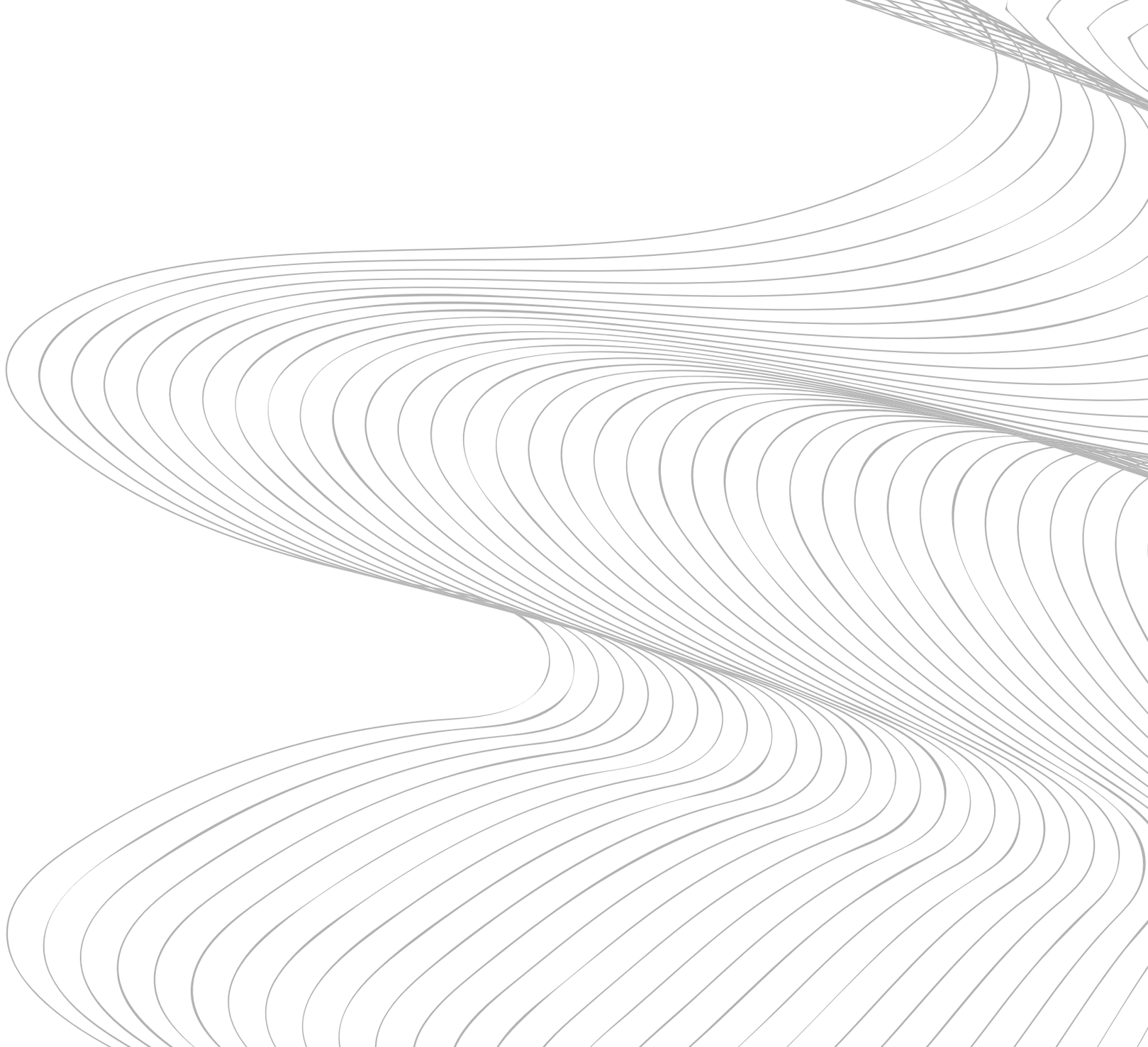
NFC FORUM

THE NEXT REVOLUTION IN CONTACTLESS TECHNOLOGY

# NFC Multi-Purpose Tap: One tap, unlimited potential



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# What is NFC?

NFC stands for Near Field Communication. It is a touchless wireless technology that enables the secure exchange of data or power between objects and devices in close proximity.

As a short-range wireless connectivity technology (operating up to a few centimeters), NFC uses magnetic field induction to enable communication between devices when they are brought within a few centimeters of each other.

This includes authenticating credit cards, enabling physical access, transferring small files and jumpstarting more capable wireless links.

**To learn more visit the NFC Forum website.**

This document is relevant to:

- **Product managers and OEM designers** wanting to create new and innovative solutions,
- **Manufacturers of NFC enabled devices** looking to ensure their product is ready to support future innovations,
- **Sustainability ecosystem decision makers and influencers** exploring options for dematerialization or looking to implement sustainable data sharing protocols,
- **NFC technology providers** who wish to remain up to date with the latest work of the NFC community and forthcoming standards which can enhance the services offered.



# NFC Multi-Purpose Tap: One tap, unlimited potential

Digital solutions are increasingly prevalent in almost every facet of society. From contactless payments to wearable technology, interoperable smart devices are in demand.

Central to this growth of smart devices are smartphones. There are over 4.5 billion smartphone users worldwide today, a number that is estimated to exceed 5 billion by 2028. The overwhelming majority of these devices come with Near Field Communication (NFC) technology built in as standard.

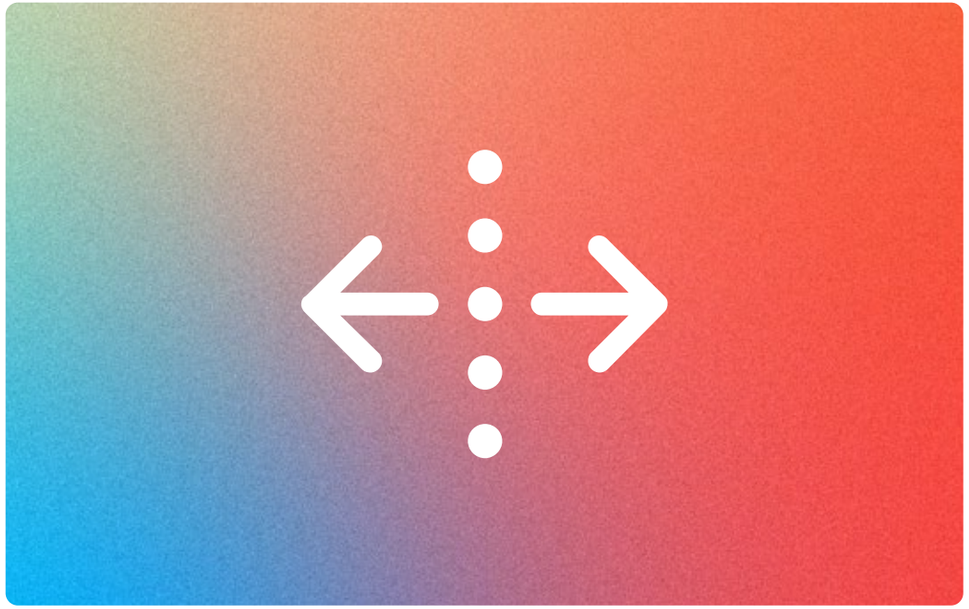
The potential of this market has yet to be full realized.

The shift towards an increasingly digital society is creating an increasing number of opportunities to achieve efficient, ergonomic and environmentally friendly solutions. And as the number of industries creating smart solutions grows, so too does the demand for these services to work together.

NFC multi-purpose tap can help realize this demand. This emerging concept aims to allow users to complete all required actions in a transaction in just one tap. A payment can be made, correct discounts applied, receipts delivered, loyalty points given and more, all with the single tap of a device.

**By reading this eBook you will learn:**

- What is multi-purpose tap,
- How NFC can potentially bind services to deliver more convenience and personalized solutions,
- Example use cases that stand to benefit from multi-purpose tap and how these enhance the user experience,
- The role NFC Forum is playing to deliver this enhanced offering.



## Versatile Connections

NFC devices such as smartphones can operate in a variety of modes, including reader/writer mode and card emulation mode. An NFC Device is able to communicate in reader/writer mode with another NFC Device in card emulation mode at any time.

No matter the mode, mobile developers can design custom applications that, with just one tap, interact with other NFC devices to both read and write data. This allows for frictionless two-way communication between devices in a fully controlled, transparent and secure way.

# Improving Contactless Experiences

Multi-purpose tap is an emerging concept to further improve the contactless user experience. It leverages the capability of NFC devices to allow both reading and writing of data across a connection. This means that several actions can be executed at the same time, and transactions that would typically require multiple stages can be completed quickly and easily with just one tap.

Unlike many emerging technologies, the implementation of NFC enabled multi-purpose tap is seamless. Users are already familiar and comfortable with the NFC functionality of their existing devices, with many already using it for payments, loyalty schemes, or for transit. Giving customers the ability to use their own device to combine and personalize multiple services, while removing the need for yet another physical card, interaction or activity is an attractive option, especially when this can be done without compromising on security.

As the number of connected devices grows, the potential of multi-purpose tap will continue to rise too. Data exchanged between smart devices using NFC technology facilitates connectivity with web-based services, central servers, or APIs. In doing so, NFC facilitates seamless integration of local data with data stored in the cloud or distributed databases.

## NFC Multi-Purpose Tap In Concept

Securely exchanging information in a single tap

**PRE-CONDITIONS**

- Permissions to purchase (demographics)
- Discounts & Loyalty
- Mobility / Public Transport Ticketing

**TRANSACTIONS**

Payments and transactions for:
- Goods
- Services
- Tickets

**POST-PROCESSING**

- Receipts
- Data processing
- Access

# Benefits of Multi-purpose Tap

With hundreds of millions of NFC-enabled devices in the marketplace today, NFC technology is proven as one of the most versatile and secure technologies available. Every day, millions and millions of people use NFC technology to connect to things and the world around them.

- **Multi-purpose tap has the power to enhance the connectivity for each user with an NFC enabled device. For example: Simultaneous point-to-point receipt delivery,**
- **Automatic identity verification, for example, not allowing a payment to be made for alcohol to minors,**
- **Rewards from loyalty schemes given within the same transaction as the payment being made,**
- **Tap and go total-journey ticketing that automatically applies the correct taxes and concessions.**

While multi-purpose tap is undoubtedly an exciting prospect that looks set to transform how our devices interact with each other, it is important to recognize that it is still in the ideation stage.

NFC Forum is carefully evaluating the requirements of each market that multi-purpose tap stands to benefit to ensure that its unique value is accentuated as needed for each individual use case.

**This means that contributions by the community are actively encouraged as we seek to create a solution influenced by those that stand to use and benefit most from it.**

## What is Dematerialization?

Dematerialization is the practice of reducing the volume of materials used and by extension, waste generated, in the production of an object or outcome.

It is part of the wider industrial ecology approach to material flow management which aims to reduce the environmental impact a business has.

A popular way to do this is to leverage the power of a consumer's own device. By issuing a digital receipt, travel ticket or other asset, it eliminates the need for them to be given out physically.



# Loyalty Cards and Receipts

Payment and loyalty are natural allies. 85% of global consumers are more likely to shop with retailers that offer loyalty programs, and over two-thirds of millennials look for reward programs when staying loyal to a brand.

This trend delivers benefits to merchants too. Customer data is the new 'gold' as industry leaders look to map and understand spending habits. Connected and dynamic loyalty programs enable merchants to monitor trends, allowing them to be agile and make informed decisions that help them meet the needs and wants of their customer base. In turn, this can help drive high-value behaviours and profitable spend.

NFC technology could innovatively bind loyalty and payments. When a consumer pays for their goods or services using their NFC enabled device, the tap would also trigger the loyalty program. By linking the two transactions this could automatically apply relevant customer discounts and add loyalty points to their account intuitively. It could also be used to trigger specific, targeted marketing communications, verify a person's age for restricted purchases, or simply to transfer the receipt to the customer direct to their smartphone.

NFC Forum has a long history of working across multiple industries to bring new and innovative solutions to market. Thanks to these relationships, multi-purpose tap  is being designed to meet each verticals' unique needs. For example, electric vehicle owners will be able to initiate the vehicle charging process and simultaneously pay for it by tapping their smartphone with the required charging station app against the terminal.

Not only does combining these actions into one single tap provide a quicker checkout flow, enhance consumer convenience and a personalised experience, but it can also support climate and sustainability targets as transactions can be made completely paperless, and, by eliminating the need for separate loyalty cards, it can help dematerialize the loyalty ecosystem.

## What is MaaS?

Mobility-as-a-Service (MaaS) is the practice of integrating multiple forms of transport and transport-related services into a single unified on-demand mobility service.

It creates an interoperable network of mobility services between multiple providers that allows a passenger to blend seamlessly between both public and private mobility offers.

## Seamless Mobility for all

NFC allows users to download tickets onto their own smartphone, eliminating the need to queue to get a physical ticket. But this convenience is not limited to those who are willing or able to use to a smartphone.

The flexibility of NFC means that it can also be integrated into bank cards or designated reusable smartcards, meaning the same seamless, modern ticketing offering can be made available for all.

**WHERE MIGHT NFC MULTI-PURPOSE TAP BE IMPLEMENTED?**

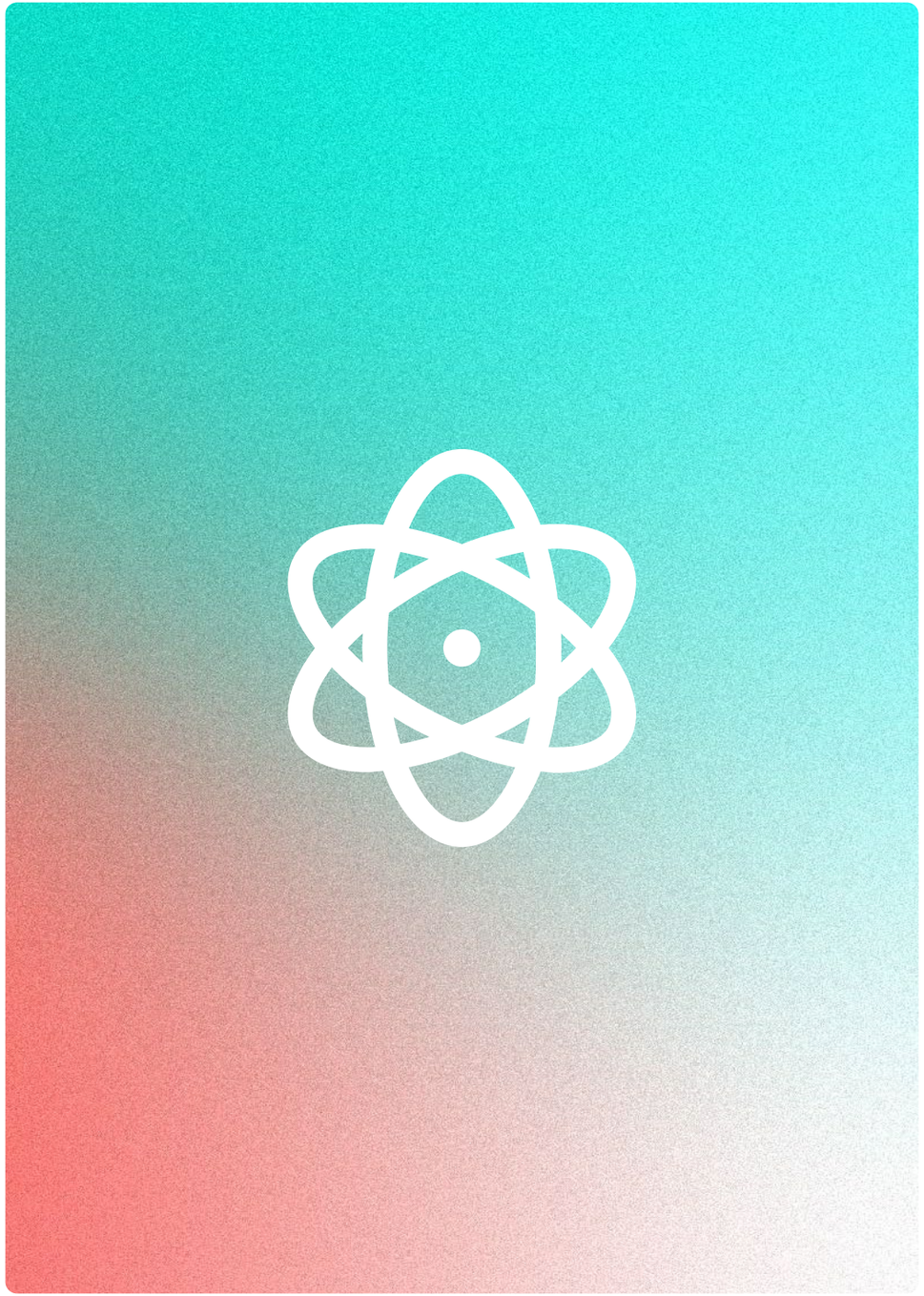
# Transit Ticketing

Traditionally, those using public transport have been issued a physical paper ticket or plastic travel pass as proof of their right to ride. While this physical ticket can be effective, it is also very inefficient. Not only are passengers required to queue at a booth or machine to obtain their ticket each time they want to use a transit service, but physical tickets also create a vast amount of waste, especially as most of them are only valid for a single journey.

Furthermore, new integrated ticketing options and initiatives such as Mobility-as-a-Service (MaaS) seamlessly connect different services and technologies thanks to online network connectivity. Digitizing the fare collection process makes managing these services far easier and more secure. Digital tickets are less prone to fraud or counterfeiting while also allowing operators to be far more proactive with the evolution of account-based ticketing offers, giving users ticketing options that meet their needs.

NFC technology provides a way by which transit operators can offer the modern approaches to ticketing that passengers demand while also advancing their sustainability objectives. The ergonomic tap-and-go user experience allows users to securely validate their ticket in a matter of seconds. This speeds up the validation process at barriers, helping travellers get to where they need to be without undue delay and maximizing passenger throughput.

The multi-purpose tap functionality of NFC could further enhance NFC ticketing by unlocking a host of new purchase options for both open and closed loop systems. The bidirectional exchange of information that multi-purpose tap facilitates mean that the correct taxes and concessions can immediately be applied to give the traveller the best and most relevant fare. It also gives operators a way to issue those using tap-and-go solutions with an eticket which can quickly and easily be checked by a ticket inspector, all from the user's own device.



# Combining multi-purpose tap with future NFC Forum innovations

Multi-purpose tap has the potential to deliver the ultimate consumer convenience. And as NFC technology continues to evolve, the improved usability and personalized seamless experience that multi-purpose tap can offer will expand to even more ecosystems.

**Modernized Device-to-Device Communication** empowers NFC-enabled smartphones to have Point-of-Sale functionality (SoftPOS), allowing businesses or individuals to receive payments anywhere. Combining this with multi-purpose tap would open up additional use cases for digital payments. For example, fare collectors on public transport would be able to accept payment, issue and validate tickets on the go, all with one tap of a passenger's device on the inspector's device.

Multi-purpose tap can also help drive initiatives such as the **Digital Product Passport**. Enabling NFC to share data on the composition of a product when a user taps their device to pay means that sustainability data can be transferred straight to the user. This means that the required information on ways a product can be recycled is always readily available, helping to meet evolving consumer demands and regulatory requirements, as well as contributing to a healthy circulatory economy.

## Why Standards?

When markets need to align and combine to deliver joint services, the 'rules' of interaction need to be clear to ensure that different applications or solutions do not disrupt or impact another service or component. Industry standards are vital in achieving this.

They set a baseline framework that enables all players to build and design products that will perform as intended, interoperate as expected with other solutions, and provide the reliable and seamless experiences anticipated.

## NFC Forum

1. Listens to its members and partners to understand future market requirements.
2. Defines standards that enable mass market delivery of NFC technology.
3. Tests and verifies that products perform to the functional standards expected by NFC Forum.
4. And, promotes the use of NFC technology through the Wayfinding Mark and the N-Mark.

# The Role of NFC Forum

Multi-purpose tap is one of a number of NFC developments emerging as it moves into a new revolutionary era led by some significant market players. NFC Forum is at the forefront of this, bringing together an active technical community of more than 500 member organizations.

Driven by its Board - which includes Apple, Google, Huawei, Identiv, Infineon, NXP, Qualcomm, Sony, and STMicroelectronics - the community comprises silicon vendors and OEMs to application developers and implementers.

All NFC Forum stakeholders are collaborating to create accessible, interoperable, and efficient solutions.

Due to the universal adoption of NFC Forum Standards on smartphones, NFC Forum is well positioned to engender the continued evolution of the technology. Multi-purpose tap is one of a number of innovative advancements to NFC that the Forum and its members are driving.

NFC Forum is currently mapping out the market use cases for multi-purpose tab and how these could be supported technically and in a standardized manner.

# Contact Us

Interested in understanding how multi-purpose tap can support your ambitions for next-generation contactless transactions?

Contact us here.