

■ Near Field Communication

Near Field Communication (NFC) is a short range wireless technology that allows electronic devices to communicate with one another. Short range in this case is about 1.5 inches. The technology is quite popular in other countries, like Japan, and is getting a lot of attention from companies around the world. NFC was founded by Nokia, Sony and Royal Philips Electronics in 2004. Since then, Samsung, Motorola, Google, Microsoft, Apple and more than a hundred others have joined in.

NFC technology is a type of Radio Frequency Identification (RFID), but whereas RFID uses radio waves to transfer data, NFC uses magnetic fields. NFC technology is most similar to Smart “Contactless” cards popular with gas companies (i.e., ExxonMobil’s Speedpass). Instead of using your credit or debit card to pay for gas at a pump or a car wash kiosk, you can wave your Smart Key tag near the reader and pay with a card already on file with the gas company.

■ Tip of the Month

As the 6th largest transit organization in the US and with over 400,000 average weekday riders, South Eastern Pennsylvania Port Authority (**SEPTA**) has been working on developing a sustainability plan that will last for generations. Using a “people-planet-prosperity” approach, SEPTA will address social, environmental and economic objectives to increase livable communities, mitigate environmental damage, and engage in fiscal responsibility.

As part of their economic objectives, SEPTA will be implementing a new smart payment system that will use **NFC technology** within the next 3 years. The new system will allow people to use bank cards, mobile devices, and pre-paid contactless cards to expedite payment options on all SEPTA lines.

To learn more, visit:

www.septa.org/sustain/resources.html

An even more popular RFID technology is EZPass tags in vehicles. When the vehicle tag passes through a designated reader at a toll station, the transaction between the reader and tag happens automatically and your account is debited. EZPass has made traveling quicker and easier, allowing people to avoid stopping at toll stations.

NFC technology will be similar but the hardware can be embedded in mobile phones, tablets and other handheld electronics; devices already used by millions of individuals around the world. By using hardware already in existence (and not having to issue another piece of hardware consumers have to carry), industry representatives believe the convenience will be well received by consumers.

So what exactly is NFC and how do you use it?

NFC is a bi-directional communication method. It can be used for contactless payments where you pay for an item not with cash or credit/debit cards, but by simply holding your cell phone near a receiver and allowing information to be transferred wirelessly from your store account. NFC technology can also be used for obtaining information such as retailer reviews, transit schedules, instant coupons, movie trailer info, school schedules, and much more. The benefit of NFC is that images, text, web links, money transactions, and other data can be transmitted wirelessly to and from the user within moments.

Since NFC technology operates within a short range (1.5 inches) and must include user intervention by pushing a button, it is considered a secure method of data transmission. A word of caution however: although NFC is considered secure due to its short

■ Website Worth Watching

- » www.rethinkingschools.org/just_fun/games/mapgame.html - Interactive geography game highlighting the countries of the Middle East.

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range, the technology is still in its infancy and is not inherently secure. Locking your device and using passwords are a first line of defense but these aren't foolproof if the device is lost or stolen. Many retailer's apps will offer additional password protection which adds another layer of protection for your personal information but caution is still encouraged.

With that in mind, the technology is currently active on websites, in printed material, and in select retail shops. The symbol below (**Figure 1**) is a typical NFC barcode.



Figure 1. Typical NFC Barcode

Before you can use NFC, you will have to satisfy three requirements:

1. You must have a device that can read NFC codes (the technology cannot be retrofit into existing devices - you must buy a device that has the technology built in). Many options are currently available.
2. You must be willing to download the retailer's app.
3. You must be willing to establish an account with the retailer and have them store your credit card or debit card number. In some instances you can establish an account with cash which you'll have to replenish manually. With NFC, you'll be able to check your balances instantly within the retailer's app.

Where Will You Most Likely See NFC receivers?

- Vending Machines - *no cash or credit cards*
- Parking meters - *no cash or credit cards*
- ATMs - *no more ATM cards*
- Turnstiles or equipment associated with transit - *no more tokens or metro passes*
- Point of sale equipment – *checkouts in retail shops; no cash or credit/debit cards*
- Vehicles - *open car doors and start the engine with your cell phone; no key fobs needed*
- Nearly any application for mobile phones, tablets, or wireless devices

Applications of NFC

NFC can be used in many places to pay for goods or services or just obtain information. Here are some of the more intriguing uses for NFC that we will see in the coming years.

- Replace loyalty cards – all of your retailers' cards can be stored with your payment information (credit or debit card, bank account).
- Download instant coupons from retailers by waving your NFC-enabled device at the checkout.
- Get instant information on an upcoming movie by scanning the poster in a theater.
- Pay for your coffee by flashing your phone across an NFC capable device (**Figure 2**).
- Health care providers can scan a patient's NFC tag to get instant information about the patient such as when they were last seen, treatments received, health history, etc.
- Print a photo by waving your device (e.g., a tablet with an embedded camera) near the NFC sensor on a printer.
- Play a two-player game by touching your phones together.



Figure 2. Smartphone showing the Starbucks app for mobile payment. Simply download the app and setup your account. Then place an order at the counter, place your phone near the Starbucks receiver, and then touch the button on your phone to complete the transaction. Your Starbucks account will be debited automatically without having to present a credit/debit card or cash.

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