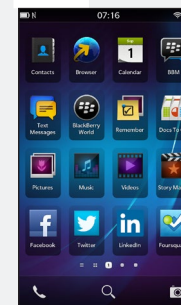
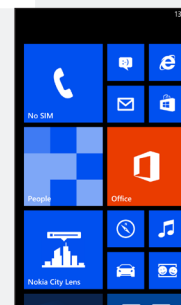
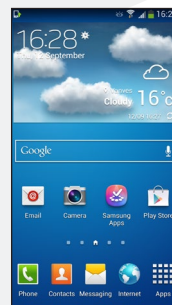
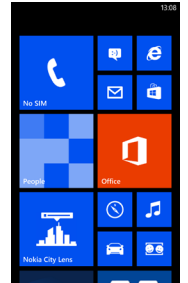
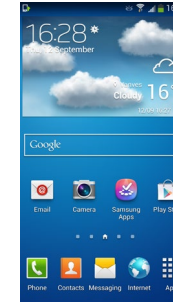
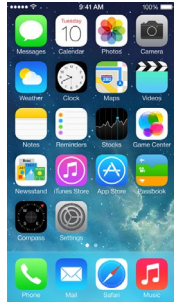


How iOS 7 Stacks Up: Smartphone OS **User Experience Shootout**



Pfeiffer
Report
01001011

Introduction



Why is it that the arrival of iOS 7 is necessarily a momentous event for the smartphone market?

Simple: Unlike any other operating system out there, it will be in the hands of millions or tens of millions of users within a few days after its launch.

And that will make it a force to be reckoned with.

The question is, of course:
How good is it really?

Whether we like it or not, smartphones have become a software game. Take any recent top-of-the-line smartphone, and you are likely to get a well-designed, fast, pleasant to use bit of hardware: fluid operation, responsive interaction, fast graphics. **The difference of user experience, therefore, stems almost exclusively from the operating system,** the user interface design, the application integration, the overall coherence.

This report compares the five major mobile operating systems in use today: iOS 7, iOS 6, Android*, Windows Phone 8, and Blackberry 10, and rates them in terms of user experience.

* We have chosen Samsung's implementation of Android, since, given the overwhelming market share of Samsung in the smartphone market, it is clearly the most widely used version of Android currently distributed.

We do not look at features, we do not compare cutting-edge options and gadgets, **we only look at aspects that have a direct impact on the day-to-day user experience of an average, non-technical user.**

The aspects we have surveyed and rated are the following:
cognitive load, efficiency, customization, as well as **user experience friction.** Based on the results from these benchmarks we have then established an overall **Mobile Operating System User Experience Index** presented at the end of this document.

The benchmarks are based on the **Pfeiffer Consulting Methodology for User Experience Quantification.** You can find detailed information on the subject by following **this link.**

Cognitive Load

Cognitive load—the sum of elements you need to get familiar with in order to use a device spontaneously and intuitively—**is one of the key aspects of user experience for a non-technical user.** For this benchmark we counted

the **number of apps/widgets** as well as other **icons and user interface elements** a default installation of the operating system contains. Differences between operating systems are significant. **Details**

iOS 7
Cog. Load Index: **40**

In terms of overall cognitive load, **iOS 7 is slightly less streamlined than the previous version of iOS.** This difference is due to the addition of the Control Center, a new user interface element with a new set of icons that were not present in iOS before.

iOS 6
Cog. Load Index: **32**

iOS 6 has **the lowest cognitive load count of all major mobile operating systems** - but lags behind in terms of ease of use functionality.

Android (Samsung)
Cog. Load Index: **162**

Samsung's version of Android has **by far the highest cognitive load of all the mobile operating systems** surveyed here: no less than 104 apps and widgets, more than 4 times more than iOS 7, and a significantly higher number of icons and user interface elements.

Windows Phone 8
Cog. Load Index: **40**

Windows Phone 8 has a streamlined user interface that differs significantly from the iPhone/Android approach. Windows Phone 8 is the only mobile OS that has a cognitive load as low as iOS7 - but at the cost of eliminating some core user experience and efficiency features.

Blackberry 10
Cog. Load Index: **53**

Blackberry OS 10 has relatively low cognitive load, in a range that is comparable to Windows Phone 8, but introduces some unusual user interface elements and techniques that require some learning.

Mobile Operating Systems Cognitive Load Comparison **Lower is better**



Efficiency and Integration

Smartphone user experience depends in large part on the easy and efficient integration of different key features and services. **For this benchmark we analyzed access to key settings, integration with notifications,**

multitasking, and camera access, among others. While there is a core set of integration functionality all mobile operating systems share, there are significant differences between the five major players in the market. **Details**

iOS 7

Efficiency Rating: **7/10**

iOS 7 offers mature efficiency and integration options including a customizable notifications area, Control Centre and well-implemented multitasking and application switching.

iOS 6

Efficiency Rating: **6/10**

iOS 6 has good basic efficiency and integration features, but it lags behind Android and iOS 7 **several areas concerning efficiency and integration**: there are no shortcuts for key settings, for instance, and multitasking is implemented in a way that makes quitting running apps to free memory somewhat unintuitive.

Android (Samsung)

Efficiency Rating: **7/10**

Samsung's Android implementation offers mature but slightly **overwhelming efficiency and integration options**, ranging from multitasking, customizable notifications and shortcuts to key settings, but lacks direct access to the camera from the lock-screen.

Windows Phone 8

Efficiency Rating: **4/10**

Windows Phone 8 offers only **basic efficiency integration**: notification management is limited; multitasking control is very basic, and does not provide any way of selectively quitting running apps, and there is no quick access to key settings.

Blackberry 10

Efficiency Rating: **5/10**

Integration and efficiency options of Blackberry 10 are **basic, reflecting the relative immaturity of the operating system**. With the Blackberry Hub, Blackberry 10 has a potential killer feature, yet the muddled implementation and inconsistent user interface makes it sometimes frustrating to use.

Consumer-Level Efficiency and Integration Comparison **Higher is better**



Customization

Consumer-level customization is one of the key user experience aspects of connected digital devices. Nevertheless, the current crop of mobile operating systems differs quite significantly in terms of customization,

ranging from the almost dizzying granularity of Android's options, to the starkness of Windows Phone 8, which allows hardly any user-level customization. **Details**

iOS 7
Customization: **6/10**

iOS 7 offers similar customization options as the previous release, but adds dynamic type support, as well as comprehensive accessibility options. (Users who have difficulties reading the thin typeface of iOS 7 can switch to bold type, for instance)

iOS 6
Customization: **5/10**

iOS 6 has **good basic customization options**, and offers some some accessibility features which are still missing in competing mobile operating systems.

Android (Samsung)
Customization: **7/10**

Android has the **longest list of customization options** of all mobile operating systems surveyed, but lacks some of the accessibility options present in iOS.

Windows Phone 8
Customization: **2/10**

Windows Phone offers the **poorest customization options** of all the operating systems surveyed here: No background image can be set of the home screen, and even background colors are limited to black and white. Customization of the colored tiles is minimal. In addition, Windows Phone lacks the capability to group apps into Folders.

Blackberry 10
Customization: **4/10**

Blackberry 10 offers **basic customization** that is better than Windows Phone 8 (it supports a personalized home screen as well as grouping apps into folders) but clearly lags behind iOS and Android.

Consumer-Level Customization Options Comparison **Higher is better**



User Experience Friction (UXF)

UXF is the bad stuff, the aspects of a device that can annoy you in a niggling way, or, in extreme cases, drive you crazy. **Basically, UXF occurs whenever a device does not do what you expect it to do - or lacks a key feature that**

should be available. For this survey we took only the most obvious UXF factors into account, and rated them. **For a detailed account of the UXF factors, as well as the rating method, click on [Details](#).**

iOS 7
UXF Factor: **17**

While iOS 7 has added some useful efficiency features, some of the new additions also contribute to UXF. A good example is the Control Center: it is clearly useful, yet has the annoying habit of accidentally popping up.

iOS 6
UXF Factor: **14**

iOS 6 has one of the lowest UXF ratings in the industry, clearly linked to very low cognitive load and a streamlined feature set. Some of the UXF factors in this release of iOS have been eliminated in iOS 7, such as the confusing multitasking manager that made it difficult to eliminate running apps.

Android (Samsung)
UXF Factor: **30**

While Android has improved immensely since earlier releases, **some aspects can remain annoying even for experienced users**, such as the unintuitive way of deleting selected apps, or the inconsistent approach to interface design that mixes app icons with what looks like advertisements for specific apps.

Windows Phone 8
UXF Factor: **51**

Microsoft deserves credit for designing a mobile operating systems that is completely different from the iPhone. Unfortunately, **Windows Phone 8 also has a significant amount of UXF:** customization of the user environment is minimal, for instance, making the stylish interface oppressive after a while.

Blackberry 10
UXF Factor: **38**

Blackberry 10 is a textbook example how UXF can challenge overall usability. While the idea of the “Blackberry Hub” is interesting, the implementation is such that the intended benefits are almost completely lost. Add the absence of a Home or Back button, among others, and you wind up with very serious user experience friction.

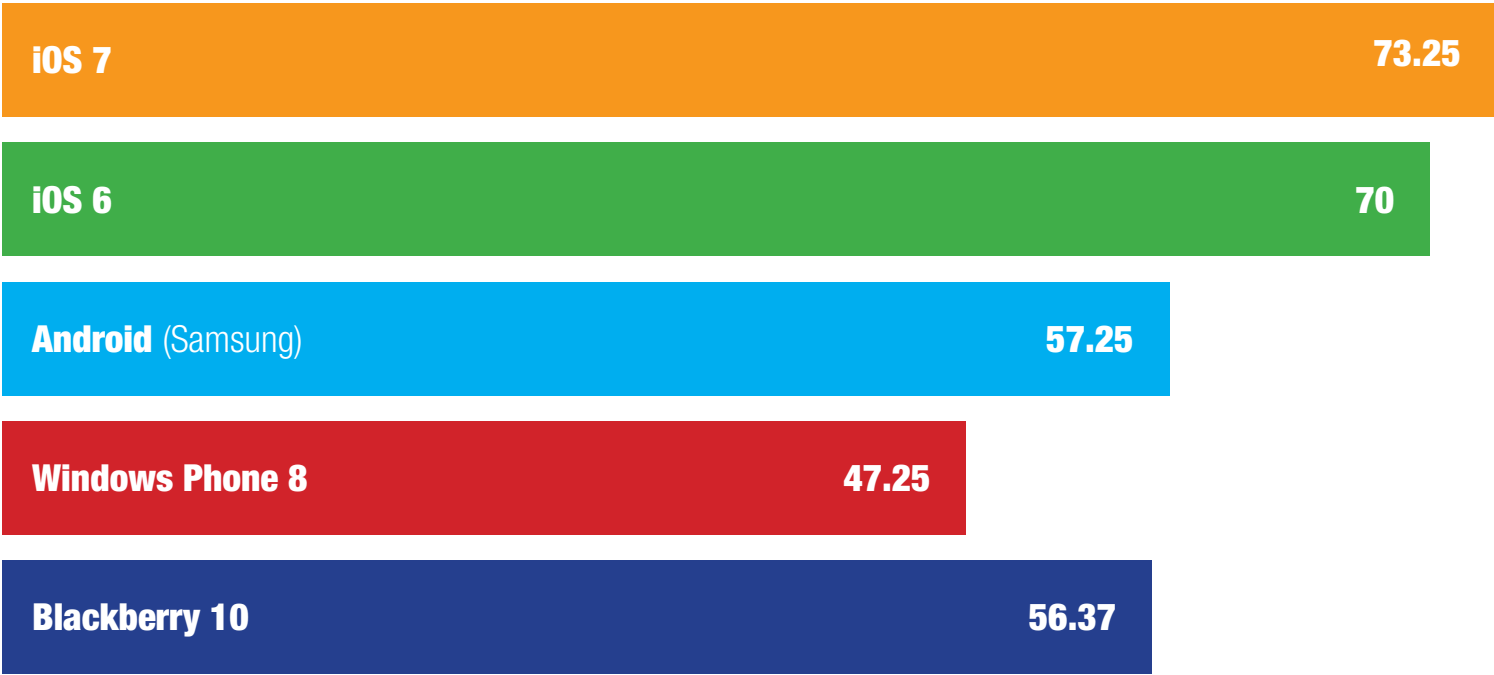
Mobile Operating System User Experience Friction Comparison **Lower is better**



Overall User Experience Index

The combined results of the four different benchmarks and evaluations **give iOS 7 a clear advantage in terms of overall user experience**, taking into account the context defined for these benchmarks: day-to-day user experience of an average, non-technical user.

Mobile Operating System User Experience Index **Higher is better**



How the overall results were calculated Each category had the same weight in the overall score, i.e. 25%. However, since there is an obvious disproportion between the cognitive load score, and the others, the absolute result of the cognitive load score were scaled by 50%, which brought them within the same range as the other results,
We assumed an ideal score of 100 for each category (which currently no operating is even close to reaching).
Cognitive Load and User Experience Friction were input as negative numbers, i.e. deducted from the ideal score.
The final score is the average of the results for each category.

Results by Platform



iOS 7 73.25

Apple has achieved its goal to move iOS into the modern smartphone era. Despite some controversial design aspects, **iOS 7 is pleasant and more fluid to use than other mobile operating systems**—and it does not look like any competing system on the market.

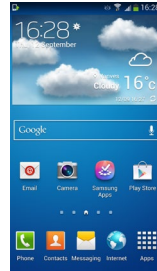
It will be interesting what the longterm impact of iOS7 will be—in any case, **market penetration is likely to be significantly faster than that of any other new mobile operating system.**



iOS 6 70

iOS 6 is still the simplest mobile operating system, especially for very inexperienced users, **but that simplicity comes at the price of efficiency and integration features that the operating system lacks.**

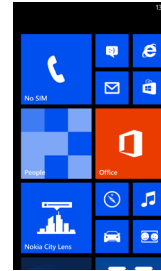
In the context of smartphone use, the absence of these features is a handicap, since, unlike tablets, smartphones rely much more on tight integration of repeatedly used key apps and services.



Android (Samsung) 57.25

Android has come a long way in terms of user experience, and could easily become an iOS killer not only in terms of market-share, but in terms of user experience—provided that Google and Samsung truly understood where the user experience differences with Apple's platform lie.

As it stands, **Samsung's Android is very usable - but undermines the overall user experience through odd design decisions, disproportionate cognitive load and half-baked innovations** that are a distraction rather than a help.



Windows Phone 8 47.25

In its current state, Windows Phone 8 is **a strange mixture of slick, original design—and a surprising disregard for key usability, not to mention the lack of some key user experience features** such as customization options, pervasive notifications, or quick access to key settings.

It is highly likely that some of these features will pop up in future software upgrades, but as of today, **Windows Phone 8 is not very competitive in terms of overall user experience.**



Blackberry 10 56.37

Blackberry 10 has a lot of promise—the basic idea behind the Blackberry Hub is a clever take on the notifications feature in iOS and Android—but **the operating system is hampered by inconsistencies, unexpected behaviors and user experience friction** that make it frustrating to use.

Analysis

The arrival of iOS 7 on the market signals a new phase in mobile operating systems. We are definitely entering a world of maturity in terms of features and interaction patterns. A world where smartphones are like cars: when you can drive one you can drive them all—but also a world where finishing and usability may be more important for the user than the latest killer feature.

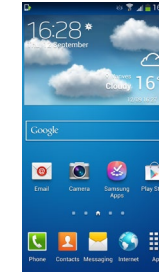


The results of this user experience benchmarks are both interesting—and disappointing.

Interesting because they confirm that beyond competent hardware, **there are significant user experience differences between operating systems**, and that at least some of these differences can be described and quantified.

Disappointing because these benchmarks simply underscore a balance of power that exists already in the market: **iOS 7 is clearly the most mature of the mobile operating systems**, combining the hallmark ease of use of earlier iOS versions with a feature set that lives up to the challenges of modern smartphone use.

Beyond the quibbles about the new design direction, Apple has managed to create a new operating system that looks different from any other on the market, and that is immediately easy and intuitive to use - and that is identical on any iOS device the company produces. **In terms of user**

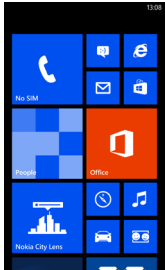


experience, iOS 7 clearly remains the market leader.

What about Android? The truth is that smartphones are becoming more and more like cars, and if you can drive one you can drive them all. The true differences do not lie in function, they are the finishing touches. While it does have annoying aspects in terms of user experience, **Android has become a perfectly usable mobile OS** (which is more than one could say about early releases of the Google's mobile OS)—even if it still is more overwhelming than necessary for the non-technical user.

What separates the Android user experience from iOS 7 is not functionality, but feature-bloat and sloppy user interface design. In terms of user experience, less is more.

But there is another issue for Android, and that is market fragmentation: The loyalty of Apple's users is such that the company can be certain that millions of users will upgrade to a new release - and



Apple's marketing is working hard to increase the desire to do so. **Android, by contrast is terrifyingly fragmented, with most users only upgrading when they change device.** This is a problem that will be almost impossible to overcome—and can only get worse over time.

As for Windows Phone 8 and BlackBerry 10, it is, alas, a case of too little, too late.

Microsoft deserves credit for designing a highly original mobile operating system that does not imitate the market leaders and boldly goes its own way. That would be great—if the OS actually delivered all the user experience aspects that users around the world have come to expect. **The truth is that under the slick veneer of swiveling tiles is an operating system that is challenging to use.** One can feel easily trapped in the rigid user interface that leaves no room for customization, and the user interface in general is not conceived to deal efficiently with the dozens and dozens of apps smartphone users want. Add to that the lack of some core user interface features and

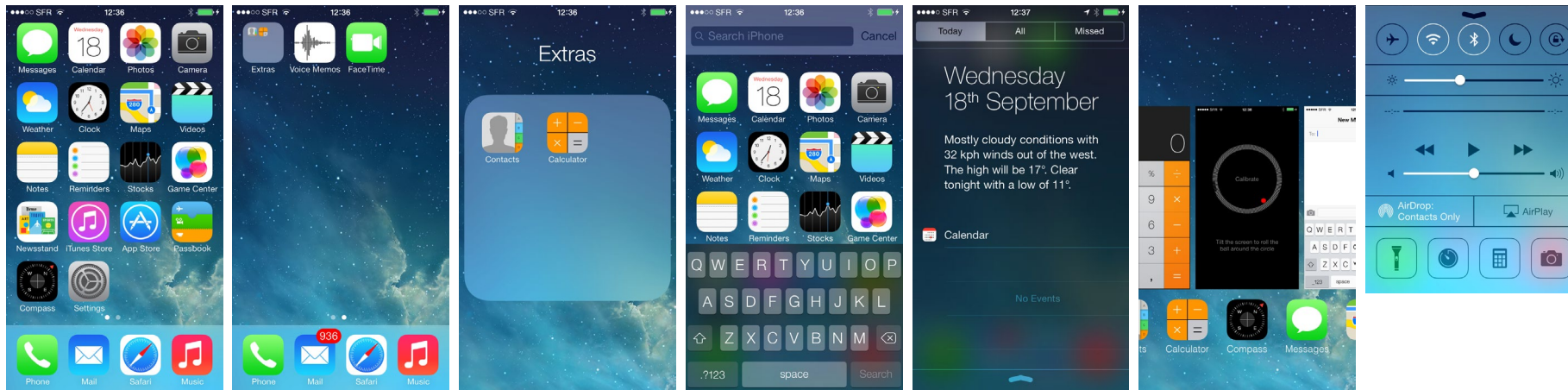
you get an idea of Microsoft's challenges to make Windows Phone truly competitive.

Blackberry 10 on the other hand has a different set of serious user experience problems. It offers most of the key usability features one would expect, and experiments with an original way of layering different services, **but the implementation is such that, at least in the current release, the frustration created by incoherently implemented features outweighs the benefits of the new system.** No Home button? No Back button, or only in certain application areas? What were they thinking?

In short, BlackBerry 10 turns out to be more frustrating and less efficient than older releases, even for die-hard BlackBerry users—yet doesn't deliver the slickness and fluidity (not to mention the apps) iOS and Android can provide.

It is sad to say, but in terms of overall user experience, neither BlackBerry 10 nor Windows Phone 8 are currently in a position to challenge the two market leaders.

Cognitive Load Comparison: iOS 7 vs. iOS 6



Default user interface elements on a factory-standard installation of iOS 7 running on an iPhone 5.

iOS 7 (above) brings some (highly necessary) efficiency features to the operating system. These additions results in a slight increase of cognitive load over the previous release, albeit not at a point where they risk overwhelming even a casual users.

iOS 6 (below) is clearly the mobile operating system with the lowest cognitive load footprint - the whole operating environment fits into a few screens, and everything important is accessible from the Home screen.



Default user interface elements on a factory-standard installation of iOS 6 running on an iPhone 5.

Cognitive Load Comparison: **iOS 7** vs. **Android** (Samsung)

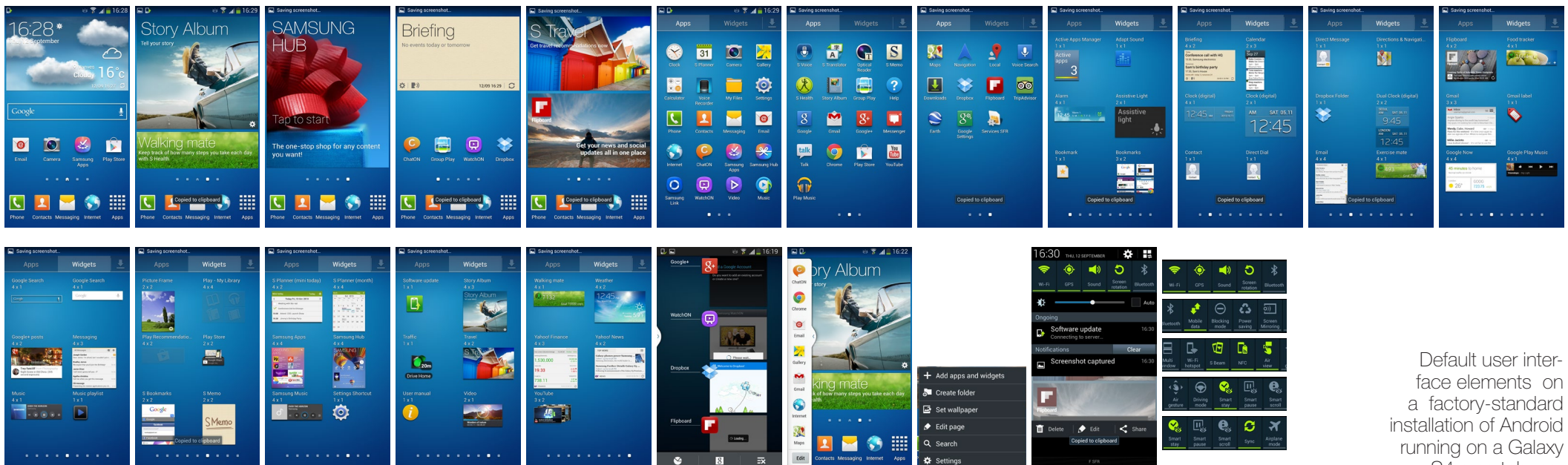


Default user interface elements on a factory-standard installation of iOS 7 running on an iPhone 5.

Comparing iOS 7 and Samsung's version of Android is difficult, since both operating systems take such a different approach to delivering value to the customer. Where Apple tries to reduce feature overload to the maximum, Samsung clearly revels in adding options, apps and widgets, providing for instance two mail clients and two app stores. (In total, this version of Android counts no less

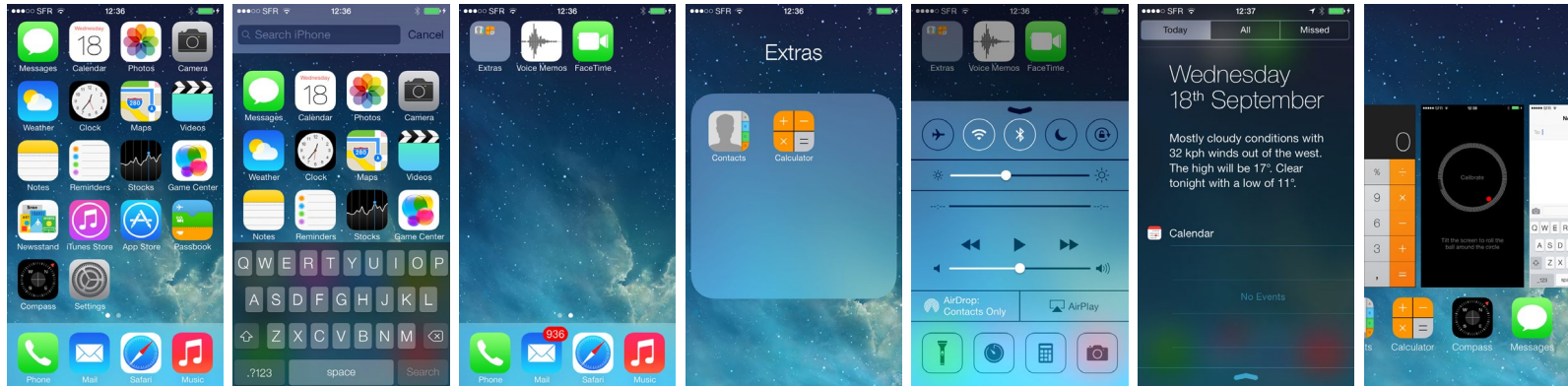
than 104 apps and widgets, in addition to 58 icons and other user interface elements.)

While experienced users may find this embarrassment of riches stimulating, there is no doubt that this approach contributes significantly to the overall cognitive load of the operating system, and can make it overwhelming for casual users.



Default user interface elements on a factory-standard installation of Android running on a Galaxy S4 smartphone.

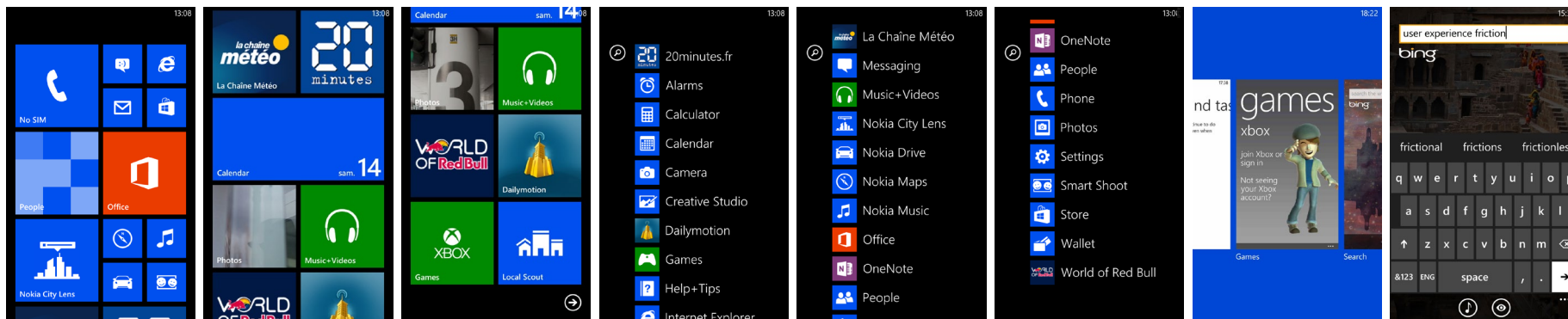
Cognitive Load Comparison: iOS 7 vs. Windows Phone 8



Default user interface elements on a factory-standard installation of iOS 7 running on an iPhone 5.

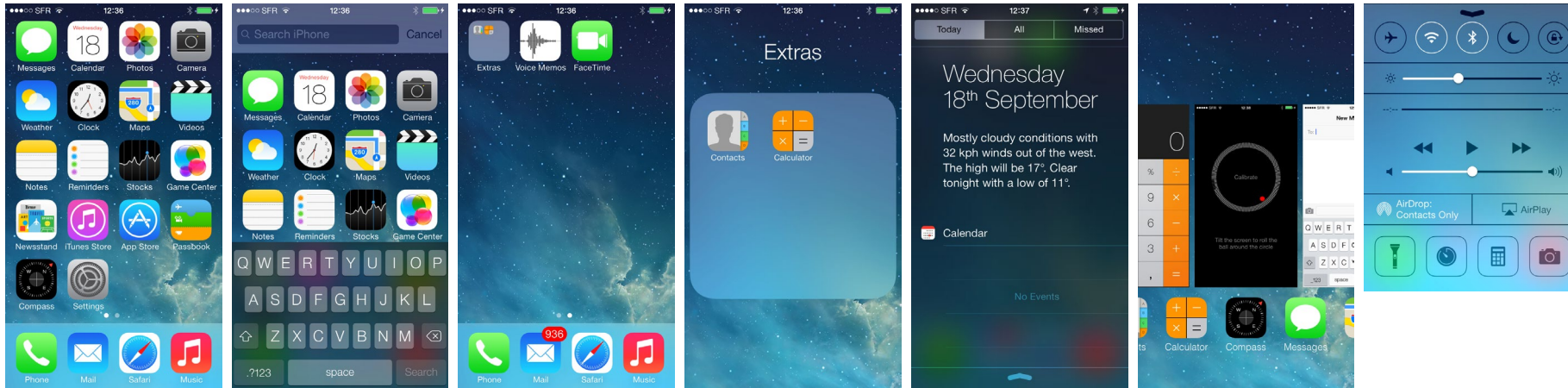
In terms of cognitive load count, iOS 7 and Windows Phone 8 are comparable—with the notable difference that Microsoft's mobile operating system does not include efficiency features such as Notification Center or Control Center in this number.

Generally speaking, Windows Phone 8 relies less on icons and other visual cues than the competition, which can make the operating system more serious looking than Android or iOS, but can also be perceived as more forbidding.



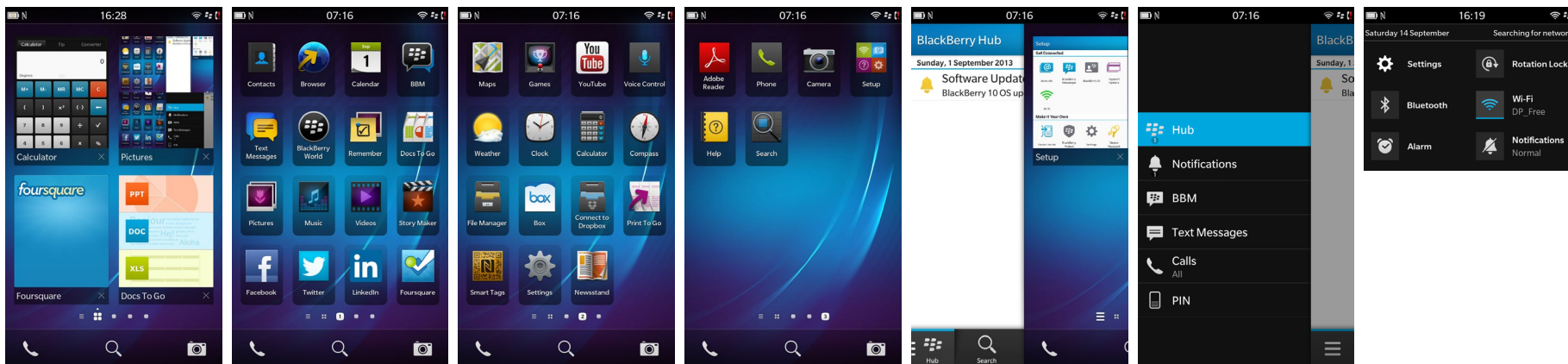
Default user interface elements on a factory-standard installation of Windows Phone 8 running on a Nokia Lumia 920 smartphone.

Cognitive Load Comparison: iOS 7 vs. Blackberry 10



Default user interface elements on a factory-standard installation of iOS 7 running on an iPhone 5.

To some extent Blackberry 10 (below) looks like a mix of iOS, Android and Blackberry, borrowing elements from all three operating systems, but adding some new interactions and layering ideas.



Default user interface elements on a factory-standard installation of BlackBerry 10 running on an BlackBerry Z10 smartphone.

Efficiency and Integration Details (by platform)

To rate efficiency and integration of each platform we listed the different options available in each platform and compared them.

The rating is not only based on presence of options, but also on ease of discovery for a non-technical user, as well as quality of implementation.

Bold type indicates sophisticated implementation of feature

iOS 7	7/10	iOS 6	6/10	Android (Samsung) 7/10	Windows Phone 8 4/10	Blackberry 10	5/10
Efficiency and Integration Options							
• Notification area (customizable)	• Notification area (customizable)	• Notification area		• Notification area (customizable)			
• Notifications on Lock screen	• Notifications on Lock screen	• Notifications on Lock screen		• Notifications on Lock screen	• Notifications on Lock screen		• Notifications on Lock screen
• Multitasking	• Multitasking	• Multitasking		• Multitasking	• Multitasking		• Multitasking
		• Multi-window mode					
• Control area		• Control Area					• Control area
• Multitouch controls	• Multitouch controls						
• Direct Camera Access from Lock screen	• Direct Camera Access from Lock screen						• Direct Camera Access from Lock screen

Customization Details (by platform)

To rate customization option of each platform we listed the different options available in each platform and compared them.

The rating is not only based on presence of options, but also on ease of

discovery for a non-technical user, as well as quality of implementation.

Bold type indicates key customization functionality frequently expected from a modern smartphone.

iOS 7	6/10	iOS 6	5/10	Android (Samsung)	7/10	Windows Phone 8	2/10	Blackberry 10	4/10
Customization Options									
• Lock screen picture		• Lock screen picture		• Lock screen picture		• Lock screen picture		• Lock screen picture	
• Wallpaper picture		• Wallpaper picture		• Wallpaper picture				• Wallpaper picture	
• Folders		• Folders		• Folders				• Folders	
• Customizable notifications area		• Customizable notifications area						• Customizable notifications area	
						• Change size of icons			
• Change font size		• Change font size		• Change font size		• Change font size		• Change font size	
				• Change font style					
• Change boldness of type									
				• Customizable quick-access controls					
				• Choose specific home page					
				• Customizable quick-access controls					
				• Choose specific home page					
Accessibility Options									
• Zoom		• Zoom		• Zoom		• Zoom		• Zoom	
						• TTY Support		• TTY Support	
• Negative/inverted Colors		• Negative/inverted Colors		• Negative/inverted Colors					
• High contrast		• High contrast				• High contrast			
• Voice feedback for vision impaired		• Voice feedback for vision impaired		• Voice feedback for vision impaired					
				• Speak Password					
• Text-to-speech		• Text-to-speech		• Text-to-speech					
• Sound balance		• Sound balance		• Sound balance					
• Guided Access		• Guided Access							
• Switch control									
• Assistive Touch									
				• Color adjustment					
				• Enhance web accessibility					

UXF Details (by platform)

The following pages provide a detailed list of the occurrences of UXF revealed by this research, taking into account the **context** chosen for the research, that of a **non-technical user**, and of **casual, non-professional use**.

The benchmarks are using a basic weighting system that rates any UXF occurrence on **a scale from 1 to 10**, the lower numbers corresponding to UXF elements that are noticeable, but do not have long-term impact; higher numbers are for UXF occurrences that remain noticeable, confusing or annoying even once the user has grown accustomed to

the device. (As an example, a confusing icon design would be rated as a low UXF number, while aspects such as the absence of a Home button continues to create friction throughout the lifespan of the device, and would be rated as a high UXF number.)

It is of course up to the user to decide whether these instances of user experience friction are perceived as important or not. **But there is no doubt that they exist:** all of the UXF occurrences listed here are clearly perceptible, as this documentation shows.

iOS 7

15

Lockscreen camera access is confusing

Accessing Control Center and/or Camera from the lock screen use similar gestures and can be confusing

UXF Rating: 2

Involuntary access to Notification Center

The pull-down Notification Center can be dropped down accidentally when interacting with other aspects of the phone. This can be annoying even for experienced users.

UXF Rating: 4

Unclear icon design

The new design of iOS has tried to simplify icon design, but in some cases icons are initially difficult to understand.

UXF Rating: 2

Involuntary access to Control Center

Control Center is useful—but the gesture that makes it appear can easily occur in other interactions with the phone. This can be annoying even for experienced users.

UXF Rating: 4

Hyperlinks in user interface aren't very explicit

Some of the user interface design decisions in iOS7 can be hard to interpret at first. Inexperienced users may not know

what part of the user interface constitutes a clickable link.

UXF Rating: 3

iOS 6

14

Involuntary access to Notification Center

The pull-down Notification Center can be dropped down accidentally when interacting with other aspects of the phone. This can be annoying even for experienced users.

UXF Rating: 4

Task Manager is confusing

Displaying the task manager is not as intuitive as it may seem, and inexperienced users may wonder what the apps are. Are they currently running and therefore using up memory and potential battery, or are they just the apps that were recently launched? The user interface does not provide any indications on this.

UXF Rating: 4

Confusion between 2 clicks vs double click on home button

On iOS, the user has to differentiate between several actions on the Home button. Besides pressing once, which takes the user out of the current app to the latest app screen that was displayed, there are two clicks, which display the search screen, and double-click which will display the task manager bar underneath the main screen. Differentiating between these different

actions can be confusing for an inexperienced user.

UXF Rating: 4

Music player in task manager

The iOS 6 Task Manager displays not only apps, but also basic controls for the Music Player, even when no music is playing. This can be confusing for inexperienced users who might wonder why these controls show up next to a list of apps.

UXF Rating: 2

Android (Samsung)

30

Confusion between apps and widgets

Android distinguishes between Apps and Widgets, a distinction inherited from computer operating systems, but without any clearly defined reason on a mobile device, since simpler apps are just like widgets. Even for an experienced user, this contributes to the overall cognitive load and can be confusing.

UXF Rating: 3

Placing items is unintuitive

Placing items from the App/Widgets screens to personal pages is unintuitive, and can lead to unexpected results. For instance, if there is no space on the personal page, there is no indication that the item has not been placed. For a first-time user, this can be confusing and unintuitive.

UXF Rating: 5

Deleting items is unintuitive

Deleting items on Android is unintuitive: a long press of an icon on a personal page results in the display of a trashcan icon in the top icon bar of the device; however it is not enough to click on this icon to remove the selected item, it is necessary to drag the item on top of the icon for deletion. This can be annoying even for experienced users.

UXF Rating: 5

Apps can be launched, widgets have to be placed first

Apps can be launched directly from the App/Widgets screens. Widgets, on the other hand need to be placed on a personal page first. This can be confusing for an inexperienced user.

UXF Rating: 5

Confusing Home screens

The Galaxy S4 uses the personal screens of the phone to advertise some selected apps not simply through an icon, but through colorful, big photographs that look more like movie posters or book covers. While prettier than small app icons, they can be confusing for inexperienced users: why are these apps different from others? Are these simply advertisements? What happens when the user eliminates them?

UXF Rating: 2

Redundancy and duplication of apps and widgets

Samsung's version of Android offers several seemingly redundant apps and services:

two e-mail clients, several messaging apps, two apps stores, as well as widgets and apps that seem to target similar purposes. This contributes to overall cognitive load and can be confusing for inexperienced users.

UXF Rating: 3

No direct access to Camera

Smartphones have become the most popular cameras on the planet, and quick access to the camera is essential. Unlike other operating systems, Samsung's Android does not provide direct camera access on the lock screen which would eliminate the need for password-entry to unlock the phone before shooting a picture. This can be annoying even for experienced users.

UXF Rating: 7

Windows Phone 8

51

Sense of some icons is hard to grasp

As with iOS 7, the flat design of Windows Phone 8 makes the sense of some icons hard to grasp. This can be disconcerting for inexperienced users.

UXF Rating: 2

Single-color tiles are less easy to distinguish than more sophisticated ones

While the tile design used for Windows Phone 8 is distinctive, it provides little variation to distinguish different apps.

UXF Rating: 2

Advertisements on home screen

Windows Phone 8 includes “sponsored content” on the home screen: the Nokia Lumia 920 used for our benchmarks displayed an app linked to a well-known energy drink, among others. Some users may find this inappropriate or offensive. Or simply not justified in any way.

UXF Rating: **3**

Lack of icons makes some aspects less usable

Windows Phone 8 relies more on words than on images to convey meaning: In the Settings app, for instance, there are no small icons to help the user quickly locate a specific function, making it less efficient to navigate. This can be annoying even for experienced users.

UXF Rating: **4**

No background image for Home screen

One of the first thing many smartphone users do is to choose a personal background for their phone. Windows Phone 8 only supports wallpaper for the lock screen, but not for the home screen. (And even the background color of the home screen can only be set to black or white.)

UXF Rating: **5**

Search Button always brings up Bing

Windows Phone 8 does not allow the user to assign another search engine than Bing to the main Search icon on the Phone. (Users who want to use Google instead need to do their search through Internet Explorer, having reassigned the default search engine for the web browser to Google).

UXF Rating: **7**

Inefficient use of Home screen real estate

The tile design used for the Windows Phone home screen is visually interesting, yet from a user perspective it is inefficient use of screen real-estate: iOS displays 24 apps on its home screen, while Windows Phone 8 barely manages 12

UXF Rating: **6**

Task Manager doesn't allow individual running apps to be closed

While Windows Phone 8 allows the user to see which applications are currently loaded, there is no way to specifically eliminate an individual app from the list to free up memory or resources.

UXF Rating: **4**

No way of grouping apps into folders

Windows Phone 8 is the only major mobile operating system on the market that does not allow apps to be grouped into folders for organization. (The feature actually seems to exist, since some tiles represent folders of games, for instance; but the feature does not seem to be available to users.)

UXF Rating: **7**

No way of customizing tiles

Unlike other operating systems, Windows Phone 8 uses monochromatic, unshaded tiles. This results in a very uniform look for all tiles. It is impossible for the user to change the color of individual apps of the user interface (although Microsoft uses a different shade to make Office and Xbox games stand out.)

UXF Rating: **3**

Absence of pervasive notifications

Windows Phone 8 currently does not offer a way to display notifications the way iOS and Android do. Users can choose to display detailed notifications from mail, calendar, phone or messaging - but only from one source at a time, meaning that if a user wants to see his calendar on the home screen he will not be able to see e-mail messages.

UXF Rating: **8**

Blackberry 10

38

Mix of vertical scrolling for open apps and horizontal scrolling for other apps

In Blackberry 10, open applications have to be scrolled vertically, while the installed apps are scrolled horizontally. This can be confusing even for experienced users

UXF Rating: **3**

No Back button

The fact that Blackberry 10 does not have support for a unified Back button makes navigating the complex, layered interface even more intricate than it already is.

UXF Rating: **8**

No Home button

Blackberry 10 lacks a Home button—although, as Microsoft has shown, the Logo situated outside of the screen area can function as a Home button. This absence is not only counterintuitive, it can be very annoying even for experienced users.

UXF Rating: **10**

Layering of Blackberry Hub is very confusing.

The basic idea of the Blackberry Hub is that of an always available notification area that is always just a swipe away, as in iOS or Android, but that provides direct access to all your connections: mail messages, social feeds, BBM, text messaging, phone calls. A brilliant idea—unfortunately, in its current implementation, there are many situation where the system just doesn't work: one expects to access the hub, but does instead get some other screen. This can remain very annoying even after prolonged use.

UXF Rating: **10**



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