Giesecke & Devrient

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About Near Field Communication (NFC)

Near Field Communication (NFC) is a short-range wireless connectivity technology standard designed for intuitive, simple and safe communication between electronic devices. NFC communication is enabled by bringing two NFC compatible devices within a few centimeters of one another or for the two devices to literally "touch" one another.

Applications of NFC technology include contactless transactions such as payment and transit ticketing, simple and fast data transfers including calendar synchronization or electronic business cards and access to online digital content.

NFC Standards are acknowledged by ISO/IEC (International Organization for Standardization / International Electrotechnical Commission), ETSI (European Telecommunications Standards Institute), and ECMA (European association for standardizing information and communication systems). NFC Forum compliant devices in NFC Forum Reader/Writer mode must support the RF requirements for ISO/IEC 14443A, ISO/IEC 14443 B and FeliCa as outlined in the relevant parts in the ISO18092.

NFC devices are naturally interoperable, as NFC is based on pre-existing contactless payment and ticketing standards that are used on a daily basis by millions of people and devices worldwide. These standards determine not only the "contactless" operating environment, such as the physical requirements of the antennas, but also the format of the data to be transferred and the data rates for that transfer.

NFC technology experience

Thanks to NFC technology, we will be able to "pick up" information from our environment. NFC technology allows mobile devices to "read" information stored in "tags" on everyday objects. These can be affixed to physical objects such as posters, bus stop signs, street signs, medicines, certificates, food packaging and much more.
Here are some examples where NFC technology can help capture information or trigger a chain of events.

- We all walk past billboards and posters advertising products. By adding NFC-compatible "tags" to posters and magazine advertisements, we can read the tags with an NFC-enabled phone and immediately act – before we forget.
- NFC tags can be used on special documents like parking permits, credit cards and money to prove authenticity. An NFC hologram is copy-resistant and can be cancelled if it is stolen.
- NFC enables simple and easy set-up of connections. For example, to connect a Bluetooth headset to a mobile phone, you just hold the devices close to each other and the connection automatically starts.

NFC will make mobile payment and ticketing easier

NFC enables contactless tickets and cards to be held in everyday devices like mobile phones. Instead of carrying several physical cards, you can choose to carry some or all of your cards within a personal device like an NFC-enabled mobile phone. NFC technology is helping to increase the acceptance and usability of contactless services because it is based on an international standard, designed to work for any service, in any place, around the world.

Payment and ticketing are the first NFC applications as NFC can leverage the acceptance infrastructure for contactless cards in place already today. Rollout will happen first in cities with existing contactless infrastructure for payment or ticketing.

- NFC technology can enhance contactless payment at shop check-outs or unattended payment machines like parking meters. You can pay using virtual payment cards or e-money.
- Contactless tickets have revolutionized transport and event ticketing with their speed and flexibility. With NFC-enabled devices like mobile phones, you can buy tickets, receive them on your device and then go through “fast track” turnstiles while others wait. You can check your balance or update your tickets remotely.
- You can quickly download information (such as a bus timetable) by bringing your NFC-enabled phone or PDA close to a sign with NFC-readable information.
- A successful pilot project with Near Field Communication (NFC) enabled mobile phones already moved to mainstream: bus passengers in Hanau, Germany now have a new option to purchasing a bus ticket. The German Public Transport Network Operator RMV (Rhein-Main-Verkehrsverbund) is making certain daily transactions, such as transport ticketing, a routine option via mobile phone. More than 90% of the test users in the pilot considered this a positive, convenient system worth continuing, and now this opportunity is available to all Hanau residents.

Secure transactions

Payment and ticketing applications will be stored in a secure element in the NFC device. Secure element is a smart card chip capable of storing multiple applications, e.g. SIM card, secure memory card or an additional embedded smart card chip in the NFC device.

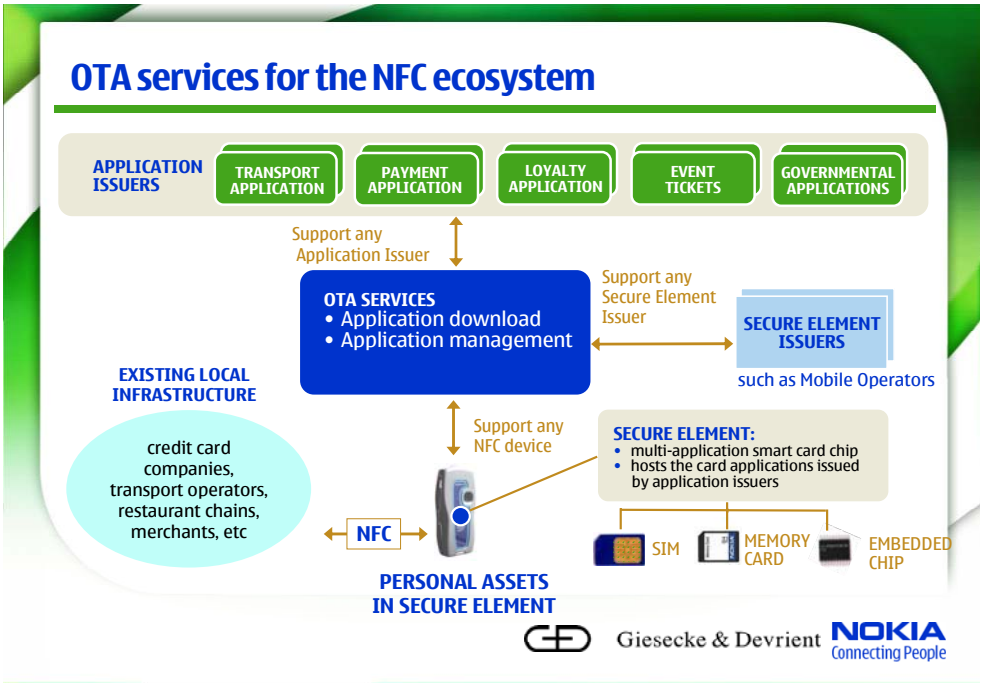
Payment and ticketing applications will be provisioned over-the-air into secure element of the NFC device. Security and openness are of fundamental importance for the over-the-air provisioning.

Once an application, for example a credit card, has been securely provisioned to the NFC enabled phone, customers can pay by simply waving their phone at a point-of-sale reader. This convenient, fast transaction comes courtesy of the phone's built-in NFC technology. It imbues mobile phones with the functionality found in standard contactless smart cards that are used worldwide in credit cards and tickets for public transit systems.

In addition to being compatible with existing contactless card acceptance infrastructure, an NFC enabled phone provides other benefits to consumers, such as capability to view transactions and data on the phone display and to buy tickets directly to the phone anywhere anytime. NFC phone can also be used to access services by simply touching with the phone a service poster embedded with an RFID chip.

NFC will be an ecosystem with new services and intersection of multiple industries

Nokia and Giesecke & Devrient have agreed to set up a new company to provide services to the NFC ecosystem to manage over-the-air (OTA) the consumers' applications in the NFC devices. The OTA services from the new company will be open and available for all stakeholders in the NFC ecosystem, including all NFC device vendors.



The joint venture will implement and operate a secure and versatile service platform to manage the over-the-air transactions with consumers' NFC enabled devices. The service platform will be operated in a white-label mode with in-built interfaces to the IT systems of the actual service providers, such as banks issuing credit cards. The over-the-air services will be offered to all parties in the NFC ecosystem,

where mobile operators and other service providers are exploring the opportunities to cooperate in launching new services to consumers.

The new company's services will be available and open to any NFC enabled devices from all vendors. Company's global scale, neutrality and openness are corner stones for cost efficient services benefiting all stakeholders in the NFC ecosystem. The company service offering will also help to harmonize the way how the applications are provisioned to consumers, thus preventing the fragmentation of the related NFC services.

Simplicity of use

NFC is based on existing contactless infrastructure around the world that is already in use by millions of people on a daily basis. NFC is not a fashionable nice-to-have technology, but actually a technology that makes peoples lives easier – easier to pay for goods and services, easier to use public transport, easier to access services in your surroundings and easier to share data between devices.