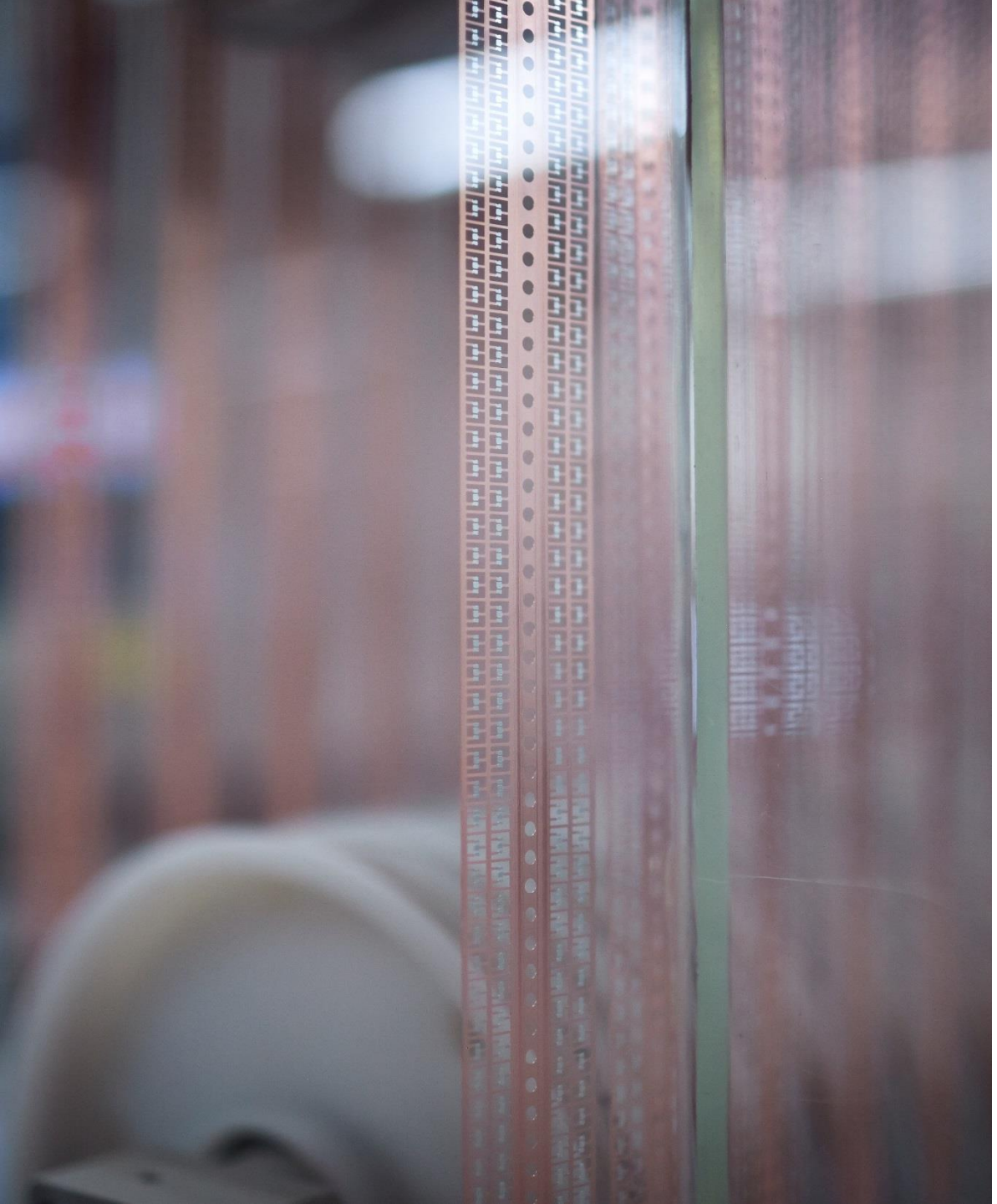
LEARN ALL ABOUT NFC

SESSION 4: PRODUCT SUPPORT PACKAGE FOR NFC READERS & NFC CONNECTED TAGS

JORDI JOFRE
NFC EVERYWHERE
APRIL 2017

SECURE CONNECTIONS FOR A SMARTER WORLD



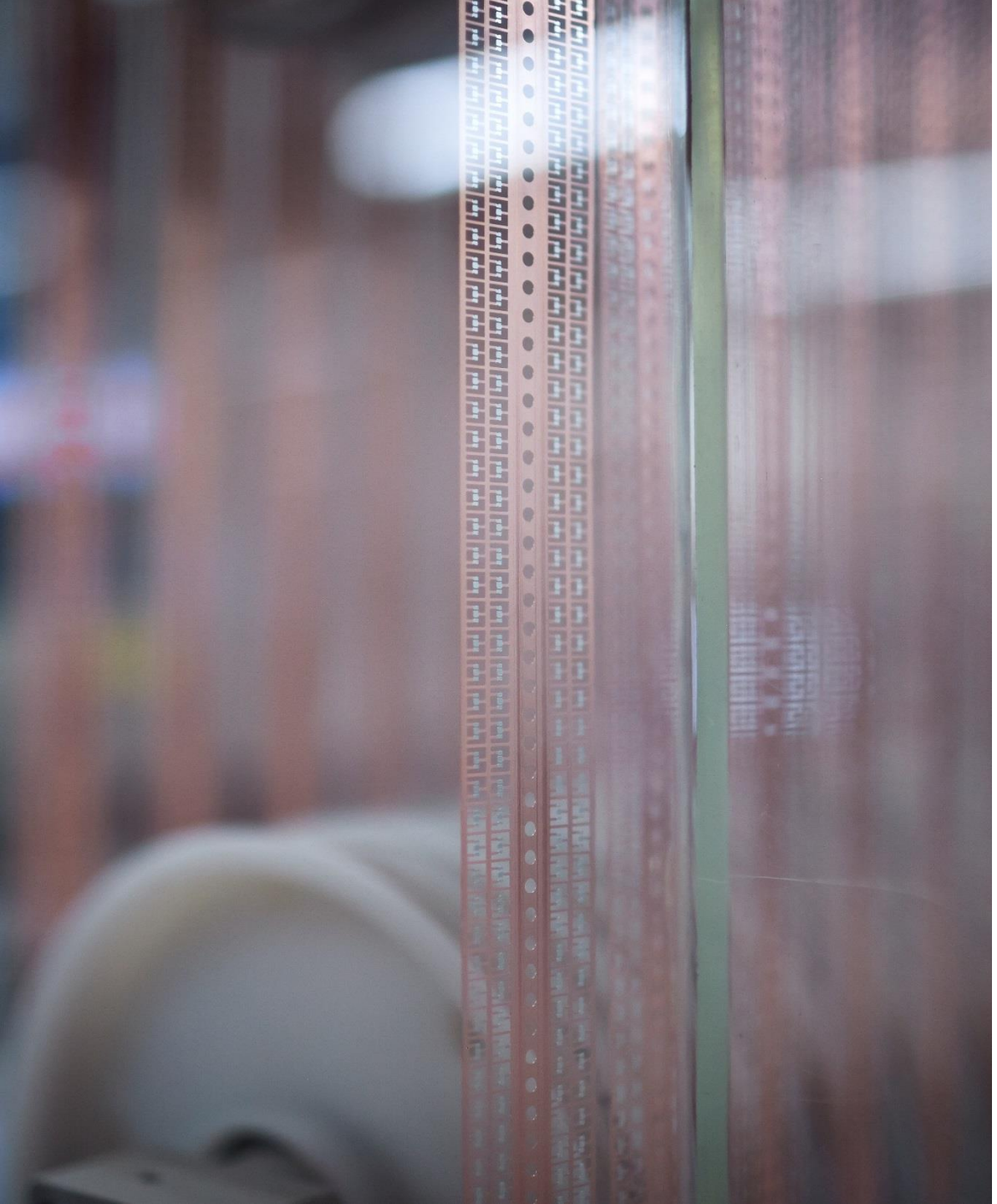
Learn all about NFC

Session I, 15th March
NFC applications and use cases
https://attendee.gotowebinar.com/rt/1059402932312036099

Session II, 22th March
NFC essentials
https://attendee.gotowebinar.com/rt/6461366231742998273

Session III, 28th March
NFC product portfolio
https://attendee.gotowebinar.com/rt/8452313508808186113

Session IV, 12th April
Product support package for NFC Readers & NFC-Connected Tags
https://attendee.gotowebinar.com/rt/3965453945970616321



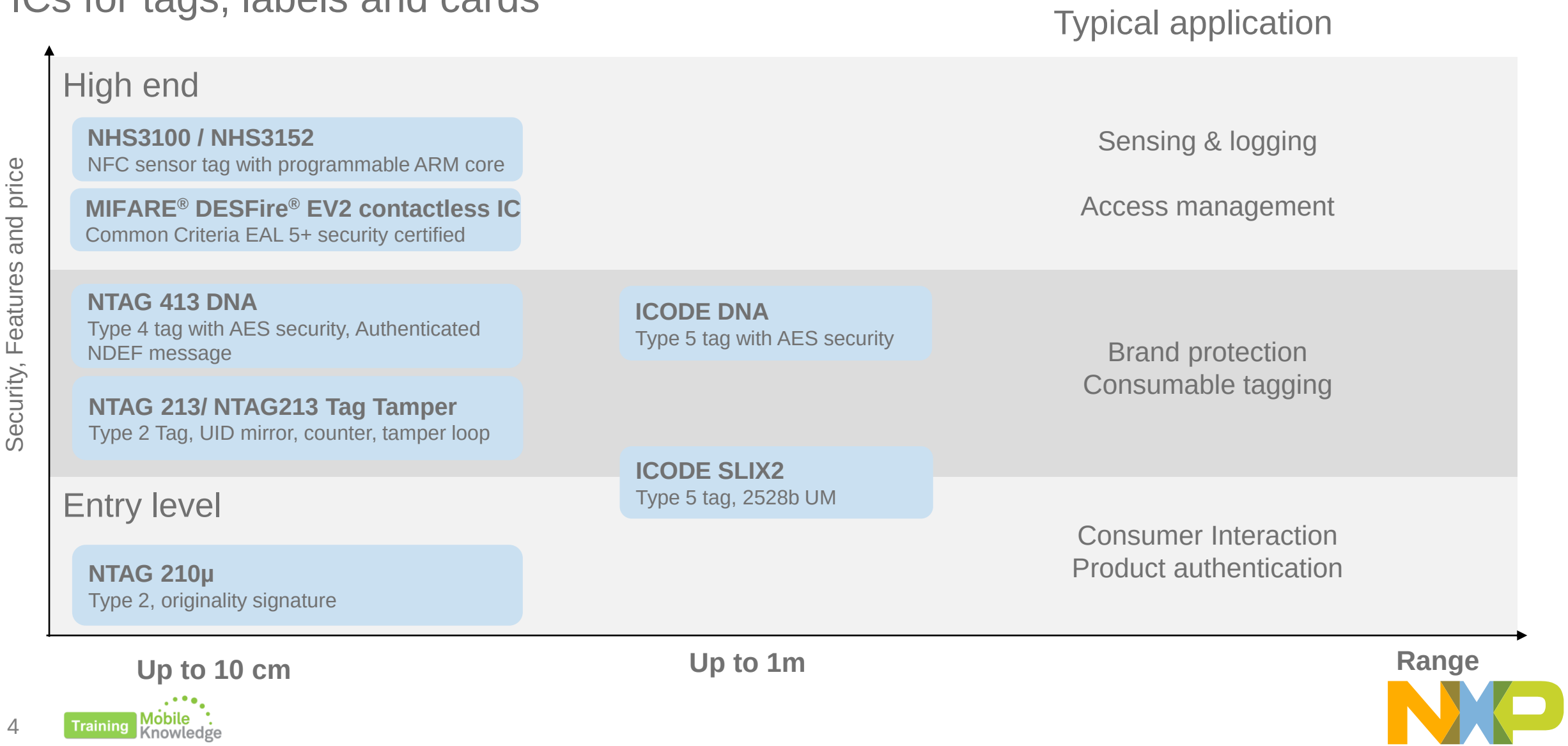
Agenda

- NFC portfolio and our support package.
- Support package for NTAG I²C *plus.*
- Support package for CLRC663 *plus*, PN5180 and PN7462.
- Support package for PN7150.
- More support material.

NFC portfolio and our support package

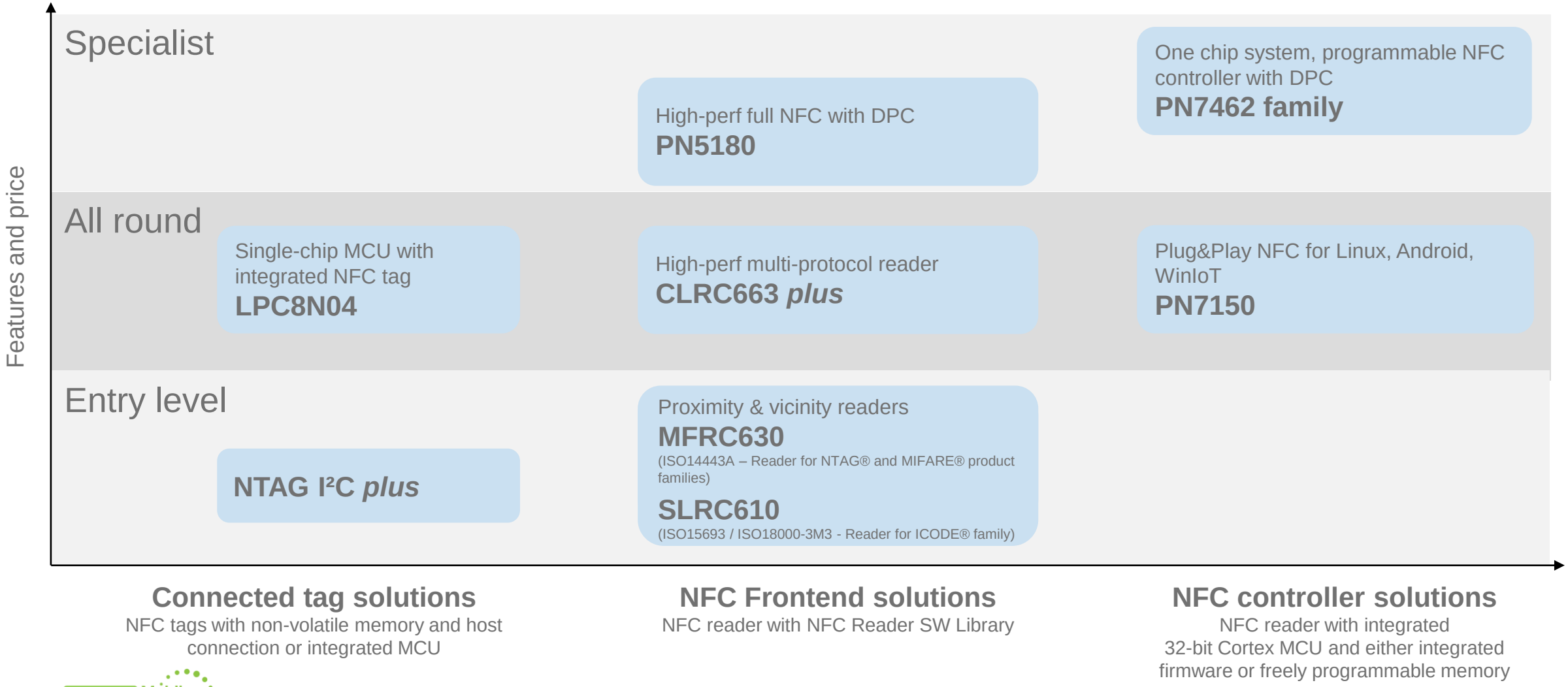
NFC focus products for each application need

ICs for tags, labels and cards



NFC focus products for each application need

Readers/connected tags: for embedded electronics



Training Mobile Knowledge

NXP offers highest level of support on the market

We reduce complexity, streamline tasks and add flexibility
at every point in development

We know each step in the NFC implementation process

Our support package simplifies the process and reduces time to market

We have the right material for each design step

Full range of development kits, design files, sample code, app notes, online training, tutorials

We find direct answers to your questions

Through our technical NFC community and NXP approved engineering consultants (AECs)

A unique combination of PCB boards, software tools, software examples,
training material, documentation, tutorials and support community

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NXP support tools for NFC

	NFC Support		
Decide the functionality	Online selection tools, including selection app, parametric search, and product details on nxp.com	NFC Everywhere brochure	NXP approved engineering consultants https://nxp.surl.ms/NFC_AEC
Select IC	Z-card with NFC Reader Portfolio	NFC use case and product webinars	
Evaluate Features	Full range of development kits for every NFC Product NFC Cockpit	Compatibility with common MCU boards and single-board computers	MobileKnowledge, IMST, INGENUTEC, Kronegger, ipTronix, ONE
Prototype	Gerber files for development kits online	NFC product support package and antenna design webinars	
Test & Debug	NFC Library App notes Sample code Tutorials NFC Cockpit	Design files for development kits Online trainings on software integration and antenna design	Technical NFC Community https://community.nxp.com/community/nfc
Get Certified	DPC, strong RF power generation, RF wave shaping, and HW-based EMD error handling	EMVCo L1 (analog and digital) library in source code	

Links to the support tools on **nxp.com/nfc.**

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Support package for NTAG I²C *plus*

Support package for NTAG I²C *plus*

- NTAG I²C *plus* Explorer Kit and variants
- Android and Windows sample applications
- Source code examples
- PCBs design files
- Documentation and training

Training Mobile Knowledge

NTAG I²C *plus* Explorer Kit and variants

OM5569-NT322E: NTAG I²C *plus* Explorer Kit

- NFC Explorer board with Class 4 antenna
- Field detector board
- NTAG I²C *plus* mounted on a Class 6 flex-board with built in I²C interface connectors
- 10 NTAG I²C *plus* package SO8 samples for prototyping

OM5569-NT322ER: NTAG I²C *plus* Explorer Kit with NFC Reader

- NFC Explorer board with Class 4 antenna
- Field detector board
- NTAG I²C *plus* mounted on a Class 6 flex-board with built in I²C interface connectors
- 10 NTAG I²C *plus* package SO8 samples for prototyping
- Identiv CLOUD 3700F reader

OM5569-NT322F: NTAG I²C *plus* Flex Kit containing additional flex antennas

- Class 4 flex antenna
- Class 5 flex antenna
- Class 6 flex antenna
- 10 NTAG I²C *plus* package SO8 samples for prototyping

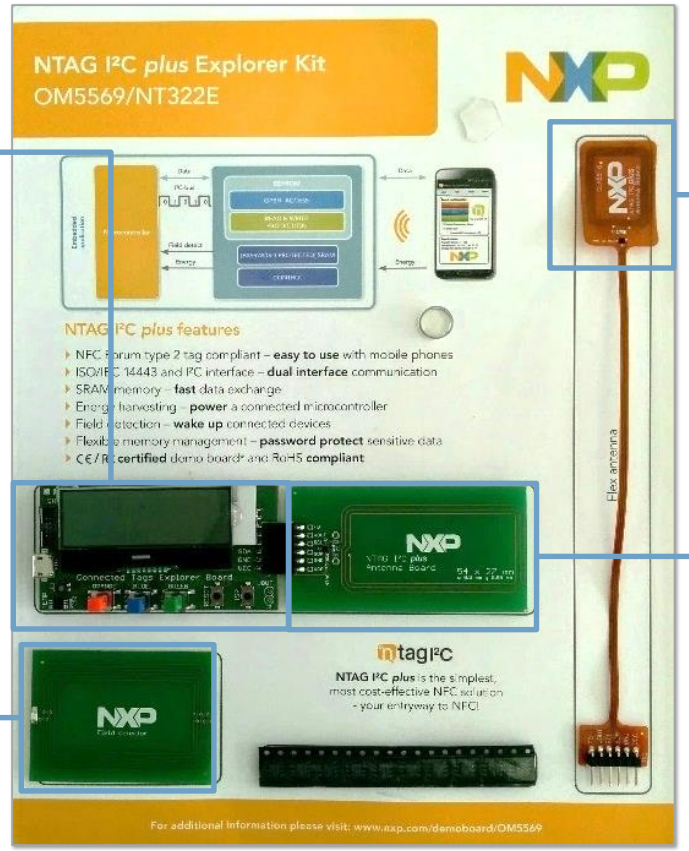
OM23221ARD: NTAG I²C *plus* kit for Arduino pinout

- NTAG I²C *plus* mounted on an antenna board PCB
- Adapter board for connectivity to any device with Arduino pinout (e.g., Kinetis, i.MX, LPC)
- Bluetooth pairing example based on NXP KW41Z
- Library for NTAG I²C *plus* available through MCUXpresso for FRDM-KW41Z

Printed circuit board design files

SW3638 - NTAG I²C *plus* Explorer Kit

SW3640 – Field Detector board



SW3641 - NTAG I²C *plus* flex antenna Class 6

SW3639 - NTAG I²C *plus* Class 4

AN11276 – NTAG Antenna design guide

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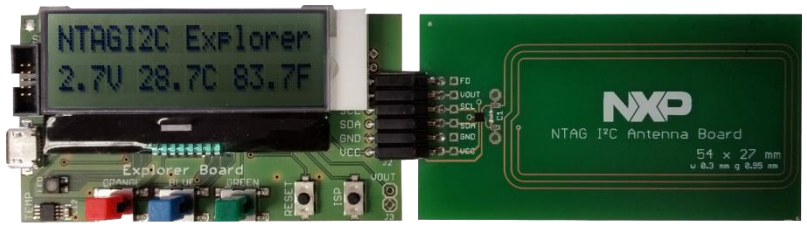
More information: www.nxp.com/products/:NT3H2111_2211

NTAG I²C Demo App for Android

Get it for free from: ANDROID APP ON Google play



Explore the NTAG I²C *plus* features:

- Energy harvesting.
- Bidirectional data exchange & data throughput.
- Read / write NDEF messages.
- Read / write access to configuration pages.

UM10989 - NTAG I²C Android Demo App developer start-up guide.

UM10966 - NTAG I²C *plus* Explorer Kit Android Demo.

SW3648 - NTAG I²C Android Demo App source code .

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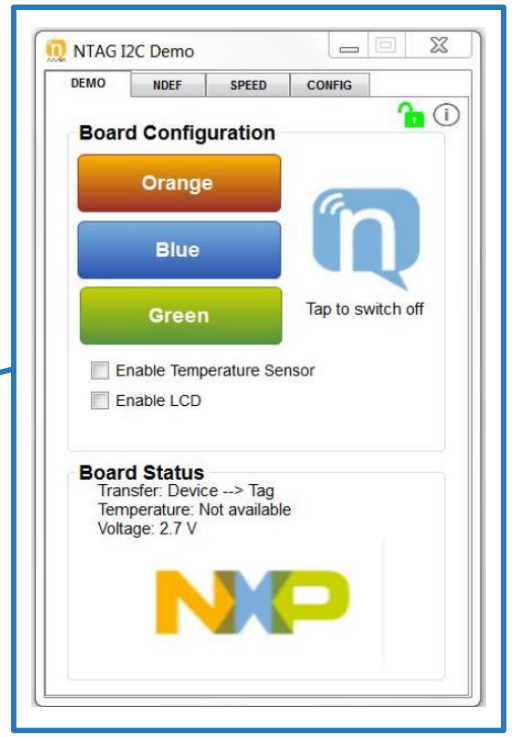
More information: www.nxp.com/products/:NT3H2111_2211

NTAG I²C Demo for Windows PC

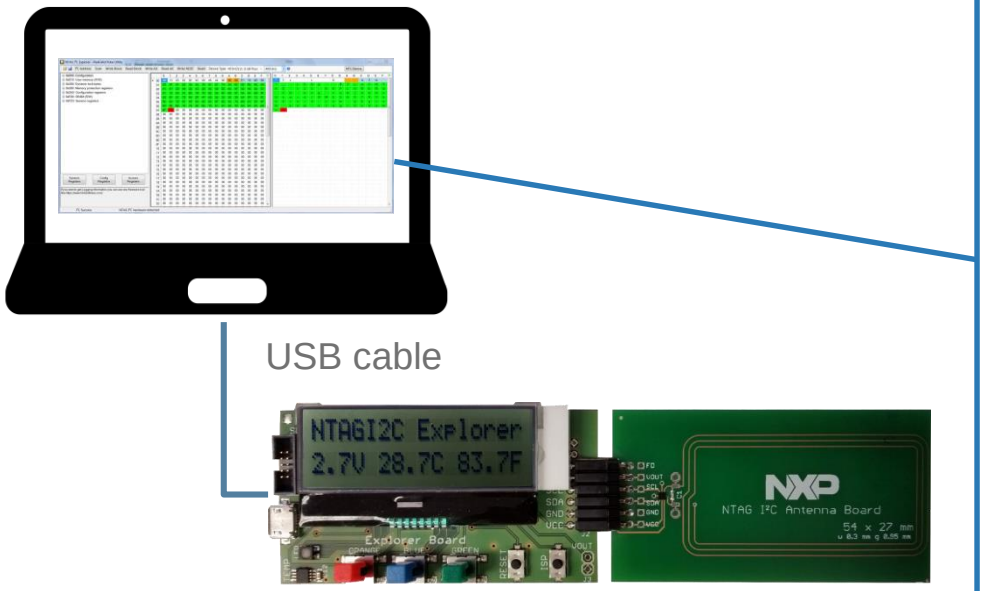


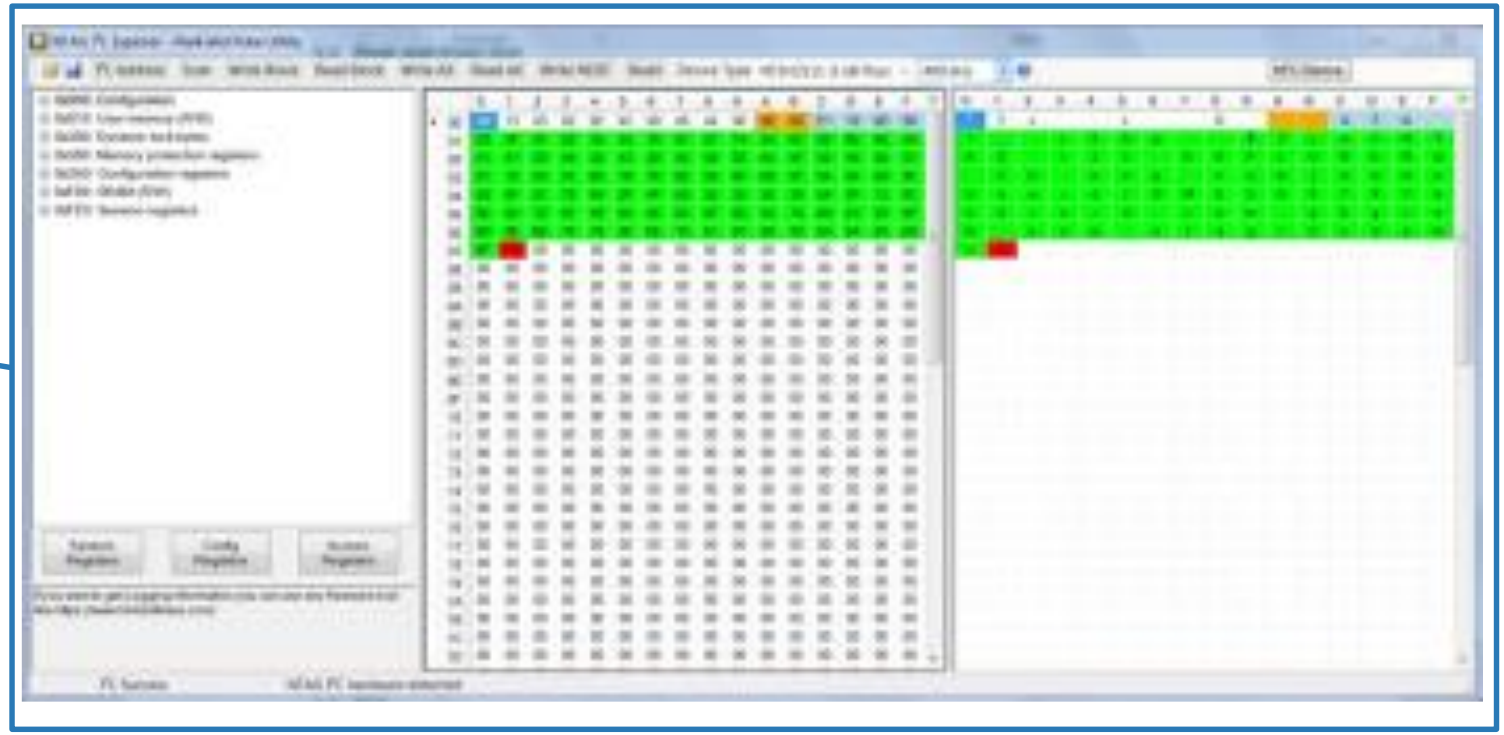
If you do not have an NFC phone, you can use the NTAG I²C demo for Windows PC in combination with the NFC Reader included in the Explorer Kit

Same functionalities as the NTAG I²C Demo App for Android

More information: www.nxp.com/products/:NT3H2111_2211

NTAG I²C *plus* Explorer Kit Peek and Poke





The Peek and Poke GUI is a Windows application that can be used to examine the detailed memory contents of the NTAG I²C *plus* EEPROM via I²C interface

UM10967 - NTAG I²C Explorer kit Peek and Poke
SW3652 – Peek and Poke Windows installer
SW3649 – Peek and Poke source code VS2010

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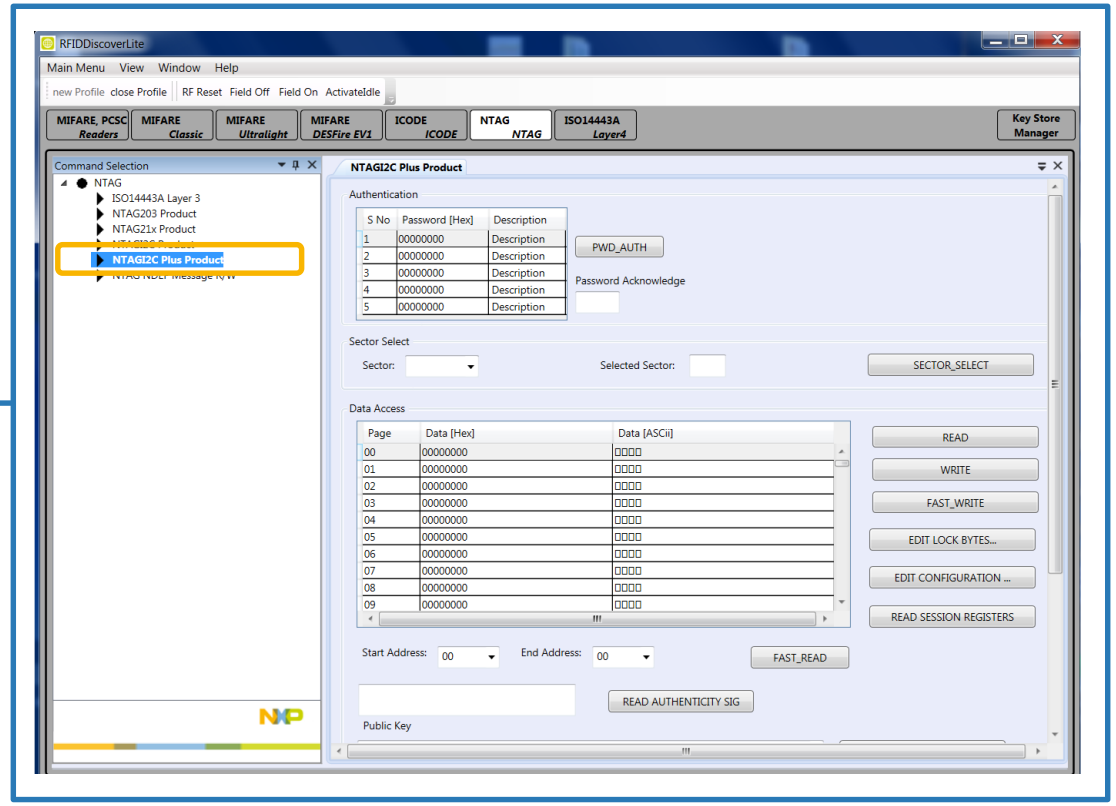
More information: www.nxp.com/products/:NT3H2111_2211

RFIDDiscover Lite 4.1.6



The RFIDDiscover Lite is a GUI for Windows that allows us access and configuration of the NTAG I²C *plus* memory from the RF interface.

SW214441 – RFIDDiscover Lite v4.1

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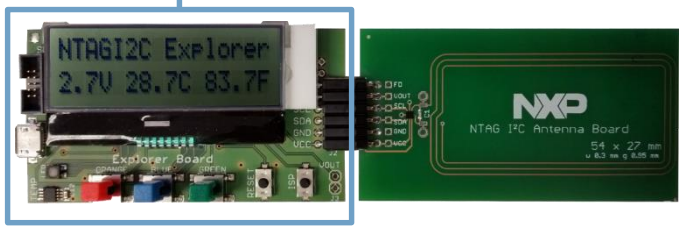
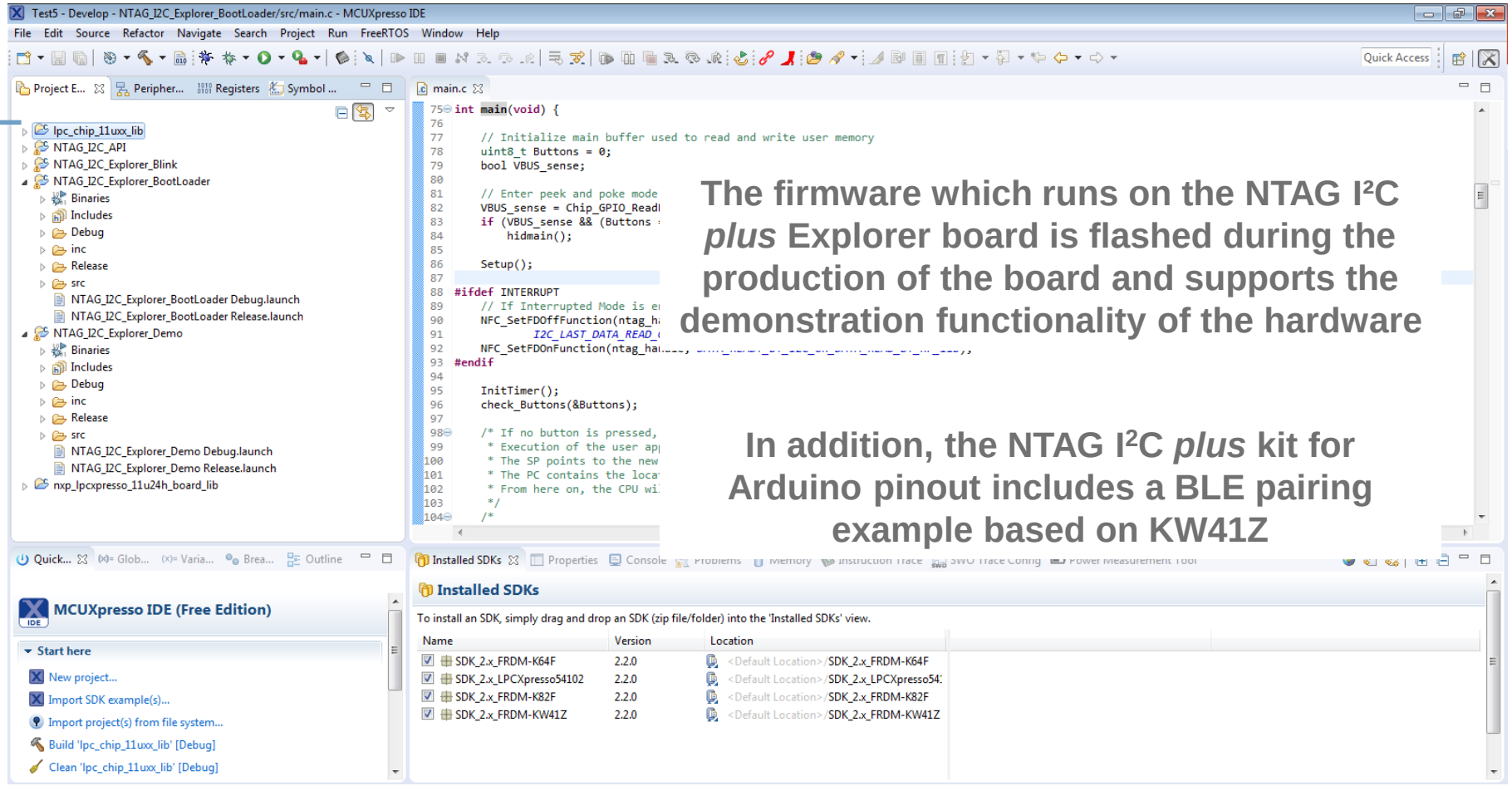
More information: www.nxp.com/products/:NT3H2111_2211

NTAG I²C *plus* Explorer board firmware





The firmware which runs on the NTAG I²C *plus* Explorer board is flashed during the production of the board and supports the demonstration functionality of the hardware

In addition, the NTAG I²C *plus* kit for Arduino pinout includes a BLE pairing example based on KW41Z

SW3647 - NTAG I²C *plus* Explorer board firmware source files

SW4223 – BLE pairing with NFC on Kw41 and NTAG I²C *plus*

Training Mobile Knowledge

Support package for CLRC663 *plus*, PN5180 and PN7462

Support package for CLRC663 *plus*, PN5180 and PN7462

- NFC development kits
- NFC Reader Library and source code example
- Antenna design resources
- NFC Cockpit
- Documentation and training

Training Mobile Knowledge

CLRC663 *plus*, PN5180 and PN7462 development kits

OM26630FDK: CLRC663 *plus* NFC frontend development kit

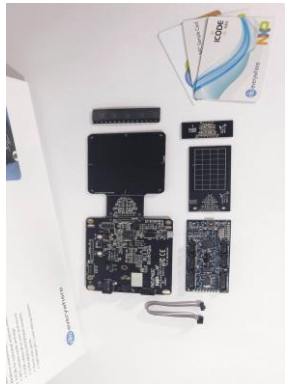
- CLEV6630B board with 65x65mm antenna optimized for EMVCo applications
- 30 mm x 50 mm antenna with matching components optimized for NFC applications
- Three small antenna matching PCBs for custom antenna matching
- NFC sample card (NTAG216) and MIFARE DESFire EV2
- 10 CLRC663 plus IC samples (HVQFN package)

AN11022 – CLRC663 plus evaluation board quick start guide

OM25180FDK: PN5180 NFC frontend development kit

- PNEV5180B board with 65x65mm antenna optimized for EMVCo applications
- 30 mm x 50 mm antenna with matching components optimized for NFC applications
- Three small antenna matching PCBs for custom antenna matching
- NFC sample card (NTAG216)
- 10 PN5180 IC samples (HVQFN package)

AN11744 – PN5180 Evaluation board quick start guide

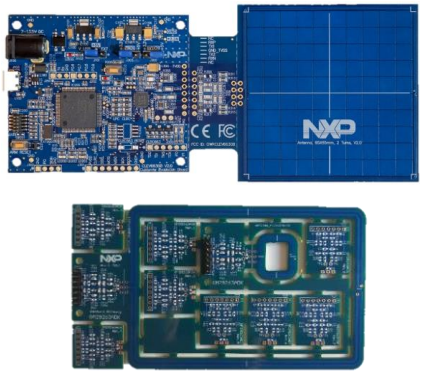


OM27462CDKP: PN7462 NFC controller development kit

- PNEV7462C board with 65x65mm antenna optimized for EMVCo applications
- 30 mm x 50 mm antenna with matching components optimized for NFC applications
- Three small antenna matching PCBs for custom antenna matching
- NFC sample card (NTAG216)
- 7.5V DC power supply and two USB cables
- LPC-Link2 debug adapter (OM13054)
- 5 PN7462 IC samples (HVQFN package)

UM10833 – PN7462 Quick Start Guide.

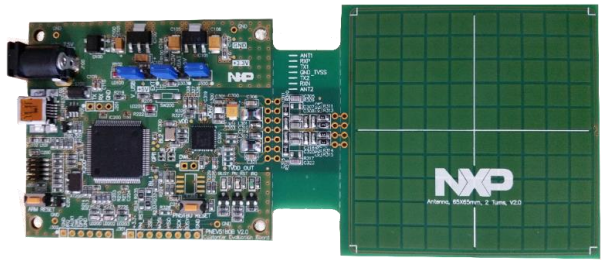
NFC antenna design resources



CLRC663 *plus* antenna design resources

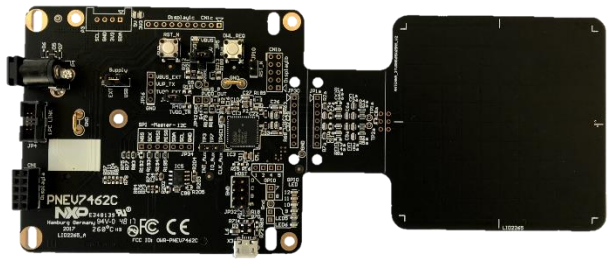
- AN11019 – CLRC663, MFRC630, MFRC631, SLRC610 antenna design guide
- AN11783 – CLRC663 plus Low Power Card Detection
- AN11535 – Measurement and tuning of a NFC and reader IC antenna with MiniVNA
- AN11246 – Antenna matching calculation
- ***OM29263ADK – NFC antenna development kit***

UM11098 – OM29263ADK Quick start guide antenna kit



PN5180 antenna design resources

- AN11740 – PN5180 Antenna design guide
- AN11741 – How to design an antenna with DPC
- SW3545 – PN5180 Antenna design tools
- AN11742 – Dynamic Power Control
- AN11849 – PN5180 Rx Matrix Test

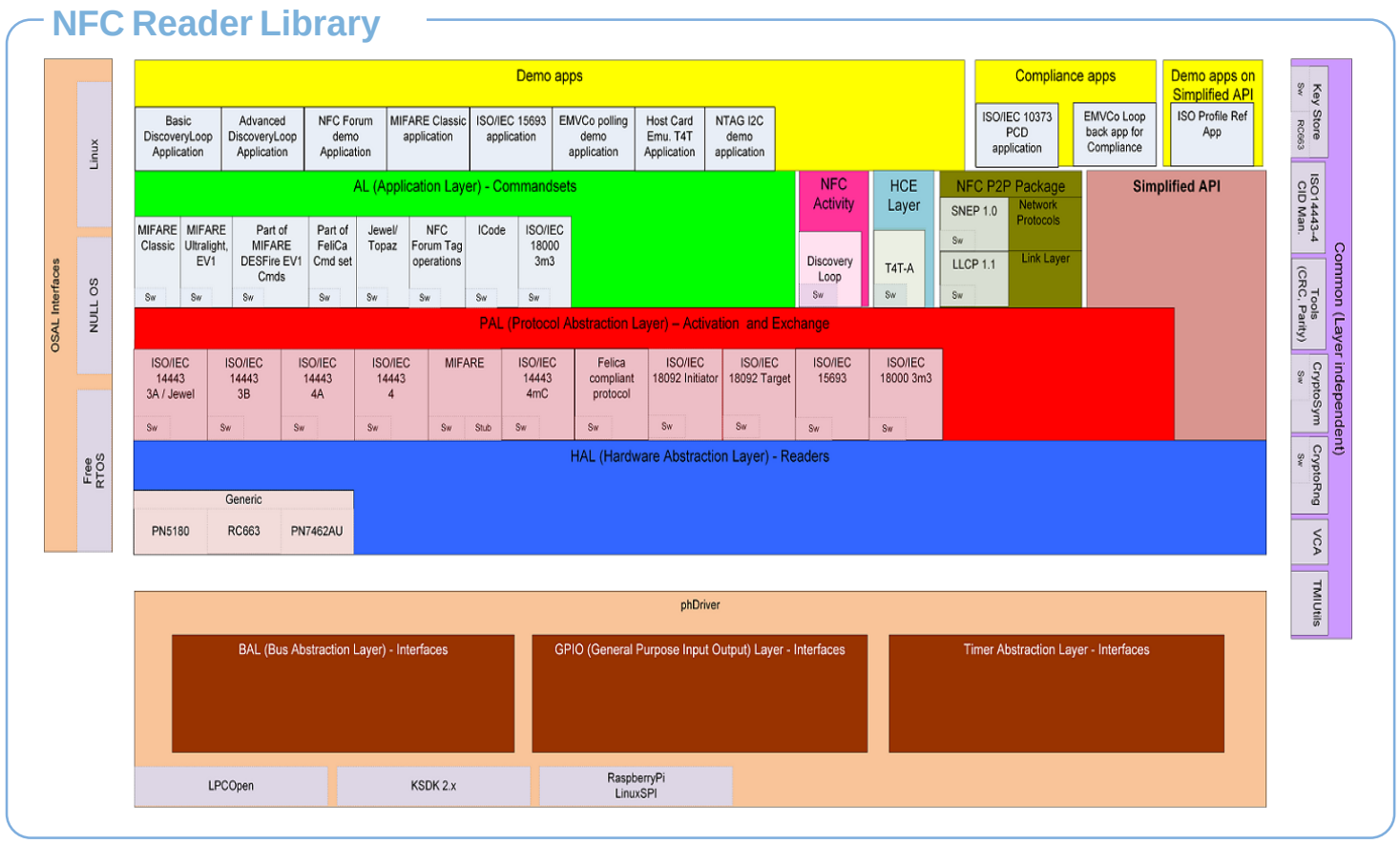


PN7462 antenna design resources

- AN11706 – PN7462AU Antenna design guide
- AN11742 – Dynamic Power Control
- AN11785 – PN7462AU LPCD and standby mode

Training Mobile Knowledge

NFC Reader Library support for multiple products and platforms



Info and more information: www.nxp.com/pages/:NFC-READER-LIBRARY

* NFC Reader Library v5.02.00

Supported products:*

- CLRC663 *plus* family
- PN5180
- PN7462 family

Supported dev boards:*

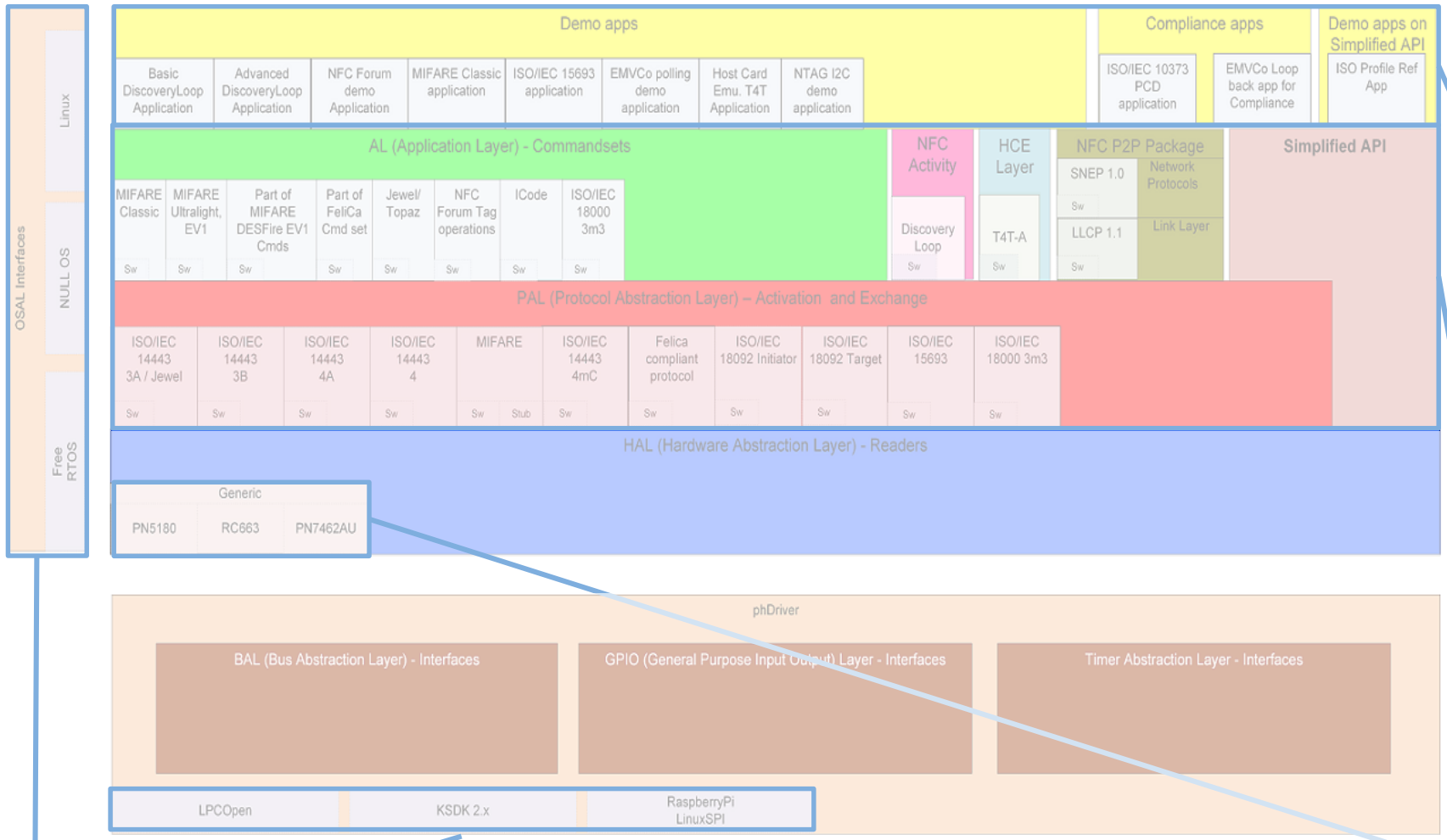
- CLEV6630A
- CLEV6630B
- PNEV5180B
- PNEV7462B

Supported platforms:*

- LPC1769
- FRDM-K82F
- Raspberry Pi Model 3
- … portable to other MCUs and platforms.

Training Mobile Knowledge

NFC Reader Library architecture



11 software examples available to be tested and re-used.

- Nfcrdlib_SimplifiedAPI_EMVCo
- Nfcrdlib_SimplifiedAPI_EMVCo_Analog
- Nfcrdlib_SimplifiedAPI_ISO
- NfcrdlibEx1_BasicDiscoveryLoop
- NfcrdlibEx2_AdvancedDiscoveryLoop
- NfcrdlibEx4_MIFAREClassic
- NfcrdlibEx5_ISO15693
- NfcrdlibEx7_EMVCo_Polling
- NfcrdlibEx9_ NTAGI2C
- NfrcdlibEx11_ISO10373_PCD
- NfcrdlibTst12_RC633LPCD

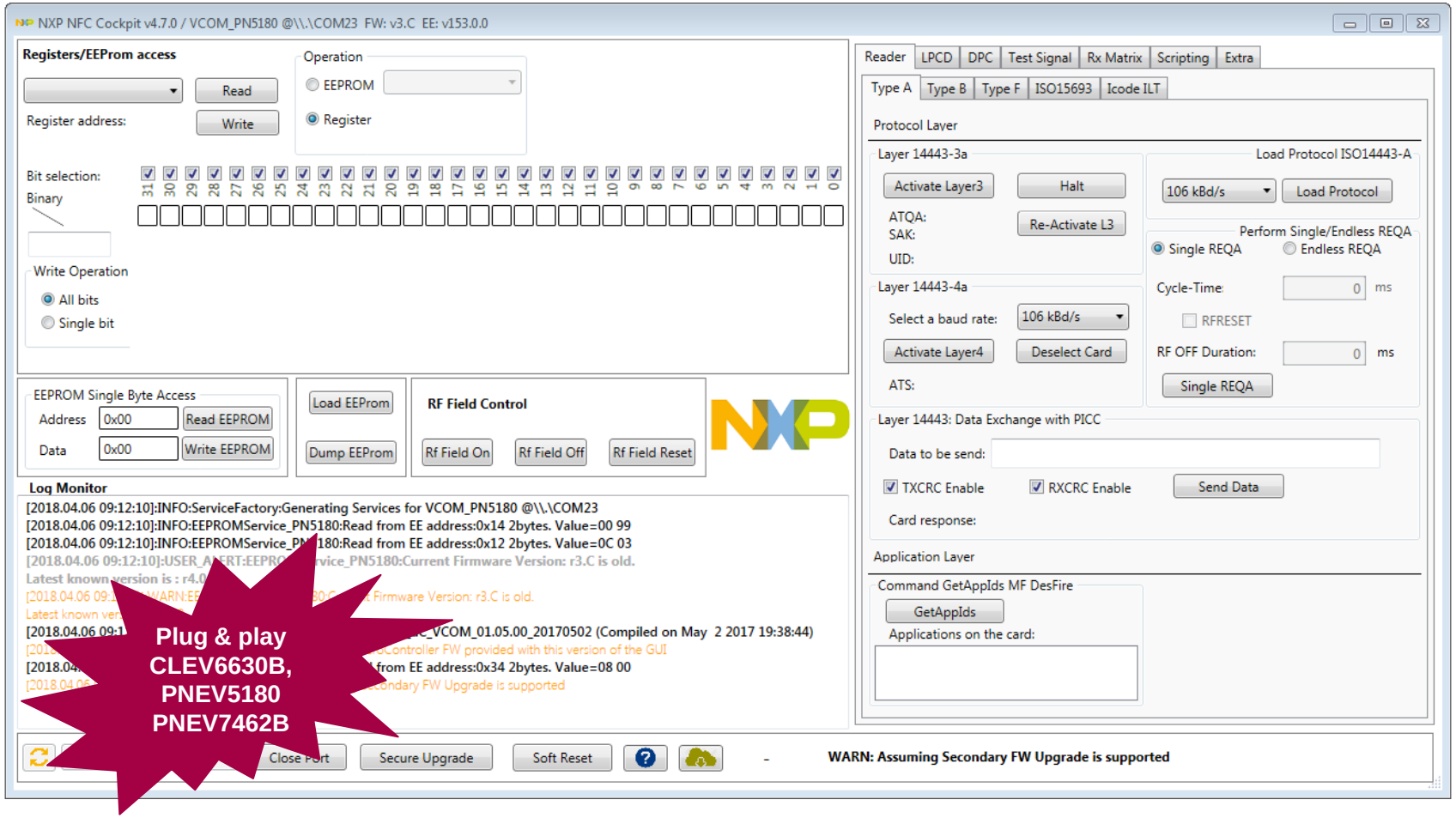
AL and PAL layers are **hardware and platform independent**, so they can be used on top of any supported NFC IC and MCU since they have no adaptation

HAL is **platform independent**, so NXP NFC readers can be used on top of any MCU since they have no adaptation

The software examples can be imported and run the supported platforms without any adaptation.

Support for other platforms requires adaptations in OSAL and DAL.

NFC Cockpit configuration tool for NFC ICs



NFC Cockpit features

- Direct access to registers and EEPROM memory.
- Reader for card activation and card communication.
- Low Power Card Detection (LPCD) calibration and configuration.
- Test signal unlocking and routing.
- RX matrix test for receiver settings optimization.

- Helps to speed up the design, allows quick and easy configuration of registers (USB interface connection to PC) using the development board .
- Get familiar with the IC (on line information of register bits), a fast antenna tuning, a quick DPC parameter setting and perform some tests with NFC devices (cards or mobile phones).

Training Mobile Knowledge

Support package for PN7150

Support package for PN7150

- Single Board Computer development kits
- Linux, Android and WinIoT software drivers
- Software images and source code examples
- PCBs design files
- Documentation and training

Training Mobile Knowledge

PN7150 NFC controller single board computer (SBC) kits

OM5578/PN7150ARD: PN7150 SBC kit for Arduino

- PN7150 NFC controller board
- Arduino interface board
- NFC Forum Type 2 Tag

AN11841 – PN7150 Arduino SBC kit quick start guide

OM5578/PN7150RPi: PN7150 SBC kit for Raspberry Pi

- PN7150 NFC controller board
- Raspberry Pi Interface board
- NFC Forum Type 2 Tag

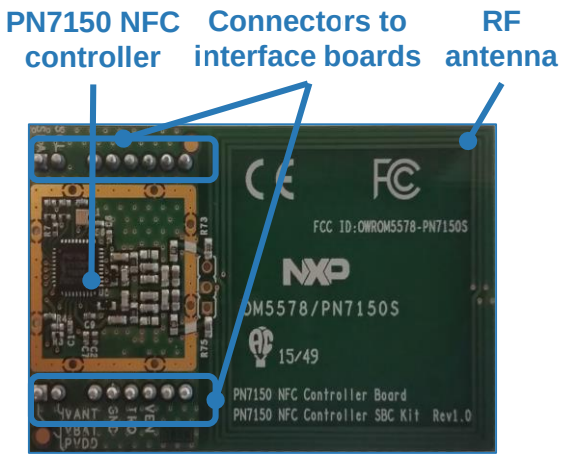
AN11758 – PN7150 Raspberry Pi SBC kit quick start guide

OM5578/PN7150BBB: PN7150 SBC kit for BeagleBone Black

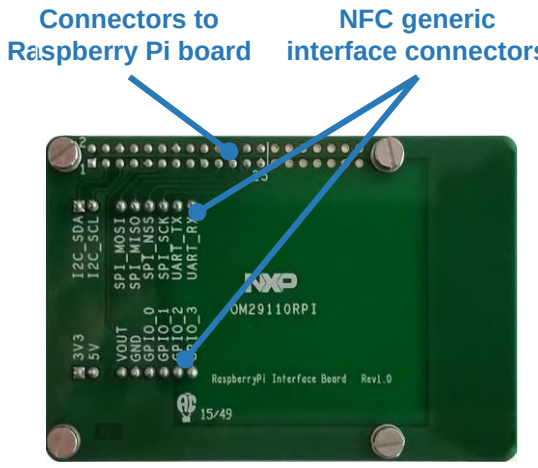
- PN7150 NFC controller board
- Beagle Bone Black interface board
- NFC Forum Type 2 Tag

AN11842 – PN7150 Beagle Bone Black SBC kit quick start guide

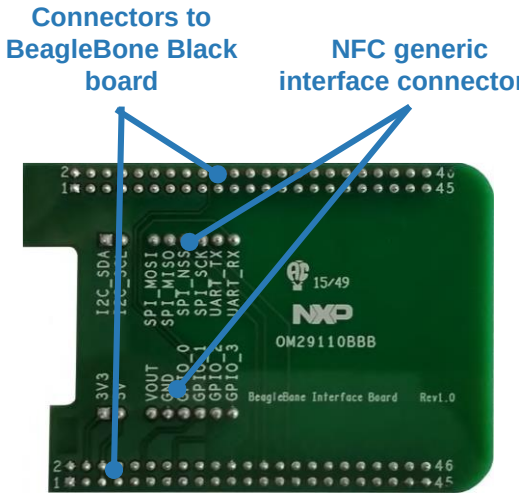
PN7150 printed circuit boards design files



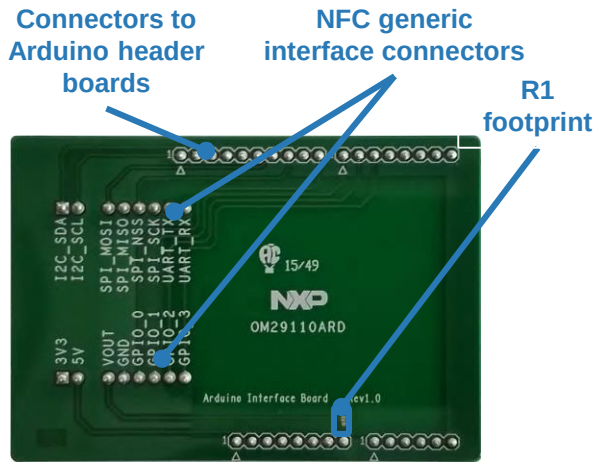
OM5578//PN7150S NFC controller board



OM29110 Raspberry Pi interface board



OM29110 Beagle Bone interface board



OM29110 Arduino interface board

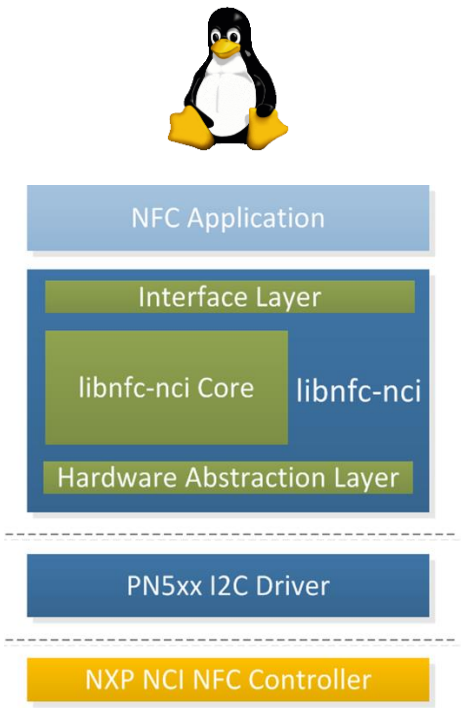
OM5578 kits can be reused in another system by building your own interface board

HW3560 – Hardware design files OM5578_PN7150S
HW3561 – Hardware design files OM29110

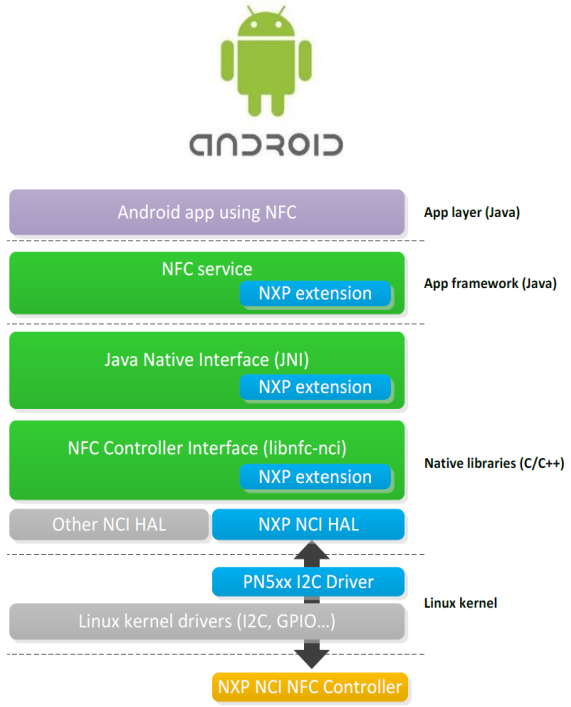
UM10935 – PN7150 NFC Controller SBC Kit user manual
UM10956 – OM29110 NFC SBC Interface Boards user manual

Training Mobile Knowledge

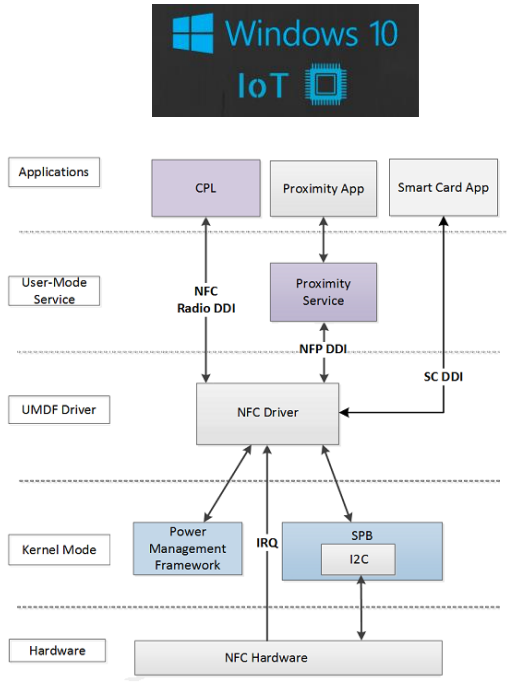
PN7150 software drivers for SW integration into any platform



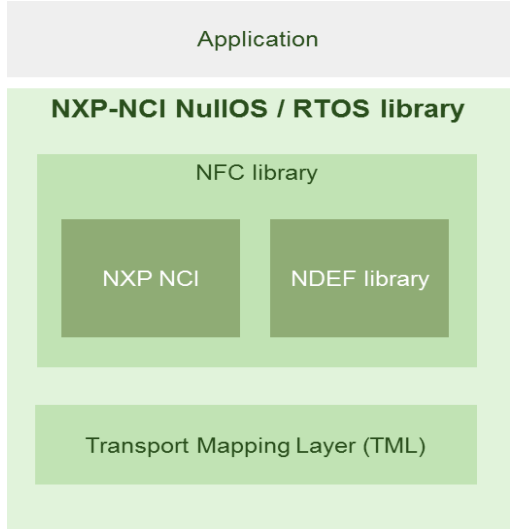
Linux NFC architecture
Linux integration is offered through NXP's Linux libnfc-nci SW stack



Android NFC architecture
Android integration is offered through the Android AOSP SW stack for which NXP delivers dedicated patches.



Windows NFC architecture
Windows integration is offered through Microsoft Windows universal NFC device driver model,



NullOS/RTOS architecture
NullOS/RTOS integration is demonstrated with code examples running on NXP's LPC , Kinetis and i.MX MCUs

PN7150 software images and source code examples

OM5578/PN7150ARD: Software images

- OM5578/PN7150ARD UDOO Neo Linux demo image
- OM5578/PN7150ARD UDOO Neo Android Lollipop demo image
- OM5578/PN7150ARD NXP-NCI MCUXpresso example project

OM5578/PN7150RPi: Software images

- OM5578/PN7150RPi Linux demo image
- OM5578/PN7150RPi WinIoT SW image

OM5578/PN7150BBB: Software images

- OM5578/PN7150BBB Linux demo image
- OM5578/PN7150BBB Android SW image

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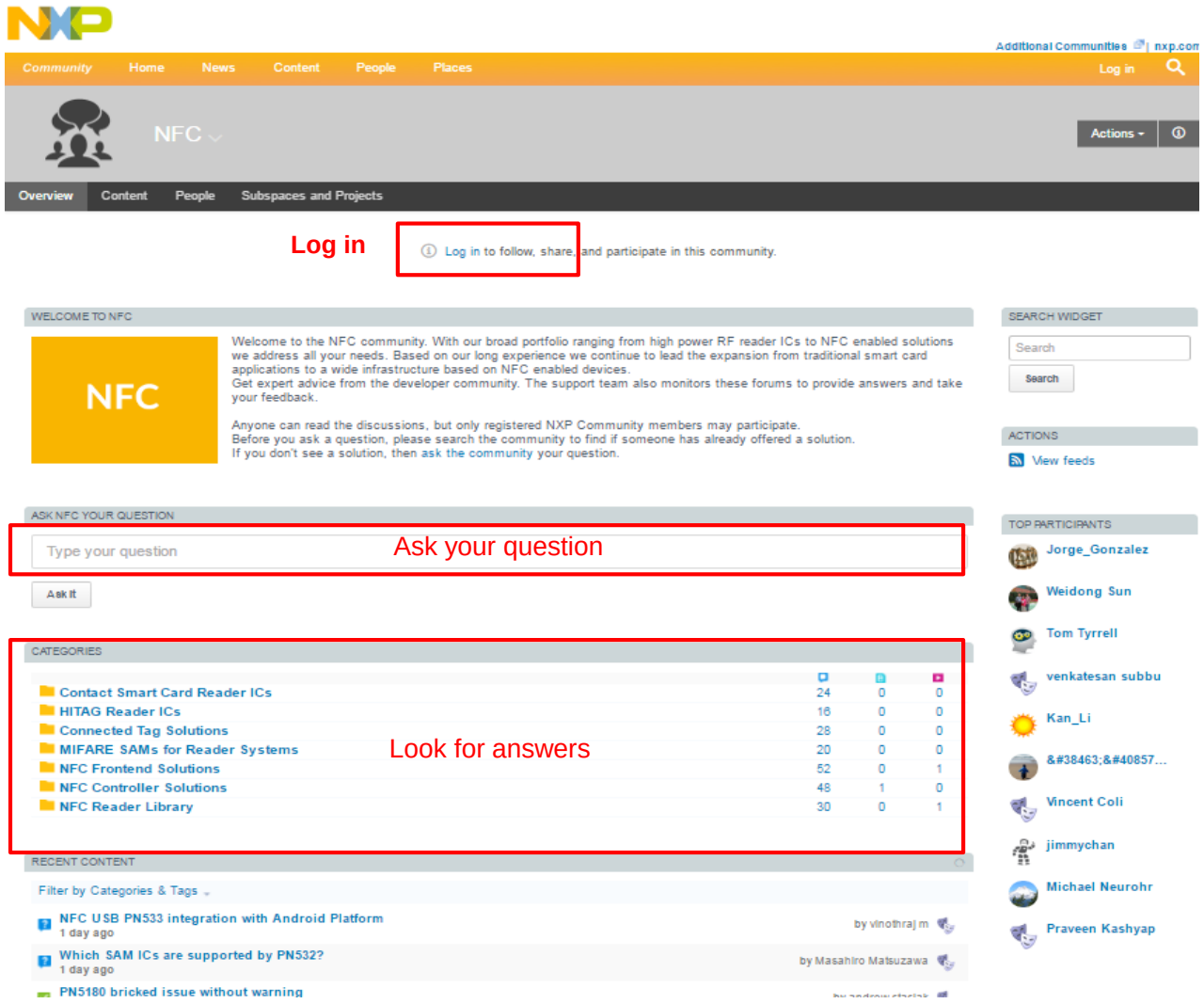
More support

Use our technical community for your questions

Become a registered member and get expert advice from the developer community
https://community.nxp.com/community/nfc

How to get there

- NFC and Reader Ics → NFC Technology hub → NFC support → NFC community
- URL: https://community.nxp.com/community/nfc



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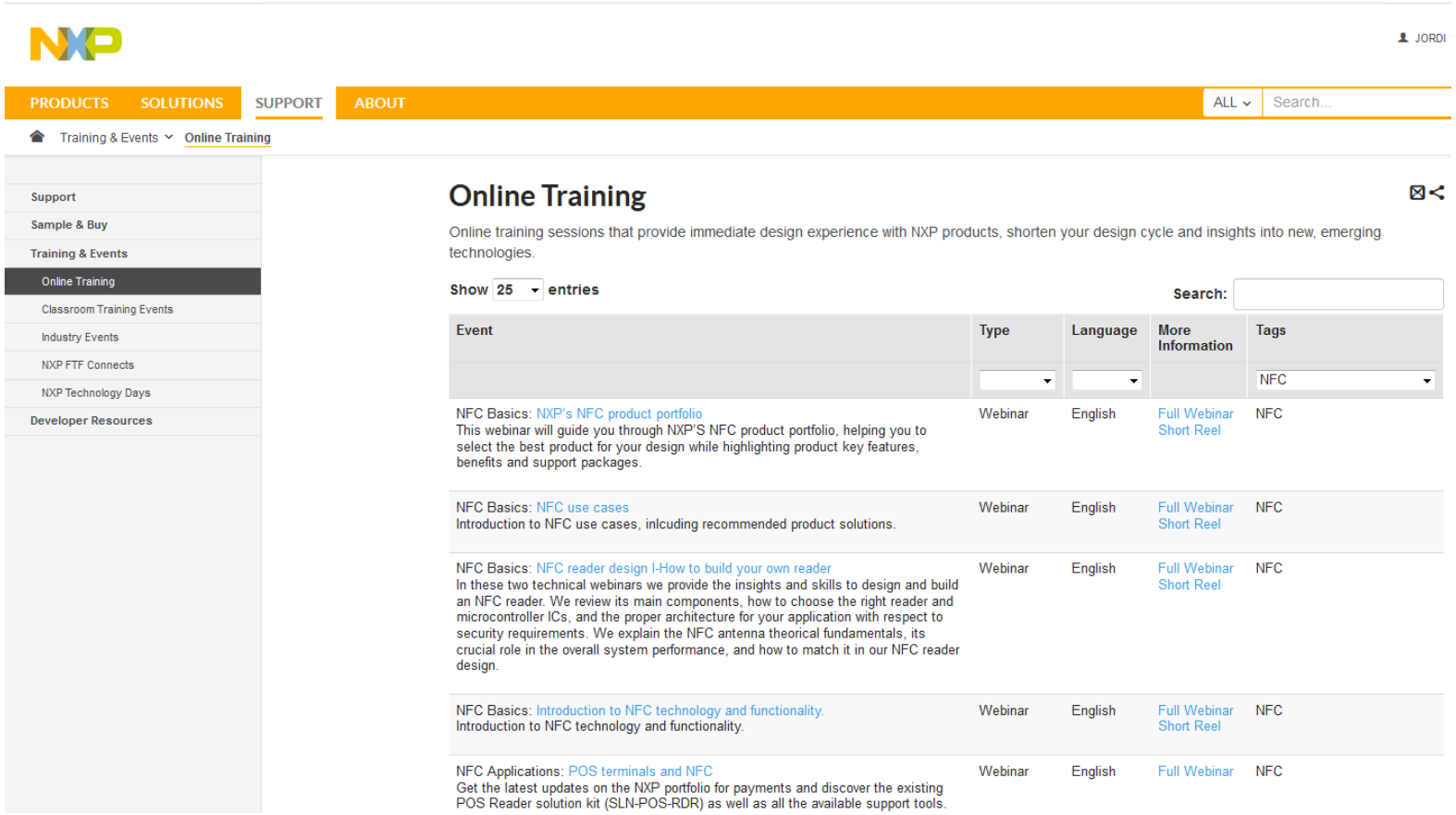
Find recorded sessions, among others, for:

- NFC essentials
- NFC use cases
- NFC standards
- NFC reader antenna design (6 sessions)
- NFC reader portfolio
- NFC in smart home, gaming, payments,
- …



How to get there

- NFC and Reader ICs→ NFC Technology hub → NFC support → NFC webinars
- URL: http://www.nxp.com/support/online-academy/nfc-webinars:NFC-WEBINARS

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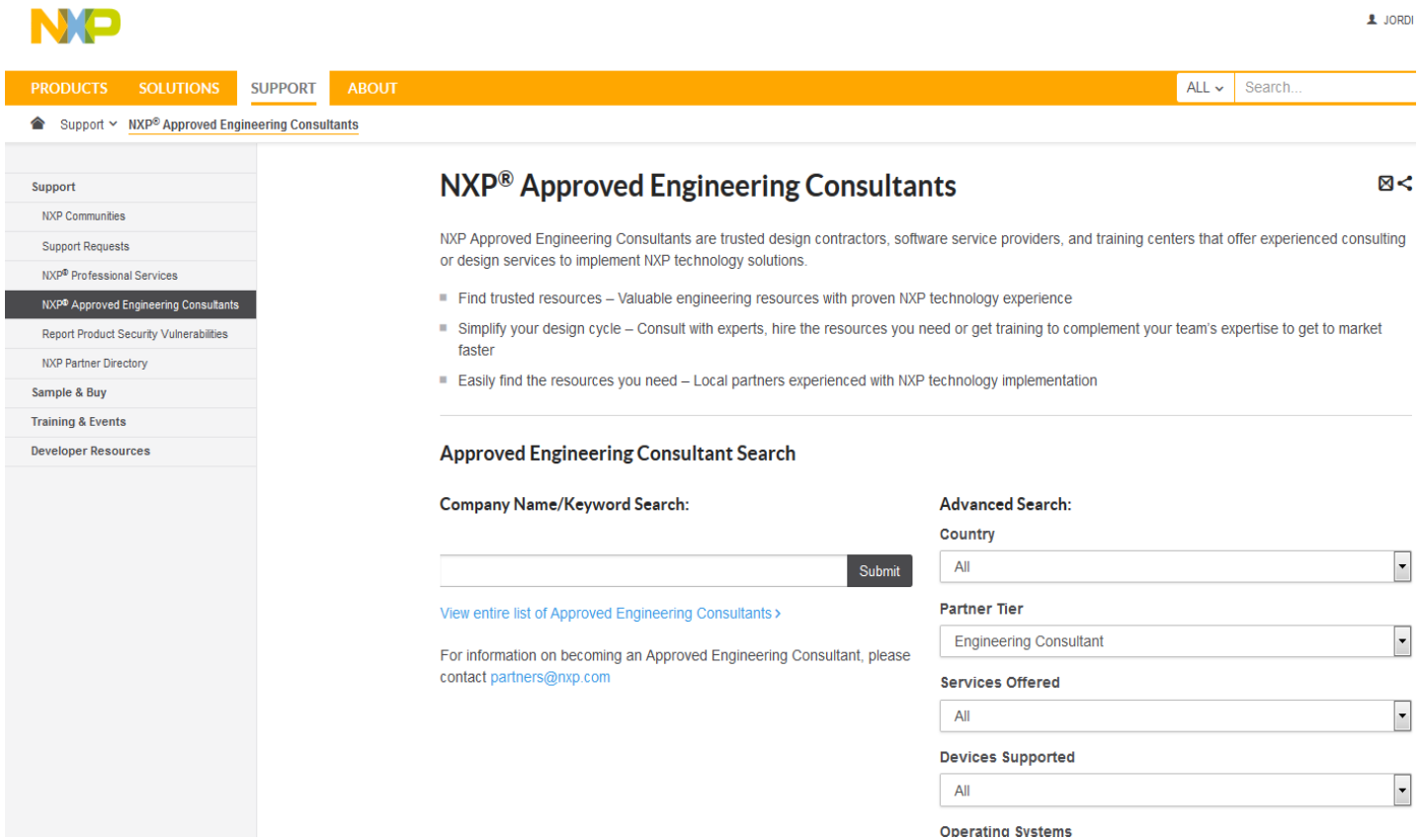
NXP approved engineering consultants



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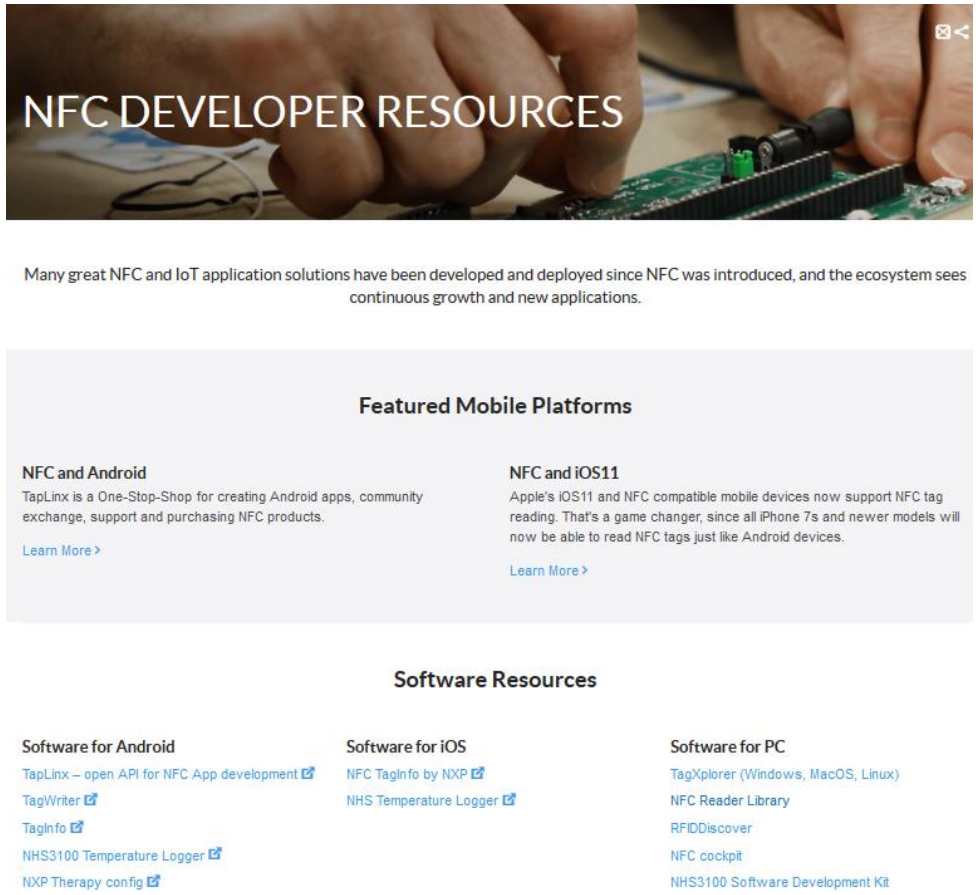
More information about NFC

Visit **NFC developer resources** for a quick start



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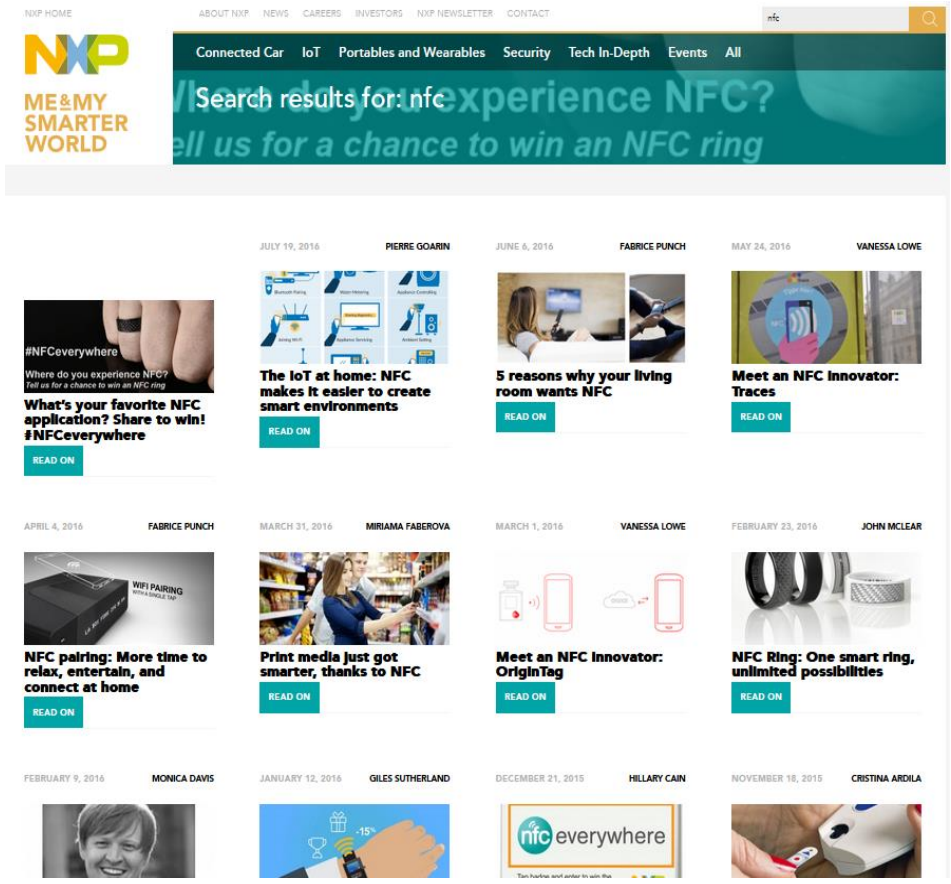

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