

Topic	Android	iOS	Windows	All	Link / Media
<b>a) 5 Reasons to go mobile</b>				<p><b>Communication</b> Synchronous and asynchronous communication</p> <p><b>Entertainment</b> Gaming and content consumption delivery systems</p> <p><b>Location Based Services</b> GPS - directions, searching, Wifi, NFC</p> <p><b>Commerce</b> Influence (recommendations, reviews, product research, pricing) Aggregations (filtering of products)</p> <p><b>Utility</b> Right function (proper function density) Task efficiency (simple way)</p>	
<b>b) Attributes</b> <b>i. Screen Sizes</b>	<p><b>Low DPI (LDPI)</b> <i>0.75x</i> 120 DPI</p> <p><b>Medium DPI (MDPI)</b> <i>1x</i> 160 DPI</p> <p><b>High DPI (HDPI)</b> <i>1.5x</i> 240 DPI</p> <p><b>Extra High DPI (XHDPI)</b> <i>2x</i> 320 DPI</p> <p><b>Extra Extra High DPI (XXHDPI)</b> <i>3x</i> 480 DPI</p> <p><b>Extra Extra Extra High DPI (XXXHDPI)</b> <i>4x</i> 640 DPI</p>	<p><b>iPhone 4 / 4S (1.5:1)</b> 640 x 960 (326 ppi)</p> <p><b>iPhone 5 / 5S (16:9)</b> 1136 x 640 (326 ppi)</p> <p><b>iPad Mini / 2 (4:3)</b> 1024 x 768 (mini 163 ppi / iPad 2 132 ppi)</p> <p><b>iPad Air / Mini Retina</b> 2048 x 1536 (Air 264 ppi / mini retina 326 ppi)</p>	<p><b>WVGA (15:9)</b> 480 x 800</p> <p><b>WXGA (15:9)</b> <b>1.6x</b> 768 x 1280 (480 x 800 scaled)</p> <p><b>720p (16:9)</b> <b>1.5x</b> 720 x 1280 (480 x 853 scaled)</p> <p><b>1080p (16:9)</b> <b>1.5x</b> 1080 x 1920 (480 x 853 scaled)</p>		<p><a href="https://developer.android.com/design/style/devices-displays.html">https://developer.android.com/design/style/devices-displays.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/LaunchImages.html#//apple_ref/doc/uid/TP40006556-CH22-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/LaunchImages.html#//apple_ref/doc/uid/TP40006556-CH22-SW1</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj206974(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj206974(v=vs.105).aspx</a></p>
<b>ii. Interactions</b> <b>1) Soft vr. Hard Buttons</b>	<p><b>Soft Buttons</b> Back button Home button Recent Apps button</p> <p><b>Hardware Buttons</b> Power button Volume Up / Down buttons <i>Some models</i> <i>Back button</i> <i>Search button</i> <i>List / Menu button</i> <i>Home button</i></p>	<p><b>Hardware Buttons</b> Sleep / Wake button Home / TouchID button Volume Up / Down buttons Silent / Lock orientation switch</p>	<p><b>Hardware Buttons</b> Power/sleep Volume up and volume down Camera Back Start Search</p>	<p><b>Hard</b> Sleep / Wake</p>	<p><a href="http://developer.android.com/design/patterns/navigation.html">http://developer.android.com/design/patterns/navigation.html</a></p> <p><a href="https://www.apple.com/iphone-5s/specs/">https://www.apple.com/iphone-5s/specs/</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj206974(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj206974(v=vs.105).aspx</a></p>

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<b>ii. Interactions</b> <b>2) Touch / Gestures</b>	<p><b>Touch and Hold</b> Enters data selection mode. Allows you to select one or more items in a view and act upon the data using a contextual action bar.</p> <p><b>Swipe or Drag</b> Scrolls overflowing content, or navigates between views in the same hierarchy.</p> <p><b>Double tap</b> Also used as a secondary gesture for text selection.</p> <p><b>Double touch drag</b> Scales content by pushing away or pulling closer, centered around gesture.</p>	<p><b>Flick</b> To scroll or pan quickly.</p> <p><b>Swipe</b> With one finger, to return to the previous screen, to reveal the hidden view in a split view (iPad only), or the Delete button in a table-view row. With four fingers, to switch between apps on iPad.</p> <p><b>Touch and hold</b> In editable or selectable text, to display a magnified view for cursor positioning.</p> <p><b>Shake</b> To initiate an undo or redo action.</p>	<p><b>Flick</b> A flick gesture moves content from one area to another area.</p> <p><b>Touch and Hold</b> Touch and hold is a single finger down within a bounded area for a defined period of time. The touch and hold gesture should generally be used to display a context menu or options page for an item.</p> <p><b>Pan</b> Content can be moved through direct manipulation. A pan can move or reorder a specific item.</p>	<p><b>Tap</b> To press or select a control or item.</p> <p><b>Drag</b> To scroll or pan—that is, move side to side. To drag an element.</p> <p><b>Pinch</b> Pinch open to zoom in; pinch close to zoom out.</p> <p><b>Double tap</b> To zoom in and center a block of content or an image. To zoom out (if already zoomed in).</p>	<p><a href="http://developer.android.com/design/patterns/gestures.html">http://developer.android.com/design/patterns/gestures.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/InteractivityInput.html#//apple_ref/doc/uid/TP40006556-CH55-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/InteractivityInput.html#//apple_ref/doc/uid/TP40006556-CH55-SW1</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windowsphone/design/hh202911(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/design/hh202911(v=vs.105).aspx</a></p>
<b>iii. Sizes &amp; Scales</b> <b>1) Icons</b>	<p><b>Launcher Icon</b> 48 x 48 dp (512 x 512 pixels for store)</p> <p><b>Action Bar</b> 32 x 32 dp (optical 24 x 24 dp)</p> <p><b>Small Contextual Icons</b> 16x16 dp (optical 12 x 12 dp)</p> <p><b>Notification Icons</b> 24 x 24 dp (22 x 22 optical)</p>	<p><b>App icon</b> 120 x 120 152 x 152 76 x 76</p> <p><b>Tappable Controls</b> 44 x 44 points (hit area)</p> <p><b>Activity template image (share)</b> 70 x 70 pixels</p> <p><b>Tab bar icon</b> About 50 x 50 pixels (96 x 64 pixels maximum) About 25 x 25 pixels (48 x 32 pixels maximum) for standard resolution</p>	<p><b>App bar icon</b> 48 x 48 pixels (26 x 26 foreground image)</p> <p><b>Check box</b> 4mm</p>	<p><b>Style</b> Flat, not too detailed, iconographic look</p>	<p><a href="http://developer.android.com/design/style/iconography.html">http://developer.android.com/design/style/iconography.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/LayoutandAppearance.html#//apple_ref/doc/uid/TP40006556-CH54-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/LayoutandAppearance.html#//apple_ref/doc/uid/TP40006556-CH54-SW1</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windowsphone/develop/ff431806(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/develop/ff431806(v=vs.105).aspx</a></p>
<b>iii. Sizes &amp; Scales</b> <b>2) Dimensions</b>	<p><b>dp (density-independent pixels)</b> 1dp = 1px 160 dpi screen (MDPI)</p>	<p><b>points</b> 1 point = 1 pixel in regular resolution designs, 2 pixels retina designs</p>	<p><b>mm</b> (to be measured on an actual device)</p>		<p><a href="http://developer.android.com/design/style/metrics-grids.html">http://developer.android.com/design/style/metrics-grids.html</a></p>
<b>iv. Versions of Software</b>	<p><b>4.4 Kit Kat</b></p>	<p><b>iOS 7.1</b></p>	<p><b>Windows Phone 8</b></p>		

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c. Design i. Philosophy	<b>Enchant me</b> Beauty is more than skin deep. Android apps are sleek and aesthetically pleasing on multiple levels. Transitions are fast and clear; layout and typography are crisp and meaningful. App icons are works of art in their own right. Just like a well-made tool, your app should strive to combine beauty, simplicity and purpose to create a magical experience that is effortless and powerful.	<b>Deference.</b> The UI helps users understand and interact with the content, but never competes with it.	<b>Pride in craftsmanship</b> Devote time and energy to small things that many will see often. Engineer the experience to be complete and polished at every stage.		<a href="https://developer.android.com/design/get-started/creative-vision.html">https:// developer.android.com/ design/get-started/ creative-vision.html</a>
	<b>Simplify my life</b> Android apps make life easier and are easy to understand. When people use your app for the first time, they should intuitively grasp the most important features. The design work doesn't stop at the first use, though. Android apps remove ongoing chores like file management and syncing. Simple tasks never require complex procedures, and complex tasks are tailored to the human hand and mind. People of all ages and cultures feel firmly in control, and are never overwhelmed by too many choices or irrelevant flash.	<b>Clarity.</b> Text is legible at every size, icons are precise and lucid, adornments are subtle and appropriate, and a sharpened focus on functionality motivates the design.	<b>More with less</b> Create a clean and purposeful experience by leaving only the most relevant elements on screen. When it comes to designing great app experiences, we believe in content, not chrome. Let people be immersed in what they love and they'll explore the rest.	<b>Fast and fluid</b> Products that feel immersive and responsive are compelling, delightful, and bring the interface to life. Let people interact directly with content and respond to actions quickly with matching energy. Bring life to the experience, create a sense of continuity, and tell a story through meaningful use of motion. Phone apps need to focus on simple, quick-use scenarios.	<a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/index.html#//apple_ref/doc/uid/TP40006556">https:// developer.apple.com/ library/ios/ documentation/ UserExperience/ Conceptual/MobileHIG/ index.html#//apple_ref/ doc/uid/TP40006556</a>
	<b>Make me amazing</b> It's not enough to make an app that is easy to use. Android apps empower people to try new things and to use apps in inventive new ways. Android lets people combine applications into new workflows through multitasking, notifications, and sharing across apps. At the same time, your app should feel personal, giving people access to superb technology with clarity and grace.	<b>Depth.</b> Visual layers and realistic motion impart vitality and heighten users' delight and understanding.	<b>Authentically digital</b> Being authentically digital is about going beyond the rules and properties of the physical world to create new and exciting possibilities in a purely digital space. Take full advantage of the digital medium.	<b>Win as one</b> Using a common UI model and ecosystem creates complete end-to-end user scenarios. In other words, try not to reinvent the wheel. Innovation is great, but not at the expense of the user experience. Every app also conveys a certain tone of voice, a personality that resonates with users. Check out how we approach Voice and start thinking about how to use it in your app. Find what works for your app and don't hesitate to emulate what's proven effective.	<a href="http://dev.windowsphone.com/en-us/design/principles">http:// dev.windowsphone.com/ en-us/design/principles</a>

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<b>c. Design</b> <b>ii. Branding</b>	<p><b>Color</b> Use your brand color for accent by overriding the Android framework's default blue in UI elements like checkboxes, progress bars, radio buttons, sliders, tabs, and scroll indicators.</p> <p>Look for opportunities to use high-contrast color for emphasis, for example, as the background color of the action bar or a primary button. But don't go overboard: not all actions are equal, so use it only for the one or two most important things.</p> <p>When customizing colors, touch feedback should be subtle — just slightly lighter or darker than the untouched color.</p> <p><b>Logo</b> Your app's launcher icon is a key place to incorporate your logo, because it's what users will look for and touch to begin using your app. You can carry the launcher icon through to all the screens in your app by showing it in the action bar along with the name of the app.</p> <p>Another approach to consider is to have your logo take the place of the launcher icon and app name in the action bar.</p> <p><b>Icons</b> If you have icons that you're already using for your app on other platforms and they have a distinctive look intended to fit your brand, use them on your Android app as well. If you take this approach, make sure your brand styling is applied to every single icon in your app.</p>	<p><b>Incorporate a brand's assets in a refined, unobtrusive way.</b> People use your app to get things done or be entertained; they don't want to feel as if they're being forced to watch an advertisement. For the best user experience, you want to quietly remind users of the brand identity through your choice of font, color, and imagery.</p> <p><b>Don't take space away from the content people care about.</b> For example, displaying a second, persistent bar at the top of the screen that does nothing but display brand assets means that there's less room for content. Instead, defer to the user's content and consider less intrusive ways to display pervasive branding, such as using a custom tint or font, or subtly customizing the background of a screen.</p> <p><b>Resist the temptation to display your logo throughout the app.</b> Mobile device screens are relatively small, and every occurrence of a logo takes space away from the content that users want to see. What's more, displaying a logo in an app doesn't serve the same purpose as displaying it in a webpage: It's common for users to arrive on a webpage without knowing its owner, but it's much less likely that users will open an iOS app without seeing its app icon.</p>	<p><b>Colors</b> Color is a key attribute for expressing brand. Apply the primary color associated with your brand in ways that tell people that this app comes from your business.</p> <p><b>Graphics</b> Use graphics to reinforce your brand by adding character to the presentation of content. Too many graphics, however, can interfere with the flow of your content and seem mere decoration or distraction.</p> <p><b>Images</b> Illustrations and photography should also reflect your brand. Reuse the same imagery and style from your company's other communications or websites.</p> <p><b>Grid</b> The Windows Store app grid system helps unify the visual elements of your app's presentation. The grid aligns your branded app's UI to work with the rest of Windows.</p> <p><b>Layout</b> The arrangement of visual elements for all pages needs to be relevant to your brand. You should also strive for consistency across page and content types.</p> <p><b>Logo</b> Use your logo to help people quickly identify your app and recognize your brand.</p> <p><b>Typography</b> Typefaces are a key part of Windows Store apps. The right choice can be as impactful to your brand as color, logo, or layout, so be thoughtful about the typography you use.</p>	<p><b>Use brand color</b></p>	<p><a href="https://developer.android.com/design/style/branding.html">https://developer.android.com/design/style/branding.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/userexperience/conceptual/mobilehig/Branding.html">https://developer.apple.com/library/ios/documentation/userexperience/conceptual/mobilehig/Branding.html</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windows/apps/hh465418.aspx">http://msdn.microsoft.com/en-us/library/windows/apps/hh465418.aspx</a></p>

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<b>c. Design</b> <b>iii. Elements of Design</b> <b>1) Typography</b>	<b>Roboto</b> The Android design language relies on traditional typographic tools such as scale, space, rhythm, and alignment with an underlying grid. Successful deployment of these tools is essential to help users quickly understand a screen of information. To support such use of typography, Ice Cream Sandwich introduced a new type family named Roboto, created specifically for the requirements of UI and high-resolution screens.	<b>Text should never be smaller than 11 points,</b> even when the user chooses the extra-small text size. For comparison, the body style uses a font size of 17 points at the large size, which is the default text-size setting.  In general, font size and leading values differ by one point per text-size setting. Exceptions to this are the two caption styles, which use the same font size, leading, and tracking at the extra-small, small, and medium settings.	<b>Default: SergoeWP</b>  <b>Who are you?</b> Find the typography that best reflects your app's personality  <b>It all stacks up</b> Use hierarchy and balance when designing your app. Good use of typography can create a sense of structure and rhythm in your app's interface  <b>FontSize</b> The default value is 11 pixels.	<b>In general, use a single font throughout your app.</b> Mixing several different fonts can make your app seem fragmented and sloppy. Instead, use one font and just a few styles and sizes.	<a href="https://developer.android.com/design/style/typography.html">https://developer.android.com/design/style/typography.html</a>  <a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/ColorImagesText.html#//apple_ref/doc/uid/TP40006556-CH58-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/ColorImagesText.html#//apple_ref/doc/uid/TP40006556-CH58-SW1</a>  <a href="http://msdn.microsoft.com/en-us/library/windowsphone/develop/cc189010(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/develop/cc189010(v=vs.105).aspx</a>
	<b>Text Size Micro</b> 12sp  <b>Text Size Small</b> 14sp  <b>Text Size Medium</b> 18sp  <b>Text Size Large</b> 22sp	At the smallest three text sizes, tracking values are relatively large; at the largest three text sizes, tracking values are relatively tight.  The headline and body styles use the same font size. To distinguish it from the body style, the headline style uses a heavier weight.  Text in a navigation controller uses the same font size that body style text uses for the large setting (specifically, 17 points).  Text always uses either regular or medium weight; it doesn't use light or bold.			
<b>c. Design</b> <b>iii. Elements of Design</b> <b>2) Color</b>	<b>Use color primarily for emphasis.</b> Choose colors that fit with your brand and provide good contrast between visual components. Note that red and green may be indistinguishable to color-blind users.  <b>Palette</b> <b>Blue is the standard accent color in Android's color palette.</b> Each color has a corresponding darker shade that can be used as a complement when needed.	<b>If you create multiple custom colors, make sure they work well together.</b>  <b>Pay attention to color contrasts in different contexts.</b>  <b>Be aware of color blindness.</b>  <b>Consider choosing a key color to indicate interactivity and state.</b>  <b>Avoid using the same color in both interactive and noninteractive elements.</b>  <b>Color communicates, but not always in the way you intend.</b>  <b>In most cases, don't let color distract users.</b>	<b>A Windows Phone theme is a combination of a background color and an accent color.</b>  The background color is the color of the background. You have two options for background color in your app: Dark and Light.  The accent color is the color that is applied to controls and other visual elements.  The following table lists the accent colors and their corresponding color values in red, green, blue (RGB) and hexadecimal (Hex). The Windows Phone 8 themes are also available on Windows Phone 7.8 devices.	<b>Color for emphasis.</b>	<a href="http://developer.android.com/design/style/color.html">http://developer.android.com/design/style/color.html</a>  <a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/ColorImagesText.html#//apple_ref/doc/uid/TP40006556-CH58-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/ColorImagesText.html#//apple_ref/doc/uid/TP40006556-CH58-SW1</a>  <a href="http://msdn.microsoft.com/en-us/library/windowsphone/develop/ff402557(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/develop/ff402557(v=vs.105).aspx</a>



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<b>c. Design</b> <b>iii. Elements of Design</b> <b>3) Grid / Spacing</b>	<p><b>Mind the gaps</b> Spacing between each UI element is 8dp.</p> <p><b>48dp Rythym</b> Touchable UI components are generally laid out along 48dp units.</p> <p>On average, 48dp translate to a physical size of about 9mm (with some variability). This is comfortably in the range of recommended target sizes (7-10 mm) for touchscreen objects and users will be able to reliably and accurately target them with their fingers.</p> <p>If you design your elements to be at least 48dp high and wide you can guarantee that: your targets will never be smaller than the minimum recommended target size of 7mm regardless of what screen they are displayed on. you strike a good compromise between overall information density on the one hand, and targetability of UI elements on the other.</p>	<p>Make it easy for people to interact with content and controls by giving each interactive element ample spacing. <b>Give tappable controls a hit target of about 44 x 44 points.</b></p> <p><b>Avoid crowding a navigation bar with additional controls, even if it looks like there's enough space.</b> In general, a navigation bar should contain no more than the view's current title, the back button, and one control that manages the view's contents. If you use a segmented control in the navigation bar, the bar shouldn't display a title and it shouldn't contain any controls other than the segmented control.</p> <p><b>Avoid making a popover too big.</b> A popover shouldn't appear to take over the entire screen. Instead, it should be just big enough to display its contents and still point to the place it came from. Ideally, the width of a popover should be at <b>least 320 points, but no greater than 600 points</b></p> <p><b>A split view controller</b> Displays two panes (the width of the left pane is fixed at 320 points in all orientations; you can customize the width of the right pane)</p> <p><b>Form sheet</b> Has fixed dimensions of 540 x 620 points and is centered in the screen. When the keyboard is visible in landscape, a form sheet modal view moves up to just below the status bar.</p> <p><b>Page sheet</b> Has a fixed width of 768 points; the sheet height is the current height of the screen. In landscape, the area of the screen that's visible on both sides of the modal view is dimmed.</p>	<p>Extensive user testing suggests that <b>9 mm square</b> is the ideal touch target size across all Microsoft touch platforms.</p> <p>Where smaller hit target heights are warranted, the <b>minimum target size is 7 mm</b>. In these cases, it's better to have a wider visual asset in these cases. For example, list items or menu items should be wider.</p> <p><b>Minimum visual size</b> The minimum visual size for a touchable item should be greater than or equal to 4.2 mm. Any smaller, and users won't perceive the item as touchable at all. Use this size only when a smaller visual asset is necessary. Targets can be 10-15 mm or larger.</p> <p><b>Make the target size bigger than the visual asset.</b> Don't go below 4.5 mm for the visual asset size when the asset's visual size will be smaller than the target.</p> <p><b>Introduce spacing between adjacent visual assets.</b> In these cases, adjust for the hit target size by including space (2 mm minimum) between adjacent assets to enable better hit targets.</p> <p><b>Create a visual padding around the asset.</b> The difficulty in hitting a small target can be reduced by introducing a visual padding to create a safe boundary. This will reduce the perceived difficulty in hitting the target.</p>		<p><a href="https://developer.android.com/design/style/metrics-grids.html">https://developer.android.com/design/style/metrics-grids.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/userexperience/conceptual/MobileHIG/LayoutandAppearance.html#//apple_ref/doc/uid/TP40006556-CH54-SW1">https://developer.apple.com/library/ios/documentation/userexperience/conceptual/MobileHIG/LayoutandAppearance.html#//apple_ref/doc/uid/TP40006556-CH54-SW1</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/userexperience/conceptual/MobileHIG/Bars.html#//apple_ref/doc/uid/TP40006556-CH12-SW1">https://developer.apple.com/library/ios/documentation/userexperience/conceptual/MobileHIG/Bars.html#//apple_ref/doc/uid/TP40006556-CH12-SW1</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/userexperience/conceptual/MobileHIG/Bars.html#//apple_ref/doc/uid/TP40006556-CH13-SW1">https://developer.apple.com/library/ios/documentation/userexperience/conceptual/MobileHIG/Bars.html#//apple_ref/doc/uid/TP40006556-CH13-SW1</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windowsphone/design/hh202889(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/design/hh202889(v=vs.105).aspx</a></p>

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<b>c. Design</b> <b>iii. Elements of Design</b> <b>4) Hierarchy</b>	<p><b>Status Bar</b> Displays pending notifications on the left and status, such as time, battery level, or signal strength, on the right. Swipe down from the status bar to show notification details.</p> <p><b>Navigation Bar</b> New for phones in Android 4.0, the navigation bar is present only on devices that don't have the traditional hardware keys. It houses the device navigation controls Back, Home, and Recents, and also displays a menu for apps written for Android 2.3 or earlier.</p> <p><b>Action Bar</b> The command and control center for your app. The action bar surfaces the most important actions for the current view, and may include simple controls for switching between views.</p> <p><b>Navigation Drawer</b> If your app's structure is more complex, the navigation drawer can display the main navigation options. The navigation drawer expands from the left edge of the screen, overlaying the content area but not the action bar.</p> <p><b>Content Area</b> The space where the content of your app is displayed.</p>	<p><b>Bars</b> Bars contain contextual information that tell users where they are and controls that help users navigate or initiate actions.</p> <p><b>Content views</b> Content views contain app-specific content and can enable behaviors such as scrolling, insertion, deletion, and rearrangement of items.</p> <p><b>Controls.</b> Controls perform actions or display information.</p> <p><b>Temporary views.</b> Temporary views appear briefly to give users important information or additional choices and functionality.</p>	<p><b>The Status Bar</b> is an indicator bar that displays system-level status info simply and cleanly within a reserved space in the app workspace.</p> <p><b>App Space</b> The main screen area is reserved for your app. The UI can be presented in either Landscape or Portrait mode. You can have the full 480 x 800 pixels if the Status Bar isn't being shown.</p> <p><b>App bar</b> The App Bar provides a place to display up to four common app tasks as icon buttons.</p> <p>The App Bar provides a view that displays icon buttons with text hints and an optional extended menu when a user taps the visual indicator of sequential dots or flicks up the App Bar.</p> <p>The App Bar always stays on the same edge of the display as the Steering buttons (Back, Start, and Search) and extends the full width of the screen in portrait or landscape mode. Icon buttons themselves will rotate to align with the three phone orientations.</p> <p>App Bar buttons can be displayed in an enabled or disabled state. An example of a disabled button would be a Delete button in read-only scenarios.</p> <p>The App Bar height in portrait mode and width in landscape mode is fixed at 72 pixels and can't be modified. It can be set to be displayed or hidden.</p>	<b>Status Bar</b>	<p><a href="https://developer.android.com/design/get-started/ui-overview.html">https://developer.android.com/design/get-started/ui-overview.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Anatomy.html#//apple_ref/doc/uid/TP40006556-CH24-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Anatomy.html#//apple_ref/doc/uid/TP40006556-CH24-SW1</a></p> <p><a href="http://msdn.microsoft.com/library/windowsphone/design/hh202905(v=vs.105).aspx">http://msdn.microsoft.com/library/windowsphone/design/hh202905(v=vs.105).aspx</a></p>

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<b>c. Design</b> <b>iv. Styles / Rendering</b>	<p><b>Action Bar Style</b> Pictographic, flat, not too detailed, with smooth curves or sharp shapes. If the graphic is thin, rotate it 45° left or right to fill the focal space. The thickness of the strokes and negative spaces should be a minimum of 2 dp.</p> <p><b>Launcher Style</b> Use a distinct silhouette. Three-dimensional, front view, with a slight perspective as if viewed from above, so that users perceive some depth.</p> <p><b>Small / Contextual Icons Style</b> Neutral, flat, and simple. Filled shapes are easier to see than thin strokes. Use a single visual metaphor so that a user can easily recognize and understand its purpose.</p> <p><b>Notifications Style</b> Keep the style flat and simple, using the same single, visual metaphor as your launcher icon.</p>	<p><b>Aesthetic Integrity</b> Aesthetic integrity doesn't measure the beauty of an app's artwork or characterize its style; rather, it represents how well an app's appearance and behavior integrates with its function to send a coherent message.</p> <p><b>Use plenty of negative space.</b> Negative space makes important content and functionality more noticeable and easier to understand. Negative space can also impart a sense of calm and tranquility, and it can make an app look more focused and efficient.</p> <p><b>Embrace borderless buttons.</b> In iOS 7, all bar buttons are borderless. In content areas, a borderless button uses context, color, and a call-to-action title to indicate interactivity. And when it makes sense, a content-area button can display a thin border or tinted background that makes it distinctive.</p> <p><b>Direct Manipulation</b> When people directly manipulate onscreen objects instead of using separate controls to manipulate them, they're more engaged with their task and it's easier for them to understand the results of their actions.</p> <p><b>Metaphors</b> When virtual objects and actions in an app are metaphors for familiar experiences—whether these experiences are rooted in the real world or the digital world—users quickly grasp how to use the app. It's best when an app uses a metaphor to suggest a usage or experience without letting the metaphor enforce the limitations of the object or action on which it's based.</p>	<p>The Windows Phone design team was inspired by sources like Swiss-style print and packaging, simple way-finding graphics found in transportation hubs, and even our own software.</p> <p><b>Speak without words.</b> Great visuals define not only how your app looks, but how it feels and comes alive through animation and motion. Your choice of color palette, icon, and artwork are just a few examples of this visual language.</p> <p>All apps have their own unique identity, so explore the visual directions you can take with your app. Let the content guide the look and feel; don't let the look dictate your content.</p> <p><b>Info is in</b> Be "infographic." Information delivery is the primary goal, not the wrapper around it. Adopting the infographic approach will help you optimize the user experience on Windows Phone.</p>	<p>All platforms embrace the use of flat, pictographic icons for its graphic assets.</p>	<p><a href="https://developer.android.com/design/style/iconography.html">https://developer.android.com/design/style/iconography.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Principles.html#//apple_ref/doc/uid/TP40006556-CH4-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Principles.html#//apple_ref/doc/uid/TP40006556-CH4-SW1</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/index.html#//apple_ref/doc/uid/TP40006556-CH66-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/index.html#//apple_ref/doc/uid/TP40006556-CH66-SW1</a></p> <p><a href="http://dev.windowsphone.com/en-us/design">http://dev.windowsphone.com/en-us/design</a></p> <p><a href="https://dev.windowsphone.com/en-us/design/process">https://dev.windowsphone.com/en-us/design/process</a></p>



Topic	Android	iOS	Windows	All	Link / Media
<b>c. Design v. Motion / Transitions / Animation</b>	<p>Animations can add subtle visual cues that notify users about what's going on in your app and improve their mental model of your app's interface. Animations are especially useful when the screen changes state, such as when content loads or new actions become available. Animations can also add a polished look to your app, which gives your app a higher quality feel.</p> <p>Keep in mind though, that overusing animations or using them at the wrong time can be detrimental, such as when they cause delays. This training class shows you how to implement some common types of animations that can increase usability and add flair without annoying your users.</p>	<p>Beautiful, subtle animation pervades the iOS UI and makes the app experience more engaging and dynamic. Appropriate animation can:</p> <p>Communicate status and provide feedback Enhance the sense of direct manipulation Help people visualize the results of their actions</p> <p><b>Add animation cautiously, especially in apps that don't provide an immersive experience.</b></p> <p><b>When appropriate, make custom animation consistent with built-in animation.</b></p> <p><b>Use animation consistently throughout your app.</b></p> <p><b>In general, strive for realism and credibility in custom animation.</b></p>	<p><b>Transitions</b> Triggered by user actions, transitions provide a mental breadcrumb for the user as they navigate the UI. The various transitions have been authored to lead the user along a path and give them confidence as to where they are. Larger transitions are used app to app, whereas smaller transitions are used to navigate within an app.</p> <p><b>Animations</b> Visual feedback confined to a local element within a view, but not always as a result of user action. One example is the lock screen's "hop" motion, which informs the user how to unlock the device.</p> <p><b>Serve up information without taps.</b></p> <p><b>Give feedback based on the user's behavior. Teach the user how to interact with touch targets.</b></p> <p><b>Indicate how to navigate to previous or succeeding views.</b></p> <p><b>Motion</b> delights the user, adds hints towards interaction. is directional: it moves forward and backward, gives the impression of enhanced performance. adds personality. adds consistency. adds elegance.</p>		<p><a href="http://developer.android.com/training/animation/index.html">http://developer.android.com/training/animation/index.html</a></p> <p><a href="https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Animation.html#//apple_ref/doc/uid/TP40006556-CH57-SW1">https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Animation.html#//apple_ref/doc/uid/TP40006556-CH57-SW1</a></p> <p><a href="http://msdn.microsoft.com/en-us/library/windowsphone/design/hh202871(v=vs.105).aspx">http://msdn.microsoft.com/en-us/library/windowsphone/design/hh202871(v=vs.105).aspx</a></p>