Design Mobile Apps From The Outside In

by Mike Gualtieri, August 7, 2012

KEY TAKEAWAYS

Successful Smartphone And Tablet Mobile Apps Must Be Loved By Users

In a world with hundreds of thousands of mobile apps to choose from, indifference is failure. One Android user expressed a common sentiment: “I feel like everyone wants me to download their app, but no one is showing me how it will significantly improve my life.” To make your app lovable, you must design a compelling mobile app user experience.

Outside In: Create Mobile Personas Of Your Users

To design a great mobile user experience, you must develop a deep understanding of your users to find out what they will really find useful, usable, and desirable. To do this, create personas: vivid, narrative descriptions of named fictitious people, each one representing a segment of your users.

Mobile Context Is King: Design For Location, Locomotion, Immediacy, Intimacy, And Device (LLIID)

LLIID mobile context is critical because it describes the environment in which users use the app as well as the features that would be most useful and valuable to them in that environment. Mobile amplifies the importance of context in five dimensions: location, locomotion, immediacy, intimacy, and device.

Mobile App Architecture Matters

It is critical that your mobile back-end services architecture supports: high availability, performance, scalability, adaptability, security, and cost effectiveness.
FOR APPLICATION DEVELOPMENT & DELIVERY PROFESSIONALS  AUGUST 7, 2012

Design Mobile Apps From The Outside In
Policy And Procedures: The Mobile App Development Playbook
by Mike Gualtieri
with Stephen Powers and Vivian Brown

WHY READ THIS REPORT

This report outlines best practices in mobile app design that application development & delivery professionals can use to design great mobile apps. Customer expectations for mobile apps have never been higher. People use apps that are amazingly intuitive and make them feel pampered, and they quickly start to wonder why all their app experiences can’t be like that. The bar has risen — big time. If you think mobile app design is about choosing the best development tools and designing for a smaller screen size, guess again. Sure, the platform is important, but great mobile user experiences don’t happen just because you chose the best development tools. To deliver apps your users will love, you must design and develop a user experience that is useful, usable, and desirable and that takes into account the mobile context, and you have to design for emotion. Design is the differentiator. Great mobile apps are the result.

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19 If You Want To Differentiate, You Have To Design

Notes & Resources

Forrester built on its existing research in user experience design best practices and interviewed leading experts in mobile smartphone and tablet application design. In addition, we reviewed relevant third-party research, books, and articles on mobile devices and user experience design. This report is part of the mobile app development playbook.

Related Research Documents

Build Great Mobile Apps That Drive Engagement
June 28, 2012

Digital Experience Strategy: Follow These Three Mega Rules To Beat The Competition In 2012
December 15, 2011

The Seven Qualities Of Wildly Desirable Software
January 24, 2011
YOU MUST GET THE MOBILE USER EXPERIENCE RIGHT

Mobile first has become the battle cry for many application development professionals. If you haven’t developed a mobile app yet, then you probably will soon. If you have already developed one, then you probably need to make it better. Your app is the movie. The users are the audience. How many stars you get depends on the mobile user experience you design (or don’t design) and the audience’s reaction to it. Voting begins as soon as you release your app. And vote they will, whether with reviews on social media sites or with their thumb or forefinger when they adopt your mobile app. Unfortunately, too few application development teams appreciate the value of mobile user experience design. Many application development teams:

- **Mistakenly think that choosing the right mobile development platform is what matters most.** Many application development professionals obsess over what tools and technology they should choose to develop a mobile app. Sure, making the right choice among the many options, such as HTML/JavaScript, native application, and mobile middleware, is important. But it is less than half the battle. If users don’t love your application, then they will simply move on to another application that they do love — or use no app at all.

- **Wrongly focus only on designing for screen size, ignoring other key design factors.** Yes, there are many form factors, and screens sizes do tend to be smaller. But savvy designers recognize that mobile is about much more than a smaller screen size. Mobile means you can take it with you and use it anywhere, anytime. Screen sizes vary among smartphones, eReaders, and tablets. What’s next? Wearable glasses that can project a four-foot screen on the wall and respond to hand gestures? There goes the screen size theory! Certainly screen size is an important factor in mobile user experience design — but it is only one factor.

If this is your view of mobile experience design, don’t worry. Read on to learn what truly matters in mobile user experience design: the best practices for designing mobile apps that will lead your customers to say, “This app is awesome.”

Successful Mobile Applications Must Be Loved

“The opposite of love is not hate; it’s indifference.” (Elie Wiesel)

In a world where there are already hundreds of thousands of mobile apps to choose from, indifference is failure. Lisa, a Google Android smartphone user, expressed a common sentiment: “I feel like everyone wants me to download their app, but no one is showing me how it will significantly improve my life.” You must design apps that your target users love, and to make your app lovable, you must design the user experience to be (see Figure 1):

- **Useful: Can users achieve their goals?** First and foremost, a mobile app must provide functionality that allows a user to fulfill his goals. A mobile user on the go might urgently need an app to remind her of her travel itinerary. An exhausted mobile user in a train station might
just want to be entertained with a game or video. Mobile devices are a channel through which you can deliver useful functions to customers, employees, or business partners based on your ingenuity, the capabilities of your business, and the design and quality of your app.

- **Usable: How easily can they achieve their goals?** What good is great, useful functionality if it is hard to use? Your mobile app must also be easy to use. You may provide some new, supremely useful functionality to mobile users. They will use it because usefulness trumps poor usability. But if a competitor’s app offers the same usefulness but is easier to use, then, all other things being equal, users will go with the more usable app. Developers often confuse usability and user experience. Usability is one of three dimensions of user experience.

- **Desirable: Does the experience engender positive emotions?** You’d think that useful and usable would be enough — but they are not. Users also want to enjoy their experience, and the many other apps on their device increasingly condition them to expect enjoyable app experiences. Users respond to positive emotional connections to the product. Just ask any Apple iPhone user. Just as you can design a mobile app to be useful and usable, you can design it to be desirable.

**Figure 1** Differentiated Mobile Apps Must Be Useful, Usable, And Desirable

<table>
<thead>
<tr>
<th>Useful</th>
<th>Users can accomplish their goals in a mobile context.</th>
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<tbody>
<tr>
<td>Usable</td>
<td>Users can easily perform tasks in a mobile context.</td>
</tr>
<tr>
<td>Desirable</td>
<td>Users have positive emotions about their mobile app experience.</td>
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</table>

**MOBILE CONTEXT IS KING WHEN IT COMES TO MOBILE APP DESIGN**

Mobile device users can find themselves in just about any imaginable location and situation. If they can be there, then their mobile device can help them with both expected and unexpected situations and can be critical to their job. Mobile devices are personal. Many mobile users would feel panicked if they lost their mobile device.⁶
Mobile Devices Are Digital Appendages

Mobile devices aren’t just objects to be used when needed like a spatula, coffeemaker, or magic eight ball. Many mobile users keep their device with them all the time. Well-designed mobile devices and the mobile apps that run on them provide users with a:

- **Second brain.** Need knowledge, fast? Look no further than your connected mobile device to find information relevant to the goal at hand. Who was the British actor who was in that film about California wine?\(^7\) Hmm, let me just look it up on IMDb.com. Mobile apps provide users with general knowledge but also provide them access to personal information on social networks, bank accounts, travel itineraries, and corporate calendars. eBay’s RedLaser is a popular mobile apps because it uses the device’s camera to allow users to scan a product’s bar code and finds information about the product, including online availability and pricing options (see Figure 2).

- **Remote control to the world.** Need to get something done right now? Thankfully, there is probably an app for that, or there will be soon. Mobile apps provide users with a range of functions that they need every day, such as checking blood sugar levels with sanofi-aventis’ iPhone app or arming the home alarm using LifeShield’s mobile app (see Figure 3).\(^8\)

- **Megaphone.** Have something to say right now? Mobile apps such as Instagram allow mobile users to transmit pictures across their social media presence. Twitter allows protesters to rally the world to their cause. Foursquare lets people know when they are physically near each other.

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**Figure 2** RedLaser Helps Users Save Money

![RedLaser iPhone app screenshot](image)

Source: eBay RedLaser Apple iPhone app

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Source: Forrester Research, Inc.
Figure 3 LifeShield's Mobile App Allows Users To Remotely Control Their Home Security System

Source: LifeShield Security Apple iPhone app

Source: Forrester Research, Inc.

LLIID: Location, Locomotion, Immediacy, Intimacy, And Device

Context is always an important aspect of user experience design because it describes the environment in which users might use the application and the features that would be most useful and valuable to them in that environment. Mobile amplifies the importance of context in five dimensions (see Figure 4):

- **Location.** People use apps in an unlimited number of locations. And not all places are the same. A user may be in a quiet movie theater, at home in the kitchen, on a train, or in the White Mountain National Forest. Contrast this with desktop computers, stuck in places such as an office cubicle, home office, or kitchen. Laptops provide some mobility but are larger and less able to provide the immediate access of instant-on mobile devices such as smartphones, eReaders, and tablets. Location is a key dimension of context, driving different needs for users depending on where they are. Fortunately, GPS-equipped smartphones can use a geodatabase such as Google Maps to determine precise location.

- **Locomotion.** Mobile users also use their device while on the move — walking, running, swimming, dancing, and, dare I say, driving. While in locomotion, mobile users may have different needs than when they are stationary. For example, they may have only one hand available because they are pulling luggage through an airport, or they may have no hands
available because they are driving. All new smartphones have GPS capabilities, and some have a motion-sensing capability that can detect motion, speed, and direction.

- **Immediacy.** Mobile users expect to have the right app at the right time. Because they are often on the go, they may need to use a mobile app immediately to find a price, transfer funds, or update their status. Better yet, a user will be pleased if an application can anticipate his needs based on location and locomotion. Immediacy is a key dimension of context because many mobile apps are event-driven, such as when a user gets into an auto accident and needs to file a claim. The OnStar app that triggers a call when the air bags deploy is another good example.

- **Intimacy.** Mobile users identify with their mobile device, and you can and should take advantage of this personal nature in your app design. But the degree of intimacy and the nature of the relationship vary by user. Ida, a bargain-loving shopper, will not just respond but be delighted when you push an in-store offer to her device. Nick, a public works employee — not so much. Furthermore, Nick’s work context may bring additional security considerations that limit the information you can provide to Nick, but not to his supervisor. Designing for intimacy requires you to understand each design persona’s relationship with the device so you can define appropriate capabilities for the context.

- **Device.** One of the most difficult challenges of mobile UX design is the wide range of mobile device form factors and capabilities on multiple platforms and networks. Features such as gesturing, touch, voice recognition, and image recognition vary widely among devices. Device context is key because developers must design apps to use only the capabilities that are available. They must also design apps to follow the platform’s conventions, which are different for Apple iOS, Android, and Windows Phone 7. If an app needs a camera, will it work on a device with a low-resolution camera? Device capabilities are a moving target, too: Because device vendors keep inventing new features in a game of high-stakes “oneupsmanship,” app developers must always be on the lookout for new features to exploit.
**Figure 4** The Five Dimensions Of Mobile UX Context: LLIID

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Location</td>
<td>Mobile users can use their mobile device wherever they are.</td>
</tr>
<tr>
<td>Locomotion</td>
<td>Mobile users can use their mobile device on the go. Users may be walking, running, in a car, on a boat, or in any other manner of motion while using a mobile device.</td>
</tr>
<tr>
<td>Immediacy</td>
<td>Mobile users can use their mobile device at a moment’s notice.</td>
</tr>
<tr>
<td>Intimacy</td>
<td>Mobile users may use multiple devices for different purposes, and a device’s use can vary from a digital appendage to an occasionally used device for a specific personal or work task.</td>
</tr>
</tbody>
</table>
| Device    | - Mobile devices vary greatly in form factor and capabilities.  
            - Smartphones, eReaders, tablets, and other devices. |

**THE THREE BEST PRACTICES OF OUTSIDE-IN MOBILE APP DESIGN**

How can you create compelling mobile user experiences that are useful, useable, and desirable for customers and employees? To find out, Forrester built on its existing research into user experience design and spoke with leading experts in mobile application design.\(^\text{10}\) Our research uncovered that mobile user experience design builds on existing user experience best practices to add the mobile context considerations of: location, locomotion, immediacy, intimacy, and device.

To make your mobile app desirable, follow these three mobile user experience design best practices (see Figure 5):

1. Create mobile personas of your users to know how to design for them.
2. Design for the mobile context and make an emotional connection to design for love.
3. Validate your design in a mobile context to make certain your users are happy and that they love your app.
Figure 5 Mobile User Experience Design Principles

Create mobile personas.

- Segment your user population.
- Conduct user research; listen and observe.
- Bring your mobile personas to life.
- Evaluate and iterate your personas.
- Throw a persona “baby shower.”

- Create testing scenarios.
- Test real users in a mobile context.
- Make sure your mobile app engenders the right emotions.
- Assess your mobile application architecture.
- Test and monitor continuously.

Validate in a mobile context.

- Use personas to empathize with real users.
- Know your constraints.
- Find design solutions in a mobile context.
- Design for differences.
- Design for the future.
- Borrow inspiration from other designs.
- Design for emotion.
- Prototype and iterate your designs.

Source: Forrester Research, Inc.
BEST PRACTICE NO. 1: CREATE MOBILE PERSONAS OF YOUR USERS

To design a great mobile user experience, create personas that truly represent your users. A persona is a vivid, narrative description of a named fictitious person representing a segment of your user population that you create to guide your mobile user experience design. For example, Ida could represent a middle-aged woman who is a frequent bargain shopper using an iPhone. Nick could represent a public works employee using a Windows Phone 7 app to manage potholes on New York City streets. Base each target persona on user research that uncovers real attitudes, goals, and behaviors. Personas give your entire team a consistent understanding of the target users, informing your design solutions.

- Segment your user population. To segment your potential users, identify relevant characteristics of the population you wish to serve. Use demographics, needs, and the mobile context to narrow your population down to three to six defined target segments. A segment could be as broadly defined as all retirees with an interest in financial services, English-speaking teenage boys, or frequent travelers. Segmentation can also be more specific, such as patients with chronic diabetes in Florida, people who love horror movies, amateur commodity option traders, or users of a particular device or platform. The goal of segmentation is to narrow the scope of your population before you perform deeper user research.

- Conduct user research; listen and observe. Once you have defined user segments, the next step is to learn more about the users in each of your segments. Strong user research is essential to creating good personas. Interviewing users directly is the best way to understand their needs, but you can also survey them, read existing research written about them, and review what they're saying about you and your competitors on social networking sites. When interviewing, be sure to ask open-ended questions: questions that do not assume a particular outcome or a particular way your app might approach solving a user's problem. Users cannot always articulate what they need and what will make them happy. So don't just rely on what they say; you must also observe them in their natural habitat. Get out into the field and watch how users react to real-world mobile situations. What mobile apps are they using now? What situations do they encounter in which your mobile apps could help? Many of the most-successful mobile apps fill a need users could not articulate but that a designer was able to discover through direct observation. For example, shoppers were not clamoring for a mobile app to scan bar codes as they strolled through the store to find online prices, product information, and reviews, yet the RedLaser app boasts more than 7.5 million downloads.

- Bring your mobile personas to life. Now that you understand your users, it is time to synthesize all of your segmentation and user research into three to six personas that represent the users for whom you will design your mobile app. A well-written persona is like a well-developed character in a story or a movie — the audience learns quickly about the character and that character's relevance to the story. In your case, the story lives in a mobile context. Persona
descriptions typically fit on one page and include a name, photo, key attributes, and behaviors, with a focus on enabling design decisions (see Figure 8).

- **Evaluate and iterate your personas.** If your personas do not accurately represent your target users, your mobile user experience design will fail. Personas evolve through iteration just like any other artifact. Circulate your personas to stakeholders to solicit feedback, and then iterate your persona design. You have to get each persona right, while making sure that, taken together, the personas represent most of your target audience, without being excessive in number or complexity.

  Don’t get bogged down seeking universal acceptance. Lock in your personas once you feel you have them right, with the understanding that personas will keep evolving as you get new information that increases your depth of insight. However, be careful not to change personas arbitrarily. It’s important that everyone gets to know the character and can make design decisions for the real users the persona represents.

- **Throw a persona “baby shower.”** Personas are as important to a design team as a newborn baby is to its parents. Creating personas is a useless exercise unless you introduce them, so celebrate their birth by presenting them to your entire team. Some companies, such as Farm Credit Services of America, go as far as creating posters or even life-size cardboard figures of their personas. To get the most from personas, you must design them well, integrate them into the design process, and ensure that your development team accepts them.

**Figure 6** Personas Keep Your Entire Team Focused On Designs That Resonate With Your Users

<table>
<thead>
<tr>
<th>Understand</th>
<th>Personas provide your entire team with a consistent understanding of your target users and their most relevant characteristics.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathize</td>
<td>Personas provide a human face to focus empathy on the real people your personas represent.</td>
</tr>
<tr>
<td>Ideate</td>
<td>Personas help designers imagine what will be useful, usable, and desirable to real users.</td>
</tr>
<tr>
<td>Prioritize</td>
<td>Personas allow designers to prioritize features based on personas’ attraction to them.</td>
</tr>
</tbody>
</table>

Source: Forrester Research, Inc.
**Figure 7** User Research Builds Strong Personas

Source: Forrester Research, Inc.
**Figure 8 Mobile Persona Checklist**

- **Is based on user research with real users**
  Interviews, surveys, secondary research, and observation

- **Describes a mobile context: LLIID**
  Location, locomotion, immediacy, intimacy, and mobile devices

- **Calls out key characteristics and high-level goals**
  A short list of demographics, personality characteristics, behaviors, and situational goals focused on the persona’s most relevant needs

- **Includes a compelling narrative**
  A short, well-written day-in-the-life story that encapsulates key behaviors

- **Focuses on enabling design decisions**
  Supports design decisions that promote a useful, usable, and desirable user experience

- **Has high production value**
  Well-organized, visually pleasing, and, most importantly, memorable

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**Pitfalls To Avoid In Creating Mobile Personas**

If your personas are not representative or accurate, your mobile user experience design will fail. When creating your mobile personas:

- **Don’t assume that you already understand the user.** In the absence of real information about users, developers will engage their wonderful imaginations to model who they think the user could be. Then they’ll design an app that serves the needs of their imaginary friend — but not necessarily the needs of any real-life mobile user. Mobile app stores overflow with such apps.

- **Don’t just listen; observe and empathize.** Listening is not the only way to understand your customers; remember that it is just as important to observe them and empathize with them, especially in the mobile context. This will allow you to understand their overarching goals and think more creatively about how to help them achieve those goals now and in the future. Steve Jobs said: “You can't just ask customers what they want and then try to give that to them. By the time you get it built, they'll want something new.” Henry Ford famously said something similar in the 20th century: “If I had asked people what they wanted, they would have said ‘faster horses.’”
■ **Don’t forget that the mobile context is different.** Many application designers and developers are used to designing desktop or laptop web applications. Mobile is different. Always keep in mind the mobile context: location, locomotion, immediacy, intimacy, and device. The mobile context should be a key aspect of defining and understanding your mobile personas.

■ **Don’t fail to update your personas.** To make sure that your personas represent real people, connect them back to real people. Stay connected to real people as you continuously validate your personas and refine your understanding of their nature. Can you easily bucket real people into your personas? It should feel natural to say, “Oh, she’s an Ida” or “He’s a Nick.”

**BEST PRACTICE NO. 2: DESIGN FOR THE MOBILE CONTEXT AND FOR EMOTION**

R. Buckminster Fuller once said, “We are called to be architects of the future, not its victims.” Application development professionals should not leave mobile user experience to chance or to businesspeople who don’t understand the potential of technology. Instead, they should design the mobile user experience and build a mobile application that delivers that experience. Design is part art because in designing, you have to find that differentiating *je ne sais quoi* that attracts customers. But design is also part science because designers must take into account technology capabilities and research on what has worked — and what has failed — in the past.

To design for the mobile context:

■ **Use personas to empathize with real users.** Marty Neumeier, author of *Zag: The Number One Strategy of High-Performance Brands,* says, “The best design thinkers tend to be empathetic, imaginative, and idealistic.” You know your personas — now take a walk in their shoes, to feel their pain and their joy, to truly understand them. What upsets them? How do they make decisions? Empathize broadly, but also empathize in context. The concerns of a busy salesperson will differ from those of a 17-year-old music lover.

To empathize with your users, pick a persona to impersonate, and get into character. Do a mental walk-through of the user waking up in the morning, going through her day, and using your mobile app. What motivated her to use the app? What was she thinking? What tasks did she want to perform, and how easy was it to do them? What other choices does she have for achieving her goals, and why did she choose your application? Finally, how did she feel before, during, and after using your app?

■ **Know your constraints.** Make sure that your designers know their constraints before beginning the design process. Like everyone else, designers are constrained by time and money — but those are not their only constraints. They may also have technical constraints, such as the mobile device’s form factor and capabilities or an underlying technical architecture that precludes implementing certain features cost-effectively or with adequate performance.
Find design solutions in a mobile context. The mobile context must be top of mind when you ideate design solutions. Location, locomotion, immediacy, intimacy, and device form factor and capabilities are key design points for mobile apps. Design for LLIID, but in the context of the persona and the scenario (see Figure 9). Mobile users are often your customers in other contexts or channels. For example, your firm may also have a website and retail stores. You must design your mobile experience to support your overall brand and channel strategy and your customers’ overall multichannel experience.

Design for differences. It is likely that your user research uncovered the need to design for more than one mobile persona. That doesn’t mean that each of the user segments these personas represent is equally important to your business. For example, you may choose to put more design effort into satisfying users who generate the most profit or users who have the most potential for increasing revenue — or you may prefer to focus your app on attracting a new set of prospective users. Once you’ve assigned a relative importance to each persona, you can prioritize the most important content, features, and functions to include in your app.

Map your design to desired emotional state. Achieving users’ goals is a pre-requisite to satisfying them, but it is not enough. Users must also feel positive emotions that are appropriate for the context they are in. This means your app must make an emotional connection with your users. To design for emotion, you must be cognizant of how your users feel before, during, and after using your app. Determine the emotions you want your app to stimulate, using an emotion-map to analyze those emotional states (see Figure 10). Once you determine your app’s desired emotional impact, design visual elements, interactions, and features that engender those emotions to make the app lovable (see Figure 11). For emotional design inspiration, think about the products and brands your personas love and which features cause what emotions. For example, what kind of cars do they drive? What kind of televisions do they watch? What celebrities do they follow?

Design for emotion. Once you determine your app’s desired emotional impact, design visual elements, interactions, and features that engender those emotions to make the app lovable. For emotional design inspiration, think about the products you and your personas love and which features cause what emotions.

Design for the future. Hockey great Wayne Gretzky is not a mobile app designer, but he has words of wisdom for designers: “I skate to where the puck is going to be, not to where it has been.” Over time, a number of factors, including cultural shifts, economic realities, competitive offers, and technology, will change users’ expectations of what is useful, usable, and desirable. Therefore, design for change by getting insight into how your personas, business strategy, and the mobile context are likely to evolve in the future. Develop a few future scenarios based on trends in context, such as competitors’ announced intentions, technology adoption cycles, cultural shifts, and economic cycles. Then, brainstorm how each of your personas will react to each of these
future states. Now evaluate how well your current mobile user experience design can evolve to handle these future states, while bearing in mind the constraints of your technical architecture.

- **Borrow inspiration from other designs.** Design almost never starts from scratch. Review other mobile apps your target persona uses to learn what works and what resonates with him. Also look to other industries for ideas you can use in your mobile app, especially where it’s relevant to your target persona. For example, if you are creating a mobile banking app for college students, by all means, look at your competitors’ banking apps, but also research other, nonbanking apps that students use regularly.

New technology can also inspire new designs. For example, mobile devices that include thermometers can make restaurant menu suggestions that vary with the weather — soup on a cold day or a crisp shrimp salad on a warm day. A device with a camera and microphone might recognize individuals using facial or voice recognition, building on ideas from the world of gaming as implemented in Microsoft’s innovative new Kinect sensors. Because mobile devices are points of convergence for so much technology, it’s appropriate to look to adjacent fields such as gaming or robotics for inspiration.

- **Prototype and iterate your designs.** Do not commit too quickly to a particular idea. Before you pick one of the options, subject it to some user feedback via prototypes and review it for fit against business objectives. Use mobile development tools such as Apple Xcode, FileMaker Go, IBM Worklight, Sencha Architect, raw HTML5, or other mobile development tools to quickly develop a working prototype that will work on an actual device.

**Figure 9** Design For The Mobile, Persona, And Scenario Contexts

![Diagram](source: Forrester Research, Inc.)
### Figure 10 What Emotions Should Your Mobile App Engender?

<table>
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<tr>
<th>Emotion</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Why emotional state is desirable?</th>
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### Figure 11 Design For Emotion To Make Your Mobile App Lovable

1. **Chart emotions for your mobile app.** What emotions will resonate with the user in the mobile context?
2. **Explain why each emotional state is desirable.** Why will these emotions make your mobile app user experience compelling to your mobile personas?
3. **Design your mobile app for emotion.** What visual and interactive features can you design to engender the desired emotions?

Source: Forrester Research, Inc.
pitfalls to avoid in designing for the mobile context

When designing your mobile apps for the mobile context:

- **Don’t ignore your personas.** Remember, remember, remember to design for your personas. Many teams create personas only to forget that they ever existed. When making design decisions, always ask, “How would Ida feel about this?” and “How would Nick feel about this?”

- **Don’t diminish the mobile context.** Many application development professionals think that mobile apps are just a smaller version of an existing website or desktop application. This could not be further from the truth. Memorize LLIIID: location, locomotion, immediacy, intimacy, and device — and design for these contextual elements.

- **Don’t forget to design for all aspects of the mobile user experience.** Steve Jobs once said, “Design is not just what it looks like and feels like. Design is how it works.” Design is not just about picking a color palette that your personas might find pleasing or simply conforming to the slick look of the underlying mobile platform. Design requires visual, interaction, and emotion-focused design to create a mobile app that your users will find useful, usable, and desirable.

- **Don’t forget to design for nonfunctional requirements as well.** Your users see what you show them in your app’s visual and interactive features. But what they don’t see can also affect their experience. For example, if a mobile app is too slow because of poor application architecture, users may abandon the app even though you designed it perfectly to be useful and usable. Mobile app designers must be sure that the app not only has a great user experience but also performs well and is highly available, scalable, easy to develop for and extend, secure, and cost-effective.

**Best Practice No. 3: Validate Your Mobile App**

Yippee! You have finalized your design and built a prototype. You are proud and excited, but take a deep breath. Despite your most disciplined efforts, there’s no guarantee that your mobile app will be a raging success. Waiting until you launch your app to see how users will react is risky; it’s better to validate your personas, design, and mobile application architecture by testing. Before you let your mobile app loose:

- **Create testing scenarios.** Over testing can be just as bad as not testing at all, because it may sap valuable resources or delay your app’s launch. Focus your testing efforts on your app’s most important and riskiest areas. Identify a few testing scenarios that cover both the user experience and nonfunctional requirements.

- **Test with real users in a mobile context.** There is no better way to know whether you got the design right than to test with real mobile users. Traditional usability testing, where users sit in
front of a PC and a moderator asks them to perform tasks, falls flat when it comes to mobile
testing because it ignores the LLID mobile context. You must get your app into the hands of
users who will use it in context and provide feedback. You can work with a small number of
existing customers, or you might want to consider a “continuous beta” program. In both cases,
it is essential to get user feedback via an online survey or an interview.

- **Make sure your mobile app engenders the right emotions.** Just because you designed for
  emotions that you think will resonate with your users, that doesn’t mean they will. Be sure that
  you ask your real users how they feel about the mobile app before, during, and after they use it,
  using open-ended questions to ensure that you are not telling them how they should feel.

- **Assess your mobile application architecture.** The mobile user experience you design will
  run on mobile architecture comprising devices, infrastructure, and application platforms. It is
  critical that you assess your architecture’s ability to support the user experience. Assess your
  mobile architecture for availability, performance, scalability, adaptability, security, and economy.
  To do this, have your architects and developers explain how their technical design decisions
  will affect each of the seven qualities: user experience, availability, performance, scalability,
  adaptability, security, and economy (see Figure 12).

- **Test and monitor continuously.** You should not stop testing after you deploy the application.
  Apps change over time because of updates. Users’ needs and expectations change over time as
  well, causing the performance of apps with older designs to degrade even if the apps haven’t
  changed at all. You can use mobile app testing services such as Compuware’s Gomez and
  Keynote Systems to continuously monitor your mobile app’s availability and performance.
  These firms test your apps by emulating a variety of mobile devices or using actual devices in a
  testing lab. You must also retest users’ reactions to your app when you release changes. Consider
  implementing a continuous beta program with a small set of users who will continue to provide
  feedback you can use to tweak your design — or even to redesign, if necessary.
**Figure 12** Mobile Apps Must Achieve The Right Balance Of All Seven Qualities Of Great Software

<table>
<thead>
<tr>
<th>Quality</th>
<th>What it means</th>
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</thead>
<tbody>
<tr>
<td>1 User experience</td>
<td>Users’ perceptions of an application’s usefulness, usability, and desirability based on the sum of all direct and indirect interactions</td>
</tr>
<tr>
<td>2 Availability</td>
<td>An application’s readiness to perform its functions when needed</td>
</tr>
<tr>
<td>3 Performance</td>
<td>The speed with which an application performs a function that meets business requirements and user expectations</td>
</tr>
<tr>
<td>4 Scalability</td>
<td>An application’s ability to handle increasing or decreasing volumes of transactions, services, and data</td>
</tr>
<tr>
<td>5 Adaptability</td>
<td>The ease with which an application’s functionality can be changed or extended</td>
</tr>
<tr>
<td>6 Security</td>
<td>Mitigating the risk of attack and ensuring confidentiality, integrity, authentication, authorization, and nonrepudiation</td>
</tr>
<tr>
<td>7 Economy</td>
<td>Minimizing the cost to build, operate, and change an app without compromising its business value or any of the other six design qualities</td>
</tr>
</tbody>
</table>

**Pitfalls To Avoid In Validating Your Mobile App**

Resist the urge to skip any of the validation steps, and when validating:

- **Don’t just test for bugs.** Finding and fixing bugs is a critical goal of software testing, but many development teams fail to test if users will love their application. Test for bugs, but also test whether the app is useful, usable, and desirable — initially and in every successive release that affects the user experience.

- **Don’t rely on manual testing.** Testing successive releases of your app can be a pain. Make sure you build validation into your mobile application development life cycle so that you automate as much of it as possible.

**Recommendations**

**IF YOU WANT TO DIFFERENTIATE, YOU HAVE TO DESIGN**

Mobile is the innovative frontier when it comes to developing applications that will serve your customers and drive business growth. But firms that simply develop a mobile application to say “me too” are missing the boat. Mobile is a critical channel that your business can use to differentiate itself from competitors. You must develop mobile apps that your users will love — and, ultimately, so they will transfer that love to you by adopting your app. A good starting point to innovation, therefore, is figuring out if you can bring existing services to customers through the mobile channel. To do this:
■ **Inventory your customer interactions.** Make a list of all your current customer interactions by category — for example, marketing, customer services, and sales. Don’t just try to copy these interactions on mobile; instead, figure out how to make these interactions better in a mobile context. That might mean mobilizing a small slice of a current interaction or combining elements of multiple interactions to make it easier for customers to achieve a goal.

■ **Ideate to find solutions.** The key to generating ideas for mobile apps is understanding your customers, their interactions, and the mobile context. You should create a persona or two of your current customers and then, considering the LLIIID mobile context, do a day-in-the-life walk-through interaction with your firm. Generate multiple ideas as rapidly as possible, and then focus on a few for closer examination. Don’t be afraid to throw out ideas that don’t work out based on closer examination. Keep iterating.

The future of application development is mobile.

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**ENDNOTES**

1 For the latest trends in mobile development platform selection, please see the December 22, 2010, “Mobile Development Goes Multiplatform” report.

2 Imagine a wearable mobile device such as Google glasses combined with Microsoft Kinect.

3 Elie Wiesel, Nobel Laureate, famously said, “The opposite of love is not hate; it’s indifference.”

4 Apple’s iPhone App Store has more than 350,000 apps, Google Android has more than 250,000 apps, and Windows Phone 7 has more than 9,000 apps available for download as of March 2011. Source: Miles J Thomas, “Android Store Catching Apple Store App Numbers,” 3G.co.uk, March 16, 2011 (http://www.3g.co.uk/PR/March2011/android-store-catching-apple-store-app-numbers.html).

5 Droid is a smartphone mobile device that runs Google’s Android operating system and is sold by Verizon Wireless.


8 Sanofi-aventis is a pharmaceutical firm. LifeShield provides home security systems and services.

9 Microsoft offers mobile developers a 101-page “UI Design and Interaction Guide For Windows Phone 7” that defines visual elements, device capabilities such as sensors, and other design-related elements. Source: “UI Design and Interaction Guide For Windows Phone 7,” Microsoft, July 2010.
To learn about Forrester's best practices for designing great user experiences, see the September 4, 2009, “Best Practices In User Experience (UX) Design” report.

Alan Cooper introduced the concept of personas in his 1999 book, _The Inmates Are Running the Asylum_ (Pearson Education, 2004). Since then, the practice of creating personas and using them to drive design decisions has caught on across a broad spectrum of marketing, product development and design, and customer service.

Source: RedLaser (http://redlaser.com/).


*Je ne sais quoi* is a French phrase that means “something indescribable.”


Constantin Stanislavski, the inventor of method acting, made famous by great actors such as Marlon Brando and Robert De Niro, offers some advice for empathizing with your users in his book _An Actor Prepares_: “An actor is under the obligation to live his part inwardly and then to give his experience an external embodiment.” Source: Constantin Stanislavski, _An Actor Prepares_, Theatre Arts Books, 1989.


Forrester has identified seven key qualities that all applications, including mobile applications, must exhibit. Forrester defines the seven qualities as, “the common requirements that all software applications must satisfy to be successful: user experience, availability, performance, scalability, adaptability, security, and economy.” For a detailed explanation of the seven qualities, see the January 24, 2011, “The Seven Qualities Of Wildly Desirable Software” report.

Traditional usability testing focuses on websites and applications that people access while sitting in front of a PC. Many of the usability best practices apply to mobile testing as well, but the biggest difference is the mobile context, which encompasses location, locomotion, immediacy, intimacy, and device. This makes mobile testing much more difficult.
In a continuous beta program, individual application capabilities, or features, are given as a beta release to a subset of the overall user population. Multiple features are in beta at any moment in time (for Netflix, the number is around 200). You may expose an individual user to some of those beta features, depending on the user's profile, location, or other characteristics. If any beta feature fails, the session restarts at the point of interruption, with the original fully released feature restored instead of the beta feature.

Forrester published a report detailing how companies can adopt Emotional Experience Design (EED) to engage their customers in digital channels. For more information, see the January 18, 2011, “Mastering Emotional Experience Design: Address Customers’ Real Goals” report.
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