



ADVANCING NEAR
FIELD COMMUNICATION
TECHNOLOGY

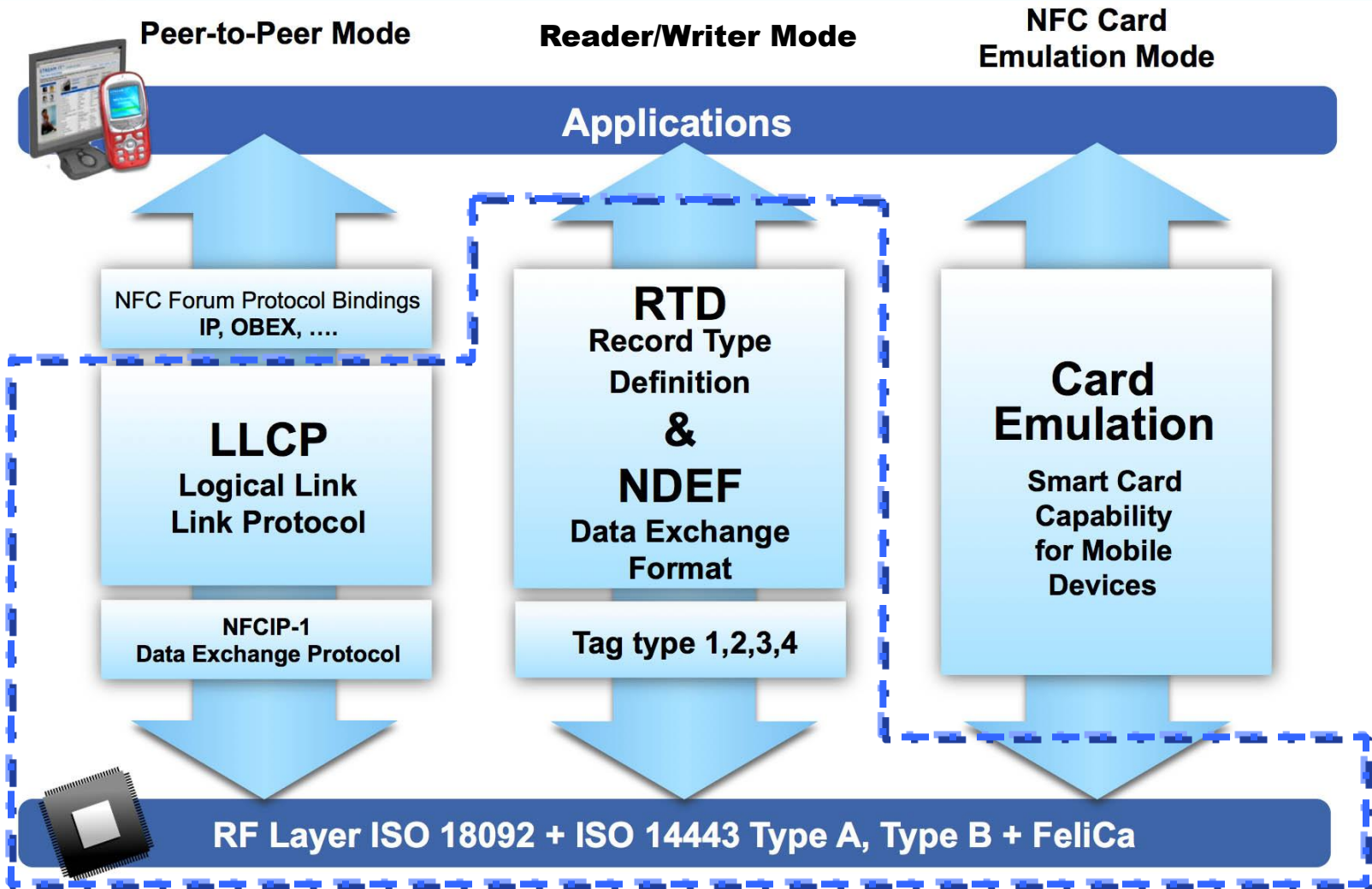
Specification Update

Frank Dawidowsky
SONY
Secretary, NFC Forum

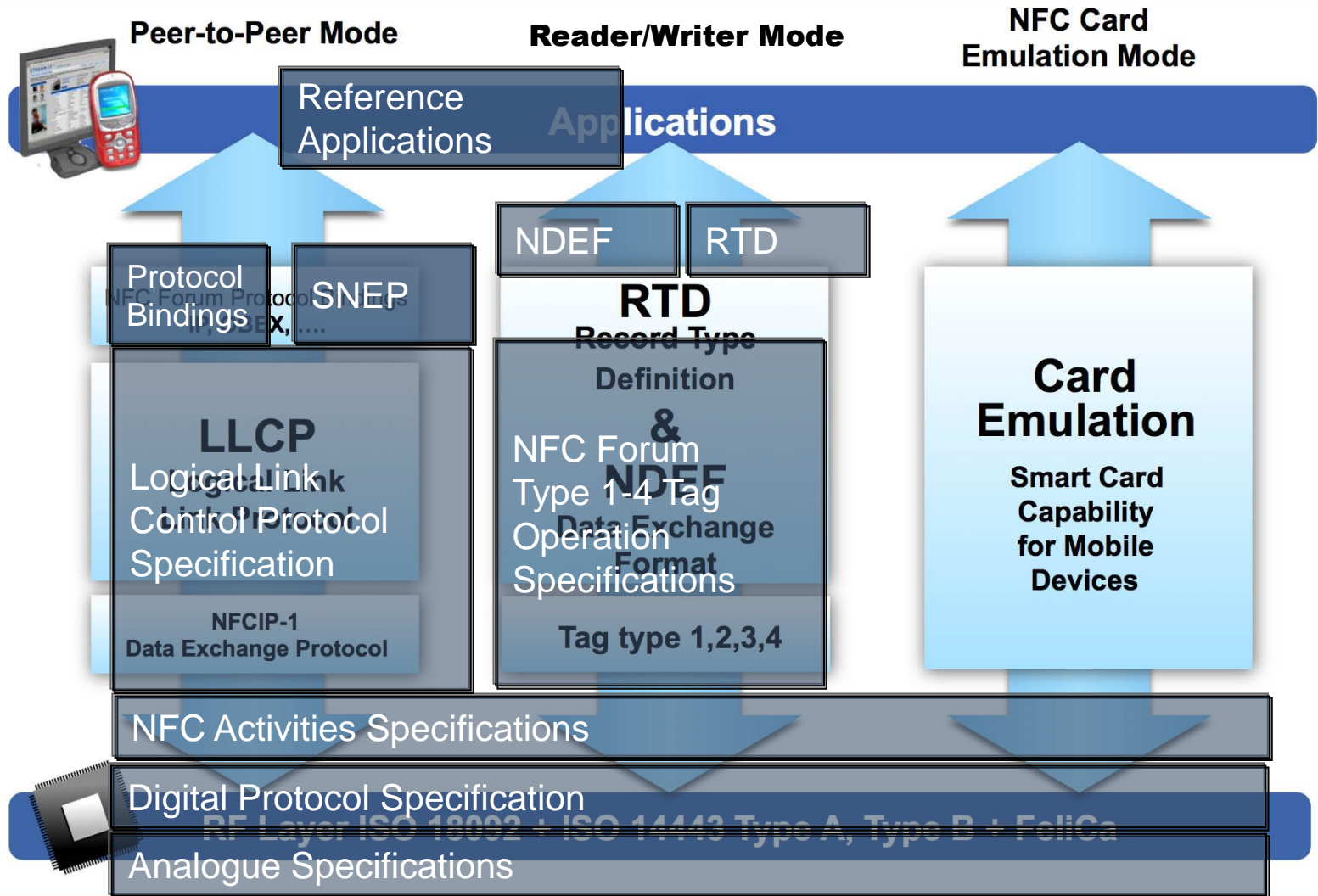
April 21, 2011



NFC Forum Architecture



NFC Forum Technology Architecture

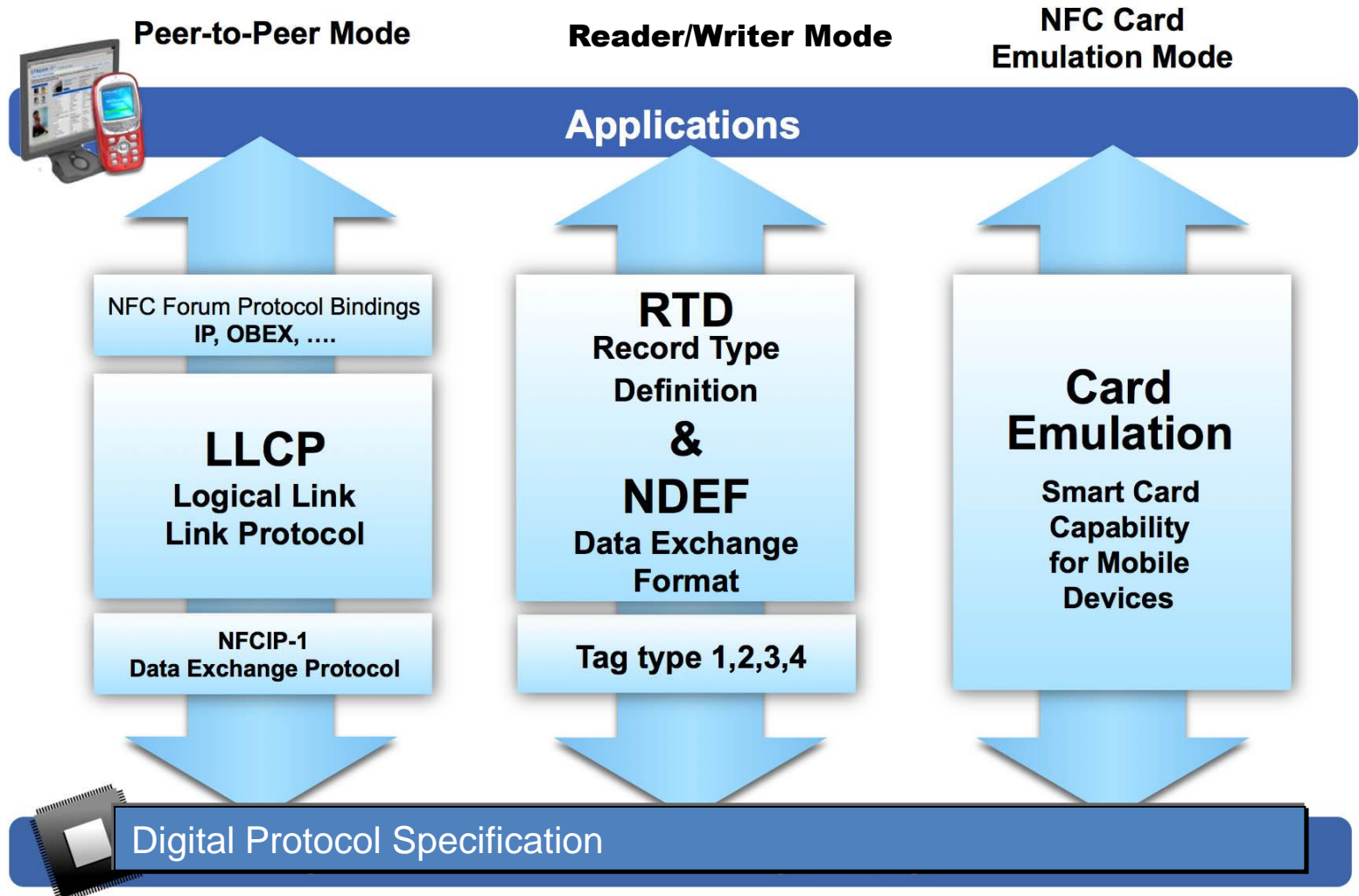


Device Level Specifications

Digital Protocol Specification

- Aim of specification:
 - Define the “building blocks” to set up and maintain an NFC connection between two devices
- How it does this:
 - An implementation specification of NFCIP-1 incorporating ISO/IEC14443
 - Narrows down options in the base specifications to ensure interoperability
- Implementation issues:
 - Typically implemented in NFC chipsets and firmware
- Where it is based in the device architecture:
 - Part of the RF layer and Mode Switch

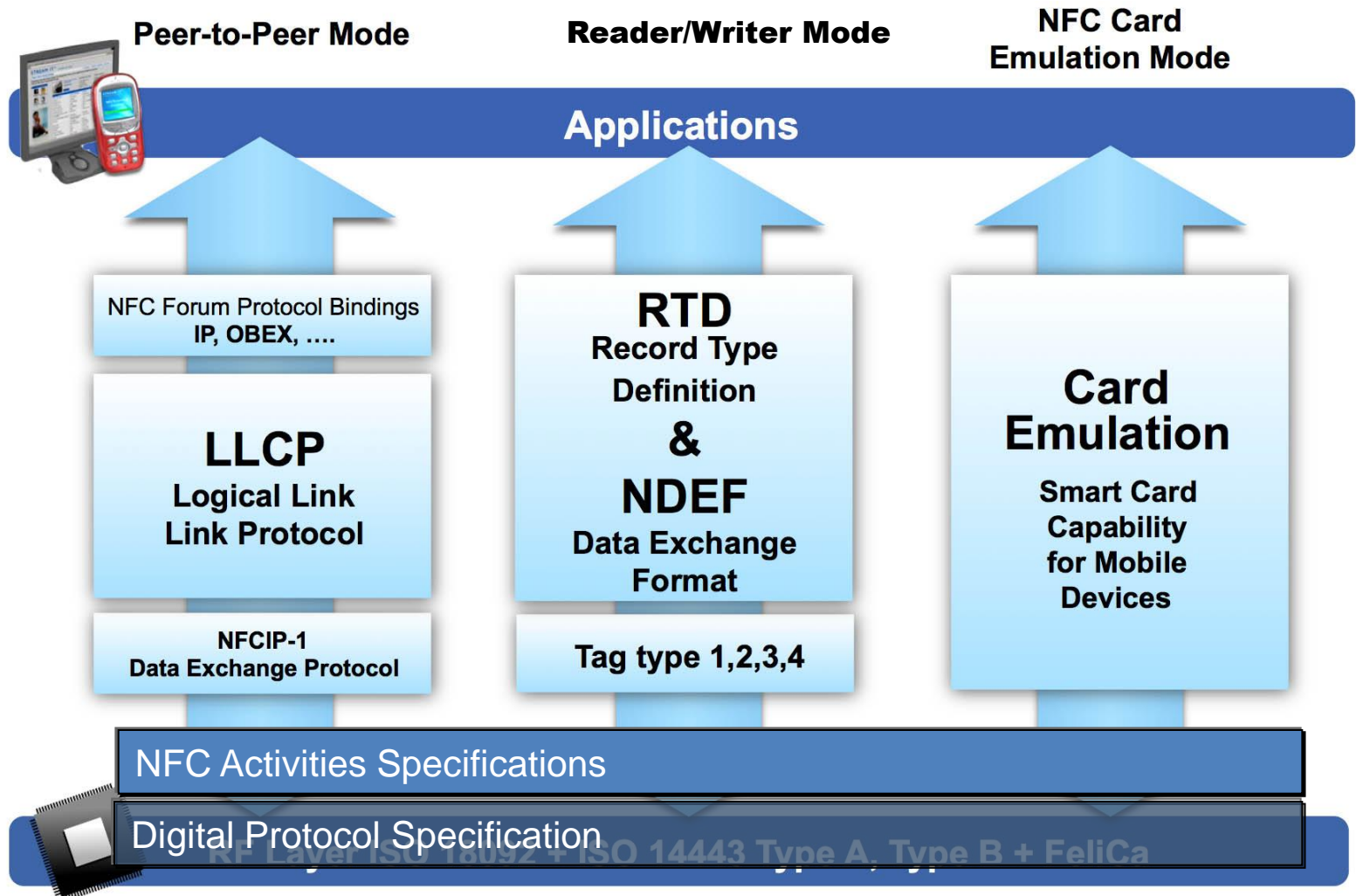
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Activity Specification

- Aim of specification:
 - How to use the building blocks of the Digital Protocol specification for particular use-cases
- How it does this:
 - Defines a number of profiles that define the sequence of activities required to fulfill a set of use-cases.
 - E.g., establishing a peer-to-peer connection to another NFC device, reading NDEF data from a tag
- Implementation issues:
 - Possible for a device to implement proprietary profiles to support specific use cases
- Where it is based in the device architecture:
 - Mode switch

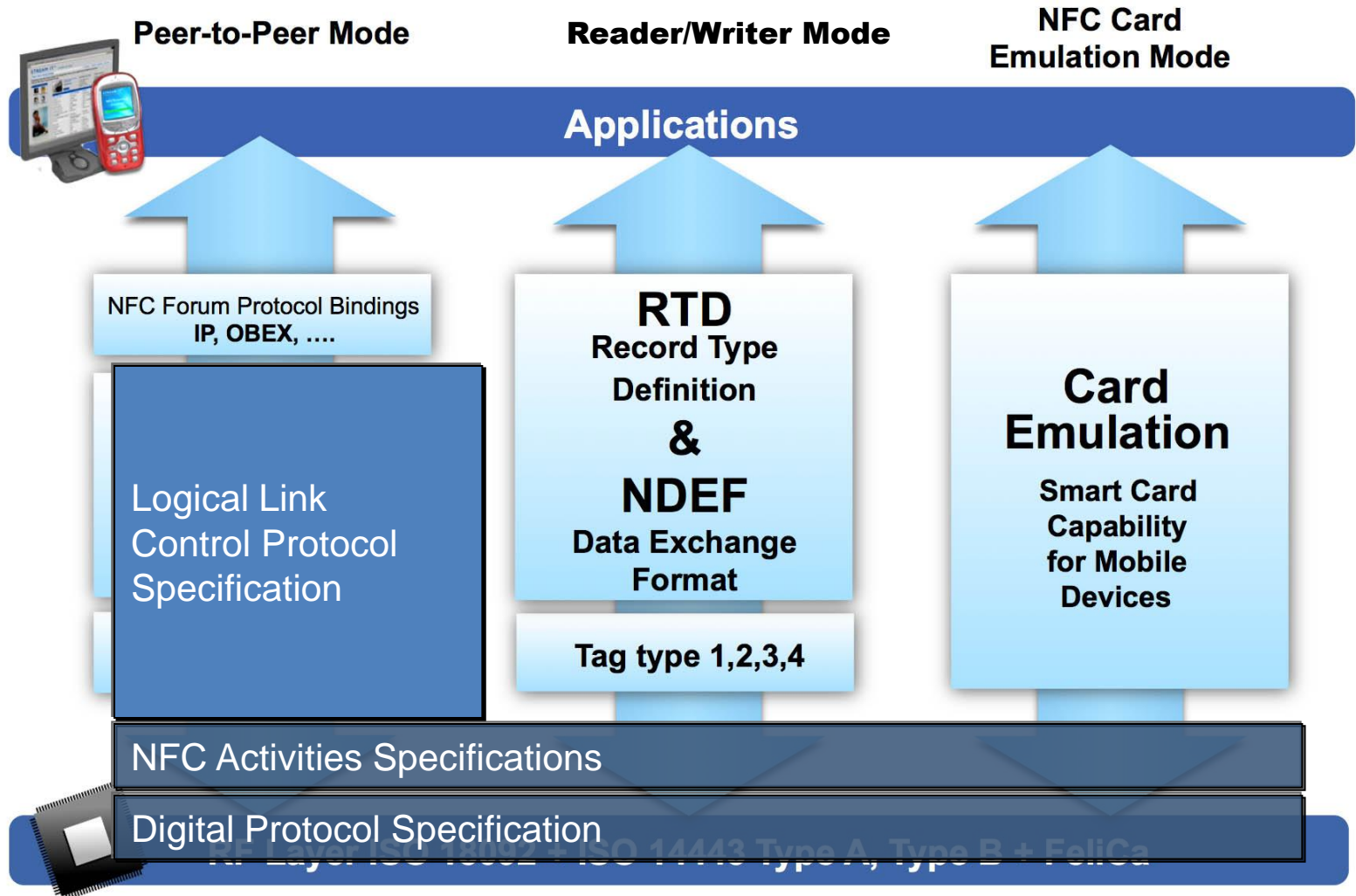
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Logical Link Control Protocol (LLCP)

- Aim of specification:
 - Provide reliable peer-to-peer communication over NFC
- How it does this:
 - Defines a logical link control layer on top of the Digital Protocol Specification peer-mode
 - Provides support for peer-to-peer communication, connection oriented and connectionless transport, and protocol multiplexing
- Implementation issues:
 - May be implemented in NFC chip sets or in software in the device
- Where it is based in the device architecture:
 - Between Mode Switch and Application layer
 - Applicable to Peer-to-peer mode only

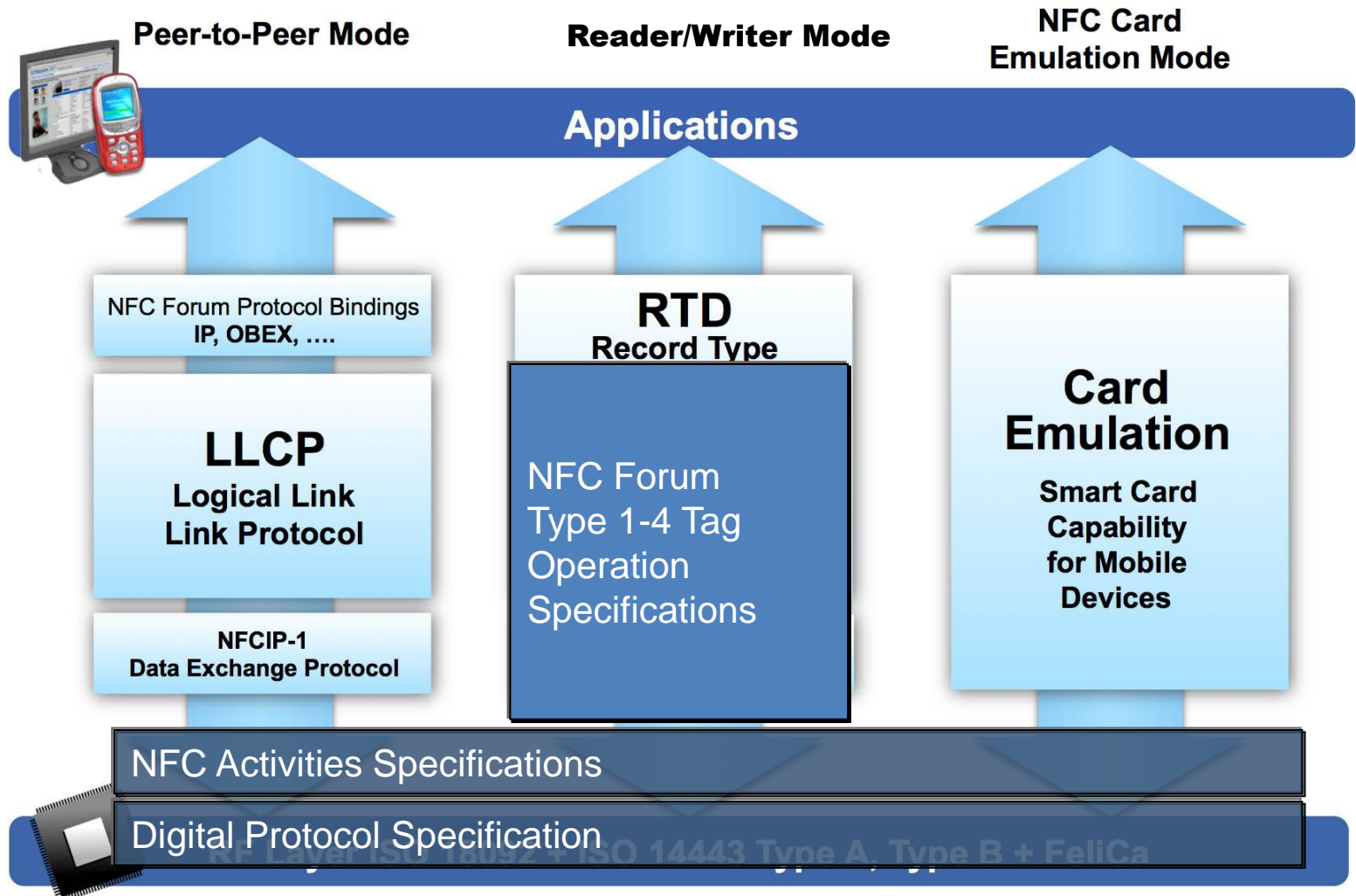
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Tag Type Specifications

- Aim of specification:
 - Defines how to read NDEF messages from NFC Forum Tags
- How it does this:
 - Defines 4 tag types
 - Defines the commands and parameters to read and write data to tags
- Implementation issues:
 - An NFC Forum device is required to be able to read and write to all tag types
- Where it is based in the device architecture:
 - Sits above mode switch and provides support to applications
 - Applicable to Reader/Writer mode only

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Application Level Specifications

NDEF

NFC Data Exchange Format

- Aim of specification:
 - Provide a standard format for NFC application data
- How it does this:
 - Defines a message format
 - Messages consist of one or more records, which may be nested
 - A message may be split into multiple chunks
- Implementation issues:
 - NDEF messages may be up to 4GB, but are typically limited by memory considerations (such as size of tag)
- Use Cases:
 - Smart Poster
 - Exchange of control information (e.g., remote controls)

RTD

Record Type Definition

- Aim of specification:
 - Provide an extensible structure for the identification of the type of data in an NDEF message
- How it does this:
 - Defines a record structure and record type
 - Record type identifies the semantics of the data
 - Record type may be well known (defined by NFC Forum) or external (defined by another organization)
- Implementation issues:
 - External type namespace is based on domain name of organization defining the type
- Use Cases:
 - Well known RTDs include: Text, URI, Smart Poster, Generic Control, and NDEF Signature

Connection Handover

- Aim of specification:
 - Use NFC to initiate a connection on an alternative technology
- How it does this:
 - Defines the messages for negotiating and exchanging configuration information for the alternative technology
- Implementation issues:
 - Configuration information may be defined by organizations defining the alternative technology
- Use Cases:
 - Enables quick and easy pairing with Bluetooth devices
 - Creates secure WiFi links

What's Coming Up

- Application Documents
 - Describes how to use NFC technology for a particular use case
 - “Bluetooth Secure Simple Pairing using NFC”
- Personal Healthcare Devices
 - Specifications related to communication with personal health care devices using NFC
- Enhancing NFC
 - Analogue Specification: RF properties of NFC devices
 - NFC Controller Interface Specification: Logical interface to NFC chips
 - Simple NDEF Exchange Protocol Specification: Exchange of NDEF messages over peer-to-peer