NEAR FIELD COMMUNICATION

WHAT IS NFC???

- NFC or Near Field Communication is a short range high frequency wireless communication technology.
- A radio communication is established by touching the two phones or keeping them in a proximity of a few centimeters.
- NFC is mainly aimed for mobile or handheld devices.
- NFC is an extension of Radio frequency identification or RFID technology.
- RFID is mainly used for tracking and identification by sending radio waves.

EVOLUTION OF NFC TECHNOLOGY

- In 2004, NFC Forum was formed by Nokia, Philips, Sony,to set standards for NFC . Every NFC enabled device will have “N-Mark” trademark ,developed by NFC Forum.

N MARK TRADEMARK

EVOLUTION OF NFC TECHNOLOGY

- **In 2006**

First mobile phone(nokia 6131) with NFC released by NOKIA.

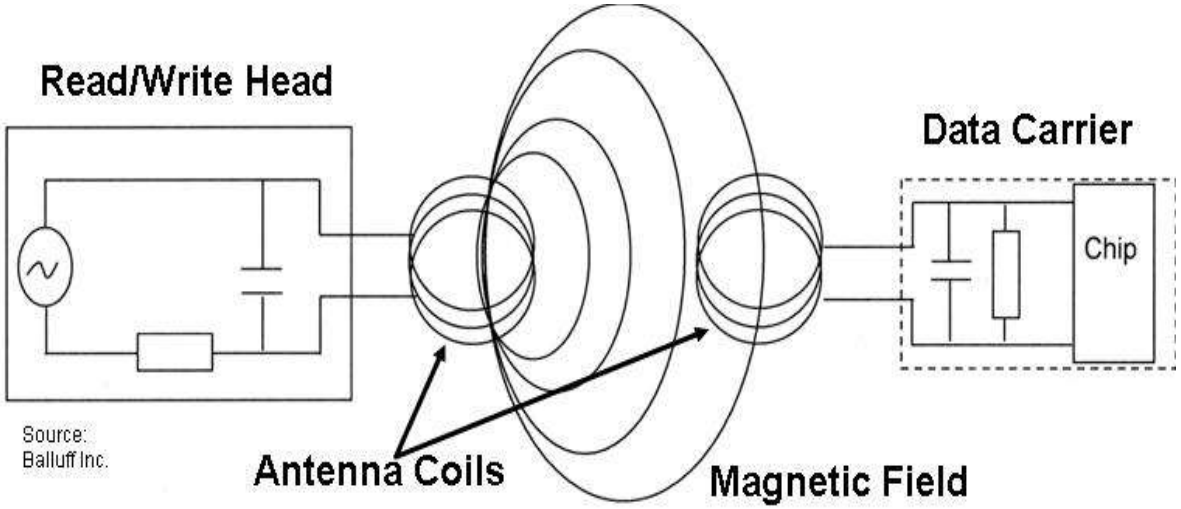
EVOLUTION OF NFC TECHNOLOGY

- **In 2010**

First android phone SAMSUNG NEXUS S with NFC support released.

OPERATION OF NFC

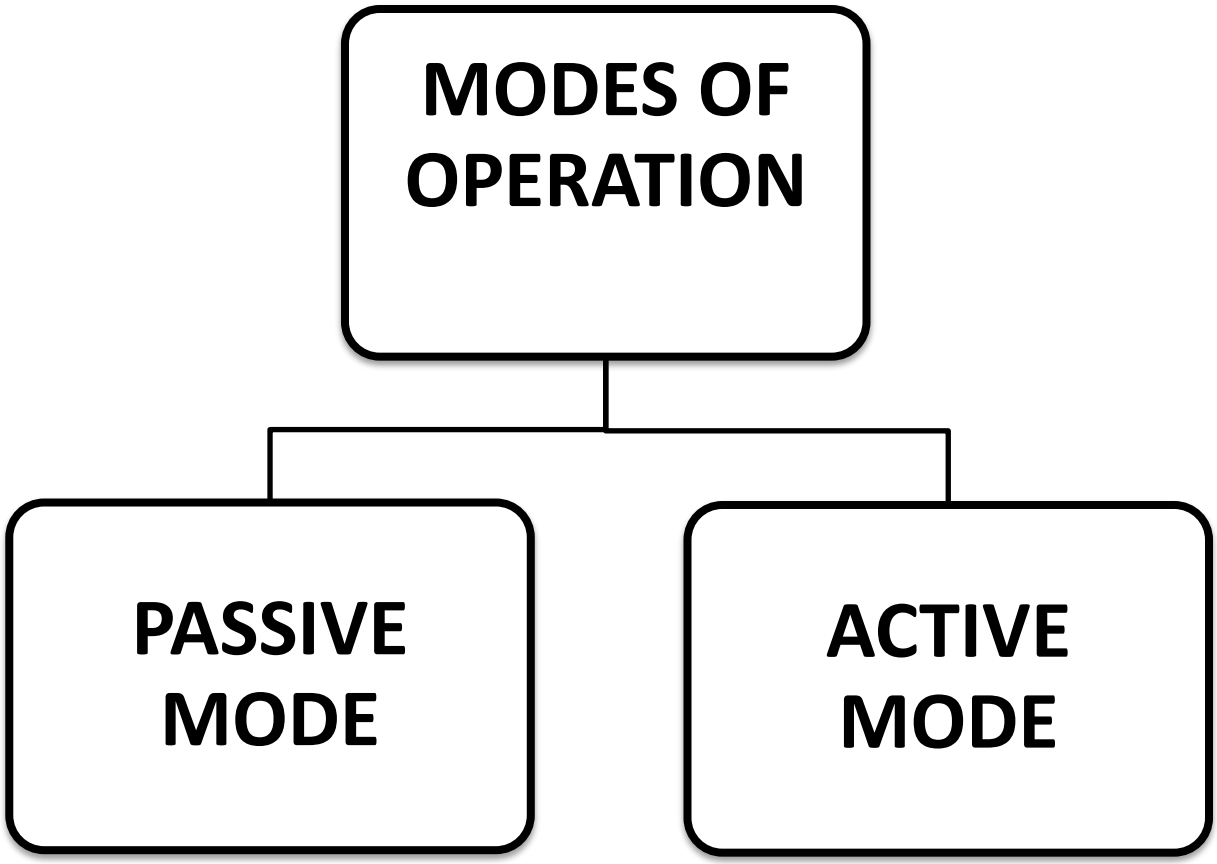
- Near field communication is based on inductive-coupling.
- NFC works using magnetic induction between two loop antennas located within each other's 'near field’.



OPERATION OF NFC

- operating frequency 13.56 MHz.data rate 106 kbit/s to 424 kbit/s.
- NFC use an initiator and a target; the initiator actively generates an RF field that can power a passive target.

MODES OF OPERTAION



MODES OF OPERATION

- In Active mode, both devices with NFC chip generates an electromagnetic field and exchange data.

Two NFC enabled devices transfer -ring data in active mode

MODES OF OPERATION

- In Passive mode, there is only one active device and the other uses that field to exchange information.

A NFC-enabled mobile phone is paired with a RFID-tagged "smart poster"

APPLICATION OF NFC

- NFC applications can be split into the following three basic categories:

- Touch and Go
- Touch and Confirm
- Touch and Connect

APPLICATION OF NFC

- **Touch and Go**

  Applications such as access control or transport/event ticketing, where the user needs only to bring the device storing the ticket or access code close to the reader. Example for picking up an Internet URL from a smart label on a poster.

Touch and go Mode of application

APPLICATION OF NFC

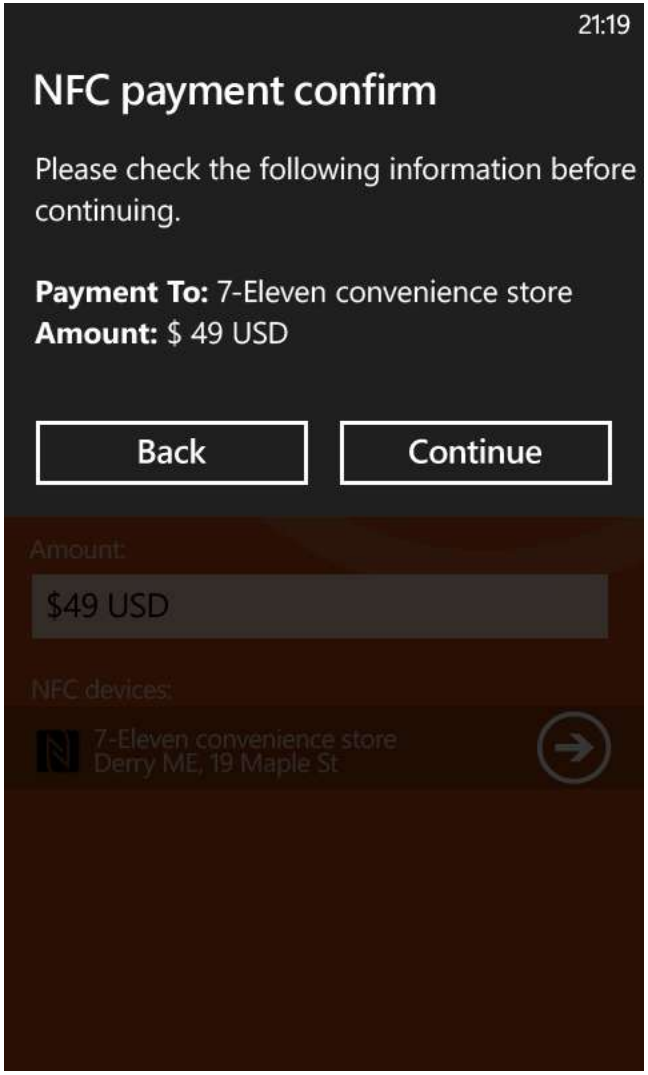
Movie buff gathering info about a movie using his NFC enabled Mobile Phone

APPLICATION OF NFC

- **Touch and Confirm**

  Applications such as mobile payment where the user has to confirm the interaction by entering a password or just accepting the transaction.

APPLICATION OF NFC



The screenshot from a mobile device showing the confirmation message.

APPLICATION OF NFC

- **Touch and Connect**

  Linking two NFC-enabled devices to enable peer to peer transfer of data such as downloading music, exchanging images or synchronizing address books.

Data transfer via NFC

COMPARISON WITH EXISTING TECHNOLOGY

	NFC	RFID	IrDa	Bluetooth
Set –up time	<0.1ms	<0.1ms	~O.5s	~6 sec
Range	Up to 10cm	Up to 3m	Up to 5m	Up to 30m
Usability	Human centric Easy, intuitive, fast	Item centric Easy	Data centric Easy	Data centric Medium
Selectivity	High, given, security	Partly given	Line of sight	Who are you?
Use cases	Pay, get access, share, initiate service, easy set up	Item tracking	Control & exchange data	Network for data exchange, headset
Consumer experience	Touch, wave, simply connect	Get information	Easy	Configuration needed

ADVANTAGES OF NFC

- High convenience to the user, because the data exchange is done by bringing two mobiles together.
- Reduces cost of electronic issuance .
- Secure communication.
- No special software.
- No manual configuration and settings.
- No search and pair procedure.

DISADVANTAGES OF NFC

- The system has the limitation that it can be operated only with devices under a short range i.e around 10 cm.
- The data transfer rate is very less at about 106kbps, 212 kbps and 424kbps.

SOME DEVICES USING NFC TECHNOLOGY

- Nexus S
- Google Nexus S 4G
- Samsung Galaxy S II
- Samsung Galaxy Note
- Galaxy Nexus
- Nokia 6212 Classic
- Nokia 6131 NFC

DEVICES WITH NFC TECHNOLOGY

FUTURE OF NFC

- New generations of iPhone, iPod and iPad products would reportedly be equipped with NFC capability which would enable small-scale monetary transactions.
- On May 2, 2011, RIM announced the Blackberry Bold 9900, a new device that will use NFC technology.
- Recently, Microsoft announced that all Windows Phone 8 devices will make use of the NFC technology.

CONCLUSION

- Mobile handsets are the primary target for NFC and soon NFC will be implemented in most handheld devices. Even though NFC have the shortest range among radio frequency technologies, combining them with existing technologies like Bluetooth or Infrared can increase its range of applications.

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THANK YOU