



# NFC Forum News Conference

June 5, 2006



# The NFC Forum: Who We Are and Where We Are Going

Christophe Duverne, NFC Forum Chairman  
*Philips Semiconductors*

- **Introduction to the NFC Forum**
  - Christophe Duverne, NFC Forum Chairman (Philips Semiconductors)
- **Near Field Communication technology - coming soon to a device near you!**
  - Erik Michielsen, Director RFID and M2M (ABI Research)
- **Today's news from the NFC Forum**
  - Gerhard Romen, NFC Forum Marketing Committee Chairman (Nokia)

Near Field Communication (NFC) is a standards-based, short-range (a few centimeters) wireless connectivity technology that enables simple and safe two-way interactions among electronic devices.

# New Touch-Based Mobile Services Emerging

**Get information by touching smart posters!**



**Your NFC device is your ticket!**



**Your NFC device is your travel card!**



**Buy goods from vending machines with your phone!**

**Get information about your current job or task!**



**Your NFC device is your credit card!**

The mission of the NFC Forum is to advance the use of Near Field Communication technology by developing specifications, ensuring interoperability among devices and services and educating the market about NFC technology.

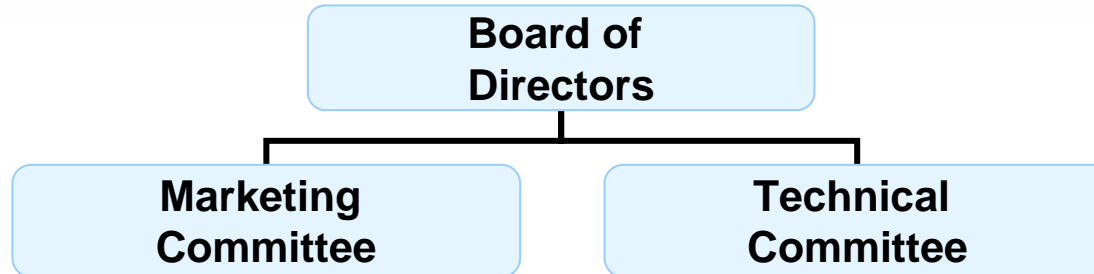


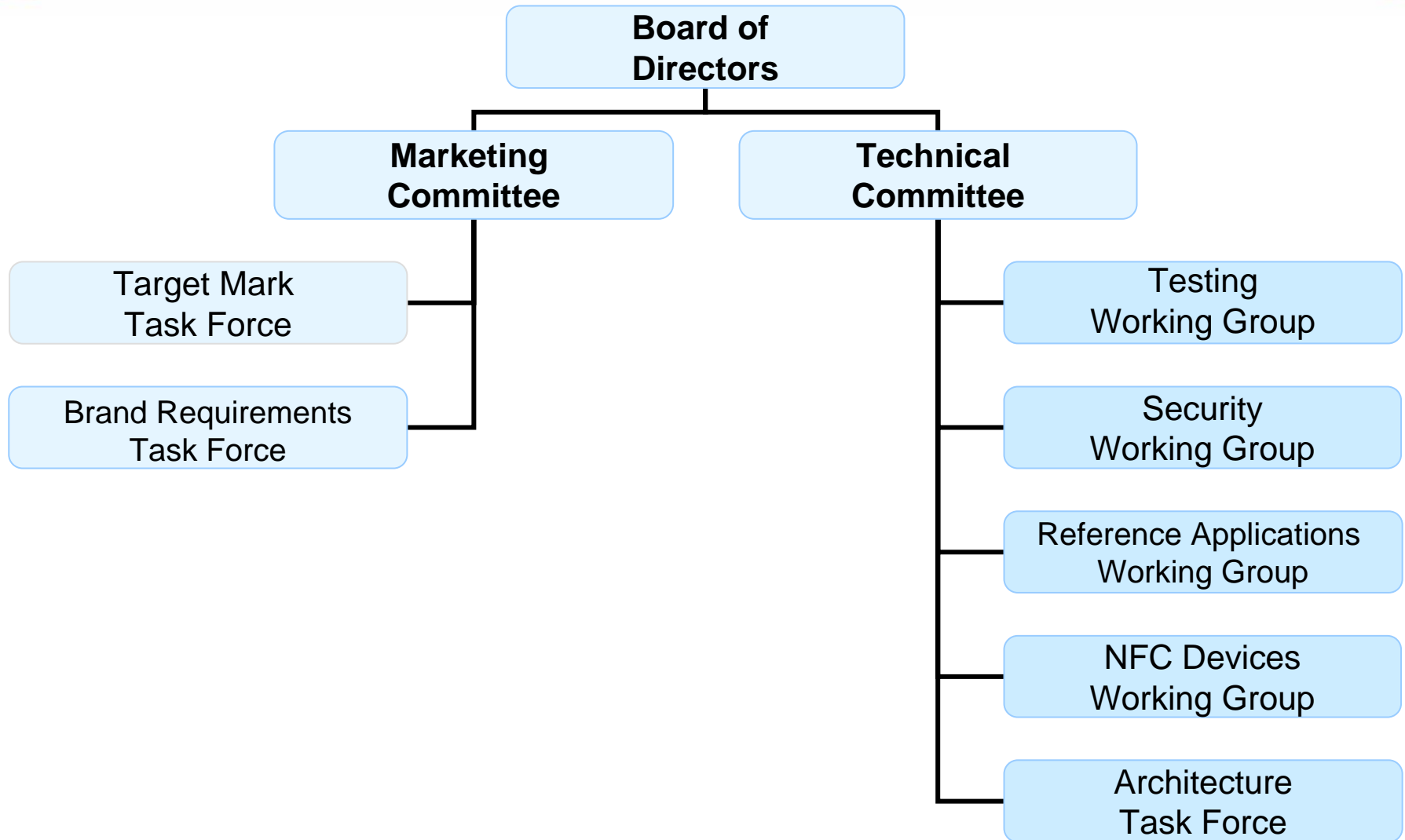
3ALogics  
 ALPS Electric  
 American Express  
 Anadigm, Inc.  
 ARM  
 ATMEL  
 Atos Worldline  
 Axalto  
 Bouygues Telecom  
 Broadcom Corp.  
 CETECOM  
 Consorzio Triveneto  
 S.P.A  
 Dai Nippon Printing  
 Deutsche Postbank AG  
 Dexit, Inc.  
 E-Group Hungary  
 Electronics Testing  
 Center  
 ETRI  
 FH OO Studeinbetriebs  
 GmbH

First Data International  
 France Telecom  
 Gemplus  
 Giesecke & Devrient  
 Hanchang System  
 Corporation  
 HTA Lucerne  
 Infineon Technologies  
 Ingenico  
 Innovision Research &  
 Technology  
 Inside Contactless  
 Intel  
 JCB Co., Ltd.  
 KDDI  
 LG Electronics  
 LogicaCMG  
 Logitech Europe SA  
 MasterCard International  
 Melexis  
 MeT (Mobile Electronic  
 Transactions)  
 Microsoft

Mobey Forum  
 MobileLime  
 mobilkom austria  
 Motorola  
 National Technical  
 Systems  
 NEC Corporation  
 NexgTelecom Co., Ltd  
 Nokia  
 Oberthur Card Systems  
 Omnikey  
 Panasonic  
 Payzy  
 Philips  
 Plantronics  
 RATP  
 Renesas Technology  
 Corp.  
 RF Micro Devices  
 Ricoh Company Ltd.  
 Samsung  
 SanDisk  
 Schindler

SFR  
 Silicide  
 SK Telecom  
 SKIDATA AG  
 Smart Technologies  
 Group  
 Sony  
 Sony Ericsson Mobile  
 Communications AB  
 Sprint  
 Strategic Engineering  
 Group (SEG)  
 Swisscom Mobile  
 Telenor  
 Texas Instruments  
 The Open Group  
 Visa International  
 ViVOTech  
 VISA  
 Vodafone Group PLC  
 VTT Technical Research  
 Centre  
 Wells Fargo  
 Yoonison BV





The vision of the NFC Forum is to enable users to access content and services in an intuitive way, leading to...

- a world of secure universal commerce and connectivity
- in which consumers can access and pay for physical and digital services
- anywhere, at any time, using any device



- Develop standards-based specifications that define NFC device architecture and protocols for interoperability
- Encourage use of NFC Forum specifications
- Work to ensure that products claiming NFC capabilities comply with NFC Forum specifications
- Educate consumers and enterprises globally about NFC

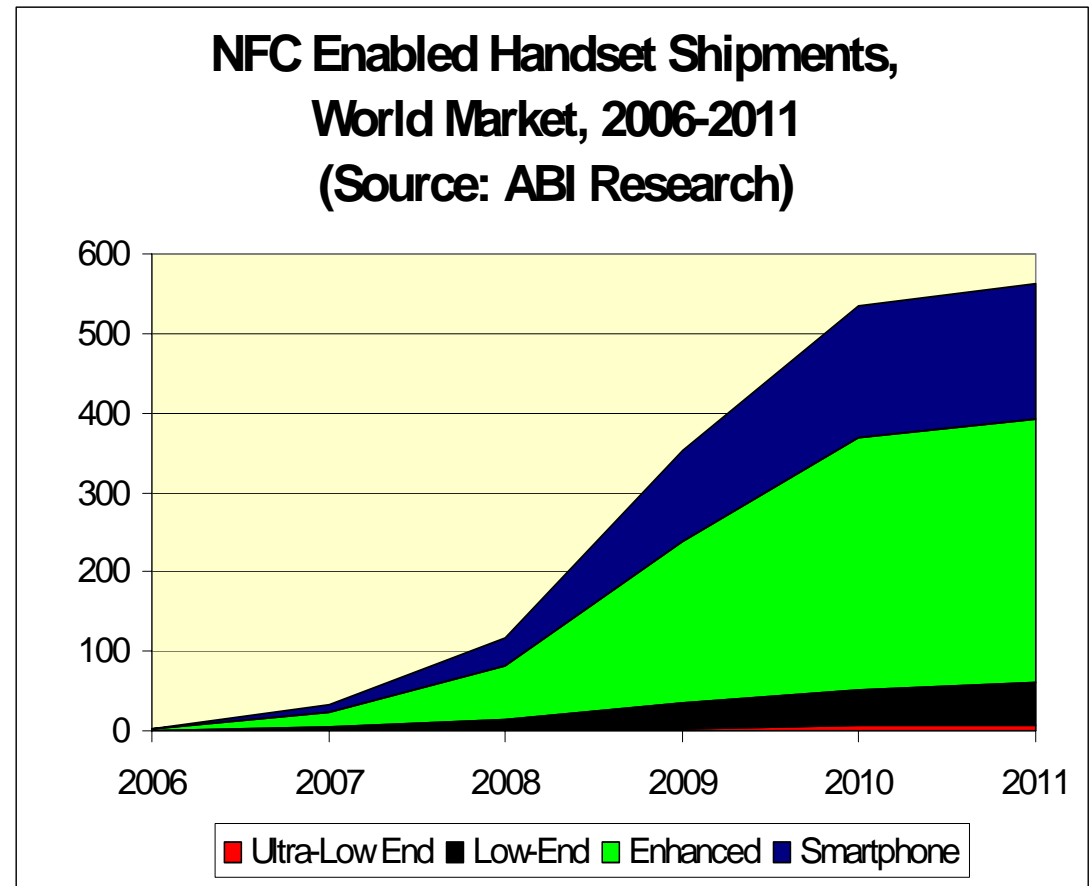


# Near Field Communication Technology: Coming Soon to a Device Near You!

Erik Michielsen, Director RFID and M2M  
*ABI Research*

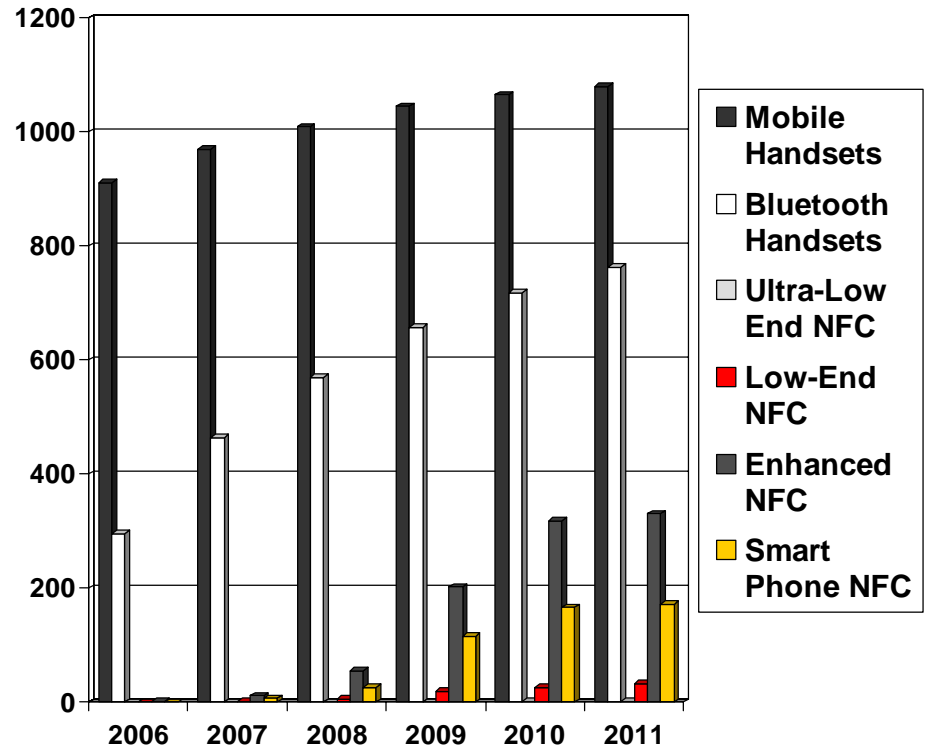
## • Assumption Drivers

- Japan: 24% DoCoMo Base Using Wallet Mobile Phone EOY06
- NFC Bluetooth Chipset Development
- Contactless Payment Via OTA "Soft Cards"
- Acceptance Growth (e.g. 55,000 U.S. locations by EOY06)
- 12+ NFC Trials in '06 Service Discovery as Data Revenue Driver



- **Bluetooth Simple Pairing**
  - Integrate connectivity bundle (NFC, BT, Wi-Fi, GPS, FM Radio) and drive functionality (e.g. headsets, data sharing)
  - Challenge-NFC Secure Element
  - Bluetooth-NFC systems arrive on the market 4Q06/1Q07
- **Bluetooth SIG Interest Up**
  - Bluetooth handset penetration surpasses 70% by 2010
  - Share 30+ use case experience with NFC Forum groups to guarantee interoperability
  - NFC enhances BT relevance

**NFC Bluetooth-Enabled Phones by Phone Type, World Market, Moderate Forecast, 2006-2011 (Source: ABI Research)**



“At a time when television and radio advertising generate less effective responses and the market continues to fragment, NFC offers a way to connect consumers where it matters most — with their peers — while offering anytime point-of-sale opportunities on the move via the cellular handset and, progressively, consumer electronics devices.”

- ABI Research, December 2005

- **Today's Challenges**

- Modes, Formats, Security, Emulation, Carrier Buy-In
- Backward Compatibility in reader environments where NFC plays passive role (payment, ticketing, transit)
- Architecture, mode switching, profile definition, Secure Element flexibility learned from Bluetooth and applied to NFC Content Discovery and device pairing
- Phone Availability

- **Tomorrow's Challenges**

- Device Switching Challenges (e.g., Banking Soft Cards)
- NFC Enabled Consumer Electronics
- Advertiser and Agency Education on Content Discovery
- Compelling Application Availability



# NFC Forum Technology Architecture And Our First Specifications

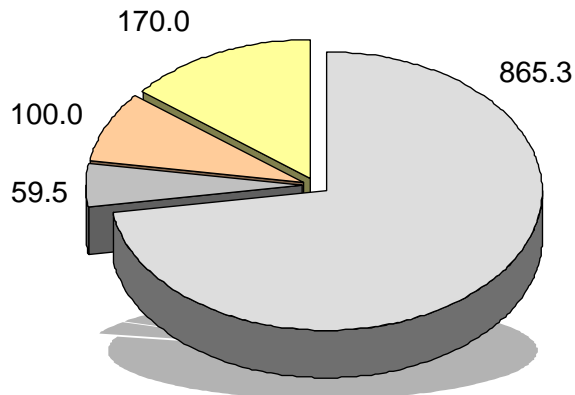
Gerhard Romen, NFC Forum Marketing Committee Chairman  
*Nokia*

A diagram structure consisting of two vertical lines that define a central rectangular area. This area is currently empty, suggesting it is a placeholder for a detailed architectural diagram of the NFC Forum technology.

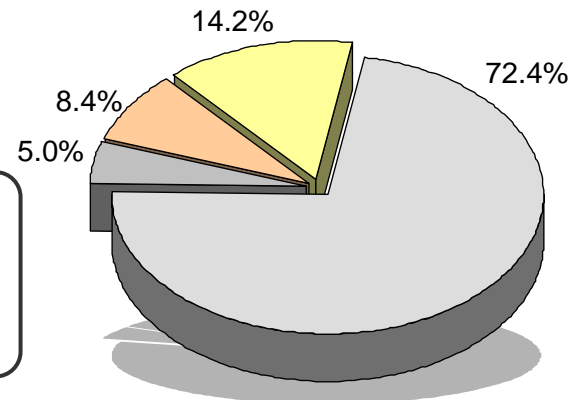
**RF Layer ISO 18092 + ISO 14443 Type A, Type B + FeliCa**

- The NFC Forum specified an initial set of mandatory tag formats based on ISO 14443 Type A and 14443 Type B standards, and Sony's FeliCa
  - ISO 14443 is a four-part international standard for contactless smart cards operating at 13.56 MHz in close proximity with a reader antenna
  - Compatible tags are available initially from Innovision, Philips, Sony and other vendors

NFC-Ready Tags  
(Units Thru 2005)



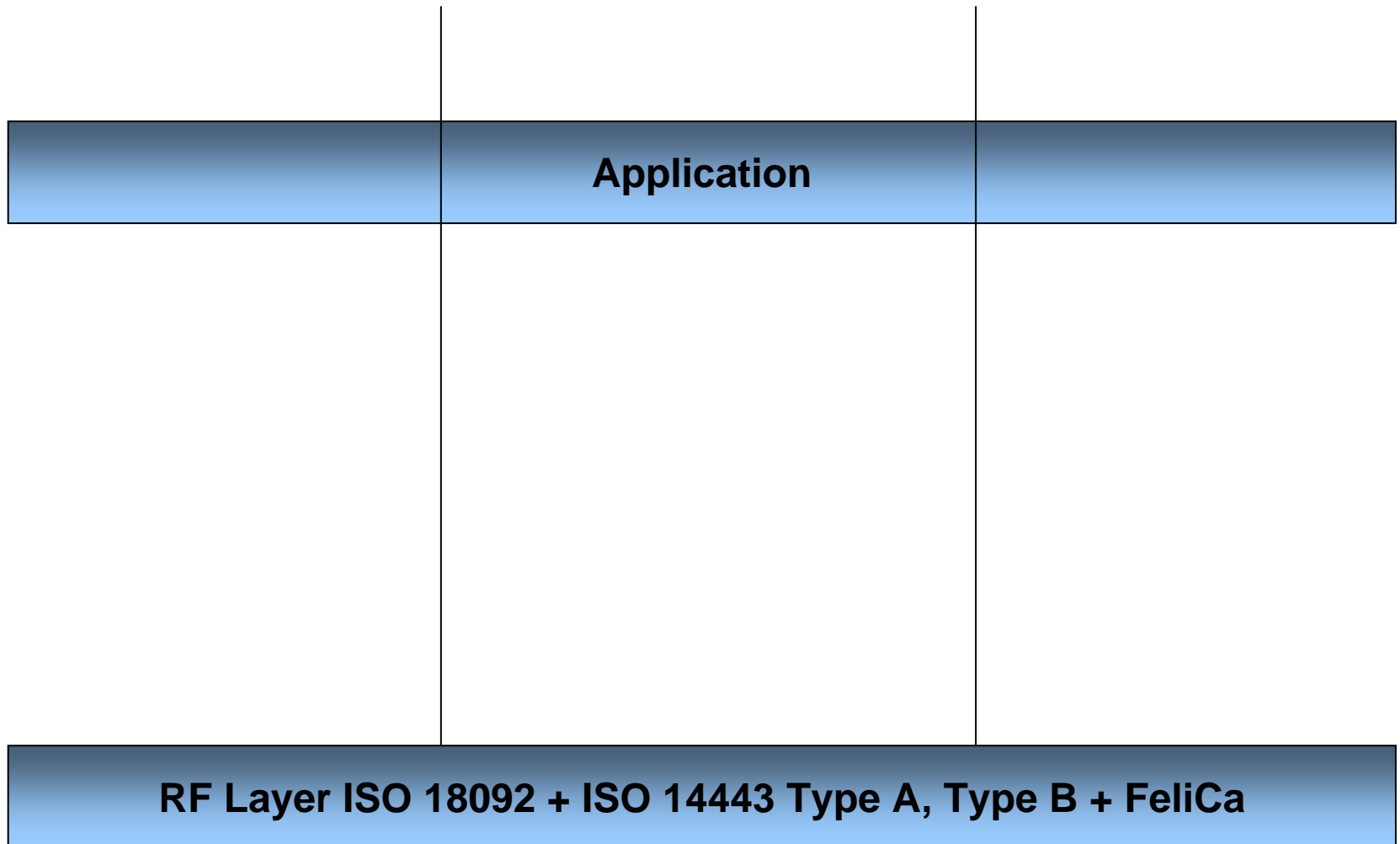
NFC-Ready Tags  
(% Share Thru 2005)

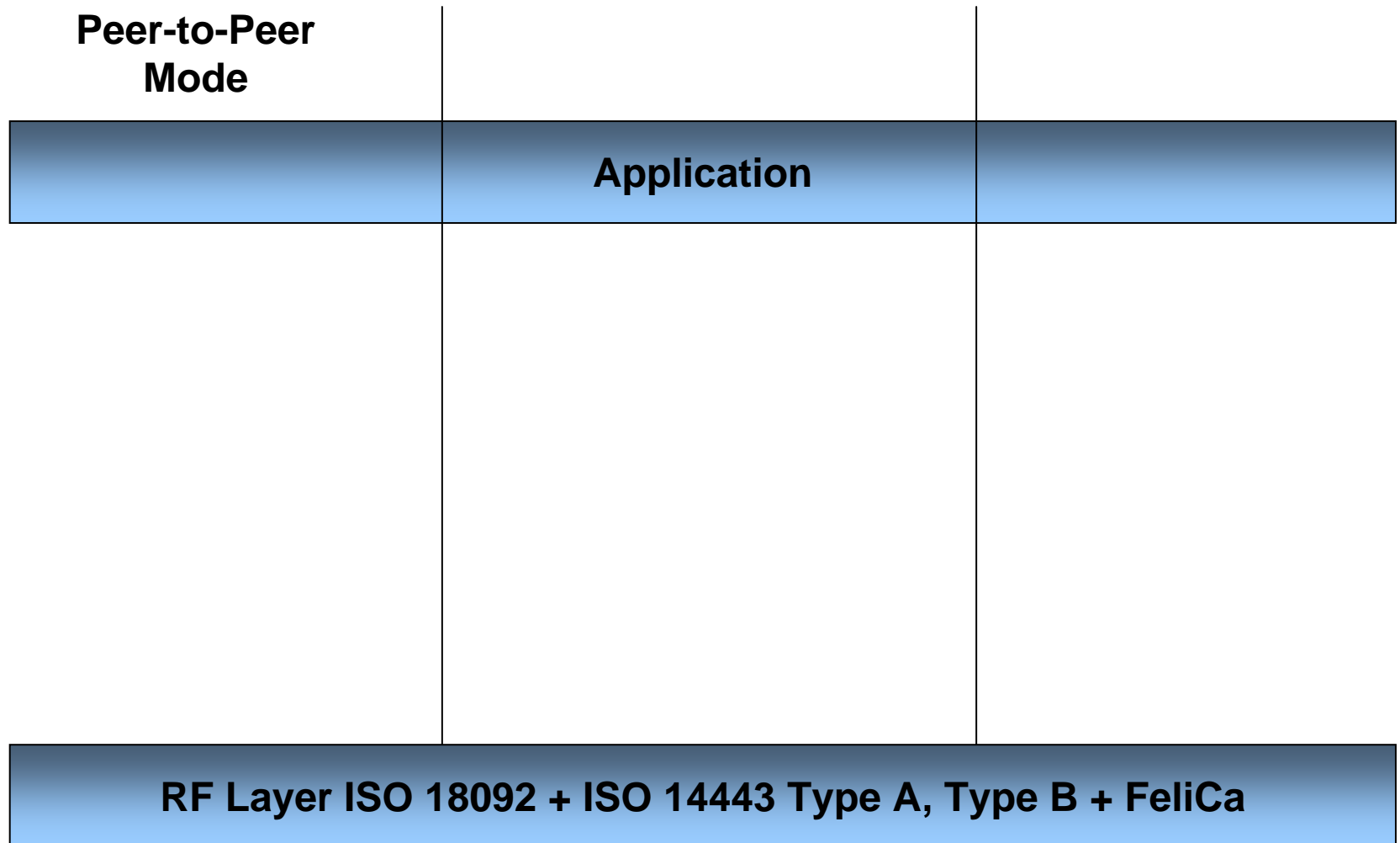


- 14443 Type A
- 14443 Type B
- FeliCa
- Others

# Four Mandated NFC Forum Tag Formats

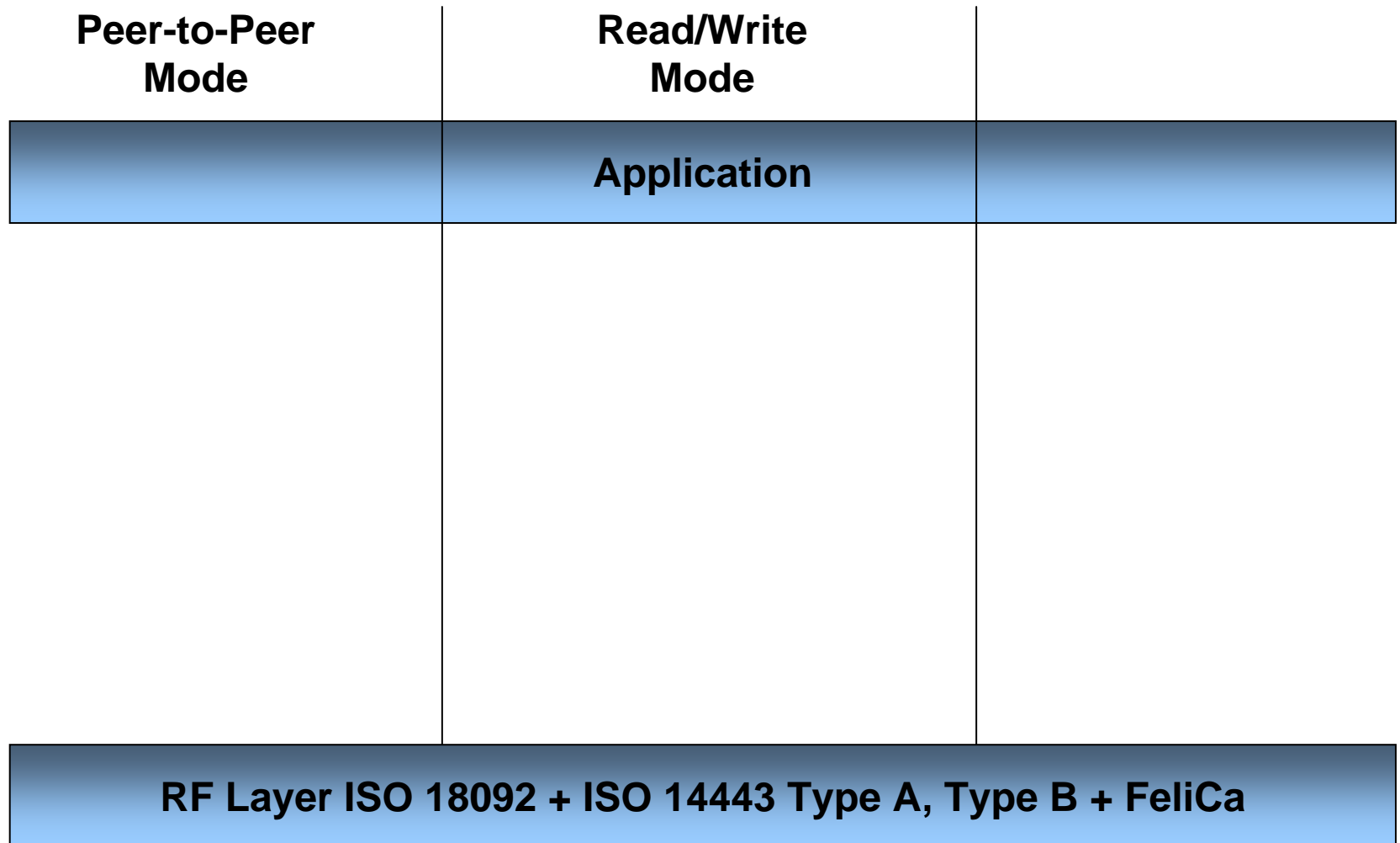
	<b>Type 1</b>	<b>Type 2</b>	<b>Type 3</b>	<b>Type 4</b>
<b>RF Interface</b>	ISO 14443 A-2	ISO 14443 A-2	FeliCa (ISO 18092, passive communication mode at 212 kbits/second)	ISO 14443-2
<b>Initialization</b>	ISO 14443 A-3	ISO 14443 A-3	FeliCa (ISO 18092, passive communication mode at 212 kbit/ssecond)	ISO 14443-3
<b>Speed</b>	106 kbits/second	106 kbits/second	212 kbits/second	106-424 kbits/second
<b>Protocol</b>	Specific Command set	Specific Command Set	FeliCa protocol	ISO 14443-4 ISO 7816-4 commands
<b>Memory Size</b>	Up to 1 KB	Up to 2 KB	Up to 1 MB	Up to 64KB
<b>Cost (memory dependent)</b>	Low	Low	Moderate	Moderate
<b>Use cases</b>	Tags with small memory for single application		Flexible tags with larger memory offering multi-application capabilities	







## Connect Electronic Devices

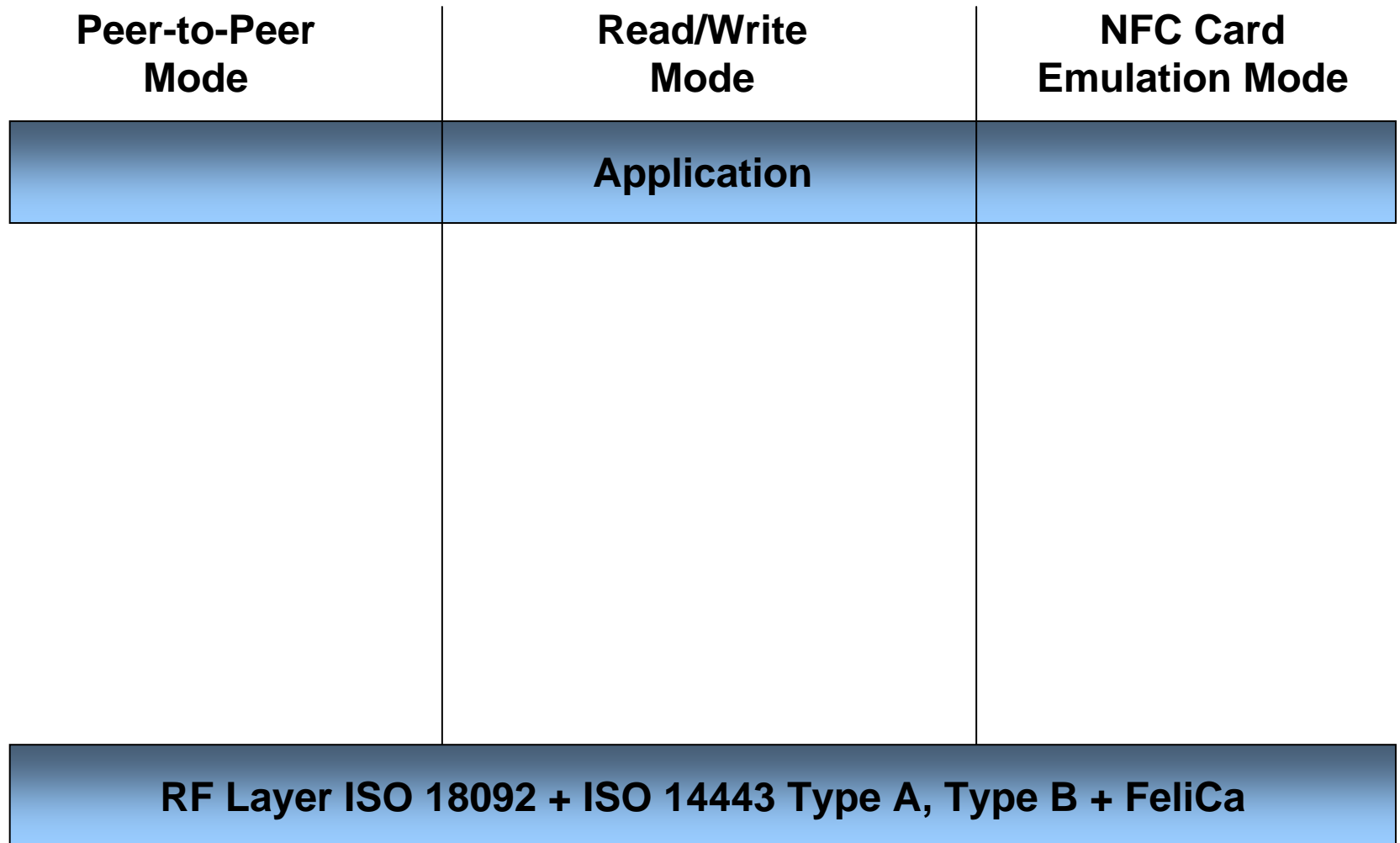




**Connect Electronic Devices**



**Access Digital Content**





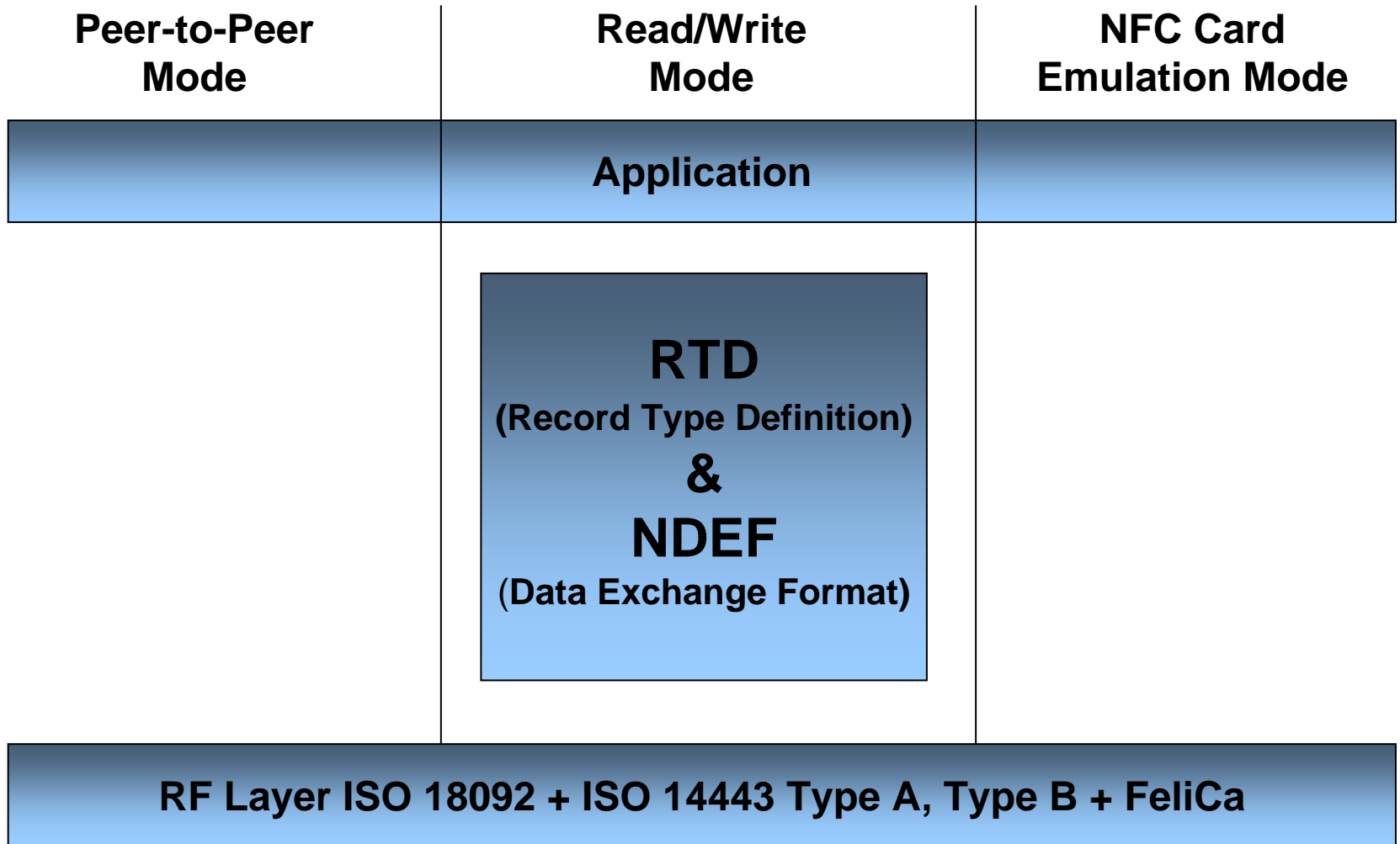
## Connect Electronic Devices



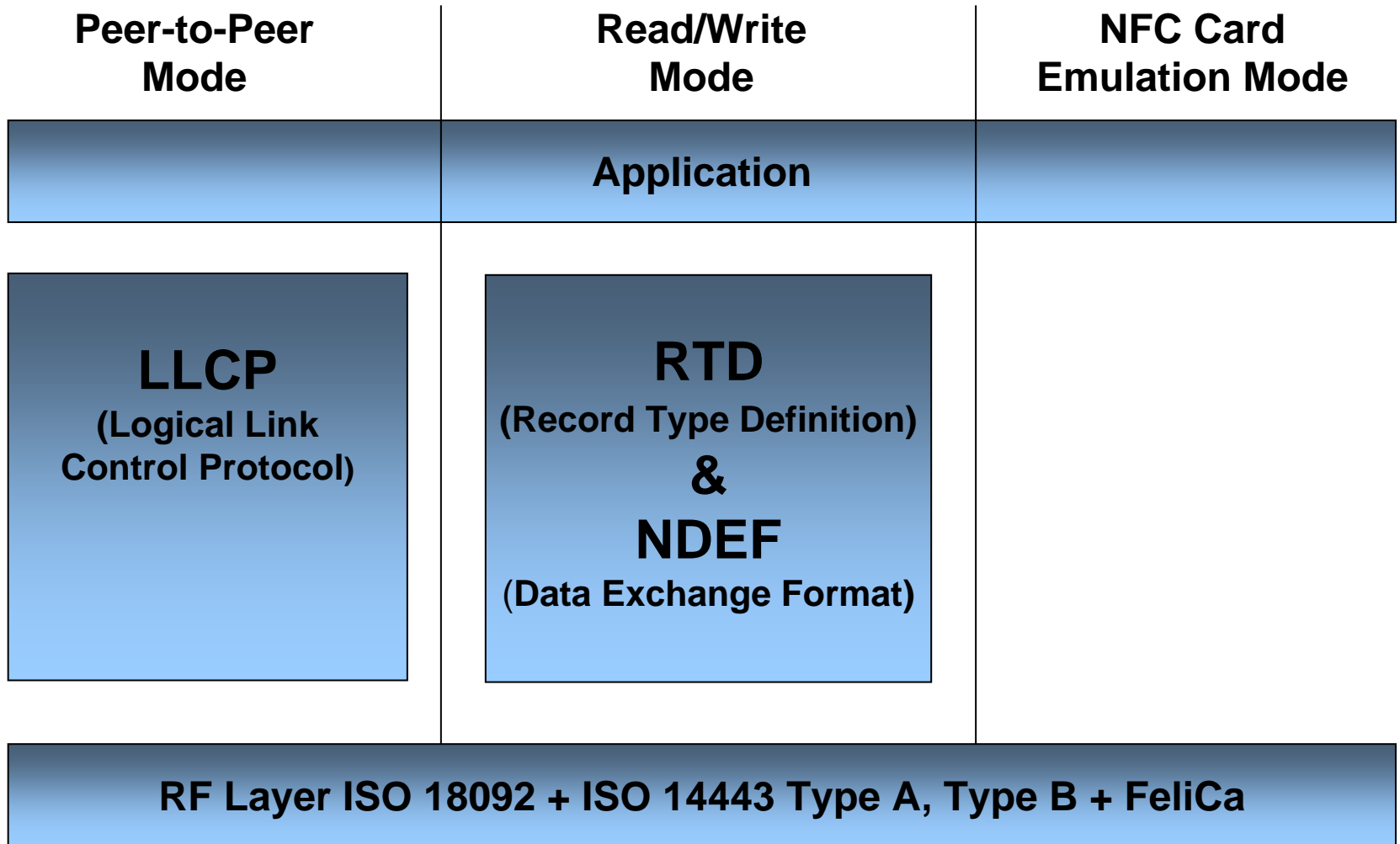
## Access Digital Content

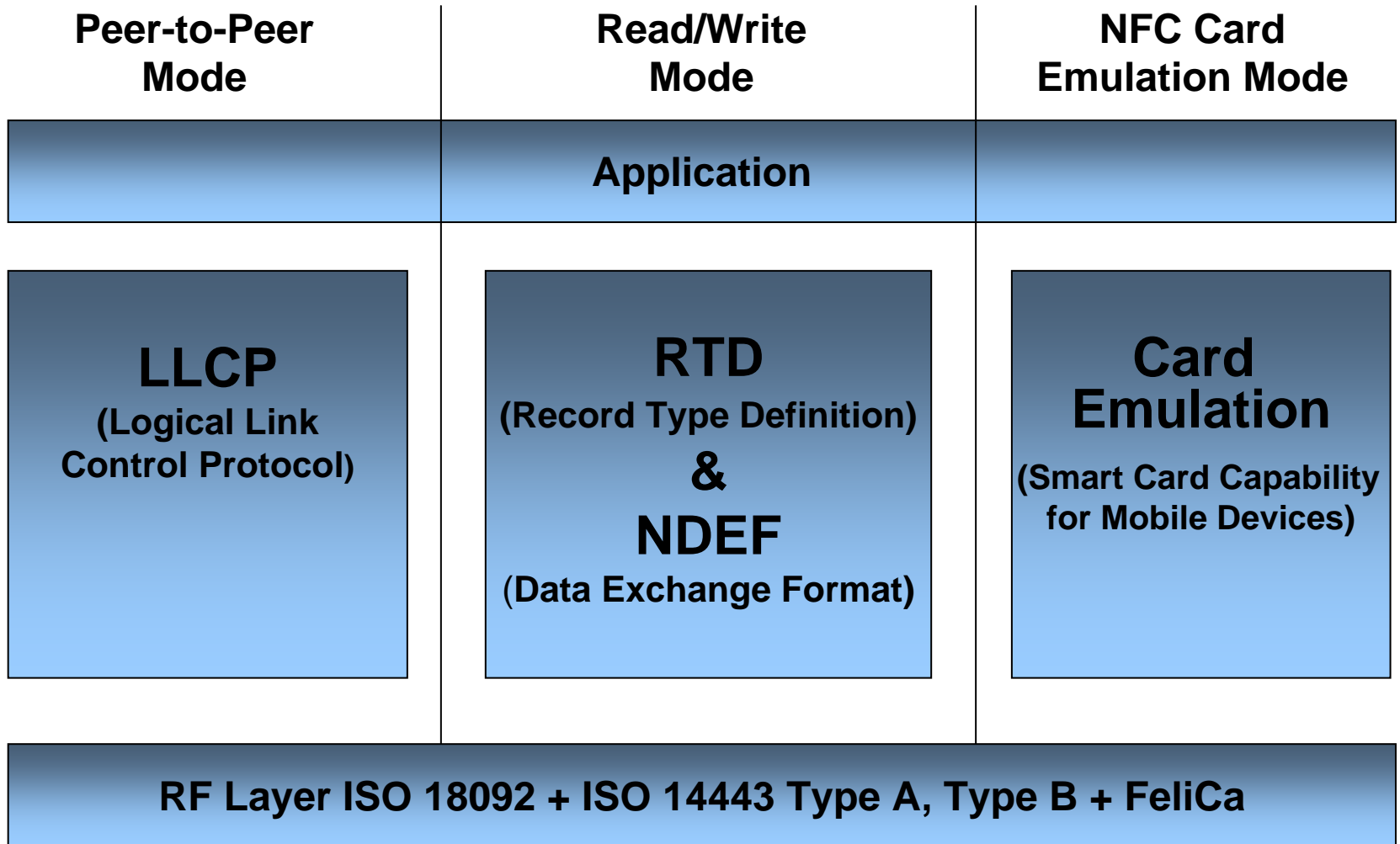


## Make Contactless Transactions



- **The first two NFC Forum specifications will provide common formats for data sharing between NFC-enabled devices and between devices and tags**
  - **NFC Data Exchange Format (NDEF)**
    - Specifies a common data format for NFC Forum devices and NFC Forum tags
  - **NFC Record Type Definition (RTD)**
    - Specifies standard record types used in messages between NFC Forum devices and between NFC Forum devices and tags
  - Both scheduled for release in Q3
- **Next NFC Forum specifications define specific RTDs**
  - **Smart Poster RTD**
    - For posters incorporating tags containing text, audio or other data
  - **Text RTD**
    - For records containing plain text
  - **Uniform Resource Identifier (URI) RTD**
    - For records that refer to an Internet resource





- **Logical Link Control Protocol (LLCP)**
  - Defines the protocol to manage the logical link between NFC Forum devices (based on ISO 18092 / NFCIP-1)
- **Card Emulation**
  - Defines how NFC Forum devices can function as contactless smart cards

- **NFC Forum publishes its technology architecture**
- **The NFC Forum specified an initial set of mandatory tag formats based on ISO 14443 Type A and 14443 Type B standards, and Sony's FeliCa**
- **NFC Forum announces first five pending specifications**
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Specifies common data format for NFC Forum devices and NFC Forum tags
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# Questions

	NFC	RFID	IrDa	Bluetooth
Set -up time	<0.1ms	<0.1ms	~0.5s	~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