



FeliCaマーク

65 Million+ Handsets

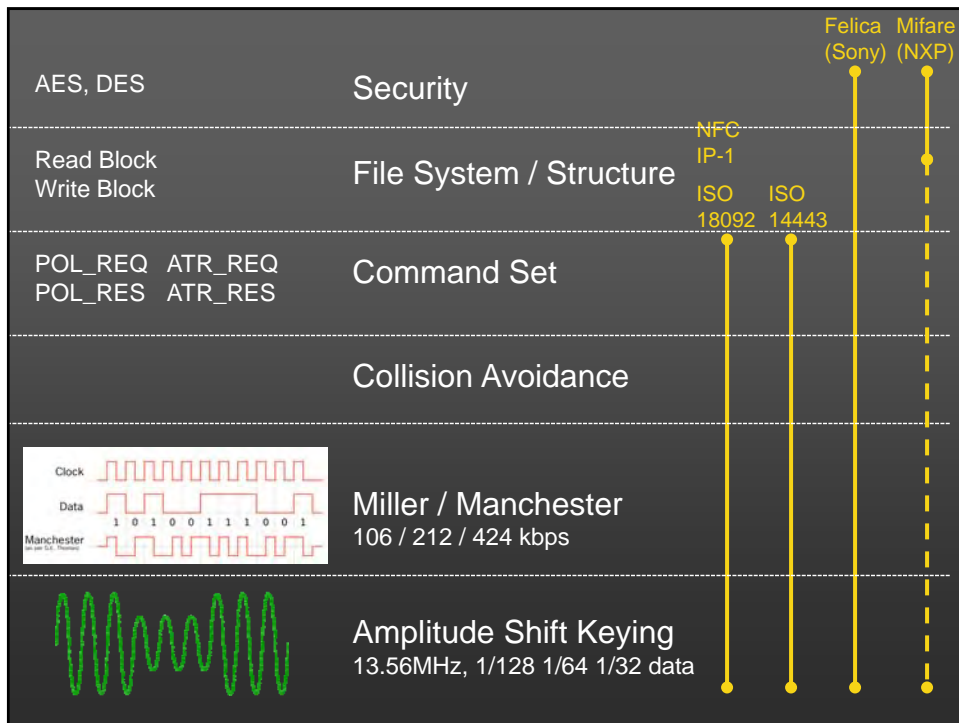
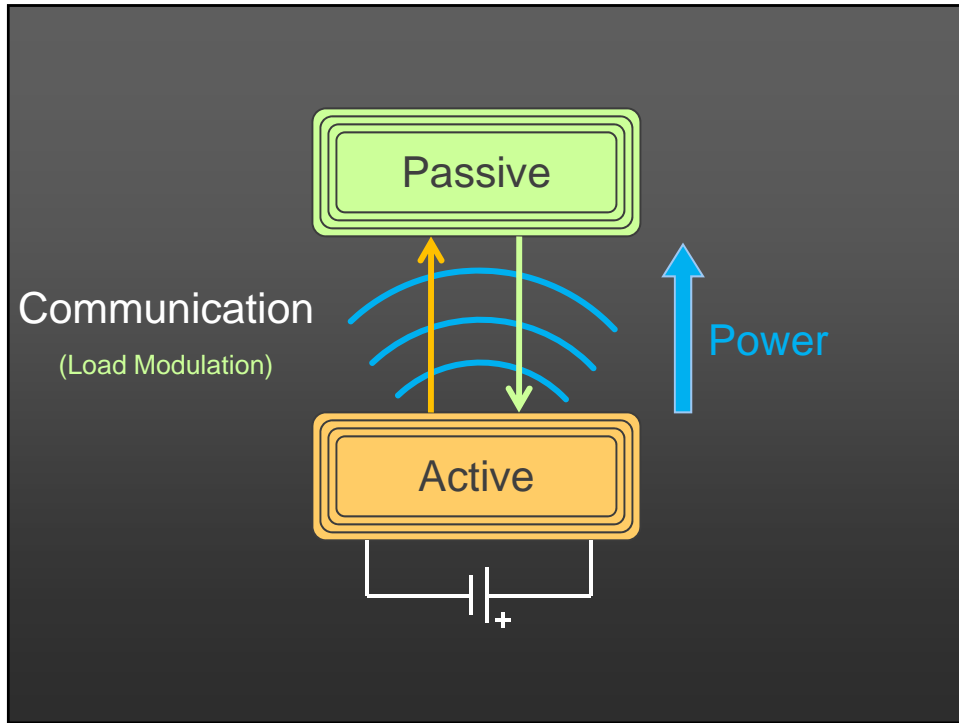


A collection of various smartphones and feature phones, including models from Apple, Samsung, HTC, and others, arranged in two rows. The top row shows larger smartphones, and the bottom row shows smaller smartphones and feature phones.


Physical is the Next Frontier



A diagram illustrating the evolution of computing devices. It starts with a desktop computer (monitor, keyboard, mouse), followed by a smartphone, and finally a person using a smartphone to interact with a physical object (a coffee cup). Yellow arrows indicate the progression from left to right.



Standards and Vendors

- Physical Layer, Link Layer: ISO 14443 Parts 1-4
 - Phillips Mifare (ISO 14443 Type A)
 - Sony Felica (~ISO 14443 Type C)
- FeliCa Networks = “Mobile Felica” 
 - NTT / JR / Sony joint.
 - Integration with mobile phone.
- NFC Forum (<http://www.nfc-forum.org>)
 - Tag Type specifications
 - Record Type specifications
- JSR 257: Contactless Communication API

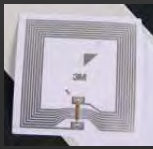
NFC

- Short Range (2-5cm)
- 1:1 (mostly)
- Read / write
- Large Capacity
- AES/DES
- A few Dollars
- Standards, some fragmentation
- Country specific



RFID

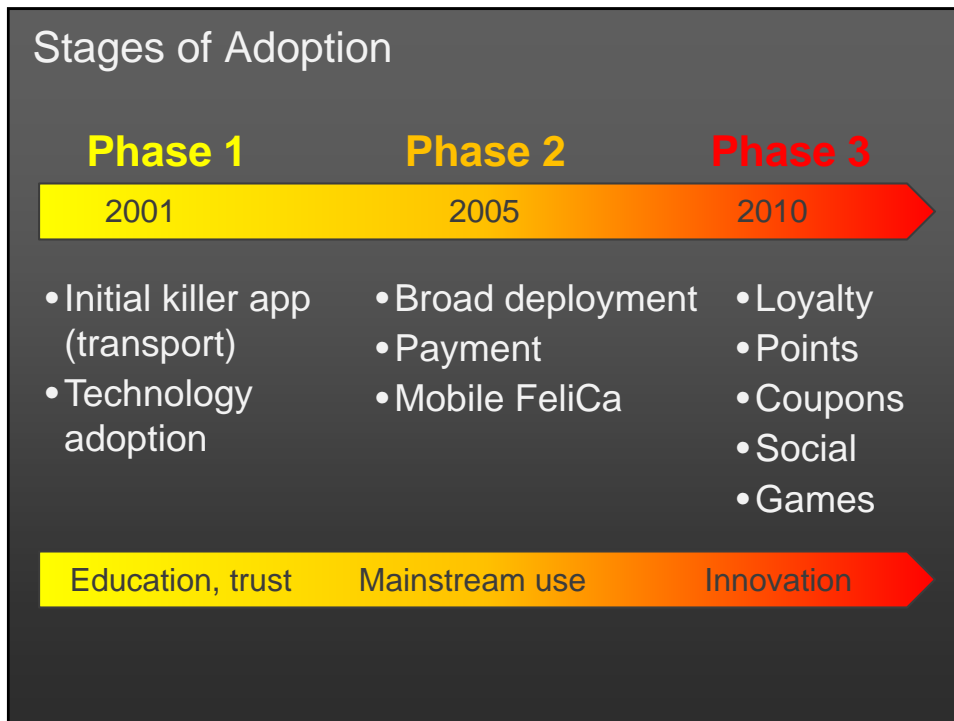
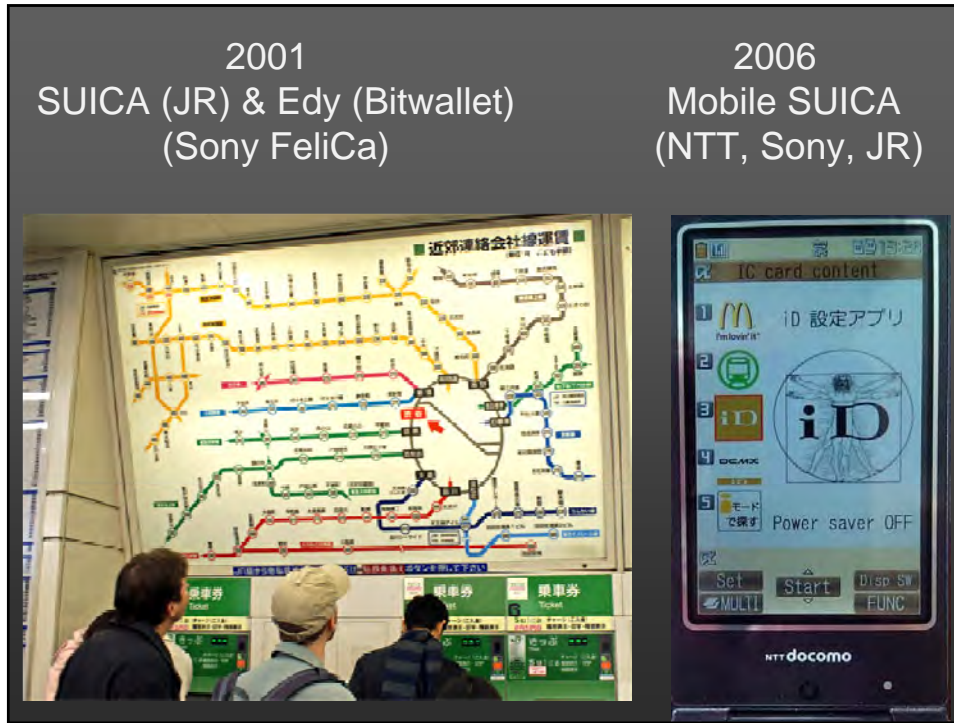
- Longer range (several meters)
- Many to one
- Mostly read
- Relatively dumb
- Not necessarily
- Extreme low-cost
- Standardized
- Widely deployed



Bluetooth Low Energy

- up to 50m
- Many to one
- Read write
- Smart device
- AES
- Embedded in device
- Core spec
- iPhone 4s





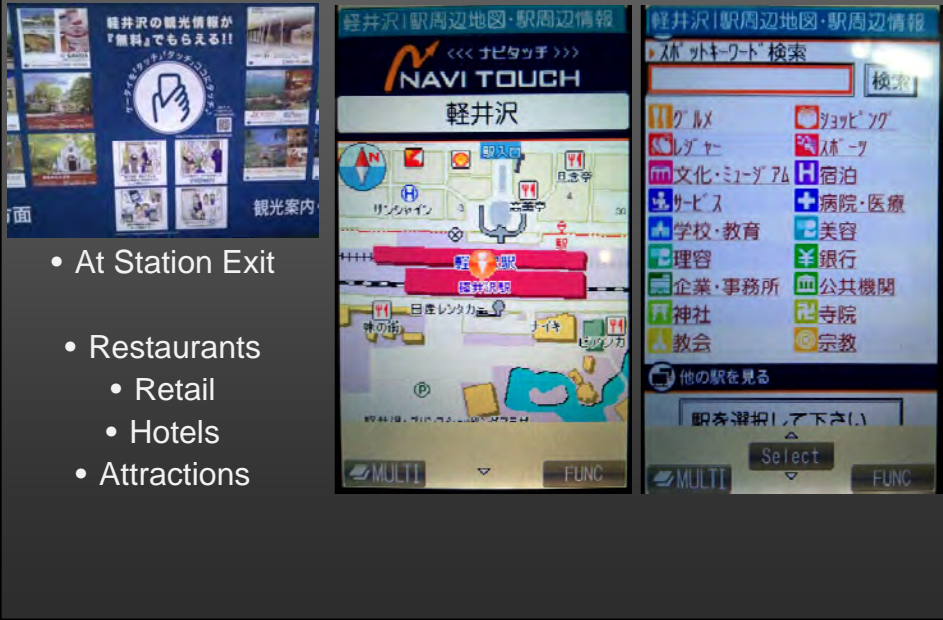
Payments



Payment: 370k Shops + 400k Vending Machines

決済方式		プリペイド(前払い) (Prepaid)					
利用環境	Phys.	166,000店	79,420店	62,000店	27,578店	40,500店	自販機:40万台
	Online	約7,500サイト (09/03)	3サイト			1サイト	
決済ブランド		 カード: 5,300万枚 (携帯: 1000万台) (09/10) ビットワレット	 カード: 3,040万枚 (マネー: 万枚) (携帯: 177万台) (09/11) JR東日本	 カード: 1,364万枚 (09/10) パスモ	 カード: 923万枚 (09/10) セブン&i	 カード: 1,220万枚 (09/11) イオン	 カード: 934万枚 (09/08) TIOJ (JCB)
		FeliCa (Post-Pay)					TypeA
決済方式		ポストペイ(後払い) (Post-pay)					
利用環境	Phys.	R/W: 390,000台	R/W: 169,000台	R/W: 49,000台	18,000店	R/W: 276台	
	Online						約2,000サイト
決済ブランド		 会員: 1000万人 (08/12) NTTドコモ	 会員: 455万人 (08/12) JCB	 会員: 69万人 (08/9) UFJニコス/ VISA	 会員: 116万人 (09/5) スルッとKANSAI	 会員: 97,000人 Master Card	 会員: 100万人 (07/3) SFI
		FeliCa				Type A or B	FeliCa

Local Search - NaviTouch



- At Station Exit
- Restaurants
 - Retail
 - Hotels
 - Attractions

Local Search – Roppongi Retail Association >



- 92 Lamp posts in Roppongi equipped with Felica
- Lamp post typically owned / operated by retail association
- Includes local search, basic navigation, open now

Points / Coupons: Gurunavi Touch >



- 10000 Devices, stand-alone
- 1200 in Tokyo, 19 in Roppongi >
- Store owner gains insight
- Lottery game
- Stamp Card
- Loyalty: "free beer after 3 visits"



Campaigns

Collect Avatar items

Point / Coupons w/ POS Integration

McDonalds >



- Download application to phone
- Select coupon
- Coupon stored in Mobile Felica chip
- Redeem via NFC at register

Games / Loyalty

“Stamp Rally”



- JR / SUICA



Shima Ken >

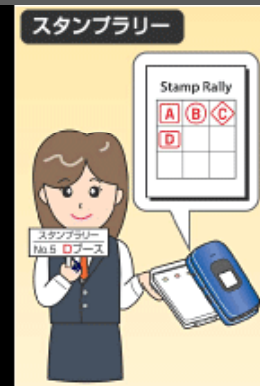
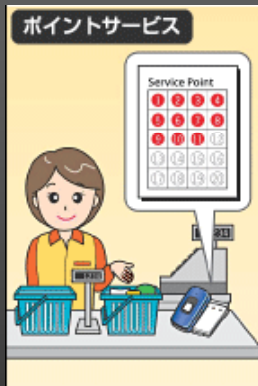


- Reads SUICA/Edy purchase history to obtain a place as “territory”
- Think “Foursquare” based on spend

Loyalty Points




Member Reg.

Stamp Rally





Google™ NFC


Standards	Devices	Platform & Applications
		
<ul style="list-style-type: none">• NFC Forum• SNEP	<ul style="list-style-type: none">• Android 2.3+• Beam (4.0)	<ul style="list-style-type: none">• Google Wallet• Payment & Offers

Physical Access to Google Services



Physical Button



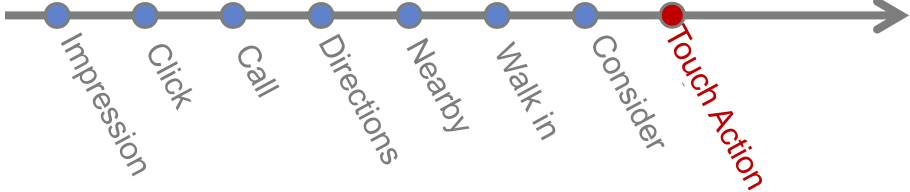


Remembering a Place

Giving Feedback

Coming Back & Getting a Deal

Mobile to Off-line Conversion Tracking



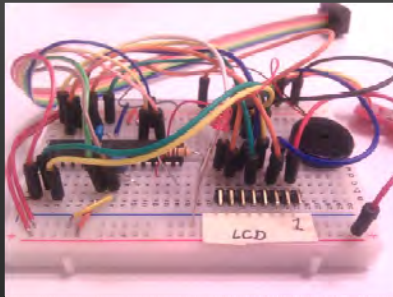
Impression Click Call Directions Nearby Walk in Consider Touch Action

- Connect on-line ad impression and physical action
- For example, check-in, coupon redemption
- Allows advertisers to optimize on-line campaigns for off-line conversions
- Physical “button” behaves analogous to on-line button

“Smart Tag” NFC Base Station



Weds
17:00



- Off-the-shelf Felica / NFC Module
- AVR microcontroller (\$2)
- Rechargeable battery or USB power
- AES encryption, USB HID emulation
- NFC & FeliCa
- Watchdog, no malloc

