



# Sizing & Specifying User-Centered Design Projects

How to Avoid Cheating Yourself or

BY JANICE JAMES AND CAROL RIGHI

**U**ser-centered design (UCD) consultants continually face the challenge of sizing a UCD project so that the actual time spent on the various activities reflects what was originally proposed. The process of estimating project completion time may be affected by many variables, including the iterative nature of the UCD process and scope creep.

This article describes various strategies for sizing UCD projects. For the purposes of this article, “sizing” refers to determining the amount of time (usually measured in person hours) a project will require. We assume a direct relationship between size and cost; however, we will address alternative relationships. This discussion applies to outside consultants working for an organization as well as to practitioners who provide services to internal clients. The term “consultant” will be used to represent both individuals.

## Actual Hours (Time and Materials)

Perhaps the most straightforward sizing strategy is to make a best guess estimate of the actual number of hours an activity will require, based on your experience. Although the client is then expected to pay the actual cost of the project, the best-guess estimate sets cost expectations for the project.

There are some caveats to this approach. First, it is very difficult to anticipate all the factors that can affect an estimate. A client may have assumed your estimate represents the actual ultimate cost of the project. If the actual number of hours exceeds the estimate, this may cause difficulties with the client. Second, the market for UCD services is becoming more competitive. An actual-hours estimate does not easily

allow for adjustments that might help a consultant bid competitively.

This strategy is best used where there is a flexible budget and when the client and consultant trust each other. If the client believes you are giving an honest estimate of what is required and making a best effort to stay within the estimate, this strategy allows you to receive fair compensation for your efforts. When using this strategy, it is wise to update the client frequently with the running cost and any changes that will affect the estimate.

## Best Guess

A related strategy is one in which a consultant guesses a project’s time and cost. The guess is not based on formulas or guidelines, but rather a sense of, or feel for, the project’s time and costs. The guess is likely based on experience and knowledge, but applied in a largely unstructured manner. You get a feel for what the project is worth to the client and fix a price accordingly.

An advantage to this strategy is that it is quick to perform. Detailed pricing breakdowns are not required. A disadvantage is that a client, upon receiving an estimate with no details, may not be confident that you are competent. On the other hand, if you have a reputation for performing high-quality work, the client may not be concerned about the lack of specificity. Ultimately, whether this is a good strategy for you or

the client will depend upon how good you are at guessing. If you severely underestimate the time required for a project, it may result in a schedule overrun. If you overestimate, you will reap more profit than with an accurate estimate.

### Low/High Estimates

In this approach, the consultant estimates the actual number of hours based on both best-case and worst-case scenarios. The best-case scenario is one in which it is assumed that no unexpected situations will occur. The worst-case scenario is one that identifies and accounts for all possible factors that might affect the sizing. Both estimates are provided to the client; the client is informed that the actual cost will probably fall somewhere in between.

There are several advantages to this approach for both you and the client. Giving both low and high estimates protects you by building in "padding." If additional costs are required, you will not have to eat the costs. The client is forewarned and can budget accordingly. There is no need to rework the estimate or create a new statement of work. Giving a low/high estimate can also help develop trust between you and the client. A client expecting that the high estimate is, in fact, the actual quote, will be pleasantly surprised if a lower cost is billed.

There are also some disadvantages to the low/high estimate strategy. Virtually no project is free of the unexpected. Creating a low

estimate may be unrealistically optimistic. Meeting a client's

expectation that the high estimate is, in fact, the real estimate may lead to mistrust. The client may think the low estimate was simply a ploy to win the bid.

Another potential disadvantage of offering a low/high estimate is that the client might attempt to negotiate each of the factors identified as those causing the disparity between the two estimates. Such detailed negotiations can be cumbersome.

### Fixed Price by Project

In this strategy, a consultant quotes a total price for the project. Regardless of how much time is required to complete the project, the price tag will equal the quote.

There are a number of ways to determine the price of a project. You can create a detailed worksheet containing time estimates for each activity and multiply the total hours by a desired hourly rate to calculate the total price. Or, you may set a price based on a typical price for an activity (see Guidelines-based Estimate) that is proven to yield the profit desired and that has been acceptable to clients. In either case, you may want to subject the estimate to a sniff test—a subjective judgment to determine whether the price seems too high to be acceptable to the client or too low to be profitable. The price is then adjusted to maximize both.

One advantage of a fixed price by project strategy is that you can spend less time tracking and reporting hours. You also avoid the situation of having to tell the client that an estimate was too low. However, you should track spent hours to help improve future sizing efforts. This strategy also works to your advantage if the project takes less time than expected.

On the other hand, you can incur a considerable loss if the time required far exceeds the estimate. Another disadvantage is that some clients try to get the most for their money by attempting to extract additional tasks, deliverables, or iterations for no additional cost. The onus is

on you to protect yourself by writing a detailed statement of work with clearly specified activities and deliverables, including a description of a process for renegotiating the contract to account for any new client requirements or deliverables.

A fixed price by project strategy is most suitable for projects with few project management resources or fixed budgets, and for projects in which the consultant understands how to control the factors that may cause a project to exceed its estimate. This strategy allows you to adjust the bottom-line cost estimate, and is thus well-suited to competitive bidding environments.

### Fixed Price by Activity or Deliverable

A variation of the fixed price strategy is to fix a price not by project, but by deliverable. Each distinct deliverable (for example, a usability test, a test report) is identified and priced separately.

## Triple Constraints of Project Pricing



### Professional project management revolves around the time-cost-scope triangle:

- ◎ Every project has constraints:
- ◎ Time to plan the project, assemble, and train team members, and execute the project.
- ◎ Money to pay for employees, tools, and services.
- ◎ Scope—the work to be accomplished; the goals it satisfies, and the level of acceptable quality.

When you're estimating a project, you need to consider the project deliverables and each constraint, and then optimize your proposal according to what is most important to the client.

Keep in mind that all three sides of the triangle need to remain in balance. Any impact to one side of the triangle will directly impact the other two sides. For instance, if the client can't give you enough money or time, try reducing the scope of the project, perhaps by breaking the project into manageable phases or deliverables and suggesting that the client fund the subsequent phases after the first one succeeds. If there is sufficient money but untrained team members, you will have to extend the time frame while the client sends them to training courses.

## Stiffing Your Clients

Advantages and disadvantages include all of those identified for the fixed price by project approach, plus a few more.

Activities and deliverables are well-defined units; it is easier for both you and the client to get your arms around them. The primary disadvantage is that a client may get the impression that he or she can simply cherry-pick the activities and deliverables. You can help the client understand the activities and deliverables by explaining and documenting why each is necessary and explaining the risks of eliminating them.

### Guidelines-based Estimate

A guidelines-based estimate is one in which a standard amount of time is specified for each activity. A total cost estimate is derived by multiplying the number of units by the amount of time and the consultant's rate per hour. For example, a typical usability test may require ten hours per user (including planning, observation, data analysis, report writing, and presentation of results). Using this guideline, you can quickly estimate that a six-user test will require 60 hours. Another example is the per screen estimate for design projects.

Advantages of this method are that it is quick and easy to perform and easy to communicate to the client. It projects an air of fairness. It is similar to, for example, going to a mechanic who always charges the same price for an oil change. A disadvantage is that the method is only as good as the guidelines used. That said, a consultant's guidelines can be modified through experience and professional exchange.

A guidelines-based estimate is best used for projects consisting of activities or deliverables that are readily containable (for example, a usability test) and for small projects in which activities are easy to identify and quantify. Small redesign projects are

## Known Unknowns and Unknown Unknowns

Some risk factors can be anticipated and you can plan for contingencies. For example, based on prior experience, you know that schedules may slip because team members go on vacation, get sick, or leave. This is a known unknown. You can plan for missing people by padding the timeline or identifying other people who can step in during emergencies.

However, when the project is new and unfamiliar to you and the client, there will be some risks that you cannot anticipate. Say that the client decides to build a wrist video camera for space shuttle tourists. It will be hard to anticipate all the problems. For example, what effect will weightlessness have on the person's ability to use the camera? This is an unknown unknown.

You can plan for unknown unknowns to a degree by building in contingencies. For instance, a percentage of the budget should be set aside for the known unknowns as well as the unknown unknowns. The key is adequate planning and managing of risks to improve the probability of a favorable project outcome.

well-suited to this strategy because the deliverable is, to some extent, a known entity, as opposed to projects in which something new is being designed.

### Split Sizing and Pricing

Because UCD is a process that is, by definition, driven by ongoing data gathering, it is virtually impossible to know at the inception of the project what precisely is required to achieve the project goals. Some of the most significant factors, such as user requirements, are often unknowns early in the project. Once identified, however, the rest of the project can be more easily sized. A split sizing and pricing model postpones the need to size the latter project activities until enough information is gathered. Once early user research and other early conceptual design activities are performed, you can then size the rest of the project. Ideally, the first part of the project should be charged on a time and materials basis. The rest of the project can then be sized using any of the methods discussed here.

There are several advantages to the split

sizing and pricing model for the consultant. First, it allows you to charge the client for project planning, something often performed without compensation. Second, it protects you from committing to an estimate without first having the information required for an accurate sizing.

Unfortunately, many clients may be reluctant to agree to this type of pricing. A client may require a total estimate before getting project approval or agreeing to the contract. Or a client may feel that paying for the first part of a project, without any idea of the cost of the second part, effectively obligates them to keep the consultant on through the second part.

Split sizing and pricing is most applicable to projects that are end-to-end in nature—that is, that follow a project from its early stages of user research through later evaluation or design activities. This method is also better suited for very large projects because they typically have more unknowns.

In summary, the strategy you choose will depend on many factors: your relationship with the client, the client's resources, your

## ABOUT THE AUTHORS



**Janice James**, Simply Usable by Design, has been a practitioner and independent consultant in the field of human-computer interaction since 1988, specializing in software and hardware usability research, evaluation, training, and user interface design. Janice managed usability programs at three major corporations and has provided consulting services to Best Buy, McAfee, McGraw-Hill, Charles Schwab, Cisco, Intuit, and many others. In 1990, Janice founded UPA. She has presented her work at many professional conferences and is a contributing author of *Usability in Practice*.



Since 1984, **Carol Righi**, Righi Interface Engineering ([www.righiinterface.com](http://www.righiinterface.com)), has been a practitioner and pioneer in the fields of user-centered design, information architecture, interaction design, usability engineering, and training. Projects have included user research, design, evaluation, and training for IBM, Mapquest.com, Nokia, Cisco, UAB, Deloitte and Touche, Toyota, Chrysler, MetLife, and many others. Carol is a leader in the fields of user-centered design and usability engineering, having written and presented extensively. She is co-author of *User-Centered Design: An Integrated Approach*.

experience, your competitors, and others. Although there is no one best strategy for all situations, most consultants seem to eventually find one that they feel best ensures their success. To reach this level of comfort, it is advisable to carefully review your experiences: What has resulted in the best results? Which is easiest for you to manage? Which gives you a greater sense of security? Also,

by tracking your actual hours on projects and noting other issues that arise that affect time and cost, you can broaden your knowledge and improve your ability to size projects more accurately and effectively. **UX**

*This article is adapted from the 2003 UPA workshop, "Effectively and Accurately Sizing User-Centered Design (UCD) Projects." The work-*

*shop addressed the difficulty of sizing a usability or UCD project and attempted to identify various strategies used by those responsible for sizing UCD projects. Workshop members were Scott McDaniel, Martha Posey, Charlotte Schwendeman, and Kimberly VanCuren. More information can be found at [http://www.usabilityprofessionals.org/upa\\_publications/user\\_experience/current\\_issue/index.html](http://www.usabilityprofessionals.org/upa_publications/user_experience/current_issue/index.html).*

Strategy	Definition	When Best to Use	Pros	Cons	Advice if Using
Actual Hours (time and materials)	Actual number of hours is estimated and reported to client. Client will pay based on actual time and materials.	When budget is flexible.	Consultant is fairly compensated.	Client may believe the estimate will be the final cost and resist paying what they perceive as an overage.	Keep client informed of costs throughout project.
		When client/consultant relationship is strong, trusting, long-term.			
Best Guess	Consultant guesses at ultimate cost based on a "feel" for what the project will require.		Quick to perform.	Hard to justify expenses to client without an understandable justification.	Learn from experience with regard to developing and scaling guidelines.
			Can be accurate if the consultant is good at this method.		
Low/high Estimates	The actual number of hours is estimated and calculated twice: first, based on a best-case scenario and second, on a worst-case scenario.	Always except when an RFP requires exact pricing.	Protects consultant by informing client early about possible additional costs.	Client may wonder why the consultant cannot do the project for minimum price.	Do not share your sizing worksheet with the client, as it may lead to the client micromanaging the effort to try to save money.
			Client is apprised of potential additional costs early.		
			Allows for additional activities without having to rewrite the statement of work.	The client may perceive the low estimate as a ploy to win the bid.	
			May increase trust between client and consultant.		
Fixed Price by Project	Project costs a given dollar amount, regardless of what it takes to complete.	Highly competitive environment.	Less time spent managing the project with regard to hours, costs.	An underestimate will result in the consultant not being compensated for all his/her time.	Account for all deliverables clearly and completely prior to starting work.
		Good handle on knowns.	Never a need to report an overage to client.	Clients may try to extract additional tasks and deliverables for the same price.	Research the competition with regard to "going rates" for various activities.
		Don't want to deal with tracking, managing hours, etc.	Can result in higher margins for consultant.	Excessive management by client may impede progress.	Perform a final "sniff test" regarding whether the ultimate price seems reasonable.
					Determine whether the client has a budget before making the estimate.
Fixed Price by Activity/Deliverable	Each distinct deliverable is identified and priced separately. Deliverables are charged at a fixed price, regardless of what it takes to complete.	(Same as Fixed Price by Project)	(Same as Fixed Price by Project)	An underestimate will result in the consultant not being compensated for all his/her time.	(Same as Fixed Price by Project)
			Easier to understand scope of entire project by breaking it down into deliverables.	Excessive management by client may impede progress.	
				Client may try to "pick and choose" activities to try to save money.	
Guidelines-based Estimate (per-type-of-screen pricing)	A standard amount of time is specified for each activity. A total cost estimate is derived by multiplying the number of "units" by the amount of time and the consultant's rate per hour.	Easily-definable deliverables.	Fairly easy and quick to do.	Only as good as your guidelines.	Learn from experience with regard to developing and scaling guidelines.
		Easiest to use for small redesign projects.	Fairly easy to communicate, easy for client to understand.		
			Has an inherent air of fairness.		
Split Sizing and Pricing	Time and materials are charged during discovery and requirements gathering. Later estimate the rest of the project using another strategy.	Large projects with many unknowns.	Consultant can bill for project planning.	Clients may want or need a complete estimate before starting project.	Perform as much user research and conceptual work in the first phase of the project.
		End-to-end projects.	Gives consultant time to gather more data prior to making a final estimate.		