FORUM NOKIA

Getting Started with Mobile Design

Version 1.0; June 5, 2008

User Experience

NOKIA

Contents

Change history

June 5, 2008	Version 1.0	Initial document release

1 Mobile design — Forum Nokia's vision and mission statement

While mobile technologies and services are becoming an integral part of our everyday lives, new technologies are constantly emerging, and mobile devices are getting to be more diverse, feature-rich, and consequently more complicated than ever before.

The purpose of mobile design is to bridge the gap between the person using the device and the technology behind the interface — to make the complex simple. Mobile design is by no means a completely new, or even separate, discipline. The fundamental truths and lessons of interaction design and visual design are applied in a different context and with a different set of boundaries.

For the designer who is new to mobile design, the rules and boundaries may not always seem clear. This document, based on years of experience in mobile design, attempts to illustrate some of these boundaries, and encourages designers to transcend them.

1.1 Defining design

In the day-to-day work of a mobile designer, design is the creation of something useful and desirable. Successful design accomplishes both of the above for the intended audience, in the intended context, while meeting the intended business goals.

When done properly, design is a synthesis of emotions, functions, and aesthetics. It should exhilarate and inspire; it should encourage people to think about their world and the tools and toys around them in new ways. These values do not apply exclusively to consumer devices, applications, and environments — they should be just as present in enterprise solutions. The key to success lies in a good designer's ability to synthesize — that is, to absorb as much input as possible about the problems at hand and then map the solution.

1.2 Boom of mobile design

The mobile ecosystem is finally reaching a level of maturity where design is becoming a major factor. While the cutting edge of technological development is driven by convergence — the synergy of communication, media, and productivity technologies — users are gathering around mobile services and applications. These include more and more Web services that people are already using in a desktop environment, but specifically designed for mobile devices.

Mobile applications and services can have a very complicated lifecycle. They may be created by one party, installed or used on a device created by a second, use platforms or browsers created by a third, and operate on a network belonging to a fourth. Somehow, all must meet seamlessly, allowing users to use the product as intended.

1.3 Value of good design

All stakeholders benefit from good design. A carefully designed product that delights users will create consumer advocates who actively recommend the product.

Product designers, developers, and marketers will also benefit from a clear vision of why the product was designed, who will use it, and why. This focus will in turn lead to stronger product decisions, which will once again benefit users.

Ultimately the value of design is embedded in the ability to understand what customers want and to communicate with them in a way that will increase their desire for the product and lead to sales.

2 Becoming a mobile designer: From Web/print to mobile

Making the transition to mobile design from another design discipline is not all that different from making a transition from print to Web or other interactive media. It is important to understand that the success of a product or service depends on a thorough understanding of who the users are, what they are trying to do, and how they will interact with your creation.

There is a growing body of literature on the mobile user experience; the modalities of interaction that relate to mobile; and the social, cultural, and practical nuances of the mobile experience. These are important resources because although the mobile experience may seem to be the "next big thing," there is much to learn from industry experiences to date.

As in the Web domain, it is also important to understand the technologies that will bring designs to life and how to better collaborate with development teams. Think of mobile technology as the Web circa 2000, when dial-up was still common, broadband was the next big thing, and interactive Flash content inspired love and hate in equal measure. While the options available to mobile designers are rapidly increasing, finding creativity in the midst of constraints is an important part of the job.

To begin the transition from Web or print design to mobile design, designers should take the following steps:

1. **Do the study:** Get to know the existing literature, both online and printed, about mobile design and mobile user experience. Become familiar with existing design examples, devices, and applications.

2. **Spend time playing**: See what is popular in stores and watch what people use their devices for and how, in the streets, in airports, and in social situations. Think what would, or would not, be useful to them as they go about their lives.

3. **Start sketching**: Once you know the basics of the environment, you will learn best from actual work. However, even in the midst of designing, always remember the people you are designing for.

Remember: A user can be almost anyone, of any age, or any social group. Their mobile device will probably be with them all day, every day, and even all night. This is a very different scenario from the one that is typically encountered in designing desktop or Web applications. Apart from the context and the shorter periods of use, the fact that a mobile device is a lot more personal than a computer is very exciting and should lead to new ways of designing products and services.

Mobile devices are not supercomputing powerhouses — they have limited processing capabilities and memory availability. At the same time, users do not care about this: They just want to see their picture rendered as soon as possible, for example. Users are also used to broadband data transfer speeds, and it may not be easy for them to accept the slower rates of mobile devices. In addition, there are considerations related to data transfer costs. While some users may have flat-rate data plans, many do not, and the possibility of a huge bill might ruin the experience or discourage use.

Finally, designers should get used to thinking about the entire product lifecycle. While your grandmother may never install a piece of software on a computer, she may well install a mobile application or have one preinstalled by the operator. Will she know what to do, how to perform updates, how to assess data usage? These can be challenging questions, but that is what makes mobile design so exciting!

2.1 Understanding the mobile context

Designing for the Web or desktop requires an understanding of when, how, and why users will interact with your products. Issues of when, how, and why are also at the root of most differences between Web/desktop and mobile application design.

Figure 1: Contexts for mobile use are innumerable.

2.1.1 When: Anytime, anywhere

Even with the advent of ultra mobile laptops, using a Web or desktop application is rarely an impromptu event. At the very least, the desktop user is:

- Sitting down;
- Looking towards the screen;
- Using a mouse or touchpad to easily point and click, or typing to provide input and perform actions.

By comparison, **a mobile user** may be:

- Walking, running, or driving;
- Operating in lighting conditions that are too dark or too bright to see the screen or device keypad properly;
- Relying on one hand to initiate and complete tasks;
- Trying to complete a task by glancing occasionally at the screen.

In fact, **the ability to deal with distractions and interruptions** should almost be considered a feature of mobile applications. At the very least, an application will have to compete with crucial functions of the device, such as incoming voice calls or text messages that immediately steal the user's attention. Unlike the context for Web or desktop applications, mobile devices typically do not provide the ability to visually interact with multiple applications on the same screen. This means that users will almost always have to leave, or even completely exit, an application to do something else. This departure may be sudden, and applications must deal gracefully with potential data loss, log-in status, etc.

Finally, it is worth remembering that **mobile devices are private devices** operating in a very public context. This means that users may want to use a product quietly or discreetly, which is yet another reason why designers will benefit from knowing their users and how the design will fit into users' lives.

2.1.2 How: Indirect interaction and challenges of the small screen

While the mention of **point and click** in the previous section may seem trivial, this aspect of mobile reality can present a huge stumbling block if it is not properly integrated into the design. Without the ability to simply point and click, a user must rely on visual cues to identify which onscreen control is currently selected and which key to press to execute a command or navigate to an option. If visual

mapping is unclear, there is a risk of unintended selections, or at the very least the user may end up clicking at random in the hopes of discovering additional cues. **Touch screen devices** provide even more direct interaction than point-and-click interfaces.

Reading large blocks of text can also be problematic on a mobile device. While scrolling text works well online because it is an occasional action and fairly precise, scrolling on a mobile device happens frequently and is imprecise: the user clicks, waits to see how much the text moves, and then attempts to sort out where the last word s/he was reading has ended up. Font size and rendering can also vary greatly, further compounding the problem.

2.1.3 Why: The fickle nature of downtime and in-between moments

The "why" aspect can be the most intriguing: Mobile technology is now firmly entrenched in our lives and has both affected and been affected by our culture and society. Mobile TV for example was often marketed as a service that consumers would use while on a coffee break or waiting for the bus. Instead, research indicates that it is most often used at home. It allows teenagers to watch television in their rooms or even to watch one program on TV while occasionally glancing at another.

Gaming seems to have followed a similar path. While casual games are quite popular because they are easy to learn and require little commitment, users seem to be playing them for longer periods of time than originally anticipated. While there are no hard and fast rules, once again it is important to consider **who will be using your product and what habits they currently have**, and how these vary in public vs. private scenarios.

Mobile devices are also perfect companions for the extremely popular **social Web services**, allowing users to update their status, and blog entries or upload content in real time.

Still, **communication** remains at the core of mobile devices. Whenever users need to communicate — be it via voice, short message service (SMS), or e-mail — their mobile devices must support this basic need as efficiently as possible. This is where good design becomes invisible, enabling the user to, for example, use the phonebook and make calls intuitively.

3 Mobile design challenges and how to overcome them

The mobile world has its own particular characteristics, which need to be acknowledged when designing for mobile devices and the mobile context. Sometimes these characteristics may seem too restrictive, cramping a designer's style; conversely, the mobile context gives designers a chance to challenge themselves in ways the PC environment never can.

Major challenges with mobile devices include:

- Screen size and limited display real estate
- Small and limited input devices
- Limited battery life
- Limited processing power and memory
- Short periods of use, varying customs and habits
- Irregular network connection speeds and data costs

Limited text input methods push designers to think about new ways to add information and keep information. Guiding the user and reducing the requirement of text input is crucial for getting higher usage, but do not underestimate the persistence of a motivated user, either — if something is interesting enough the user will find ways of using the service that designers cannot begin to imagine.

Mobile users are more **prone to interruptions** than users who are sitting in front of a computer. While one could argue that a Web or desktop application must also compete for a user's attention, mobile devices typically do not provide the ability to visually interact with multiple applications on the same screen. For most of us, **mobile devices have two primary functions — voice- and text-based communication**. However, since many people make use of other features, and since the number of features seems to increase with every new model, it is important to enable old and new features to function well together to create new and interesting experiences.

The future of the mobile ecosystem depends on designers' and developers' ability to create new applications that truly enrich and add value to the lives of everyday users, not just to the small minority of technology freaks and early adopters. At the same time, in addition to being aware of device and user requirements, designers need to know something about the mobile market and the current state and level of design. A challenge indeed!

3.1 Tools

Apart from certain existing platform components, there are **no tools specific to mobile design**. In fact, old-fashioned and proven tools like **sketches and paper prototypes** still go a long way. In addition to these, mobile designers can use application design and development environments to create mock-ups and prototypes. Any available small-screen templates can be utilized with graphic design tools and other design tools.

When selecting tools and templates — be it Adobe Photoshop, Adobe Illustrator, Adobe Flash, or Adobe Dreamweaver for Web pages — remember to think ahead to the testing and prototyping phase. Tools should allow designers to get their designs to the mobile devices as easily and early as possible. Ideally, designers can throw their designs directly onto their device and show them to colleagues over lunch.

A Flash prototype or a simple coded application mockup may take more time, but sometimes the investment can pay off — even a little actual interaction brings the prototype easily to the next level and allows designers to communicate their design better.

3.2 Standards, platforms, and conventions

Standards will most likely help in the creation of new and exciting mobile products and services. The lack of standards currently places great constraints on the creation of new products, and for many companies this constraint is too great for them to achieve a mobile presence. Standards should not be seen as limiting factors but rather as facilitating ones. Currently, mobile Java™ standards are being developed, and there is definite movement towards more standards for mobile browsers, with companies like dotMobi leading the way for lightweight mobile Web development.

Platform-specific components and design conventions can offer many advantages to designers. If well developed and mature, they can radically decrease the amount of learning involved when a user first encounters an application. From a design and development point of view, they can also allow designers to safely shift their efforts to solving the more interesting and complicated interaction or feature-related challenges. However, for designers fresh from the desktop world where there are no rules (or rules are meant to be broken), readymade components and strict UI styles may also stifle creativity and experimentation.

Analyze the **purpose and intended audience** of your product before deciding whether or not to use platform components. For productivity-oriented enterprise applications, visual stimulation is hardly at the top of the list. Users of these applications want to perform certain tasks, often related to accessing, sorting, and managing information, as clearly and efficiently as possible, and familiarity can help with these tasks. When designing **a productivity application**, using components and following platform design guidelines is not only highly recommended, but possibly the only way to achieve your goal. It is unnecessary to burden the user with new patterns of interaction while trying to accomplish specific productive tasks —especially when these may interact with existing platform applications like the calendar, SMS, or e-mail.

There are also **more specialized applications**, such as widgets. These do one or two simple things and require minimal user input. Here as well, components and conventions can be useful, but there is already much more tolerance for experimentation. If a user is only going to set or adjust the widget on an occasional basis, devising new and innovative ways to perform these small tasks may be a valid choice. For more information on widgets, see Getting Started with Nokia Web Widget Development [2] at Forum Nokia.

Finally, there are applications that are not intended to accomplish important tasks, but that **engage users with the advanced visual and interaction capabilities of the target device**. These should be designed to be fun, whimsical, and playful — the kind of application that may not be best served by standard components.

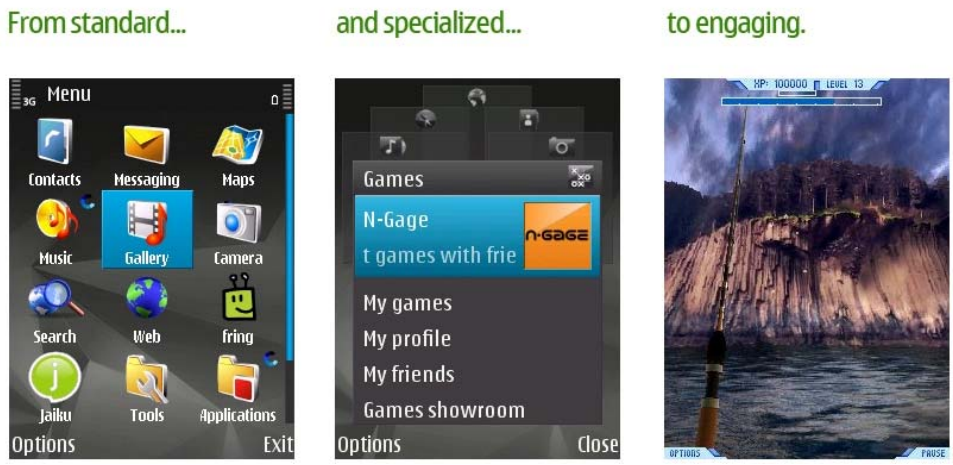

Figure 2: Standard components, specialized applications, and engaging design.

Tip: Remember that an engaging design and efficiency are by no means polar opposites. Most applications are about content, and the greatest "wow" effect comes from what you can achieve with an application, not from shiny visuals or subtle animations. If both factors support each other, all the better!

Standards and conventions are generally considered a good thing by mobile design experts. Yes, they put limitations on design work, but at the same time they offer tested functionality and familiarity. This may lead to a less innovative design, but one that works. If what you are trying to create has critical goals, the use of common conventions is advisable. It is not necessarily fair to the user to break conventions. Despite the fact that standards can lead to better and more numerous services and applications, they should always leave some room for flexibility.

Designers should be able to **challenge conventions** when a customer wants to break or exceed any limitations set by these conventions. If a design project has been properly researched, this approach should be possible. At a certain point, the designer will need time to assess whether the innovation is properly conceived and if there are the necessary resources to design it properly. If these are not available, the designer should go with the conventions. However, there are many examples in the mobile world of breaking conventions and passing up on components, solely for the sake of individual design. Decide whether your design — and thus the user — benefits from such an approach.

Sometimes standard components may have an adverse effect on design work. Especially when dealing with a completely new platform, there can be numerous unfamiliar components and little to no documentation available. Because the platform is new to the users as well, explaining the context can be challenging.

3.3 Design patterns

A desktop user interface will not function as such on a mobile device — designers must change their thinking to **mobile design patterns**. However, sometimes designers may need to consider how to convey an existing experience, such as a popular Web service or desktop application, ported to the mobile playground, in the terms of mobile patterns.

When designing a mobile variant for a product or service with a strong brand identity that already exists in the PC world, designers may wish to transfer as much of the product experience as possible. In such cases, consider the following questions:

- **What core functionalities do you want to provide on the mobile device?** Often it is unnecessary or even undesirable from the user's point of view to port an entire Web service — rather, it should just be the most probable scenarios. For example, consider a massive social networking service like Facebook — the clutter-free mobile offering consists of the features most likely to be used on the go, such as status updates and private messages.

- **What does the platform/target device offer?** An application designed to work on all devices will often not work well on most devices. Users of a specific platform are familiar with how their device works, and they expect new services to work similarly. While the visual design can be different, the patterns of interaction should follow the platform conventions, at least to some extent. You may need to design separate applications for each target platform to ensure that the overall experience of the original product is duplicated.

A good source for mobile design patterns, recognized by experts, is Barbara Ballard's *Mobile design pattern library [3]*, which is a free mobile design resource from Little Springs Design, a mobile user experience consulting company.

Tip: Keep track of examples of useful design constructs, patterns, and interactions, along with those that did not work so well. To break patterns and create new approaches, designers need to be familiar with existing patterns. Knowing what works will help you design something that works even better.

3.4 Dealing with interruptions

With mobile devices, interruptions when using an application are a given. Even when they are prepared to use a mobile application for a longer sitting, users can be interrupted by an incoming phone call. Always design applications to retain their state of use in case of an interruption. If users have spent time and effort browsing for a certain item, they should not be burdened with having to start all over again if they happen to open an incoming message.

In addition, mobile applications and services should always maintain user data and never lose information due to an interruption.

Most mapping applications demonstrate this behavior: If you pop to other functions in between navigation or browsing a map, the map is still there when you come back, with the ability to snap to your current location. Examine, compare, and contrast mobile mapping applications, and you will notice they accomplish similar things, with subtle differences from the point of view of functionality and input.

Study how people deal with an application or service when interrupted in the middle of use, as part of the design process. Of course there are instances where people use devices for longer periods of time, such as for entertainment, and patterns of use can be hard to find. However, always assume there will be interruptions.

3.5 User identity

The mobile environment is a lot more personal than the PC environment. The same device and hence the applications and services on that device are probably going to be used by a single user. This eliminates the need for logging in to every application separately and allows for more personalized widgets that are configured with a single user in mind.

This personalization can be crucial to the usability of services on a mobile device. Unlike on a desktop, the user needs to access content in very short time spans, and it is important to skip past log-ons and get to the relevant information as quickly as possible.

4 The design process

Designers everywhere have a similar idea of what the **ideal design process** should be like in order to create products that have value for users. The process includes several steps and considerations:

1. **Goals**. Set clear goals for the product. Create scenarios to illustrate how, when, and why the product will be used.
2. **User needs**. Identify the users. Let your understanding of the target audience guide you. That is to say, do not add a feature simply because a focus group says, "We want it." Analyze what they have to say. Why do they want or need a particular feature? Simply replicating a feature demand is easy, but the hard nut to crack is figuring out a better way to meet the demand, or erase that demand altogether. Do people really want the entire Web on their mobile device? Or are they simply feeling robbed by the poor experience mobilized content sources provide? Figure out the user's needs and draw your conclusions. Condense the list into a few main issues.
3. **Context**. Carefully optimize user interactions around the goals and scenarios you have created to ensure that they are intuitive and remain the focus of the product. The less your users have to think, concentrate, and learn new behaviors when using the product, the more desirable it will feel. Truly good design is invisible; it feels good and "just works."
4. **Collaboration**. Insist on collaboration from all stakeholders involved: design, engineering, marketing. Many times designers are called in too late, and the issue at hand is not synthesizing all the issues in a way that makes sense to consumers, but rather to create something that looks nice in the hopes that the audience will not see the flaws. The visual designer should be involved from the start of the project. This is particularly essential when the product is aimed at consumer markets, where it is important to stand out. If you want to achieve "wow," it is unreasonable to leave it to one person. It requires a joint effort —visual designers and interaction designers, as well as researchers.
5. **Testing**. Test often, on real handsets and with real people. Get the design onto a handset as early as possible and continue to test throughout the design process. Try to simulate real contexts of use, such as noise, limited lighting, incoming calls, or loss of signal to ensure that the application deals gracefully with these types of interruptions.
6. **Iteration**. Great design requires iteration. Once the product or prototype has been released, review the process. Re-examine your users and your product. Does it still meet the initial goals or allow users to perform the tasks you had in mind? How do they feel when using it? What can you do to make your product more enjoyable to use while keeping these core goals and tasks in mind?
7. **Documentation**. Once the project is executed, it should be documented so that everyone involved knows what to do in various scenarios. The design is no use to anyone, if the only one knowing about it is the designer.

4.1 Advice for designers

Designers do not have the lead role in the mobile play arena; users do. But it is up to designers to make that play possible in the first place.

If you are just starting your career as a mobile designer, take **time to study**. Pick up a mobile device and a style guide, and learn to understand the platform and the applications. Have a knowledgeable colleague explain the design process. You will not start by drawing the user interface — instead, get acquainted with the use cases and requirements.

When designing, **create prototypes and mockups as often as you can and get the designs onto a handset from day one**. **Download popular applications** and make **constant benchmarking** a habit. The competition on the market is constantly growing, and you are better off knowing what your peers are doing. Learn from their mistakes as well as their triumphs. Keep examples of design constructs, patterns, and interactions that you found useful, but also keep track of ones that did not work. It is important to prioritize — some designers are willing to make everything smaller so that it

fits onto one screen, which can be very crowded. Strong designers will not go for this, and users will adapt even if they cannot have everything available at once.

Figure 3: From sketching to design candidates.

Working with paper and pencil to craft the overall experience is an easy way to put an idea in front of people with a minimal amount of effort. You can find out pretty quickly if your potential audience "gets it," well before shelling out hundreds of thousands of dollars on development.

Usability will certainly have an effect on design, and should be a factor right from the start. Often it is a matter of small changes, but it is heart warming to hear about good result from user testing when their needs are taken into account. Users will provide input you cannot get anywhere else.

4.2 Interaction design

Interaction design begins around the **goals set for the product**. Create scenarios to illustrate how, when, and why the product will be used. To create effective scenarios you need a good mix of user goals and examples of people using the product to achieve these goals. Carefully optimize user interactions around the goals and scenarios you have created to ensure that these are intuitive and remain the focus of the product.

Once you have narrowed down and optimized the interactions, start putting the vision of the application or service on paper, from the top down. Consider how items and information are displayed and organized. Create prototypes and do not be afraid to return to the drawing board when things do not work smoothly.

When it comes to interaction design, **it is usually what you do not notice that is most important**. If a user does not have to think about what s/he is doing, the feature it is probably good enough. The less your users have to think, concentrate, or learn new behaviors, the more desirable the product will feel. Truly good design is invisible; it feels good and just works. **If you do not notice any issues, the interaction designer has usually done a good job**.

People who use a specific device are used to how the device works, and they expect the service to work similarly. The visual design may be different, but the interaction design should be specific for the platform.

A few key points to keep in mind to optimize interaction on a mobile device:

- **Clarity**. Do not make it more complex than it has to be. With the lack of screen real estate and challenges of manipulation, there is already enough complexity in the small device.
- **Simplicity**. Take every measure to simplify the actions users need to achieve a goal. Narrow down the functionality to what is essential.

- **Context**. Keep in mind both the physical and social context of use and any other difficulties users may encounter related to the environment.

- **Learning**. Take advantage of innovations that have worked in the past, such as design patterns. Do not reinvent the wheel just because it seems cool.

When designing an engaging, visually distinctive consumer service, involve the graphic designer in the entire design process from the beginning. With such services, interaction and visual design go hand in hand; they may also benefit from input from usability researchers, if available.

While visualization might usually affect only the details of interaction design, sometimes it may be difficult to differentiate which details fall into the domain of interaction and which into visualization.

The most common fallacy in mobile interaction design is to **treat the mobile device interface as an alternative to the existing desktop environment**. Why is so much precious real estate wasted on idle screens that offer little or no value with the exception of providing pleasant wallpaper? Why do most mobile devices have five-way navigation options, yet we still do nothing but scroll up/down through lists 90 percent of the time?

Know the limitations of your platform, but do not be afraid to challenge them. Encourage developers to treat the device as if it is more advanced than it is — they should not hold back on design or on realizing the full potential available. Having the inspiration and enthusiasm to challenge the current hindrances in design are important qualities for a good mobile designer.

Another interesting design challenge is the current trend towards touch screens and gesture control. These introduce completely new issues into the design work from the users' viewpoint; for example, gestures are visible to the public, and others will know what users are doing with their device. What are the possibilities offered by these control schemes?

4.3 Visual design for mobile devices

On an interactive level, users need to accomplish tasks as quickly and efficiently as possible. Information must be accessible and not hidden beneath levels of hierarchy. Visuals can help the user separate primary information from secondary, and identify and navigate the different hierarchical layers.

In order to design successfully for small screens in terms of limited, clear layout and shallow-focused interaction flows, designers must have **an understanding of color, animation, and rendering on small platforms**.

Simplicity and clarity are the main guidelines in visual design for mobile devices. When users are on the move, diminutive, detailed visual elements will get lost and small text will become unreadable. **Focus** in mobile devices is the same as a mouse pointer in the desktop environment — you navigate, select options, and execute tasks, and the focus should always remain clear. Contrast and complementary colors are of significant use in this.

Visual clarity is a decisive factor in the usability of your design, but there are additional considerations in the mobile environment:

- **Visual appeal**. While a mobile device is very individual and private, it is often frequently displayed and shared between friends. An appealing visual design will naturally please the user, and help attract more users.

- **Physical and social context**. Does the design fit the look and feel of the target device or environment? Who is the design aimed at, and will they find it appropriate in terms of color and iconography, for example?

Having a **solid understanding of the input devices your audience may need to use when accessing the application** is a crucial factor for success in mobile design. This is true for both visual and interaction design. If you are starting from scratch, grab five to ten devices from different manufacturers and study their commonalities and differences. Obviously there are hundreds of

devices on the market, each with their own quirks, but it helps to think about some of these quirks to begin with.

Given the potential idiosyncrasies, it makes sense to design applications with the understanding that different input devices might alter the user experience, and to think about ways to streamline hiccups that might come about in the porting process. For example, with touch devices that use a virtual keyboard, you must be able to fit the keyboard on the screen, yet all the elements must be easy to touch and focus on.

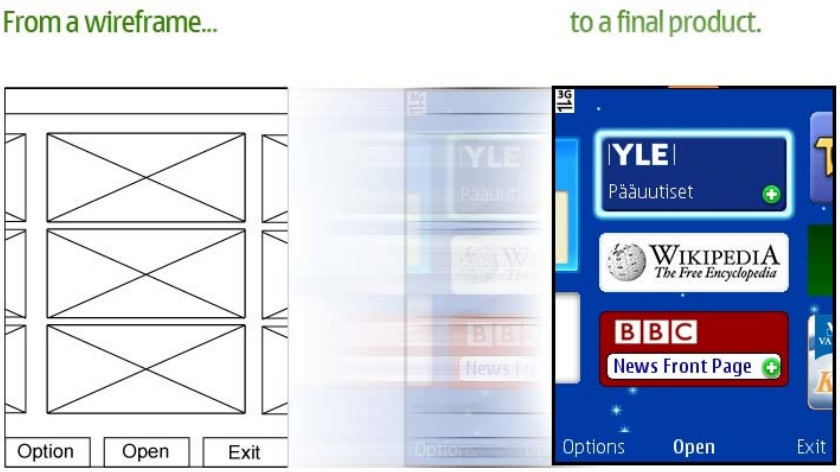

Figure 4: Adding the visual layer over a wire-frame design.

Transitions and animations help the user understand the context, where they are, and where they are going. When used properly, transitions are a great asset: they can significantly help users achieve their goals while at the same time making the whole process more fun and engaging. Transitions and animations should never be a feature themselves, but offer unobtrusive guidance to the user.

For general information and guidelines on small screen design, mobile typography, and the use of color and contrast, see S60 Platform: Visualization and Graphic Design Guideline [1] at Forum Nokia.

4.4 Optimization for mobile technology

The mobile Web and the desktop Web share core technologies. Full browsers, such as the Nokia Web Browser, support the same standard technologies as their desktop cousins.

However, it is a mistake to attempt to cram the “real” Web onto mobile devices. Mobile users need **quick snippets of information and entertainment**. The full-blown desktop Web, with all its options and opportunities, can be unwieldy on a very small screen. Technical compatibility is no excuse for not ensuring that the design and user experience work smoothly on mobile devices.

Figure 5: NYT Web service, content optimized for small screen.

The most efficient way to approach the small screen is to consider mobile devices when doing desktop Web design. When certain design issues are taken into account, the Web services will be immediately more accessible in the mobile domain as well. This reduces the amount of optimization work and eliminates the necessity of separate design work. See Web design checklist [4] at Forum Nokia.

The line between dedicated applications and Web services is blurring. Even with fully functional scalable Web browsers that can render full Web pages, users may find it more pleasing to use services via specific applications or widgets. However, while users appreciate optimized design, they may also be annoyed if the mobile solution is clearly limited and does not offer the functions of the service they are used to on the mobile device.

Always consider **how the desktop and mobile play together** — what are the **features that the user is likely to use on the mobile device**.

Apply the "Don't shrink, rethink" rule; that is, do not try to fit the existing conventions on the smaller screen rather than reinventing these conventions. Often companies forget to think about the mobile context, but it is something that must be considered in order to create great mobile services.

Figure 6: Live Search — search results on a small screen.

Web applications often have **links and buttons** that the user needs to focus on and select. The button as an implicitly "clickable" item is firmly entrenched in our digital culture. Designers who are used to the Web or multimedia will casually populate screens with buttons without thinking through the mental and visual mapping required to determine which button currently has focus and how to get from one button to the next. Mobile designers, however, need to think about how to replace all this

clicking with a process that more visually and implicitly maps the handset controls to the proposed action (for example, the use of contextual Options and softkeys on most Nokia devices).

The Web is here to stay, along with mobile technology, but currently there is a disconnect when transferring from one platform to another. When optimizing the Web for mobile applications, some customization is required. At the moment, successful solutions are few and far between.

5 Testing mobile design

When designing a new product for the mobile world, often the actual goals are not clearly defined. Starting from the initial idea, the design process sets out to define what the product is, what the feasible solutions are, and what the goals are from the end user's point of view. To ensure that these goals are met by the final product or service, continuous testing is required.

Testing should be carried out with end users. These users will be looking at how the product functions and whether it fulfills their needs — one of the main goals of your design work. Depending on your working environment, you may have clients and various stakeholders using their own devices, platforms, or services with your prototype. (Of course, testing by peer designers or developers is better than none at all.)

Users can deliver priceless feedback on various details of the product, such as interaction or individual functionalities, but designers should use this feedback judiciously. Remember that a restricted number of test users do not offer a representative picture of all users.

Do not be afraid to reevaluate your design — and then try again. Even experienced designers are still in the learning stage when it comes to mobile design and usage. Test the design in different usage contexts and on different devices, if applicable.

If there is an opportunity to conduct tests with end users, consider involving them throughout the design process. There may be a disconnect between the paper prototype and how the product feels on an actual mobile device. What seems clear and straightforward on paper may feel convoluted on a small screen or become complicated because of the input interface. In order to reveal any problems in the design, try to have the prototype available on the target platform at the earliest opportunity.

Test often, on real handsets and with real people. Get the design onto a handset as early as possible and test throughout the design process. Try to simulate real contexts of use, such as noise, limited lighting, incoming calls, or loss of signal to ensure that the application deals gracefully with these types of interruptions.

5.1 Tried and true methods of testing

When there are no critical constraints for testing, such as an insufficient budget or overly tight schedules, **conduct as thorough testing as possible**. If you are designing a product or service for which there is no previous research, benchmark, or market study, you can approach the users' needs with multiple possible concepts, which you can test with user groups to see what works.

After narrowing down the concept, create a prototype for your given platform, as close to the definite article as possible. For the initial testing, set up a mock real-world testing environment with audio and visual distractions that affect the use of the design.

Finally, take the prototype to the field to be tested by developers and users alike in the actual conditions and context.

Unfortunately, extensive testing scenarios are not always possible, and more straightforward methods have to be used. **Wire-frame models and paper prototypes** are quick, cheap, and efficient way to get feedback on a design concept. However, while they can give a detailed cognitive walkthrough of the design, they offer little to the tester (and thus no feedback) on the actual product experience.

When using wire-frame models, bear in mind that you may run into a situation where the implementation of the tested model is not possible. For example, visuals may get too crowded, so you will have to scale back the design and maybe test it again. Remember to conduct any tests on the actual devices the design will use, or devices with similar screen sizes, etc.

A combination of testing the design with paper and flash prototypes yields solid and reliable results and will provide enough information for designers to see whether their design works or if there is room for improvement.

6 Conclusion

In this document, we have tried to tackle the essentials of mobile design and provide an overview of several important aspects, including:

- The mobile context
- Tools, standards, and design elements
- The design process, interaction design and visual design

Mobile design is not about taking an existing desktop application or service and zooming out until everything becomes illegible. It is not about fitting as many bells and whistles as possible on a small screen. And it is not about providing spectacular graphics and visual effects for the sake of a visual ”wow.”

Instead, mobile design is about knowing **when, how, and why the application or service is used**. It is about focusing on the **essential goals and playing with the strengths of the tools and platforms available to achieve those goals**. And it is about **visual clarity and subtle, suggestive transitions and effects**.

Excelling in mobile design is the result of experience. This means both the designer’s experience of devices, platforms, services, and applications, as well as (and most importantly) the user’s experience of the above. Users are the people who will truly evaluate a design and whether or not it fulfills their needs. More often than not, the distinction comes down to a few ifs and buts: “If only the service did this and this.” Listening to users can help designers overcome most shortcomings.

Investing in mobile design will result in more usable, better-looking applications and services, which will in turn yield more value to customers and consequently all stakeholders.

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Dr. David M. L. Williams, UI Lead

Asentio Design is a Hong Kong registered company, formed in May 2005. Asentio Design founders have been shaping the worldwide mobile industry over the past 10 years in industrial design and user interface design.

Yiibu (http://www.yiibu.com/)
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Based in Brighton, U.K., Yiibu works with device manufacturers, startups, agencies, and software companies to create unique and engaging mobile experiences. Areas of expertise include mobile product design, mobile user experience, and user interface design for mobile games, applications, or content. Yiibu provides expertise in digital products aimed at the youth or educational markets, and has a strong understanding of the differences between mobile markets and consumers in Europe, North America, and Asia.

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