24/7 or Bust: Designing for the Challenges of Global UCD

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ABSTRACT
The globalization of Oracle's development organization, customer base, and product lines has had an ongoing impact on the evolution of the Oracle UI Group (OUI). It has changed not only the product and user requirements to be met via the UCD process but also the nature of that process. This overview describes some of the internal and external challenges inherent to the globalization of enterprise software and how OUI has attempted to address them by creating deep connections with both its user and developer communities.

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H.5.2. User Interfaces: User Centered Design
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INTRODUCTION
Oracle first gained prominence for its relational database software, dominating almost 80% of the market. But it is also increasingly influential in the enterprise applications sector, consisting of "application suites" that a large company would use to automate its human resources, sales, call center, financial accounting, procurement, and other internal business functions, hence the name "e-business".

Over the past decade Internet technologies such as thin-client HTML interfaces have sparked a shift in corporate information technology (IT) infrastructure. Decentralized enterprise systems (e.g. email, human resources and accounting applications) run by company divisions have given way to a single global instance of an application suite hosted at a single location, with user access worldwide through a web browser. For example, during this period Oracle itself has consolidated from 300 email servers to one single server. The global shared database and application suite may be hosted at the corporate headquarters but more likely will be located at a lower cost location within the parent operating country with at least some supporting staff in locations like India or Eastern Europe.

Thus, designing a single application that can support such a range of users among various cultures, roles and tasks, as well as operating under diverse country regulations has become one of the driving challenges for OUI.

This is further complicated by the fact that the Oracle development organization currently employs over 6000 programmers distributed globally with primary concentrations in the United States, India and the United Kingdom (UK). Additional development centers are scattered around the world in locations such as China and Australia. Consequently, the sun never sets on the software creation process at Oracle, with design and development activities persisting worldwide 24 hours a day.

HISTORY & MISSION
The Oracle UI Group (OUI) was founded in 1994 as a centralized UCD organization to support the software development process with the specific goal of improving the usability of enterprise products through UI design, usability evaluation and standards coordination. Initially the primary focus of OUI was designing Windows GUIs to replace command-line interfaces running on local client-server hardware.

This quickly evolved into redesigning such UIs to run on Java in a thick-client deployment. In the last 5 years, OUI has focused entirely on designing thin-client browser-based UIs deployed within a 3-tier architecture of database, application server, and browser. Meanwhile, the number of products Oracle produced doubled to over 130.

TEAM EXPERTISE AND ORGANIZATION
OUI consists of a 65-person multidisciplinary staff of designers, psychologists, and computer scientists. It is currently the largest corporate UCD group in California's famed Silicon Valley. OUI also has staff located in Boston and the UK. Facilities include over 7,000 square feet of dedicated lab space and state of the art equipment including an eye tracker.

Operationally OUI is divided into 5 teams. Three teams focus on the design of specific product lines: Applications, Database, and Business Intelligence tools. A dedicated standards team is responsible for Oracle UI standards for Java, HTML, and mobile device software. OUI also features a research team focused on the development of visualization and multimodal technologies. This team also sponsors research activities with leading university labs. Projects have been completed with Stanford

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(1), University of California - Berkeley and Carnegie Mellon (2) universities.

METHODS

OUI employs a thorough, multiphase UCD methodology throughout a product life cycle. This approach has recently become internalized via a revised functional design document (FDD) used by many of Oracle's applications teams. Requirements gathering, object/task modeling, flow diagramming and interface prototyping encompass the range of activities, with associated deliverables. These phases in turn are supported by various usability methods like focus groups, contextual inquiry, and group task analysis, as well as CIF testing (3) for full product evaluations. While usability experts conduct these activities, they are well attended by the UI designers and product teams and often customers, as well. The OUI usability lab has the ability to provide a streaming video feed over the Internet to remote development and customer locations. Like all software development, UCD at Oracle proceeds in an iterative fashion, punctuated by periodic reviews and benchmarking of designs. These methods have had to be adapted to address the evolving nature of the globalization of IT.

Internal Development Process Examples

One example of how Oracle's UCD process has changed is the development of tools and procedures to work remotely with customers. Remote usability testing as well as remote customer requirements gathering sessions can now be conducted with a combination of custom and standard web-conferencing tools. For example, a recent usability test of a prototype pharmaceutical tracking application was tested with a German customer from the OUI site in Boston. In another case a Java development tool was tested remotely with users in India from the OUI site in California. These sessions yielded data that could not have been collected with only local test participants.

In addition, rapid prototyping is often done with UI design taking place primarily in the US and prototype construction in India. The 12-hour time difference yields a much faster turnaround in the process because the serial nature of the activities can be spread over a 24-hour working day. This allows more design iterations to be considered in the same timeframe but also increases the communications challenges the global team faces. There is of course the likelihood of misinterpretation, a sense of detachment from the process, cultural misunderstanding of design necessities like code iterations, and especially the challenge of shepherding the UCD process from the other side of the world.

External product deployment examples

Two examples from recent projects illustrate the cultural challenges in constructing a suite of products that must work on a global basis. For instance, Oracle provides call center software to a number of industries. Initially this software was developed for a user population in the United States characterized by high turnover rates and users with a high school level of education. As large companies have migrated these positions to India, the user profile shifted to a college education level. Users in India quickly indicated dissatisfaction with restrictions intentionally built into the UI design to channel the call center user through a wizard-like, serial interview process when talking to a customer. The Indian users wanted and were able to manage a much more fluid interaction model, thus the product design needed to be adjusted accordingly.

Furthermore, the software must be designed to support the wide variations of roles, tasks, and business procedures that exist when a multinational corporation runs all its business operations software out of a single global instance. For example, the software must be able to model all of the human resource procedures and taxation laws in effect for every country that a business operates within. The UI design needs to be layered to accommodate both the configuration and execution tasks because no single individual can have the full range of expertise. Also of note, Oracle products are designed to be concurrently available in 24 different languages including Semitic, Cyrillic, and Asian languages like Chinese and Japanese.

CONCLUSION

The OUI Group is exploring the next step of global design challenges, including new interaction designs supporting dynamic object manipulation, flexible layouts for literal translation, and shifting user profiles due to changing geographic and cultural user requirements. UCD is here to stay in the corporate environment but will continue to evolve as the products, services, and users expand globally.

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