Deadlines and Work Practices in New Media Development: Its about time

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ABSTRACT

This paper goes behind the screen to view the interaction and coordination among professionals involved in commercial software development and web design for new media. In order to explore what is new with new media, focus is put upon the practices and conditions with which new media products are built. - It focuses on the speed-up of time constraints and new and fluid divisions among professionals in the work practices of design and production. The authors use an Actor Network approach to analyze moments in time where the development process is more interactive among development professionals and could potentially be opened up to actual end-user participation. The article also traces some materials in the development process which function as boundary objects across professional groups.

Keywords

Actor networks, boundary objects, end-users, content providers, deadlines, designers, new media, programmers, participation, work practices.

INTRODUCTION

Design, and development of commercial web sites is a race against time by different professional groups. Not unlike earlier information systems development, web professionals such as programmers and customer account representatives need to cooperate to produce software as rapidly as "the customer wants it". But the new constellation of software designers and developers now also includes professions such as graphic artists, advertising specialists, and newly created categories of so-called content providers who supply the material which will actually appear on the website. And in this blend of art, advertising, software creation and technical infrastructure, the work practices have been intensified into time constraints which are breathtaking in their proportions.

This article examines the actions of the behind-the-screen professionals in the fast paced work of commercial web site development which is part of the larger industry of new media. It does so within the historical context of commercial software development where installation deadlines have framed the work practices and division of labor between programmers and other professions with responsibility for dealing with 'the user'. Our objective has been to study the inter-group work practices in order to find times and places where coordination among groups could be opened up to include potential for participation with more customer organization representatives and with actual end-users.

New media products such as internet web sites, intranets, e-commerce, and broad and narrow-cast streaming are primarily produced by small firms although there are indications that large companies are expanding their IT divisions to handle all or part of the development work (NY New Media Survey). The empirical material presented here is based on a two-year case study of a Scandinavian new media firm and interviews with some of its European affiliates. Material is also collected from supplemental interviews and survey data about New York's so-called Silicon Alley firms.

Our study looked specifically at activities between and among groups of programmers, customer representatives, and designers. The professionals we studied were, for the most part, engaged in designing and developing complex web sites for corporate and government clients. The activities of these workers often overlapped and the communities of practices between and among the professions changed during the period of our study. The activities of designing and developing web sites, particularly within the commercially compressed time periods, illustrated a high degree of flexibility and cooperation between professional groups. The flexible and fluid nature of this cooperation within the firm provides moments in time and shared materials which we examine here for their potential for increased participation within and outside of the work process.

Deadlines have been a fact of life in commercial software development (IT) since the inception of large scale development in the beginning of the 1960s. Software

products, whether they are custom designed work-flow systems for specific companies or generic commercial applications, are and have always been shaped, by the deadline of roll-out or launch dates contractually agreed upon with customer organizations. New media development deadlines have been intensified by enhanced customer and user expectations and commercial competitive pressures. Like software development in the 1960s and '70s, the emerging new media industry is made up of many small firms which are both competing with each other and involved in mergers and acquisitions with other firms. This combination of commercial pressures is one of the actors shaping the technical features of the web sites, which include: information architecture, choice of coded modules, coding languages, database construction and systems architecture, as well as shaping the less technical, but integral aspects of how the product should look and interact with existing and planned work practices and life activities.

There are two themes we develop here which are an important part of the background in the speed-up of new media design and development. The first concerns *time*: the ways that new media workers need to function within a pressure cooker of hurried deadlines and multiple project demands. The second theme addresses the issue of *divided and reintegrated labor* in the form of work practices, job titles, work demands and the identities and background knowledge of the workers involved in design and development of new media.

Commercial web software development is an emerging field combining software development with traditions from advertising and broadcasting. In order to better understand these combined traditions we view the work practices we observed in our case study through an understanding of their historical contexts. We examine the situations in which deadlines are presented to new media workers and look at these workers' prior expectations of work and their evolving work practices.

Our focus on both the issue of time and labor is built on an interest in analyzing how interactive communication takes place. We view face-to-face communication as a two-way, circular process involving both senders and receivers. Communication is in this way fundamentally participatory (Stuedahl, 1996). The interactive character of new media renders the *possibility* of circular communication between individuals and institutions across time and space. The success of email, newsgroups and synchronous chat groups shows the forces and capacities of participatory and circular communication. Still, most of the web site development projects we studied, were however, designed for an *audience*, rather than for two-way communication. While commercial web site design often includes adding ways where 'customers' can communicate with the organization, such as email and discussion boards, these interactive forms are designed to involve the audience in specific functions, such as registering to get more information about a product, or making contact

between purchasers and sellers possible in order to complete commercial transactions. Yet, as studies have shown, these communication forms seem not to fulfill customers' needs in electronic shopping because it takes too long to get an answer, or it is difficult for customers to get the right answer (Lohse and Spiller 1998). One explanation for this could be a lack of understanding of the participatory and immediate character of new media communication.

The combination of traditional systems development practices which viewed 'users' as passive recipients of software, and traditional advertising and broadcast media practices which put information out to passive 'audiences'; accounts, in part, for this emphasis on one-way broadcasting in the two-way interactive media. The challenges of integrating people who use the commercial web sites into the process of development are impressive. The former practices of using focus groups or statistical inquiries from mass media, do not give satisfactory information about the heterogeneity of new media interactions, (Lohse and Spiller 1998) nor do they open the doors to participatory interaction.

In order to explore how these challenges, influence the production of new media we applied an Actor Network approach to identify moments in time when activities and events were most fluid and therefore potentially open to change. Actor-Network theory, as developed by Latour, Law, Callon and others (see Law, 1991,1999), has been used to study historical developments in science and technology. It goes beyond traditional social construction of technology approaches by highlighting and blending the ways that human and non-human actors shape developments. Through a focus on negotiations between actors, and the translations and transformations needed to end up in a delivered product, we found it particularly useful for helping us identify intermediary moments in time and place where designs, specifications and software code were changed through actions by people, prior events and pieces of the technical infrastructure (non human interventions.

As we examined moments in time we noticed how intricately intertwined they were with the materials in use. In order to further explore the interaction we used the notion of boundary objects as discussed by Bowker and Star (1999). "Boundary objects", they argue, "are objects that both inhabit several communities of practice and satisfy the informational requirements of each of them" (p.297). In our study objects as diverse as pieces of code, web site mock-ups and storyboards, and contract specifications had differing meanings and uses to different professional groups, yet they were shared and shaped among the professional groups at moments and places in the production process.

The next section gives the background of our case study and an overview of Actor-Network theory explaining how we applied it to our study of new media development. This is illustrated with examples of moments in time and place where programmers, account representatives and graphic designers

shape and reshape the web 'products' which are delivered to customer organizations. We then turn to an analysis of the boundary objects which are shared and reshaped in the development process, concluding with some comments on the complexity of communication as a foundation for user participation in the design and development process.

APPLYING AN ACTOR-NETWORK APPROACH

Our case study involved more than 25 in-depth interviews with programmers, account representatives and designers and their managers. These semi-structured interviews were done in the context of the workplace (see Beyer and Holtzblatt, 1998) and were enhanced with observations of work practices and 'walk throughs' where the workers discussed what they were doing and showed how they were doing it (see Greenbaum, 1998). Interview transcripts and observation and 'walk through' notes were sorted and resorted using concepts from Actor-Network theory in order to identify moments in time and place where actors, both human and non human were influencing web site design and production. Use of the Actor Network approach gave us the language and a lens with which to view the interaction of humans and non humans in translating socially perceived concepts into concrete pieces of software (Law, 1991,1999).

In order to understand the translation process better we combed our interviews and field notes for threads of *intermediaries* where events and products were reshaped. According to Callon (1991) intermediaries are "...any entity able to associate texts, humans, non-humans and money" (p.40). In our study we found that significant intermediaries included: meetings; project documents, including specifications and contracts; architectures for information and systems; testing procedures and tests; project objects (like screens) and program modules. Each of these intermediaries represented points in time and place where projects took shape, and indeed depending on the actors involved, different project results could emerge. The intermediaries also included a mix of specific worker skills like programming and application languages, as well as work practices of different professional groups and individual workers.

An example of the way in which human and non human actors interacted through intermediary moments can be illustrated by the following story. During one of our periods of observing work we noted a chance meeting between two programmers at a Coke machine. The chance meeting resulted in one programmer borrowing some already written code from the other in order to speed up his production time. In general borrowed code, sometimes in another programming language or application language, results in slight differences in the overall design and functioning of the web site the customer would see. Change encounters, as we know from earlier periods of software development, can influence the delivered program product. In the coke machine instance we observed, as well as many other moments, non human actors such as the coke machine, and pre-coded program modules mix with the actions of programmers in speeding up the production process.

Understanding how the actors, in cooperation with each other, negotiate, translate and transform ideas into coded products, is a process which Actor-Network theorists call *enrollment*. For our purposes it was useful to note the times and places where enrollment reshaped the materials which were used and the web sites customers saw as a result. In another example, as programmers were testing a screen which produced customer receipts, some modules were unable to work in conjunction with other screens, and were then deleted from the web site in order to meet the launch date. Customer account representatives, who for the most part are responsible for writing the contracts and drawing up the initial specification, have learned to cut projects up into separate modules and define each module in separate specifications and contracts parts, so that modules can be jettisoned in order to meet deadlines. In this way, both the inanimate actors like program modules and contract pieces and the professional actors, such as account representatives and programmers are enrolled in a process of meeting the deadlines.

What Actor Network theorists call *inscription* is the active process whereby the enrolled agreements are built into the technology, or in this case, the structure and functions of the web site. The process of inscribing agreed functions into new media products is a fluid one. In our study it was not uncommon to see both designers and programmers work with applications like Dreamweaver in sketching and prototyping initial web pages. Up until very recently designers generally laid out paper-based story boards or web designs which were then turned into prototypes and functional web sites by programmers. Now the tasks of programmers and designers often overlap, resulting in differences in the final web site depending on which professional actors are working on it and which programming languages or application tools they use. The series of web pages delivered to the customer organization can look and function differently when as we saw, a programmer inserted a Java applet or some Perl script into it, or if it was inscribed with the characteristics created by a designer in an application like Dreamweaver.

Programmers and designers need to work closely with each other, but each professional group has a different identity and a differing understanding of the concept of design. Designers from the graphic and industrial arts generally first concern themselves with the aesthetic and visual aspects of the web page layouts. Programmers, on the other hand are trained to focus on aspects of functionality--how the page will perform, and how it functions within the technical infrastructure of the overall systems design. Although designers are increasingly doing more programming functions and programmers are prototyping more overall designs, the characteristics they inscribe into the design, can and do, give different appearances and functions to the finished web site.

FOLLOWING BOUNDARY OBJECTS

When we first prepared our research design of new media development, we had planned to follow one project through from beginning through completion. This would have meant, for example, following customer representatives as they met with broadcasters planning to stream their radio programs on a web site, watching the process as designers laid out story boards and screen designs, and examining the programming process as programmers and analysts turned the planned site into a working built web environment. But this research plan proved impossible as all groups of new media workers in our pilot research site were working on more than one project at a time; and as it turned out in further interviews, multiple project work was the norm in the new emerging industry. Indeed, as we followed each worker as they did their tasks and asked them to talk about their work, we found that designers, programmers and customer representatives were working on an average of five different projects at a time. This meant, for example, a programmer: coding a module for a sign-in screen for an online vendor; coding a home screen for a wholesale company; debugging a navigation system for a wine merchant; and preparing the information architecture for a database which had to link between an old legacy system and a new web site for ticket sales. Tasks for designers were different, but the range of project and product types could run in any given day from concepts for supermarket 'shopping carts' to icons and symbols for a new advertising campaign.

While their concepts of design and the artifacts they worked with were different, the work of producing web sites was facilitated by sets of intermediaries which functioned as boundary objects between and among the workers. As Bowker and Star point out "the creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting communities" (p297). Here we use the concept of boundary objects to examine in more detail some of the tangible intermediaries discussed above, such as contract parts, specification documents, program code modules and screen designs, in order to see how coherent perceptions are enrolled by the professionals working on them.

The following are examples from interviews and observations in our empirical work which illustrate some of the ways which customer account representatives, designers and programmers create and share boundary objects in ways which help them maintain their own professional identities and, at the same time, manage and indeed create time to get the work done.

Customer account representatives

Customer account representatives are generally the first people to meet with potential customer organizations and are responsible for the contractual arrangements between the new media firm and the customer organization, as well as the contractual arrangements with increasingly complex networks of outside vendors, design and marketing firms, and software sub contractors. One customer account representative who we interviewed and observed noted that he was working on 6 project accounts with firms such as a large travel organization, an electric company and an insurance company. Each firm wanted a customer service-oriented web site for customers (end users) to pay their bills and order additional services. The account managers who he coordinated with at the customer firms "Only want what they see", he complained, emphasizing that they were "usually short sighted and wanted things for show".

He saw his role as one where he had to advise and warn customer organizations about their expectations. But because he did not have the time to "educate" each customer, he tried to cut each project up into smaller contract modules so that each one could be produced more quickly and the customer's dissatisfaction or confusion about using one part would not effect the others. In this way he chopped up customer demands into individual contracts for specific sites with specific functions such as account management screens and end-user sign on screens. Thus the boundary objects of contractual language became simpler for the different groups to understand, and more measurable in terms of reaching short term goals.

One day, for example, when we were observing his work space we watched him talk on his head-set phone to a customer representative as he scrolled through a computer-based set of specifications which the customer was in the process of changing. While still on the phone he had created links in his own calendar system and the new media firm's contract production system, so that the agreed on specification changes could be entered into new contract modules and new meeting dates. These new specifications, contracts parts and delivery dates were then conveyed to the designers and programmers working on those pieces of the project.

Designers

What such contract and specification changes mean for designers is often a frustrating experience. Ideally, most say, they would prefer to meet with the customer organization contact people themselves so that they could sketch or present new storyboards or poster presentations showing designs of what the changes would look like. But in the fast-paced environment of web-based design, account representatives may draw up initial presentations together with help from designers, but then it is up to the designers to flesh out the appearance and details of the language of the contract.

A designer who we met with over an extended period of time commented on the changing nature of his job in this way, "Using Dreamweaver speeds up my design time from three weeks of drawing presentation material into no more than 3 days of coding and designing". In this way, as changes came in he was able to code and design at the same time and speed up his ability to meet the changing deadlines and requirements. It is the designer's role to turn a contract module and specification document into sample web sites both the outside customers and internal programmers can

understand. These web-based and/or paper-based contractual and visual 'designs' then become a series of boundary objects which need to be understood and used by all of the contractual partners and understood at a detailed level by programmers who then add functionally to buttons and interactive screens.

Programmers

Programmers are at the end of the production chain in development, which means that shortened and changing deadlines impact them the most. The fact that designers now also code screen layouts sometimes does not help speed up their production time, especially when there are technical problems which lie behind the screen design. One programmer explained it this way " Say we have to attach a customer billing screen to an existing legacy database and the screen design does not account for the technical problems of connecting to the old billing database". In these cases, which are not uncommon he adds " we have to start from scratch and still meet the deadline which the customer account representative made with the client firm".

What the programmers produce is then launched to the customer organization who ordered it, and depending on acceptance by the organization, hosted as an active web-site for all potential users to interact with. In this way the web-site is another form of boundary object which must be recognizable to the customer organization, and useable by the public it is oriented towards.

It is this last step, the creation of usable web sites for the general public, which is the most evident from a participatory design perspective. Yet the testing and further investigation of web site use by the firms that create them, is in its infancy.

DIVISION OF INTEGRATED WORK PRACTICES

The changing roles and the overlapping skill sets of new media workers has meant an emerging set of new work practices and new integration as well as division of labor.

In some ways the research analysis presented here is an old story; the retelling of twentieth century tales of divisions of labor and specialization that go back to Taylorism and time-management studies in the early part of the twentieth century (Braverman, 1974). The main firm we studied and the industry it is in, have experienced increased competition, mergers, specialization and new product development in the time span of three years which match that of the first thirty years of software development in the computer field (Greenbaum, 1979). Indeed, some of the dialectical dance between specialization of professions like designers and programmers, and integration of tasks done between the professions, has been witnessed in other office work including the legal profession and insurance processing (see Doorewaard, 87, Greenbaum, 1995). Yet, these old stories have the added twist of speed-up in production time, speed-up of technical and business changes and speed-up of the changes in the professions involved in production. The increased speed, and the pace with which it is occurring

effect the professional identities of the workers as well.

In 1998 when we began our pilot study, the new media firm we studied had three main groups of professional workers: customer account representatives, designers and programmers. Today, this firm, like others we have looked at have re-divided the work into two main areas: information architects and systems architects. In addition, some firms have also carved out a new specialty called user expertise architect. While some changes appear to be changes in titles, with many software engineers, for example, now preferring to call themselves software architects, the title changes signify a newly emerging set of work and learning practices. Here we will focus on our study of designers and programmers and examples of where they are positioning themselves to fit in.

Information and Systems Architectures

In our study, people who were drawn into new media from the design field mostly came from advertising and broadcast media, with the majority having a background in graphic design. Interviews with designers in other firms verify this pattern and also indicate that younger designers are coming from art and graphic design schools. Now, as designers have begun to do more programming, and in fact often construct their storyboards as computer-based prototypes, the line between art and technology is blurring. Added into this picture is the complex issue of what type of information should be included and how it should be presented to customers and users.

The breadth of the design field is one of the reasons for the emergence of a new area called information architecture. Designs presented to customers and end-users need to include more than the physical appearance of the designed screen or web-site. For web-based media the definition of the 'information' which will appear on the site is part of what is called the 'content'. Indeed the professional groups who get to define the *information architecture* are in a position to define not only what the customers see, but how the data is organized and how the links and navigation are arranged.

But there is a problem with the line between information architecture, interaction architecture and systems architecture, and it is the same problem which effected the division between designers and programmers; namely that problems not anticipated in the information structure get uncovered and redefined in the systems or technical infrastructure. For example a travel site which has multiple 'departure' and 'arrival' times specified in the information architecture, may need to be connected with an existing computer system which can be accessed only through one departure or arrival time. The information architecture would then clash with the systems or technical infrastructure, and the programmers or systems architects would be left scrambling to close the technical gap.

The questions of *what* gets defined by information architects and what is defined by systems architects is basically the old question of *who* meets with the customers and thus gets

their definitions specified into contractual language. But it is now being infused with traditions from different professions including software, advertising and broadcast media, and restructured with a separation of content from technical architecture.

Designers and programmers

While designers and some programmers are carving out the field of information architecture, programmers and project managers are forming the base of systems architecture. Yet within these broader fields, the jobs of designers and programmers are often becoming more specialized as people try to cope with intensified deadlines.

A designer we met with, explained that she had begun to specialize in fonts because fonts were an important part of graphic design and she identified herself as a graphic designer. Indeed the handling of fonts is both a graphic design and a technical issue for fonts appear differently under different technical platforms and within different software packages. Learning software tools like Dreamweaver and Silver Screen is a time-consuming process and every few months new software tools and new versions of existing ones come on the market, meaning more time spent in learning and using these 'time-saving' tools. Most of her learning was on her own time or during lulls between projects, but her new media firm also paid for her to attend seminars and buy tutorial materials to learn these new products. It appears from interviews with other new media designers, that these practices are common in the new media industry. By focusing on fonts she was able to keep technically up-to-date, meet approaching deadlines, and still handle the visual aspects of design that she enjoyed. .

Similarly a programmer whose work we followed, had been specializing in Java and Java Applets. Since he was working on so many projects at one time he felt that it was impossible for him to do a good job on all of them if he had to learn and relearn the range of languages he had been coding in. The programmers we interviewed used Java, ASP, Visual Basic, emac and Perl script, as well as learning the newer design/programming tools like Dreamweaver which the designers were using. And like the designers, their faster learning curves had to be squeezed between project 'down' times.

WEB DEVELOPMENT AS MOMENTS IN TIME

As mentioned earlier, commercial software development has always been a race against time to deliver working systems to customer organizations for the price and at the time established in the contract and specifications. What is new now is the mix of professional groups and their differing traditions, and the ongoing reorganizations of companies and professional boundaries within them. The fact that commercial web software development reaches enormous potential user groups is also a significant new characteristic of web development.

Participatory approaches for commercial software design emerged in the 1970s and '80s in an effort to integrate end-users into the design process in the early stages. Cooperative design in particular emphasized early, active and ongoing participation which focused on users' work practices and the situations of work (Greenbaum & Kyng, 1991, Schuler & Namioka 1993). We believe that these approaches could also be useful for influencing the speeded-up time constraints of new media production. But the challenges are huge, and the potential for further divorcing end users from the customer organizations involved in the design and development process is real, given the hybrid nature of new media as a collection of 'content' producers, designers and programmers and technical support.

Trying to intermittently insert participatory and cooperative design practices into this hybrid mix of work practices is likely to have little impact on the overall process or products. Our starting point however, has been to analyze the design and production process in terms of moments in time and place, in order to identify areas where active participation already occurs among the professional groups, and in order to give us some insight into *where and when* end-users could be introduced into the development process as participants, rather than audience. Some of the moments in time and place when translation and transformations occur are summarized below along with their corresponding boundary objects :

1. Communication. As pointed to earlier, the interactivity of new media represents a two-way participatory activity. Communication involves interaction between senders and receivers--it is a two way street. This implies that web sites and new media development is never a finished product, but rather one which can and will experience ongoing change. Understanding this dynamic character of new media as a part of the enrollment process would be a potential way to put to use the communication between people using it and those who produce, design and program it.

   Development of new media products, like that of earlier software development, is not a straight linear process. Moments in time from early meetings with customers organizations through actual installation or launch dates, are instances of enrolling different actors and their perceptions in the process of translating and transforming form and function to the resulting product. Project modules are often patched together in more of an improvised fashion where bricolage plays a more important role than formal project stages. Indeed these moments in time can be quite informal, such as a designer and a programmer meeting in the hallway late at night while they are working on a deadline. Moments in time can also be more formal, such as producers or customer representatives meeting or talking on the phone in order to clarify problems in the original specifications. In the more scripted and planned moments, customer organizations and end-users can be involved both physically and through their active participation with

boundary objects such as contract and specification documents and design prototypes.

2. Boundary objects. When modules and objects such as web pages are defined, these modules pass through the eyes and hands of content specialists, designers and technical staff. As contracts and specification documents attempt to crystallize the modules, they become, in effect, boundary objects which change form and function as they are negotiated formally and informally by different groups in the production process. Recognizing that the boundaries are semi porous and that web specifications are, in effect, boundary objectives in transition, can help us see that end-users can travel the pathways of the development process through interacting with web design objects, and through more clearly written specification documents. In addition, prototypes, as boundary objects are and were intended to include active end-user involvement--indeed a working mock-up of what may happen when end-users interact.

It is also useful to remember that web development as a non linear process is not one which can be controlled or coordinated using traditional system development project life-cycle techniques. Most textbooks from the discipline of systems development emphasize project management as if it were a linear process with discrete stages. They also focus on managing one project at a time (Kendall & Kendall 1992, Shelley et al. 1995). While it is open to question if this approach to single project, discrete step management was ever appropriate, the fact remains that new media development, as a multi-project environment with speeded-up deadlines and the involvement of more sub contractors, can not be managed using step-based project management techniques.

DISCUSSION

Actor-network concepts have helped us uncover actors--or sources of influence in the fluid and opaque process of new media production. These concepts have enabled us to illuminate time as a serious actor which influences not only the speed of production, but also directly the choices and strategies individuals are taking in the processes of negotiating the new product. In this way we have seen how time has been an actor which influences and forms the process of translation of the boundary objects along the development process. We have also seen how these choices consequently influence both the production and the end product.

But, the perspective and vocabulary of actor-network ideas has not helped us to tell the other story about the product; the perceptions or the political opinions that were *not* enrolled into the translation, and that were *not* inscribed into the finished website. By tracing the process of translation in the fluid network we did not see the network of other actors who did not get enrolled. Whereas the actor–network perspective has helped us illuminate non-human actors it has not brought other human actors into the picture.

According to Cynthia Cockburn, actor-network concepts

are based on a conception of power as a capacity, and as Cockburn points out; " in the lived world power is often experienced as domination" (Cockburn 1992:42) Tracing the networks of successful translations has given us a way to describe and explain the production process, but it does not explore how the end-users in fact *use* the products.

The fast pace of web development by new media firms is achieved in part by the fact that new media workers are separated from customer organizations and customer organizations are separate from end-users, who in fact are far more complex then the organization's focus group vision of 'customers'. The domination and control of customer organizations over their customers was not included in our study of new media work, but should be included in further research since it is the customer organizations, as clients of new media firms who order the web software products. End-users with their daily experience and knowledge are not a group that are likely to wait quietly outside the network of customer organizations and web site development firms. As user expectations increase it may only be a matter of time before active users, not as customers of organizations, nor as subjects of focus groups, press their way into the development process. Then the question should not be: who let the audience in? but rather, how do we welcome them as web site users?

ACKNOWLEDGMENTS

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