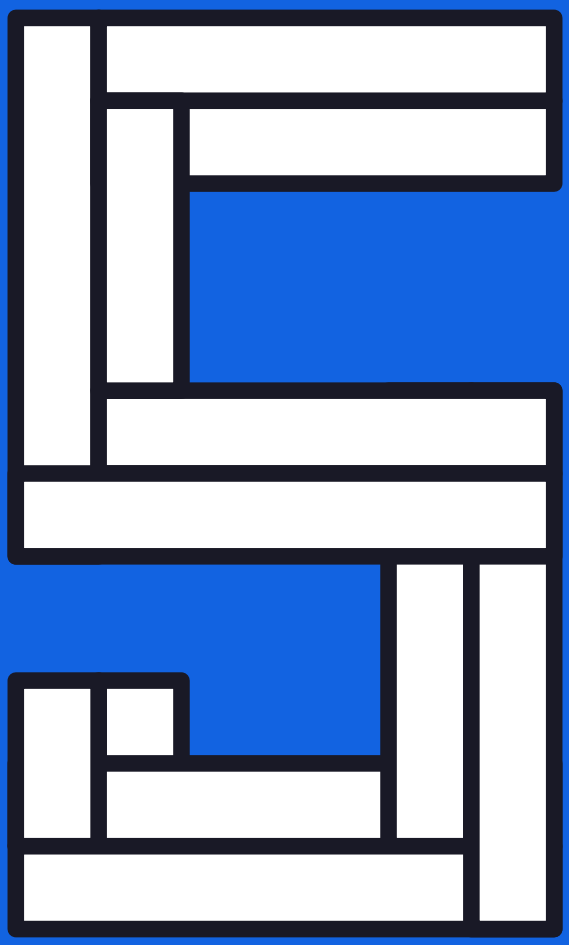
UXPin

The 5 Building Blocks of Interaction Design



UXPin

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Introduction

Think of an interaction as a conversation between your product and your user.

Just like in real life, if the conversation is boring, your user will eventually leave and talk to someone more interesting. Interactions are the essence of all user experiences. Without interactions, there wouldn't be any delight in the experience.

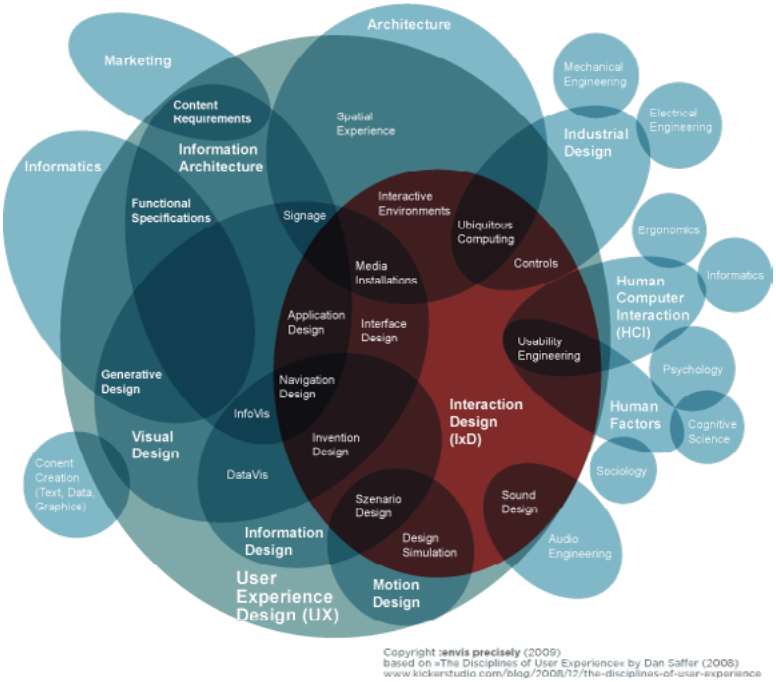

Photo credit: "Interaction Design Disciplines", Wikipedia. Creative Commons 2.0

It's crucial in today's world of infinite-scrolling websites and touch-driven mobile apps to understand how interaction design (abbreviated as IxD) helps create memorable user experiences that are fluid and lifelike. As described in *Interaction Design Best Practices Vol. 1*, interaction design requires an understanding of multiple UX disciplines – which makes sense, since it's not easy to make a system of objects and text be friendly, learnable, and useful.

Let's start by defining IxD, breaking down the core principles, and explaining a five-step process to better interaction design.

What Is Interaction Design?

Interactions are part of our daily lives. Every time you make a decision on a digital device – checking sports scores, returning your mom's email – you project your needs into a machine that must then respond as though it knows you. IxD is about bridging the gap between the device, the interface and the tasks we want to accomplish.

Interaction design requires art and skill to move beyond human-to-computer interfaces and embrace human-to-human design. The skill of IxD is taking into account the human element of your users, and in creating that *human* connection built from human-to-computer interaction (HCI).

It's important to distinguish IxD from UI. As discussed in the free ebook *The Guide to Mockups*, the UI is what the user actually sees. IxD is concerned with how users engage with the UI, and how that UI will respond so users know how to accomplish their goals. As a result, the users delight in the ease of an interface – which becomes part of their larger product enjoyment – forms the overall user experience.

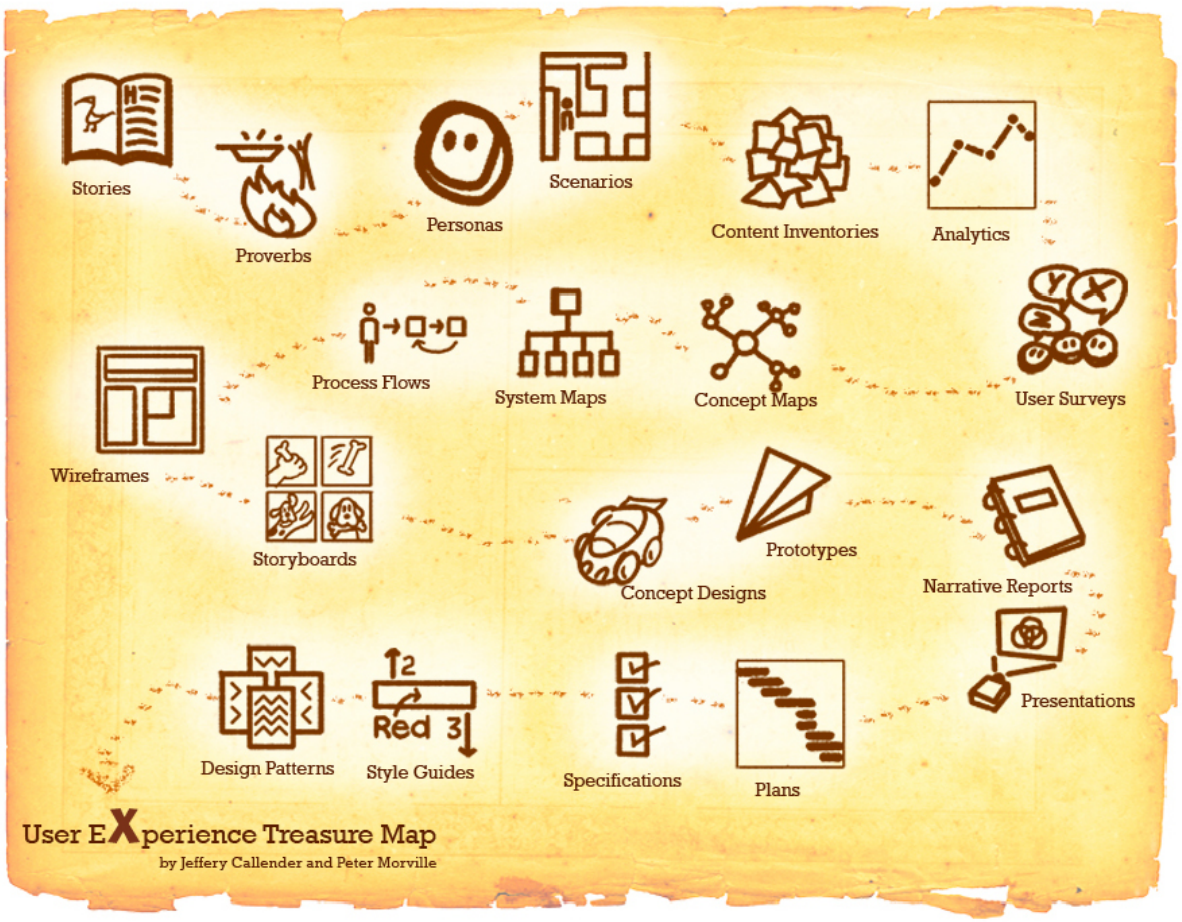

Photo credit: "User Experience Treasure Map," Peter Morville. Creative Commons 2.0

You can't design a user experience any easier than a business can just make more money, but you can certainly design better UIs and interactions. That's why IxD is so imperative – it makes the difference between having a system that merely works, and having one that your users will be delighted to use.

Your design is an extension of your brand. You need to think about the UI as your digital staff, the "people" who facilitate interactions between your "customers" and your "store." Interaction design, then, is how your digital staff engages with customers to meet their needs. Naturally you'll want your staff to be helpful, accommodating, and friendly – that will make your customer enjoy shopping at your store.

But a poorly designed interface is like a staff that's unhelpful, rude, and, at times, doesn't even do their job.

Making the right decisions in UI design is hiring the right staff. Making the right decisions in interaction design is training that staff to work in the most efficient and pleasant manner possible.

Why Interaction Design Matters

Frog Design's Robert Fabricant has the perfect analogy that clearly illustrates why feedback is the heart of IxD. Without feedback to guide us, how would we know if an interaction accomplished the goal we wanted. As he explains in his piece for FastCo.Design, the evolution of the UI for the NYC subway is a prime example of how technology is only as powerful as the interactions it produces.

If you're old enough to remember subway tokens, that's a good place to start. You put the coin in the slot (the interaction), you heard that satisfying ***click*** as the coin slid into the mechanism (the feedback), and that was how you knew you now had access (the goal). The sound of the coin falling into place was not intentional, but rather an accidental interaction design decision, albeit a fortunate one. This action-reaction feedback loop is the groundwork of all interactions, digital or analog.

Photo credit: MTA of New York. Creative Commons 2.0

Then came the metrocard, which replaced the coin drop with a card swipe. This made using the subway easier because people didn't need to carry around coins. However, the swipe was a little more difficult action, and sometimes takes two or three tries to get it right. It also didn't create the ***click*** noise of a token sliding into place, signalling people to lean into the turnstile.

While the metrocard certainly made life easier, some people still preferred the tokens. The coins were simpler and gave immediate feedback. Giving users the appropriate cues at the appropriate times allows them to better interact with your product. If you app or site doesn't account for all the nuances and shortcomings of human behavior, then users won't be quick to prefer it over the familiar.

Elements of Interaction Design

As emphasized in *Interaction Design Best Practices Vol. 1*, good interaction design is driven by a human connection. But what drives human connection and how does that translate into a computerized interface? The answers to these questions aren't so black-and-white. Thankfully Andrew Maier, designer and co-founder of UX Booth, explains in an article for his site some of the core principles of interaction design.

In our experience, we've found five concepts to be critical for even the most basic interaction design.

Photo credit: "Personas." Nicolas Nova Creative. Creative Commons 2.0

1. Goal-driven Design

While you might not be the person who's conducting the user research (especially if there's a UX researcher or UX designer around), you still need to know how to apply the results. As Maier writes:

> *In every design discipline, the artist must first acknowledge their constraints, and then devise a solution. In the case of interaction design, users themselves generally form the basis of an interface's constraints.*

So, discussing the goals of interaction design becomes very people-centric, especially your target user. In the free ebook *The Guide to UX Design Process and Documentation*, we outlined three fundamental tactics for designing for your target user, which can be applied just as well – perhaps better – to IxD specifically:

1. **Personas** – Personas are fictional characters created from the behaviors and psychologies of your target users. Personas come in handy as a reference when making crucial design decisions, for example, "What kind of checkout process would Sally the Seasonal Shopper prefer?" To take personas a step further, try turning them into characters.

2. **User Scenarios** – Related to personas, user scenarios explain how the personas act when using the site. For example, "It's Black Friday, and Sally the Seasonal Shopper has a long list of presents to buy online before work." User stories urge you to

think critically about your personas' behaviors so you design the UI to suit them. Kristopher Layon gives more details in this piece for *A List Apart*.

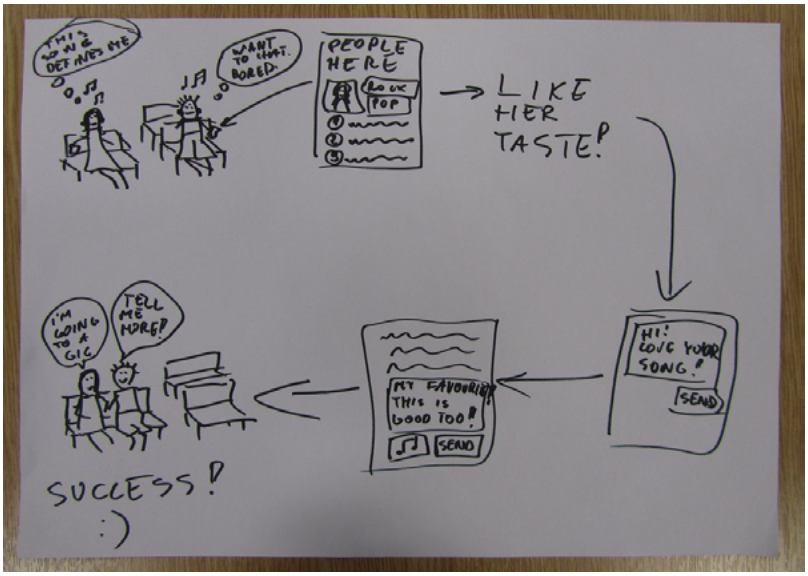

Photo credit: "Design Jam London," Yaal. Creative Commons 2.0

3. **Experience Maps** – Going one step further than user scenarios, experience maps chronicle all the different conditions surrounding a single interaction, including emotions and external circumstances. "Angry that her skiing trip ended in a broken leg, Sally the Seasonal Shopper must do her Black Friday Christmas shopping online – though as quickly as possible." Chris Risdon, Design Director at Adaptive Path, explains the anatomy of an experience map in this post.

Following these people-centric methods for general design will help you stay focused on what's most important for your IxD: the people. For more information on how personas and scenarios can benefit your interaction design, we recommend reading this piece on goal-driven design from Christina Wodtke, former General Manager of Zynga.

2. Usability

In many ways, usability is the bare minimum of interaction design. If your audience can't use your product, they certainly won't desire it.

For an example that goes above and beyond, let's look at **Eventbrite**'s seat designer. This online app lets event organizers create a reserved-seating event from start to finish with a high level of detail (such as determining rows, tables, and a dance floor, if needed). It consolidates what otherwise would be a multi-step, multi-program process into a single linear path.

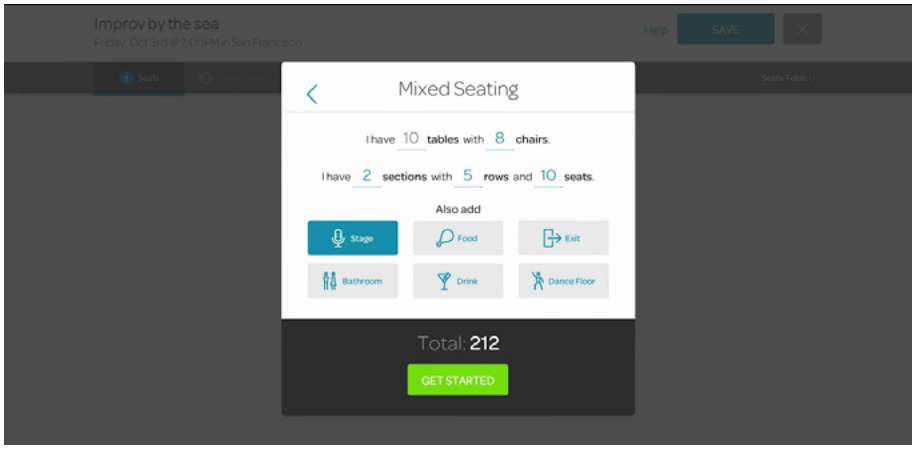

Image Credit: Eventbrite via IXDA

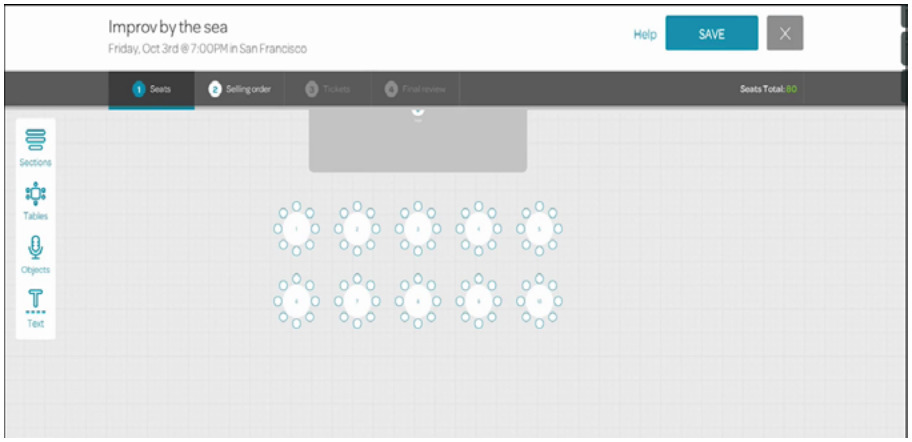

Image Credit: Eventbrite via IXDA

A system's usability should be *effortless*. The less attention the user pays to figuring out how to use the system, the more they can accomplish the task at hand. For this reason, usability is essential – a system must first be usable before you can work on making it desirable. To learn more, **ZURB** illustrates how usability, utility, and desirability are all required for good design.

3. Affordances & Signifiers

The concept of affordances is that a function should speak for itself, and suggest its own use (i.e., a road *affords* walking). Signifiers are what hint at the affordance (i.e., the road's flat surface *signals* you to walk with your feet).

One of the most common signifiers is the blue underline for link text. This is a cue to almost every user that clicking on the text will take you to a new page.

Image Credit: uxpin.com via Team Treehouse blog

Without signifiers, users won't be able to perceive the affordance.

The play button on a video invites you to watch it, whereas a video with no play button might be mistaken for a static photo. In the above example, you can see the progression of button design. The first stage

lacks any signifiers and looks just like standard text, while the third stage starts to resemble a button with its rounded edges and gradient.

Photo credit: iPhone 5s, John Karakatsanis. Creative Commons 2.0

Signifiers also work on a metaphorical level, because people also need to know *why* they would interact with something, not just *if* it's possible. In the above **iPhone** example, you can see how the rounded edges let us know that we can interact with the buttons, while the metaphorical images (phones, envelope, musical note) let us know what purpose is served.

4. Learnability

In an ideal world, a user would remember every function after only a single use, but we do not live in idealism. The reality is that familiarity and intuition must be consciously designed into the interface.

Tesler's Law of the Conservation of Complexity states that every system has an immutable amount of complexity that must be dealt with during development, specifically when designing your UI. Successful interaction design boils down this complexity into the most comprehensible manner through consistency and predictability. For example, don't make some links open in a new tab while others redirect the user. Likewise, don't use a lightbox for some images while others open in a new tab.

Consistency creates predictability, which improves learnability, which in turn enhances the overall experience. And like what we said earlier, good IxD builds your brand. Consistency is one of the ways that's accomplished. It builds trust with your users.

Photo credit: "Be consistent not uniform," Paul Downey. Creative Commons 2.0

A common tactic for improving learnability is using UI patterns. Many sites and apps already use these patterns so the user is familiar (plus

the design is consistent), and you're still allowed plenty of creativity to customize the design elements for your site.

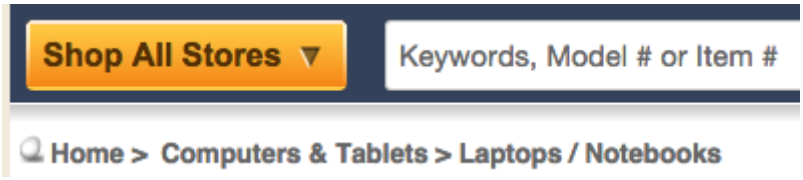

Image Source: www.newegg.com

For example, breadcrumbs – the navigational strategy that lets you know where on a site through its hierarchy – is a common web pattern for helping users get around. It doesn't matter what site you're on, if you see breadcrumbs, you understand how they work. This familiarity lends itself to a product's learnability. And when products are learnable, it encourages people to use those products, which also improves usability. And in turn, builds trust and confidence in users.

Ultimately, the goal of learnability is to hook users on your product faster, as explained in serial entrepreneur Nir Eyal's best-selling product design book *Hooked: How to Build Habit-Forming Products*.

For a fuller list of web UI patterns, check out Pattern Tap by ZURB and UI-Patterns (two of our favorite pattern libraries). We also wrote this free e-book analyzing 63 of the most popular web UI patterns.

5. Feedback & Response Time

As we saw by the NYC subway example, feedback is the heart and soul of any interaction. If user interaction is a conversation between

a user and your product, then your product better participate in a friendly, interesting, and helpful manner. If it doesn't, users won't trust your product or brand.

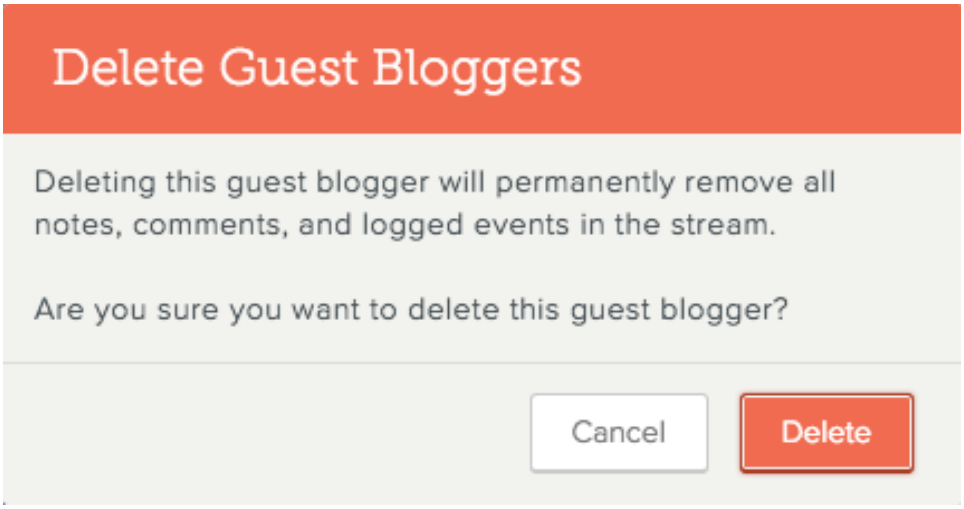

Image Source: www.relateiq.com

Whether an elaborate animation, a beautiful micro-interaction, or a simple *beep*, a response gives the user the satisfaction of knowing if their task was or was not accomplished (and what to do next).

In this example from **Hootsuite**, the owl simply "goes to sleep" after a long period of user inactivity, which makes sense since the app pulls in data from Twitter (and doesn't want to overload the API). The feedback is intelligent and fun, and actually turns a possibly negative experience (stopping updates) into a positive one.

It's also important to mention that a key factor in feedback is response time. The best response times are as immediate as possible, with any lag time killing the user's momentum. If you don't understand why, imagine how infuriating it would be if you were playing a guitar, and every note came seconds after strumming. As described in

the free e-book *Interaction Design Best Practices Vol. 1*, the best IxD is barely there: the interface responds promptly and don't require much thought.

If you'd like more inspiration and examples of good interaction design, this Quora thread includes great sources ranging from films to websites like Core77 and PatternTap.

5-Step Process for Improving Interactions

Now that you know the fundamentals, we'll describe a process we believe is helpful to nailing the details.

Photo credit:UXPin

As notable interaction designer and author Stephen P. Anderson advises, it can be eye-opening to have someone pretend to be your interface while you interact with them as a user. You'll be able to hear out loud any awkward responses from the interface, which will help you avoid creating robotic interactions that feel inhumane. Once you're done, you can start scripting the narrative and restructuring interaction.

Here's the process he advises, which we've tried this year and found extremely helpful:

- **Roleplay the interaction** – Grab two people, one to act as the interface and the other to take notes. Make a browser window prop to be held by the interface person and show the interface on a projector. Then, start a dialog with you as the user explaining their goal, and the "interface" limiting their responses only to labels, menus, and anything else on the UI. Check out this video and transcript to see how it plays out.

- **Simplify the steps** – Users sometimes have goals that require many steps (buying a car online, booking airline tickets). As recommended in *The Guide to Prototyping*, your interface must be able to separate a complex goal into simple steps (like asking for a destination, then a departure/arrival date, etc). For example, Virgin America's stepped form design make the booking process feel much easier than it is.

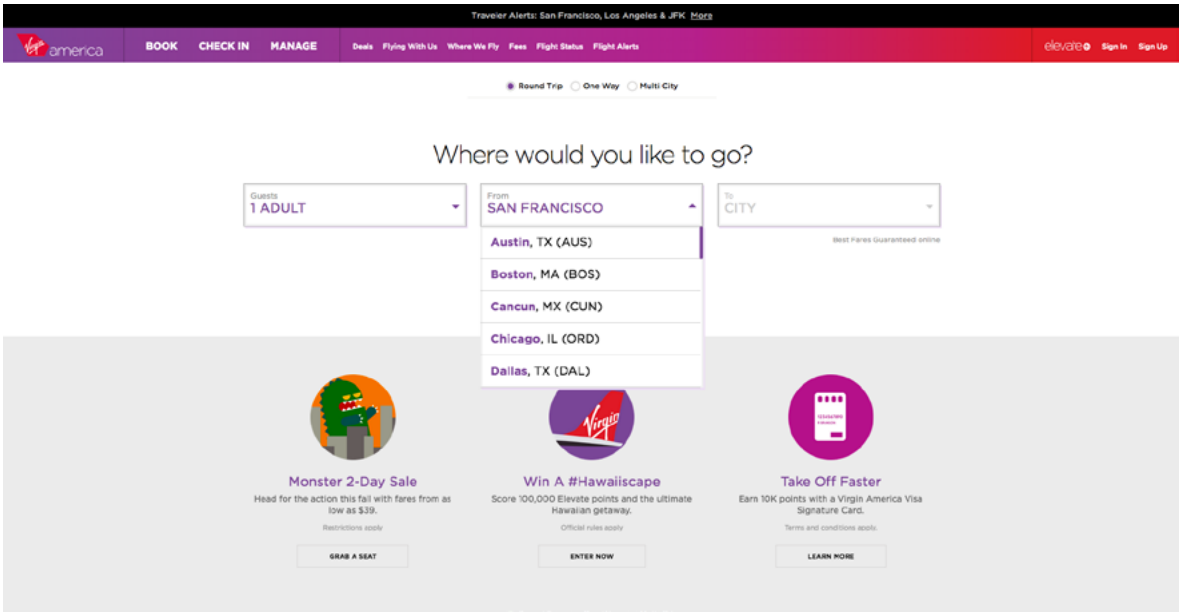

Photo credit: Virgin America

- **Limit user choices** – This is probably the hardest step, but you must minimize the actions available to users. Always ask yourself if all the choices are critical for that moment in time. If not, separate it for another conversation.
- **Pay attention to micromoments** – As Stephen Anderson describes, a micromoment is when a person might hesitate, advance, or stop when engaging with interfaces. If you look back to the role-playing exercise, you'll remember the moments of apprehension. To clarify the conversation, take advantage of microcopy and UI patterns like contextual actions and selection-dependent inputs (which we discuss in *Web UI Patterns 2014*).

Just like a magician's trick will fail if the details are off, just one bad interaction can ruin the entire user experience. The process described above will help you approach interaction design as a conversation rather than just a way of animating interfaces.

Putting It All Together With a Prototype

Prototyping helps you refine all these tangible and intangible design elements. Let's look at a few concepts behind interactive interfaces today.

Concepts

Even as interfaces evolve, a few principles continue to ring true:

- Users need cues about what's interactive and what isn't. Guessing by trial and error is frustrating, time-consuming and undiscoverable. That is, until people see something's interactive, they won't go looking for interactions.

- Actions must be immediate. Users need instant feedback about their actions to to feel in control. Hesitant interfaces make their experience feel sluggish, even frustrating, as users wait for the interface to respond. Snappy UIs, on the other hand, focus users' attention on your product.

- People need back buttons in concept, if not in fact. As they experiment with an interface, they need the ability to return to and reverse actions. Doing so encourages them to experiment and explore freely, confident that no move is fatal. Navigation menus slide in and out; switches toggle on and off; accordions collapse; multi-step forms back "back" or "cancel" links.

Visual cues

Users need hints that something is interactive. For example:

- A particular color always causes an action.
- Icons of a similar style cause action.
- Hovering over elements causes them to "float," indicating a potential action.
- Initial motion on page load shows people what's possible.

Remember that these are more than cues. They're promises. Keep them.

Practicing interaction design

In this demo we're going to prototype a task management app. As users tap each item, it will disappear from the list. But how will they know to tap, and how can we minimize frustration?

One way to indicate interactivity is to have the interface give a little hint. In this interactive lesson, one item in a shopping list gives a little bounce to indicate that it's tappable. By extension, and a little experimentation, users will understand that other elements are tappable as well. Notice that the bounce happens two seconds after the prototype loads, giving users a chance to absorb the design before receiving visual information about its interactivity.

The slightly-sideways bounce is also a sign of things to come: elements slide out of sight in the same direction of the bounce.

Differentiation also helps users figure out what's active. This demo shows how high-contrast elements appear to be more active than their low-contrast counterparts. In the first example, "Apples" and "Orange juice" tappable, helping users understand what high contrast colors mean.

Icons are another common convention that users may try to tap. In this case, tapping icons toggles their state. Unlike the previous examples, these icons give users the chance to undo their actions – an important part of making people feel they're in control and free to experiment.

Finally, the UI should work as quickly as possible. Users need instant feedback about their actions. This example feels buggy because the tappable elements are sluggish. Non-interactive elements won't respond at all; interactive elements that respond after a few milliseconds make users second-guess their actions. Exceed 1 second, and they start to feel like they're losing control.

Takeaway

Interaction design isn't about how interfaces behave, it's about how *people* behave, and then adapting technology accordingly.

It's a two-part challenge. First, you must know your target users on a level that reveals what they like and what they expect. Second, you must figure out how to satisfy those needs given your technological constraints. If you get those right, you'll have the building blocks to create interactions that delight your users.

Interaction design starts and ends with your prototype. To start prototyping better interactions, go ahead and begin your UXPin free trial. The collaborative wireframing and prototyping tool contains 20+ interactions and a custom animations editor so you can create the most lifelike prototypes without code.