IoT solution made easy with NFC

Session 1: NFC commissioning solution with the NTAG I²C *plus* kit for Arduino pinout

JORDI JOFRE NFC READERS NFC EVERYWHERE 11/07/2017





SECURE CONNECTIONS FOR A SMARTER WORLD

IoT and smart home adoption today



The Internet of Things in 2020

Smart Home and Smart Building expected to reflect 30% of "Things"

50B

\$19T

6.58

~1



Connected Devices Global IoT Economy Value Devices per person



CONNECTED DEVICES (Billion units)



2



Increasing number of connected home devices



Smarthome value proposition



Source: Lowe's Smart Home Survey, July 2014





4

Accelerating IoT and connected home devices require



Current roadblocks for smart home mass market adoption



NFC commissioning solution



NFC one-tap solution: Use NFC as out-of-band commissioning



Training

No power supply required for commissioning

NFC commissioning: Tap and connect





If all devices and nodes are equipped with **NFC**, a simple tap is all it needs to exchange credentials and connect them with each other

NFC is complementary with other wireless technologies, whether it is Zigbee, WiFi, BT or any other RF protocol.



Benefits for the ecosystem

- MSOs / MNOs

- Increase end user satisfaction
- Limit technicians effort / after sales services
- Smooth bridging of multi-network systems (e.g. Wi-Fi with Zigbee)

OEMs / ODMs

- Ensure maximum interoperability with all existing standards
- Ease do-it-yourself kits adoption enabling retail distribution

End user

- Confidentiality through proximity
- Simple handling
- Plug & play set-up











NFC commissioning step by step



NFC commissioning: #1 Node initialization

User Memory (EEPROM)



• Data format can follow the NFC forum standard (NDEF message).







NFC commissioning: #2 Node detection

13









NFC commissioning: #4 Node activation

NXP solutions for smart home



Smart home node – Providing full solutions to enable the market



Fig 1. Typical simplified gateway HW architecture



Fig 1. Typical simplified node HW architecture

NFC-enabled smart home devices

- One-tap-pairing with Bluetooth, WiFi and ZigBee
- Secure set-up, out-of-band key exchange
- Home automation commissioning and maintenance
- Handle node settings easily on the phone/tablet touchscreen.
- Personalization & Logical Access Control, e.g for parental control





PN71xx family of NFC controllers The best plug and play full NFC solutions





NFC controller with integrated firmware and NCI interface

- Full NFC Forum-compliant
- Microcontroller core with integrated firmware
- Accompanied by Linux, Android, WinIoT drivers and several software examples
- NCI host interface
- Integrated power management unit allowing direct supply from a battery
- Industry-standard form factor packages

More info about PN71xx solutions: http://www.nxp.com/products/identification-and-security/nfc-and-reader-ics/nfc-controllersolutions/high-performance-nfc-controller-supporting-all-nfc-forum-modes-with-integrated-firmware-and-nci-interface:PN7150B0HN





PN7150 NFC controller single board computer (SBC) kits



PN7150 demokits cover integration with **Raspberry Pi**, **BeagleBone Black** and any board with **Arduino-compatible header**





NTAG I²C plus

The simplest, most cost-effective NFC solution



Sensors, switches & actuators



More info about PN71xx solutions: <u>http://www.nxp.com/products/:NT3H2111W0FHK</u>

NP

Connected tag with field detection pin and I²C interface:

- Field detection to wake up connected devices
- Energy Harvesting capabilities
- EEPROM for offline data access
- Maximum interoperability with NFC devices
- Flexible memory management
- Originality signature for protection against cloning
- Fast & convenient data exchange via a 64 bytes SRAM buffer
- Small footprint package (1,6*1,6*0,5mm)



NTAG I²C *plus*: Generate & store any NDEF message via MCU/APU



- NTAG I²C *plus* can update dynamically NDEF message via the Host/back end of the electronic devices for ALL smart phone OS (with an App)
- The NDEF message is stored in a non-volatile memory can be read like a passive NFC tag (no power supply required)





New NTAG I²C *plus* kit for Arduino pinout

OM23221ARD contents

- NTAG I²C plus PCB antenna board
- Adapter board for Arduino pinout

OM23221ARD features

- Connectivity to any device with Arduino pinout like NXP
 Freedom board family (Kinetis) and UDOO Neo (i.MX).
- Software support for Bluetooth pairing example based on NXP KW41Z, projects available on Explorer Kit moved to Kinetis platform (e.g. pass-through mechanism) and all examples available through the Kinetis Expert Tool

For additional information please visit: http://www.nxp.com/demoboard/OM23221ARD

NTAG I²C *plus* antenna board

OM29110ARD Adaptor board with an Arduino-compatible header





Embed NFC into any Electronics device for smart interaction



NTAG I²C plus Explorer demokit and variants

Demokits for **NTAG I²C** plus





NP intagi2C NTAG I2C plus is the simplest, most cost-effective NFC solution - your entryway to NFC! **Ordering details** Orderable part number: OM5569-NT322F 12NC: 935307851699 • URL: http://www.nxp.com/demoboard/OM5569-NT322F.html

* NTAG I²C *plus* Explorer demokit info and ordering details:

http://www.nxp.com/products/identification-and-security/nfc-and-reader-ics/connected-tag-solutions/ntag-ic-iplus-i-explorer-kit:OM5569-NT322E





Wrap up and Q&A



Find your NFC toolkit at www.nxp.com







Join us next session!

Next IoT solution made easy with NFC webinar session:



July 27th : Bluetooth pairing with the NTAG PC plus kit for Arduino pinout

Register here:

July 27th, 2017 10:00 AM - 10:30 AM CET July 27th, 2017 08:00 AM - 08:30 AM PST

Please **register now** for the time that works best for you: https://register.gotowebinar.com/rt/6416854696962677506



Software development in Android and iOS Embedded software for MCUs JCOP, Java Card operating Systems Hardware design and development Digital, analog, sensor acquisition, power management Wireless communications WiFi, ZigBee, Bluetooth, BLE Contactless antenna RF design, evaluation and testing

MIFARE® product-based applications End-to-end systems, readers and card-related designs **EMVco** applications Readers, cards, design for test compliancy (including PCI) Secure Element management GlobalPlatform compliant backend solutions Secure services provisioning OTA, TSM services



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