NFC Forum
2024 Annual Report

Contents

All It Takes Is Just One Tap

The past several years have seen a surge in interest and adoption for NFC Forum technologies. We renewed the momentum behind our community towards delivering secure, fast, and convenient contactless user experiences across a growing diversity of use cases. No other wireless technology does more for consumers today with the same effortless simplicity and efficiency.

Contactless has become a device-first user experience with consumers choosing to tap with their phone or wearable over a card. A 2024 study by ABI Research found that, compared to other in-person payment methods, Near Field Communication (NFC) contactless was rated the most secure, most convenient, most reliable, and easiest to use.

For the past two years, we have seen our membership grow from just over 100 members to more than 700 and some months we add a new member daily.

Our two Annual Member Meetings provide unique networking and collaboration opportunities. This year we celebrated our 20th anniversary with an even brighter future.

The NFC Forum Technology Roadmap includes five broad initiatives like range extension, increases to wireless power, multi-purpose tap, device-to-device connectivity and extended data formats to enable sustainable solutions. Each of these efforts are making progress through task forces, tiger teams, committees, working groups and special interest groups towards market reality.

Our Certification Compliance Program today is not only used by the NFC Forum product ecosystem but is also required by the Universal Stylus Initiative and the Digital Key effort of the Car Connectivity Consortium, for whom we have certified 60 products to date. This means more and more companies are looking to our community for baseline interoperability of NFC technologies for their customers. And we're just getting started.

Thank you for your continued support. It is through your efforts that we are making such great progress with just one tap.

Mike McCamon
Executive Director
NFC Forum

Consumers Prefer Device-First Contactless Experience

The results from our 2024 bi-annual study with ABI Research support the growing trend towards a device-first future, predominantly through the accelerating migration from physical to digital wallets and the security, reliability and convenience enabled by increased NFC adoption. This device-first approach echoes growing consumer familiarity, comfortability and trust in NFC technology.

" The 2024 Study highlights a significant paradigm shift in the way that people use their contactless devices.

Daily use of mobile payment platforms is becoming increasingly common, with users citing the security, reliability and convenience of digital solutions as core driving factors. As familiarity and understanding of NFC continues to grow, so too does demand for additional applications and use cases for the technology.

We are now entering an end user perception step change whereby NFC is not just considered a payments technology, but a technology that can underpin a variety of different applications and use cases, such as the ability to tap to receive additional product information, for digital car and/or house key storage, use across brand protection or tap to register a product warranty to name but a few. "

Andrew Zignani,
Research Director at ABI Research

82%
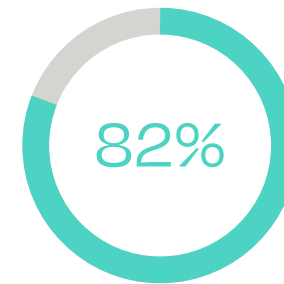
of consumers have used a smartphone or smartwatch to make a contactless payment.

55%
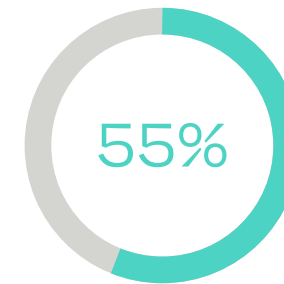
of respondents would prefer to use their smartphone or smartwatch to pay than a card.

92%
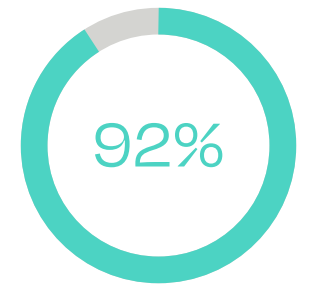
of consumers are familiar with NFC, showing near ubiquitous understanding of the technology.

★★★★★

When compared to QR codes, Contactless Cards and Cash, NFC Contactless was rated the **Most Secure, Most Convenient, Most Reliable,** and **Easiest to Use** way to pay.

4

Changing How We Pay

Already rated by customers as the most secure, most convenient, most reliable, and most easy to use way to pay, the next generation of NFC Forum-capable devices look to further transform the digital payment experience.

The modernized device-to-device communication functionality of NFC enabled smartphones will enable smartphone-to-smartphone payment acceptance.

Merchants previously locked out of the ecosystem due to cost and connectivity, can now access convenient, affordable payment solutions from everyday consumer handsets.

NFC Forum is at the heart of reliable smartphone payment acceptance solutions. It is working to create a platform for strong, industry-wide collaboration to harmonize this ecosystem and deliver seamless, secure payment experiences.

Learn more

Listen   to our podcast with EMVCo and PCI SSC
Read   SOFTPOS: The Next Great Disruptor to the Payments Ecosystem
Read   Convenience, Security and Reliability:
Three Factors Driving a Payments Paradigm Shift

Multi-Purpose Tap

Multi-Purpose Tap is an emerging concept that is expected to revolutionize the contactless user experience by supporting several actions with a single tap.

This will bring unparalleled convenience to multiple NFC use cases including point-to-point receipt delivery, loyalty, identification, and total-journey transit ticketing.

The innovation is expected to provide the opportunity to personalize seamless consumer experiences. Examples include simultaneously

taking retail payments while adding loyalty points and promotions; applying concessions and best fare pricing when purchasing travel tickets; or receiving details on how a product can be recycled and reused when buying goods.

NFC Forum has been working to undertake feasibility studies and define use cases and encourages all stakeholders from across the NFC value chain to contribute to the development of Multi-Purpose Tap.

Learn more

Download   Multi-Purpose Tap Improving the User Experience

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Unlock and Start Your Car

Digital car keys are starting to become a reality. The technology allows drivers to use their smartphones to lock, unlock and start their cars. Within this space, NFC plays a unique role as, unlike other wireless technology, it can operate without power. Even when a smartphone battery is drained, NFC technology can still open and start a car.

Additionally, as NFC tags can easily be integrated into a fob or other medium, it provides a back-up access solution.

NFC also addresses concerns around passive entry, as the communication range is short, the owner of the vehicle must have intent to be near and ready to access their car.

This combined functionality has led to NFC becoming a vital component in all digital car key systems, with NFC Forum Standards now mandated by the Car Connectivity Consortium.

Learn more

Read   **Q&A with Car Connectivity Consortium:**
Using NFC to Drive Innovation in the Automotive Industry

Improving Healthcare

NFC technology has the power to transform the healthcare industry.

Product authenticity is also a mounting concern within healthcare – encompassing pharmaceutical companies and medical device manufacturers. An illegitimate batch of a medicine that leads to patient complications could be catastrophic for a brand's image and, more importantly, the health of the patient themselves.

NFC tags can be embedded in the packaging of medical supplies, such as medicine, vaccines, or drug samples and equipped with a tamper detection feature. This allows end users to see if the data written onto the tag has ever been edited throughout its entire lifespan, providing crucial protection for pharmaceutical brands as the integrity of their product and its composite ingredients can be verified to guarantee patient safety.

Learn more

Read   **Combatting Counterfeiting:**
How NFC Technology is Providing Protection to Key Industries

Wirelessly Charge the Smallest of Devices

When selecting a wireless charging solution, more and more companies are carefully modelling the user experience in addition to power charging time. Our smallest personal devices need to be powerful and light while also delivering attractive industrial design.

Many of these types of products have extremely low power requirements so that even just a minute of NFC Wireless Charging time usually provides hours of continuous use.

NFC Forum has launched a dedicated campaign aimed at encouraging product designers to build on the existing NFC technology to offer wireless charging capabilities. The NFC Forum Wireless Charging Standard was first released in May 2020, and is a complementary specification to Qi from the Wireless Power Consortium.

Version 2.0 was released in October 2021 to support smaller antenna sizes expanding the range of devices that can be wirelessly charged. NFC Forum aims to enhance the specification's capabilities in the coming years, to reach up to 3 watts of power. This change will bring wireless power and charging to new and smaller form factors, disrupting industrial design while defining new markets.

Making use of NFC chipsets and antennas delivers convenient power transfer without the need for separate wireless charging units helping product designers simplify their design, streamline development and reduce costs, while accelerating time-to-market.
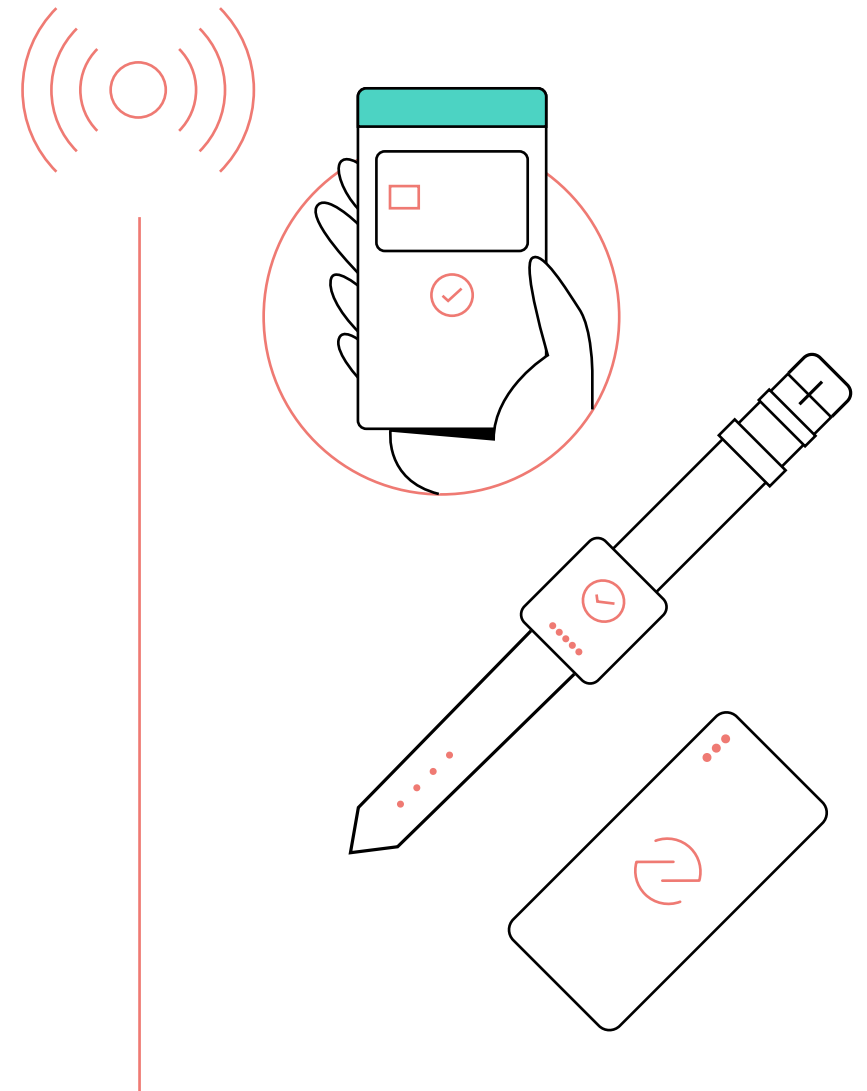
NFC for Access Control

Tap and go solutions based on NFC Forum technologies allow you to lock or unlock any door with your phone or wearable without having to carry your keys.

Consumer familiarity and usability of NFC make it a natural technology option for access control and managing entry to buildings, rooms and other secure areas.

Leveraging the biometric security on a device, NFC Forum Access Control reduces the risk of unauthorized access compared to traditional keys or magnetic swipe cards by using an extremely short-range, encrypted connection between a device and a lock.

NFC technologies also deliver ultimate convenience by utilizing the Digital Wallet of the mobile device most consumers already own. Most digital key frameworks also make sharing keys with others a snap – and then just a tap.

Learn more

Download   **How NFC is Unlocking the Future of Secure Access Control**

Identity

NFC technology significantly enhances identity verification processes, offering a fast, secure, and convenient method for securely storing and authenticating personal identity.

The low cost and ubiquity of NFC means that it can effectively support a number of use cases at scale, verifying people, products as well as Internet of Things (IOT) provisioning.

No other technology provides for user intent using a "tap and go" method to initiate an action. This meets legal requirements for identity sharing, while simultaneously making the identity process easy and intuitive.

There's no lengthy handshaking or data entry requirements, simply tap and go. Watch this space for more details as we continue to support new and emerging identity use cases.

Having all your identity credentials securely and conveniently stored in your wallet not only offers easy access, but new use cases, such as allowing merchants to confirm a customer is of the correct age to purchase certain goods.

Follow the NFC Forum for more details as we continue to support new and emerging identity use cases.

2024 Innovation Awards

Every other year the NFC Forum rewards products that showcase outstanding implementations and the most innovative uses of NFC products, services and applications.

The free award program is open to member and non-member companies, or systems integrators, agencies, and media companies submitting on behalf of their clients. Submissions must demonstrate how the use of NFC contactless technology has improved people's lives.

There were more than 60 entries to the 2024 Innovation Awards, with the top 10 finalists chosen by an expert panel. The top 5 winners were:

ProQure, a technology provider of IoT cloud management for physical objects, for its NFC IC PQ201-S.

BP Digital, with **NOUMI,** a solution that captures digital copies of receipts via a tap of an NFC-enabled mobile device.

Erisco for its battery-less smart padlock which uses power harvesting to authenticate users and lock or unlock.

Blu Oberon's **bluon.me Semiperdo Smart Wristband,** that uses an embedded NFC tag to communicate with smartphones.

App Creator by IoTize won for its low-code environment for designing apps with minimal expertise and effort.

For more information on the criteria, judging process and previous winners, visit our **Innovation Awards webpage.**

2024 Individual Achievement Awards

Each year the NFC Forum recognizes members whose contributions have made a significant, lasting impact within the organization and industry through our NFC Champion Awards program.

A shortlist of nominees was created by NFC Forum leadership, via submissions from the Board, Officers, and Chairs. We then invited our membership to participate in the selection of a "People's Choice" award winner.

2024 Champion Award Winners

Marc Lajon,
NXP Semiconductors

Jean-Rémi Ruiz,
STMicroelectronics

Sten Wendel,
NFC Forum Staff

2024 People's Choice Award Winner

(selected by NFC Forum membership)

Koichi Wada,
Sony

The Arc of Contactless

Payments have been foundational in creating an environment of trust in NFC technology, which is proven to be secure, convenient and reliable.

So, what next?
There is an emerging arc of contactless technology adoption, that is accelerating and inevitable.
In addition to payments innovations, new use case possibilities are advancing at pace.

↓

Interested in shaping the future of NFC technology?

Join the NFC Forum community to define and accelerate the contactless lifestyle.

Payments → Transit → Ticketing → Digital Keys → Loyalty → Identity → Ubiquity
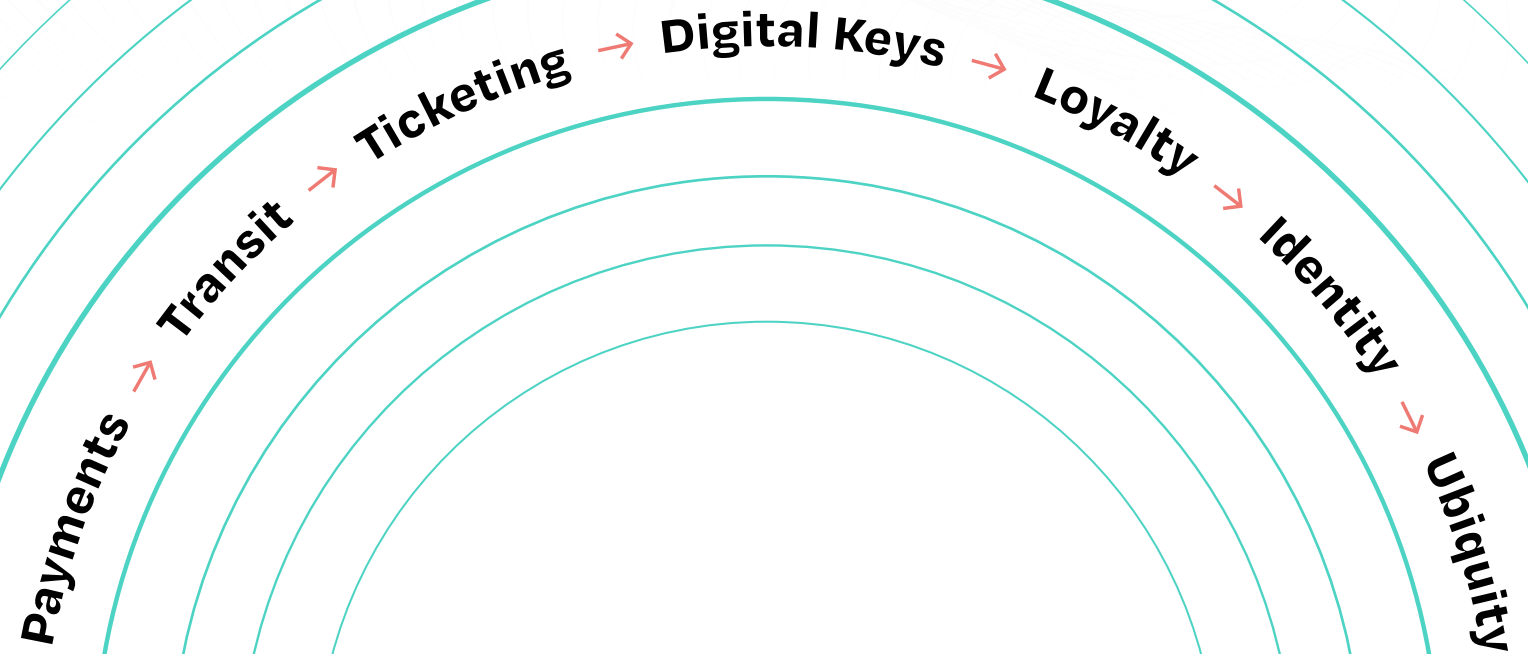
Technology Roadmap

NFC Forum unveiled its Technology Roadmap back in 2023, outlining key plans and research efforts through 2028. The comprehensive roadmap included five key initiatives and offered a unique glimpse into the future of NFC, highlighting the technology's direction and anticipated product development, market, and business opportunities for the coming years.

Increased Range

Extending the NFC range beyond the current 5mm operating distance will make contactless transactions and actions faster and easier by decreasing the precision needed for antenna alignment.

Multi-Purpose Tap

Supporting several actions with a single tap will improve the contactless user experience.

The use cases driving activity include point-to-point receipt delivery, loyalty identification, and total-journey ticketing.

Enhanced Reader Mode

Optimizing reader-writer mode to empower NFC-enabled smartphones to have point-of-sale functionality will allow businesses or individuals to receive payments anywhere.

Increased Power for NFC Wireless Charging

Increasing the capabilities of the NFC Wireless Charging Specification beyond 1 watt will bring wireless power and charging to new and smaller form factors, disrupting industrial design while defining new markets.

## Expanding NFC's Ability to Drive Sustainability

Defining a standard to enable the use of NFC as a Digital Product Passport data carrier will enable access to data throughout a product's lifecycle, supporting increasing regulatory requirements and the circular economy.

Learn more

Listen to the **Technology Roadmap Webinar** for more details or read **7 Insights from the NFC Forum Technical Roadmap** blog.

Sustainability – more than just a data carrier
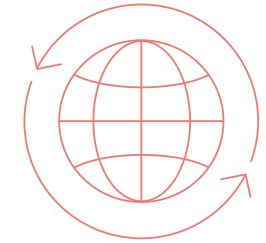
Like all areas within the technology ecosystem, the NFC community needs to do more to support sustainability; not just from an ethical standpoint but also to meet new and pending regional regulatory requirements.

Ensuring sustainability is a key focus area for NFC Forum, with a commitment to establishing standards that align with sustainable product development and foster seamless user experiences across all geographies, industries, and products.

By designing easy to use, power-efficient solutions that unlock new markets, the NFC community is bringing sustainability front and center to its work, as well as ensuring sustainability is a key part of NFC Forum's strategy.

There are currently three technical focuses to NFC Forum's sustainability activity:

Using NFC to Connect and Store Digital Product Passport (DPP) Data

NFC Forum is developing an NFC DPP Standard to support emerging regulatory requirements, starting in the European Union with the Eco-design for Sustainable Product Regulation (ESPR).

This will support the use of NFC Forum technologies as a data carrier for the DPP. Organizations will be able to store DPP data and the standard hyperlink cloud-based online DPP data record on a device, using the NFC tags and chips already embedded in the product.

As a result, both businesses and consumers will have reliable and robust access to information on how a product can be re-used, remanufactured, or recycled – throughout its entire lifecycle.

Charging Without Cables

NFC Wireless Charging allows small personal and wearable devices, such as wireless earbuds, smartwatches and digital styluses, to be charged without cables, further reducing e-waste.

Power IoT Devices

NFC Wireless Charging supports power harvesting. NFC-enabled smartphones can power and connect battery-less IoT devices, eliminating the need for products to be constantly charged and

connected to the internet. By utilizing NFC power harvesting, small devices can be made without batteries and charging cables, cutting down the environmental impact of creating the device and lowering the cost of ownership for consumers.

Learn more

Read   **Shaping The Future of the Digital Product Passport**

Watch   **NFC & NDPP - Powering the Digital Product Passport**

Watch   **The Circular Economy Redefined - NFC & the Digital Product Passport**

NFC Digital Product Passport

What will the NDPP Standard deliver?

A key concept of sustainability is using each component to its full potential, and NFC's capability to enable the DPP embodies this perfectly. NFC is a single chip that already facilitates multiple use cases, including payments, product authentication, digital identity and access control. Adding DPP functionality to the chip would be a near-zero cost approach towards achieving global sustainability goals and comply with future government regulations.

In 2024, NFC Forum began work on its NFC Digital Product Passport (NDPP) Standard, with the goal of enabling consumers and regulators to read the DPP data using off-the-shelf smartphones.

**Digital
Product
Passport**

Simplifying the Digital Product Passport: Vision NFC

At its Vision NFC event, NFC Forum welcomed industry leaders, innovators, and stakeholders to Vision NFC to facilitate collaboration throughout the connected device ecosystem, helping drive towards a more sustainable future.

Vision NFC saw keynote addresses from Philippe Dubois, Senior Vice President Secure Transactions & Identification at NXP Semiconductors, Thomas L. Roedding, Chair JTC 24 Digital Product Passport – Framework and System, Klaus Roehrle from Sony, and Chair of the NFC Forum Devices and Applications Working Group.

Two panel discussions then explored how NFC technology can drive the development, ease of use, and adoption of the digital product passport initiative as a data carrier and the experiences and opportunities for the DPP for conscious brands. The premier event fostered the vital industry dialogue and innovation required to create a more transparent and sustainable future.

The event consolidated a year of public and active discussions, engagement and promotion by NFC Forum of NFC's role in supporting the circular economy as a data carrier for the DPP. NFC Forum also showcased its DPP learnings, activities and, vitally, its vision for an open, interoperable and secure NDPP Standard through the launch of a Proof-of-Concept NFC Digital Product Passport Mobile Reader application for Android and iOS that can read on-product NFC Digital Product Passport (NDPP) data.

Learn more

Read   **NFC and the DPP:
A Vision for the Future of Sustainability**

Why NFC Forum?

It brings the NFC community together from both a technical and business perspective to:

- Identify NFC applications with mass market reach and appeal.

- Define common technical frameworks / specifications to ensure applications can be deployed reliably at scale.

- Provide vital partnerships with other industry bodies to optimize NFC adoption.

- Offer a testing infrastructure to confirm products will perform reliably.

NFC Forum Members benefit from:

- Opportunities to shape the future technical roadmap for NFC solutions.

- Unique business partnerships and connections with market leaders.

- Access to pioneering industry expertise and exclusive market insights.

- Time to market advantages for new products and NFC use cases.

NFC Forum Standards Expand Innovation

As the defacto standard for contactless payments that enables smartphone, watch and wearable payments possible, NFC has proven its credentials as a user-friendly, secure and simple technology with mass market reach. At just 14 mm in diameter and flat NFC tags and even smaller chipsets and antenna designs are small yet their ability to power and connect is huge, offering innovative new use case potential in a vast range of industries.

To realize its mission, the goals of the NFC Forum are to:

Publicly publish and promote NFC Forum use cases and technical roadmap.	Ensure NFC technology delivers a consistently positive user experience in all NFC product form factors.
Develop specifications, test mechanisms and tools and a compliance programme that ensures consistent, secure, and interoperable use cases worldwide.	Continuously improve key operational systems.

NFC Forum Sponsor Members

Get to know NFC Forum
Board Officers and Committee Chairs

While the end work products of the NFC Forum come from a network of dedicated volunteers from our member community, the key leadership of the Forum comes from the Board of Directors along with the Chairs of the Technical and Compliance Committees.

Preeti Ohri Khemani
Infineon Technologies

CHAIR

Michael Stark, Ph.D.
NXP Semiconductors

VICE CHAIR

Jean-Rémi Ruiz
STMicroelectronics

VICE CHAIR

Frank Dawidowsky
Sony

SECRETARY

Yo Tabayashi
Sony

TREASURER

Teuvo Järvelä
Huawei Technologies

TECHNICAL COMMITTEE CHAIR

Arnaud Schreiner
NXP Semiconductors

COMPLIANCE COMMITTEE CHAIR

Industry Collaboration

The success of our contactless lifestyle is in part based on a deliberate collaborative approach by the NFC Forum within the entire technology ecosystem, understanding that working together can be more powerful than working in isolation.

The NFC Compliance Committee is a strong case study in this activity. It coordinates with partners to ensure market interoperability and promote the integrity of the NFC connectivity across a wide and diverse range of use cases and markets.

CARCONNECTIVITY consortium®

In an era where digital innovation drives the automotive industry forward, the CCC and the NFC Forum are at the forefront, facilitating seamless and secure smart vehicle access. The CCC Digital Key™ will set a new threshold of connectivity and security standards for industry-leading vehicle and device members.

View Q&A

csa connectivity standards alliance

With development underway for Matter, the standard that will serve as the foundation of connected things, the liaison agreement between these two organizations explores opportunities to use NFC technologies with CSA standards to improve experiences in areas like commissioning, access control, and proof of possession.

View Article

EMVCo PARTNER

Point-Of-Sale software for mobile innovation will allow retailers and consumers to harness the NFC connection of their handset to transform it into a payment acceptance terminal. NFC Forum is working with EMVCo to define operating volume requirements and testing needs to deliver an optimal user experience.

APIA   APSCA   APTA American Public Transportation Association   Calypso Networks Association   cen   fido ALLIANCE   GCF   Global Platform™   GSMA™   ICCE 智慧车联产业生态联盟   ISO

JasPar   LoRa Alliance®   RAIN ALLIANCE   SECURE TECHNOLOGY ALLIANCE   SMART TICKETING Alliance   THREAD GROUP   USI Universal Stylus Initiative   VDA   qi WIRELESS POWER CONSORTIUM

NFC Forum in Numbers

700+
NFC Forum Member Community

Over 1.8 million
Touchpoints across the industry via member meetings, interaction with industry specific groups, and technology webinars

2,500+
NFC Forum Registered Licensees

2,061
Resource, Document and Specification Downloads

Over 200
Certified Products

Events

Upcoming

2025 Spring Member Meeting
April 7th – 10th 2025

2025 Europe Member Meeting
October 7 – 8th 2025

2024 Historical

Webinar: Certification Workshop for CCC Digital Key™
April 10th 2024

Webinar: Contactless Market and User Trends with ABI Research
April 16th 2024

Taichung Member Meeting & Connections Summit
May 13 – 15th 2024

Europe Member Meeting & Simplifying the Digital Product Passport: A Vision NFC event
October 8 – 10th 2024

Webinar: NFC & NDPP - Powering the Digital Product Passport
November 6th 2024

NFC Forum Certification

Making sure millions of products work flawlessly with one another is the goal of the NFC Forum Certification Program. Unlike many other standards organizations, NFC Forum Certification is open to non-members. The program confirms that devices are Certified Compliant with NFC Forum Specifications. Conformance to the specifications provides consistency of behavior across NFC implementations and sets the foundation for interoperability.

Quick Facts

Available to non-members
Scalable design.

Being used by third parties including Connected Card Consortium, Universal Stylus Initiative, GSM Association.

Over **200** products certified
5 test labs.

3 test tools.

Inheritance

Designed for products built with NFC Forum Certified components or subsystems. Generally focused on analog testing by Authorized Test Labs or manufacturer.

Full Certification

Designed for products with extensive digital and analog testing performed by an Authorized Test Lab.

Rename

Designed for already NFC Forum Certified products or subsystems that are being renamed or rebranded.

NFC Forum Marks

The NFC Forum has developed a global identifier to increase interoperability and improve the user experience of NFC connected applications and use cases.

The Wayfinding Mark System shows consumers an item includes NFC, and more importantly guides the consumer where to tap, simplifying the way we connect with the things around us.

Marks are available at no charge and to both members and non-members.

Learn more

Read   **The Mark of Trust: Wayfinding and Certification Marks for NFC Technology**

Why Wayfinding?

Because NFC is Different.

Other wireless technologies indiscriminately broadcast their presence to the world around them – only NFC is centered on user intent. Marks that simply indicate the existence of a technology, are not sufficient for NFC. To be successful we must guide users to a tapping location.

The Directional variation of the NFC Forum mark guides users to the connecting point and precise location of the NFC antenna, providing an optimal connectivity experience.

The Simplified variation of the NFC Forum mark can be used in everyday use cases where users have a high degree of familiarity.

The Instructional variations of the NFC Forum mark can be used in cases where user awareness and knowledge of NFC technology are presumed to be low. It provides the most literal guidance of tapping from a mobile device to establish a connection.

The Charging variation of the NFC Forum mark provides users with confirmation of NFC charging functionality and the location of the antenna. It is reserved for this use case only.