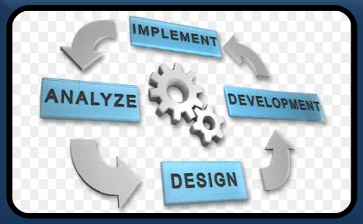
# WELCOME : OVERVIEW

# Mobile Applications Testing

# INTRODUCTION: Mobile APP vs Desktop and WEB

Ever since the first cell phone hit the commercial market in 1983, the mobile market has rapidly innovated from a handset that weighed over 2 pounds and could only make one phone call at a time, to a modern-day smartphone that weighs barely 5 ounces and can hold enough apps to practically run your entire life

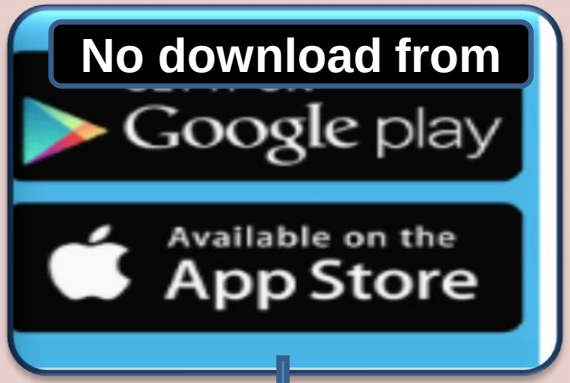
Lets discuss how testing mobile apps differs from desktop and web testing, and points out the complexities and nuances that make mobile testing a unique skill for testers.




We have witnessed transition from desktop to web and are witnessing another transition from web to mobile.

It is important to understand how testing mobile applications is different from testing browser / desktop applications.

# Test Approach: Mobile APP vs Desktop and WEB


**Desktop application:** A native application that executes on a user's local machine.

**Mobile application:** An application built to run natively on a mobile device.

**Web applications:** Applications that run 100% within a browser.

# INTRODUCTION: Mobile APP vs Desktop and WEB

## Desktop application:

This application may or may not have a network component, although most desktops have some kind of network component these days, even if it's just to update itself online.

If you need to update the application, an update needs to be downloaded locally.

# INTRODUCTION: Mobile APP vs Desktop and WEB

## Mobile application:

The most common devices these days are either iOS or Android based, but there is a small population of Windows mobile users and a few folks still clinging to their Blackberries.

Mobile applications, similar to desktop apps may or may not have a network component

Just like a desktop app, if you need to make an update to this app, something needs to be downloaded and installed.

# INTRODUCTION: Mobile APP vs Desktop and WEB

## WEB application:

There a group of apps on both the desktop and on mobile that are just web apps, running within an app-specific browser.

An example of one of these would have been the early versions of the Facebook app -- those were just a bunch of web views running within a browser window.

Sometimes those are hard to identify, but a surefire tell is if your app updates without you needing to do anything from the App Store/Play Store.

# INTRODUCTION: SUMMARY

## What is a difference between WEB and DESKTOP APP ?

| # | WEB | Desktop |
|---|---|---|
| 1. | *Deployment and upgrade for web based application requires deployment on single set of server machines.* | *Deployment and any upgrade/patching is done on individual client machines separately* |
| 2. | *Web applications can be accessed from anywhere, so there is no location constraint* | *As desktop are confined to a standalone machine, so they can be only accessed from the machines they are deployed in* |
| 3. | *Web applications are platform independent, they can work in different types of platforms with the only requirement of web browser* | *Desktop applications need to be developed separately for different platform machines* |
| 4. | *Web applications are at higher security risks as they are inherently designed to increase accessibility* | *Desktop application on the other hand have better authorization and administrators have better control, hence more secure* |
| 5 | *Web applications rely heavily on internet connectivity in order to operate* | *Desktop applications doesn't require internet for their operations. Some applications just require internet connectivity at the time of updates* |

# INTRODUCTION: Testing a SMARTPHONE

- Test for reception. Devices which have the same carrier can receive different reception. Perform signal tests at each of the identified major wireless carrier locations.
- Call automated systems that specialize in voice recognition.
- Call answering machines.
- Place calls from indoor and outdoor locations, as well as remote and populated, areas.
- Listen to your voice on audio message and voice dialing systems.
- Check vibrating alerts, and ringtone volume.
- Test the quality of voice dialing, ringtone volume, and the strength of the vibrating alert.
- Observe and analyze physical design to assess ease and preference of use, including display quality and size, controls, storage, ports.
- Test LTE speed in multiple locations.

# INTRODUCTION: Testing a SMARTPHONE (cont)

- Test the quality of voice dialing, ringtone volume, and the strength of the vibrating alert.
- Assess different microphone and the speakerphone volume levels.
- Test the device stereo and mono Bluetooth connections. Try to make calls and play music using Bluetooth technology.
- Perform continuous talk-time metrics on the battery life.
- Ensure access to a full signal. Then dial in a perpetual loop recording until the phone battery dies.
- Measure active battery time against prime battery retention times.
- Verify that the phone has Wi-Fi. Check the Wi-Fi speed at distances of up to 150 feet.
- Testing must center around both cell phone and smartphone operations, as well as associated carrier connections.

# INTRODUCTION: Testing a SMARTPHONE
## EXAMPLE : TEST CASES for Device

| # | HOMEWORK Description |
|---|---|
| 1 | Verify that all the required buttons- numbers 0-9, calling buttons etc are present |
| 2 | Verify that user can make a call by pressing numbers and hitting calling(green) button |
| 3 | Verify that user can make a call by selecting contact person from phone directory |
| 4 | Verify that user can make a call by selecting contact person from phone directory |
| 5 | Verify that user can reject an incoming call |
| 6 | Verify that user can receive an SMS |
| 7 | Verify that user can type and send an SMS |
| 8 | Verify that the dimension of the mobile is as per specification |
| 9 | Verify the screen size of the mobile |
| 10 | Verify that the weight of the mobile is as per the specification |
| 11 | Verify the font type and size of the characters printed on the keypad |

# INTRODUCTION: Testing a SMARTPHONE
## EXAMPLE : TEST CASES for Device

| # | Description |
|---|---|
| 13 | Verify the pressure required to press a key on the keypad |
| 14 | Verify that spacing between the keys on the keypad are adequate |
| 15 | Check the type of mobile- smart phone or feature phone |
| 16 | Check if the mobile is colored or black-white |
| 17 | Check the lighting on the mobile screen is adequate- verify in dark or day light |
| 18 | Check if mobile phone can be locked out without password or pin |
| 19 | Check if mobile phone can be locked out with password or pin |
| 20 | Verify that mobile phone can be unlocked with/without password |
| 21 | Verify that user can receive call when phone is locked |
| 22 | Verify that receiving a call when phone is locked, doesn't unlocked it after call completion |
| 23 | Verify that user can select an incoming call and SMS alert ringtone |
| 24 | Verify that user can make silent or vibrate mode or incoming calls and SMS |

# INTRODUCTION: Testing a SMARTPHONE
## EXAMPLE : TEST CASES for Device

| # | Description |
|---|---|
| 25 | Verify the battery requirement of the mobile |
| 26 | Verify the total time taken to charge the mobile completely |
| 27 | Verify the total time for mobile to get completely discharged when left idle |
| 28 | Verify the total talk for mobile to get completely discharged when continuously used in conversation |
| 29 | Verify the length of charger wire |
| 30 | Verify that mobile can be switched off and ON |
| 31 | Verify that user can store contact details on the phone book directory |
| 32 | Verify that user can delete and update contact details in the phonebook directory |
| 33 | Verify that Call logs are maintained in the Call Logs |
| 34 | Verify that received and Sent SMSs are saved in mobile |
| 35 | Verify that user can silent the phone during an incoming call |
| 36 | Verify the auto-reject option can be applied and removed on particular numbers |

# INTRODUCTION: Testing a TABLET

| | | | | |
|---|---|---|---|---|
| Analyze the quality, display size, ports, storage, and controls of the physical design. | Check Web search engine browsing speed. | Check the processor performance, including interface fluidity and 2D/3D resolution. | Launch and play games. | Test various MP3 and other file formats at several bit rates. |
| Test internal and Bluetooth headphones. | Test video operations at various resolutions | Verify Wi-Fi performance on open and WPA2 networks. | Test LTE speed. | Test digital camera capabilities. |
| | Use rundown loop testing to assess the length of battery life. | Test for pressure-sensitive pen quality. | If the tablet provides GPS, display accurate locations which have different environmental conditions. | |

- Create testing procedures that conform to the tablet's operating system and release level.
- Windows 10, for instance, may require different testing metrics and procedures than Windows 8.
- **iOS** iPads can be initially tested by using roughly the same procedures as with Android tablet testing.
- In addition, test the performance of new apps, including the amount of time to launch, UI experience, and frame rate. Use automated metrics to confirm performance times, and Wi-Fi reception.
- Test **Windows** tablets similarly to laptops, focusing precisely on the operating system. Verify overall performance, including:
- Video editing
- Music
- Gaming
- Communications
- Productivity
- Battery life
- Test from every-day-task, media, and entertainment perspectives. Perform automated 3D tests that simulate movement within complex environments. Testing Adobe Photoshop reveals the length of time it takes the software to manage images.

# INTRODUCTION: Testing a SMART WATCH

- Test also for :
- Wearability
- Screen quality
- Battery life
- Smooth performance
- Built in GPS efficiency
- Efficient charging

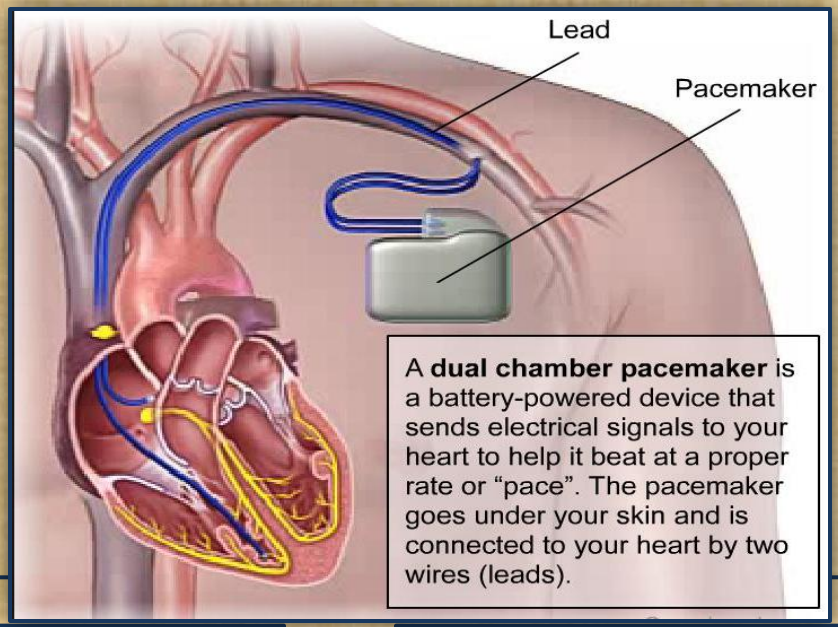
**SmartWatches**
require similar primary testing procedures as Smartphones and Tablets.

# INTRODUCTION: Testing a HEART MAKER ( medical device)

**You'll want to test for:**

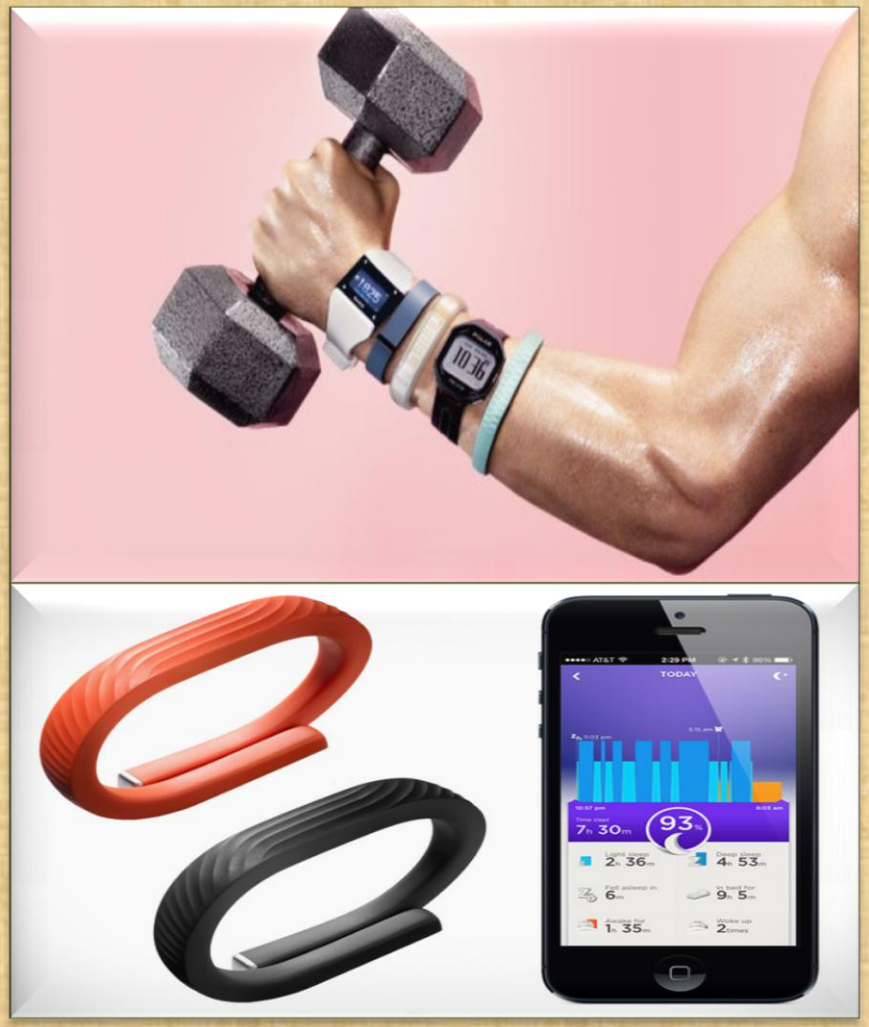
- The spectrum of pulse shapes
- ECG wave measurements
- Measured energy output
- Test automation is crucial in testing pacemakers to assure standardized clinical requirements.

Use a defibrillator tester to analyze a **pacemaker**. Perform the specified test loads and measurement algorithms required for operational assurance.



# INTRODUCTION: Testing a Fitness Tracker

- The primary required attribute is accuracy. Test for in depth fitness analysis that includes the elimination of such deficiencies as:
- Overestimated or underestimated performance
- Overestimated or underestimated calories
- Lack of useful features
- Overestimated or underestimated distances
- Overall tracking accuracy
- Testing is performed using various scenarios that virtually duplicate normal usage.



# Testing Mobile APP vs WEB :

## 1. Limited Real Estate : SCREEN SIZE

### MOBILE

Mobile devices are much smaller. Aligning images and text becomes a real challenge in features like **portrait** and **landscape** orientation


More variation – even when dealing with the same manufacturer

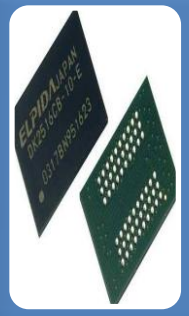
### WEB

Responsive design is relatively easy to code for desktop and laptop browsers – most of which come with predefined ratios

# Testing Mobile APP vs WEB :
# 2. STORAGE and RAM

## MOBILE

Limited storage and processing power of today's mobile devices.



Even high capacity phones can quickly fill up as users download apps and multimedia.

## WEB

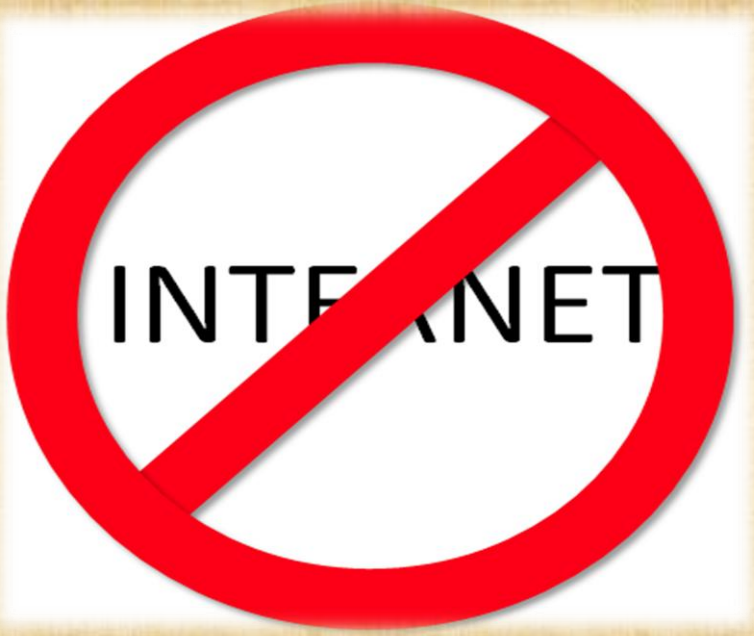
**Desktop storage is essentially unlimited (measured in terabytes).**

**Cloud-based storage is easy to increase, even if this requires charging higher prices to end-users.**

# Testing Mobile APP vs WEB :
# 3. INTERNET ACCESS

**MOBILE**

Mobile apps may or may not need online access




**WEB**

With the exception of a few off-line browser applications (e.g. Gmail), Web-based software always requires an Internet connection.

# Testing Mobile APP vs WEB :
# 4. MORE CONFIGURATIONS

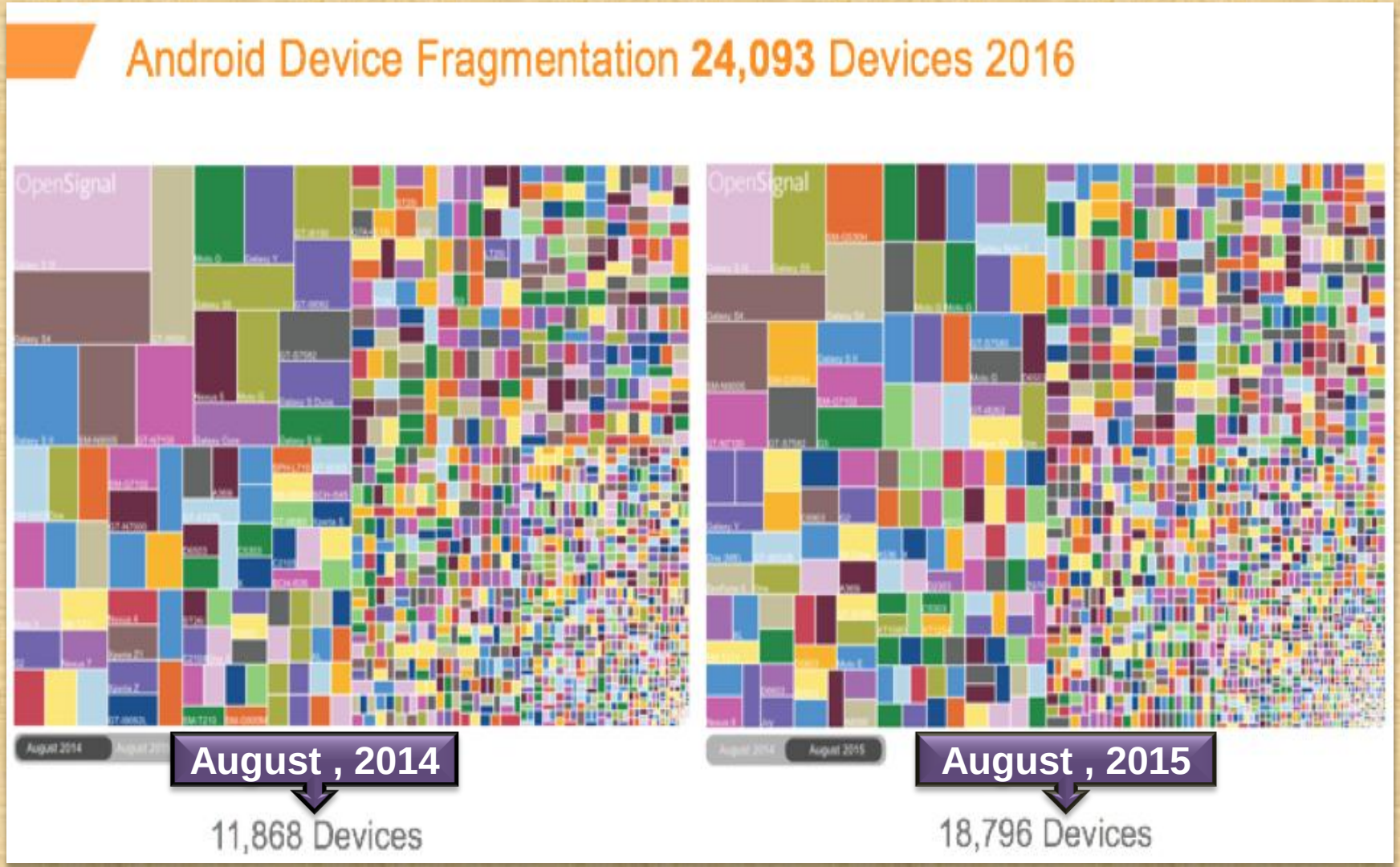
## MOBILE

- iOS, Android, Windows OS, and BlackBerry.
- Hardware limitations specific to devices manufactured by Nokia, HTC, Sony, Samsung, Apple ,etc
- New mobile devices frequently hit the market
- Emulators and Simulators

## WEB

- The majority of today's browsers follow the same basic logic. Chrome is not radically different from Internet Explorer. And Firefox has more in common with Safari than Mozilla
- Web-based software testers nearly always have access to the platforms they're testing

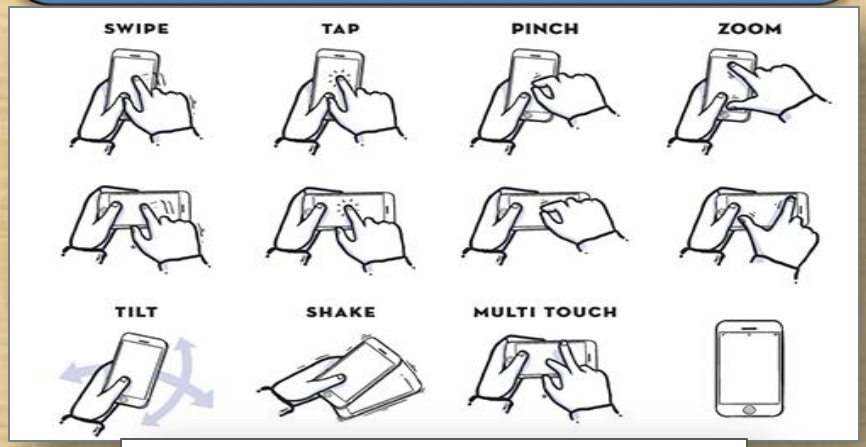
# Testing Mobile APP vs WEB : (cont)
## DEVICE FRAGMENTATION



# Testing Mobile APP vs WEB :
# 5. INPUT INTERFACE

**MOBILE**

**Touch Screens, USB connections, and even voice recognition (thanks, Siri).**




**WEB**

**Usually with keyboards and mouse (although even this is changing)**