

NFC PRODUCTS

FOR MOBILE COMMUNICATIONS

Leading the Next Generation of Mobile Devices and Services.

Near Field Communication (NFC) promises to revolutionize the ways in which people access and use information. Soon, NFC-enabled devices will enable mobile payment, loyalty, interactive advertising, ID authentication, transit fare collection, and other uses.

- Comprehensive roadmap, multiple architectures
- Best-of-breed, mature NFC solution
- Open NFC™ software stack: truly open, royalty-free.
- Unique integration and support team
- Payments market experience: multiple applications, domain knowledge
- iClass in collaboration with HID
- One-stop-shop innovative, technology partner



Solutions for the NFC Ecosystem

INSIDE has developed solutions for key members of the mobile telecommunications ecosystem:

- **Mobile handset manufacturers turn** to INSIDE for its mature, open products; comprehensive commercial-grade open source software stack; and expertise in NFC integration for service delivery, handset design, and user interface design.
- **Mobile Network Operators** can deliver innovative consumer retail, transport, payment, access control, and loyalty services with INSIDE's NFC technologies are fully compliant with standards such as Single Wire Protocol (SWP).
- **SIM card manufacturers** can leverage dedicated SIM solutions that enables mobile network operators to capture new revenue opportunities from a vast installed base of NFC-capable devices.

Proven and Flexible Technology

INSIDE owns essential NFC patents, and its NFC solutions are based on third-generation silicon. Features such as battery-off or powered-by-the-field operation; low-power card detect; and support for SWP and Host Controller Interface (HCI) enable design and development of innovative new products and services. A mature NFC controller supports multiple architectures for UICC and embedded Secure Element.

Multiple Standards-compliant Interfaces

INSIDE NFC solutions include standards-based interfaces for host, SE, and RF standard cards:

- Host interfaces: I²C[®]
- SE interfaces: SWP, UICC interoperability with leading SIM card manufacturers, and additional digital interfaces for SE (DCLB)
- RF standard: ISO 14443 (A,B); Felica; ISO 15693; card mode; reader and peer-to-peer modes

Firmware

ETSI-compliant firmware for SIM and the application processor enables customers to upload new firmware for product enhancements and changes to regulatory compliance. It also supports a wide range of use cases, combining several power management options and test features.

Integration Support

INSIDE delivers complete solutions—from silicon to Open NFC™ (NFC software stack) for integration with the baseband/application processor software. An efficient, high-quality integration support team helps simplify technology integration in mobile handsets. INSIDE's NFC software stack is also available free of charge under an Apache v2.0 license to support open source development. Last INSIDE offers a development and evaluation kit to ease and simplify integration.

PRODUCT FAMILIES



MicroRead[®] provides third-generation silicon that allows handset manufacturers to develop products that support contactless services such as payment, transportation, access control, loyalty, and ticketing. MicroRead is designed for traditional NFC applications, new applications, and legacy RFID applications in mobile phones, smart phones, and other consumer devices.



- **Third-generation silicon:** The MicroRead suite combines third-generation silicon, a full set of host interfaces, NFC software stack, a reference design, and robust standards support—ready for volume production. It is ISO 9001-certified and features unique, multi-host router technology.
- **Most flexible solution:** Easy to integrate, MicroRead accelerates time to market for innovative NFC services and has been proven in multiple market trials. It is pin-to-pin compatible with INSIDE SecuRead and enables firmware upgrades.
- **Battery off capability:** Solutions based on MicroRead are highly convenient, and enable users to use NFC features even when the handset is turned off. Market trials have demonstrated rapid user adoption and high customer satisfaction.
- **Open source:** Because solutions are based on open standards, solution developers can increase their return on investment in the MicroRead platform. INSIDE Open NFC™ is the industry's only open source software stack. MicroRead is certified for all ISO 14443 types and ISO 15693 RFID.



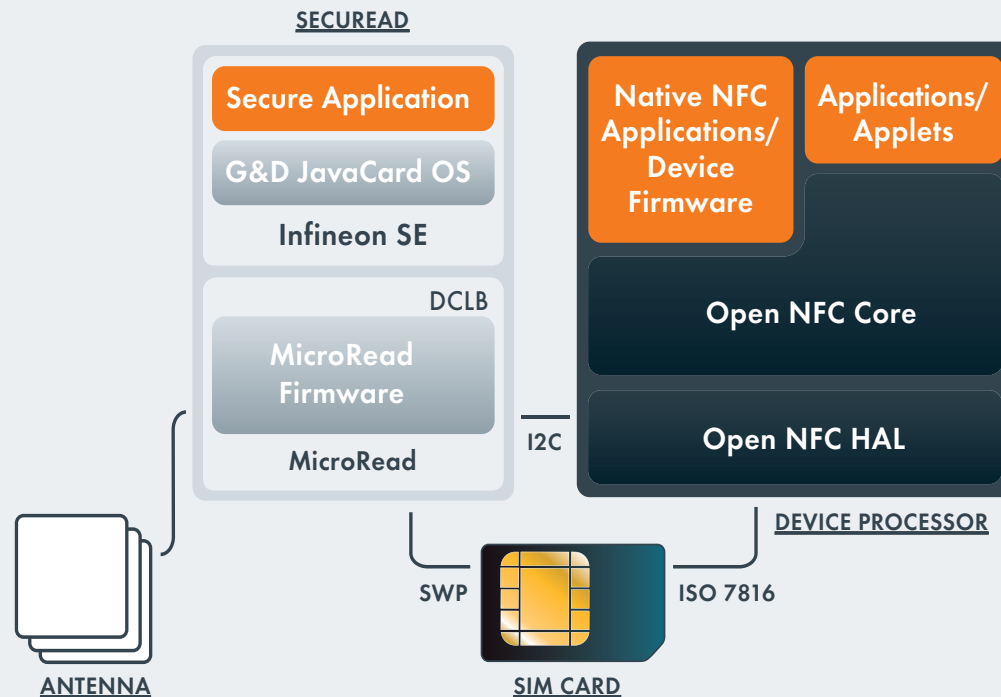
INSIDE SecuRead® is a fully integrated, system-in-package solution. As an application-ready package, it includes the MicroRead NFC controller, a secure element from Infineon Technologies, and a Giesecke & Devrient operating system with a full set of applications, including payment. SecuRead is also compatible with iCLASS and Mifare technologies in support of payment, transport, access control, and other applications.

- **Broad Compatibility:** SecuRead complies with ISO 14443 A/B, ISO 15693, and ISO 18092 standards and can communicate with a global installed base of contactless readers. Devices equipped with SecuRead can also perform as readers to access peer devices and smart objects.

- **Fast Time to Market:** A pre-integrated system-in-package makes it easy for handset manufacturers to gain advanced NFC functionality with a built-in secure element. The SecuRead package can be quickly and easily integrated with minimal configuration required, accelerating time to market for innovative NFC-enabled handsets.
- **Flexible Configuration:** Solutions based on SecuRead can securely route applications to multiple hosts in a device, providing flexibility for supporting multiple architectures.

SYSTEM OVERVIEW

SE Access Modes





INSIDE Open NFC is a comprehensive, commercial-grade, royalty-free NFC protocol stack that is available in an open source edition under the Apache™ License, Version 2.0. Open NFC supports several levels of functionality:

- Low-level RF control
- NFC Forum-specified tag handling
- Peer-to-peer communications
- Bluetooth and Wi-Fi pairing
- Interactions with single-wire protocol SIMs and other secure elements
- Compatibility with smart cards and RFID tags based on Felica, Mifare, and ISO 14443 standards

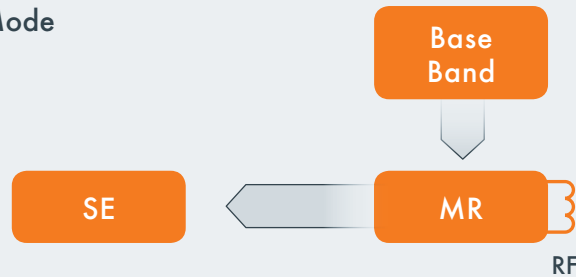
Open NFC offers a consistent API across all NFC hardware, which simplifies and accelerates development. It is available for WinCE 6.0 (compatible with Windows™ Mobile 7), Linux 2.6, MeeGo, and Android platforms.

NFC Evaluation Kit and Integration Services

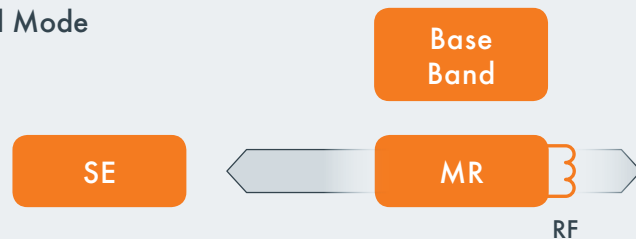
INSIDE's leadership in NFC standards development and NFC pilot programs gives it the expertise and market understanding to deliver NFC technologies and solutions that are encouraging adoption of NFC-based applications.

INSIDE can help accelerate product design and integration through development kits and professional integration services. Qualcomm reference designs speed development and customization services can help with everything from architecture to final form factor.

Dialog Mode



Front-End Mode



Dialog Mode (of SE)

- Communication between baseband and SE
- Baseband/Microread is configured as a reader
- SE is "seen" as an "internal" card

Front-End Mode (of SE)

- Communication between an external reader and SE
- MR is in card emulation mode

For more information about INSIDE Secure NFC products, please visit www.insideseecure.com

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