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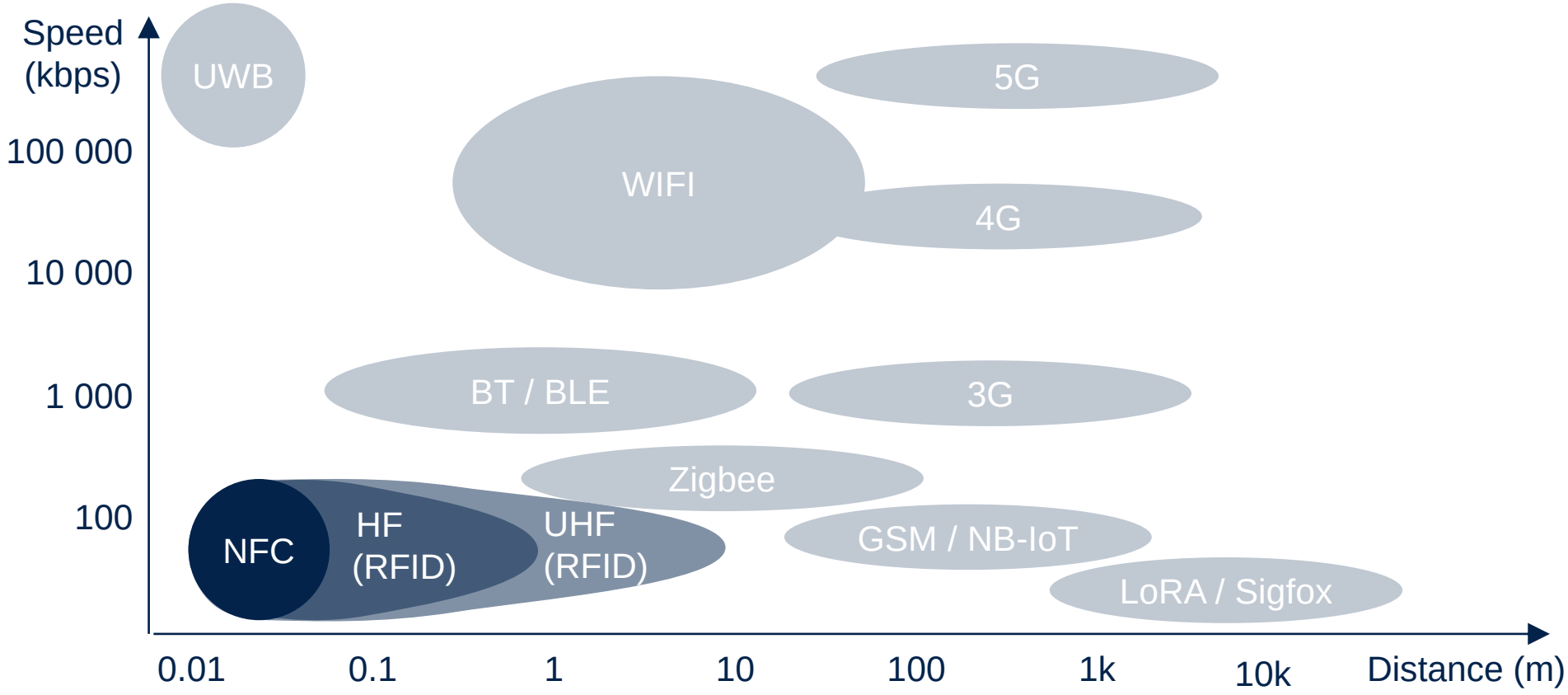
ST25 NFC / RFID solutions for automotive applications

Automotive: car, 4 wheelers, truck…

MMY division

NFC, RFID HF & UHF technologies

Complementary solutions to Wireless Technologies



Communication from 1cm (NFC) to up to 10m (RFID UHF)

Automotive applications

NFC technology

Near Field Communication

- Short range contactless communication
- Technology operating at 13.56MHz frequency
- Based on RFID HF ISO14443 & ISO15693 standards

Interactive and zero power

- NFC tags powered by phone or RFID reader
- Enabling convenient connection to the Cloud for IoT
- NFC-enabled mobile phone can engage with items by a simple tap

NFC is developed by NFC Forum

- Interoperability between devices with NFC Forum certified products
- Standardized use cases (URL web link, Bluetooth handover…)

Fast growing employment in Mobile phone

- More than 70% of new phones come with NFC
- NFC is used for Mobile Payment with Android and iOS (ApplePay)
- Apple added in 2019 support of NFC reader / writer mode from iOS13 onward

NFC main use cases & benefits

Access & Start

NFC

- Convenient access to the car (door handle)
- NFC being the RF back-up interface for keyfob in case of battery off
- Secured start
- Cloud-based distribution of keys to an NFC enabled phone

Pairing, Setup & Safety

NFC

- Convenient BT pairing to connect NFC phone to car
- Automatic driver identification & personal settings configuration (seat, temperature…)
- NFC credit cards or badges detection to prevent damaging them during Qi charging
- In car secured payment

Consumable & Diagnostics

NFC

- NFC also enables consumable authentication (e.g. air filter, oil filter)
- No physical connection (ODB) is required anymore for car diagnostics.

Interactive and zero power technology (Tag powered by Reader)
Trusted communication thanks to short reading distance
Simple and flexible

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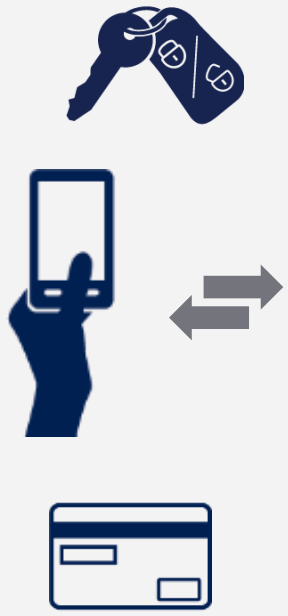
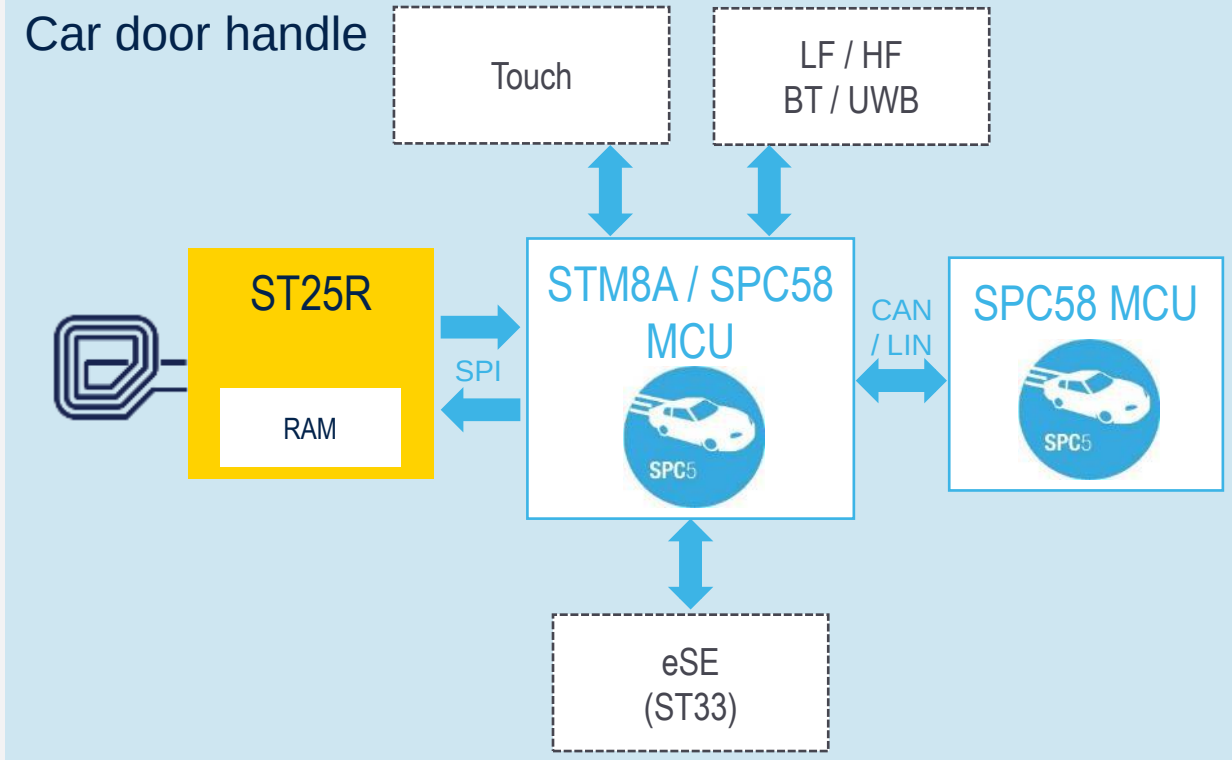
NFC reader for door handle

Typical NFC Reader Block Diagram & Usage for Car door handle





ST25R3914 / 15 - ST25R3920

High output power
Low power consumption
Automatic antenna tuning
Phone compatibility

Keyless car access
(CCC specification)

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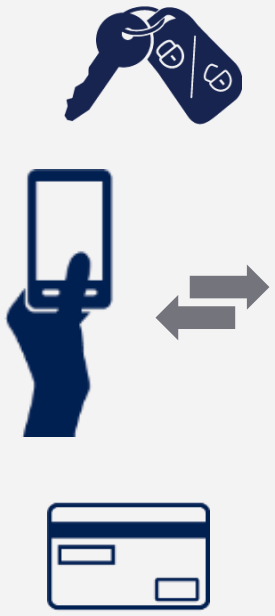
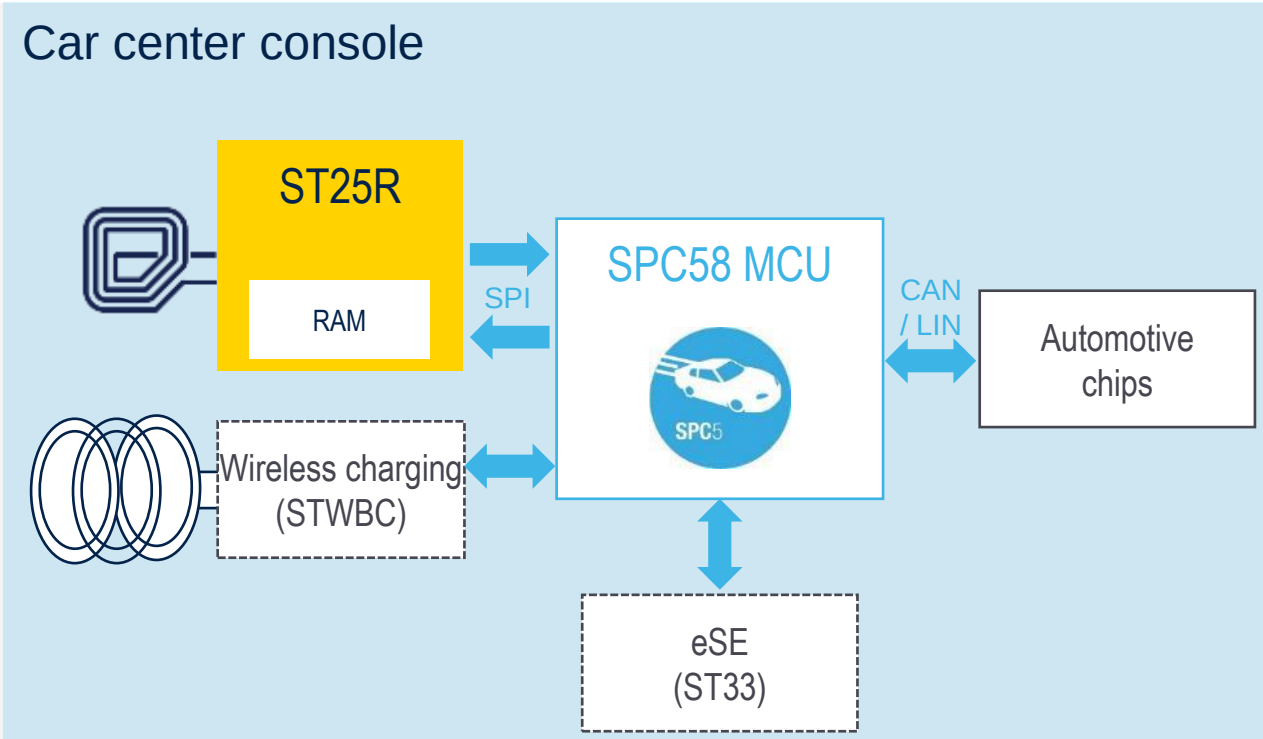
NFC reader for center console

Typical NFC Reader Block Diagram & Usage for Car center console





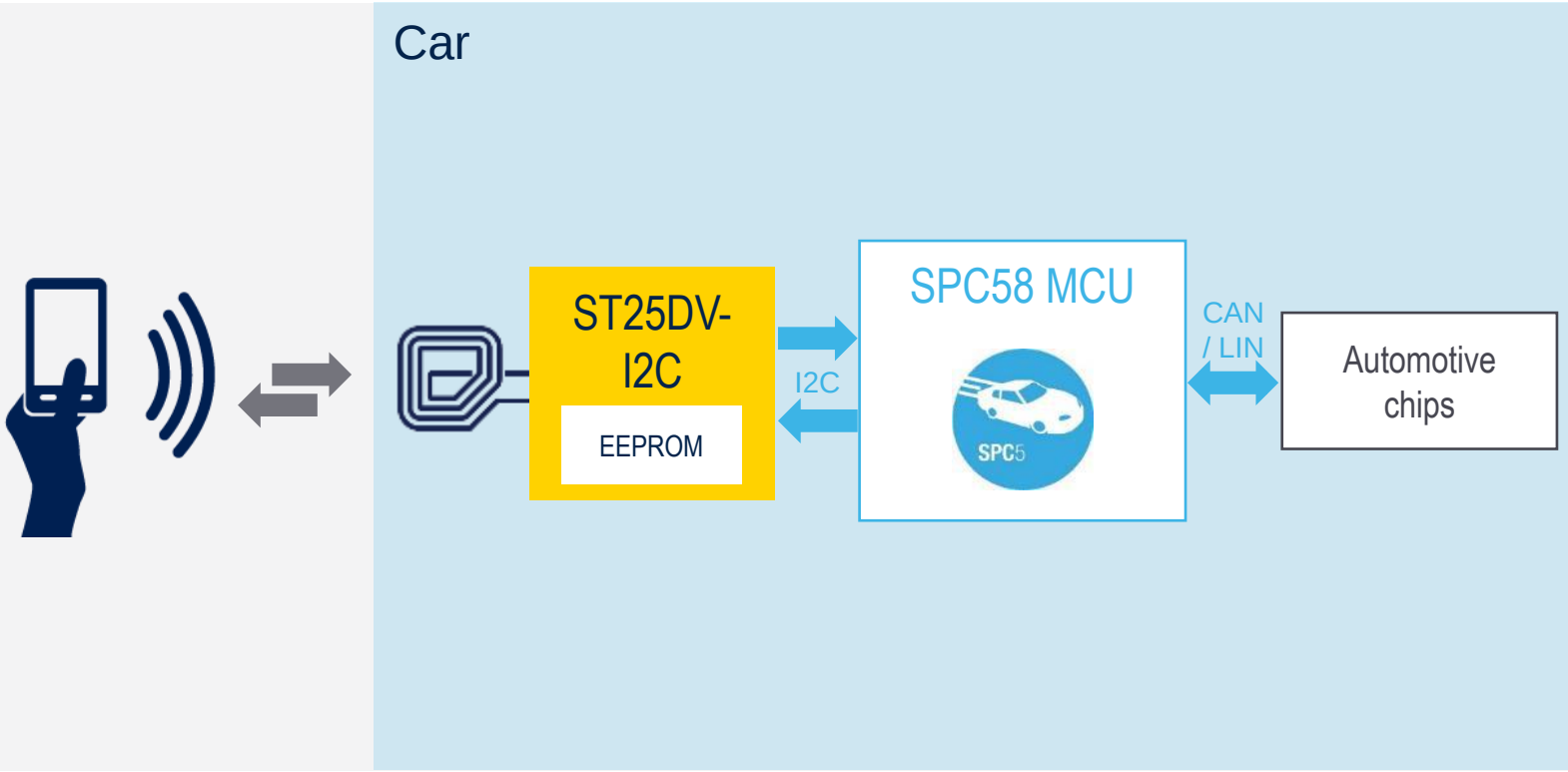
ST25R3914 / 15 - ST25R3920

- **High output power**
- **Low power consumption**
- **Automatic antenna tuning**
- **Phone compatibility**

Car easy start
BT pairing
Driver settings
NFC for Wireless charging

Dynamic NFC tag

Typical Dynamic NFC Tag Block Diagram and Usage for Automotive



ST25DV04K / 16K / 64K

I2C fast interface
Fast Transfer Mode
Long RF range

BT pairing
Driver settings

Typical NFC Tag (+ Reader) Block Diagram & Usage in Automotive

Consumable (e.g. filter…)

ST25TV02K / ST25TA02KB

TruST25 digital signature
Passwords
Easy & fast data transfer

Product recognition
End user experience

ST25 rich eco-system

- Discovery Kits based on STM32 MCU
- STM32 Nucleo boards ecosystem
- STM32Cube software ecosystem

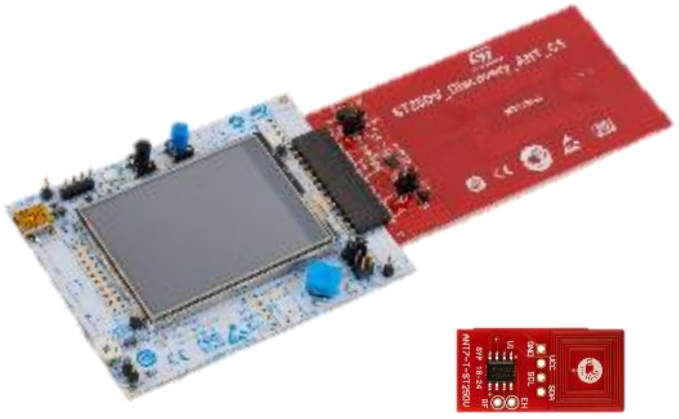
- Antenna e-design tool
- Schematic, BOM, Gerber
- IBIS models

- PC software tool ST25 SDK
- Mobile Apps ST25 SDK (Android & iOS)

- Documentation
- Training
- Webinar
- MOOC

ST25 hardware solutions

Speed-up Evaluation, Prototyping and Design



NFC TAG KIT

- ST25-TAG-BAG-U

DYNAMIC NFC TAG KITS

- ST25DV-DISCOVERY
- ANT-1-6-ST25DV
- X-NUCLEO-NFC04A1
- ANT7-T-ST25DV04K

HF / NFC READER KITS

- ST25R3911B-DISCO
- X-NUCLEO-NFC05A1
- ST25R3916-DISCO
- X-NUCLEO-NFC06A1

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Automotive applications

NFC in automotive

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Solutions for NFC / RFID Tags & Readers

ST25

ST25 SIMPLY MORE CONNECTED