



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!

TOUCH



Buy goods from vending machines with your phone!

Get information about your current job or task!



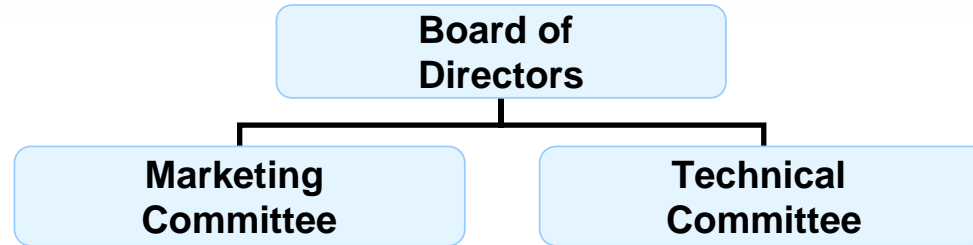
Your NFC device is your credit card!

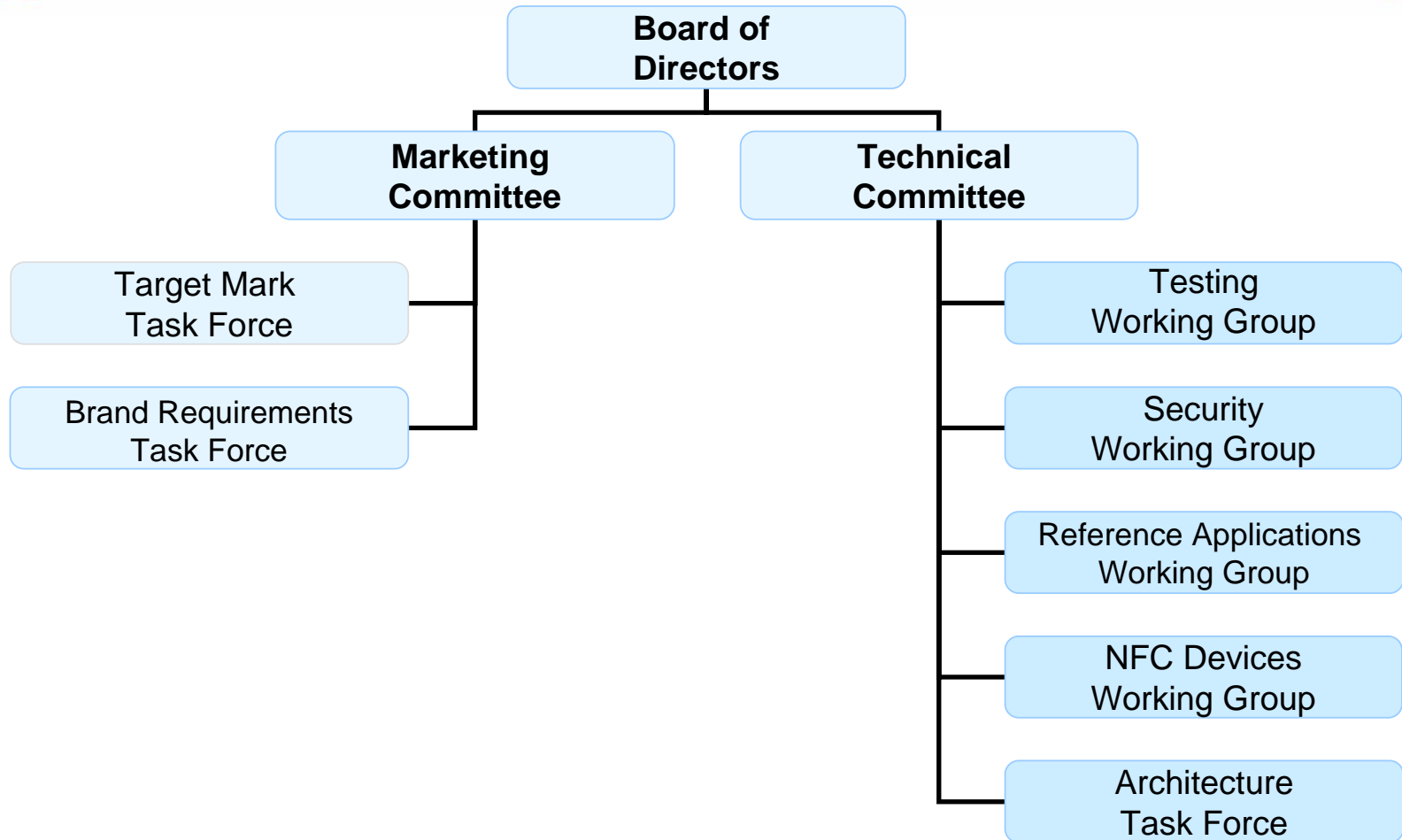


The mission of the NFC Forum is to advance the use of Near Field Communication technology by developing specifications, ensuring interoperability among devices and services and educating the market about NFC technology.



3ALogics	First Data International	Mobey Forum	SFR
ALPS Electric	France Telecom	MobileLime	Silicide
American Express	Gemplus	mobilkom austria	SK Telecom
Anadigm, Inc.	Giesecke & Devrient	Motorola	SKIDATA AG
ARM	Hanchang System Corporation	National Technical Systems	Smart Technologies Group
ATMEL	HTA Lucerne	NEC Corporation	Sony
Atos Worldline	Infineon Technologies	NexgTelecom Co., Ltd	Sony Ericsson Mobile Communications AB
Axalto	Ingenico	Nokia	Sprint
Bouygues Telecom	Innovision Research & Technology	Oberthur Card Systems	Strategic Engineering Group (SEG)
Broadcom Corp.	Inside Contactless	Omnikey	Swisscom Mobile
CETECOM	Intel	Panasonic	Telenor
Consorzio Triveneto S.P.A	JCB Co., Ltd.	Payzy	Texas Instruments
Dai Nippon Printing	KDDI	Philips	The Open Group
Deutsche Postbank AG	LG Electronics	Plantronics	Visa International
Dexit, Inc.	LogicaCMG	RATP	ViVOTech
E-Group Hungary	Logitech Europe SA	Renesas Technology Corp.	VISA
Electronics Testing Center	MasterCard International	RF Micro Devices	Vodafone Group PLC
ETRI	Melexis	Ricoh Company Ltd.	VTT Technical Research Centre
FH OO Studeinbetriebs GmbH	MeT (Mobile Electronic Transactions)	Samsung	Wells Fargo
	Microsoft	SanDisk	Yoonison BV
		Schindler	





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

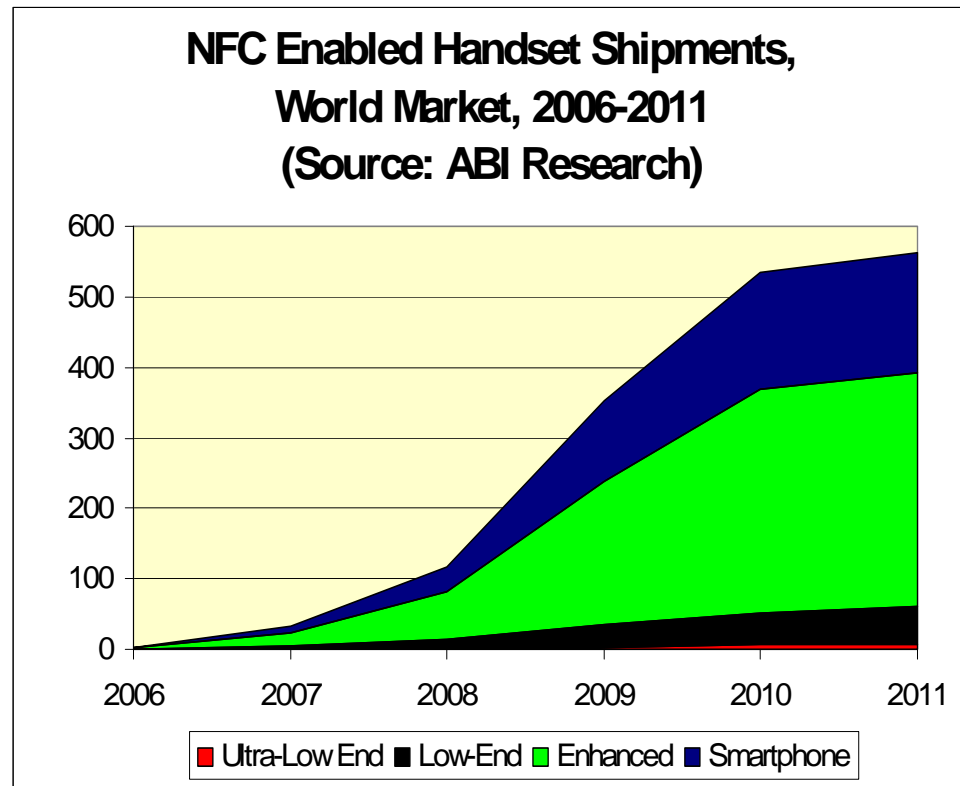


Near Field Communication Technology: Coming Soon to a Device Near You!

Erik Michielsen, Director RFID and M2M
ABI Research

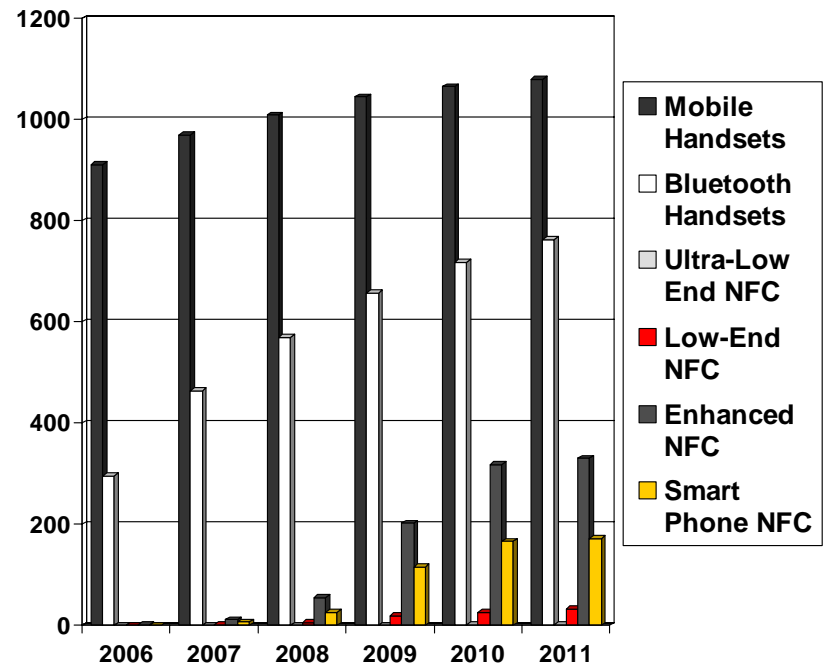
- **Assumption Drivers**

- 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

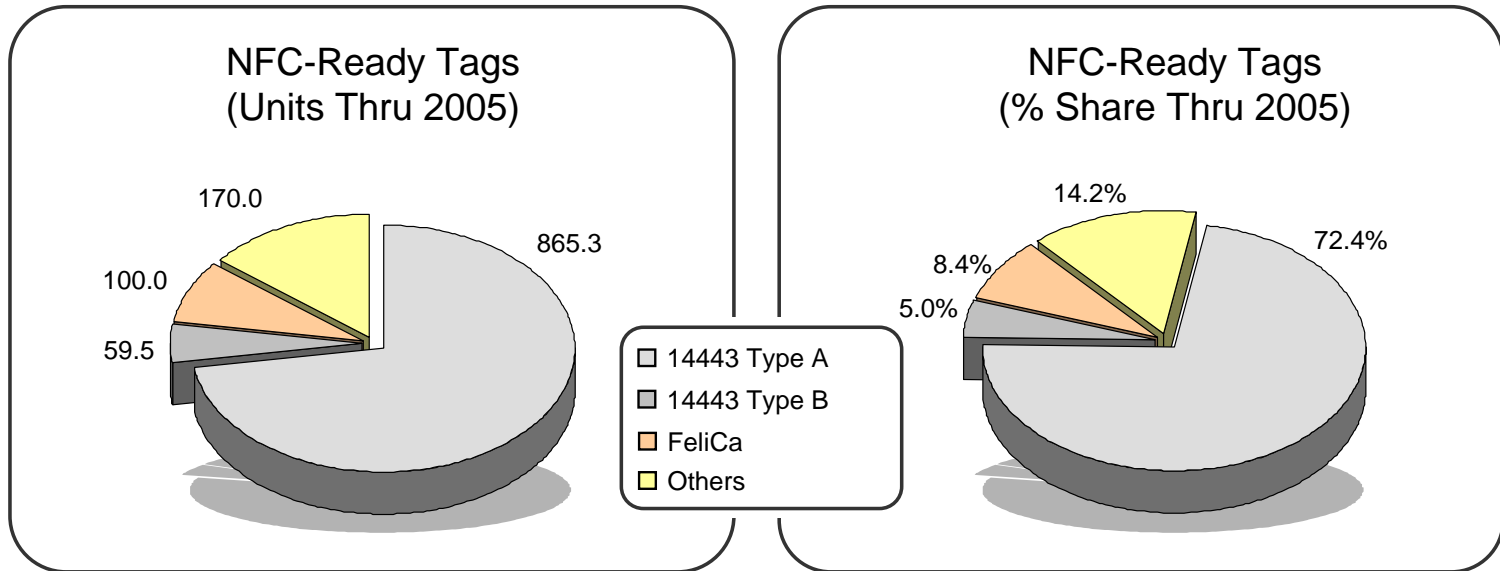


NFC Forum Technology Architecture

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

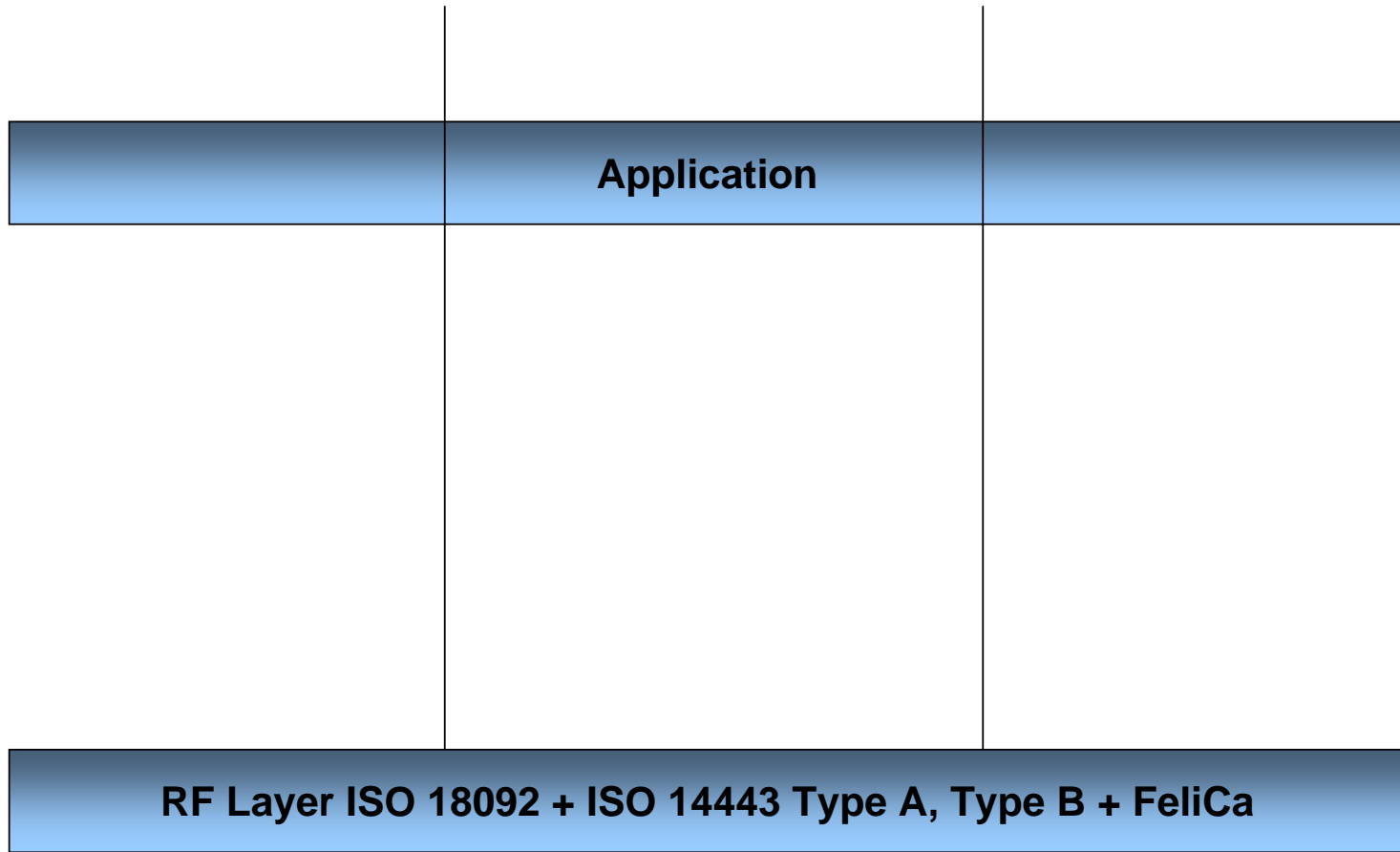
A Billion NFC-Ready Tags Are Already Deployed

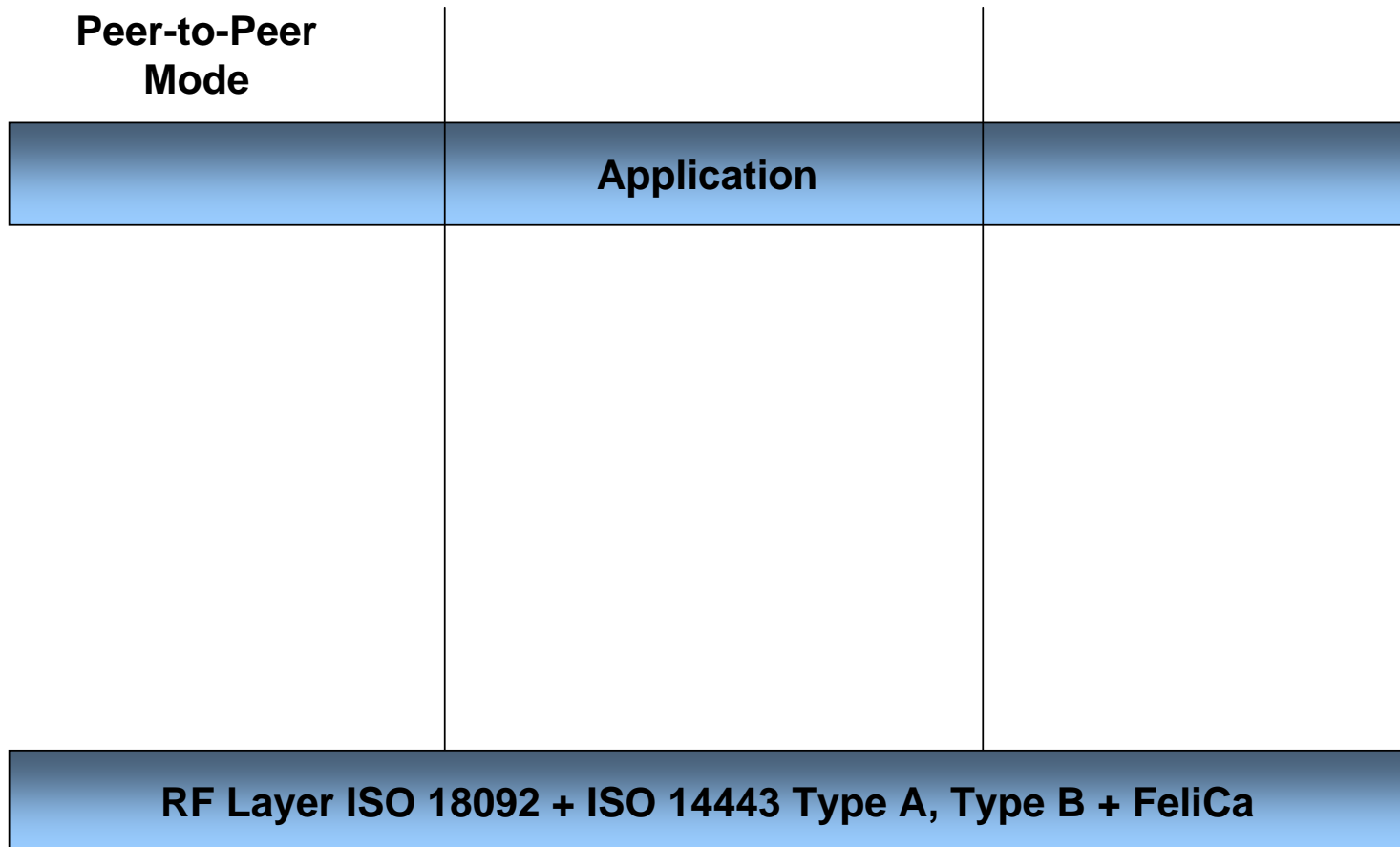




Four Mandated NFC Forum Tag Formats

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



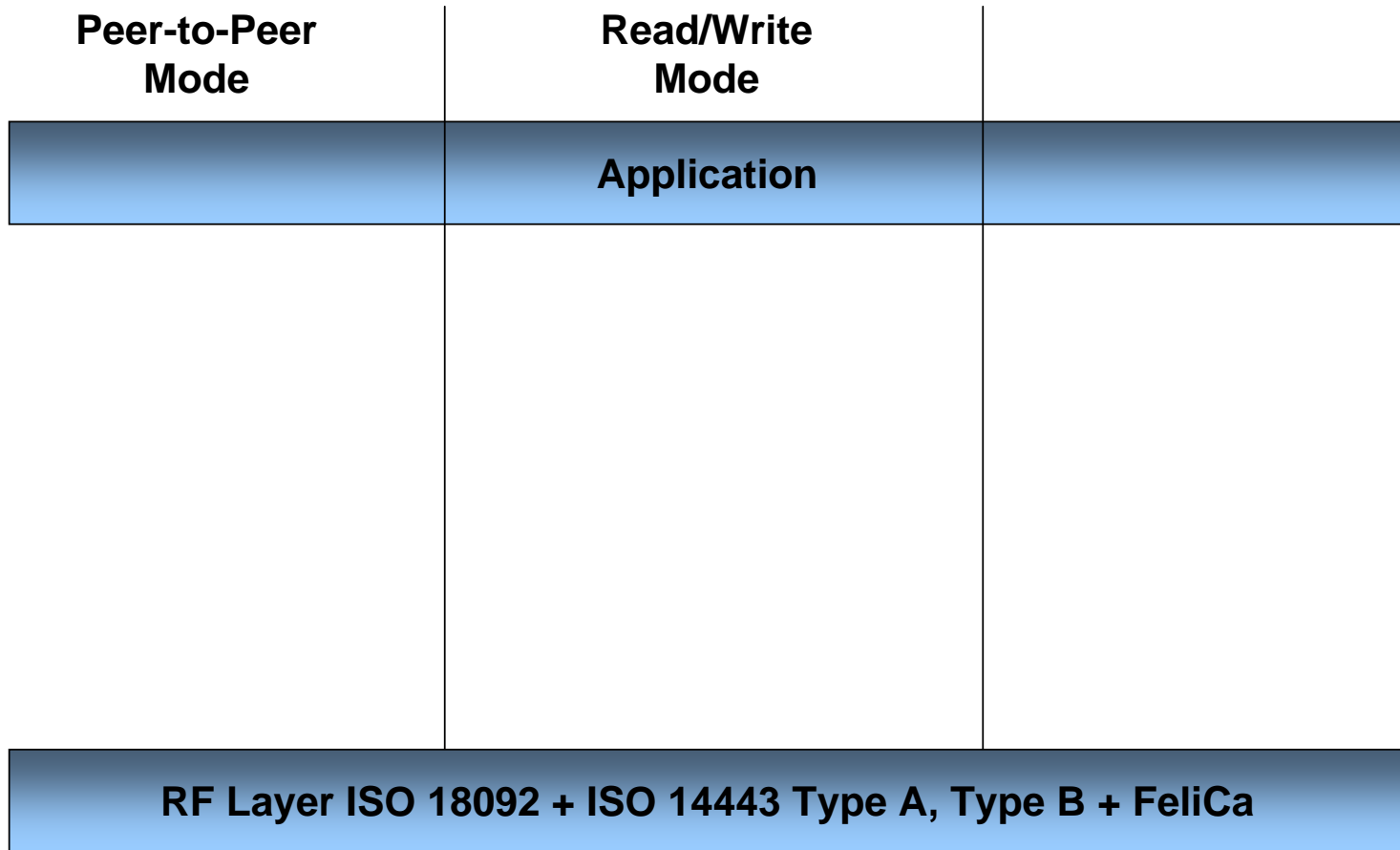




Connect Electronic Devices



NFC Forum Technology Architecture





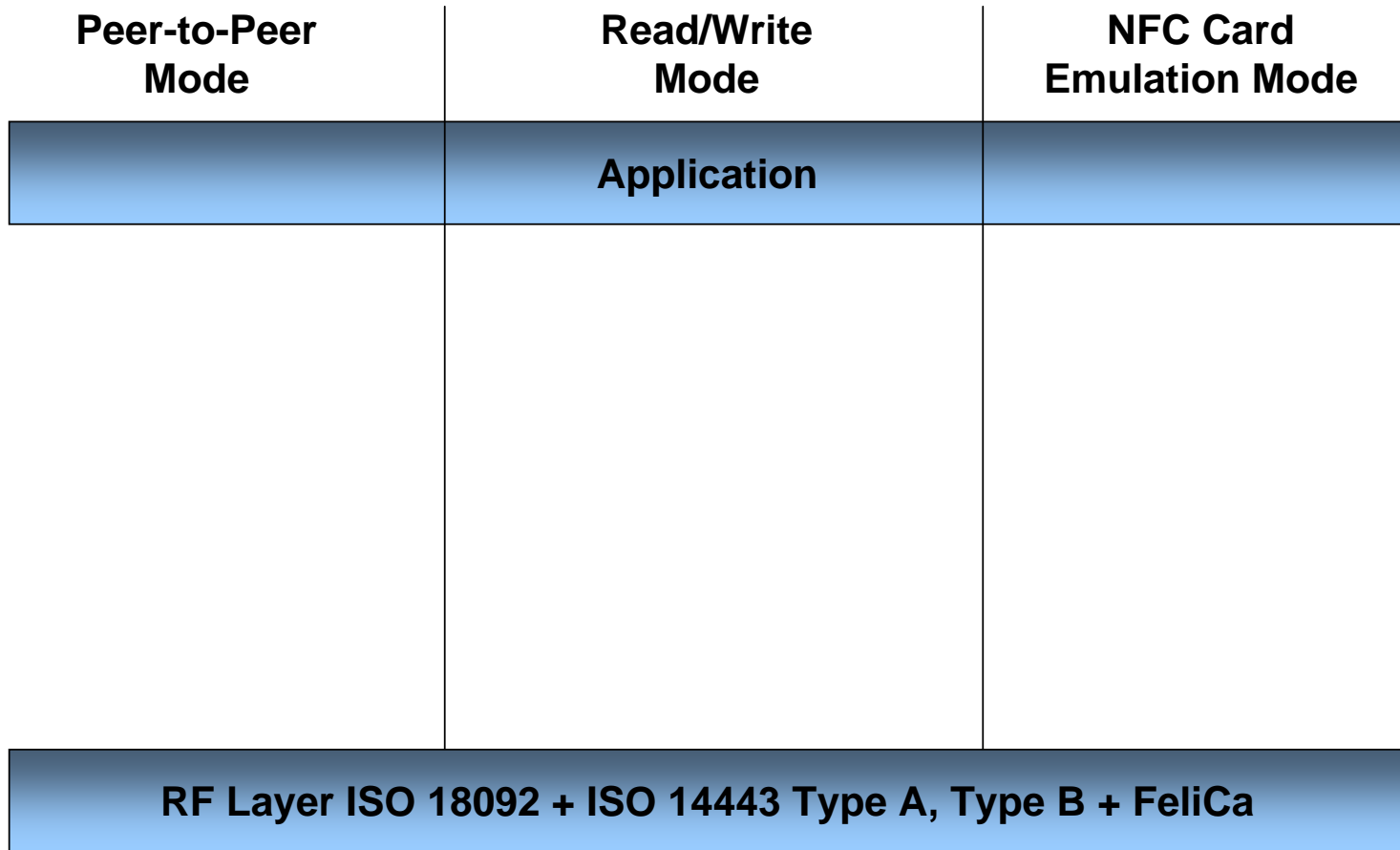
Connect Electronic Devices



Access Digital Content



NFC Forum Technology Architecture





Connect Electronic Devices



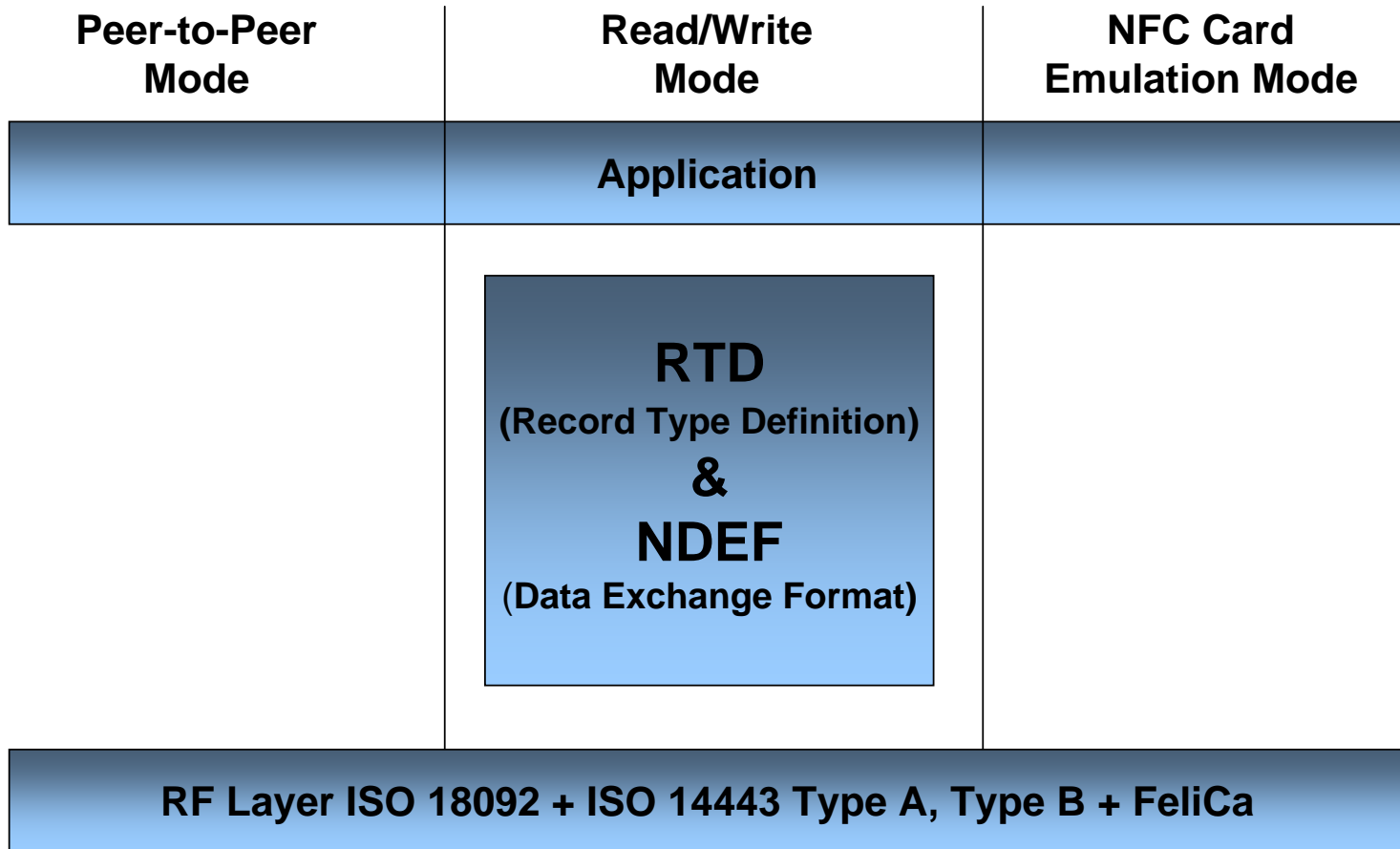
Access Digital Content



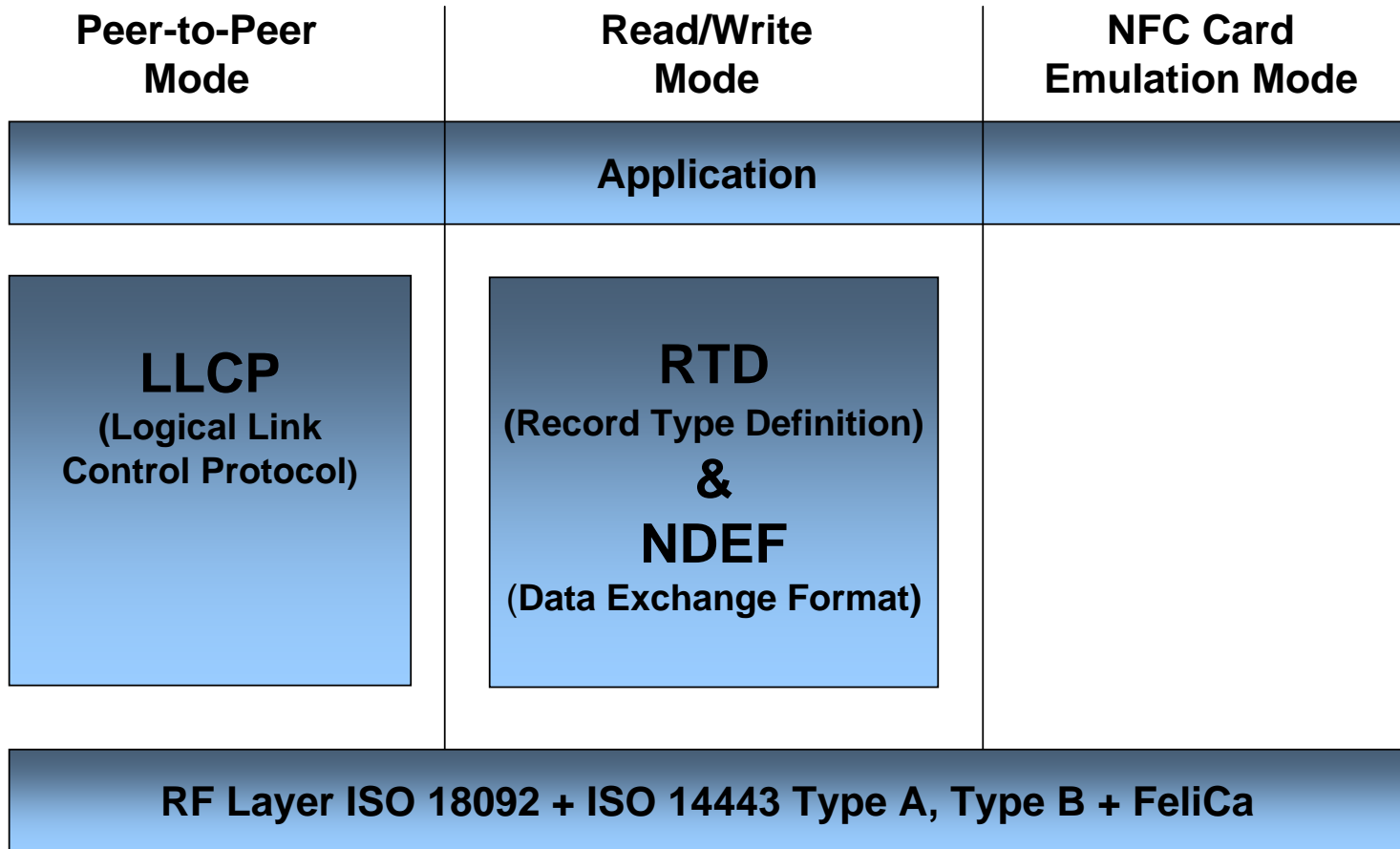
Make Contactless Transactions



NFC Forum Technology Architecture

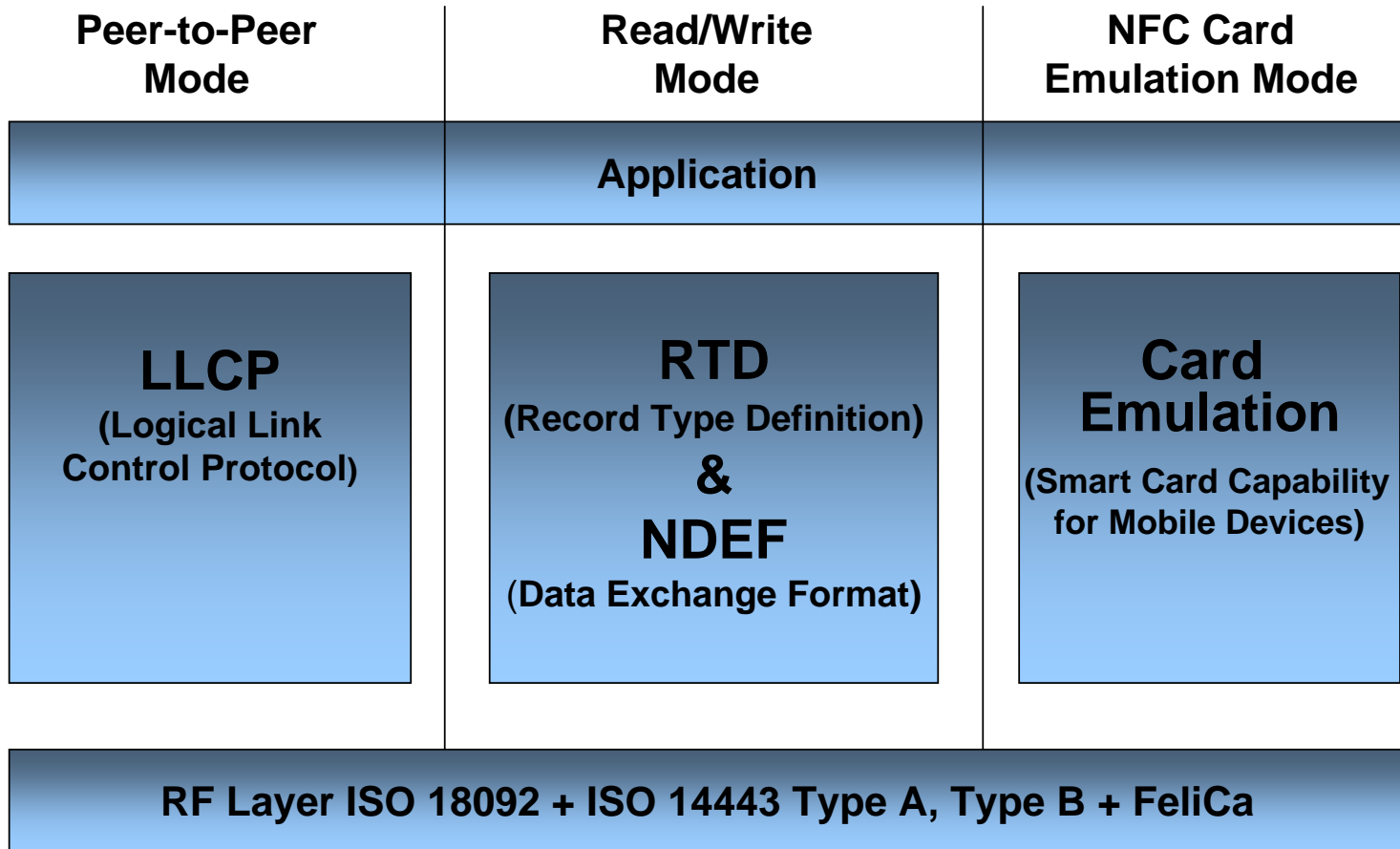


- **The first two NFC Forum specifications will provide common formats for data sharing between NFC-enabled devices and between devices and tags**
 - **NFC Data Exchange Format (NDEF)**
 - Specifies a common data format for NFC Forum devices and NFC Forum tags
 - **NFC Record Type Definition (RTD)**
 - 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





NFC Forum Technology Architecture



- **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
 - **NFC Data Exchange Format (NDEF)**
Specifies 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
 - **Smart Poster RTD**
For posters incorporating tags containing text, audio or other data
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For records containing plain text
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For records that refer to an Internet resource



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