

Understanding WIRELESS TECHNOLOGIES

WI-FI, 3G, LTE, BLUETOOTH AND MORE

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The Internet can be a confusing thing. Not what's on it, but how you can access it. In my work I encounter clients who don't understand the concepts of Internet connectivity--namely, the differences between Wi-Fi, 3G or LTE and Bluetooth. It is no wonder that they don't understand, as these technologies are evolving as quickly as they are named! Basically, most computers, that is laptops and desktops, use Wi-Fi. Most cell phones, e-readers and tablets can use either Wi-Fi or a cellular signal to connect to the Internet.

First, lets define some of the terms we will discuss:



- Wi-Fi - Wireless Internet, used in many homes and businesses to allow portable electronics like laptops and

phones access the internet. (Interesting fact: Wi-Fi does not stand for Wireless Fidelity. It is simply a made-up term to define this wireless network technology!)



- Cellular Data - This is what allows your device to connect to the internet anywhere, via the nearest cell tower.



- G - Generation. So a 3G phone is a 3rd Generation Phone. 4G is the fourth generation, and probably one of the most misused terms in terms of cell phone marketing. True 4G technology is still several years away from implementation.



- LTE - Long Term Evolution. A new faster form of cellular data that has started appearing in cell phones and tablets. It is very fast, much faster than most people's home internet service.



- Bluetooth is a short range wireless signal that can send and receive data.



- NFC is Near Field Communication, it is a special chip that can communicate with another NFC chip securely over a very short distance.



- GPS - Global Positioning Satellite, allows your phone to receive signals from GPS Satellites in space to figure out your latitude and longitude and use that data to tell you where you are in the world. Most commonly used for navigation.

Understanding Wi-Fi and 3G/LTE

How do you connect to the Internet? If you have broadband (i.e. cable or DSL) service in your home, you may also have a wireless router—a device that makes that broadband connection wireless. In other words, you've got Wi-Fi. Wi-Fi connects to the internet through a wireless network and has a short range. Its range always depends on your proximity to the Wi-Fi router. Wi-Fi is also commonly available in public places such as coffee shops, airports and bookstores.

Wi-Fi is great when you're using your laptop, tablet, iPad, or other device around the house, but what happens when you're in the car? Or at the beach? No Wi-Fi. And that means no Internet.

That's where 3G and LTE come in. 3G and LTE are kind of like "Wi-Fi everywhere," meaning they provide Internet access via the same radio towers that provide voice and text service to your mobile phone. This means that the range is a lot wider than a wireless network. To use a 3G or LTE connection, you need to sign up for a contracted data plan from your cellular service provider. Think of cell towers like giant Wi-Fi antennas that you have to pay to use.

Not all devices are equipped to access 3G or LTE service. The Kindle Fire and Nook Color, as well as the Wi-Fi only iPad models for example, are Wi-Fi-only tablets. That means they can connect to the Internet only where there's a Wi-



Fi hotspot (which, in addition to your home, can be a coffee shop, library, airport terminal, etc.)

There may be a smarter option than paying for 3G or LTE for a single device: buy a mobile hotspot instead. These pocket-size gizmos connect to 3G (or LTE) networks, then share that connection via Wi-Fi to as many as five nearby devices--not just one. And the monthly rates are about the same as you'd pay for one gadget with built-in 3G or LTE.

Understanding Bluetooth, NFC and GPS

Bluetooth is the wireless technology you may use to receive and make phone calls while driving. It is short-range, and uses very low power which makes it ideal for mice, keyboards, speakers and printers. To use Bluetooth, you connect the two devices by a method called 'Pairing.' Once two devices are paired, they will automatically connect when nearby. A Bluetooth signal typically only fills one room. It's just a nice way to connect two devices without using wires.

NFC stands for near-field communication. It's a signal emitted by a phone with the intent of communicating with other phones or tablets within a very short range (typically the two devices have to actually touch). This has many uses -- you can send photos to a friend's phone by touching your phones together, or touch your phone to a cash register to pay via Paypal. NFC technology is most often incorporated into smartphones.

GPS is a totally different technology. Circling above us in the atmosphere are dozens of GPS satellites. Each one of these GPS satellites transmits a message containing its location and time all over the Earth. By comparing the different signals from the different satellites, your phone can calculate exactly where in the world you are. That is all GPS does. Your phone doesn't transmit any kind of GPS information; no kind of internet, voice, or text data is involved in GPS. GPS satellites don't know who you are and they're not broadcasting at you, they're just send out their message to the entire planet. GPS is free the same way a car radio is free, the GPS satellites constantly send out signals, your device just taps into them and picks them up. It's a really clever system, actually.