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Executive Summary

Interface design guidelines represent a form of codified knowledge, yet there are very few published studies regarding the awareness and use of such guidelines by web interface designers. This study explored the perceptions and use of web design guidelines by the design community. Starting in June, 2010, 116 participants responded over a three week period to a web based questionnaire. Twenty participants also took part in phone interviews. The study asked designers about specific guideline sets, knowledge sharing and design tradeoffs. Participants generally expressed a positive attitude towards the use of guidelines and a majority incorporated guidelines in their work. Of the various guidelines considered in the study, the WCAG Accessibility Guidelines were mentioned most often by participants. Awareness of guidelines came predominantly from other designers, where knowledge sharing occurred via blogs and direct contact with peers. Design tradeoffs were considered a persistent factor in design work, where making both simple and complex choices was a measure of what constituted "good" design.

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Background

The study, conducted as part of doctoral research at the University of Toronto, included a web based questionnaire which gathered data from June 16 to July 6, 2010. Follow-up interviews were conducted with 20 participants from July to September, 2010.

Participant Demographics

The study captured data from 116 participants, of whom 59 self identified as Canadian residents, 40 as residing in the U.S., five from India, and the remainder from Australia, Austria, Croatia-Herzegovina, France, Germany and the U.K. 40% of participants had over 10 years experience as web interface designers. Over 72% of the participants were between 25 and 44 years of age, with men representing 60% of total respondents. Participants were involved in a wide range of project sizes (as measured by the total project budgets) and over half had experiences in a lead role in projects with budgets of over $500,000.

Guideline Use

83% of participants indicated that they used guidelines in their work. The definition of what constituted a guideline set varied widely, from accessibility guidelines (including W3C and the U.S. government's Section 508 guidelines) to heuristics to online pattern libraries. When asked about the helpfulness of guidelines, 83% of respondents felt the guidelines sometimes or often helped address design problems. In addition to guidelines, a number of participants made reference to the use of pattern libraries. These libraries differ from guidelines in describing a design problem and then offering solutions drawn from communities of practice. The use of evidence based guideline sets, such as ISO9241 or the *Research Based Web Design & Usability Guidelines* (U.S. Dept of Health and Human Services) was relatively low, with less than 4% using the ISO guidelines, and under 13% using the U.S. Dept of Health and Human Services guidelines. The phone interviews indicated there was little perceived difference in the validity of evidence based and non-evidence based guidelines. The validity and adoption of a set was not predicated on the strength of research evidence, but rather on multiple factors including the publication date, guideline source and the experience of the designer.

A majority of participants agreed that guidelines are good at communicating solutions to design problems, and that designers should consult guidelines in the course of their work, but over 60% disagreed that designers *must* follow guidelines. Many respondents stressed that guidelines were not rules and adherence had to be tempered by experience and judgment.

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Knowledge Sharing

Awareness of evidence-based guideline sets varied greatly, although over 85% of participants were aware of the WCAG Accessibility Guidelines (version 2). Participants were asked to indicate how they learned about the web design guidelines they used in their work. Results are shown in Table 1 (note that multiple responses were possible). The interviews supported the importance of communicating with other designers, both electronically and in person, when addressing design problems.

Table 1: Sources through which designers learned about web design guidelines

Sources	% of participants
Blog	60%
Other Designer	56%
Book	55%
Search Engine	43%
Client	33%
Educational Institution	32%
Listserv or Message Board	32%
Journal (Online)	26%
e-newsletter	12%
Podcast	10%

Design Tradeoffs

In the web based survey, over 60% of participants reported that they often experienced design tradeoffs in their work. These tradeoffs were described across a broad spectrum, including (i) design problems specific to a certain project, (ii) addressing business goals versus design goals, and (iii) reaching consensus among project stakeholders. Many participants reported that the act of making design choices was the very essence of the design process. Addressing design problems, which include design tradeoffs, was reported in the phone interviews to represent from 10% to over 80% of the time devoted to a project.

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Table 2 shows participants experienced three of the four tradeoffs discussed in the literature. Only 32% of respondents indicated that they experienced a tradeoff between *Ensuring User Accessibility* and *Employing Screen Based Controls or Widgets.*

Table 2: Experiences with design trade-offs drawn from literature

Tradeoff (drawn from literature)	Response Percentage (totals may not equal 100% due to rounding)		
	Yes	No	Uncertain
Ensuring User Accessibility versus **the Use of Images and Multimedia**	**65%**	29%	6%
Ensuring User Accessibility versus **Employing Screen Based Controls or Widgets**	32%	**50%**	19%
Optimizing User Experience versus **Displaying Image and Text Rich Content**	**56%**	34%	11%
Ensuring a Web Page is Laid out Clearly versus **Displaying Dense or Complex Content**	**61%**	32%	7%

Limitations of Study

The web based survey did not use a random sample, therefore this data cannot be extrapolated to represent the design community as a whole. It should be considered exploratory and only reflect the attitudes and opinions of the 116 participants.

Next Steps

This report presents highlights of the data collected, which will now be analyzed in detail in order to better understand the perceptions about, and use of, interface design guidelines. The results of the analysis will be available as part of the authors dissertation (anticipated completion in early 2011).

A number of resources were cited by participants during both the web based survey and the phone interviews. Some of these resources, as well as a list of studies related to guideline use, are annotated in the following pages.

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Resources

An annotated list of guideline sets, pattern libraries, design aids, books and organizations mentioned by participants in the study.

Guideline Sets

ISO 9241: Ergonomic requirements for office work with visual display terminals (VDTs). http://www.iso.org/iso/catalogue_detail.htm?csnumber=16883

> This multipart collection of standards is also titled *Ergonomics of Human System Interaction*. Some of the guidelines include references.

PAS 78: Guide to good practice in commissioning accessible websites (British Standards Institution). http://www.bsigroup.com/

> A guide to web accessibility best practices. The BSI Group is a certification body located in London, England.

Research-based Web Design and Usability Guidelines published by the US Dept. of Health and Human Services**.** http://www.usability.gov/guidelines/index.html

> An excellent collection of evidence based guidelines (now in its second edition) produced by the U.S. government and originally based on a 2001 National Cancer Institute guideline set. Free download.

Web Content Accessibility Guidelines (1.0 & 2.0)**.** http://www.w3.org/TR/WCAG20/

> Arguably the best known collection of accessibility guidelines. They are published by W3Cs Web Accessibility initiative. Free download.

Pattern Libraries

> Pattern libraries are repositories for examples of design solutions. These four sites contain a wealth of examples and design advice.

Open Source Design Pattern Library. http://www.uidesignpatterns.org/

UI Pattern Library. http://ui-patterns.com/

Wellie.com. Patterns in Interaction Design. http://www.welie.com/patterns/

Yahoo Design Pattern Library. http://developer.yahoo.com/ypatterns/

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Design Aids

Designer's Toolbox. (2010). http://www.designerstoolbox.com/

> A collection of resources for digital (and print) design, including browser window sizing, banner ad sizes, guide to HTML characters and a *Lorem Ipsum* generator.

Nielsen, J. (1994). *Ten Usability Heuristics*.
http://www.useit.com/papers/heuristic/heuristic_list.html

> Nielsen's heuristics are one of the best known guides to user interface design. The ten heuristics are intended to provide designers with a checklist and shortcuts to ensuring a minimal level of usability.

Smith, N. (2010). *960 Grid System*. http://960.gs/

> A guide to working within various browser dimensions.

Books

> These books provide designers with guides to producing interfaces not only for web browsers, but software and other interactive platforms.

Tidwell, J. (2005). *Designing Interfaces: Patterns for Effective Interaction Design.* O'Reilly Media.

van Duyne, D.K., Landay, J.A. & Hong, J.L. (2006). *The Design of Sites: Patterns for Creating Winning Web Sites.* Prentice Hall.

Johnson, J. (2010) *Designing with the Mind in Mind. Simple Guide to Understanding User Interface Design Rules*. Morgan Kaufmann.

Organizations

> Members of both these associations were notified (via message board posting and listserv) of the questionnaire. Both associations have a strong history of representing the interests of web interface designers.

IxDA (Interaction Design Association). http://www.ixda.org/

SIGCHI: The Association for Computer Machinery Special Interest Group on Computer Human Interaction. http://www.sigchi.org/

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Research studies related to guidelines

From the author's review of literature

Beier, B., & Vaughan, M.W. (2003). *The Bull's Eye: A Framework for Web Application User Interface Design Guidelines.* Paper presented at the CHI 2003, Ft. Lauderdale, Florida. http://www.cc.gatech.edu/projects/PageSleuth/references/p489-beier.pdf

Cherry, J. M., Muter, P., & Szigeti, S. (2006). Bibliographic Displays in Web Catalogs: Does Conformity to Design Guidelines Correlate with User Performance? *Information Technology and Libraries, 25*(3), 154-162. http://cogprints.org/5244/

Curran, K. & Robinson, D. (2007). An Investigation Into Web Content Accessibility Guideline Conformance for an Aging Population*. International Journal on ELearning*. 6(3), 333-350. http://www.editlib.org/noaccess/21021

Decker, J. (1994). The validation of computer simulations for design guideline dispute resolution. *Environment and behavior*. 26(3), 421-443 http://eab.sagepub.com/content/26/3/421.abstract

Ivory, M., & Megraw, R. (2005). Evolution of Website Design Patterns. *ACM Transactions on Information Systems, 23*(4), 463-497. http://portal.acm.org/citation.cfm?id=1095872.1095876

Janeiro, J., Barbosa, S.D.J., Springer, T. & Schill, A. (2009). Enhancing user interface design patterns with design rationale structures. *Proceedings of the 27th ACM international conference on Design of communication*. Bloomington, Indiana, USA. 9-16 http://portal.acm.org/citation.cfm?id=1621998

Tetzlaff, L., & Schwartz, D.R. (1991). *The Use of Guidelines in Interface Design.* Paper presented at the Proceeding of the Conference on Human Factors in Computing Systems (CHI '91), New York, New York. http://portal.acm.org/citation.cfm?id=108936

Vora, P. (2009) *Web Application Design Patterns*. Morgan Kaufmann. [Book]

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