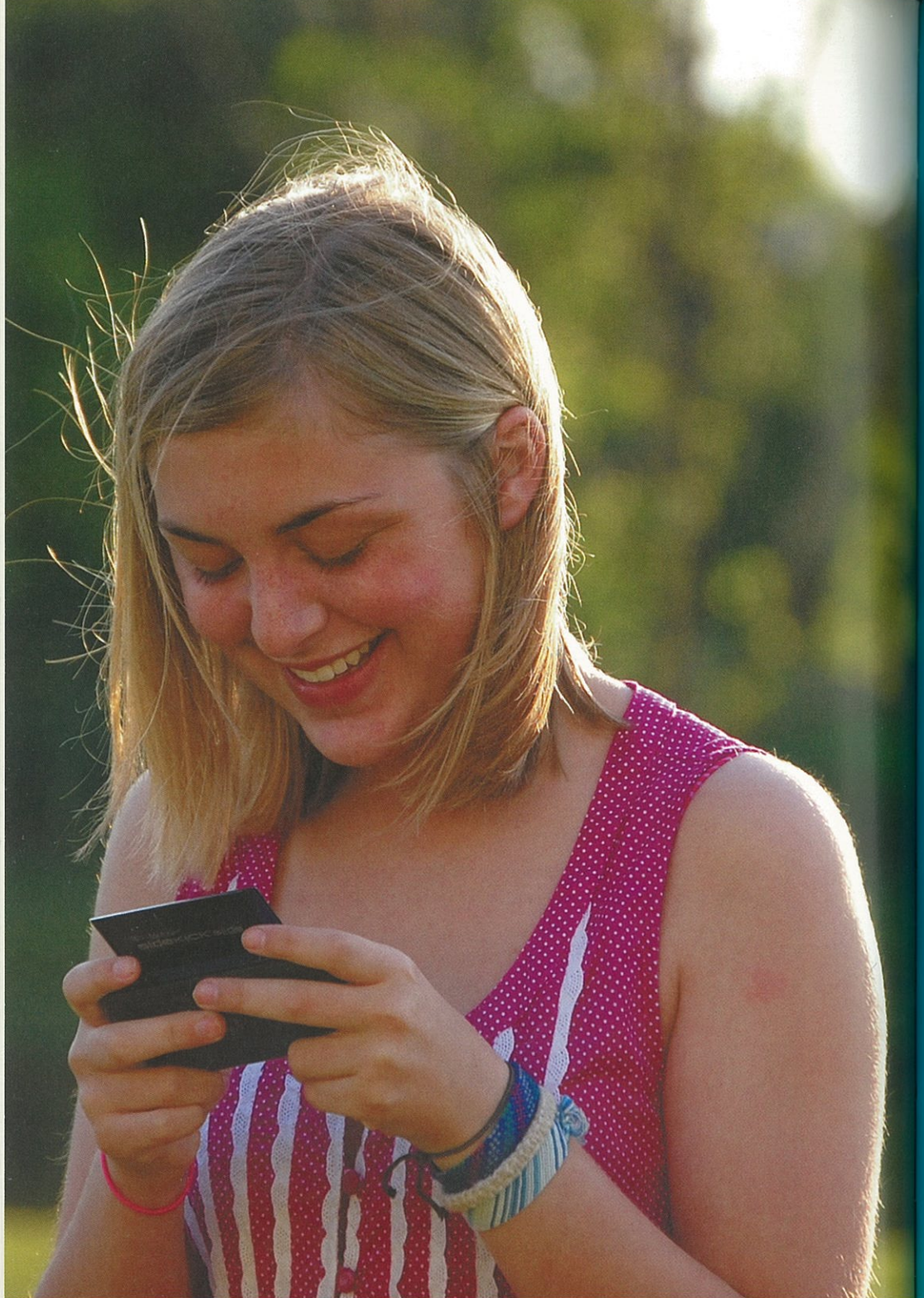

CHAPTER 6

Mobile Prototyping

Tools and Methods for Designing Mobile Experiences

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One of my favorite television programs of all times is the reality cooking show *Top Chef* (see Figures 6.1 and 6.2). Food, creativity, competition, drama—it's a show that's got everything. My favorite part of the program is the elimination segment referred to as "Judges' Table." It's the suspenseful finale of each show where the three chefs who performed the worst that week are called before a panel of judges to defend their dish. Time and again, regardless of circumstance, most of them repeat a similar phrase, "...I would have made different choices."

FIGURES 6.1 AND 6.2
Top Chef is an American television show in which chefs compete for the title of Top Chef. Each week a panel of judges (known as the judges' table) must eliminate a contestant.

The act of design, like cooking, is all about choices. Whether designing a meal, a dress, or a mobile Web site, the end product is the result of a million and one design decisions. UX designers are called on to make decisions about interaction, form, function, and style, and these choices are driven by a host of internal and external drivers such as time, personal goals and motivation, client/organizational needs, and social pressure. The ability to make good design decisions in the face of constraints and pressure is perhaps the most valuable skill any designer can possess.

Designers interested in getting into mobile UX often ask these questions:

"What makes mobile design and development different?"

"What modifications to my existing design processes do I need to make to create good mobile experiences?"

"When the rubber hits the road, what do I need to do differently?"

My answer: decision-making. The primary skill that designers new to mobile UX must learn is to calibrate their design decision-making skills to a new medium.

And that's what this chapter is about. It's designed to help you get in tune with your design decision-making so that you can:

- Be confident about your mobile design choices.
- Know how to identify and recover from bad choices and failures.
- Know when you've made good design choices.

The Design Process

Different designers manage their design processes in a myriad of ways. However, a process blueprint I find myself turning to time and again for most mobile design projects is the double-diamond model, as shown in Figure 6.3. Even if you've never heard of this model, it will likely feel familiar because it's a model that many designers intuitively follow during a typical design project cycle. Divided into four distinct phases—discover, define, develop, and deliver—this model maps the divergent and convergent stages of the design process, showing the different modes of thinking that designers use in each phase.

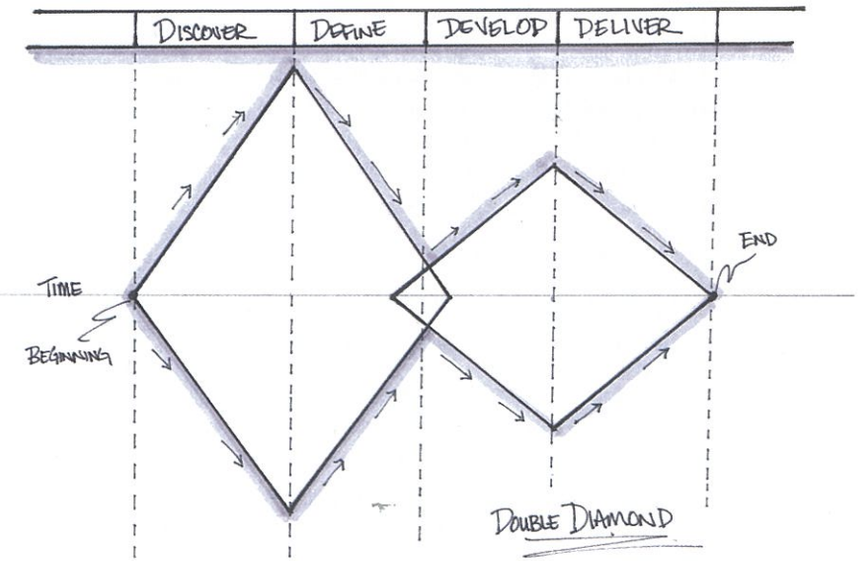


FIGURE 6.3
The double-diamond project model.

Discover

The first quarter of the double-diamond model represents the set of activities conducted at the beginning of a design project. This phase starts with a single point—an initial idea or inspiration—followed by exploratory design activities that fan out and diverge, such as the following:

- Contextual user research
- Secondary research
- Competitive research—data analysis

Define

The second quarter of the model—the definition stage—is the phase of a project that is all about filtering. Unlike the discovery phase, which is divergent, design activities in the define phase are convergent in nature and focus on editing ideas and information on what's most relevant to the given project. Key activities during the define stage are:

- Data synthesis and design principles
- Brainstorming and concept development
- Business alignment

Develop

The third quarter of the double-diamond process is the phase of a project where design solutions are developed, tested, and iterated. Similar to the discover phase, the design activities in the develop phase are divergent and generative in nature. Key activities and objectives during the develop stage are:

- Sketching and diagramming flows
- Interaction and visual design language development
- Prototype development, testing, and interaction
- Prototype testing and iteration

Deliver

The last quarter of the double-diamond model represents the final stage of a design process. This is the key "decision-making" phase of any design project. In this phase, any fine-tuning of the final concept of a product or service occurs before it's launched into the world. The key activities and objectives during this stage are:

- Interaction and visual design language finalized and applied to screen layouts and flow diagrams
- Technical implementation, testing, and fine-tuning design
- Salability testing

Where Things Usually Go Wrong

The two diamonds of this model are not different sizes by accident. The first diamond—the discover and define phase—is bigger because it requires more divergent thinking. While some convergent thought is required in this phase, it's generally regarded as the blue sky/green field part of a project where anything seems possible. The second diamond—the develop and deliver phase—is where you start to see the results of your decisions take form and become concrete.

Fate has a funny way of revealing bad choices at inopportune moments, and the second diamond is no exception. Unfortunately, this phase (the phase where your project's precious time and resources are dwindling) is where most mobile UX projects go sideways or entirely off the rails.

The biggest reason involves bad decision-making. The second diamond is where all the ideas that once seemed brilliant in your mind start to take form—and all their imperfections come to light. It's the place where a series of small assumptions and well-intentioned but poor decisions can accumulate and rear their ugly head, resulting in a bad design.

The second diamond of almost any mobile UX project is where good design decisions matter most. Unfortunately, it's the place that designers new to mobile have the least skill and confidence because they are largely unfamiliar with the subtle nuances of the mobile medium. However, there is something that can alleviate the impact of this common problem. It's a design activity that will help designers new to mobile improve their decision-making skills, build their confidence, and up their chances of success. That activity is prototyping.

Prototyping

We've heard it all before…prototype, prototype, prototype. It's a standard step we've all been encouraged to include in our design processes, but often it's the first step skipped in time- and budget-constrained projects. Although prototyping is considered a luxury for many PC-based experiences, it is an absolutely *essential* part of creating compelling tablet and mobile experiences. The reason is simple. Chances are if you are new to mobile, your design experience and instincts aren't very well tuned to mobile. This often results in bad decision-making. Bad design decision-making will make that last diamond—the develop and deliver phase of your project—feel like a death march. And it doesn't have to be that way if you plan and engage in a lot of prototyping.

Prototypes are like decision-making aids. They are a way of working through a design idea with tangible means, giving other people a chance to experience your idea and provide feedback. Like a list of "if/then" statements of a geometric proof, prototypes are the design equivalent of "showing your work." Unfortunately, they are often sidestepped.

The reason that prototypes are often side-stepped in other design domains is that designers tend to marshal the decision-making skills they've acquired from previous design projects and apply them to the project at hand. Whether it's leaning on already established heuristics, expertise, or instinct, it's not always necessary when designing PC experiences to "show your work"—you can simply make the call.

Mobile is a different animal, though. Designers and UX professionals new to mobile don't have the skills and the confidence to intuitively make consistently good design decisions. Those intuitive design and decision-making skills for mobile take time and experience to develop. Additionally, unlike the PC, the mobile design space is relatively new, and design patterns have yet to be formally codified. In lieu of experience and heuristics, the best way to develop these skills is to practice turning the brilliant ideas in your head into tangible experiences you and other people can engage with. In short, if you want to develop your mobile design decision-making skills, you've got to get into the practice of showing your work. You've gotta prototype.

Aside from accruing mobile UX experience and skills, prototypes can perform important roles in your project and serve a variety of purposes. I've identified four basic reasons I turn to prototyping when designing mobile experiences. There are probably more or variants on these…but these are my four "whys":

1. Communicate a design idea or experience.
2. Gather user feedback.
3. Explore the unknowns.
4. Fine-tune an idea.

Communicate a Design Idea or Experience

While humans are highly verbal, words can be a tricky way to communicate an idea because words can mean different things to different people. Prototypes serve as a powerful communication tool because they are often more precise than words. Whether you're pitching a start-up idea to investors or trying to explain your team's idea to internal stakeholders, prototypes provide people with something more tangible than an elevator pitch or a marketing statement, as shown in Figure 6.4.

FIGURE 6.4
Research scientists at the Nokia Research Center created a concept video that communicated Morph, a product that demonstrated some of the possibilities nanotechnologies might enable in future communication devices.

Gather User Feedback

Most designers are blessed with a solid gut sense of what users will like, tolerate, or reject outright. However, even the most skilled designers know there is a time and place when it's important to gut-check their instincts with users (see Figure 6.5). Prototypes provide you with a tangible artifact in which to gather feedback with people outside of yourself and your team. They are the perfect tools for gut-testing your design assumptions.

FIGURE 6.5
Paper prototypes are an easy way to gut-check design decisions with users early in your design process.

Exploring the Unknowns

When designing user experiences, there are two types of unknowns: the known and unknown unknowns. Often, designers arrive at a point in the design process when they intuitively sense there's a particular design decision that is crucial to the success of their product or service, yet they're not quite sure about the solution. Or sometimes designers find themselves working on a very future-facing project that requires thinking outside of typical products and contexts. Prototyping is a great way to explore these "unknowns." It allows designers to explore their ideas in the physical world through the creation of artifacts or experiences. Instead of ruminating about a design issue, or laboring through all the possible solutions and "it could be…" in your head, prototypes provide the means to explore tangible solutions. The physicality of prototyping also helps designers see flaws or the unexpected—otherwise known as the *unknown unknowns*—at a better rate than simply "thinking" about the design. Figure 6.6 is a perfect example of this physicality.

FIGURE 6.6
Before starting development of the early Palm Pilot, inventor Jeff Hawkins carried a block of wood, the size of the potential Pilot, in his pocket for a week to explore how the idea felt.

Fine-Tune an Idea

One of the biggest challenges when creating mobile experiences is the discrepancy between the tools used and the static context that exists for most designers during the design process—not to mention the dynamic contexts of use in which most mobile design work is experienced in once it finds its way into the hands of users. There is often a disconnect between creating a design on a large computer screen in a static context and experiencing that design on a handheld device in a dynamic context. Layouts can become too information dense, type may feel too small, or an interaction may not feel intuitive. There is no substitute for getting your work on a mobile device early and often (see Figure 6.7). The devil is often in the details, and prototyping is a great way to fine-tune your work.

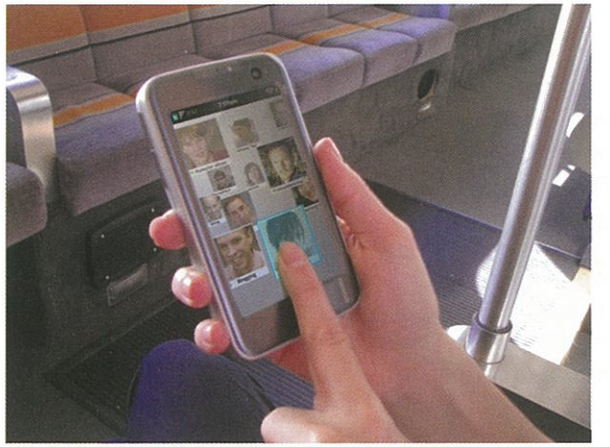


FIGURE 6.7
On-device prototypes are a great way to fine-tune important interactions and details of your design.

Genres of Mobile Prototyping

Regardless of the "why" for your particular prototype, selecting the right prototyping method for your mobile UX project is a lot like selecting a good book. There are countless options to choose from, so how do you pick the right one? Similar to asking yourself, "What type of book am I in the mood for?," the first step in identifying the right prototyping method involves asking, "What type of design exploration am I about to embark on?" Unlike selecting the right reading material from countless book genres, mobile prototyping methods tend to fall into two basic genres: "tactical" and "experiential" prototyping.

While I've categorized mobile prototyping into the two genres—tactical and experiential—there's nothing to stop you from "crossing the streams." For example, it's perfectly fine to use an experiential prototyping method, such as storyboarding, in a more tactical-type project and vice-versa. However, identifying the nature of the project you are taking on is the first point in your mobile UX decision-making process. It will help you identify the design prototyping methods that are best suited for your project and will likely prove most valuable to you as you embark on designing for the mobile medium.

Tactical Versus Experiential Prototyping

Tactical prototyping is best suited for design explorations where:

1. **You are working on a "focused" mobile design project.**

   Examples:
   "I'm creating a mobile application."
   "I'm creating a mobile version of my company's Web site."

2. **Target mobile hardware and software platform options are perhaps not decided, but the scope is known.**

   Examples:
   "We're targeting smartphones with a capacitive touchscreen."
   "We're not quite sure which software platform we'll target, but it will likely be either platform X, Y, or Z."

3. **The design space is relatively known. Precursors exist, and other designers have begun to explore the terrain.**

   Examples:
   Mobile/tablet applications
   Mobile Web sites

Experiential prototyping is best suited for design explorations where:

1. **You are working on a "broader" design project where you're thinking about a mobile device's role in a user's device ecosystem experience.**

   Examples:
   "We're thinking about all the touchpoints a customer has with our service: mobile, PC, tablets, and interactive TV."
   "We're trying to understand how we can use mobile technology to improve people's experience with our city's public transportation system."

2. **Target mobile hardware and software platforms are unknown and perhaps in the process of being created.**

   Examples:
   "We're trying to use gestural interactions to make the television experience more intuitive."
   "We're trying to enable mobile payments at a supermarket chain."

3. **The design space is relatively new and unchartered.**

   Examples:
   NFC
   Gestural interfaces
   Service experiences that prism through various devices, such as Netflix (computer, TV, mobile device)

Tactical Prototyping

The three tactical prototyping methods I find myself turning to repeatedly and which have proved to be the most valuable are:

- Sketching
- Paper Prototyping
- Interactive On-Device Prototyping

Sketching

There are few things more direct and efficient than running a pen across paper, and that's what makes sketching such a powerful design skill and prototyping method. Whether it's on a whiteboard, recipe cards, or using custom platform UI stencils and sketchpads, sketching is by far my favorite form of prototyping because it's direct, generative, inexpensive, and allows you to explore ideas with a low level of commitment. Because of its generative properties, sketching is the perfect activity during the divergent phases of any design project. I use sketching to work through rough ideas for screen flows and layouts, and I find that it's an activity best suited for communicating screen-based experiences.

Mobile Templates

Can't draw? Not a problem. Most mobile software platforms have stencils that can be purchased online. These stencils are lifesavers if you are self-conscious about your sketching abilities (see Figure 6.8). For a relatively low financial investment, they come in handy for anyone interested in putting mobile ideas on paper quickly.

FIGURE 6.8
Here's an example of a mobile software stencil that can be used to sketch mobile screen designs quickly and easily.

Sketching and Ruthless Editing

Sketching out your ideas early and often is a key step in creating intuitive interfaces that "speak their power." An intuitive interface, for any medium, has long been the hallmark of a good user experience. However, the inherent cognitive constraints of mobile design make it even more important to create intuitive interfaces. Great mobile interfaces are like a light switch or a shopping cart (see Figure 6.9). They speak their power.

UIs that speak their power have affordances that invite exploration; their very design provides user with interaction cues. Compare the differences between a Web page designed for a PC experience and a similar experience

tailored for a mobile device. The large screen real estate of a PC experience enables more room for annotating expectations. In mobile, options have to be readily apparent (see Figures 6.10 and 6.11). The design elements must instantly communicate to the user how to engage with them.

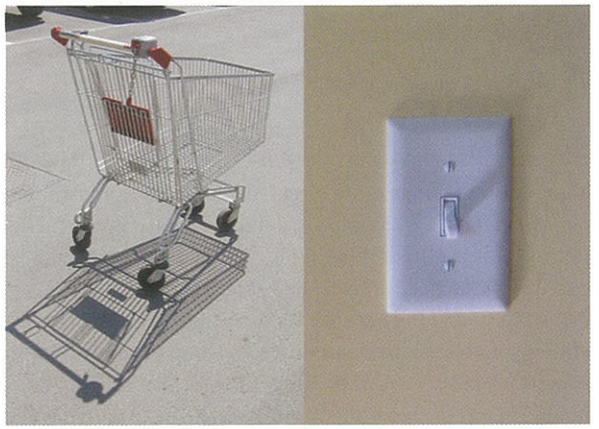


FIGURE 6.9
Similar to a shopping cart or a light switch, a great mobile design provides users with interaction cues.

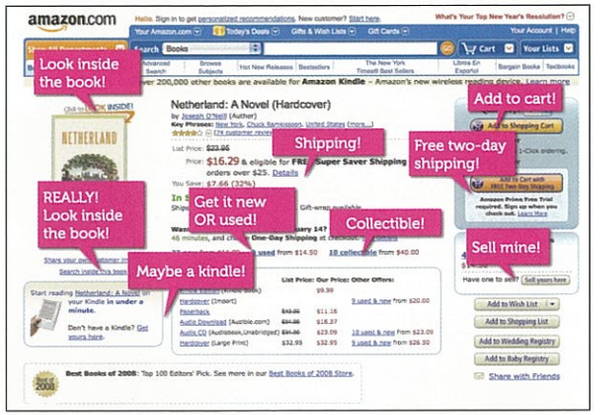


FIGURE 6.10
The generous screen real estate of a PC experience enables more room for annotating expectations.

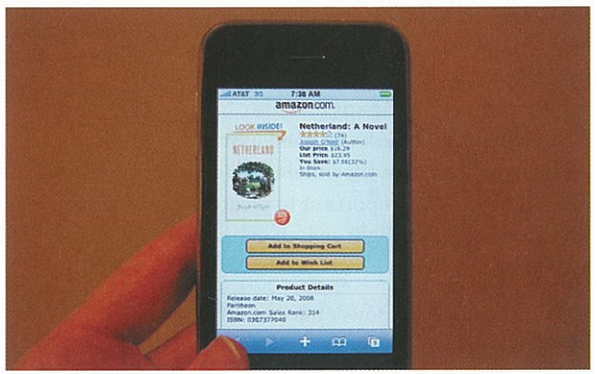


FIGURE 6.11
Options in mobile have to be readily apparent.

Tips for Ruthless Editing

After amassing many sketches, the next step is often to work through your mobile Web site or application's system flow. This is where your ruthless editing skills should kick in. Here are some good questions to keep in mind while evaluating your sketches.

1. What is the primary purpose of this screen?
2. What are the three to five secondary actions this screen must provide to a user?
3. What is the most intuitive way to visualize this information?
4. Will users know how to interact with this screen within 3 seconds?
5. Is the information on this screen too dense? What can be removed?
6. How can I get users to the information they are looking for in the least amount of time?

In order to create interfaces that speak their power, designers new to mobile must grow ruthless editing skills. Ruthless editing is about getting rid of extraneous text, visual treatments, and goofy transitions. It's about combining all the design elements—screen design, interactions, transitions, flows, visual treatments, haptics, and sound—in order to guide people through information quickly and intuitively. Just like a topiary artist pruning an overgrown tree into the shape of an elephant, ruthless editing is about taming the chaos and being able to make the cuts necessary in order for a vision to take form. Ruthless editing is about making good decisions. It's about learning to say *no*.

Visualizing Data on a Small Screen

Learning how to visualize data efficiently on a small mobile screen is an important mobile skill to master. Sketching on index cards early in your design process is a practice that will enable you to experiment with different ideas while simultaneously giving you realistic size constraints (see Figure 6.12).

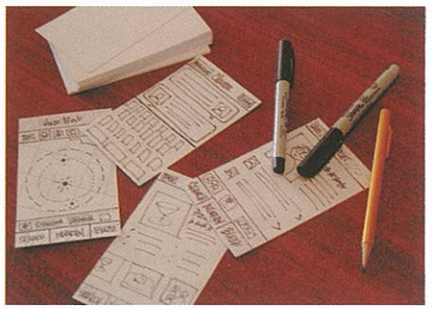


FIGURE 6.12
Sketching on index cards early in your design process will show you how to effectively visualize data for a small mobile screen.

FIGURE 6.13
An example of a mobile paper prototype.

Paper Prototyping

A paper prototype is basically a paper model of your screen-based product or service (see Figure 6.13). Similar to sketching, paper prototyping requires a modest time and small financial investment while providing you with the means to work generatively and iteratively on your designs. Paper prototyping is a great technique for working through the details of screen flows and sequencing, as well as validating decisions about screen layout, button placements, and rough ideas for touch and gesture.

The thing I like best about paper prototypes is that they are a tangible way of testing out your interaction ideas with users and gathering feedback at an early stage in the design process. For designers new to mobile, paper prototyping is an ideal way to take your design assumptions for a test run early and often—and prevent the end of your project from feeling like a death march. A paper prototype can provide the opportunity for a quick iteration of a single concept or the ability to simultaneously work through several design directions.

Paper Prototyping Basics

Paper prototypes are a great way to work through your design ideas early in your design process. The steps outlined below will help you create paper prototypes with ease.

1. **Determine the key interactions.**

   Chances are that it's not necessary to create a paper prototype of a complete mobile application or Web site. Instead, you'll probably want to prototype key interactions. The first step of the paper prototyping process is to identify the key interactions you want to prototype and the central questions you want the prototype to answer.

2. **Sketch screen layouts.**

   Next, determine the types of screen layouts that will best convey information to your users. Whether you use index cards, specialized paper templates, or higher-fidelity comps created on a computer, this step is about determining how to convey information and intuitively pivot people through a series of screens in order to get them to the information they need (see Figure 6.14).

3. **Determine the screen flow/sequencing.**

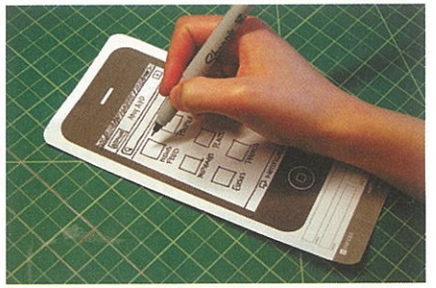
   Map out individual screen layouts and the flow of those screens. It's the process of identifying what goes where and what the users will see as they navigate through the system you're creating. This process will help you identify primary and secondary navigation elements and how to most efficiently map out the underlying system of the key interactions (see Figure 6.15).

4. **Prepare interactive elements.**

   Paper prototypes allow you to fake some level of interactivity. Feel free to include and create elements like text entry, keyboards, alerts, highlighting, and pickers in your prototype. It will help you get a more accurate sense of the user experience.

5. **Take your prototype for a test run.**

   Once you've created all the elements, take your prototype for a test run with colleagues or friends. Identify what's working and what needs further refinement or modifications (see Figure 6.16).



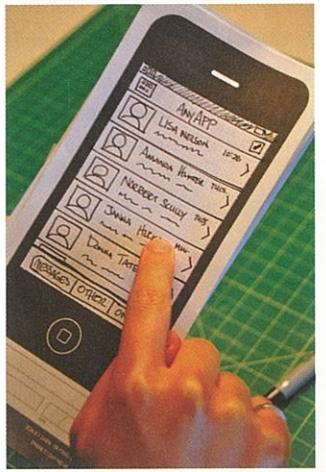


FIGURE 6.14–6.16
Sketching screen layouts, determining the screen flow, and taking your prototype on a test run with users are a few of the steps involved in creating a paper prototype.

Paper Prototyping and Touchscreens

In recent times, modern smartphones have moved away from interactions instigated by physical buttons like four-way keys and dial pads in favor of touchscreens and gesture-based interactions. This is a trend that will probably not change anytime soon. Making the move from GUI, mouse-based interactions to touchscreen/gesture-based interactions can pose an unexpected and significant challenge for designers new to mobile. Paper prototyping is a great method for working through the key differences between NUI and GUI paradigms.

Interactive On-Device Prototyping

To this day, I still get a little giddy when I see an early on-device prototype of my mobile design work. There's something about seeing all the elements—the screen layout, the interaction flows, the gestures—come together that's…well, it's exciting and a little magical. Part of that magic comes from the fact that unless you have some serious mobile programming skills, actually getting your design work on a device and experiencing it has historically been a challenge. While getting an on-device prototype up and running has its hurdles, there are significant benefits. Aside from that totally awesome feeling of seeing your work on a device, on-device prototypes enable you and others to critically evaluate your design decisions. As mobile UX becomes more prevalent, viewing your early design work on a mobile device will likely get easier. Until then, here are some on-device methods to try:

- In-screen mobile prototype
- Mobile browser prototype
- Mobile prototype using presentation software
- Platform specific prototype

In-Screen Mobile Prototype

An in-screen prototype is basically a paper prototype that's ported into a mobile device by snapping photos of the screens with the device's camera. Creating an in-screen mobile prototype entails creating low-fidelity sketches, importing them into a mobile device, and viewing them through an application such as a slideshow on the mobile device's camera.

FIGURE 6.17
This on-device prototype was created using image maps and viewed through the browser on a mobile device.

Mobile Browser Prototype

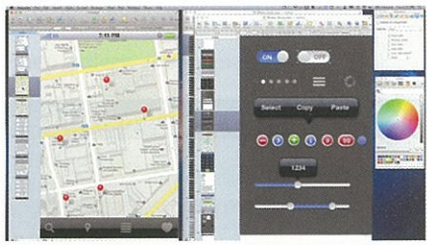
A browser prototype is simply a prototype that is rendered by using your mobile device's browser, which is using HTML and other browser-based programming such as JavaScript. Screens can be created using HTML, which is potentially a great option, particularly if you're building a mobile Web site and are proficient in HTML. However, for those less familiar with extensive markup, you can easily upload a series of linked image maps of screen layouts and view them through your phone's browser (see Figure 6.17).

Mobile Prototype Using Presentation Software

Creating prototypes using presentation software such as Apple Keynote or Microsoft PowerPoint is an efficient way to prototype interactivity and transitions on a mobile device. You can easily download platform components from the Web, build your prototype using the presentation software, fine-tune the interactions and transitions included in the software, and download the file to your mobile device.

While designers use various types of tools to document their wireframe ideas, presentation software is emerging as a favorite tool in the mobile UX realm (see Figures 6.18–6.20). In addition to specifying the placement of design elements on a screen, presentation software enables designers to turn their work into low-fidelity on-device prototypes. Instead of flat, static documents, presentation software offers designers the ability to experiment with transitions and interactivity.

Keynotopia is a fabulous resource for Keynote prototypers. The site's creator, Amir Khella, has put together a truly useful collection of templates sporting a comprehensive collection of standard controls and widgets. Just drag these visual elements into place to build mock-ups that will run on a mobile device. Travis Isaacs also has created a great online resource for creating prototypes with presentation software like Keynote. His Web site, Keynote Kungfu (http://keynotekungfu.com), contains great resources for creating on-device prototypes.



FIGURES 6.18–6.20
Presentation software, such as Apple Keynote and Microsoft Powerpoint, is emerging as a favorite mobile prototyping tool.

Reasons for Prototyping in Keynote/PowerPoint

- It's super efficient and fast!
- Level of fidelity is high; it gives you an end result that looks and feels like a real app.
- Supports some gestures and transitions.
- It's as close as you can get to the real thing without digging into code.

Platform-Specific Prototype

If you're the type of designer who likes to roll up his sleeves and get into the code, then investing in the SDK (software developer kit) and creating your prototype using the programming language of a target platform might be the way to go. This approach allows you to create prototypes using native code, and while labor intensive, it provides the most interactivity of any prototyping method.

Pros and Cons of Common On-Device Prototyping Tools

Although getting an interactive prototype up and running on a device is no small task, it is possible. Table 6.1 should help you get a sense of the benefits and drawbacks of common mobile prototyping tools, as well as help you determine what type of prototype is best given your project's resources.

TABLE 6.1

PROS AND CONS OF PROTOTYPING TOOLS			
	Level of Complexity/ Difficulty to Create	Level of Interactivity	Level of Programming Required
In-Screen Prototype	Low	Low	None
Browser Prototype	Medium	Low	Low
Keynote Prototype	Medium	Medium	None
Platform-Specific Prototype (example: XCode for the Apple platform)	High	High	High

In-Screen Prototype Basics

I'm a sketcher, not a coder, so in-screen prototyping is my favorite on-device prototyping method. While it's not great for expressing detailed interactivity and transitions between screens, it's an easy way to get your work on a device quickly. Here are the basics as outlined by Diego Pulido in his article published by *UX Magazine* (http://uxmag.com/articles/paper-in-screen-prototyping):

FIGURE 6.21
Sketch.

1. Sketch screen layouts, as shown in Figure 6.21.
2. Scan or photograph the sketches (see Figure 6.22).
3. Make any necessary sizing adjustments to the files (see Figure 6.23).
4. Save the resized images in a file format supported by the mobile device, as shown in Figure 6.24. Organize all the screen images into the correct order for the scenario. Be mindful of the sequencing of your screens and label files accordingly.
5. Import the files into the mobile device's photo gallery, as shown in Figure 6.25.
6. Click and swipe away, as shown in Figure 6.26.

FIGURE 6.22
Scan or photograph.

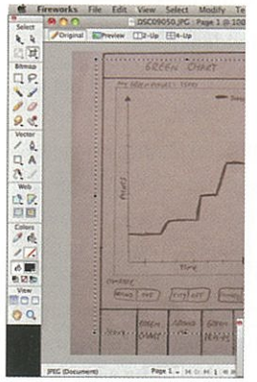


FIGURE 6.23
Make necessary sizing adjustments.

FIGURE 6.24
Save the resized images in the correct file format.

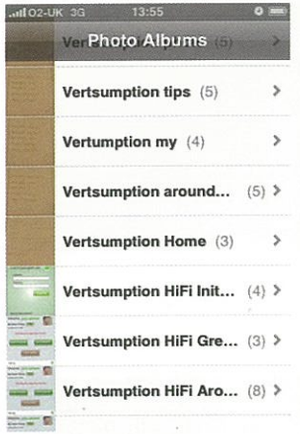


FIGURE 6.25
Import the files into the photo gallery.

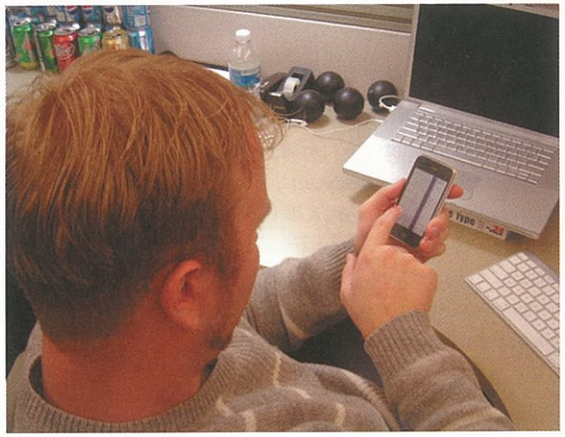


FIGURE 6.26
Click, and you're done.

Experiential Prototyping

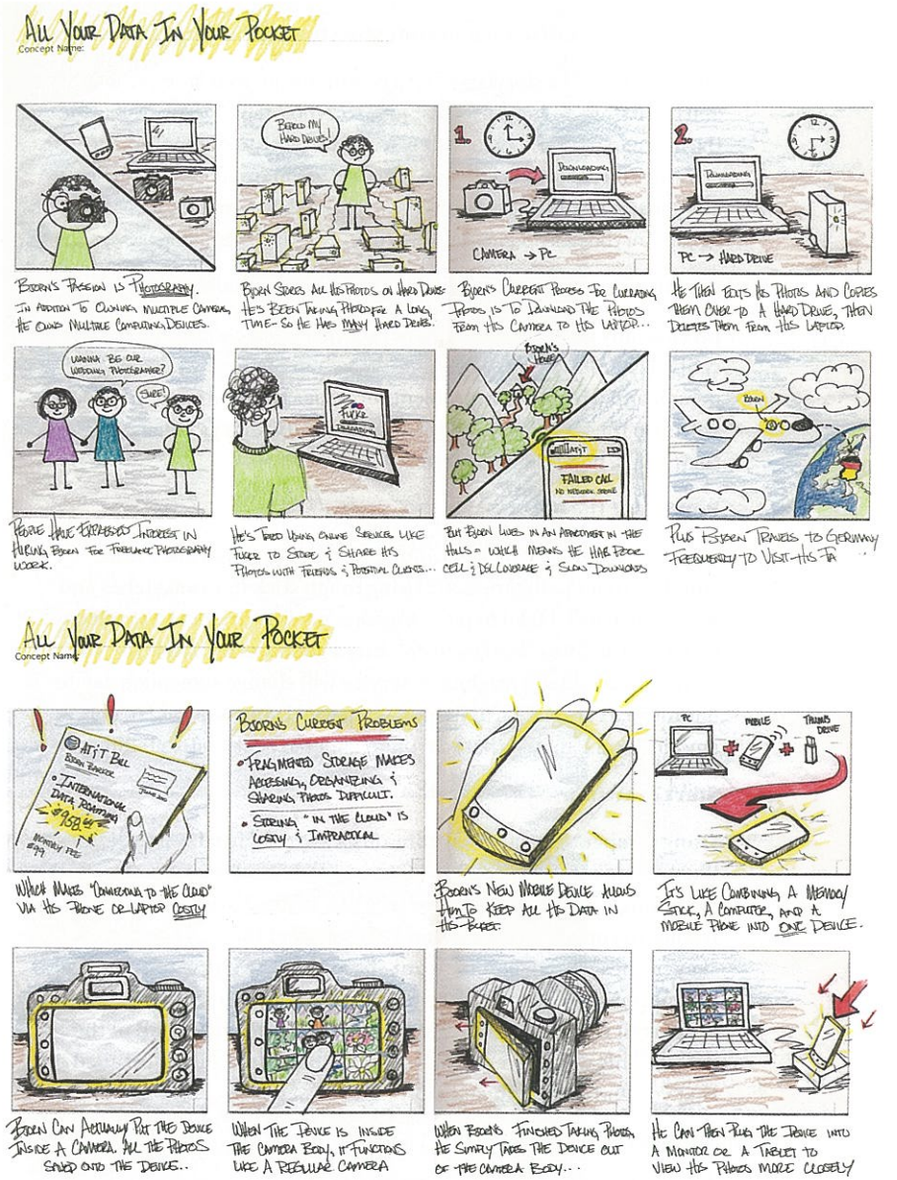
One of the realities of mobile user experiences is that they rarely occur in isolation. Mobile technology often interacts with technology in the environment or works in concert with other technology in a device ecosystem. If getting the orchestration of all these elements in sync is critical to the success of your project, experiential prototyping methods can help you explore ideas as well as identify and fine-tune core system elements of the experience.

Five experiential prototyping methods that prove helpful in these types of design explorations are:

- Storyboarding
- Bodystorming
- Speed dating prototypes
- Concept videos

Storyboarding

Storyboarding, the act of creating a set of comics or illustrations and placing them in sequential order to convey a narrative, is a powerful UX technique borrowed from the filmmaking process. Unlike wireframes or system flows, storyboarding is a visual tool for communicating the experiential aspect (the story) of a product or service (see Figures 6.27 and 6.28). Since storyboarding is a form of storytelling, the sequence of drawings you create can help you think through a typical user's life and find clarity on the central user issues your designs should try to solve. I also find the process of storyboarding a great method for working through and identifying interaction vignettes. Vignettes are the key interactions that are central to a user's experience. They are the interactions that communicate "breakthrough moments" and describe how what you are creating will actually work and the impact that it could have for a user. Before diving into detailed screen designs and UI flows, storyboarding is a great tool for identifying these vignettes and beginning to describe how they would (or should) work.



FIGURES 6.27 AND 6.28
These storyboards depict how a new-to-the world mobile device concept might interact with other parts of a user's device ecosystem.

Mobile UX Storyboarding Basics

Storyboarding is a great prototyping method for helping designers explore experiential aspects of a mobile experience early in the design process. The steps outlined in Figures 6.29–6.31 should prove helpful as you begin to explore this prototyping technique.

1. **Identify the central idea(s) your storyboard should communicate.**

   The purpose of the storyboard is to communicate your story, so identifying and clarifying the central idea(s) your storyboard will communicate is the first and most important step. A common mistake people make when creating storyboards is to try and include too many ideas in a single storyboard. Don't try to communicate more than three key ideas within a single storyboard; otherwise, it will simply be too confusing.

2. **Create a character and identify the key issues he/she currently faces.**

   Just like any good story, your storyboard should communicate how a central character is struggling, as shown in Figure 6.29. Who is this person and what are the problems or issues they are currently dealing with? Do these issues make them frustrated? Angry? Lonely? What are their goals, hopes, and aspirations?

3. **Rough out the basic story.**

   The next step of the storyboarding process is to rough out a basic storyline (refer to Figure 6.30). Using rough stick-figure sketches and scrawling notes, I tend to piece together my first drafts of a storyboard using Post-it notes. The key to creating a good storyboard is to communicate how a product or service will change someone's day-to-day life in a compelling and interesting way. Don't be afraid to express emotion and humor—that's an important part of the storytelling process.

4. **Start drawing.**

   Using a paper template that contains a series of frames or cells, begin illustrating each cell (refer to Figure 6.31). It's not necessary to illustrate every single step of your character's life. Instead use space between the frames to communicate changes of scene and the passage of time. Use "key frames" to depict important changes in the story. Your natural inclination may be to draw every detailed cell in order. Resist! Roughly sketch out the complete storyboard and then go back to fill in the details. This will prevent you from wasting time creating detailed cells that you end up editing out later in the process.

5. **Walk through it.**

   Done with the scene? Go back and walk through it a few times (by yourself and with a colleague or friend). Make sure that your cells make sense and help tell a cohesive story. Can you add or change a shot to increase the dramatic effect? Can you remove a shot to tighten the pacing? Walking through the your storyboard several times and sharing it with a colleague will help you figure out how to tighten the story and make any final edits.

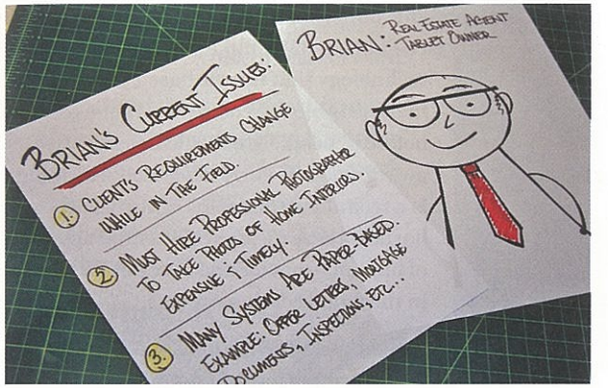


FIGURE 6.29
Identify key issues the character in your story currently faces.

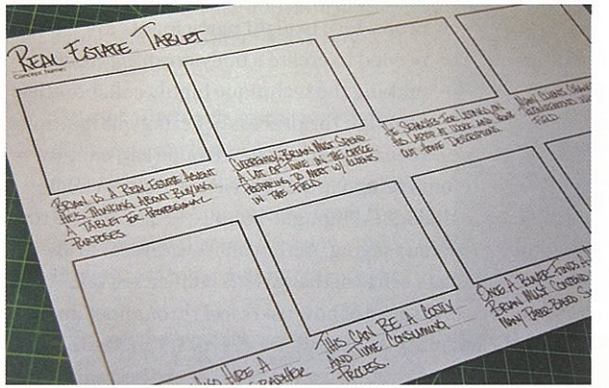


FIGURE 6.30
Rough out a basic story line.

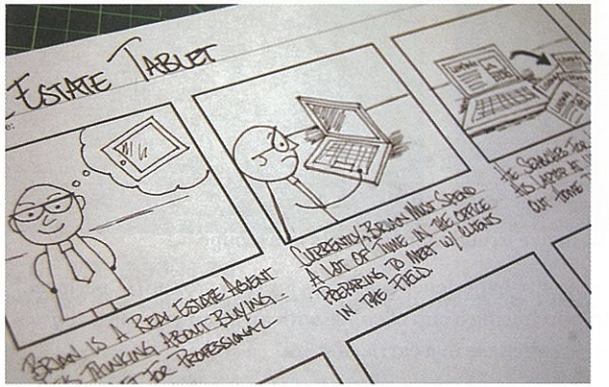


FIGURE 6.31
Done drawing? Walk through your storyboard by yourself and with a colleague or friend to find out where you can tighten the story line.

Bodystorming

Unlike many design techniques that focus on the output of design artifacts, bodystorming focuses on the "performance" of an experience. Bodystorming is a design technique where designers enact the physical performance of an experience in order to gain an understanding of its physical, emotional, and behavioral dimensions. The technique builds on the notion that people must act first in order to know reality (see Figure 6.32). Unlike computer-based technology that is logic based and only makes visible the conditions that existed before it, people are illogical, perceptive, aware, and self-correcting. Bodystorming is a technique that helps capture and harness these messy yet essential aspects of human behavior and account for them in the mobile design process.

FIGURE 6.32
Members of an IDEO design team used bodystorming to prototype for Elmo's Monster Maker iPhone app.

Similar to improvisational theater, bodystorming involves acting out possible scenarios or use cases with actors and props. Five to eight participants are needed to create a bodystorming troupe, making the technique highly collaborative. Through the process of acting out multiple scenarios, the design troupe can capture user expectations and the emotional tempo of an experience. Actors can be people or objects and engage in dialogue—thought-bubble cards are used to show what an actor is thinking versus saying. Acting out several scenarios helps designers get a more complete sense of the various contexts of use. In doing so, designers get a visceral sense of how users feel throughout an experience, so the designers can make adjustments accordingly before any big design decisions must be made. Another great benefit of the bodystorming technique is that it makes the design process more physical. Designers must get up and move, trying things out with their own body, rather than just sitting around a meeting table.

Guidelines for Bodystorming

Use these guidelines for creating an effective bodystorming experience (see Figures 6.33–6.36).

1. Select groups of five to eight participants in a troupe.
2. Identify three to five experience scenarios for your troupe to "perform." For example, purchasing a cup of coffee with an iPhone or selecting which phone to purchase in a carrier's store.
3. Every player must have a role; there should be no "trees" that are just for background. Use large cards that label the roles people are playing.
4. Props can have feelings, thoughts, and the ability to speak. Use thought-bubble cards to show what a participant is thinking versus saying. He may say, "How can I help you?" while someone holds a thought-bubble card above her head showing she is really thinking, "Jerk."
5. Have a narrator or color commentator who can explain things. The narrator can pretend the scenario is like television, using a remote to stop action, rewind, or fast-forward.
6. Run through a scenario with your troupe. When your group is working through a scenario, try to approach the experience with the spirit of improvisational acting: "Yes, and…" rather than "No, but…."
7. Try creating two skits for your scenarios, showing a before and after.
8. Try splitting larger groups into two or more teams that bodystorm the same scenario and observe any differences.
9. Debrief after each scenario. What did the group learn? What was surprising? What seemed important? Capture what you learned from the exercise and discuss how you can integrate it into what happens next.

FIGURES 6.33–6.36
Images of a team of designers bodystorming an iPhone application.[1]

1 *Bodystorming as Embodied Design*, pp. 47–51 of November/December 2010, *Interactions Magazine*. Authors: Dennis Schleicher, Peter Jones, Oksana Kachur

Speed Dating Prototyping

Unlike prototyping a mobile application or a Web site, creating convergence or ubiquitous computing experiences (experiences that involve multiple devices such as a mobile device, laptop, television, car sound and navigation system, and so on) presents multiple challenges. From a creative perspective, it's difficult to explore and iterate multiple ideas because the design space is vast and complex. Additionally, it is a relatively nascent design space, and there are few tools and techniques available to designers to explore systems that touch so many facets of a user's life. From a tactical perspective, even though there's a high level of confidence in a concept, "building" a working prototype has a high cost of failure. Prototypes are time-intensive to create, there are few existing interaction design patterns to build on, and there are often unpredictable social consequences.

Scott Davidoff of CMU created the speed dating prototyping method to address these very issues. Like it's romantic counterpart, Scott's theory builds on the following three ideas:

- Abundance brings perspective.
- It's easier to compare something relative to other things.
- Multiple low-cost engagements with a wide variety of concepts enable a broader perspective to emerge.

Using a combination of storyboarding and a form of experience prototyping, Scott's speed dating prototyping technique provides designers of ubiquitous systems with a framework to explore ideas, evaluate multiple design concepts, and quickly identify "showstopper" issues with minimal investment.

Speed dating consists of two main stages: need validation and user enactments. In the need validation phase, designers create multiple storyboards that depict both an unmet need that was uncovered during research and a design solution that addresses that need (see Figure 6.37).

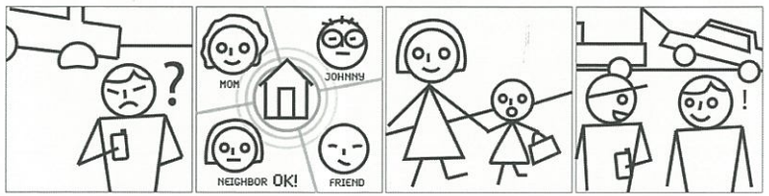


FIGURE 6.37
Examples of storyboard sketches used in speed dating prototyping activity.

The creation of multiple divergent concepts is encouraged. Next, the design team presents the paper storyboards to a set of target users. This process allows the team to synchronize the needs uncovered during research with users and vet design solutions developed to address those needs with a group of target users. Paper is cheap, so storyboarding is a quick and inexpensive way to validate and prioritize user needs as well as evaluate the potential of multiple ideas.

Next, top-rated concepts and their possible instantiations are inserted into a matrix. Teams then conduct user enactments of the various concepts with research participants. Research participants are asked to enact a specific role they regularly play (like mother or father) as they walk through the scenarios, within an inexpensive, low-fidelity mock-up of the target environment or device ecosystem (see Figure 6.38).

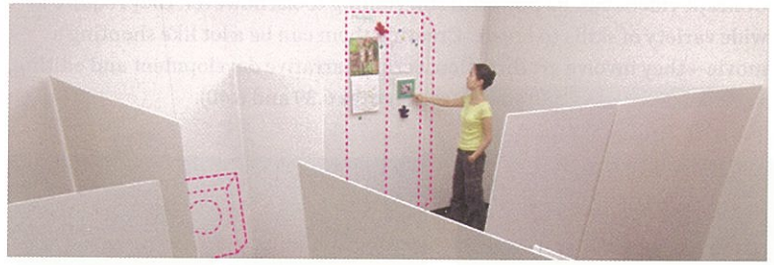


FIGURE 6.38
Research participants are asked to enact a role they regularly play in everyday life as they walk through the scenarios.

Throughout the enactment stage, designers gather feedback from research participants. Building on the idea that it's easier to compare something relative to other things, an essential component of the enactment stage of this process is to "act out" multiple design solutions to an identified user need.

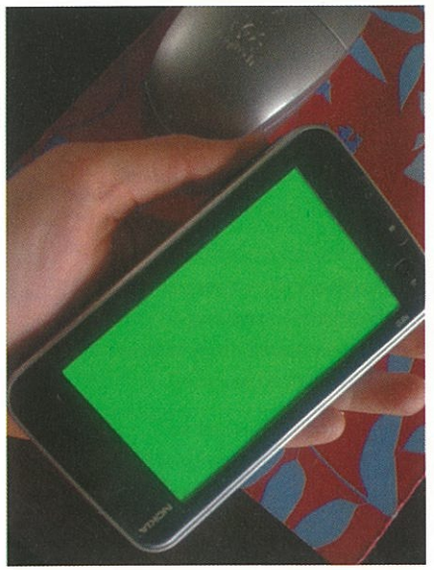
Since the mobile device is a common, if not standard, part of most users' device ecosystems, speed dating is a great prototyping method for exploring the role that mobile devices will play in converged device systems. Speed dating provides a low-cost way for design teams to compare multiple converged or ubiquitous computing system concepts and supply a structure to explore those multiple versions. It's a technique that helps capture how users might react to a concept early in the design process.

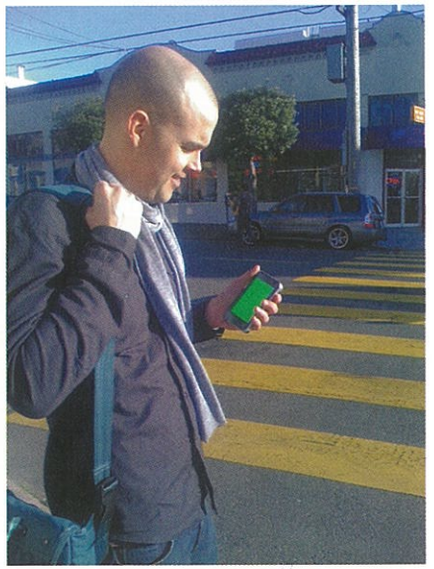
Concept Videos

Some mobile UX projects are less about creating an experience or product that finds its way into the world and more about communicating ideas about how people will interact with mobile technology in the future. They are about exploring and communicating what is possible in the future. These assignments are best served by a prototyping method known as a *concept video.*

At heart, concept videos are a practice in storytelling. They provide designers with an opportunity to explore how a user might engage with a product or service without actually designing and building out the nuances and details. Concept videos are often short videos (3–5 minutes in length) that highlight several key features of a product or service. Concept videos often focus not only on the design or experience, but also on the impact that experience can have on a user's life.

Concept videos can be powerful storytelling tools; however, they require a wide variety of skills to create. Creating them can be a lot like shooting a movie—they involve art direction, script/narrative development and editing, video, photography, and sound (see Figures 6.39 and 6.40).





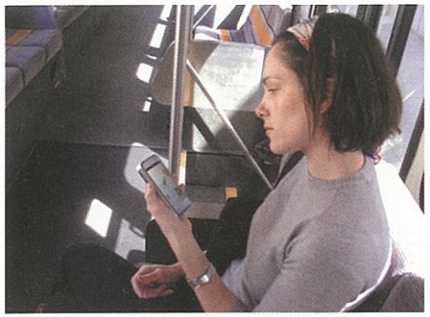
FIGURES 6.39 AND 6.40
Creating concept videos often requires video-editing skills. Action shots for this video were taken with a device covered with a green screen. The mobile interface was applied in postproduction using video editing software.

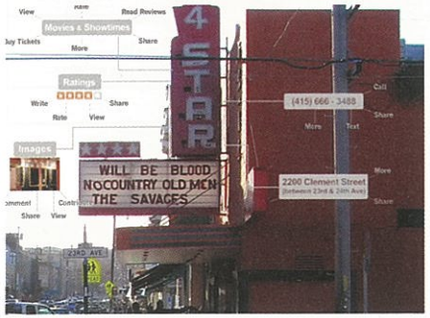
Depending on fidelity, concept videos can be time-consuming to create. However, they are a powerful tool for generating enthusiasm for an idea or communicating the benefits of a technology that is not yet available—and might not be for many years to come (see Figures 6.41–6.46). Table 6.2 shows some tips to help determine whether a concept video is the right solution for your project:

TABLE 6.2

CONCEPT VIDEO PROS AND CONS	
Pros	**Cons**
High impact	Resource intensive
Highly shareable	Skill intensive
Good for high-level ideas	Not a good cultural fit for all organizations
Good for technology still in development	Don't make bad ideas good

FIGURES 6.41 AND 6.42
These images depict stills from a concept video created by Tamer Nakisci. The video depicts a future product called the Nokia 888 Communicator device, which incorporates a flexible display that can be worn in multiple configurations. The device conveys information—such as an incoming call—by changing shape.





FIGURES 6.43–6.46
These images depict stills from a concept video created in 2008 to communicate an application-less mobile interface concept. Instead of applications, the interface relies on the organizing principle of dynamic tiles.

Three Prototyping Truisms

This chapter has hopefully given you insight into the breadth and depth of prototyping methods at your disposal as you begin crafting mobile experience. Regardless of the methods you choose to use, there are three prototyping truisms to always keep in mind:

- Choose the appropriate fidelity
- Embrace failure
- Remember that prototyping is not a panacea

Choose the Appropriate Fidelity

A common reason many folks side-step prototyping during their design process is because it's an activity that has a bad rap for being time-consuming. To be fair, prototyping *does* take time, but I would argue that prototyping has earned this "time-consuming" reputation unfairly. The reason is because prototypes have a sneaky way of becoming a time drain. The culprit really isn't the method as much as it is designer pride.

A funny thing can happen once you start making a prototype. Your designer instincts can kick in, leaving you longing to keep working on a prototype in order to make it "beautiful" or "perfect." Resist this urge!

FIGURE 6.47
Famous French writer and philosopher Voltaire coined the famous and relevant quote: *"Perfection is the enemy of the good."*

While the desire to make something "perfect" can be noble, it's often not the best use of your time and can be unfair to your team. The fidelity of a prototype should map to your reason for making it. Prototypes are a means to an end. Be open to what you can learn from them, but don't get too attached. Remember when creating prototypes, perfection is your enemy—not your friend (see Figure 6.47).

Embrace Failure

One of the best and most valuable things about prototyping is that it can reveal bad ideas—or ideas not worth pursuing—early in the design process. However, identifying ideas not worth pursuing requires objectivity. Throughout my career, I've seen many designers (myself included) lose their objectivity and doggedly invest time and energy continuously prototyping an idea that just won't work.

It's important to stay objective about your prototypes. Just because your idea failed doesn't mean you are a failure. We've all had ideas that seemed brilliant in our head but that turned out to be colossal failures once we prototyped them. Don't be afraid to identify when failure is happening and move on to the next idea. If you're unsure if an idea is working, seek feedback from colleagues or users about the work. Be open to what creating prototypes can teach you, and remember that failure helps you learn.

Prototyping Is Not a Panacea

Any method or process is a means to an end. Prototyping is a useful and important tool for building great mobile experiences. However, prototyping an idea doesn't make an idea great.

Remember that prototyping is a great way to do the following:

- Build your mobile UX skills
- Communicate a design idea or experience
- Gather user feedback
- Explore the unknown
- Fine-tune an idea

Prototyping, however, is no substitute for creativity and great ideas. Those come from you.

Summary

- The primary skill that designers new to mobile UX must learn is to calibrate their design decision-making skills to a new medium. Prototyping is the best way to improve decision-making skills for mobile UX.
- Mobile prototyping methods tend to fall into two basic genres: tactical and experiential prototyping.
- The three tactical prototyping methods are:
  - Sketching
  - Paper prototyping
  - Interactive on-device prototyping
- Five experiential prototyping methods are:
  - Storyboarding
  - Bodystorming
  - Speed dating prototypes
  - Concept videos
- The four key reasons designers should turn to prototyping are:
  - Communicate a design idea or experience.
  - Gather user feedback.
  - Explore the unknown.
  - Fine-tune an idea.
- Don't be afraid to identify when failure is happening and move on to the next idea.
- Prototyping is a useful and important tool for building great mobile experiences; however, prototyping an idea doesn't make an idea great.