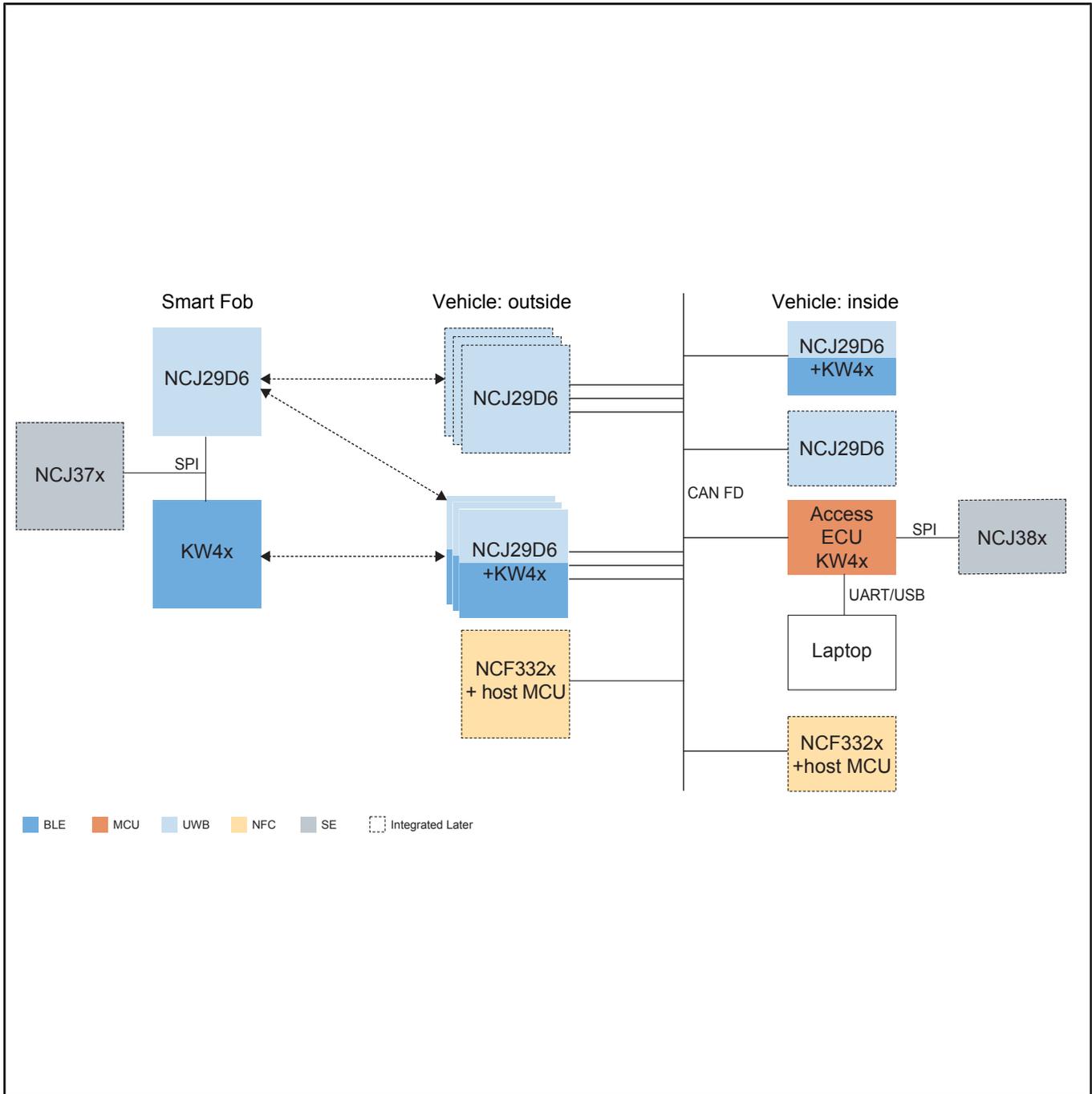# Digital Key Reference System (CCC / ICCE / ICCOA)

DIGITAL-KEY-RD

Last Updated: Jan 29, 2026

This automotive smart access reference design combines Bluetooth® for pre-ranging and wake-up (with upcoming Bluetooth channel sounding support) with secure ultra-wideband (UWB) for precise ranging and localization. By leveraging both technologies, it delivers secure, accurate and seamless keyless entry. Fixed anchors in a vehicle work in tandem with a remote device—such as a key fob—to authenticate user proximity with centimeter-level accuracy.

By being compliant with the Car Connectivity Consortium (CCC) Digital Key Release 4.0 and supporting variants such as the Intelligent Car Connectivity Industry Ecosystem Alliance (ICCE) and the Intelligent Car Connectivity Open Alliance (ICCOA), this design provides a robust, relay-resistant solution that enhances both convenience and security for the digital automotive access system.

Digital Key Reference Design Block Diagram

Smart Fob

Vehicle: outside

Vehicle: inside

NCJ29D6

NCJ37x

SPI

KW4x

NCJ29D6

NCJ29D6
+KW4x

NCF332x
+ host MCU

CAN FD

NCJ29D6
+KW4x

NCJ29D6

Access
ECU
KW4x

SPI

NCJ38x

UART/USB

Laptop

NCF332x
+host MCU

Legend: BLE | MCU | UWB | NFC | SE | Integrated Later

View additional information for Digital Key Reference System (CCC / ICCE / ICCOA).

Note: The information on this document is subject to change without notice.

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