User-Centered Design as it Pertains to Online Reference Systems

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Introduction
This poster presents models of, and approaches to, user-centered design of online-reference systems (encyclopedias, dictionaries, and their aggregations). This is based not only on approaches used by Credo’s product development team, but also on specific interviews of key staff at other online reference companies such as Tom Bayer at iFactory (who has built award-winning reference platforms for Sage, Oxford University Press, Harvard University Press, and others), and Erin McKeen at ReVerb (who has built the largest online English dictionary). Approaches that model user behavior such as personas, audience analysis, and a specific model related to reference (the modes of reference) will be featured.

The focus of this poster is on the earliest stages of product design, the point at which you are deciding who your users are and what needs of theirs you are going trying to solve. Getting a complete picture of potential users, understanding their goals and objectives, and appreciating the context in which they will experience your new product or application is essential. This includes an understanding of the economics of their access to the product, the other players in their world who may play an important role in the purchase and set-up of the product, and even a sense of the emotional connection you are hoping to create with your users.

Audience Analysis
The first section of the poster covers the techniques used in audience analysis: market segmentation, personas, and the multiple talents/voices you should have at the design table when doing early stage design.

Geoffrey’s Moore’s *Crossing the Chasm* is famous for popularizing the logic behind Everett Rogers’ Technology Adoption Curve. If your product or application requires a broad adoption in order that the business model supporting it can be successful then a detailed understanding of a user’s “100% solution” is necessary. Otherwise one will be left with only a fraction of the potential market for the innovation. Moore’s book gives a good description of how to go about envisioning the holistic, 100% solution necessary to carry a product into the mainstream.

This resonates well with a popular technique in understanding users, the use of personas. Personas are detailed descriptions of an imagined user of your system or application. In a group setting you get the design team to think through a half-dozen archetypical users and give a detailed description of a fictitious member of that user group. You give them names and characteristics that give real life to the discussion about the needs of differing users among your target user-base.

A great example of personas are those used in the development of some new capabilities by ReVerb, formerly Wordnik. ReVerb has built the largest English Language online dictionary and they are building both their own apps for this dictionary as well as making it available to other developers wanting to add dictionary functionality to their apps. Examples of their personas (as you can see on the poster) include:

- Confirmers
- Explorers
- Collectors
- Student Collectors
Super Collectors

English Language Learners

Two different API users: Dave and Sanjay

It’s interesting that Reverb has included two personas related to their API. Most product designers wouldn’t spend much time thinking through the whole user context of an API user. But Erin McKeen is very specific about user needs when she talks about Sanjay:

Sanjay works for a start-up and he is coding when most things are closed. In the middle of the night he’s got this great idea; he wants to finish it. He’s in this creative flow state and he wants to include a dictionary in what he’s building and he doesn’t want to send an email to a business development person and ask for permissions and wait to get approval and wait to get his key.

Erin goes on to say that she knows several Sanjays personally because she is the one who answers their frustrated e-mails first thing in the morning when she gets to work—each one is asking a question which Sanjay would have preferred to have found his own answer to only a few hours earlier when he was in his creative flow state.

Getting a personal image in mind of likely users is a hallmark of the use of personas, but it’s not a new idea. One of the most endearing features of the seminal article on reference and user services in libraries is Samuel Green’s article based on a speech he gave at the first conference of the American Library Association back in 1878. Even though he does not use the word “reference” anywhere in his 7 page article, he gives wonderfully clear descriptions of 27 different users coming to the Worcester Free Public Library and shows what user-focused service of these users mean for the library and the library staff.

Since the design conversation seeking a holistic, potentially transformative design is multi-faceted, it begs a diverse set of outlooks or voices at the table. Tom Kelly, the CEO of Ideo, has co-authored the book, The 10 Faces of Innovation in which he describes some of the faces he recommends be at your design table. Each of these differing voices may have a pivotal role in suggesting what may turn out to be the central feature or aspect of the application which then leads to its success.

It turns out that in some cases understanding different groups of users may unlock a completely different business model that would have gone untapped if not recognized in a timely fashion. Birds of North America is such an example. There is a significant difference in the needs of ornithologists and amateur bird-watchers. Both can be served by much of the same information, but there are also differences in what information each group can provide to an encyclopedia of birds. Amateur birders can provide data on sightings and many would be pleased to be able to do so. But the authority of a bird encyclopedia would not be served by having just anyone being able to declare a new species of finch. It also turns out that each of these user-types has different economics driving them and their interest in the online application. So Alan Poole, editor of the Birds of North America designed the online version of this 18 volume iconic reference work with two very distinct user communities: ornithologists and bird-enthusiasts. Bird enthusiasts pay an annual subscription which sustainably covers the financial needs of this ongoing resource. Ornithologists, through collaboration with professional ornithological organizations are then able to have the functionality that supports the scholarly communication needs of that community.

The Modes of Reference

The second section of the poster deal with the Modes of Reference, developed at Credo Reference. Typically the user-centered design life cycle goes from audiences or user identification to use cases, web page and interaction design. At Credo we have found it useful to put significant design attention to what we call the modes of reference. This level of design has proven useful to us not only as a way to generate discussion when enumerating candidate use cases, but also to help get a sense of a product road map on how our product can evolve over time—incrementally improving our coverage of the various modes.

The result of audience analysis often correctly captures the fact that the search behavior of lawyers is different than that of doctors, teachers different than students, and high school students different than PhD candidates. The modes of reference capture the fact that the same student or doctor can have very different search behaviors depending on their immediate goal and state-of-mind. We call each of these a mode and they are distinguished by:

- Desired completion state
- Tolerance, delight, or distain for false positives (serendipity)
- Tolerance or distain for false negatives
Importance of source authority

You can see from the poster that we currently have identified 8 modes in 4 different categories:
- Fact finding
- Exploration
- Diversion
- Detailed Bibliographic Research

Testing User Design

Because the objectives of user-centered design demand an iterative and continuous improvement process it’s important to point out that all interim products of the design process lend themselves to some form of usability testing. With permission from the publisher, ALA Editions of eContent Quarterly we are providing a handout of an annotated bibliography including classics of reference and reference librarianship as well as both classics and recent textbooks, articles, and websites re User Centered Design. This bibliography was put together with contributions from Terry Winograd of Stanford University, Erin McKean of ReVerb, and Jodi Wing and Josh Orum of LoudDog.com.

It’s worth pointing out from this bibliography that if you have time for just one book, it should be Steve Krug’s Don’t Make Me Think. And if you have time for just one chapter from one book, make it Chapter Nine in Don’t Make Me Think. If you implement well what Krug presents in Chapter Nine your user-centered design will be way ahead of the pack.

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REFERENCES


Curriculum Vitae

John G. Dove has worked for Credo Reference for the past 11 years, first as CEO, then President, and now as Senior Publisher. He has spoken at a variety of library conferences such as the Charleston Conference, the Fiesole Collection Development Retreat, and the Acquisition Institute at Timberline Lodge. John is currently co-editing a book on the future of reference and reference services with Dave Tyckoson of CalState/Fresno to be published later this year by Purdue University Press.

John has extensive experience in technology businesses including a Boston area consulting firm, Symmetrix, which was instrumental in building learning organizations and electronic performance support systems to back them up. In the mid-90s he was president and COO of SilverPlatter, a supplier of electronic and online bibliographic information to research libraries worldwide.
In 2000, John was COO of GlobaLearn, a company that deployed investigative reporters and photographers to travel the world on behalf of (and wired into) social studies classrooms all across the U.S. GlobaLearn was subsequently purchased by Houghton-Mifflin. Immediately prior to joining Credo Reference in 2003, John worked with the Executive Education for E-Government project at Harvard's Kennedy School of Government.