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# The Evolution of User Research Methodologies in Industry

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**Abstract**

User research methodologies continue to evolve to meet the needs of industrial settings. Traditional summative methods continue to be refined in terms of efficiency, and formative or generative methodologies of some form have become an accepted practice in most industrial settings. More recently, an emphasis on measuring the emotional impact of designs has been in vogue. One of the challenges facing those entering industry from academic settings is that the methods appropriate for academic inquiry often fail to meet the needs of industrial settings in terms of efficiency or effectiveness. This paper will explore some of the current challenges faced by product design teams and examine some of the methods that show promise in overcoming those challenges.

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**Introduction**

The field of human computer interaction is a relatively new field that is rapidly evolving. ACM SIGCHI just recently celebrated its 25<sup>th</sup> anniversary. While 25 years may seem like a significant time to some in the relatively young technology profession, two factors impact the maturity of the methods used in our field.

First, the technology industry itself is rapidly evolving in lock step with the nature of the products and services it produces. Traditional hardware and software development lifecycles have compressed, and new types of products and services have emerged such as web sites and cell phones that have even shorter development lifecycles.

Second, the nature of human-computer interaction work has shifted. The majority of practitioners today work in product (or service) development rather than corporate research settings. Researchers in such settings quickly realize that the demands of these

environments often render historical methods impractical and must adapt or create new methods that meet the demands of their situations.

This paper will examine some of the current trends in user research and attempt to categorize them as either having increased the effectiveness of the research, or increased the efficiency of the data collection process (or both).

### **Trends in usability testing**

Usability testing of software and hardware is one of the oldest methods for improving user experience. This method was adapted from traditional academic experimental methods to meet the needs of early industrial settings. The driving force behind these adaptations was to make the methods more suitable to usability problem detection rather than scientific hypothesis testing [1]. One could argue that finding problems is the same as null hypothesis testing (there are no problems) in academic research, but traditional research usually has highly specific hypotheses, and typically adheres to more rigorous data collection and analysis standards.

#### *Testing is becoming more formative and iterative*

Traditional usability testing (utilizing metrics), while still widely used in its original format, has further evolved into so called “discount” methods such as the RITE method [2]. These methods have evolved to meet the needs of projects using shorter more iterative development cycles, which require repeated studies on a changing design. Typically, these projects require very fast turnaround times in terms of collection and analysis of data, in other words higher levels of efficiency.

Other forces driving the adoption of “RITE method” like approaches to testing include increased team participation in user-centered design activities, and pressure to be more “formative” by providing feedback earlier in the product lifecycle. Both trends are generally positive but issues can arise if research specialists fail to maintain enough control of the research process to ensure data quality.

Adaptations to usability testing like the RITE method when conducted correctly can help make the research more effective (improving the impact of the findings) by improving the number of iterations possible in a development cycle. This increases the likelihood that team members will fix problems and validate the updated designs with additional tests. It would be helpful if academic programs provided better training on these new methods and helped evolve them through scientific analysis of their effectiveness in industry settings.

#### *Technology is changing our approaches to testing*

Many recent adaptations to usability testing methods have focused on making improvements in efficiency. Some of these improvements have been made possible due to technological advances, such as the use of specialized software and hardware to assist in capturing data in both text (data logging by observers, or survey data from participants) and video, or remote collaboration software that allows tests to be run using remote participants. Low cost eye tracking tools have spread studies of user’s gaze patterns. While eye tracking is not a new methodology, advances in technology have made it more cost and time efficient to conduct studies of this type, making them practical in industrial settings.

The most extreme example of how technology can make existing methods more efficient is the automation of summative usability testing [3] which enables participants to test software with limited human supervision. As technology advances, so does our ability to increase the efficiency of our methods. While this may increase adoption of existing methods, it does not necessarily increase the effectiveness of the method itself, but certainly promises to make researchers more effective by allowing them to focus on activities of higher value to the organization.

*More companies have adopted usability scorecards*

As members of senior management in companies become better educated about the benefits of usability testing, the demand for the creation of product usability scorecards is spreading. Two related factors are driving this change. First, is the development of summative usability testing standards like ISO/IEC 25062:2006 [4] that have helped spread adoption of summative testing. Second is the overall business management trend of tracking metrics via methods like Balanced Scorecards [5]. This is a positive trend because it helps executives and senior managers track investments in user experience like other business metrics, which can only help make summative testing efforts more effective. It has also resulted in researchers in industrial settings adapting methods like magnitude estimation for comparing user experiences [6] that are appropriate for comparing different types of products.

*Measuring emotion has become a common practice*

As companies become more interested in designing experiences, some are starting to recognize that traditional metrics like task completion rates do not capture consumer emotions. While we may be able to

thank Don Norman for promoting the concept of emotion in design [7], it is more likely that executives are slowly adopting the concepts of experience design due to other influences, including the mass media's coverage of design. One challenge is that researchers may find their existing user satisfaction measurement methods to be inadequate for this purpose. Perhaps academic research can provide some useful tools to assist in doing this in an effective and efficient manner. It seems unlikely that the use of P300 brainwave measurement will find wide spread adoption! Another issue is few companies can afford to spend time on measuring emotion as they are already struggling to do more traditional user research. When task completion rates remain very low, it is likely users will not be happy. Perhaps in these situations it might be more effective to focus on problems that are more basic and easier to measure.

**Trends in ethnographic research**

Watching users interact with a system, or do work that could be improved by technology is one of the oldest methods in traditional human factors work. One could argue that Frederick Taylor, an influential management theorist at the turn of the 20<sup>th</sup> century, was the first to promote these methods in American industry. Whatever their origin, clearly such techniques predate computer technology. These methods were some of the first to be adapted to computer software and hardware in attempt to address the shortcomings of traditional usability testing.

*Use of ethnographic research for product strategy*

The adoption of ethnographic research has evolved to the point that companies are regularly utilizing this method to define market and product strategies outside

of product development initiatives. Some market research consulting firms have even adopted ethnographic methods and created new methods that incorporate ethnography such as the Jobs & Outcomes method [10]. Some companies have gone as far as to create dedicated groups of ethnographic researchers who conduct studies to investigate new markets to inform corporate strategy and product planning.

In 2005, the first Ethnographic Praxis in Industry Conference (EPIC) was held by the American Anthropological Society as a response to the growing interest in ethnographic methods in industrial settings. This indicates that industry may have finally realized that user-centered methods can be most effective when applied before the project team has even started development. It does however; create issues if these researchers fail to consider the needs of the teams who do product design or development because they have never worked on product design or development themselves. Most methods have been adapted to become more practical within product development environments, but as a result of increasing specialization of practitioners and ethnography's role in early product definition phases, ethnographic methods currently appear to be moving towards being less rather than more pragmatic. This trend may reverse if classically trained ethnographers find themselves unable to impact product design like the early psychologists who first adapted experimental methods for use in industry.

### **Usage log analysis and feedback forms**

Some traditional software companies have historically used beta tests to deploy so-called "instrumented" versions of their products designed to track user

behavior in an effort to improve usability. Before the wide spread adoption of the internet this practice was limited by the challenges of getting users to agree to the practice, as well as the logistics collecting the resulting data files. Many help manuals solicited user feedback via postage paid cards or by printing email addresses in printed materials soliciting feedback from users of manuals. Response rates to these requests for feedback were typically poor. Pervasive network technologies have made modern versions of these methods far more efficient and somewhat more effective by making it more convenient for users to provide feedback.

Once web-server logs made it convenient to study user's actual interactions with interfaces this practice started spreading. It became very common for major web sites to analyze server logs and to collect user feedback via online forms during the "dot com" era. This has now spread back to desktop application design. The most recent update of Microsoft Office (Office 2007) was based on an extensive analysis of logs of user's interactions with the interface during real world use [11]. Many desktop applications now leverage both behavioral logging and prompts for written user feedback (while using the product) as they assume users are online most of the time. These are just some examples of where technology has enabled us to improve the efficiency of existing methodologies.

### **Summary**

User research methods continue to evolve primarily through the efforts of individuals working in industry. It seems fitting that our community refines methods through "user experience" with methods. Several challenges exist with this approach. How do researchers

in industry learn what methods are appropriate? Where do they learn about these new methods as they evolve? How do we ensure these new methods are valid? In the past methods were often evaluated carefully by scientists in corporate research settings who had time to study the validity of new methods and publish papers on their findings at forums such as CHI. As corporate research has been deemphasized by many companies the number of scientists doing studies of user research methods has dropped. One hope is that academia will find ways to collaborate with industry to do this type of work, including doing research into new methods that meet the needs of those in industry.

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