NFC is striking back - NFC Congress 2011 in Hagenberg

Florian Michahelles

ETH Zurich
Auto-ID Labs
Zurich, Switzerland.
fmichahelles@ehtz.ch

At the recent NFC Congress 2011 in Hagenberg organized by Joseph Langer, I felt that participants and speakers shared the strong belief that NFC is finally coming - "if Apple does it, it can't be wrong.". Eventhough not many visitors realized it, the conference badge had an NFC tag embedded storing the participants' contacts. Touching the badges with the Google Nexus S phone I could easily import the contacts into my phone's address book, it just worked without any further excitement! My first NFC commodity service. However, from a user experience it does feel strange grabbing ones badge and touching it with your phone...

The first speaker, Andreas Jackl from Nokia, was introducing to the development frameworks of Qt and Symbian. Windows Mobile was mentioned of course, but a coherent strategy of how this parallelism to QT/Symbian will co-exist in the future was not visible. Further talks from smaller local solution providers presented existing work-a-rounds for NFC-enabling phones and speculated about Apple's NFC strategy.

In the afternoon I had the chance to chair two session of the 3rd International Workshop on Near Field Communication (NFC 2011). Gregor Broll from Docomo-Eurolabs presented touch-based interaction with public displays using grids of NFC tags as an alternative to touch screens. While the accuracy of the system was rather low, the users from the described study seemed to appreciate the interaction [1]. Andreas Prinz from University of Kassel presented an NFC-poster describing a workflow for patients with impaired motor skills to report their health status [4]. Michael Gebhard from NXP Graz presented the design of a contactless smartcard sticker not being disturbed by the metal material of the phone it is sticked to [2]. The work presented both simulations and measurements which should be very rewarding to implement the ferrit-coil concept also for RFID tags in metal environments. Michael Koch from Hagenberg analyzed the vulnerabilities of signed NDEF. He presented nice examples about how these only partially signed NDEF segments could be rearranged by an attacker while still being recognized as correctly signed [5]. This is really something the NFC Forum should think about considering their specs. Martin Gossar from TU Graz presented phase-shift-keying modulation as way to increase the data rates in NFC communication [3]. Roel Verdult from Radboud University Nijmegen was revealing a security hole in Nokia's method of automatically evoking a bluetooth connection upon touching a tag. Verdult showed how infected smart posters could be used to inject a virus onto one's phone [6].

On the second day Charles Dachs from NXP was providing some arguments why NFC would be in a better position now than six years ago. First the penetration of smart phones (20%, >1 billion) has increased. Second, based on NXP NFC chip sales OEM's are investing now and the number of NFC-enabled handset should increase (I guess he was careful enough not to compare to the hype numbers of 20% of all phones once shared in 2007). Third, the network providers would finally invest in NFC. Fifth, the contactless infrastructure would be increasing. Dachs

presented NFC as connecting the virtual world with touch-points in the real world. He showed a number of touch-point examples to be installed in Starbucks. To close with a number, he expected 50 million NFC devices to be shipped this year (which is far below initial predictions from ABI Research of 450 million). Jure Sustersic from Nokia reported about 150 million of Symbian devices where of "many" would be NFC-enabled, not quite matching "all new Nokia smartphones to come with NFC from 2011" from last year. Tuomo Tuikka from VTT reported about the Smart Urban Spaces Project. The user experience of finding NFC tags in urban spaces and receiving information would be superior to location-based GPS applications. Zhiyun Ren from the T-Labs presented an NFC-based mobile wallet which can feature endless numbers of credit-card schemes on the mobile phone. He showed a demo that worked. Stefan Cecil from Seibersdorf Labs presented the design of a textile tag based on copper-wires weaved into textile fabric. Monto Kumagai from XtremeSignPost presented NFC-based postcards as a means of advertising products by sharing personal experiences.

Overall, the NFC Congress has confirmed my feeling from half a year ago (see here) that NFC is coming back. Nothing has changed about scenarios and business models: coupons, smart posters and payment are still the major ones. The discussion about where to put the secure element might dissolve by just putting several secure elements into a phone, one for the bank, one for the handset manufacturer, and one for the network operator. As new NFC-enabled handset arrive on the market, it will be rather niche players proving their innovativeness to start to deploy 2D-barcode stickers with NFC-tags on the background. URL's will be first, control of apps perhaps later. It's starting now, the only difficult things to predict: how long will we have to wait for mass adoption?

References

1. Gregor Broll, Roman Graebsch, Maximilian Scherr, Sebastian Boring, Paul Holleis, and Matthias Wagner. Touch to play – exploring touch-based mobile interaction with public displays. In *3rd International Workshop on Near Field Communication (NFC 2011)*, pages 15–20. IEEE Computer Society, 2011.
2. Michael Gebhart, Roland Neubauer, Michael Stark, and Dimitri Warnez. Design of 13.56 MHz smartcard stickers with ferrite for payment and authentication. In *3rd International Workshop on Near Field Communication (NFC 2011)*, pages 59–64. IEEE Computer Society, 2011.
3. Martin Gossar, Michael Stark, Michael Gebhart, Wolfgang Pribyl, and Peter Söser. Investigations to achieve very high data rates for proximity coupling devices at 13.56 MHz and NFC applications. In *3rd International Workshop on Near Field Communication (NFC 2011)*, pages 71–76. IEEE Computer Society, 2011.
4. Andreas Prinz, Philipp Menschner, Matthias Altmann, and Jan Marco Leimeister. insert – an NFC-based self reporting questionnaire for patients with impaired fine motor skills. In *3rd International Workshop on Near Field Communication (NFC 2011)*, pages 26–31. IEEE Computer Society, 2011.
5. Michael Roland, Josef Langer, and Josef Scharinger. Security vulnerabilities of the NDEF signature record type. In *3rd International Workshop on Near Field Communication (NFC 2011)*, pages 59–64. IEEE Computer Society, 2011.
6. Roel Verdult and François Kooman. Practical attacks on NFC enabled cell phones. In *3rd International Workshop on Near Field Communication (NFC 2011)*, pages 77–82. IEEE Computer Society, 2011.