

Near Field Communication: Testing the Future!



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The world has been talking a lot about Near Field Communication (NFC) lately. Why? NFC is a technology with the potential to create endless opportunities with manifold use cases connecting several vertical markets. But this is exactly why we are all still talking about it, not using it in commercial implementations that go beyond pilots or trials. With so many components, security questions, conflicting business models, converging vertical markets, among many other challenges... It's obviously not that simple.

However, all are convinced that it's the best thing since sliced bread and that it's going to change our daily life creating the freshest of business opportunities around. In this article I would like to focus on how to overcome at least one of the challenges of introducing NFC: testing the technology and why this is so vital.

Everything you always wanted to know about testing... but were afraid to ask

Software testing is the process that provides information about the general quality of a device or a system. Testing can focus on the conformance of the product to ruling specifications, how the unit under test performs under certain pre-defined circumstances, if the product works accurately after upgrades or updates (regression testing), how the product integrates with other components of a system or if technologies or devices are interoperable. Software testing can also allow the business to identify and understand the risks of an implementation.

At Clear2Pay, we follow the black box testing approach, appropriate for testing electronic transactions such as e.g. payments, e-ticketing or mobile applications.

According to this black box methodology, the system under test is split up in the different units that communicate with each other via interfaces. Then, the unit under test's behaviour is verified by checking all communication flows that run via the interfaces with their environment. Tests are automated which enables to run test scenarios with minimal manual interaction to gain time, to exclude the human error factor and allow repetitiveness. Up next is the development of a test environment that allows simultaneous control of the different interfaces of each unit. With the software test tool, a tester can now simulate components and send commands (triggers) or faulty scenarios via the interfaces and monitor the reactions of the unit under test. Whenever possible, the recorded reactions will be compared with the expected reactions that have been generated by a simulation.

NFC: why should we test it?

Here's a short example that will help understand the importance of testing. Every day, millions of people worldwide rely on their payment smart cards to conduct their daily purchases. The consumer's confidence and unconditional trust in the technology was facilitated by payment standardization bodies such as EMVCo. This organization imposed international rules to which card payments components should comply, thus enabling conformity and global interoperability. This is ensured by a rigid certification regime for the different components in the system such as cards and devices.

In the NFC space, we see a similar tendency. In 2004, the NFC Forum was formed to advance the use of Near Field Communication. The three founding companies have grown an international community of more than 150 members representing manufacturers, application developers, technology providers, financial institutions, and more. The Forum members work together closely to develop standards-based specifications ensuring interoperability between NFC devices and services.

It's the Forum's motivation to provide intuitive, safe and smart two-way interactions between NFC user devices.

Let's make it happen

It is simply elementary for NFC products to comply with global interoperable specifications like the NFC Forum specifications. To achieve this, the NFC Forum launched its Certification Program: an initiative allowing providers to verify their NFC solutions by authorized laboratories where they are tested for conformance against the published specifications. Devices that pass this certification process receive a Certification Mark as proof of compliance which can be used to add credibility and trust to products. The Certification Program supports consistency in the behaviour of NFC devices by confirming that products conform to NFC Forum specifications. Moreover, it offers increased assurance that NFC Forum-certified products are interoperable with other NFC Forum-certified products.

Using Test Solutions

Testing eradicates failures and issues that can lead to costly modifications during post-launch, not to forget that each error involving end-users has an immediate impact on image and reputation which is exactly what we want to avoid, as mentioned above.

Before an NFC device manufacturer submits its product to a certification laboratory, he should test his equipment in-house. The test laboratories that are qualified by the NFC Forum only endorse officially validated tools - such as Clear2Pay's Integri branded test solution - so using the same tools guarantees passing the certification and allows to gain a significant amount of time and money. Purchasing test tools makes good business sense: each certification entry comes at a price and there are no refunds. Clearly, failure has a much higher cost than upfront testing.



Clear2Pay - NFC-Based Solutions

In addition to and on top of the NFC Forum specifications, the actual NFC-based solutions (like e.g. mobile payment) need to be built. In turn these need to be thoroughly tested. For providers of NFC products or services, testing is obviously not their core business. Companies such as Clear2Pay, among others, build upon years of experience and can assist in assessing the true complexity of testing transactional mobile systems, provide a specialized range of tools and services that are readily available. These test solutions are also helpful throughout the development phases as an interim benchmark.

Customer confidence and global acceptance guarding the future

The World of NFC is a very complex one. But it is interesting and it is promising, that's the least we can say. And benefitting from the NFC Forum's efforts and using the right test solution will safeguard the future of the technology: quality consistency, faster time-to-market and interoperability. Truly key elements to win the hearts of the consumer.

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