

Analytic UX Evaluation: Data Collection Methods and Techniques

Highlights

- Design walk-throughs and reviews as early analytic evaluation methods.
- Focus groups.
- UX inspection.
- Heuristic evaluation.
- Our practical approach to UX inspection.

25.1 INTRODUCTION

25.1.1 You Are Here

We begin each process chapter with a “you are here” picture of the chapter topic in the context of The Wheel, overall UX design lifecycle template (Fig. 25-1). As an alternative approach to the empirical data collection methods of the previous chapter, this chapter is about analytic data collection methods.

25.1.2 Adding Analytic Methods to the Mix

Some projects, especially large domain-complex system projects, can benefit greatly from the potential for high rigor offered by empirical UX evaluation (Chapters 23 and 24).

For most other kinds of projects, analytic UX evaluation methods offer an alternative. Although analytic methods can be performed with high rigor and, therefore, less speed, they were developed as faster and less expensive methods to produce approximations to or predictors of empirical results.

Therefore, in practice, analytic methods tend to be more rapid and less expensive because you don’t need to:

Analytic UX Evaluation

Evaluation methods based on examining inherent attributes of the design rather than seeing the design in use (Section 21.2.2).

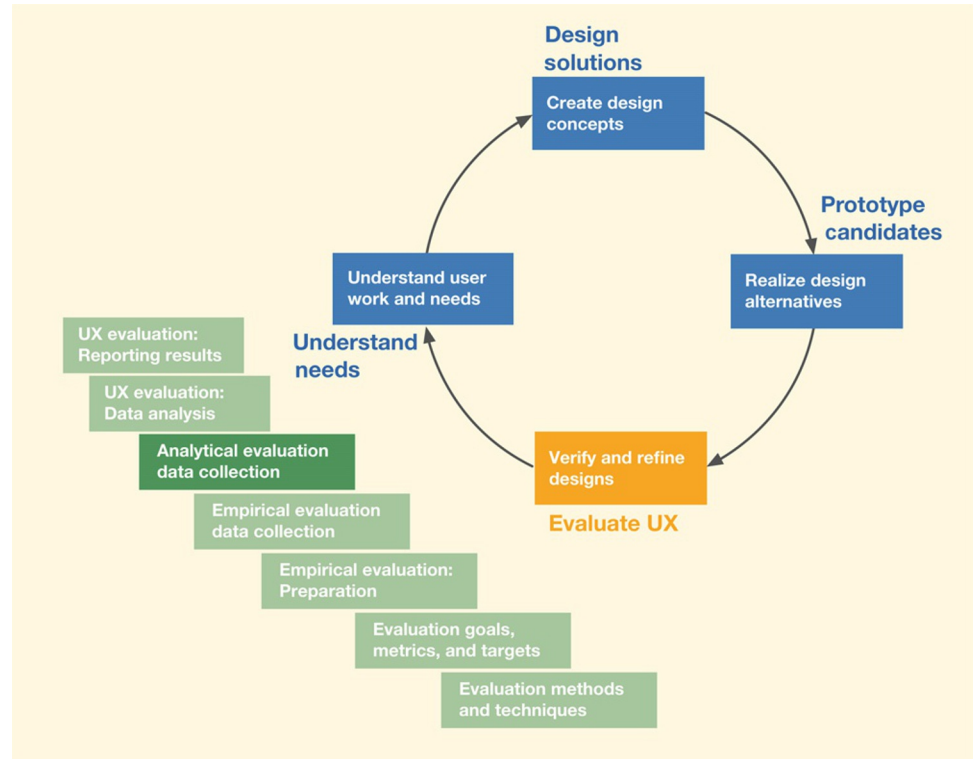


Fig. 25-1

You are here, in the chapter on analytic UX evaluation data collection within the Evaluate UX activity, in the context of the overall Wheel lifecycle process.

Participant

A participant, or user participant, is a user, potential, or user surrogate who helps evaluate UX designs for usability and user experience. These are the people who perform tasks and give feedback while we observe and measure. Because we wish to invite these volunteers to join our team and help us evaluate designs (i.e., we want them to participate), we use the term “participant” instead of “subject” (Section 21.1.3).

- Identify and recruit user participants.
- Schedule participant sessions and bring in participants (or go to visit them).
- Run long task-based evaluation sessions.

Analytic methods are based on deconstructing a UX design and examining its inherent attributes rather than seeing the design in use, producing primarily qualitative, subjective data. The analytic methods of this chapter, especially suitable for smaller fast-track projects, agile environments, and product development, include design reviews, design walk-throughs, and inspection methods, such as heuristic evaluation.

Here are some general characteristics of analytic evaluation methods:

- Because they are based on expert opinions rather than empirical usage data, they require experts in both UX and the subject-matter domain.
- They are aimed almost exclusively at finding the most important qualitative data, the UX problems that are cost-effective to fix.

Subjective UX Evaluation Data

Data based on opinion or judgment, of evaluator or user (Section 21.1.4.2).

- There is a heavy dependency on practical techniques.
- Usually they are less formal, with less protocol and fewer rules.
- There is much more variability in the process, with almost every evaluation “session” being different, tailored to the prevailing conditions.
- This freedom to adapt to conditions creates more room for spontaneous ingenuity, something experienced UX professionals do best.

In early stages of a project, your prototype may not be developed well enough for interacting with customers or users. Still, you can use design reviews, focus groups, and walk-throughs for early design evaluation.

Beyond these early approaches, when you have an interactive prototype, at least a click-through wireframe prototype, you will usually employ some variation of the UX inspection methods.

25.1.3 Criticism of Analytic Methods

Analytic UX evaluation methods, including most inspection methods, have been criticized in HCI literature of the past. Sometimes disparagingly called “discount methods,” analytic methods have been criticized for not being thorough and for being unscientific. Although these two claims are, in fact, true, the rapid methods we discuss in this chapter are the result of simply trading off the thoroughness of high rigor for low cost and fast application. These methods are the bread and butter of agile UX practice. For more about “discount” evaluation methods, see [Section 28.3.3](#).

25.2 DESIGN WALK-THROUGHS AND REVIEWS

25.2.1 Design Walk-Throughs

Design reviews and walk-throughs are not as deeply analytic as the UX inspection methods described later in this chapter, but we consider them as analytic methods because they are based on looking at design (as presented by the designers) rather than on empirical data from usage.

A design walk-through is an informal way to get initial reactions to design concepts. At this point you usually have only scenarios, storyboards, screen sketches, and/or some wireframes. So, you may have to do the “driving,” if it’s too early for anyone else in a user role to engage in real interaction.

Walk-throughs are an important way to get early feedback from the rest of the design team, customers, potential users, subject matter experts, and other stakeholders.

Inspection (UX)

An analytical evaluation method in which a UX expert evaluates an interaction design by looking at it or trying it out, sometimes in the context of a set of abstracted design guidelines. Expert evaluators are both participant surrogates and observers, asking themselves questions about what would cause users problems and giving an expert opinion predicting UX problems ([Section 25.4](#)).

Heuristic Evaluation

An analytic evaluation method based on expert UX inspection guided by a set of heuristics, general high-level UX design guidelines ([Section 25.5](#)).

Design Review

A slightly more comprehensive UX evaluation technique than design walk-throughs, usually done with click-through wireframe prototypes to demonstrate workflow and navigation. Often the primary evaluation method for task-level UX designs in the fast iteration of the late funnel ([Section 25.2.2](#)).

Focus Group (in UX Practice)

A small discussion group of representative users or stakeholders aimed at identifying broad themes and issues in a work practice (Section 7.4.4.3).

Wireframe Prototype

A prototype composed of wireframes, which are line-drawing representations of UX designs, especially the interaction design of screens (Section 20.4).

Discount UX Evaluation Methods

Evaluation methods that result simply from trading off the thoroughness of high rigor for low cost and fast application. This includes most of the analytic methods, especially in their less rigorous forms (Section 28.3.3).

25.2.2 Design Reviews

Design reviews, a bit more advanced than early walk-throughs, tend to be a bit more comprehensive and are usually done with click-through wireframe prototypes to demo the workflow and navigation. Design reviews are often the primary evaluation method for task-level UX designs in the fast iteration of the late funnel. In this kind of use, the reviews often amount to a team-based UX inspection. And, even though these are click-through prototypes, they are usually not interactive enough to support someone else doing the clicking, so, again, usually you have to do the driving.

Memmel, Gundelsweiler, and Reiterer (2007, Table 8) declare that design reviews are less time-consuming and more cost-effective than participant-based testing, and that their flexibility and scalability mean the effort can be adjusted to match the needs of the situation.

The goal of a design walk-through or design review, as with almost any kind of analytic method, is to explore a design on behalf of users to simulate the user's view of moving through the design, but to see it with an expert's eye. The team is trying to anticipate problems that users might have if they were the ones using the design.

25.2.3 Prepare for a Design Review

Prepare for a design review or walk-through by doing these things:

- Test your prototype for completeness, consistency, glitches, flaws, inconsistencies, and breakdowns (don't use up other people's valuable time to fix your own mistakes).
- If useful, start with storyboards to illustrate flow.
- Have at hand descriptions of relevant users, work roles, and user classes.
- Practice with your design scenarios or user stories to drive the walk-through.
- Schedule the session with the appropriate users and stakeholders:
 - Set a beginning and end time.
 - Your UX studio is a good venue for this.
- Decide who will take the role of leader and who will run the prototype.
- Decide who will take the role of note-taker to record UX problems discovered and changes needed.

25.2.4 Conduct a Design Review Session

Informal session protocol can include:

- The leader introduces the design and its purpose and context.
- The leader does the clicking and navigation in a guided tour of the design in action:

- First, cover the main workflow and navigational paths.
- Then, cover edge cases, exceptions, error and recovery.
- Comments and discussion are invited from the entire group.
- The note-taker records UX problems discovered (this is data collection for this method).
 - Each note should be referenced to the wireframe numbers involved.
- End on time; stick to your announced end time (if you chronically allow sessions to run overtime, your group will be less likely to return and help with the many more design reviews yet to come).

To be realistic and engaging, UX evaluators explore early UX designs through the lens of usage or design scenarios. The leader walks the group through key workflow patterns that the system is intended to support.

As the team follows the scenarios, looking systematically at parts of the design and discussing the merits and potential problems, the leader tells stories about users and usage, user intentions and actions, and expected outcomes. The leader explains what the user will be doing, what the user might be thinking, and how the task fits in the work practice, workflow, and context. Other team members think about how well all of that might work for users. As potential UX problems arise, someone records them on a list for further consideration.

Reviews may also include considerations of compliance with design guidelines and style guides as well as questions about emotional impact, including aesthetics and fun. Beyond just the details of UX and other design problems that might emerge, it is a good way to communicate about the design and keep on the same page within the project.

25.2.5 After the Session

Make changes needed and update wireframes to fix the problems identified. Decide if enough has been changed to require you to reconvene the group for a follow-up review of the updated design.

Storyboard

A visual scenario in the form of a series of sketches or graphical clips, often annotated, in cartoon-like frames, illustrating the interplay between a user and an envisioned ecology or device (Section 17.4.1).

Emotional Impact

An affective component of user experience that influences user feelings. Includes such effects as enjoyment, pleasure, fun, satisfaction, aesthetics, coolness, engagement, and novelty and can involve deeper emotional factors such as self-expression, self-identity, a feeling of contribution to the world, and pride of ownership (Section 1.4.4).

25.3 FOCUS GROUPS

Focus groups, composed of a moderator and, say, a half-dozen other participants, are an analytic method for (in our practice) early evaluation of UX designs. As [Martin and Hanington \(2012\)](#) say, “The power of focus groups lies in the group dynamic that it creates.” Group members share opinions and collaboratively discuss the pros and cons as peers. As the group members describe their experiences and feelings, they will tell stories and use metaphors and analogies. At the end of a session, the moderator leads the group in creating a summary of the discussion.

25.4 EXPERT UX INSPECTION

25.4.1 What is UX Inspection?

A UX inspection is an analytic evaluation method in that it involves evaluating by looking at and trying out the design yourself as a UX expert instead of having participants exercise it while you observe. The evaluator is both participant surrogate and observer. Inspectors ask themselves questions about what would cause users problems. So, the essence of these methods is the inspector giving an opinion predicting UX problems.

25.4.2 Inspection is a Valuable Tool in the UX Toolbox

UX professionals have been using UX inspection methods for years with great success. In our own practice, we now use it as our main go-to evaluation approach, falling back on empirical methods only when we need more rigor. UX inspection is especially useful:

- When applied in early stages and early design iterations.
- When you are brought in to evaluate an existing system that has not undergone previous UX evaluation and iterative redesign.
- When you cannot afford or cannot do empirical testing for some reason but still want to do *some* evaluation.

UX inspection can still do a good job for you when you do not have the time or other resources for a rigorous empirical evaluation (which, these days, is most of the time). However, there is a tradeoff, in that there will always be some UX problems showing up in real live user-based interaction that you will not see in an inspection or design review.

25.4.3 How Many Inspectors are Needed?

In empirical UX testing, you can improve evaluation effectiveness by adding more participants until you get diminishing returns. Similarly, in UX inspection, to improve effectiveness, you can add more inspectors. A team approach is beneficial, maybe even necessary, because low individual problem detection rates preclude finding enough problems by one person.

Research and experience have shown that different evaluators (even experts) find different problems, and this diversity of skills is valuable because the union of problems found over a group of inspectors is usually much larger than the set of

problems found by any individual. Most heuristic inspections are done by a team of UX inspectors, typically two or three inspectors.

But what is the optimal number? It depends on conditions and a great deal on the system you are inspecting. Nielsen and Landauer (1993) found that, under some conditions, a small set of experts, in the range of three to five, is optimal before diminishing returns. For further discussion about the “three-to-five-users” rule and its limitations, see Section 28.6.3. As a practical matter, as with almost any kind of evaluation, some is better than none. For early project stages, we often have to be satisfied with a single inspection by one or two inspectors working together.

25.4.4 What Kind of Inspectors are Needed?

Not surprisingly, Nielsen (1992) found that UX experts (UX practitioners or consultants) make the best inspection evaluators, which is why this kind of evaluation method is also sometimes called “expert evaluation” or “expert inspection” (Section 25.4).

Sometimes, it is best to get a fresh view by using an expert evaluator who is not on the project team. If those UX experts also have knowledge in the subject-matter domain of the interface being evaluated, all the better. Those people are called dual experts and can evaluate through both a design guidelines perspective and a work activity, workflow, and task perspective. The equivalent of having a dual expert can be approximated by pairing up a UX expert with a work domain expert.

25.5 HEURISTIC EVALUATION, A UX INSPECTION METHOD

Heuristic UX evaluation is an analytic evaluation method based on expert UX inspection in which the evaluator compares aspects of the design against a set of heuristics, general high-level UX design guidelines.

25.5.1 Introduction

As Nielsen (Nielsen, 1992; Nielsen & Molich, 1990) states, the heuristic evaluation (HE) method has the advantages of being inexpensive, intuitive, and easy to motivate practitioners to do, and it is effective for use early in the UX process. It is no surprise that, of all the inspection methods, the HE method is the best known and the most popular.

25.5.1.1 *The heuristics*

For a list of the original Molich and Nielsen heuristics (Molich & Nielsen, 1990; Nielsen & Molich, 1990), see Section 28.9. Following publication of the original heuristics, Nielsen enhanced the heuristics with a study based on factor analysis of a large number of real usability problems. The resulting refined heuristics (Nielsen, 1994) are these (from “10 Usability Heuristics for User Interface Design” by Jakob Nielsen (January 1, 1995; <https://www.nngroup.com/articles/ten-usability-heuristics>)):

1. Visibility of system status

The system should always keep users informed about what is going on through appropriate feedback within reasonable time.

2. Match between system and the real world

The system should speak the users’ language, with words, phrases, and concepts familiar to the user rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

3. User control and freedom

Users often choose system functions by mistake and will need a clearly marked “emergency exit” to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5. Error prevention

Even better than good error messages is a careful design that prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

6. Recognition rather than recall

Minimize the user’s memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7. Flexibility and efficiency of use

Accelerators—unseen by the novice user—may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8. Aesthetic and minimalist design

Dialogues should not contain information that is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

9. Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), indicate the problem precisely, and suggest a solution constructively.

10. Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

25.5.1.2 *The procedure*

Despite the large number of variations in practice, we endeavor to describe what roughly represents the “plain” or “standard” version. These inspection sessions can take from a couple of hours for small systems to several days for larger systems. Here is how to do it:

- The project team or manager selects a set of evaluators, typically three to five.
- The team selects a small, tractable set, about 10, of “heuristics,” generalized and simplified design guidelines in the form of inspection questions, for example, “Does the interaction design use the natural language that is familiar to the target user?”
 - The set of heuristics given in the previous section are a good start.
- Each inspector individually browses through each part of the interaction design, asking the heuristic questions about that part and, for each heuristic question:
 - Assesses the compliance of each part of the design.
 - Notes places where a heuristic is violated as candidate usability problems.
 - Notes places where heuristics are supported (things done well).
 - Identifies the context of each instance noted previously, usually by capturing an image of the screen or part of the screen where the problem or good design feature occurs.
- All the inspectors get together and, as a team, they:
 - Merge their problem lists.
 - Select the most important ones to fix.
 - Brainstorm suggested solutions.
 - Decide on recommendations for the designers based on the most frequently visited screens, screens with the most usability problems, guidelines violated most often, and resources available to make changes.
 - Issue a group report.

A heuristic evaluation report should:

- Start with an overview of the system being evaluated.
- Give an overview explanation of inspection process.
- List the inspection questions based on heuristics used.

- Report on potential usability problems revealed by the inspection:
 - By heuristic: for each heuristic, give examples of design violations and of ways the design supports the heuristic.
 - Or by part of the design: for each part, give specific examples of heuristics violated and/or supported.
- Include as many illustrative screen images or other visual examples as possible.

The team then puts forward the recommendations they agreed on for design modifications, using language that will motivate others to want to make these changes. They highlight a realistic list of the “Top 3” (or 4 or 5) suggestions for modifications and prioritize suggestions, to give the biggest improvement in usability for the least cost (perhaps using the cost-importance analysis of [Section 26.4](#)).

25.5.1.3 Documenting UX problems

We have found it best to keep HE problem documentation simple. Long forms with lots of fields can capture more information, but tend to be tedious for UX professionals who have to deal with large numbers of problems. [Table 25-1](#) is a simple HE data capture form that we have adapted, with permission, from one developed by Brad Myers.

Be specific and insightful; include subtlety and depth. Saying, “The system does not have good color choices because it does not use color,” is pretty trivial and is not helpful. Also, if you evaluated a prototype, saying that functions are not implemented is obvious and unhelpful.

25.5.1.4 Variations abound

The one “constant” about the HE method and most other analytic methods is the variation with which they are used in practice. These methods are adapted and customized by almost every team that ever uses them usually in undocumented and unpublished ways.

Task-based or heuristic-based expert UX inspections can be conducted with just one evaluator or with two or more evaluators, each acting independently or all working together. Other expert UX inspections can be scenario-based, persona-based, checklist-based, or as a kind of “Can you break it?” test.

As an example of a variation that was described in the literature, participatory heuristic evaluation extends the HE method with additional heuristics to address broader issues of task and workflow, beyond just the design of user interface artifacts to “consider how the system can contribute to human goals and human

Table 25-1
Simple HE reporting form, adapted from Brad Myers

Heuristic Evaluation Report


Dated: mm/dd/yyyy

Prepared By: Name: Signature:

Problem number: 1

Name of heuristic violated or supported: Consistency

Prototype screen, page, location of problem:



The screenshot shows two side-by-side product listings. The left listing is for 'Sears, Roebuck & Co. CDW Part No. 324029' with a price of '\$449.00'. The 'ADD TO CART' button is located below the product details. The right listing is for 'Sears, Roebuck & Co. CDW Part No. 324029' with a price of '\$449.00'. The 'ADD TO CART' button is located above the product details.

Reason for reporting as negative or positive: Inconsistent placement of “Add to Cart” buttons: The “Add to Cart” button is below the item in CDW but above in CDW-G

Scope of problem: Every product page

Severity of problem (high/medium/low): Low—minor, cosmetic problem

Justification for severity rating: Unlikely that users will have trouble with finding or recognizing the button

Suggestions to fix: Move the button on one of the sites to be in the same place as on the other site

Possible tradeoffs (why fix might not work): This may result in an inconsistency with something else, but unknown what that might be

experience” (Muller, Matheson, Page, & Gallup, 1998, p. 16). The definitive difference in participatory HE is the addition of users, work domain experts, to the inspection team.

Sears (1997) extended the HE method with what he calls heuristic walk-throughs. Several lists are prepared and given to each practitioner doing the inspection: user tasks, inspection heuristics, and “thought-focusing questions.” Each inspector performs two inspections, one using the tasks as a guide and supported by the thought-focusing questions. The second inspection is the more traditional kind, using the heuristics. Their studies showed that “heuristic walk-throughs resulted in finding more problems than cognitive walk-throughs and fewer false positives than heuristic evaluations.”

Perspective-based usability inspection (Zhang, Basili, & Shneiderman, 1999) is another published variation on the HE method. Because a large system can

present a scope too broad for any given inspection session, [Zhang et al. \(1999\)](#) proposed “perspective-based usability inspection,” allowing inspectors to focus on a subset of usability issues in each inspection. The resulting focus of attention afforded a higher problem detection rate within that narrower perspective.

Examples of perspectives that can be used to guide usability inspections are novice use, expert use, and error handling. In their study, [Zhang et al. \(1999\)](#) found that their perspective-based approach did lead to significant improvement in detection of usability problems in a web-based application. Persona-based UX inspection is a variation on the perspective-based inspection in that it includes consideration of context of use via the needs of personas ([Wilson, 2011](#)).

As our final example, [Cockton, Lavery, and Woolrych \(2003\)](#) developed an extended problem-reporting format that improves heuristic inspection methods by finding and eliminating many of the false positives typical of the usability inspection approach. Their Discovery and Analysis Resource (DARe) model allows analysts to bring distinct discovery and analysis resources to bear to isolate and analyze false negatives as well as false positives.

25.5.1.5 Limitations

While a helpful guide for inexperienced practitioners, we find that heuristics usually get in the way of the experts. To be fair to the heuristic method, the heuristic method was intended as a kind of “scaffolding” to help novice practitioners do usability inspections, so it should not really be compared with expert usability inspection methods, anyway.

It was perhaps self-confirming when we read that others found the actual heuristics to be similarly unhelpful ([Cockton et al., 2003](#); [Cockton & Woolrych, 2001](#)). In their studies, [Cockton et al. \(2003\)](#) found that it is experts who find problems with inspection, not experts using heuristics. [Cockton and Woolrych \(2002, p. 15\)](#) also claim that the “inspection methods do not encourage analysts to take a rich or comprehensive view of interaction.” While this may be true for heuristic methods, it does not have to be true for all inspection methods.

A major drawback with any inspection method, including the HE method, is the danger that novice practitioners will get too comfortable with it and think the heuristics are enough for any evaluation situation. There are few indications in its usage that let the novice practitioner know when it is not working well, and when a different method should be tried.

Also, like all UX inspection methods, the HE method can generate numerous false negatives, situations in which inspectors identified “problems” that turned out to be not real problems or not very important UX problems. Finally, like most other analytic UX evaluation methods, the HE method is not particularly

effective in finding usability problems below the surface—problems about sequencing and workflow.

25.6 OUR PRACTICAL APPROACH TO UX INSPECTION

We have synthesized existing UX inspection methods into a relatively simple and straightforward method that, unlike the heuristic method, is definitely for UX experts and not for novices. Sometimes, we have novices sit in and observe the process as a kind of apprentice training, but they do not perform these inspections on their own.

25.6.1 The Knock on Your Door

It is the boss. You, the UX professional, are being called in and asked to do a quick UX assessment of a prototype, an early product, or an existing product being considered for revision. You have 1 or 2 days to check it out and give feedback. You feel that if you can give some valuable feedback on UX flaws, you will gain some credibility and maybe get a bigger role in the project next time.

What method should you use? No time to go to the lab, and even the “standard” inspection techniques will take too long, with too much overhead. What you need is a practical, fast, and efficient approach to UX inspection. As a solution, we offer an approach that evolved over time in our own practice. You can apply this approach at almost any stage of progress, but it usually works better in the early stages. We believe that most real-world UX inspections are more like our approach than like the somewhat more elaborate techniques to inspection described in the literature.

25.6.2 Guided by Insight and Experience

We don’t directly or explicitly use a list of heuristics to drive this kind of UX inspection. In our own industry and consulting experience, we have just not found specific heuristics as useful as we would like. We drive our inspection process with usage in context by focusing on tasks and work activities. But, we do, however, bring our expert knowledge of UX design guidelines ([Chapter 32](#)) to bear to decide what issues are real problems and to understand the underlying nature of the problems and potential solutions.

We like a usage-based approach because it allows the practitioner to better take on the role of user. Using this approach, and our UX intuition honed over the years, we can see, and even anticipate, UX problems, many of which might not have been revealed under the purely heuristic spotlight.

Analytic UX Evaluation

Evaluation methods based on examining inherent attributes of the design rather than seeing the design in use ([Section 21.2.2](#)).

Codiscovery

A qualitative data collection technique employing two or more participants interacting in a team approach to evaluation, usually with a think-aloud data collection technique. Two people can verbalize more naturally, yielding multiple viewpoints expressed within conversational interplay (Sections 21.4.2.3 and 24.2.3.3).

Emotional Impact

An affective component of user experience that influences user feelings. Includes such effects as enjoyment, pleasure, fun, satisfaction, aesthetics, coolness, engagement, and novelty and can involve deeper emotional factors such as self-expression, self-identity, a feeling of contribution to the world, and pride of ownership (Section 1.4.4).

25.6.3 Use a Codiscovery or Team Approach in UX Inspection

Expert UX professionals as inspectors are in the role of “UX detectives.” To aid the detective work, it can help to use two practitioners, working together as mutual sounding boards in a give-and-take interplay, potentiating each other’s efforts to keep the juices flowing, to promote a constant flow of think-aloud comments from the inspectors, and to maintain a barrage of problem notes flying.

It is also often useful to team up with customers, users, designers, and other people familiar with the overall system, who can help make up for any lack of system knowledge on your part, especially if you have not been with the team during the entire project. Work domain experts can reinforce your user-surrogate role and bring in more subject-matter expertise (Muller et al., 1998).

25.6.4 Explore Systematically With a Rich and Comprehensive Usage-Oriented View

As an inspector, you should not just look for individual little problems associated with individual tasks or functions. Use all your experience and knowledge to see the big picture. Keep an expert eye on the high-level view of workflow, the overall integration of functionality, and emotional impact factors that go beyond usability.

Usage scenarios and design scenarios (Section 9.7.1) are fruitful places to look to focus on key user work roles and key user tasks that must be supported in the design.

25.6.5 Inspection is Driven by Tasks and by the Design Itself

Representative user tasks help us put ourselves in the users’ shoes. By exploring the tasks ourselves and taking our own think-aloud data, we can imagine what real users might encounter in their usage. A hierarchical task inventory (Section 9.6) is helpful in attaining a good understanding of the task structure and ensuring broad coverage of the range of tasks.

Driving the inspection with the interaction design itself means trying all possible actions on all the user interface artifacts, trying out all user interface objects such as buttons, icons, and menus. It also means being opportunistic in following leads and hunches triggered by parts of the design.

How much time to spend? The time and effort required for a good inspection are more or less proportional to the size of the system (i.e., the number of user tasks, choices, and system functions). System complexity can have an even bigger impact on inspection time and effort.

Skills needed. The main skill you need for finding UX problems as you inspect the design is your detective’s “eagle eye” for curious or suspicious incidents or phenomena. The knowledge requirement centers on design guidelines and principles and your mental inventory of typical interaction design flaws you have seen before. You really have to know the design guidelines cold, and your mental storehouse of problem examples helps you anticipate and rapidly spot new occurrences of the same types of problems.

Soon, you will find the inspection process blossoming into a fast-moving narration of critical incidents, UX problems, and guidelines. By following various threads of UX clues, you can even uncover problems that you do not encounter directly within the tasks.

25.6.6 Analytic UX Evaluation in the Layers of the Needs Pyramid

In whatever analytic UX evaluation method you use, there are certain basic questions to ask to help evaluate UX in the layers of the needs pyramid:

- Ecological layer.
- Interaction layer.
- Emotional layer.

25.6.7 Ecological-Layer Inspection

Does the system ecology make sense? Is the conceptual design appropriate for envisioned work in that domain? If you are not confident in your own ability to assess the conceptual design by inspection, you can use focus groups and similar methods to evaluate the ecological level and effectiveness of the conceptual design in the early funnel.

25.6.8 Interaction-Layer Inspection

The interaction layer is the most common focus of analytic UX evaluation methods, usually in the context of finding UX problems in task-level evaluation within the iterations of the late funnel.

25.6.9 Emotional-Layer Inspection

In the past, inspections for evaluating UX designs have been almost exclusively usability inspections at the interaction level. But this kind of evaluation can easily be extended to a more complete UX inspection by addressing issues of emotional impact, too. The process is essentially the same, but you need to look beyond a task view to the overall usage experience. Ask additional questions.

Pyramid of User Needs

An abstract representation as a pyramid shape with the bottom layer as ecological needs, the middle layer as interaction needs, and the top layer as emotional needs (Section 12.3.1).

Ecology

In the setting of UX design, the ecology is the entire set of surrounding parts of the world, including networks, other users, devices, and information structures, with which a user, product, or system interacts (Section 16.2.1).

Among the emotional impact questions to have in mind in a UX inspection are:

- Is usage fun?
- Is the visual design attractive (e.g., colors, shapes, layout) and creative?
- Will the design delight the user visually, aurally, or tactilely?
- If the target is a product:
 - Is the packaging and product presentation aesthetic?
 - Is the out-of-the-box experience exciting?
 - Does the product feel robust and good to hold?
 - Can the product add to the user's self-esteem?
 - Does the product embody environmental and sustainable practices?
 - Does the product convey the branding of the organization?
 - Does the brand stand for progressive, social, and civic values?
 - Are there opportunities to improve emotional impact in any of the aforementioned areas?

Codiscovery

A qualitative data collection technique employing two or more participants interacting in a team approach to evaluation, usually with a think-aloud data collection technique. Two people can verbalize more naturally, yielding multiple viewpoints expressed within conversational interplay (Sections 21.4.2.3 and 24.2.3.3).

You can also use focus groups (Section 25.3) and/or codiscovery to evaluate the emotional layer.

Most of the questions in a questionnaire for assessing emotional impact are also applicable as inspection questions here. As an example, using attributes from AttrakDiff:

- Is the system or product interesting?
- Is it exciting?
- Is it innovative?
- Is it engaging?
- Is it motivating?
- Is it desirable?

Exercise 13-1: UX Inspection of Your System

Goal: Get a little practice in doing a UX inspection.

Activities: It is strongly preferred that you use the wireframe prototype deck you built in a previous exercise. If your prototype is not suitable for an effective exercise in UX inspection, select an application or appropriate website as the target of your inspection.

Perform a team-based UX inspection as described in this chapter.

Deliverables: A list of UX problems identified by your UX inspection.

Schedule: An hour and a half.