The User Experience Team Kit:

How to Hire a UX Team and Incorporate User-Centered Design Methods into Your Software Development Lifecycle Process

21 February 2010

Version 1.1

Author:
Paul Sherman
ShermanUX

SHERMANUX
UX Research | Design | Strategy
Rapid Contextual Innovation
www.shermanux.com

SHERMAN

About This Document

I originally created this document in 2006-2007 as a guide for product management and development teams in a large software company that were interested in incorporating user experience / user-centered design practice into their product development life cycle processes.

I have removed all reference to the company for which it was created, and have made it available under a Creative Commons Attribution-Share Alike 3.0 United States License. You can learn more about this license at:

http://creativecommons.org/licenses/by-sa/3.0/us/

Paul Sherman

June 2009

Introduction and Executive Summary

This document has been created as a reference for senior management in product groups who wish to learn more about incorporating user experience (also known as user-centered design) practices into their product ideation, design, and development processes. The terms "user experience" and "user-centered design" are used interchangeably in this document.

The first section is designed to help readers who are interested in gaining a high-level understanding of user-centered design or who need budget and resource information. Later sections provide additional information about hiring and organizing user-centered design contributors, and how to best utilize user experience contributors in the product development lifecycle.

The four main sections of this document provide the following information:

- An overview of user-centered design methods and techniques, and how they are incorporated into UX/UCD teams' processes.

- A description of how the team fits into the development lifecycle.

- A detailed breakdown of what it costs to implement and UX/UCD team in a single product organization.

- The UX team engagement model – that is, what services the team provides, to whom, and when.

- Descriptions of the difficulties typically encountered when a product organization decides to build a UX/UCD team.

For those who wish to acquire a very high-level understanding of what it takes to start up a UX/UCD team, the below is a brief summary of how to do it:

- Hire at least 3 direct contributors – user researcher/usability analyst, interaction designer, visual designer – or more, depending on the size of your product. Hiring a manager or a director is also highly recommended.

- Budget for between US$10,000 and US$60,000 in research expenses, depending on the size of your product team and how many products you support.

- You can spend as little as US$1,000 or upwards of US$75,000 on usability and user research equipment. In any case, we recommend building the team and budgeting the research dollars first.

- Be aware that you will have to change your ideation, design and development processes in order to successfully implement user experience. If you don't explicitly make room for design research, ideation and iteration in your processes, you will not be successful in implementing user experience practices.

This document should be considered as part of a kit. The kit also includes tools, templates, position descriptions, and sample deliverables.

The primary audience for this document is the people who are able to drive change in their organizations and have the authority to support those changes with allocation of resources. The people fitting this description are general managers as well as directors and vice-presidents of product management and engineering.

1. About User Experience Design

1.1   What is UCD?

User-centered design methods and techniques grew out of the fields of *human factors* and *human-computer interaction.* For more than fifty years UCD practitioners around the globe have focused on applied problems such as those found in military, industrial, and commercial projects*.* The user-centered design approach to product ideation, requirements, design, and development has three main characteristics. The first characteristic that distinguishes this approach is that UCD contributors incorporate direct and frequent input from users throughout the development cycle.

Direct user input. A critical distinction between the user-centered design approach and other methods of gathering user input is that user-centered design methods assess users' actual *behavior* and *performance.* UCD contributors do this by observing real users both in the field as they perform their actual work tasks, and in a lab setting where they perform tasks using prototype or mockup versions of a design. Using these two methods of field-based observation and in-lab task performance, UCD contributors uncover users' motivations and objectives, learn how they conceptualize and think about their tasks, identify the terminology they use, and discover the workflow they follow.

Field-based observation is often referred to as "contextual inquiry" or "customer observation". The data this technique generates is particularly useful to product managers as they plan for new products or new versions of existing products. It provides rich, qualitative information about people from the target market that cannot be derived from survey research or focus group sessions.

In-lab task performance on a mockup or prototype is known as a "usability test". In this technique, users from the target market are asked to use a mockup or prototype of the design to accomplish tasks they typically perform at their place of work. As the participants perform the assigned tasks, the UCD contributor compiles a detailed record of what each participant does within the system and how they accomplish the assigned tasks. When carried out with as little as five participants, the UCD contributor can discover what's wrong with the design (as well as what's right with it), and identify ways to fix or improve it. (For added confidence, we usually recommend usability testing with between six and eight participants.)

This method is far superior to survey- or focus group-based methods of gathering feedback about designs. In survey- and focus group-based design research, peoples' attitudes and responses to questions are notoriously unreliable. This is because in general people "lie"; that is, they don't self-assess their performance well, and they unknowingly generate inaccurate explanations for their behavior and attitudes. Also, peoples' stated reasons for liking (or not liking) a product and preferences often run counter to their actual behavior. Therefore, when conducting user research and usability testing we trust what people *do,* not what they say. We observe and analyze participants' actual *behavior*, rather than their attitudes, to guide and improve the design.

Well-defined stages of design. Another key characteristic of the UCD process is that designs are created in well-defined, specific stages, moving from more abstract and conceptual issues such as terminology, workflow and navigation, to more concrete issues such as screen layout and control choice.

In the early stages, UCD contributors employ a number of field-based and lab-based methods to arrive at conceptual representations of tasks, features, and functions that need to be supported by the product. The design process proceeds with the construction of a "terminology taxonomy", or list of terms that reflect the mental models and terminology of people in the target market. UCD contributors then incorporate these terms and concepts into the product's navigation systems ("navigation system" refers to the menus, links, and feature access screens contained in the product). The workflow for key tasks is then defined in an abstract form (such as a task analysis diagram or use case).

Only after these stages of design have been passed through does the contributor (usually an interaction designer) begin laying out screens. This emphasis on designing in well-defined stages ensures that the application's underlying conceptual model, terminology, and workflow are validated before a screen is ever designed or coded.

Following this process vastly reduces the risk of the design not meeting users' needs, and also minimizes the risk that an already-coded design will need to be reworked. This process does not significantly lengthen the design phase of the development lifecycle. In fact, following this process can often shorten the design phase. Section 2.3 provides more information about how long UCD activities typically take.

Figure 1. Stages of design in the UCD process.
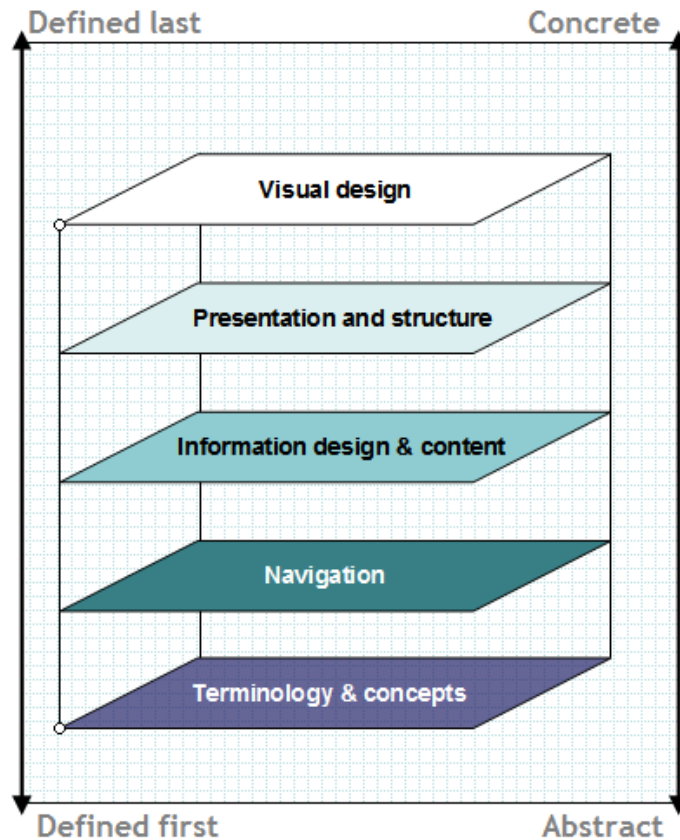
Design iterations. The final characteristic of the user-centered design process is that it is iterative. That is, designs are incrementally improved by repeatedly exposing mockup or prototype versions to people from the target user group. As mentioned above, the participants are actually asked to perform real-world tasks on the mockups or prototypes in a usability test setting. Participants' performance while using the design is assessed, and the design is modified based on the results of the usability tests. Experience has shown that the initial designs are flawed no matter how good the designer is. It is just too hard for a designer to anticipate all the reactions users will have when using a new design. The truth only comes from incorporating this direct user input in each iteration.

Advantages of following this process. The key take-away for this section is that following a user-centered design process yields benefits for customers, stockholders, and the individuals and teams in product organizations. Customers benefit because they enjoy the use of products that have been designed to be – and have been validated as - simple, intuitive and efficient. This increases customer adoption of and satisfaction with products. Increased user adoption and product satisfaction also help increase sales and overall success.

Stockholders benefit because following this process lowers risk and increases confidence. Subjecting designs to iteration and validation through usability testing provides product management and development with increased confidence that the product has been designed correctly. This in turn increases confidence within product organizations that development can deliver on its commitments, on time and with high quality.

Finally, the people and teams that comprise product organizations benefit from following this process because contributors and managers gain the opportunity to observe users work with early-stage versions of products and features. This helps them develop a shared understanding of who the customer is and what they want and need from the organization's products.

This shared understanding among contributors and managers across disciplines is invaluable. It creates cohesive, high-functioning cross-discipline teams. And when teams are cohesive and highly productive, their members are happier and more satisfied.

1.2   How Does UCD Fit Into the Software/Product Development Lifecycle?

SDLC. Software or product development lifecycle (SDLC/PDLC) is a term that encompasses all the activities that go into creating a software system, from initial establishment of feasibility and marketability through requirements definition, design, development, validation, and deployment.

UCD in the SDLC. User-centered design activities fit into several areas of the SDLC. During the ideation phase, when technical feasibility and market sizing are being established, UCD contributors can assist product management by conducting richly detailed observation sessions with people in the target market, identifying their goals, tasks, and workflow.

In the design phase, UCD contributors who are skilled at *interaction design, visual design,* and *information design* create mockups or prototypes of portions of the system, and contributors who are trained in *usability evaluation* assess the designs by subjecting them to usability testing.

During the development phase, UCD contributors are usually called upon in a consultative or interpretive role, meeting with the developers responsible for actual implementation of the product, and providing guidance for underspecified areas of the product. In this phase the UCD contributor's role is to remain the consistent user advocate throughout the project. When negotiations must happen during design and development of a feature, the UCD contributor reminds the team of the design persona (the "design target", or user group at which the feature is aimed), helps the product manager identify and weigh the risks of leaving off certain areas of functionality, etc.

During validation and release, UCD contributors are sometimes called upon to conduct benchmarking usability tests (called *summative evaluations*) that assess the finished product's performance on several dimensions. The metrics of interest in summative evaluations are typically the error rate for users as they use the system, the time it takes to attain proficiency performing a task or operation while using the system, and the time it takes to perform a task once proficiency has been attained.

The table below provides a summary of the SDLC phases and the responsibilities of the disciplines at each phase of the lifecycle.

Table 1. Roles and responsibilities during the development lifecycle.

	Product Management	User-Centered Design	Development	Quality Assurance	PMO
Ideation	**Role**: Approver/Driver **Responsibility**: Target audience definition, business model research, ID of value areas. Create customer use cases.	**Role**: Contributor **Responsibility**: Investigate target market needs at the level of individual users (workflow, success criteria).	**Role**: Informed	**Role**: Informed	**Role**: Informed
Design	**Role**: Approver **Responsibility**: Contribute to design process. Validate adherence to customer business model and value.	**Role**: Contributor **Responsibility**: Design to meet market & user requirements, within constraints.	**Role**: Contributor **Responsibility**: Manage feasibility and other technical considerations.	**Role**: Contributor **Responsibility**: Create test cases and test plan from scenarios, requirements, use cases.	**Role**: Driver **Responsibility**: Plan and manage plan for overall program of work.
Development	**Role**: Approver	**Role**: Informed	**Role**: Driver **Responsibility**: Implement the solution, meeting requirements within constraints.	**Role**: Contributor **Responsibility**: Conduct iteration testing as modules are completed.	**Role**: Informed
Validation	**Role**: Approver/ Contributor **Responsibility**: Ensure that solution meets use case requirements and delivers customer value.	**Role**: Driver **Responsibility**: Conduct customer validation research to ensure solution viability.	**Role**: Informed	**Role**: Driver **Responsibility**: Assure quality – minimal defects, adherence to requirements.	**Role**: Informed
Release	**Role**: Approver **Responsibility**: Approval authority for release signoff.	**Role**: Contributor **Responsibility**: Approve enhancement from customer view.	**Role**: Informed	**Role**: Driver **Responsibility**: Release management.	**Role**: Informed

1.3 Costs Associated with Implementing User Centered Design

As mentioned earlier in this document, incorporating user-centered design into an organization requires a significant outlay of resources. The sections below provide an overview of the hard costs associated with maintaining a UCD competency in a typical software organization. As with any discipline working within the SDLC, hard costs are related to headcount, operations, and equipment.

Headcount. Obviously, the largest expense associated with a UCD team is the cost of labor. According to a recent salary survey of user-centered design professionals carried out by the Usability Professionals' Association, user-centered design practitioners and managers within the U.S. are relatively well paid. The table below shows the average and median salaries as of 2005 for managers and practitioners with various UCD-related job titles.

Table 2. Average and median salaries for UCD contributors and managers, 2005.

	User Experience Manager	User Experience Practitioner (IA, IxD, etc)	User Researcher	Interface Designer
Average	$92,642	$83,888	$86,121	$74,571
Median	$96,700	$80,000	$83,160	$78,825
n	116	233	133	112

Source: Usability Professionals' Association, 2009.

More information about salary and compensation can be found at these sites:

Usability Professionals' Association:
http://usabilityprofessionals.org/usability_resources/surveys/SalarySurveys.html

The Society for Technical Communicators:
http://www.stcsig.org/usability/topics/salary.html.

Operating expenses. At this point in the document it should be clear that in order to gather valid, actionable data, UCD contributors must frequently interact with the product organization's customers, potential customers, and competitors' customers. Since customers' time is valuable, user experience project leaders provide incentives to ensure their participation in studies. Money is by far the best incentive.

UCD groups typically pay people participating in a usability test anywhere between US$50 to US$150, depending on the length of the test session and the time of year the test takes place. (It is difficult to get people to show up for research studies during the holiday season, so we increase the incentive significantly between Thanksgiving and Christmas.) When performing lab-based research in crowded metro areas, participants might have to be paid as much as US$175 or US$200 just to brave the traffic and show up at the lab.

Going rates for participation in field studies are somewhat higher. The UCD group typically compensates a business (or person if they are a sole proprietor) at least US$250 for a 2- to 3- hour visit, and up to US$500 for a full-day visit. Field-based participants are compensated at a higher rate than in-house participants because UCD contributors by their very presence can be somewhat distracting or disruptive to others at the site.

It's important to note that recruiting participants for field studies and usability tests is very time-consuming and is a low-value activity for user-centered design professionals. Their time is better spent designing and carrying out research. For this reason, most UCD teams outsource recruiting to local market research firms.

Depending on the complexity and specificity of the sample to be recruited, these firms charge anywhere between US$90 and US$150 per person recruited. Fortunately, even small- and mid-sized cities in the US usually have more than one market research firm. This allows a UCD team to solicit multiple bids. If you would like to investigate market research firms in your area, an excellent resource can be found at this web address: http://www.stcsig.org/usability/topics/recruiting-firms.html.

Using the figures cited above and estimating how many field studies and usability tests are conducted in a given year, a model yearly research budget can be derived for a UX team. An ambitious yet realistic research budget, based on an assumption of 10 usability tests

(using 8 participants) and 6 field studies (using 10 participants) per year, is US$51,000. A detailed breakdown of how this estimate is derived is provided in the table below.

Table 3. Estimated yearly cost of UCD field research and usability tests.

Item Name	Unit Price	Units	Amount
Usability test participant compensation	$150	8	$1200
Usability test participant recruiting fee	$125	8	$1000
Cost of compensation (gift check purchase)	-----	-----	$200
Cost of a single usability test			$2400
Cost of 10 usability tests per year	**$2400**	**10**	**$24,000**
Field research participant compensation	$300	10	$3000
Field research participant recruiting fee	$125	10	$1250
Cost of compensation (gift check purchase)	-----	-----	$250
Cost of a single field research project			$4500
Cost of 6 field studies per year	**$4500**	**6**	**$27,000**
Per-year cost of 10 usability tests and 6 field research projects:			**$51,000**

There are additional factors to consider if your product has a comparatively small user base or does not have many users near your R&D organization's locale. If users are few and/or geographically dispersed, a UX team's operating expenses should be increased to account for at least 12 multi-day trips. This can be broken out for estimating purposes into four 3-day trips by 3 people. At a per-trip cost of US$1500 per person, this additional expense totals to US$22,500.

Other operating costs incurred by UX teams include consumables such as videotapes (for recording field visits or usability test sessions), as well as brainstorming and prototyping materials such as flipchart pads, markers, and other office supplies. The total annual cost of these items is approximately US$1,000.

Equipment. Many teams build a user experience lab in one of their company facilities. In-house labs can be quite expensive. The cost of sound and video capture and mixing equipment alone can range from less than US$1,000 to as much as US$50,000. Room modifications such as installation of one-way glass, special wiring, and sound amplification can add as much as US$20,000 to the lab cost.

A team can take a more cost-effective approach by purchasing a "mobile lab" (a self-contained audio/video recording unit that can be used in the field or in a meeting room onsite), and slightly modifying a meeting room for in-house test sessions.

We would like to stress one point: we do not recommend spending money on equipment first. Those dollars are better spent on a couple of contextual inquiry projects or usability tests. Acquiring actionable, valid data is much more important than having a fancy lab.

2. A Model for Implementing a UX Team

The key to creating a successful team is building support for the team at the top *and* at the bottom of the organizational structure. The GM, VPs, and directors in an organization must strongly support the implementation of user-centered design and help drive the changes necessary to incorporate it into the organization's processes. At the same time, first-line product managers, R&D managers, and project/program managers must be held

accountable for changing existing processes and procedures, and successfully incorporating UCD methods and processes.

It's particularly important for the product management team to strongly support and buy into UCD processes. Product management represents "the business" and therefore is the driver and approver for almost all initiatives taken up by R&D. User-centered design teams cannot be fully effective without the explicit support of product management. Conversely, user-centered design teams are almost always given the time and resources to work effectively when product management sets the explicit expectation that the R&D team must design and implement a product that is proven to be usable by people in the target market.

2.1   Organizational Structure of a UX Team

A team can be structured in several ways, depending on resources and budget. While it is usually true that "some UCD is better than none at all", we have found that minimum thresholds of headcount, resource allocation, and process change must be met for a team to be even marginally effective.

At a minimum, a team should include a manager, at least one interaction designer, and at least one user researcher/usability analyst. It is highly desirable to also have a visual designer who is responsible for translating the interaction designer's low- or medium-fidelity mockups into final designs.

Ideally, a full team will be comprised of a director, manager, user researcher/usability analyst, interaction designers, a visual designer, and (optionally) user assistance contributors (aka documentation or technical writers). How many of each are needed is addressed in Section 2.2 below.

Director. The director is the lead evangelist for user-centered design in the product organization. The person in this role is responsible for strategically driving adoption of user-centered design in the product organization, and helping product management plan long-term research objectives and projects. The director may also be responsible for evangelizing user-centered design across multiple product lines and business units.

Manager. The manager is responsible for ensuring that teams working on product features have been given adequate resources. The manager gauges project priority and resource availability, and assigns resources to tasks as appropriate. The manager is also responsible for helping the director and the product management group plan and resource long-term projects.

User Researcher/Usability Analysts. The user researcher/usability analyst functions as the "voice of the user" by determining what users of the product (or of a particular feature) are trying to accomplish, how they conceptualize their work in this area, and their pain points. Then they must represent this information within the product organization during the ideation and design phases. During the development phase, these contributors assess the usability of the interaction designers' designs by subjecting them to usability tests. In this way, the usability analyst/user researcher ensures that user needs, limitations, and attitudes are accounted for in the design.

Interaction Designers. The interaction designer determines how the software should work for a feature (or the entire product) and designs the user-system interactions as appropriate. This includes the terminology used in a particular feature or area of the

product, where the feature is accessed within the product, the flow of screens associated with the feature, and the controls displayed on the screens. Interaction designers must possess an understanding of the product and its features, the requirements for the new feature created by requirements analysts, and most importantly, the users who will utilize the feature. The interaction designer will most often document the interaction using a combination of functional specifications and lo- or medium-fidelity screen mockups.

Visual Designers. The visual designer is responsible for overall look and feel of the software. They create the final user interface based on the interaction designers' mockups and specifications. If the organization maintains a user interface style guide, they often maintain this document.

It is also quite common for documentation contributors or technical writers (also known as user assistance contributors) to report into a user-centered design group. We not only recommend this, we also advocate for reconceptualizing the user assistance role into a more customer-focused function by grouping them with interaction designers, giving them in-depth training in information design and interaction design, and re-branding them with a title such as "information designer".

Our reasoning for doing this: interaction designers and user assistance contributors are really working on the same problem, which is to help the customer learn and use the product quickly and efficiently. One contributor role is usually more focused on the design of a screen, and the other on the printed page or on-screen help content. But this distinction is rapidly breaking down with the advent of embedded user assistance, in which help content is incorporated into the design of the screens and interaction. These two disciplines – interaction design and user assistance – need to work together more closely during the design phase. Grouping them together facilitates this.

Figure 2. Sample user-centered design organizational chart with separate user assistance functional group.
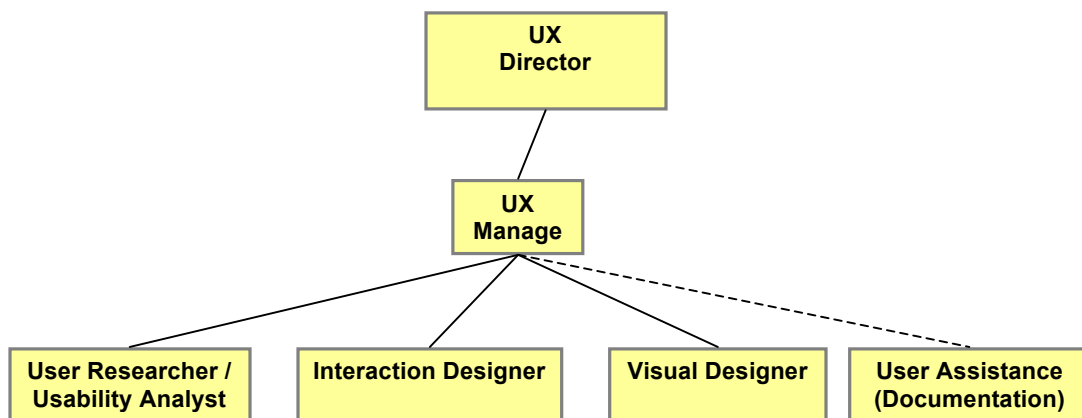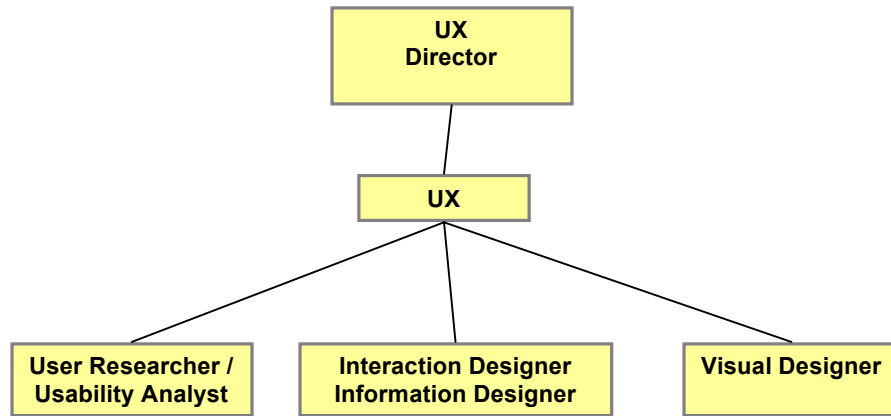
Figure 3. Sample user-centered design organizational chart with information design function grouped with interaction design.

For larger groups, it may make sense to appoint a separate manager to support the user research / usability analysts. This is because these contributors are asked by product management to study issues that may be addressed 1 or 2 releases in the future. Researcher/analysts are also asked to perform exploratory projects in support of new product development. In these cases it makes sense to have a dedicated manager to coordinate this work. This option is depicted in the figure below.

Figure 4. Sample user-centered design organizational chart with separate managers for research and design functions.
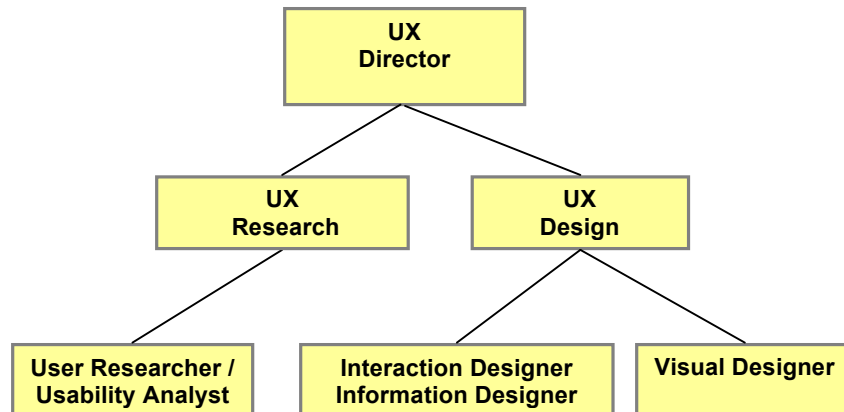
Position descriptions for the roles described above are provided in an appendix to this document.

2.2 Team Size

As mentioned in Section 2.1, at a minimum an organization should staff a UX team with one manager, a user researcher / usability analyst, an interaction designer, and a visual designer.

There is no hard-and-fast rule regarding team size. But a good-enough estimate for team size can be generated by interpolating (or extrapolating) a team size given the number of UX contributors servicing a typical multi-product desktop software product organization.

Consider a team with the following members:

Position	Count
User researcher / usability analyst	2
Interaction designer	3
Visual designer	1
Information designer	2
Manager	1
Director	1
Total individual contributors	**8**
Total	**10**

This team serves within a product team of approximately 100 people ("Product team" is defined as the combined group of people who contribute materially to the production of the product, such as product managers, requirements analysts, developers, QA analysts, etc) The ratio of others on the product team to UX in this case is approximately 9:1.

Another way to look at it is to compare the UX team against the number of developers in the product team. Say the product team contained 32 developers. This yields a developer-to-UX ratio of about 4:1.

2.3 The Engagement Model: What Specific Services Does The Team Provide?

Up to this point, we have grouped the activities performed by the UX team into two groups: field-based and in-lab. This section provides a more detailed description of the services a user-centered design team can provide at various points in the development lifecycle. The table and figure below depict the service or activity the team can provide, and where in the SDLC it is typically utilized.

Table 4. List of services provided by a UX team.

Service	Lifecycle Phase	Description	Provides PM and R&D With:
Contextual inquiry	Ideation	Investigation of users' goals, objectives, tasks, and limitations/constraints; at the users' place of business (or other appropriate use context).	Rich descriptions of users' goals, motivations, environment.

Service	Lifecycle Phase	Description	Provides PM and R&D With:
Task analysis	Ideation	Step-by-step, granular identification of users' work tasks.	Details of the users' processes.
User profiling	Ideation	Detailed reports of real users; what they do, how they do it, etc.	A "library" of user profiles that can be used to guide design.
Persona creation	Ideation	An abstracted description of users, based on the attributes of real users.	A "design target" specifying who the design is aimed at.
Role/task matrix Task/object matrix Task frequency & criticality ratings	Design	Additional details about who does what in a particular environment, as well as the importance of particular tasks.	"Quasi"-quantitative information about users, roles, tasks, etc.
Scenarios Use cases Process flows	Design	Designs describing the flow or transformation of information through a system, and how the system and user interact with each other.	Information about how a design should work in the "real world" when implemented.
Early-phase usability testing	Design	Testing the process flows and scenarios to ensure that they meet real users' needs.	Validation of the design and correction opportunities.
Wireframes & prototypes	Validation & documentation	A lo- or medium-fidelity representation of the feature or product.	A working system that can be tested in late-phase usability testing.
UI / interaction spec	Validation & documentation	The formal, complete documentation of the feature or product's user interface.	A specification to code and inspect against.
Visual design	Validation & documentation	Formal documentation of the visual design for the product or feature.	A specification to code and inspect against.
Late-phase usability testing	Validation & documentation	Usability testing using a working prototype or mockup.	Validation of the design and correction opportunities.
Summative usability testing	End-of-cycle validation	Usability testing of a finished version of the product, measuring key indicators such as average time-on-task, error rate, etc.	Information to feed into the next lifecycle's activities.

Figure 5. UX services during the software/product development lifecycle.
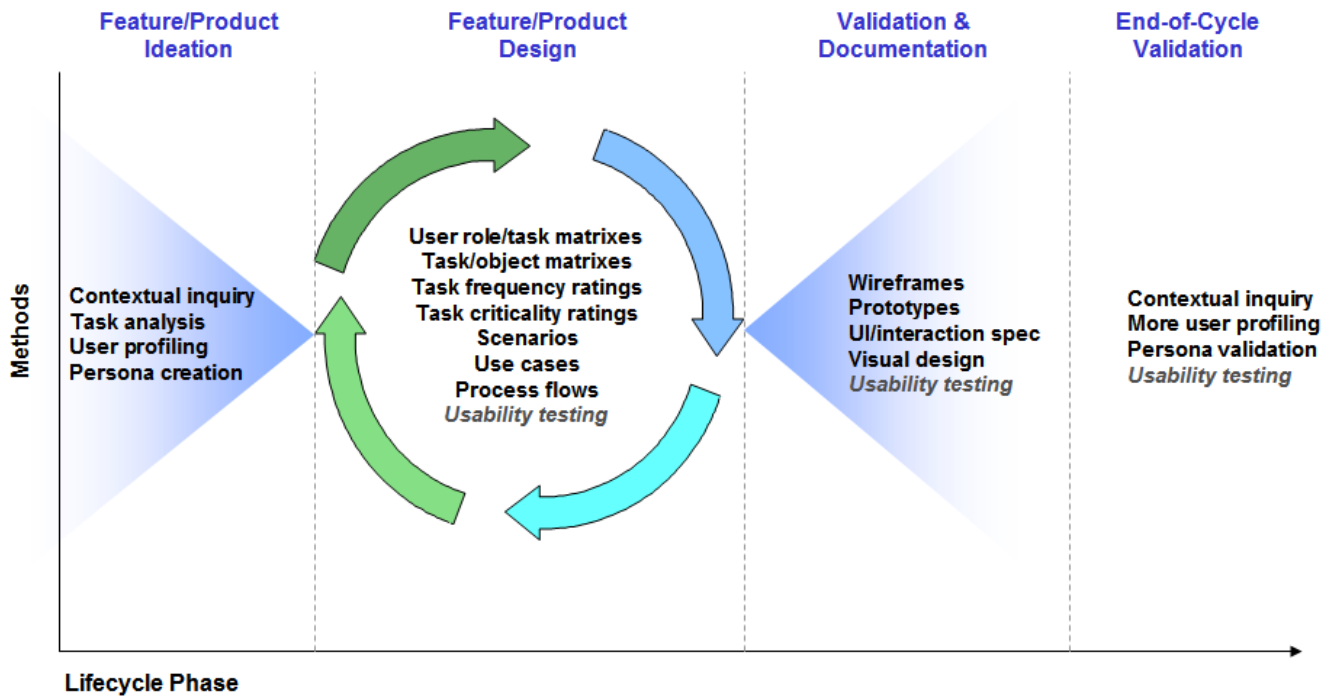
2.4 How Long Do UX Team Activities Take?

Like any activity undertaken during the development lifecycle, it is sometimes difficult to accurately estimate the length of time needed for a given activity. However, certain activities can be accurately estimated with very little knowledge of the specifics of a feature or product.

The short answers to the "how long" question are: about four weeks for a field-based customer observation project and three weeks for an early- or late-phase usability test for a feature. However, many of the preparatory tasks for both of these activities can occur in parallel with other activities carried out by product management and R&D. And when the time savings from avoided late-stage rework is factored in, it becomes clear that UCD activities have little to no negative impact on the overall length of time allocated to a product release's program of work.

For example, early- and late-phase usability testing usually requires a lead time of approximately three weeks. The first week is spent identifying the appropriate target users, securing a vendor for recruiting a group of these users (if this task is handled externally), and creating a draft usability test plan. The second week is spent developing a mockup or prototype, iterating the test plan, gathering the needed equipment and materials, and inviting colleagues to observe the test. During the third week, the test sessions are carried out and the design is iterated and improved upon.

However, the activities of the first two weeks can be carried out in parallel with other activities in the project plan. The project is mostly affected by the time that elapses during the third week, when the design is tested and modified. For all but the most complex features, each early- and late-phase usability testing effort adds a little more than a

calendar week to a project schedule. (Some designs that completely miss the mark during early-phase usability testing require additional time for ground-up redesign and subsequent validation.)

It should be noted that these elapsed time estimates do not include the effort necessary to produce the interaction design specification and final visual design. Those activities require unique estimation for each project, because every feature - and thus each design challenge - is different.

3. Expect Changes to Processes…and to Culture

The experiences we have had at a number of software vendors and consultancies has shown that successfully incorporating user-centered design into a product team triggers many changes in how the organization thinks about, organizes, and carries out its work. When UCD methods are deployed, the organization almost always finds that wide-ranging changes must occur as a result:

- Product management must learn to incorporate the UX team's qualitative research in their planning and decision-making for features and products…but the benefit is that product plans become much more connected to customer needs, and final products deliver more value as a result.

- Project/program management must explicitly make room for user experience activities (such as usability testing and iterative design) in the schedules.

- Software development and whoever was previously designing the user interface must cede authority over the user interface to the UX team.

- All disciplines must learn how to collaborate with a new set of people who have unfamiliar methods and techniques.

Culture and change. When these types of changes occur simultaneously, it's fair to say that they represent a significant culture change. We are explicitly acknowledging this fact to prepare senior leadership for the conflict and churn that are invariably associated with wide-ranging changes such as this.

Large-scale changes of any type are always disruptive in the work environment. Elemental changes to how people organize and carry out their work are probably among the most disruptive changes people encounter in the workplace. Therefore, if you intend to add user-centered design to your product team, we suggest taking an approach similar to how we have incorporated UX teams into product teams at prior organizations. Following these guidelines helped us minimize stress and disruption within our organizational culture:

1. **Staff the team first, and staff it right**. Get your UX team in place and ready to go. And appoint a strong, knowledgeable manager at the outset.

2. **Goal your senior staff on changing processes to effectively incorporate user-centered design**. Don't let user-centered design become a simple checkpoint at the end of the development lifecycle. Incorporate them fully into processes, and ensure your senior staff is on the hook to deliver on this.

3. **It's OK to take a trial approach to process change in the beginning.** If you're in the middle of a release cycle, start working within the new process model using a single feature, or two at the most. Then completely cut over to the new process model at the beginning of the next release cycle.

Skillsets and talent. Adding user-centered design talent to an organization isn't as simple as hiring completely from the outside and dropping a newly-formed team into the organization. A number of people in your organization are likely to be performing job functions that are similar to the ones described earlier. It is also highly likely that some people in your organization have already taken an active interest in usability, human-computer interaction, and user-centered design.

We strongly recommend leveraging any in-house talent and enthusiasm that may be present in your organization. When constructing the UX team, you will almost certainly be able to reassign some current contributors to the team. The most likely candidates for this type of "repurposing" are designers (who often are interested in visual or interaction design), documentation specialists (who may possess user research, usability or interaction design skills), requirements or business analysts, and even software developers.

For senior positions within the UX team, we suggest bringing in outside talent, preferably individuals who have been exposed to a number of development environments, knowledge domains, and product types. Breadth of experience in UX leaders often helps them to develop good judgment and sound organizational instincts, both of which are vital in representing this new discipline in your organization.

4. Appendix A: UX Team Position Descriptions

This section of the document describes in greater detail the competencies and qualifications associated with the various members of a typical UX team. In many cases, members of the team may be cross-trained and perform the duties of several roles. This is most common for user researcher / usability analysts who often also function as interaction designers.

As a review, below is a recap of the organizational chart for a UX team:

Figure 5. Sample user-centered design organizational chart with information design grouped together with interaction design.

```
                          ┌──────────────┐
                          │      UX      │
                          │   Director   │
                          └──────┬───────┘
                                 │
                          ┌──────┴───────┐
                          │      UX      │
                          └──────┬───────┘
              ┌──────────────────┼──────────────────┐
    ┌─────────┴────────┐ ┌───────┴──────────┐ ┌──────┴─────────┐
    │ User Researcher /│ │Interaction Designer│ │Visual Designer │
    │ Usability Analyst│ │Information Designer │ └────────────────┘
    └──────────────────┘ └────────────────────┘
```
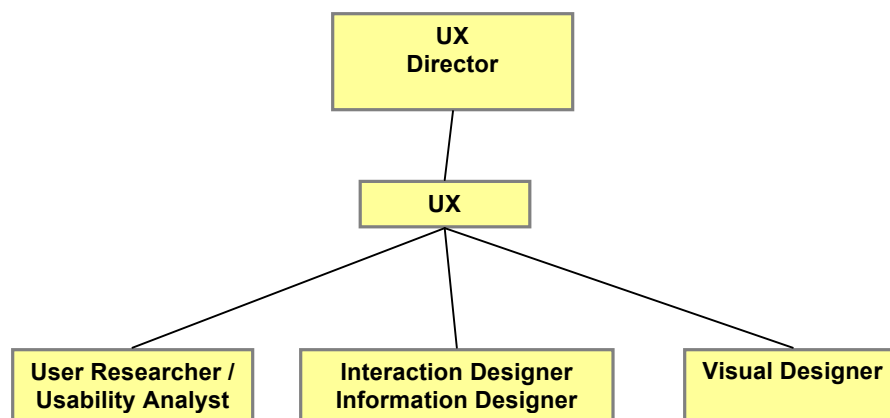
Below are position descriptions for these roles, as well as a position description for the role of UX Research Manager.

4.1 Director of User Experience

The Director of User Experience is responsible for creating and maintaining a team of design and usability professionals, ensuring that product management and development is receiving the desired services and service levels, and setting the strategic vision for user-centered design at the organization.

Key Job Responsibilities:
The UX team provides user research, interaction and visual design, and usability testing services to the business. To facilitate this, the UX Director does the following:

- Develops, maintains, and continually improves processes for providing research needed during feature/product ideation and prioritization.

- Develops, maintains and continually improves processes for how designers and usability analysts engage with feature teams during feature/product development.

- Ensures that research, design and usability test roles are adequately resourced.

- Ensures that UX staff is delivering high-quality and timely research, design, and usability engineering services to product management and R&D.

The UX Director is also responsible for guiding staff and managers' professional development. This includes providing opportunities for training and education, and challenging UX staff to learn and apply skills and methods to help the organization achieve its goals.

Qualifications:
- 5+ years experience in user interface design, information architecture, usability testing, human factors, and other related disciplines within a consultative or corporate environment.

- 5+ years experience managing design and usability practitioners.

- Proven ability to instill usability as a core value within a large software development organization's culture.

- Outstanding communication, organization, time management, and interpersonal skills.

- Thorough knowledge of the software development lifecycle.

- Employee hiring and retention experience.

- Bachelors degree in a related area such as psychology, human factors or HCI; a Masters or PhD in is a strong advantage.

4.2 User Experience Design Manager

The UX Design Manager is responsible for ensuring that the product achieves the user's specified goals with efficiency, effectiveness, and satisfaction. The manager establishes user-centered analysis, design, best practices and standards within the organization. The manager recruits, hires, and mentors user researcher/usability analysts, interaction designers, and visual designers, and oversees their deployment and performance on software development projects. The UX Design Manager also actively performs usability activities on projects as necessary.

Key Job Responsibilities:
- Define and implement effective and efficient processes and tools for developing usable and satisfying user interface designs on supported projects.

- Manage and actively participate in the creation of all interface designs to meet project schedules with highest quality and within budget.

- Serve as independent reviewer of usability activities and artifacts to ensure software applications meet customer expectations for use.

- Identify and hire resources/skills needed within the organization.

- Responsible for the mentoring, performance management, and training of assigned staff.

Qualifications:
- 3+ years of experience in user interface design, information architecture, usability testing, human factors, and other related disciplines within a consultative or corporate environment.

- 3+ years experience managing design and usability practitioners.

- Outstanding communication, organization, time management, and interpersonal skills.

- Thorough knowledge of the software development lifecycle.

- Employee hiring and retention experience.

- Bachelors degree in a related area such as psychology, human factors or HCI; a Masters or PhD in is a strong advantage.

4.3 UX Research Manager

The UX Research Manager is responsible for coordinating and leading user research within the organization. The Research Manager works closely with product management to ensure that that user needs and expectations are the key driver for feature ideas and throughout the software development life cycle. The Research Manager is responsible for managing and mentoring a team of user researchers and usability analysts.

Key Job Responsibilities:
- Lead user research efforts and work closely with the research team members to establish research goals.

- Create innovative ways of collecting user data and discovering new product opportunities.

- Work with product management, stakeholders, and team members to communicate processes, needs, and expectations.

- Contribute to the product definition and evaluation process utilizing multiple sources of information (field work, interviews, web, market literature, etc.)

- Interpret user insights and integrate the results as new product or feature recommendations.

- Work with the UX Design Manager to define and contribute to the development of product interfaces and interactions.

- Work with users and designers to evaluate concepts and existing products on the market for improvement opportunities.

Qualifications:

- Extensive experience in methodologies for uncovering user needs and product opportunities. A background in ethnography and cognitive science methods is helpful.

- 3+ years of experience in user research, user interface design, information architecture, usability testing, human factors, and other related disciplines within a consultative or corporate environment.

- 3+ years experience managing research, design and usability practitioners.

- Outstanding communication, organization, time management, and interpersonal skills.

- Thorough knowledge of the software development lifecycle.

- Bachelors degree in a related area such as psychology, human factors or HCI; a Masters or PhD in is a strong advantage.

4.4   User Researcher/Usability Analyst

The User Researcher/Usability Analyst is primarily responsible for designing and conducting user-centered design research and usability testing for software and web-based products. The research includes identification of user needs and goals, as well as task and workflow modeling. The usability testing includes rapid iterative usability testing and more in-depth validation and summative testing.

The ideal candidate will also posses some interaction design skills, including the ability to create and document navigation structures and information design. The candidate does not have to create final visual designs, but should have the ability to create detailed screen wireframes to effectively communicate designs to product management, design, and development.

Key Job Responsibilities:
Usability analyst responsibilities:
- Conduct rapid iterative usability testing of wireframes, mockups, and prototypes.

- Translate research findings into design recommendations to quickly improve product designs early in the design cycle.

- Perform validation usability testing to determine whether features and products have met business and usability objectives.

User research responsibilities:
- Prepare research proposals:
  - Clarify research goals based on input from Product Management and User-Centered Design teams.

  - Develop innovative strategies to answer research questions with limited resources.

  - Design research protocols and prepare research plans.

- - Plan user research activities such as participant recruiting and scheduling, materials production, lab preparation, and other logistics.

  - Create research materials as necessary.

- Manage projects:
  - Establish and socialize success criteria for projects, ensuring shared vision of the project's goals and objectives.

  - Establish achievable schedules and manage to them.

  - Regularly communicate status of projects and other key information to business stakeholders.

- Perform data analysis:
  - Perform qualitative and/or quantitative analyses.

  - Prepare initial results and share with key stakeholders.

- Synthesize, report, and advocate:
  - Translate research findings into actionable, prioritized recommendations.

  - Document and present findings and recommendations to stakeholders and technologists.

  - Strategize with stakeholders on how to act on research finding.

Interaction design responsibilities:
- Assist product management and feature teams in defining functional interaction requirements specifications.

- Rapidly develop wireframe-quality mockups of screens and interaction designs, as well as document process flows.

Qualifications:
- Extensive experience in methodologies for uncovering user needs and product opportunities. A background in ethnography and cognitive science methods is helpful.

- 3+ years of experience in user research, user interface design, information architecture, usability testing, human factors, and other related disciplines within a consultative or corporate environment.

- Outstanding communication, organization, time management, and interpersonal skills.

- Knowledge of the software development lifecycle.

- Bachelors degree in a related area such as psychology, human factors or HCI; a Masters or PhD in is a strong advantage.

4.5 Interaction Designer

The Interaction Designer is primarily responsible for creating navigation structures and information designs, as well as constructing prototypes, storyboards, and mockups to effectively communicate designs to product management and development. The interaction design role depends greatly on user-centered design research and usability testing to guide their designs. The candidate will possess the ability to create visual designs for desktop software and transactional Web sites.

Key Job Responsibilities:
- Assist product management and feature teams in defining functional interaction requirements specifications.

- Develop mockup / prototype interaction designs, including user interaction models, information architecture, wire frames and screen flows.

- Work with usability specialists to conduct customer studies of mockups, prototypes and existing interfaces; and iterate designs based on usability test results.

Qualifications:
- 3+ years experience in product development teams working on user interface designs.

- Experience working with user-centered design/human factors specialists.

- Knowledge of how to best design to solve business and user problems. Ability to understand the needs of customers.

- Design fundamentals including information design, visual design, industry UI standards for desktop and web-based applications, and ease of use best practices.

- Experience with design tools, including Photoshop, Visio, and Dreamweaver. Flash and Visual Studio experience is a plus.

4.6 Information Designer

The Information Designer will be primarily responsible writing and providing UI content and user assistance. For the user assistance role, the information designer writes and designs manuals, help files, tutorials, and other assistance materials that anticipate when and where users need assistance.

The Information Designer is also responsible for working closely with user researchers and interaction designers to develop an accurate understanding of the target user base and what information they need in order to quickly learn and adopt the application or web site.

Key Job Responsibilities:
- Work with interaction designers to determine user needs and translate them into the appropriate user assistance content and presentation.

- Write manuals, help and other user assistance material.

Qualifications:
- Bachelors in Technical Communication or similar field.

- 3+ years experience technical writing or other related experience.

- Knowledge of user-centered design methods.

- Experience with Adobe Framemaker, RoboHTML, Flair, or other help authoring tools.

4.7   Visual Designer (aka User Interface Designer)

The UI Designer is primarily responsible for translating wireframe interaction designs and storyboards into final visual designs for a desktop software application. The UI design role depends greatly on user-centered design research and usability testing to guide designs. The user interface designer will also be responsible for documenting these designs in a design specification document.

Key Job Responsibilities:
- Work with product specialists, usability specialists and interaction designers to develop and iterate user interface designs based on research and usability test results.

- Produce final user interface designs, adhering to the style and guidance of our staff interaction and UI design team.

- Deliver the designs in a specification document.

Qualifications:
- Experience in product development teams working on UI designs.

- Experience working with user-centered design/human factors specialists.

- Knowledge of how to best design to solve business and user problems. Ability to understand the needs of customers.

- Design fundamentals including information design, visual design, industry UI standards for desktop and web-based applications, and ease of use best practices.

- Experience with design tools, including Photoshop, Visual Basic/Visual Studio, and Visio.