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## **The Benefits and Trade-offs of Web-Based Industry Sponsored Projects**

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### **Introduction**

Industrial Design has been a part of Brigham Young University for the past 35 years. BYU is situated in Provo, UT – 700 miles in any direction from the closest centers of Industrial Design. Sixty percent of all other industrial Design programs recognized by NASAD are located within 100 miles of major manufacturing areas. This isolation of our program makes it difficult for our students to get the exposure, and experience that they need to be successful in the industry.

Over the past 35 years, external project sponsors have been sought to combat this perceived isolation. Project sponsors have included:

General Motors	Ford
Mercury Marine	Baja Boat
Motorola	Hewlett Packard
Icon Health and Fitness	Compaq Computer
Hummer	Tecumsah Motor
The Coleman Company	Harley Davidson
Clairol	Oster
Armco Steel	Hannebrink Bicycle
Fulton Homes	Texas Instruments
Agio Chairs	Honda R&D North America

Sponsored projects give the students a sense of responsibility, variety, and excitement. Faculty members gain the benefit of being able to share the teaching load, and call on virtual experts on a variety of fields depending on the specialty of the sponsoring organization.

This paper will focus on the transition of running these projects on the web, and the contrast between these web-based projects to non web-based projects

### **Definition of Sponsorship:**

For our purposes, sponsorship is defined where the company you are working with has active

involvement in the project. Winter semester (2001) our scheduled sponsor was not able to fulfill their project agreement. For a last minute project, we chose the KitchenAid brand to focus our design efforts on. Although there was a company around which to focus our efforts, because there was no input or review from the Whirlpool Corporation (owner of the KitchenAid Brand) it wasn't considered a sponsored project.

For a successful project, each sponsor should commit to supporting the project in three areas:

- Financial Support - Whether this takes the form of an actual monetary amount, or money spent on travel, meals, etc. Sponsorship does carry a monetary burden.
- Instructional Support - This usually takes the form of visits from the sponsor several times throughout the semester to teach specific concepts such as research techniques, brainstorming methods, etc.
- Correctional Support (Feedback) - This is the most common form of support. Students need feedback as to where they are in the process, and what their progress is.

### **Moving to the Web**

The three main barriers to being able to provide the necessary support are **Time** and **Money**, and **Distance**. To combat these barriers to project sponsorship, the Industrial Design program in the School of Technology at Brigham Young University began to use the Internet as a method of managing industry sponsored projects remotely. Over a three year period, remote projects were managed with various sponsors including: **The Coleman Company, Compaq Computer Corporation, Mercury Marine, General Motors, and Ford Motor Company.**

Using the web as a tool for managing sponsored projects has turned out to be surprisingly useful. However, there is no evidence that it has improved or decreased the quality of the project outcome, but it has increased our likelihood of getting a sponsor. The following case studies chronicle several milestones in our effort and serve as a format to gather conclusions.

All of these projects took place in Junior and Senior level classes, with a combined group size of 12-20 students on a single project. For each project/work group, a web-site was created that acted as a virtual "pin-up" board for the students. Students would post scans of their ideas and concepts, as well as photographs of mock-ups, in a linear fashion. These images could then be viewed remotely by the sponsor. Phone conferences would be held at least monthly, and sometimes as often as once a week. During these conferences, both parties would have the web-pages up on either a computer, or being projected in a conference room.

For reference, a project index can be found at: <http://www.et.byu.edu/id>.

### **Case study 1: Mercury Marine/Baja Boat**

Fall 2000 semester.

Sponsor Location: Fon du Lac, Wisconsin

This was the first attempt at a web-based project. The sponsor had used this format to successfully communicate with clients who were at a distance. They had a format that could be adopted/adapted to our special circumstances. This first attempt became a hybrid project. Three of the reviews were done via the web, with one interim review done in person by the sponsor.

The learning curve was tremendous. It took an additional 20 hrs/week in some cases to get everything posted and ready for the phone conferences/presentations. To add to the difficulty, the project was a mixture of individual and group work. The class was later organized into teams after initial introductory work was completed by each student. This made the information structure and/or navigation of the site awkward.

### **Case study 2: General Motors:**

Winter 2001/2002

Sponsor Location: Warren, Michigan

For the second experience, rather than relying on a specific “web-master” for gathering the work from the students and “posting” it, the students themselves were responsible for placing their own work into specific directories that they had control over. The web page was constructed so that it could go out and retrieve the student work automatically. This worked out much better from an administration point of view.

Additionally, the student web-master began experimenting with Macromedia Flash. GM didn’t have a web browser that was not able to use the appropriate Flash Plug-in. General Motors originally requested that the site be rebuilt to accommodate their limitation. Rather than re-do the site, it was suggested that the sponsor improve their equipment. They did.

### **Case study 3: The Coleman Company**

Fall 2001

Sponsor Location: Wichita, Kansas

This was the first project that included a significant amount of research results with graphs, summaries, recommendations, etc. The students had been working in Microsoft PowerPoint for compiling and presenting this information as they gathered it. There was a concern that the data would have to be reconfigured to work within the format of the existing web-page.

PowerPoint has the ability to export a presentation as a web page. Rather than try to convert the data, the presentations were saved using the “save as web page” option. This provided a format that could be placed easily on the existing web-site without a loss of time.

### **Benefits of the Web**

Based on these first three case students, the specific benefits of running these sponsored projects as “web-based” projects are:

1. **Increased Feedback:** Students no longer have to wait until a specific, scheduled review date to present work to a sponsor. However, there is a lag time between when a student “Posts” a presentation, the sponsor is able to review it, and when they get feedback. Continued work needs to go into decreasing this lost time.
2. **Convenience:** Sponsors can look at the progress of a project at any time, not just at specific milestones. A sponsor can also review a project from their computer at work, from someone else’s computer, or even from another site (home).
3. **Increased Sponsorship:** Using the web breaks traditional stereotypes for sponsors. They

are just as curious about how to use the web as we are. This curiosity opens the playing field to those who might be farther away than viable using traditional review methods.

4. Exposure of Program: The web sites generated through the fulfillment of the project can be used to look for additional sponsors. It amounts to free advertising.
5. Historical Record: The completed project of a student is recorded on the web. This helps in evaluating the student's progress at the end of the semester/term.

### **Difficulty of Web Transition**

Even with the benefits described above, the effort has not been without difficulties. Specifically related to a web-based project the following items have surfaced as being very important.

1. Recognition of a new, "digital" knowledge base: As computer literate as students are, there was a steep learning curve that the students had to go through for the new, web-based presentations. There is knowledge about file types, naming conventions, and resolution issues that everyone needs to know to make things go smoothly. Additionally, there is a new group of students coming into the process each year that need to gain that knowledge. Is there space in the curriculum for that additional learning?
2. Organization of Web-Page: How do you structure a web site? What happens if your project is group based rather than individualized? The answers to these questions are based on your specific circumstances. It is better to consider the answers to these questions earlier rather than later. The structure of the web site should facilitate easy maintenance and upkeep. It should also be easy to navigate from the point of view of the sponsor.
3. Method to Create/Maintain Site: The web pages need to have the following characteristics:
  - a. Easy to understand and navigate (especially for the sponsor)
  - b. Easy to maintain by the faculty member/webmaster
  - c. Easy for students to add or modify content that they have responsibility over.

### **Case study 4: Honda R&D, North America**

#### **Fall 2003**

Sponsor Location: Southern California

Honda R&D of North America was not faced with the hurdles of time and distance that had faced with other sponsors. They had the time and money for travel, and didn't see the distance as a great problem. Using the web was not a requirement for doing the project with them. They scheduled several trips and workshops to provide the needed support in the form of workshops and feedback. This provided an opportunity to "leave the web" and do a comparison study of the two methods. This project had two separate groups of students doing separate projects with the sponsor.

The results of this **Non-Internet** project turned out differently than the previous four. One group (because the students did not have hard and fast deadlines for "posting" results to the web) was able to give more thought to each section of the project. There were also several occasions

where students were able to recover from mistakes that they had made along the way without having to post those errors to the web. The end result of this project had a more solid, cohesive feel than the previous ones.

The other group, being relieved from the pressures of posting weekly to the web-site, struggled to maintain the momentum that had been evident in previous, web-based projects. The result of their efforts had a scattered, unfinished feel.

Despite not running the project on the web, a web presentation was created for the sponsor in summary of the semester's activities, and presented to them in CD form for sharing throughout their company.

### **Differences between the Web-based and traditionally run projects**

Based on this comparison, some of the characteristics (both positive and negative) of Web-based project management include:

1. Radical changes of direction are more difficult to make and to justify to the sponsor late in the project.
2. Web-based projects remove the "emotion of the day" from the final presentation, and lead to a more objective judgment of student work over the entire time period of the project.
3. Web-managed projects translate easier into a record that can be distributed to potential future sponsors.

Some of the characteristics (both positive and negative) of traditional "on-site" project management include:

1. Students have more time/opportunity to re-focus a project direction and recover from their mistakes.
2. During the semester, when relieved from the regular posting deadlines required for web-based project management, a student is more likely to "slack-off" until a "concrete" deadline approaches.

### **Conclusion**

Students react well to the variety and the additional input/point of view that a sponsored project affords. However, ideal sponsors are often located at a considerable distance from the classroom/project site. Travel is usually prohibitive for the students, and in today's economic market (where both time and money are important) is prohibitive for the sponsor as well. Because of the labor-intensive characteristics of most projects in terms of reviews, feedback, and instructional opportunities, sponsors are often reluctant to sign-up for such a time commitment when distance and a considerable loss of time are involved.

Running projects on the web helps to defeat two major roadblocks to industry sponsorship – Time and Distance. The web makes things accessible anytime, anywhere. Sponsors can stay in their office or review the project from home. On several occasions, sponsors made the decision to participate in a project BECAUSE the web was used as the main review tool. As an institution, the decision has been made that even on those projects where the sponsor is able to

make trips and participate “on-site”, there should still be a large web component to the project because of the benefits of record keeping, grading, and program promotional materials.

The benefits that come from web-based projects do not come without a price. There is a significant learning curve. *Both the faculty and the students feel this burden of this learning curve.*

Running web-based projects at BYU has been successful for us, and we will keep doing it. We hope to improve with experience. Within the curriculum, we are currently working to develop a “digital” knowledge base in the lower classmen to prepare them for an ever-increasing involvement in the web experience.

Richard Fry received his MFA from University of Illinois at Urbana-Champaign. He is currently Assistant Professor of Industrial Design in the School of Technology at Brigham Young University where he specializes in Product Design. Previous to entering the education field, he worked professionally in the areas of Appliance, Aerospace, Exhibit, and Home Fitness design.