

NFC,
getting closer to our life

DUALi Inc.

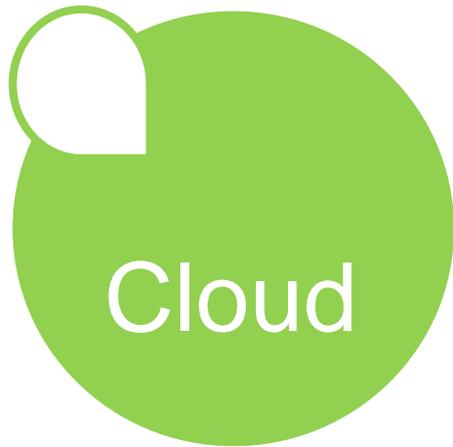


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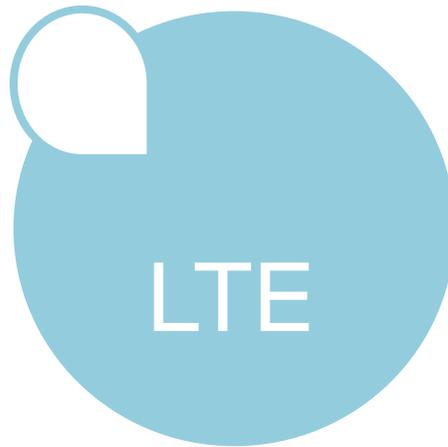
- 01 What is NFC ?
- 02 NFC History
- 03 How NFC works ?
- 04 NFC Market Trends
- 05 DUALi Performance

01.

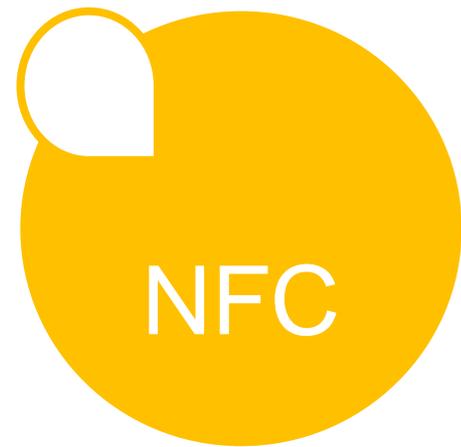
What is NFC ?



Share



Wireless



?

01.

What is NFC ?

Short range
High Frequency 13.56MHz
Wireless communication

Mobile or Handheld devices

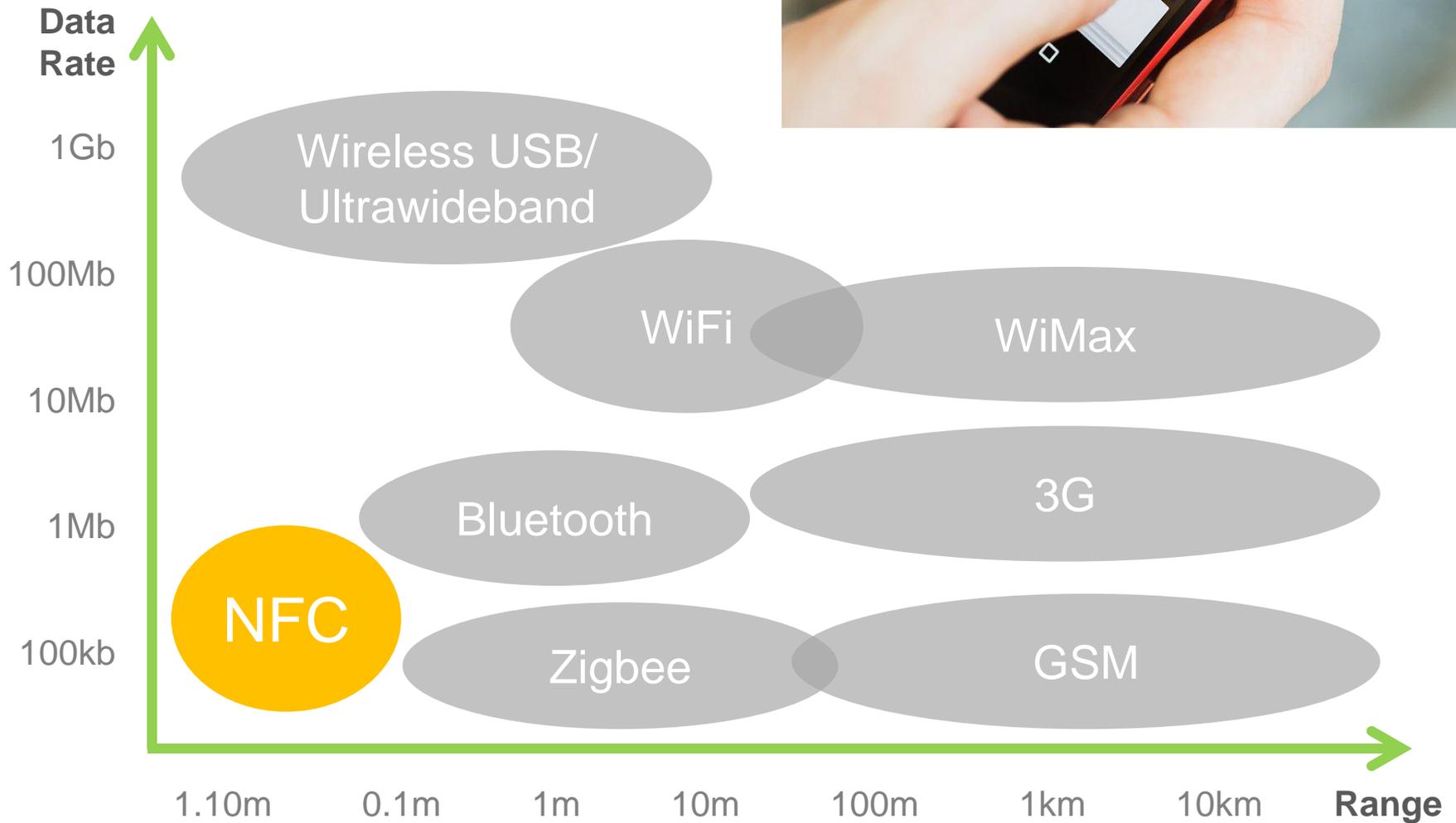
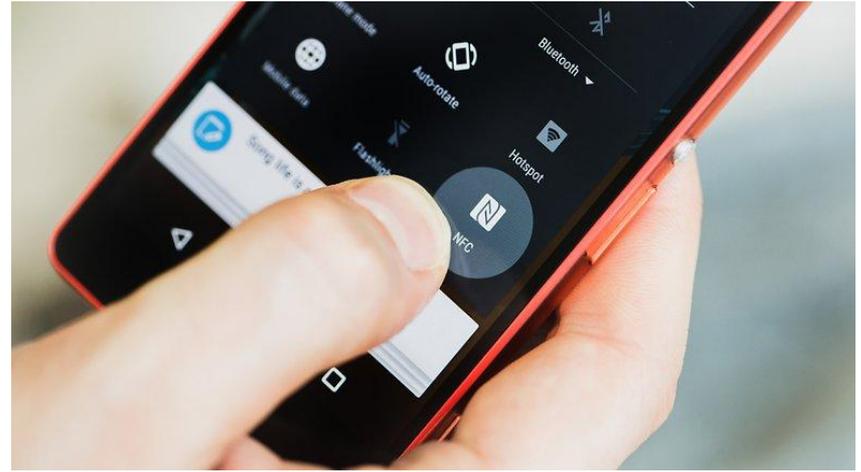


Proximity of a few centimeters
(Up to 10cm)

Simplified Transaction
Data Exchange
Wireless Connections

01.

What is NFC ?



01.

What is NFC ?

Payment Solution

Open Payment Solution
Membership / Loyalty Solution



NFC Solution

Access Control / Payment / Membership
NFC manager / NFC Compatibility Test Tool



ID Security Solution

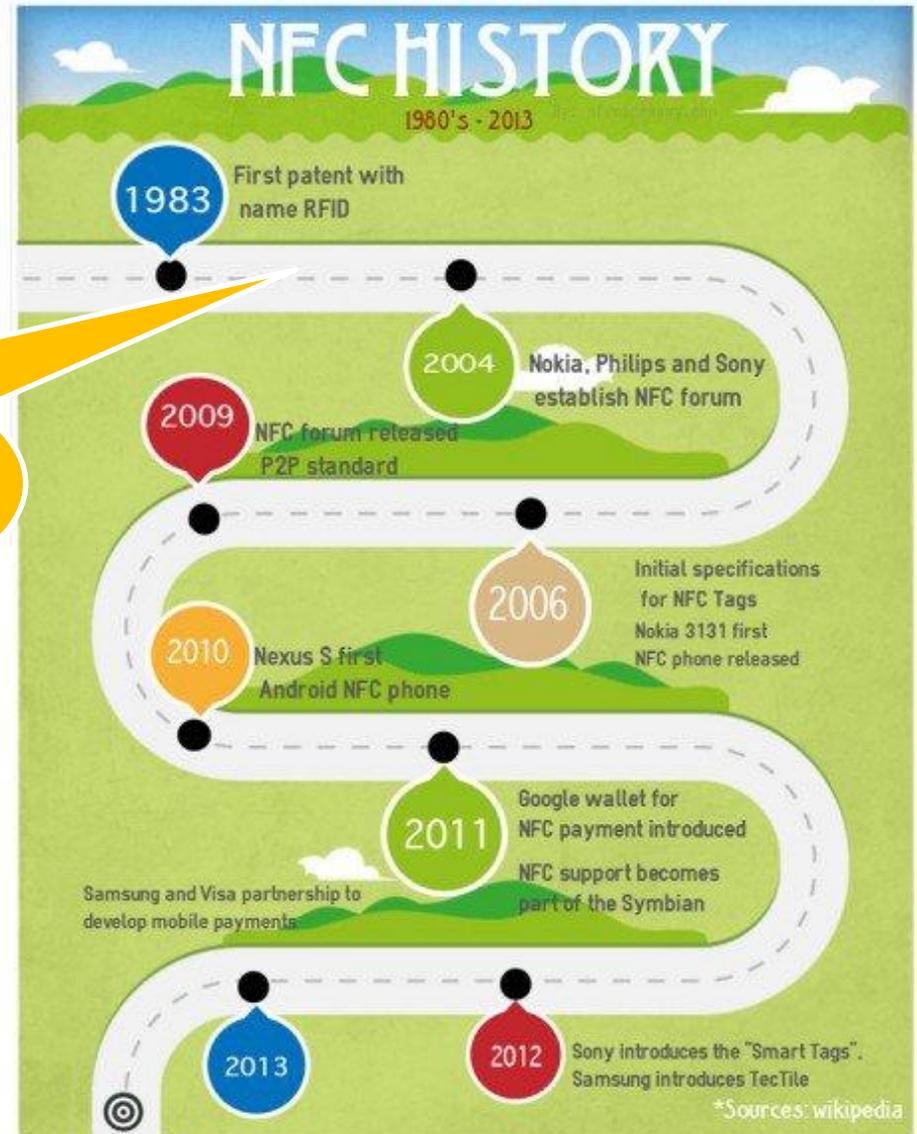
Corporate / Campus / Hospital



02.

History of NFC

2000
DUALi was established



03.

How it works ?

NFC Devices Operate in 3 Modes

1

Tag Reader/Writer

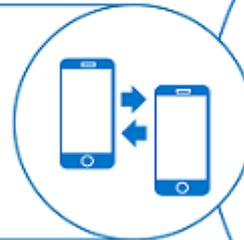
Connect the world of apps with the physical world



2

Peer to Peer

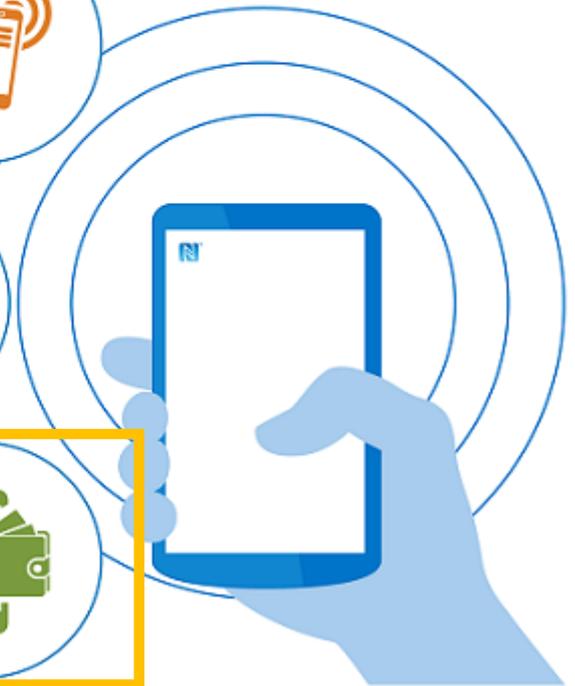
Connect devices through physical proximity



3

Card Emulation

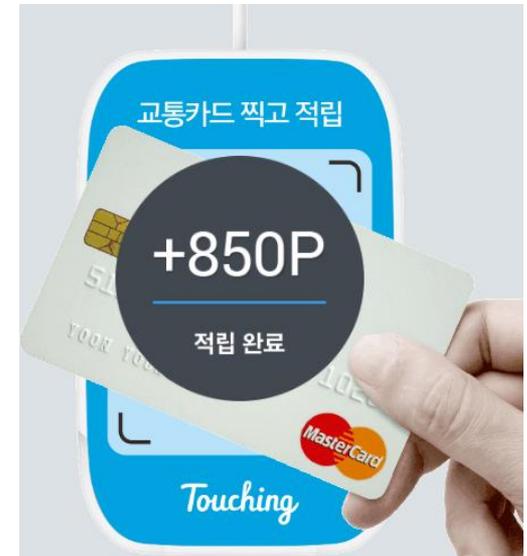
Connect to a common infrastructure



03.

How it works ?

1) Card Emulation Mode



https://www.youtube.com/watch?v=Scu_wSEvXA

03.

How it works ?

1) Card Emulation Mode



TOUCHING

CUSTOMER

DUALi

- ✓ Any of cards can be used
- ✓ Manage various membership card by cloud server app
- ✓ Low cost to set up loyalty program
- ✓ Optimized for small-medium size of stores
- ✓ Dragon (NFC Desktop Reader)
- ✓ Annually 5,000 units supplying



03.

How it works ?

4) Convergence Application

Story Time Product Package



Magic Disc Set



Bluetooth NFC Reader (optional)



NFC Character Toys



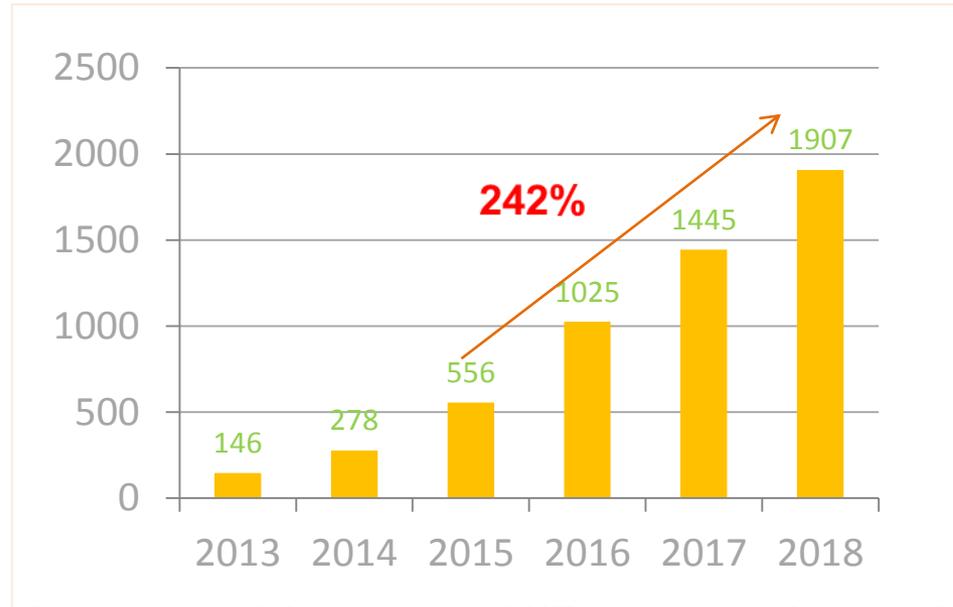
Badanamu Story Time



- ✓ Alphabet Game by NFC tag/reader
- ✓ Education contents + NFC technology
- ✓ Interactive learning

04.

NFC Market Trends



A drastic rise of the portion of NFC –equipped smartphone.



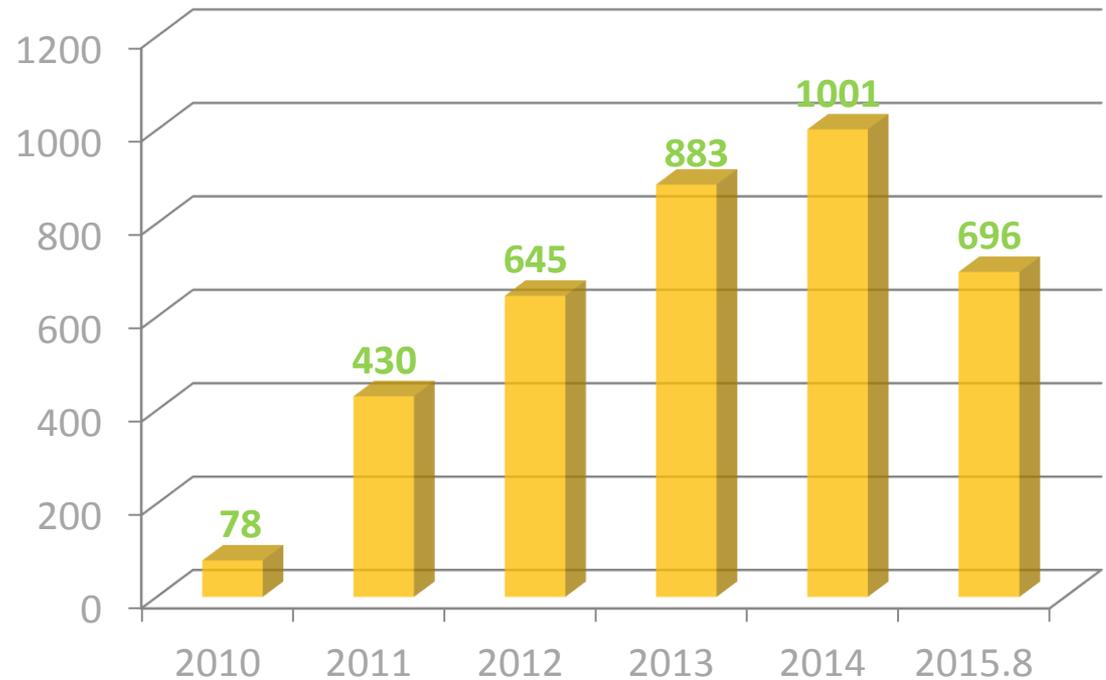
- ✓ 54.2% of smartphones are equipped with NFC
- ✓ 242% growth from 2015 through 2018
- ✓ It is related to recent movement for adopting NFC phone payment.



04.

NFC Market Trends

- ✓ Card Payment 26.6%
- ✓ NFC Tag 30.9%
- ✓ Etc. 11.7%
(Camera, Printer, Accessories)



NFC related Patent application rate in Korea

04.

NFC Market Trends

1

Payment migrating to NFC
Emergence of HCE

NFC
Market Trends



NFC bridging the IoT

2



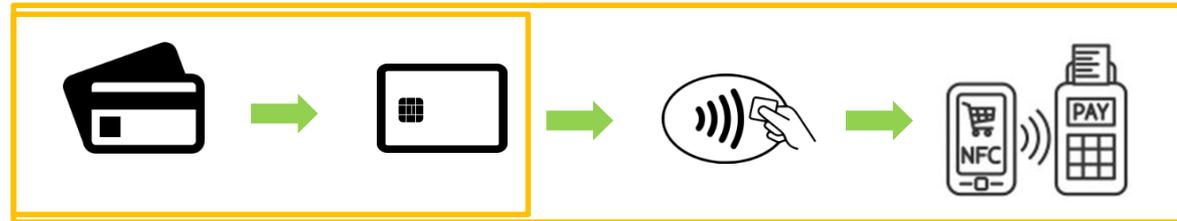
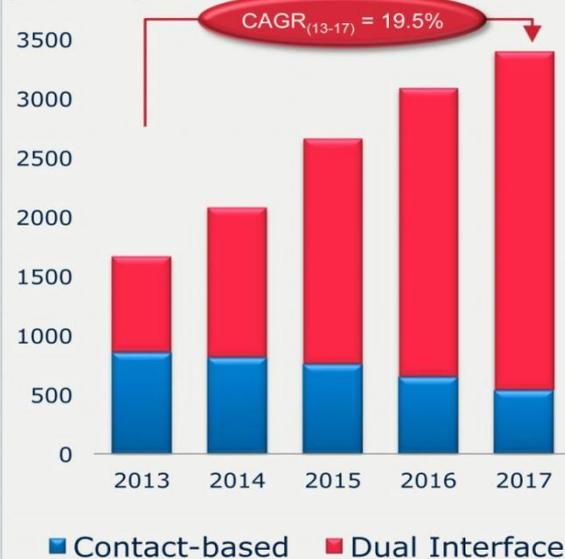
04.

NFC Market Trends

Payment Migrating to NFC

Payment market development

[unit ICs m]



Magstripe
Card

IC (Contact)
Card

RFID (Contactless)
Card

NFC Phone
Card

✓ NFC Payment Market

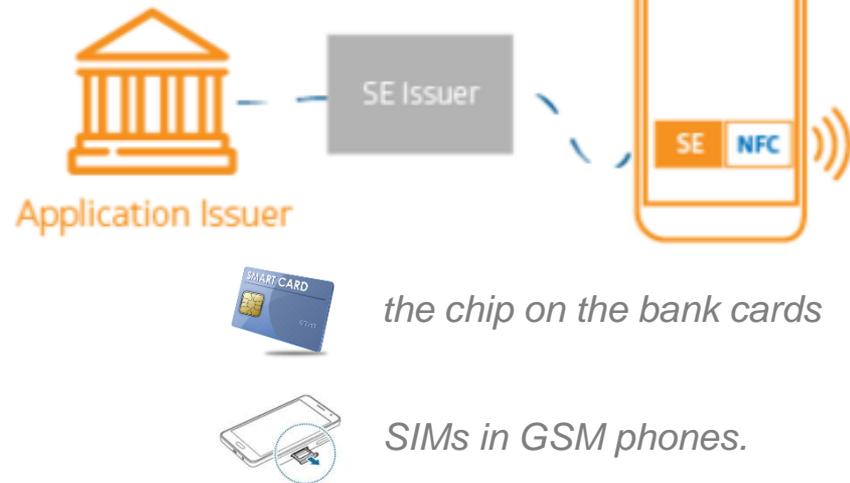
- ✓ Strong needs for protection of the customer's credentials against manipulation and fraud that Magstripe card has.
- ✓ Payment cards are migrating from MSR card to chip-based solutions with strong Dual Interface growth.

04.

NFC Market Trends

Emergence of HCE

What is SE in NFC market?



What is difference between HCE & SE ?

Cloud-based

Tokenization of PAN
(Personal Account Number)

Risk assessment in real-time



Hardware based

Dependent on mobile operator/card issuer

05.

DUALi Performance



CD800

+ Add to my solution

Q QuickView



CD800 with
Laminator

+ Add to my solution

Q QuickView



CD820

+ Add to my solution

Q QuickView



SD160

+ Add to my solution

Q QuickView



SD260

+ Add to my solution

Q QuickView



SD360

+ Add to my solution

Q QuickView



www.entrustdatacard.com

Trusted Identities | Secure Transactions™

- ✓ From **OEM Modules to General Card Readers**
- ✓ Starting from “OEM Module” to customize each customer’s demand
- ✓ All machines needed to be “NFC-enabled”
- ✓ Annually supplying 12,000 RF card printer module to *Entrust Datacard*

05.

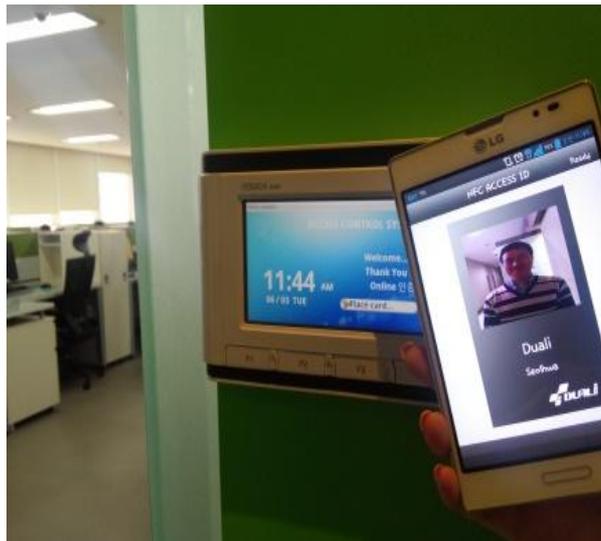
DUALi Performance



- ✓ From **OEM Modules to General Card Readers**
- ✓ Annually supplying 15,000 units of ATM RF module to all around for Thailand, Indonesia, South Korea,

05.

DUALi Performance



- ✓ Consistent demands for Android device combined with NFC feature.
- ✓ Stable compatibility available high-end Android device, called iTOUCH 20 and iTOUCH pop 2.
- ✓ Equipped with accumulated field experience through various project in domestic market (Access control / Time attendance)

05.

DUALi Performance



iTOUCH 20 deployed in Them Park



ADabisc ∞, Qatar, 2015



iTOUCH pop2 deployed in Library



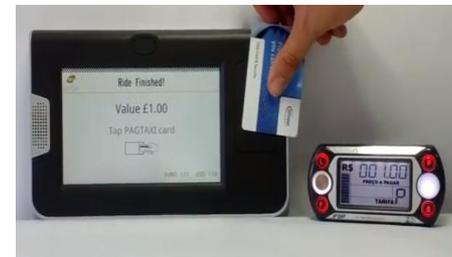
GRUPE CAP MONETIQUE, Sainte Geneviève, 2015

ASSA ABLOY

ADabisc ∞

DigiOn24

GRUPE CAP MONETIQUE
CRÉATEUR DE SYSTÈMES À CARTES

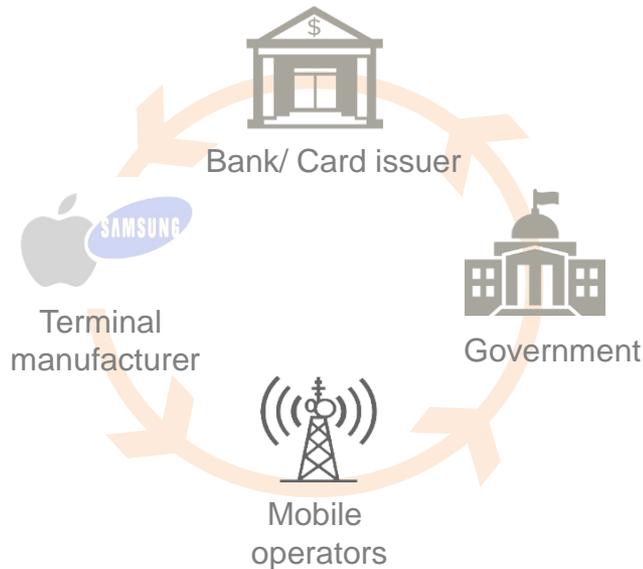


iTOUCH 20 deployed in Taxi System

Mexico, 2013

Conclusion

NFC, getting closer to our life



User

NFC, is no more option feature of Smartphone

Infrastructure

EMV, expanding NFC-enabled payment terminal

Security/Independence

HCE, eliminates dependence on mobile operators