



Nielsen Norman Group

# Getting the Science of Design Used

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I want to raise three main issues regarding the science of design:

- it must address the needs of an extremely **broad set of design projects**,
- it must result in principles or other tools that are easy enough to be applied by the extremely **wide group of personnel** that's working on these many projects (we could call this meta-usability or the usability of the science of design), and
- it must attack the problems related to **design-at-a-distance**, as necessitated by the move to offshoring most projects.

## The Teeming Masses of Design

In September 2003, there were 43,144,374 websites in the world [1] according to the Netcraft.com survey. Add maybe 22 million intranets, and the world has at least 65 million design projects.

Many of these projects may not be considered software design in an ultra-conservative meaning of the term because they are not the product of a monolithic listing of C code. Rather, they are cobbled together from a series of middleware offerings with APIs of highly varying quality, bits and pieces of scripting language, sometimes a small amount of homemade code (or sometimes substantial amounts of traditional code, in the case of major sites like amazon.com), and various HTML tags, content, graphics, and multimedia assets. In a recent analysis of ten top intranets [2] we discovered that every single intranet team had found it necessary to construct some code itself.

Whether or not websites and intranets contain traditional code, they are surely design projects that build user experiences from a (hopefully) higher-level set of software primitives than employed by traditional software development projects. These 65 million design projects account for the vast majority of today's user experience, and so they should be supported by the new science of design, even though they are often not built by traditional programmers.

## The New Designer

The 65 million design projects are staffed by people who usually don't have a traditional background in systematic design methods. Often the staff has no formal education or training in the field but have taken on their responsibilities as a result of the extremely rapid growth of websites and intranets during the last decade. Most of the projects follow no recognized development methodology, though some companies have home-grown frameworks for managing their design projects.

My main thrust for the last several years has been to encapsulate design theories in bites that are easy to swallow and that can be applied to immediate effect on these many practical design projects. I coined the term "discount usability engineering" to refer to methods that are easy and fast enough to be of interest to the vast majority of the world's design projects. Simplified usability methods can be learned by most practitioners in a very short amount of time. Design guidelines provide just-in-time injections of specific concepts and lessons.

The challenge is to develop methods and tools that are sufficiently simplified that they will actually be used on the majority of design projects while still retaining substantial explanatory power and the ability to actually improve the designs. Achieving all these goals simultaneously is not easy, but is essential for any practical impact of the new science of design. In particular, I urge attention to the

usability of any new theories, tools, methods, or other outcomes: can they be understood by average members of average design teams, and will these people be able to apply them efficiently and effectively on average projects? Innovations that only work for elite personnel who work on elite projects will not change the world and will not substantially improve the user experience for the world's users.

## Offshore Design

In the future, most software development will be conducted in offshore countries such as India, China, and Russia. Many websites and intranets will also move their development activities offshore. While this trend has many benefits, it also involves significant usability risks because of the increased distance between the users and the project teams [3].

In a simplistic model, a project has three components: user research, design, and implementation. All experience shows that usability is optimized the more tightly these three areas of work are integrated, the more the staff on the different subteams communicate, the more the design is iterated, and the more contact all project members have with users.

An offshore project may only move implementation offshore and retain user research and design in the same country where the users are located. This model creates a gap between the hoped-for design and the actual implementation that is usually bridged by specifications and other formal documents, all of which are poor at communicating many of the subtleties that lead to great usability. The distance between user research/design and implementation also often lead to fewer iterations, partly because of the reliance on a more formal development process.

Alternatively, an offshore project may move both design and implementation, while retaining user research as a domestic team. This model creates a gap between user research and design, which is almost always a prescription for a usability disaster. Also, the designers are no longer close to the users, which is another prescription for disaster. Even the best usability report cannot communicate all the details that a good

designer will pick up from personal exposure to users.

Finally, the project may move all three roles, which will reestablish tight communication and integration within the team but will separate everybody from the users. In particular, it is hard to conduct user research without access to users.

Hopefully, new methods and tools can be developed to alleviate the problems associated with offshore projects. This won't be easy, but it's essential for our future well-being since it is unrealistic to assume anything other than an explosion of offshore projects.

## References

- [1] *Web Server Survey*, <http://news.netcraft.com>, September 1, 2003.
- [2] *Intranet Design Annual 2003: Year's Ten Best Intranets*. Nielsen Norman Group, October 2003.  
<http://www.nngroup.com/reports/intranet/2003/>
- [3] Offshore Usability. *Jakob Nielsen's Alertbox*, September 16, 2002.  
<http://www.useit.com/alertbox/20020916.html>

## Biography

Jakob Nielsen, Ph.D. is principal of Nielsen Norman Group ([www.nngroup.com](http://www.nngroup.com)), a user experience think tank. He was previously a Sun Microsystems Distinguished Engineer and has also worked at the Technical University of Denmark, Bell Communications Research (Bellcore), and the IBM User Interface Institute. Nielsen's personal website is at [www.useit.com](http://www.useit.com) and occupies both of the top two Google hits for the query term "usability." He is the author of several books, including *Designing Web Usability* (published in 22 languages), *Homepage Usability: 50 Websites Deconstructed*, *Usability Engineering*, *Multimedia and Hypertext: The Internet and Beyond*, *Coordinating User Interfaces for Consistency* (editor), *Usability Inspection Methods* (editor), and *International User Interfaces* (editor). He holds 72 United States patents for various user interface inventions.

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