

10 Tips To Design Effective Mobile Screens For Business

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OUTPERFORM THE FUTURE™

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| Introduction

Mobile technology is having a major impact on how we work: smartphones and tablets are taking over the enterprise IT world, and employees increasingly expect enterprise systems to be available and indeed more efficient than on a desktop. However the plethora of devices entering the enterprise, allied with the small screen real estate of mobile devices, can make designing effective screens for your users a challenging and complex experience.

In today's mobile world, it's all about apps. Whether it is Apple telling us, "there's an app for that", analysts blaming the poor market performance of Windows Phone and Blackberry 10 on a lack of apps, or Microsoft deriding a competitor's devices as just being, "a sea of apps", the focus is on apps. But what are apps, and why have they become so significant?

A well designed app is essentially a process, a workflow, wrapped up in an intuitive user interface and optimised to display on your device. In this way it is no different to desktop software, or indeed to a well-designed web page. The differences come from how we use desktop and mobile computing: our input devices, physical location, even our patience are very different when using a smartphone as opposed to a tablet, or laptop, or a desktop.

Although when we hear the word, "app", we typically picture a desktop-style icon which, when clicked, launches the process or workflow we want, this is not the only way that apps may exist in the future. Windows 8 presents one such paradigm, although it is not yet especially well implemented: the "Live Tiles" promise to show relevant information without having to launch a process, delivering information to the user when it is needed. Meanwhile the Moto X smartphone and Google Glass are always listening, ready to provide information when asked; and Google's Chrome OS sees a future of web apps, where the heavy lifting is handled by a server which can provide information as it is needed. The underlying link between all these views of the app is that its purpose is to provide the user with information when they need it, with as little input as possible.

This whitepaper is part of a two-part series by Magic Software on developing effective mobile business screens. This document aims to shed light on key principles of successful user interface design: how to make the controls clear and easy to use; where key input and output information should be displayed; the ergonomics of using a small, handheld device; the importance of simplicity and getting real-world users to test the screens. We are not going to tell you what size to make your fonts or whether to use skeuomorphic or flat design; we are focusing on general guiding principles that will hold for tomorrow's devices as well as today's. When designing screens in the real world, it is rarely possible to follow every design guideline: when there is conflict, consider what will be easiest for the user and follow that.

The companion piece, *4 Tips to Design Effective Mobile Business Applications*, explores the unique challenges offered by the contexts in which mobile screens are used: what users are trying to do, where they are trying to do it and the varied devices they want to work on.

1 Button Size

Buttons need to be easy to locate, easy to touch and not risk the user accidentally pressing a different button. This may sound obvious, but some modern user interfaces have been criticised for not clearly indicating which areas of the screen function as buttons. Buttons should be sized such that a user with large fingers can easily touch only the intended button, and adequate space should be provided around the button, both so that it stands out and also to reduce the chance of touching another. There is no one-size-fits-all rule for button size, but in general buttons become harder to touch accurately when less than 1cm square.

This size allows the user to use the pad of their finger or thumb to interact with content rather than having to use far more awkward edge or tip. It also helps users accurately position their finger on the button, as the corners will remain visible. Of course, it will not always be practical to create large button areas, because there just isn't a lot of space on a smartphone screen. In this case it is increasingly important to follow the other guidelines in this guide, such as positioning the most important buttons in the most natural touch areas and using menus to focus on the most important options.

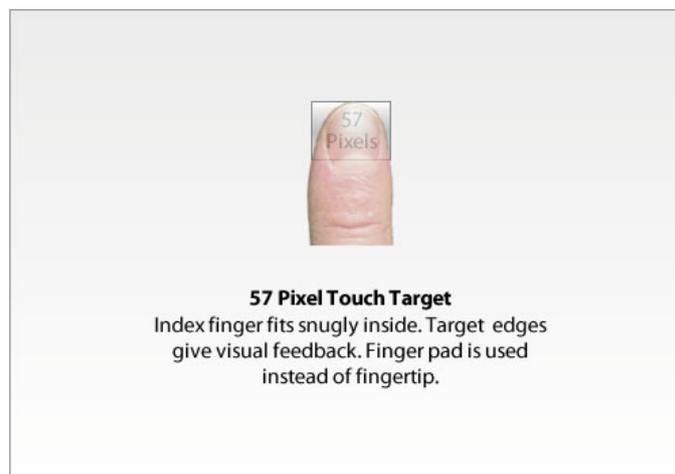


Figure 1: Ideal button size¹

Consider where your users will be using the screen, and make it easy for them. Just because a button is easy to locate and touch while sat comfortably in a well-lit office doesn't mean that it will be so easy on the go where lighting isn't guaranteed and the user's attention is diverted by other factors. This can be achieved by ensuring sufficient contrast, clearly delineating the extent of the button (either with a colour change of a border), and making its function apparent with either a clear and unambiguous icon or text. However it would be an exaggeration to suggest using the device's accelerometer to enlarge the buttons while walking!

2 UI location

Unlike with a traditional PC, mobile devices require designers to split their screen real-estate into information display areas and input areas. Neglecting this distinction is a key cause of user dissatisfaction with desktop apps that have been ported to mobile, for two reasons. Firstly, many desktop applications will position drop-down menus or text boxes throughout the page: when reaching to touch these, the mobile user will obscure most of the screen with the back of their thumb, which makes information harder to see and requires the thumb to be moved out of the way, increasing frustration.

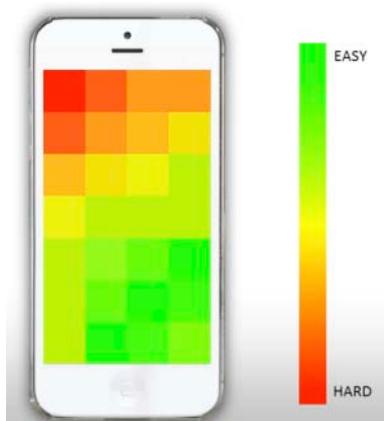


Figure 2: Easiest UI location for a right-handed userⁱⁱ

Secondly, typical desktop layouts will put the controls near the top of the screen, so as to avoid the user having to scroll through reams of information; however, on mobile buttons are considerably easier to press if they fall within the natural arc of movement of the thumb. For a device expected to be held in one hand, this is focused around the lower-right-hand corner of the screen (for right-handed users), and for a two-handed device the arc of both thumbs should be considered.

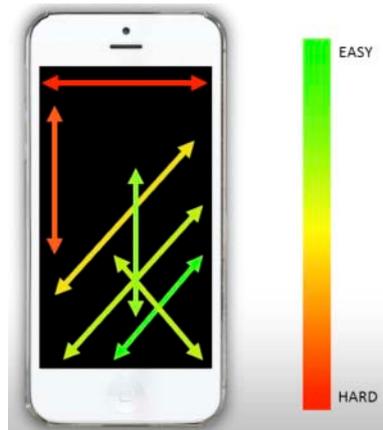


Figure 3: Natural range of thumb movementⁱⁱⁱ

This thumb movement should also be considered when building gestures into the mobile screen. For example, any gesture controlled function should be accessible within easy reach of where you expect your user's thumb to rest, and should allow the user to follow their natural arc of movement.

3 Keep it simple and consistent

Your mobile business screens are likely to be used across a range of devices and situations, so in order to reduce the chance of confusion, try to keep the look and feel of the screens consistent between devices and processes. This helps the user launch a rarely-used process while remaining confident that they will be able to complete it easily, and encourages them to use the mobile version of their workflows.

An example of how easy it can be to confuse your users completely by accident is mixing pictorial and text icons. By this we mean having some controls which are represented by images, for example a picture of a floppy disk to denote "save", or a down arrow for "download", while other controls are use text instead of icons. This is only marginally confusing in ideal conditions but even the slight cognitive burden of trying to switch between two ways of presenting information can adversely affect user experience when on the go.



Figure 4: Pick text or images^{iv}

It is also worth emphasising the importance of colour schemes in building an easily navigated mobile screen, as these can make the screen pleasant and intuitive or awkward and unattractive. In general, try to keep a good level of contrast, and where possible use dark text on a light background as this is easier for the human eye to resolve. Colour schemes should be consistent between screens, and if they do change this should be used to denote an area of different functionality, as this will help the user generate subconscious cues and make the interface easier to learn and navigate. Given the number of apps a user might employ on their device, keeping the colour and text consistent helps identify your corporate screens and can create a more immersive experience. If you are creating multiple screens, they should all look like they were created by the same people.

While having consistency between your screens helps users learn how to use them, it can also be helpful to use similar user interface elements to other popular screens, since these are probably the result of considerable research and testing, especially if they are major consumer screens. Using similar elements will create a familiar look and feel, helping your users feel comfortable and at home.

No matter how well designed your user interface, users will make mistakes. Help them get back on track with easy "back" buttons and simple, concise help screens.

4 Show what's important

As mobile screens are small and their users' location and activity cannot be accurately guessed at, it is important to show the most important information on the first screen they will see, without needing any scrolling or swiping. This information will of course be unique to the screens you are designing, but as an example in a business context showing the company logo (so the user knows they are in the right place), maybe an application title, and a workflow selector so the user can decide where to go next could be useful. In a different context, a newspaper might put its name and logo at the top of the screen with the top headlines and sections below.



Figure 5: Newspaper providing immediate access to important information

5 Users need a direction

On a desktop, you take up the available screen area and let users scroll to see more; on mobile, you need to provide one clear direction for scrolling, as going left to right as well as up and down will just get confusing. However, while directions need to be clear, they also don't have to conform to the static pages that we are used to on desktops. On mobile, we find that UI elements like carousels for selections, and pull-outs can be very effective. Regardless of which direction you choose, make it obvious by including a location bar which should indicate the axis of movement

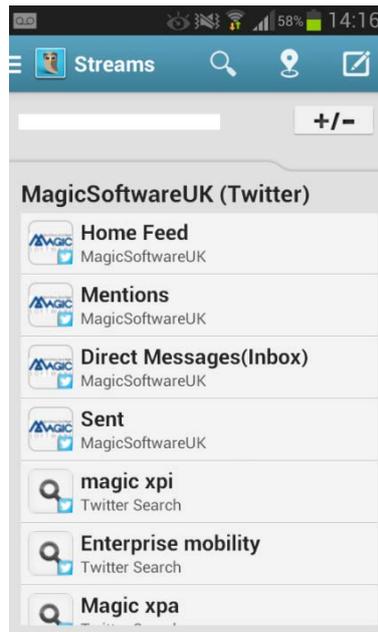


Figure 6: The scroll bar on the right-hand-side shows where we go from here^v

6 Small screens need padding

Dealing with a small mobile screen, you might be tempted to use all the screen real estate in a bid to maximise the amount of information on offer. However, this approach tends to make screens look cluttered and impose a cognitive burden on users who also find it harder to avoid hitting the wrong buttons. On the other hand, providing ample padding around user interface elements helps users to identify key aspects of the screen and also provides an area to zoom if necessary. Factor in that many users like to use clearly non-clickable areas for swiping so as to avoid accidentally clicking a button, and there is a clear rationale for padding your mobile screens.



Figure 7: Padding makes user interface elements easy to locate, understand and interact with^{vi}

7 Remember the menus

Menus are a key way to help users navigate any business app, and well-designed menus allow you to create screens that are simple enough to easily understand when on the go while also containing all the functionality users need to carry out their daily workflows. Two types of menus are useful in mobile design: the sub-menu; and the context menu.

The sub-menu is what would be used to select one element or another: for example, a sales professional selecting whether they want to find a customer nearby, to place a new order, to add a contact to the database or to look up account information. This menu would be placed on the application homescreen in order for the user to quickly select and begin their workflow.

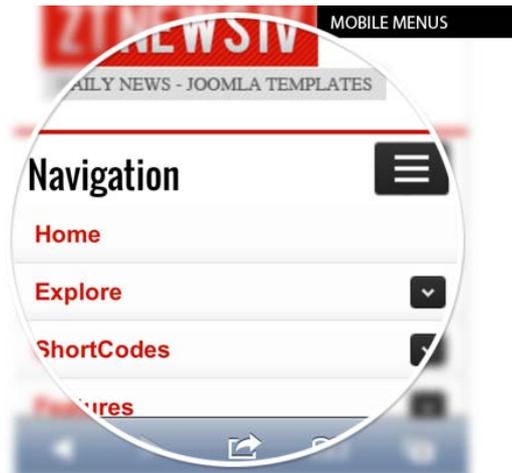


Figure 8: Menu start processes^{vii}

The context menu is one that allows options to be selected while drilling down into the context of the process: therefore it is very important that it visibly maintains both the context of the process and the user's place in the workflow. A button which opens a floating menu that doesn't push through the workflow is a good example.

8 Avoid waiting

Mobile users are more likely to be in a hurry when accessing your business screens than desktop users, which will reduce their tolerance for waiting. To ensure your screens load quickly and smoothly, remove any non-critical data transfer and keep the screen focused on the process your user is trying to complete and the information they need.

Providing an accurate indication of progress is very useful as it allows the user to feel in control of the device. This can be anything from a spinning wheel to a progress bar: your users need to believe that their request has been registered, and this also applies to on-screen buttons which should switch between a "non-pressed" and "pressed" state to show the user that their touch has been registered. This is not just a psychological boost for the user, but can also have practical benefits, since a user faced with an (apparently) non-responsive app may try to re-submit the request, waste technical support time or give up on the app altogether. It can even be worth setting a further notification for when a particularly large request takes more than a certain amount of time, as this lets the user know their request is not being ignored.



Figure 9: Buttons show when pressed^{viii}

9 Minimise input

As mobile devices typically have small screen real estate, clumsy touch input and are used on the go, designing mobile business screens for the minimum of user input is very beneficial to user experience. However there is a fine line between building screens that are too complex to easily navigate, and removing too much functionality from the business processes.

The best way to meet this balance is to map out exactly what the user will need to achieve, and build the app from this requirement. Even a very complex process which has to get input from a wide and variable range of sources can be made simple if designed in this way, and as long as users are presented with a logical flow they will see it as a powerful tool.

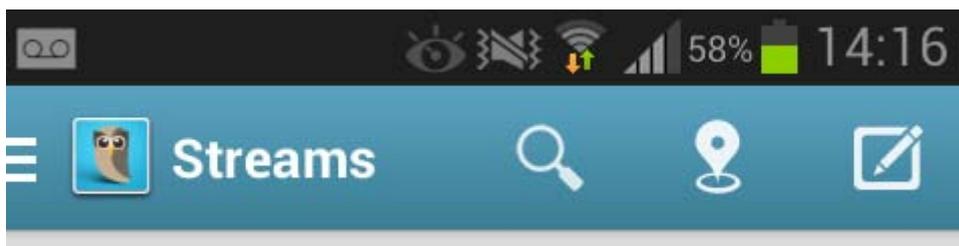


Figure 10: Left to right: Select overall activity; search within activity; search near location; compose message^{ix}

10 User testing

There is no substitute for real, hands-on testing in order to see how your users really want to work with your mobile screens. Having actual users test and play with both the concepts and pre-release versions can highlight areas of functionality that are lacking, over-complicated or just unintuitive. In order to get the user thinking about how they would interact with the screen, remind them of some of the situations they might have to contend with, or better yet, send them out into the real world for some true field testing.

Ideally, try to test with users who have differing requirements, mobile experience or workstyles to make sure that your target audience actually works the way you expect. This was where the Facebook Home app originally struggled: even users who accepted and wanted the basic premise that Facebook would be front and centre on their phone found the incompatibility with Android widgets to be frustrating. Equally, the design of Windows 8 was famously based around actual user telematics in order to build a more intuitive system; and yet when it was launched a majority of users found it anything but.

This brings us to another important aspect: you need to be familiar with and use the devices you are designing mobile screens for. Every type of mobile device, whether it is iPhone, Android, Windows Phone or something else entirely (and likewise the various device types from smartphones to tablets) has its own way of working and users will expect your screens to behave accordingly. Consider the example of the Facebook Home Android app, which was initially rejected by users not because it let Facebook take over their phone but because it did not support the widgets that were a central part of their user experience: this problem may well have stemmed from the fact that the Android app was designed by iPhone users.

In particular, user testing will show up problems with the “first launch experience”, which is important because if a mobile user can’t figure out how to make a screen do exactly what they want as soon as they look at it, they just won’t use it. On the desktop, users have multiple windows, easy switching between apps and it’s quite simple to look up a help file or ask for advice online, and most importantly they will be seated comfortably and have some time. The mobile user has little time, may not be seated comfortably and is looking at a small screen that cannot easily switch between apps and which probably has only a finger as an input device.

11 Conclusion

This whitepaper has presented key principles of user interface design which can be applied to any mobile platform and device. This whitepaper, along with its companion piece 4 Tips To Design Effective Mobile Business Apps, discusses the key challenges facing mobile users and designers, and offers advice on how to overcome them; however while this is a good start there is no substitute for experience and user testing. Some of the elements discussed in this whitepaper could even appear mutually contradictory: it is sometimes hard to follow all the rules and in these cases the predominant consideration has to be what will work best for the user. The most important considerations remain what users are trying to achieve, where and what devices they are using, alongside what user interface will best allow them to accomplish these objectives.

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We draw on 30 years of experience, millions of installations worldwide, and strategic alliances with global IT leaders, including IBM, Microsoft, Oracle, Salesforce.com, and SAP, to enable our customers to seamlessly adopt new technologies and maximize business opportunities.

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