Participatory Design and Traditional Systems Development – A Fusion Approach

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ABSTRACT
In this paper we present a case study on the use of participatory design practices in practice. Borden Ladner Gervais, a Canadian law firm embraced Participatory Design as a key element of developing and improving applications. More recently, the firm integrated PD into a more formal Systems Life Cycle (SLC) approach in an attempt to create a workable end to end process for planning, designing, developing and implementing systems. This paper presents the fusion approach that resulted.

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Design, Human Factors, Systems Development, Life Cycle

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D.2.2 [Software Engineering]: Design Tools and Techniques – evolutionary prototyping, user interfaces, modules and interfaces

INTRODUCTION
In March 2000, the National law firm of Borden Ladner Gervais, LLP was formed by the merger of five of Canada's top regional law firms: Howard, Mackie (Calgary), McMaster Gervais (Montreal), Scott & Aylen (Ottawa), Borden & Elliot (Toronto), and Ladner Downs (Vancouver). While these five firms shared common values and interests, the subtle differences between these firms and the geographic distribution of the offices present organizational architectural challenges.

The founding firms set high goals for BLG: "to build the best national law firm in Canada [and] to provide the best working environment and training for our lawyers, patent and trade-mark agents, students, and staff." [1].

One of the early initiatives for the merged firm was to put in place an IT strategy to support the integration of the five firms into 'one firm' nationally. As a result of this strategy, several 'national' applications needed to be put in place. Some of these applications that have been put in place were done by selecting and implementing packaged software; for others, software solutions needed to be designed and developed in direct partnership with users.

None of the five firms had a formal systems development methodology in place. Systems design and development efforts were ad hoc and results were varied. User involvement was historically inconsistent. In some cases, users (primarily lawyers) were under significant pressure to perform billable client work and participation in design and development projects was often viewed as secondary or a nuisance.

EMBRACING A USER-CENTERED APPROACH
The Information Systems (IS) team decided that they needed to involve users more directly in co-design and co-development. To do this, we turned to participatory and user-centered design approaches. We embraced usability testing as a way to validate applications. We built prototyping into several projects as a way of exposing potential designs to users and to give them a framework that they could relate to and comment on. We focused on work practices and work processes in understanding how users work in the practice of law. In conjunction with a formal project management approach, user leadership is established for all projects in the form of a Project Sponsor.

Usability Matters
The first time that the firm used formal usability testing was in the spring of 2003. The web services development team was working on the deployment of a precedent system – which was to house precedents in a commercial off the shelf Document Management System (DMS) and provide access through Sesame (web based). The DMS was a mature product on the back end, having gone through at least five major product releases. But, the web interface was new. The project team developed a usability test script and used front line workers (lawyers and their legal assistants) as subjects for this exercise. The results were shocking! Lawyers and their administrative staff (users)

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found it hard to navigate around the system and reported that the system was not intuitive. The project team made several adjustments to the interface that were within its control before deploying the system for firm-wide use. The major lesson from this exercise was that usability testing provided benefits – even when deciding how to deploy 'off the shelf' software.

Prototyping

Michael Schrage says: "Organizations that can swiftly manage their models, prototypes, and simulations can and do reap tremendous competitive advantage. This has proven true in the past and will prove even more important in the future." He also says "The prototyping vocabulary dictates how people view the models they build." [10]

We build prototyping into several projects as a way of exposing potential designs to users and to give them a framework that they could relate to and comment on. Prototyping has become an instrument for exposing designs to users so they can comment and provide feedback. Examples include: the design of the firm's portal, client deal rooms and extranets, document databases

Work Practices, Processes and Culture

We focused on work practices and processes in understanding how users work in the practice of law. A variety of techniques are used in projects: interviews, surveys; user observation; focus / discovery groups; process mapping; and scenario-based design. In addition, designers use these techniques to get a better understanding of the culture of the firm and units within the firm in an attempt to improve the likelihood of success in the adoption of new systems. 'After Implementation Reviews' also provide ways to 'tweak' and improve user interaction and interfaces.

Embracing Team Diversity

Our systems design and development teams are multi-disciplinary by design. These teams include the fee earning professionals (lawyers and trademark agents), librarians and information systems team.

The fee earners and their administrative support staff represent the traditional users in the firm.

Our library and information services staff are integrated with the information systems personnel as part of a larger 'information team' that works closely together. But in reality, the library team is sometimes users and at other times designers and developers – particularly as 'content' and its organization becomes more and more important in key systems.

Embracing All Users

The make up of our law firm is such that one third of the members of the firm are fee earning professionals (700) while the other two thirds of the firm is made up of administrative and support staff (1300). In many projects, therefore, it is important to balance the power relationship between fee-earners and administrative staff in designing systems to be used by both. It should also be noted that the power relationship between partners and associates is also important within projects. A deliberate attempt is made to represent these perspectives in sampling user requirements and to give these groups voice.

User Leadership

In conjunction with a formal project management approach, user leadership is established for all projects in the form of a Project Sponsor. By having users in this position of leadership and responsibility for projects, the primary focus is shifted away from IS to the user community. The user is therefore at the center of the design and development process – not on the periphery.

Co-Development

The process of design and development that results from this partnership with users can be described as one of co-development. In all projects, we endeavour to work closely with the user community to co-create solutions that match with the business need and environment.

CHALLENGES

There are a number of challenges that have arisen as we craft new practices for systems design and development.

How Much Is Enough?

In prototyping solutions and iterating towards workable systems, perfection is often an illusive goal. It is often important to make a determination as to when the system is 'good enough' and to develop solutions that 'satisfice'. The conflict between users (who want perfection) and designers (who want closure and implementation) is negotiated. This is complicated as well by project management goals and restricted resources.

Dealing With 'Off The Shelf' Software Packages.

In many cases, the systems that are put in place are acquired from software vendors and the firm is not in a position to customize them significantly without losing the cost / benefit of this approach. Accordingly, we focus on user interfaces (where we can affect these) and in carefully tailoring the various parameters allowed by the system. For example, with the Document Management systems, the dialog box where items are profiled is customized allows the firm to choose metadata such as document types and other classification items. These items were all chosen in careful consultation with users.

There Are Many Facets To 'Design'

… and PD only plays a part in some of these. In building information systems, there are many element where design is required. Design approaches are required for: graphic design; user interfaces; information architecture; interaction design; process and workflow design; database design;

program / algorithm design. PD plays a role in those elements that involve the user most directly.

Innovation Requires A Unique Approach.

Schrage says "Whether their models, simulations, and prototypes are built around functional, structural, or metaphorical surprise, the most innovative organizations spend all day at it." [10] Design requires perseverance. Innovation requires a spark of creativity and brilliance. In today's competitive environment innovation is essential to the success of many businesses. Indeed, it is essential to the success of our firm.

Not All Users Are Created Equally.

In Democratizing Innovation, Von Hippel makes the argument that innovative ideas come from *lead users* – or users who make the most of your products, often in ways you never intended. He argues that user-led innovation differs from manufacturing-led or developer-led innovation in that the focus changes from products looking for customers to listening and observing what users do with your products in practice. In similar ways, the users within our firm often use tools we give them in ways we never anticipated. By observing these behaviours, we have an opportunity to incorporate these adjustments and amendments into our systems. [13]

Not all users are created equally. The challenge therefore is to identify and learn from the *lead users* and to embrace their improvement suggestions.

Managing / Harnessing Change

Designing, developing and implementing new systems often result in changes to the way things are done. One of the challenges we find in systems projects is user resistance to change. To overcome this, we focus explicitly on developing a change program with each project, involving , where we can, key users in the planning and execution of such programs. One such approach to change that we favour is the Deviant Change model [9]. This approach focuses on the user who deviates from the norms and has unexpected successes. It encourages the designer/developer to observe them in practice and to promote and amplify the positive deviance.

OUR EXPERIENCE

Upon reflection, some projects were successful whereas others were not. In reviewing 'After Action Review' documents it became evident that users involvement was minimal.. Exemplar projects which contributed to the formalization of our Systems Life Cycle include:

New Version Of Our Portal (Sesame)

The launch of our new version of the Portal was a major milestone in user acceptance of web services as a platform for applications. End-users were consulted broadly, including: Practice Group Leaders, Practice Group Librarians for content and knowledge organizational frameworks, and, other end users.

These consultations informed the design process – both for content and for interface and usability.

We learned a number of things through this process – including how users actually used tools that were provided to them. This changed our design in many ways. Usefulness and usability was considered both from a design and testing perspective.

The portal had cultural and work process change implications – some of which we anticipated, but others which were discovered during design and afterwards through 'design in use'. For example, instead of using the Phone Book functionality to find a phone number, users were going through their Outlook (which they could now open through the Portal Page) to find that information even though it wasn't available for all the offices. The designers were 'amazed and surprised' by user behavior; they were performing the tasks by using ways we would never have thought of. Sessions were videotaped to record reactions and interactions.

Web Interface To Our Data Repositories

This project was the first one where we incorporated the concept of video conferencing as a medium for our PD sessions. We also introduced a rapid prototyping tool to support this design process.

Users from Montreal, Ottawa, Toronto and Vancouver participated in these workshops enthusiastically. High-level requirements were solicited prior to the workshops. These were used along with other user input to construct a 'working prototype'. The user representatives made comments and suggestions and changes were done 'live' on the screen.

The prototype and input from these workshops were compared with the requirements gathered prior to the workshop to make sure that everything was addressed and incorporated. This analysis informed our design and the choices. We iterated through several versions of the prototype before reaching consensus with the user reps on a proposed approach.

This approach allowed us to come to an agreed upon framework in a short period of time. This was never seen before in the Firm.

This experience proved the importance of Participatory Design and helped us to convince the Project Manager and the Project Team that users' participation at the early stages of the process was beneficial and efficient and contributed to getting their 'buy in'.

THE SYSTEMS LIFE CYCLE

Design Is Necessary But Not Sufficient.

Design is an important part of the Systems Life Cycle (SLC) but is only one component of the process. It is a necessary step – but is not sufficient in itself. We need to look at the entire process – from end to end. Accordingly, we looked at a number of traditional SLC models [4,3,14,6,12].

The BLG SLC

We examined other prior attempts to integrate PD into the Systems Life Cycle [2,5,7,8]. However, most of this work focuses on integration into the assessment, analysis and design activities. They do not offer a complete SLC that would guide activities from concept/idea to implementation. Accordingly, we developed our own Life Cycle Tis allows us to also introduce a uuser centered approach in actual development, testing and implementation phases.

However, it was deemed important that we embrace elements of user-centered design in this life cycle by explicitly embracing PD methods with central focus on the development process. We also recognized the importance of involving management in the process but separate it from other users to avoid the power biais dominating and stifling contributions

While PD is a central focus for systems projects, we continue to use modeling (behind the scenes) to allow designers and developers the rigour required for components such as database design and normalization.

CONCLUSION

In practice, we have learned a lot from PD practitioners. We have attempted to incorporate these learnings into our approach to systems design and development.

Both the Participatory Design and traditional Systems Life Cycle models have a role to play in the development process.

We like to think that we have fused these two approaches and have not 'thrown the baby out with the bath water'.

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