Applications User Experience Research and Design Process
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Executive Overview

Oracle builds user experience into its applications using a five-step process:

- Observe
- Analyze
- Design
- Prototype
- Measure

In this white paper, you will learn about the origins of Oracle’s user experience team and how we developed our five-step user experience process. Our process is compliant with national and international standards and incorporates the best industry user research methods. You will learn how Oracle has blended modern user experience practices from the companies that it has acquired into a unified process that is integrated into Oracle’s approach to software development. This user experience process has been incorporated into applications built with agile techniques and extended to the post-sales implementation of applications by customers. Oracle’s global user experience research team continues to innovate with new technologies, such as eye tracking and facial gesture analysis. The team has integrated customers into its design process, and more than 2,000 enterprise organizations are part of our Customer Participation Program. Representatives from more than 100 companies have joined the Oracle Usability Advisory Board, where members provide feedback on future technologies and products, as well as share best practices.
Introduction

Oracle has made a large investment in user experience. This focus has changed the way Oracle creates software, by integrating the user experience process into Oracle tools and making modern, innovative user experience features possible—even when customers tailor Oracle software themselves. We listen to what customers need and want, and we build applications that improve their productivity and enjoyment.
Oracle Follows a User-Centered Design Process

The Oracle Applications User Experience (Applications UX) team has developed a user-centered research and design process that includes five steps (figure 1).

1. Observe: Before beginning to design an application, the Applications UX team spends time identifying who the end users will be and visits them at their work sites. Our industry-standard user research methods include ethnographic studies, during which we watch customers in their typical work contexts, interview them as they work, and ask them to show us the tools that they are using. We also meet with these customers in brainstorming sessions, during which they tell us about what they need as well as what they want in a new or enhanced enterprise application.

2. Analyze: The Applications UX site visit teams then search for the consistencies in work processes across companies and customers. We conduct further studies using surveys and customer feedback sessions to gain a deeper understanding of customers and their work. We create user profiles and personas to characterize the key groupings of customers, and then we dig into the work details using task analysis and card-sorting techniques.

3. Design: Once the Applications UX team has a thorough understanding of users, their tasks, and the contexts of their work, we sketch out the kind of experience that we think they need. We start with paper prototypes, which explore a variety of design solutions that match customers’ mental models of how they work. Then we evaluate alternative solutions by conducting cognitive walkthroughs of task flows with customers and by having our UX experts analyze the flows against heuristics of good practice.

4. Prototype: The Applications UX team then builds interactive prototypes of the best solutions with prototyping tools that enable us to work quickly and make changes easily. We take advantage of design patterns that we have created that streamline the workload for interaction designers and provide...
consistency in designs across an application or suite of applications. In Oracle’s extensive usability labs, we recruit people who fit our user profiles and ask them to use the prototypes to complete basic tasks. In our testing, we use industry-standard tools, such as the System Usability Scale (SUS), a 10-item rating scale that provides a global view of a user’s perception of the ease of use of the task flows.

**5. Measure**: After the application is built, we conduct a Common Industry Format (CIF) test to benchmark its usability. Our CIF tests conform to the International Organization for Standardization (ISO) standard and also incorporate the Software Usability Measurement Inventory (SUMI), a validated, industry-standard questionnaire for measuring software quality from the end user’s point of view. SUMI results are compared to a database of more than 2,000 applications to see how Oracle’s applications compare to a state-of-the-market profile.

**Usability During Agile Development**

One of the challenges that the user experience team has successfully met is adapting this model to Oracle’s agile development process. Two key characteristics of agile development are its increased speed and the integrated teamwork that it requires between the product manager, the development team, and the Applications UX team. Applications UX team members are dedicated full time to each product and communicate daily with other team members. The Applications UX team creates a big-picture model of the product so that the vision is not lost during the individual sprints.

Here’s how it works: The Applications UX team gets a head start by staying one sprint ahead of the coding team when it conducts the observation and analysis phases for the next sprint. During the sprint, the Applications UX team creates wireframe models of designs, rather than interactive prototypes. Because the agile teams are in close communication, the Applications UX team is able to communicate design concepts to developers with time-efficient wireframes. In addition, product managers can convey requirements to user experience designers that may not be written down. Finally, the Applications UX team decides when there is enough functionality to justify a usability test with end users.

These practices allow the Applications UX team to keep up with the fast pace of agile development while adhering to Oracle’s high-standard user experience design process.

**We Validate and Measure the Quality of User Experience**

Oracle’s user experience process is built on the foundation of Human-Centered Design Processes for Interactive Systems (ISO 13407:1999), which embodies the internationally standardized industry approach to user-centered design. Oracle’s commitment to high standards goes back to the 1990s, when Oracle joined the innovative Industry Usability Reporting, or IUsR, Project led by the National Institutes for Standards and Technology (NIST). Oracle was a member of the steering committee that brought together representatives from NIST, software vendors, customer organizations, consultants, and academics in the user experience discipline. The IUsR Project team created guidelines followed by a draft of the Common Industry Format (CIF) for usability test reporting. The CIF describes a reporting format that emphasizes the types of information that customers want in order to make decisions about which products to purchase. Oracle was the site of a pilot of the CIF and then

Oracle’s research and design process also conforms to another NIST document, the *Common Industry Specification for Usability* – Requirements. The purpose of this document is to define usability requirements in sufficient detail to make an effective contribution to design and to define usability criteria that can be empirically validated.

**We Have Refined Our Process Over Many Years**

The Oracle Applications UX team formed in 1994, when Oracle responded to the increasing competition in the enterprise software market by hiring its first two user experience professionals. The team then began building a suite of usability labs to support the design of more user-friendly products. As the Applications UX team grew, the team integrated what was then called “usability engineering” into Oracle’s development process. Usability engineering focused on obtaining end-user feedback on early prototypes of design ideas and then iteratively evaluating those ideas throughout development.

A pivotal year for Oracle and the Applications UX team was 2004. The team had grown to include interaction designers, usability engineers, and visual designers from PeopleSoft, which had recently acquired JD Edwards. A short time later, Oracle acquired Siebel and other software manufacturers. The Applications UX team now had a huge team of skilled professionals. Oracle also had a sea of different user interfaces, different looks, and different approaches to user experience. Oracle integrated the best user experience practices from those successful companies to create its five-step process (figures 2 and 3). Oracle also synthesized the best-practice user interface design approaches from across these same acquisitions.

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Oracle maintains a centralized team of user experience design professionals, which enables Oracle to continue to innovate and to share best practices across applications suites. Our investment in customer research continues to grow as well. Today, there are 19 Oracle usability labs in nine locations worldwide, totaling 19,000 square feet of lab space. Our labs enable us to reach out to customers around the globe.

We Keep Innovating

The Oracle Applications UX team continues to add new capabilities to its design and research toolkit and to reach out to customers in unique ways. Oracle uses eye-tracking technology to support the evaluation of new designs. The system is portable and is frequently taken to user group conferences to evaluate various usability issues. The device reflects light off the surface of the eye into an infrared camera that is hidden behind a panel on a user’s computer display. By examining visual scan paths, Applications UX team members can discover why a screen-page design is or is not working for customers (figure 4). For example, a link or button that users fail to see may be the cause of inefficient navigation through a work process.
A new area of research is facial gesture analysis, which enables Applications UX team members to see and measure the emotions that customers experience as they work with Oracle software (figure 5).

Faces are one of the primary channels for humans to transmit emotional signals.
Oracle continues to watch for the trends that will change the enterprise work experience, including social media, input methods borrowed from consumer products, and communicating through a variety of devices. We believe that social channels should support how we work, not make more work. We are observing sales representatives, managers, field technicians, retail merchandisers, and next-generation users (for example, college students) as they complete their daily work, wherever it takes place. We understand the ways that they collaborate and with whom, how frequently, and on what type of platform. Integrating those behaviors into Oracle applications enables us to support the social needs of our enterprise workforce.

We continually look at trends in the consumer space to determine their relevance to enterprise applications. We are finding innovative and productive ways to interact with enterprise applications using natural gestures that are now common in games, as well as swipes and taps used in smartphones. The team also is looking to enhance the work experience by supporting interactions from an array of devices, such as wearable computers, smartphones, tablets, kiosk computers, projected displays, and interactive whiteboards.

Continuing Our Customer Focus

We find unique ways to work with Oracle customers. We created a Customer Participation Program (CPP), an outreach effort that enables us to obtain feedback from customers worldwide. The primary benefit to customers who are part of the CPP is the ability to contribute to and influence product direction and design for Oracle’s next-generation software applications. More than 2,000 companies are represented in the program. Some organizations participate by taking part in user experience activities, such as hosting on-site visits from Oracle user experience professionals.

Oracle also runs an industry-leading Usability Advisory Board (OUAB), which is tasked with helping the Oracle Applications UX team bring enterprise usability to a whole new level through industry, government, and university collaboration. Now more than 100 members strong, the board meets several times a year at different locations around the world to discuss major topics of interest related to usability and to hear keynote presentations from Oracle executives. The board participates in frequent rounds of feedback collected by the Applications UX team, including online surveys and live focus groups. In-depth technical presentations in the form of webcasts occur frequently between live meetings.

Our emphasis is on getting feedback from the Oracle Usability Advisory Board for next-generation products, as well as learning lessons from our existing product offerings based on the board’s broad range of user experiences.

-- Anna Wichansky, Senior Director, Applications User Experience, Oracle, and Chair, Oracle Usability Advisory Board
Conclusion

Oracle applications strive to deliver a complete customer experience. They are built on a foundation of customer business practices and work flows. The goal is to deliver an experience that:

- Is productive because it streamlines task flows
- Is delightful because it adapts to personal work styles
- Is useful because it engages a variety of platforms, from desktop to tablet to smartphones
- Is collaborative because it makes social media available in the context of work tasks

There are many ways to learn more about Oracle’s unique Applications UX team, its processes, and its results. Learn how to get involved in Oracle’s user experience programs by going to the Usable Apps website at oracle.com/usableapps.