

Selling Usability:

SCOPE AND

SCHEDULE

ESTIMATES

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Usability and user-centered design, as a field, doesn't always do a great job of promoting itself to management. See if this scenario seems familiar: A user interface designer attends a presentation on usability methods. Intrigued, she reads several books and tries out a few techniques. She decides to perform a few usability tests on the current version of her project. Then she approaches the project manager, laying out the wealth of information that they will be able to collect and illustrating the confidence that will support their project.

The manager is receptive. "Sure, that sounds like a good idea. No problem. Only we have to lock down the specs in two weeks and I'm almost over budget. Can you do the usability tests at no cost and still get the screens done on time?" The designer suggests a discount test that can be done on the cheap in just a few

days, although it doesn't capture as much information as she had hoped. She spends the next two days looking for the right people to get customers for the usability test, only to discover the sales director's policy: Only approved account executives may contact users. The sales director assigns an account manager to the project, but that manager is on the road until early the following week. Now it's too late.

To avoid such problems, try approaching usability and user-centered design from the manager's perspective. We have to fit our activities into the triple constraints of scope, schedule, and budget. Project managers with no training in usability need our expertise to come up with plans and budgets that include usability.

This article will help you create an effective plan and estimate for usability activities. Then you'll be able to move the discussion from the value of usability to

the details of specific activities. If you can give project managers a plan and an estimate for your usability project, you've won half the battle. A plan and an estimate will go a long way toward persuading management that user-centered design is a desirable approach to building a user interface (UI).

The Project Plan

Your plan must include all of the team's activities and deliverables. To plan the UI design effort for an entire project, start with a high-level view of the UI design life cycle and identify the work for each stage. Use records from previous projects, experience, and conversations with the team members to arrive at a preliminary hours estimate for each high-level activity. Then, as you get to each stage, create a more detailed plan and estimate for the work in that stage. Table 1 shows typical activities for UI managers and their teams.

Table 1. Manager and Designer Activities and Project Deliverables Broken Down by Project Stage

Manager and Designer Activities			
Project Stage	Manager Activities	Designer Activities	Deliverables
Vision and Kickoff State and align business, user, and IT goals. Assemble project team. Achieve common understanding of the product concept as well as project objectives and limitations.	<ul style="list-style-type: none"> Establish project plan, with strategy for usability activities. Assign and communicate roles, responsibility, and approval process. Achieve buy-in and common vision from stakeholders, and communicate that to the team. 	<ul style="list-style-type: none"> Identify major user groups. Establish preliminary usability goals. Understand technical, schedule, and resource constraints. Gather high-level design ideas in the form of concept sketches. 	<ul style="list-style-type: none"> Vision document Early concept sketches
Analysis Analyze users, tasks, and information. Develop personas to profile users and scenarios to show their tasks. Derive high-level requirements from personas and scenarios.	<ul style="list-style-type: none"> Determine appropriate user analysis activities. Help designers secure resources and access to users. Coordinate review and approval of personas, scenarios, and requirements. 	<ul style="list-style-type: none"> Assist manager in determining appropriate user analysis activities. Conduct user analysis (interviews, contextual inquiry, etc.). Produce personas, scenarios, and requirements. 	<ul style="list-style-type: none"> Personas Scenarios Requirements
High-Level Design Establish the basic concept of the user interface, its objects, and its metaphors.	<ul style="list-style-type: none"> Plan design activities, usability evaluations, and the number of design iterations. Coordinate the approval process. Present the key screen prototype to executive management for approval. 	<ul style="list-style-type: none"> Create the conceptual design: key screen layouts, graphic design, navigation, and design patterns. Conduct usability evaluations of navigation and concept. Create a key screen prototype to be tested with users and approved by management. 	<ul style="list-style-type: none"> Navigation or UI map Graphic design Design patterns Key screen prototype Usability evaluations
Detailed Design Complete the user interface design, producing specifications for developers.	<ul style="list-style-type: none"> Plan usability evaluations and manage their results. Coordinate the approval process. Coordinate specification handoff to development. 	<ul style="list-style-type: none"> Create layouts for screens and specifications for each element. Conduct usability evaluations of specific screens or workflows. 	<ul style="list-style-type: none"> Style guide, with graphic design and UI policy decisions Screen layout specifications Screen element specifications Usability evaluations
Build and Release Support developers and respond to last-minute design issues. Measure user satisfaction and usability of the released product.	<ul style="list-style-type: none"> Plan usability evaluations and manage their results. Plan and implement change control procedures to document and communicate redesigns. Work with designers to plan and coordinate measurement of user satisfaction. 	<ul style="list-style-type: none"> Answer questions and support developers during coding, redesigning screens if needed. Conduct usability evaluation of critical screens, if necessary. Conduct usability evaluation to measure the usability of the released product and user satisfaction. 	<ul style="list-style-type: none"> Revisions to specifications Usability evaluations

managers call a Work Breakdown Structure (WBS)—for each stage of UI design. A WBS is a table that lays out the activities

for a project and lets you assign hours to each of the team member slots. For example, you might include a row in the

WBS for a heuristic review of the previous version of your product. Later, at the beginning of the stage in which the team

will conduct the heuristic review, you should produce a detailed plan just for the review. When producing the detailed plan for each activity, use a more granular WBS like the one shown in the Heuristic Review Estimator sidebar.

Whether estimating at a high level or at a detailed level, the approach is the same. Total the estimated number of hours for each activity to arrive at an initial estimate of the time needed to complete the project.

Risk Assessment

The next step is to factor in risk. It's a rare project that goes off without a hitch. A team that has never worked together, for example, will take longer to complete a project than an experienced team whose members know one another. With the team, brainstorm for all the things that might make the project go over schedule or over budget. When you have identified all the risks, determine the probability and impact of each one and

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doesn't end after the
kickoff meeting.

As the project moves
along, you should keep
track of the hours
that each team member
spends on assigned
activities.

then decide what to do about them. For some requirements, you may be able to add line items to the WBS that minimize the risk. For others, you may want to

increase the initial hours estimate by 5 to 10 percent per risk, depending on the likelihood and impact of the potential problem. Be certain that the cost (in money and time) of the solution to a risk doesn't exceed the potential cost of the risk itself.

Schedule and Budget

After adding line items to the plan and including time for risk, you have a final hours estimate for the project. Determine which team members will be working on the project and use their bill rates to calculate labor costs. Then add in the non-labor costs, such as usability lab fees or printing costs, for the final budget estimate.

To determine the schedule, assume that each full-time team member can spend about six hours per day on the project. (JoAnn Hackos recommends this figure in her book *Managing Documentation Projects* [1994, John Wiley & Sons, Inc., NY, NY]—reminding us that staff

H E U R I S T I C
R E V I E W
E S T I M A T O R

A heuristic review is an expert review of a UI's usability. The expert uses a set of established design guidelines—heuristics—and inspects the user interface for conformance. Consider these roles, risks, and activities when planning a heuristic review.

Roles

While one person can conduct a heuristic review, better results tend to emerge when two to three experts review the user interface. The relevant roles are as follows:

Primary Reviewer: Review the user interface and prepare recommendations, reports, or presentations.

Secondary Reviewers: Review the user interface and assist the primary reviewer as needed.

Hours

I have been involved with heuristic reviews that have ranged from 1.5 to nearly ten hours per screen reviewed. I use six hours per screen as a starting point for estimation (this figure includes all activities for the project, including project management, writing the report, etc.). Risk factors that affect that figure include the following:

- **Specialization of the Application.** Will I need to spend much time learning the domain?
- **Learnability.** Will I need to spend much time learning the application before I can begin reviewing it?
- **Completeness of the System.** Am I evaluating the live system, an online prototype, or a paper prototype? (The closer to live the system is, the faster the evaluation goes.)
- **Access to the System.** Do I have to install the system myself? Do I need to wait for an administrator to grant me a user ID, or can I just begin using the system?
- **Access to Designers.** Can I easily ask questions of the system's designers?
- **Number of Reviewers.** The figure of six hours per screen assumes two reviewers. (Note: The figure of 6 hours per screen includes the time for project kickoff through the final report/presentation. The lead reviewer will probably spend more time than the secondary reviewers, so it won't be an even split. This method is a way of arriving at a ballpark estimate of how many hours the overall project will take, not determining how many hours each person should spend on a specific activity.)

Work Breakdown Structure

Distribute the estimated hours for your heuristic review among the steps and roles presented in Figure 1. You may also use the WBS to estimate time by estimating each step and then totaling the hours.

Figure 1. Example of a time log used by project team members.

Activity	Hours Spent/Activity	
	Primary Reviewer	Secondary Reviewer
Project Management Activities		
Tracking schedule, hours, and budget		
Team status meetings		
Status reports		
Kickoff Meeting		
Establish goals of review		
Establish goals for product		
Establish project schedule		
Product Orientation		
Introduce reviewer to product		
Answer questions about product		
Initial Review		
Conduct independent reviews of product		
Merge observations		
Record additional questions		
Submit additional questions		
Question and Answer Session		
Meet with project team		
Second Review		
Complete review		
Heuristic Report		
Write draft heuristic report		
Review report internally		
Complete draft for project team		
Incorporate feedback and complete final report		
Present Results		
Present results to project team		
Facilitate decision-making		
Consult with team		

meetings, training, and similar activities can sometimes keep us from putting in eight productive hours a day.) For example, you will need team members to keep track of the time they spend on each activity (see Figure 1). So a technical writer who is scheduled to spend 100 hours working on error messages and online help would need seventeen working days to complete these tasks. Keeping in mind which tasks need to be done

before other tasks can begin (dependencies), you can work out the calendar schedule.

Keeping Track of Everything

Project estimation doesn't end after the kickoff meeting. As the project moves along, you should keep track of the hours that each team member spends on assigned activities. These figures allow you to spot potential schedule overruns

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early, and they help you revise your estimates throughout the project.

At the beginning of each stage in the project, you need to see how much time and money have been spent so far and then create the detailed plans for the upcoming stage. Tracking hours at the specific activity level can be a burden on team members, particularly if they don't know why they are doing it. Explain the need for tracking hours and set up a system to make it as easy as possible. At the end of the project, you should have a detailed accounting of the hours and money spent. You can use these figures as the basis for future estimates.

Summary

To estimate schedule and cost for UI design and usability, follow these steps:

- Create a high-level Work Breakdown Structure for each stage of the project.
- Allocate hours to team members for each activity and sum the hours.
- Factor in risk and revise the hours estimate.
- Translate the hours estimate into labor costs using the hourly rate for each team member.
- Add the nonlabor costs.
- Create the calendar schedule using the hours estimate and any dependencies.
- Repeat the estimation process in greater detail for each stage of the project.
- Track hours and costs throughout the project to spot problems early.

A detailed plan like this is what managers need in order to make a business case for including usability and user centered design in the project. Once you've devised and presented your plan, you may be pleasantly surprised at how receptive management suddenly becomes. You've started speaking their language—the language of time and money. **1**