How NFC can help pharmaceutical brands ensure patient safety

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Addressing the challenges
of the medical industry

According to the EUIPO, counterfeit products account for 3.3% of all world trade, and the pharmaceutical industry suffers the most from the rise in grey markets (*).
Billions of counterfeit medicines are traded around the world, harming thousands of people every year, especially in developing countries. It is therefore crucial to find solutions to increase patient safety and security.

Between 8% and 15%
of medication sold internationally is either fake or not of the correct standard according to the WHO (*)

(*) Source: Packaging Gateway, 2021, available here

INCREASING PATIENT SAFETY USING NFC TECHNOLOGY

What are the benefits of using NFC technology?

NFC (Near Field Communication) is a wireless connectivity technology based on RFID (Radio Frequency Identification) enabling contactless communication between a reader and a tag. A tag is a small electronic component that can be embedded in the packaging of medical supplies, such as medicine, vaccines or drug samples, to add wireless connectivity.

Implementing NFC allows pharmaceutical brands to track their products around the world, ensure their authenticity, and create a direct two-way communication channel with consumers via their smartphone, used as an NFC reader.

How does it work?

The NFC tag embeds several advanced features like the memory protection of its content and authenticity verification (TruST25*), thereby helping both brands and patients differentiate authentic medical products from counterfeit ones.

The tag also embeds a user memory, which allows a company to store different types of information, such as product provenance or product information (expiry date, recommended dosage etc).

For example, a link to a tutorial can be configured into the tag, and by simply "tapping" the NFC-enabled object with their smartphone (bringing the mobile phone and the tag in close proximity), patients can read more information on how to take their medication properly. By opting for NFC, pharmaceutical brands offer patients a digital experience that helps them follow their treatment in a safe and secure way.

Specifically designed to enable these applications, ST offers the **ST25 Tag IC product line**, available now.

Fighting against fake medicine to protect patients

On top of the security it delivers, NFC technology offers pharmaceutical brands many other advantages, as the same NFC tag can be used for several use cases.

Use case 1: traceability

As NFC tags are unique and cannot be cloned, a company can use NFC technology to verify that the goods equipped with an NFC tag have followed the entire supply chain flows as expected and have not been tampered with.

Production	Distribution	Tag integration	Chemist	Home
Primary Suppliers	Distributors	Integrators	Sales	Patients

HOW CAN NFC IMPROVE YOUR SUPPLY CHAIN MANAGEMENT?
- Track supply chain flows
- Easy access to item provenance
- Guarantee product authenticity
- Locate items anywhere, anytime once connected via NFC
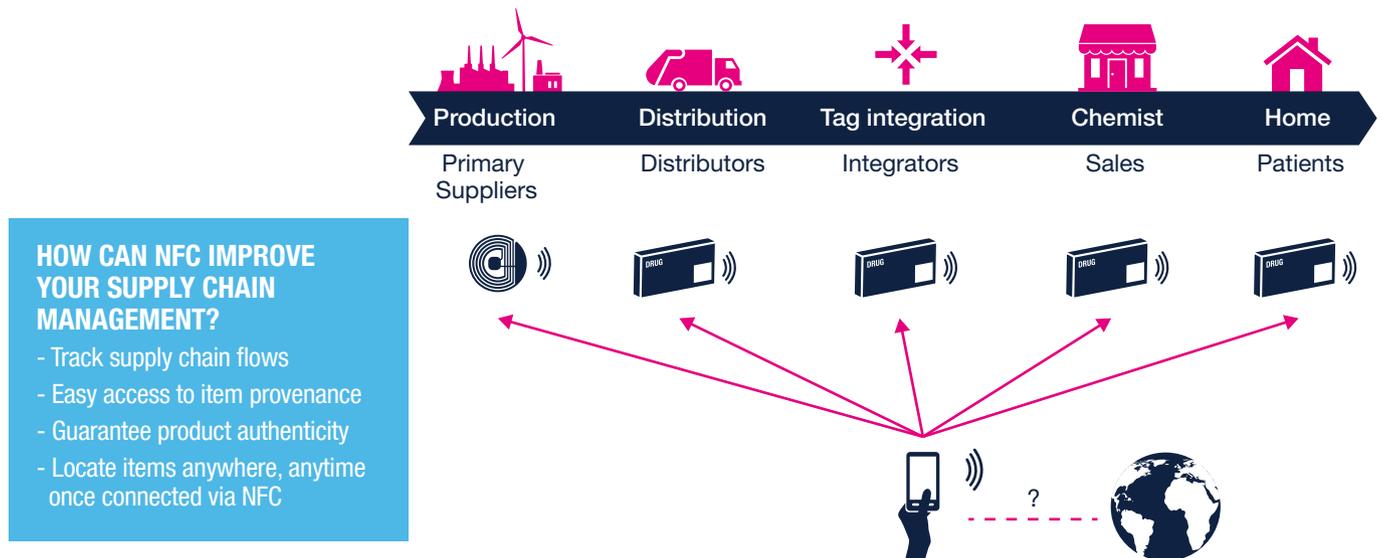
Use case 2: patient engagement

NFC tags can also be used to help patients take their medicine properly. By using their NFC-enabled smartphone to read the contents of the NFC tags embedded in the packaging of the medication, patients can be provided with more information on the recommended dosage, the potential risks, the expiry date, and more.

ENABLING MULTIPLE APPLICATIONS

Track & Trace

Thanks to their unique identifier (UID) coupled with other information coming from the application (e.g. : timestamp, etc), the medical products can be geolocated by anyone using an NFC reader or an NFC-compatible mobile phone everywhere and all along the supply chain.

By setting several check points throughout the supply chain, stock management can be improved, and the status of each tagged item can be easily accessed and updated by the medicine supplier.

This is also an efficient and secure way to fight against grey markets and unauthorized channels by knowing what product is where at any time.

The NFC tag's small form factor allows it to be hidden when necessary, depending on what the NFC tag will be used for. If a company wants to use the tag for traceability purposes, the tag can be fully integrated into the goods and be made invisible to the outside world.

However, if the tag embeds multiple application possibilities, such as traceability and consumer engagement, its location on the product must be clearly indicated so that patients can easily find the tag in order to read it and access the information it contains.

# Easier access to information anywhere, anytime

Tap & Link

NFC technology delivers the benefits of digital marketing to physical products.

Secure and ready-to-use, NFC tags can easily be configured with personalized content (authentication, product composition and more) which consumers can access by simply tapping the tag with their smartphone.

The information stored in the tag must follow a specific format that can be read by an NFC-enabled mobile phone (NDEF format). Consequently, any NFC mobile phone can interact with a product featuring an embedded NFC tag.

The so-called "Tap & Link" approach allows pharmaceutical companies to share important medical information about the product to help patients take their medicine in a safe way. Indeed, they can store information in the NFC tag that will help patients with their treatment (dosage, actions to take in case of side effects, urgency numbers etc.), thereby improving patient adherence to medication. The data is personalized during the production phase and can be protected by a password if necessary.

ST offers a wide range of ST25 tags which are certified by the NFC Forum and fully support the NDEF functionality, thereby ensuring interoperability with NFC-compatible smartphones.

| Brand		Patient
Supply chain visibility ←		→ Easier access to product information
Create direct digital relationship with patients ←		→ Improved adherence to treatment
Build trust ←		→ Access to certified medication (avoid counterfeit products)
Educate patients about medications ←		→ Possibility to re-order samples
Fight against counterfeiting ←		
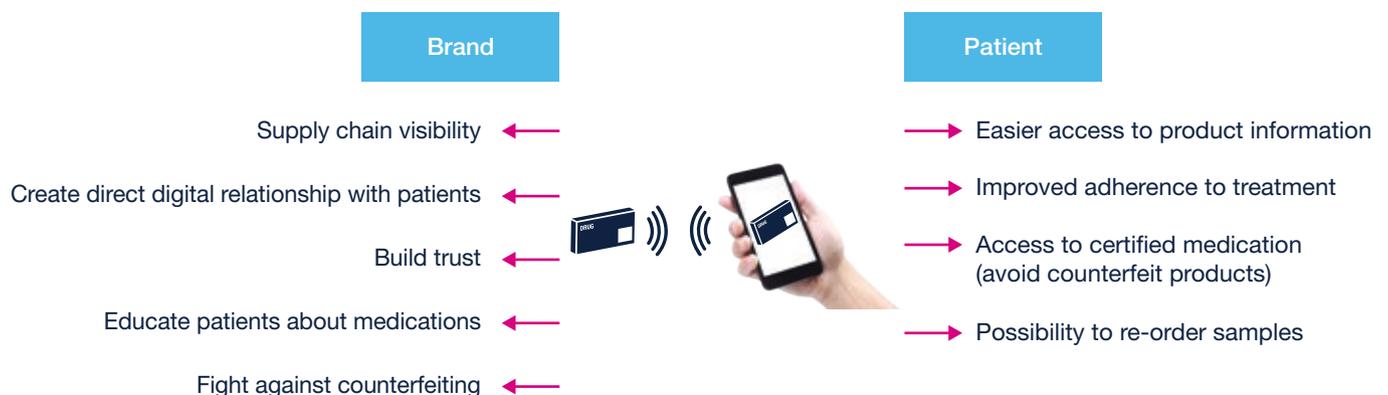
ST25Connect program
Helping brands grow their business with NFC

In practice, the successful integration of NFC technology in consumer products involves multiple stakeholders and requires technical expertise, time, and resources, especially if you are new to NFC technology.

The ST25Connect program is a service provided by ST to ensure the best product integration and implementation of NFC technologies.

With ST25Connect, you can benefit from ST's technological expertise and our network of trusted partners. In direct contact with ST's experts, you will be provided with personalized advice and the NFC technology you need to grow your business.

From NFC technology...

STMicroelectronics → ST25 NFC chip

Inlay maker →

Tag/system integrator →

Software house → Web/app solution

Your factory and warehouse →

Connecting with your customer →

ST25 Connect

...to product digitalization
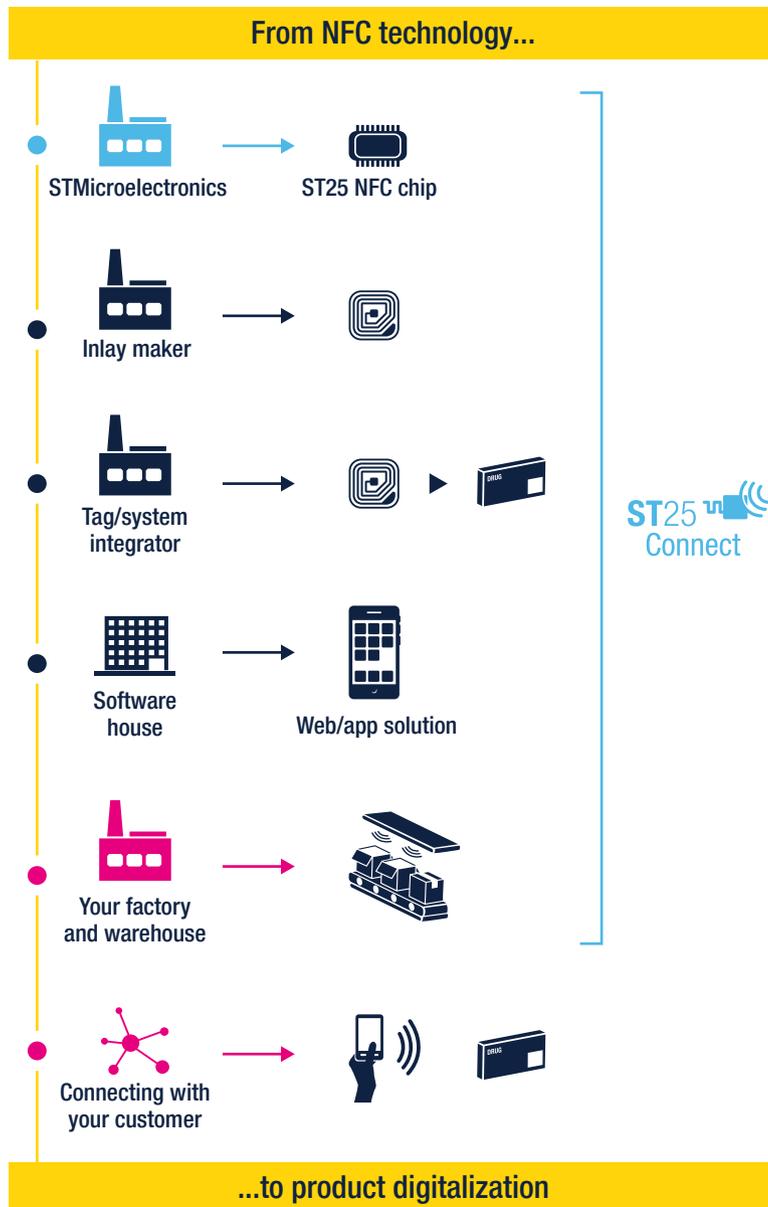
ST provides semiconductor technologies and supports companies in the implementation of NFC technology.

With over 20 years of experience in the design of NFC readers and tags and an active member of organizations like the ISO and the NFC Forum, ST has strong expertise in NFC technology, and will create a complete and customized solution addressing your needs and challenges.

Leveraging our network of recognized partners, ST's team of NFC experts will help you break down barriers to NFC adoption. Depending on your needs, requirements, and location, we will suggest the ideal business partners (inlay makers, tag integrators, certified laboratories, etc) for your project.

Once we have defined together how your company can benefit from NFC technology, we will provide a customized solution, based on ST's portfolio of ST25 NFC readers and tags.

ST25 Connect

CURIOUS TO KNOW MORE?

Visit **www.st.com/st25connect** or contact us by **email**

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For more information on ST products and solutions, visit www.st.com

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