, and offering a full version in portable media such as CD-ROM and USB drive. The project team determined which medium or approach best served the requirements of the various user groups. Table 1 contains a list of alternative publication options to the printed and electronic formats.

Table 1 Alternative Publication Format Options	
Printed Format	Electronic Format
Use Print-On-Demand (POD) services to fulfill all printed catalog orders	Improve the current online PDF version by providing more and better access to content
Provide abridged versions of the printed catalog with content based on usage survey results	Provide a content management system (CMS) managed, web based catalog online
Incorporate pricing variables such as: • Quality of materials • Binding options • Quantity ordered	Publish a limited number of catalogs in CD-ROM format
Discontinue the printed version	Publish a limited number of catalogs on portable, read-only USB drives

Electronic Formats
In order to assess an appropriate electronic alternative, various options were considered. Options included CD/DVD technology, and portable USB drives. Factors such as cost, reliability, portability, and accessibility were considered. A cost comparison of both the CD-ROM and USB drive options was conducted using information available from reputable, online duplication service providers. For example, for an order of 500 catalogs, CD-ROM format costs from $570 to $835, and USB drive format costs $3500. These are only a small representation of the numerous pricing and packaging plans available online.

Online Formats
The General Catalog and Graduate Bulletins are currently available online through the SDSU Web Portal. The project's survey results indicated a level of dissatisfaction with navigating the current format. At present, the general catalog is available in small sections accessed by hyperlinks that open as PDF files. There are several menus, or sets of links, that can be accessed from the catalog home page. Within each menu item, the list of links can be extensive and, in most cases, they provide the user with very limited access (small numbers of pages).

Printed Formats

The most significant factor in reducing publication costs was determined to be the reduction or elimination of paper. The second most significant factor was the per unit printing fee. With these issues in mind, the project team took a detailed look at the self publishing model using print-on-demand (POD) services. The POD model provided a range of publication options that would allow the university to not only tailor content, but also determine quality of materials, binding, and production schedules on a flexible basis.

There are numerous POD services available both locally and online. For book style publication, the best options can be found online. Web sites such as Amazon.com, Lulu.com, and Cafepress.com provide a wide range of services and price options geared toward the self-publishing market. On average, a full catalog with perfect bound can cost $18.25 and an abridged catalog with coil bound can cost $18.75. In addition to publication services, many POD providers offer related services including; project design, marketing, and product distribution services.

The most significant benefits of POD services are the simplicity behind the ordering, pricing, and design options. There is minimal lead time to place an order, the order can include a variety of design and material options and, there are no minimum quantity requirements.

Process Mapping and Analysis

The process mapping began with a client meeting and Enrollment Services staffs were coached on how to use the tools to document the existing processes. This exercise resulted in a series of work flow diagrams that provided a visual depiction of an interrelated production process.

A preliminary analysis was conducted and grouped the tasks and activities. Three groupings became apparent: front and back section reviews and edits, curriculum section reviews and edits, and administrative and publishing. Catalog revision represents one of the most time-consuming and labor intensive steps in the catalog publication process. The current process of converting the catalog to a word document and sending it out in small parts to the responsible parties for review and update is both redundant and inefficient. The current practice is to send out sections of the catalog to external entities responsible for revising a particular section; receiving the revised files back for updating; sending the updated files back out for a second review; receiving the second revision files back for updating; and sending the final product back out for final review. Once this process is complete, a similar editorial cycle occurs internally to check the content again. In most cases, reams of paper are used to print out sections for ease of review.

The current revision process is rather sequential. For example, while it is possible to run the front and back section edits in parallel with the curriculum section, this does not occur until the last revision. The reason for this is that it would make it harder to prepare the revision process files for import and export. This is mainly due to how FrameMaker is being utilized in the production of the Catalog. The current process does not utilize the ability to structure the document using tagged data, which in turn creates a very manual process. The ability of the staff to run the revisions concurrently is hindered by a lack of technical knowledge concerning the complex nature of the software.

Value Added and Non Value Added Analysis

With the publication system documented, the activities within the process were interrogated. Typically, production systems contain both Valued Added and Non Value Added activities. The purpose of

identifying them is not only to better understand the requirements as they relate to the customers' expectations, but also to decrease the number of Non Value Added activities. Value Added steps are activities that add attributes to the product that the customer desires and is willing to pay for, while Non Value Added steps represent activities that the customer is not willing to pay for, such as multiple revision cycles, especially when the first cycle should be capturing all of the pertinent information. As a result of this analysis, a significant number of Non Value Added steps were identified.

The next step was to document the Critical Path and determine the cycle time. The Critical Path is the longest sequence of dependent activities in terms of time that are required to complete the production cycle. The main effort was to focus on reducing the time that the Critical Path requires. This can be accomplished in identifying the necessary steps of the process, in finding ways to improve them, and also in removing unnecessary activities. The current Critical Path is very long for this process. This is due to the way that the revision process works. The curriculum and the front and back sections are not revised in tandem until after the first revision and edit cycle – the current cycle time is 211 work days.

Issues, Problems and Opportunities

The team systematically analyzed the major steps in the production process by asking questions such as: Why? Why do we do this? Why do we use a certain piece of software? Or, why do we use a particular communication method? The goal is to open the mind and challenge the status quo by looking at every step in the process. This tool is commonly referred to as the "5 Why's" in the Continuous Improvement community. Twenty five IPOs were identified on the current processes. To show the potential for these recommendations, a pro forma process map was developed. This map shows a process incorporating all of these solutions with a new cycle time of only 47 days—a 78% reduction of current cycle time.

RECOMMENDATIONS

The first recommendation concerns the use of Adobe FrameMaker. FrameMaker is a powerful application that can work with data from numerous applications and allows editing of complex documents. The current workflow involves sections of the catalog that are imported into Microsoft Word and emailed to individual reviewers. This represents a huge opportunity to streamline the current review and revision process. There are three feasible solutions to improve this workflow: (1) use tagged PDF's and require edits to be made directly within the PDF document, (2) move all data into a database and use a web portal as a reviewer interface, (3) implement a FrameMaker server.

Option one would allow reviewers to make their edits directly within the PDF allowing them to see what the final document would look like. This would also eliminate the need to copy and paste changes and increase the quality as the reviewers changes would be imported directly into the catalog. This is accomplished using tagged PDF's. To implement this solution, sections of the catalog are exported to tagged PDF's and then distributed. The reviewers make their changes directly into the PDF file. The PDF file is then imported back to the original Catalog file where the section is updated.

Option two would allow the reviewers to edit their section in a form type interface. This would eliminate the need to export and re import data from the FrameMaker document. In this instance, all of the text would be stored on a server and FrameMaker would be used to map the data into the appropriate configuration for the Catalog. To accomplish this, the existing catalog would have to be exported into data tables on a server (i.e. Oracle or SQL). A web interface would then be used to access the data and allow the reviewers to edit the text in their section. The linkage between the portal and the web interface could be accomplished using Adobe ColdFusion or a comparable technology.

Option three would allow simultaneous edits to be performed by multiple users in FrameMaker. This option would most likely remedy all of the current issues regarding updating data. However, the staff may encounter some issues regarding the management of the user group to implement this solution; the University would need to purchase a FrameMaker server license and FrameMaker user licenses for each reviewer. The implementation of this solution would most likely involve the assistance of a consultant.

Given the three options identified, options one and two are the most promising. Option one is easier to implement and involves fewer resources. Option two is more robust but would take longer to implement and have more costs associated with it. Implementation of option one is most appropriate at this time. The implementation of option one would also enable a more fluid transition to option two in the future by moving the data into a more structured framework. Option two is quite feasible and should be considered the best long term solution, alongside the curriculum review process recommendation.

The second recommendation deals with the curriculum review cycle. The curriculum sections are highly standardized. It is also understood that the curriculum revision process that occurs outside of the catalog process is moving into a server based environment. This represents a significant opportunity to extract the curriculum data and directly import it into the Catalog document. Since the curriculum data is already being moved into a server based environment, then this proves to be an ideal opportunity to start using some of the feature in FrameMaker in order to directly import these sections while eliminating the revision cycles. Since the department does not yet have experience with using the structured data capabilities, a consultant may be beneficial in making this transition. Due to time constraints, the costs involved in engaging a professional consulting firm for FrameMaker was not explored.

The third recommendation is in the project management area. Currently, there are thousands of emails in the process to send and receive the various sections of the catalog through the review process.The recommendation is to make the process more visible and to actively manage its components. This can be accomplished by using Microsoft SharePoint or a similar application. In using SharePoint, all of the deliverables can be tracked and the timeline effectively communicated. Reviewers can access the section they are responsible for, make their edits and signal completion. This will allow the entire production process to be located in a central repository. Driver measures can be derived from the information captured by SharePoint effortlessly. These combinations of attributes provided by a solution like SharePoint would move the process in a forward direction eliminating a lot of waste that currently occurs in the email process.

CONCLUSION

For many universities, the catalog represents the institution. Historically, these documents have contained information that is used as a primary reference in the areas of academics and policy. As such, much care and attention has been given to ensuring the accuracy of their content. Although the same high standard is required today, information is available from many other sources and the same standard of legitimacy is now applied to other forms of communication from sources like websites, email, and even social networking sites. These other means of communicating university information do not eliminate the benefits or necessity of publications like the catalog, but they do provide cause for assessing the current model with an eye toward integrating the information from this historic and informative document more seamlessly. The results of the analysis and the final recommendations will enable San Diego State University to implement changes in order to optimize the production model.