Co-opetition During Evolution of Technology Based Service Innovation - The Case of Development of NFC Enabled Services in Nice

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Abstract

Co-opetition is an important characteristic of innovation processes. We illustrate this with reference to a case: a service innovation project in Nice, named Cityzi. Cityzi is a local subprocess in the globally dispersed efforts to develop and implement services enabled by the NFC (Near Field Communication) technique that can be used for mobile communication. The project requires cooperation, also between competing actors, to determine technical interfaces as well as development and implementation of business models for production and use of the services in practice. Due to the heterogeneity of resources that need to be combined, actors from different industrial as well as public policy sectors participate in the project. We apply a network perspective for our analysis of co-opetition during service innovation processes.
We relate the Nice project to prior, concurrent and future global and local service innovation processes aiming to implement wireless technology.

Keywords: Co-opetition, service innovation, networks, wireless technology,

Introduction

Service innovations based on mobile communication have grown in importance during the last decade. In this paper we focus on service innovations enabled by NFC (Near Field Communication) a new, still evolving contactless mobile technology and standard that is used, or has the potential to be used, for many services, including payment for such services and for money transfers in general (Andersson et al. 2011; Markendahl 2011). NFC use for mobile phone related services is an innovation process that involves many efforts, both global and local ones. Many firms from many industries as well as policy actors, such as government agencies and industry associations are involved in such processes.

Since a couple of decades digitization has stimulated innovations based on convergence between technologies and between industries leading to a changing pattern of competition and cooperation (Bettis and Hitt 1995; Sampler 1998). Thus, coopetition is an important aspect of service innovations based on converging technologies.

Research literature that explicitly uses the concept coopetition has expanded considerably since the middle of the 1990s (Nalebuff and Brandenburg 1996; Yami et al. 2010). Bengtsson et al. (2010) find that there are two main research approaches: coopetition as a contextual characteristic (e.g. Nalebuff and Brandenburg 1996; Lado et al. 1997) and coopetition as a process of interaction between two or more actors (e.g. Bengtsson and Kock 2000; Gnyawali and Park 2011). The former usually refers to a network context. The latter is often related to a focus on corporate strategy (e.g. Dagnino and Rocco 2009; Kock et al. 2010). We argue that the phenomenon we study, technology based service innovation processes, always take place in a dynamic network context for coopetition between some, but not all of the actors involved.

Our paper draws attention to the dynamics of coopetition in innovation processes. In coopetition literature the co-existence of cooperation and competition is seen as a major cause for tensions between involved actors (Bengtsson et al. 2010) During innovation processes such tensions are affected by the shifting and still unsettled patterns of relationships between actors.

A technology enabled service innovation process is the Cityzi project in Nice. Cityzi's objective is that firms and individuals should be able to use their mobile phones for a range of, partly related, daily private and public services. The project involves actors from many sectors/industries that cooperate in the project and in other contexts, but also act as competitors in Nice and elsewhere.

Purpose and disposition

The aim of the paper is to develop knowledge about how service innovation processes that are based on innovations in information technology are related to coopetition in a network perspective, in time and in space. The paper connects to research on coopetition as a conceptual tool to analyze inter-organizational dynamics (e.g. Yami et al. 2010) and to research on dynamics of industrial networks (e.g. Håkansson and Waluszewski 2007).

Next we present how we see innovation in a network dynamic perspective and how research on industrial networks and on coopetition relate to this. A note on method and data collection for the Cityzi case is followed by the case and how it relates to some global and other local activities connected to the innovation process. The analytical discussion of the case focuses on three aspects: network overlapping, tensions and stabilizing processes. We conclude by a more general discussion about issues for future research on co-opetition.

Innovation in a network perspective

Service innovation processes
Service innovation processes enabled by technical innovations include further development and application of a new technique to production, distribution and use of a variety of, often related, services. The process results in *new resource constellations* and includes actors in *many different industries*. Innovation processes are interlinked in the sense that a specific innovation is dependent on *prior and concurrent* innovation processes at a *local and/or global* level. E.g. local feasibility tests and sometimes implementation in commercial practice are performed, that influence further such local activities and/or are dependent on global standardization and affects further spatial extension of the service innovation. An innovation by definition has to accepted for use in practice and we will therefore regard an innovation process as *value creating*.

Innovation processes create ambiguities and tensions because resource complementarities are not yet clearly defined, new and old relations between actors are not yet defined and established practice is challenged. Innovation processes always involve cooperation and competition. They are always of a *co-opetitive* nature. *Cooperation* between actors is needed to create, develop and combine resources in new ways, to standardize resources in order to achieve interoperability, to stabilize practices and to adapta *new practices to old*, still existing, often complementary practices. *Competition* between cooperating actors occurs during the development process because they might prefer different technical and/or business model alternatives, compete in still existing established practices and/or will be competitors when the new practices are implemented.

Network perspective on innovation processes
We base our analysis of such innovations on research on industrial networks in the IMP-tradition. Applying the ARA model (Håkansson and Snehota 1995) and the general perspective on innovation (Håkansson and Waluszewski 2007), networks are characterized by direct and indirect interdependencies between interacting actors, between resources controlled by actors and between activities carried out by actors. Such interdependencies are influenced by interaction between actors. Thus networks are dynamic, including both changing and stabilizing processes. Relations between network actors are characterized by cooperation and/or by competition. *Coopetition* characterizes relations in a network when two or more actors both cooperate and compete, simultaneously or over time. Literature on coopetition has substantial links to network literature (e.g. Bengtsson and Kock 2000; Schavone and Simoni 2011).

To analyze networks some more or less explicit *network boundary* setting is needed. The criteria for this is a based on interdependencies judged to be important to understand the processes in focus. Criteria may be based on spatial location and extension, temporal extension, technical attributes such as industry classifications, function for users of a product/service and a combination of such criteria. We consider *spatial* boundaries (e.g.local projects, local market, global industry associations) and *technical* boundaries (industries, function in production of service, e.g. mobile operators, banks, retailers) and *function for user* boundaries (type of service, e.g payment, transportation).

Networks, as analysts or actors have defined them, may overlap with other networks in the sense that actors in one network are related to actors in other networks. *Overlapping* is a network process by which overlaps, and interdependence between networks increase (Mattsson 1996). Examples are spatial overlapping due to globalization, technical overlapping

due to converging technologies, and function for user overlapping when a wide assortment of services becomes available in a mobile phone .

Overlapping will be associated with various *tensions* as patterns of coopetition change. There are continuously emerging contradictions (Benson 1977). Tensions emerge between a firm's individual actions and the collective actions during innovation processes (Astley and Van de Ven 1981). Ambiguities due e.g. to shifts in coopetition and uncertatinty about technical solutions and business models, characterize the innovation processes (March 1988). To cope with this, various processes are aimed to stabilize parts of the innovation. However, new spatial, technical and function for user overlappings might serve to again increase ambiguities and tensions.

Focal cases and data collection

Empirically the paper builds on a set of finished and ongoing studies of new emerging service innovations which are enabled by a mobile technological innovation and standard, Near Field Communications (NFC). The first NFC studies in the program were initiated in 2008, and the program has since included a number of qualitative studies of how mobile technologies have resulted in a new set of innovative mobile services, and how this has been related to various shifts in the value-creating constellations and networks involved. Common to the studies conducted within the program is that several projects include case studies based on in-depth qualitative enquiry through interviews, direct participant observation, work document analysis, focus group discussions, and/or participation in projects as action researchers. A common theme and starting point for most of the cases within the program has been to develop understanding of the processes of creating end user value from new mobile services and innovations, and how this is connected to shifts in roles, patterns of cooperation, and subsequently also in competitive positions.

For this paper, we have chosen one extensive case to illustrate the coopetitive nature of service innovation processes. The case describes from a set of central, participating actors' perspectives the roll-out of new mobile services to the consumers and citizens of the French City of Nice, requiring competitors within the finance, mobile telephony and other sectors to engage in various cooperative projects. The roll-out process started in 2010. Since 2011 interviews and secondary data have been collected with the purpose to follow the emergence and change of patterns of cross-industry cooperation and competition. as many types of firms become involved in advancing the development of new mobile services, from the test and pilot phase to the full roll-out. In the first step of the data collection procedures, the main actor groups involved in the Nice project were identified. They included: public organizations (e.g. the City of Nice), mobile operators (four operators and an industry association), banks (four banks and an industry association), card companies (two companies), retailers (more than 1000 retailers joining in the first phases), companies managing security (two so called "Trusted Service Managers"), transportation companies (one company), and mobile couponing service companies (one company). For the condensed case presented in this paper, one company from each group is chosen to represent different perspectives on the roll-out process in Nice. Each actor perspective is based on a set of in-depth interviews and secondary data presented by the actor. As indicated also other secondary sources are referred to.

The Case: The Cityzi project in Nice

The case concerns a service innovation in Nice, enabled by use of mobile phones equipped for Near Field Communication (NFC). NFC is a short-range wireless technology enabling smartphones and similar devices to establish radio communication with each other by touching them together or bringing them into close proximity. The case describes the Cityzi project, with a specific logo and brand name, announced in 2009, its prehistory and its aftermath. The project's objective was initially that users should have access to an assortment of day-to-day services on their Cityzi mobiles, encompassing bank payment for retail purchases, buying, fare validation and time table information for public transportation, money-off coupon services, various information services from private and public organizations for citizens and tourists.

The case is divided in three parts. *The first part,* the "Prehistory" gives a background to the Nice project on a global level and at local levels in France and in Nice. Large global policy networks with origin in different industrial sectors emerge, partly competing, partly cooperating in order to create and establish the new NFC standards. At the same time a large number of small, partly competing, local cooperative pilot projects are started, each delimited to a small set of cooperating organizations, many of them dyadic. Each local pilot test is normally associated with one delimited NFC service. Part one is the pre-commercial stage devoted to standardization and testing, preceding the roll-out of more commercial projects like Cityzi in Nice.

The second part describes the Cityzi project with focus on 2009-2011. The size and complexity of the project differed from the many, previous and delimited pilot cases in the world. In the overall project, focus is on cooperation in order to create compatibility between the different services. However, various tensions emerge due to partly diverging, competing interests between companies. The case is described from the point of view of some of the central actors.

The third part, "After Nice", describes some of other local projects, mainly in France, following the Nice project. The geographical diffusion of the service innovation takes off while the stabilization and penetration of the services in Nice continues. Competing alliances between cooperating firms are created when the service innovations are diffused to new geographical regions.

Prehistory
Contactless cards in Japan
After 16 years' development in collaboration between Sony, Toshiba and Panasonic a NFC enabled service innovation using contactless cards for payment and access to railway transportation was launched in 2001. This event was fundamental for development of NFC enabled innovations in Japan.

Global cooperation on NFC technology and its application
The *NFC Forum* was formed in 2004 by Sony, Nokia and Philips to develop standards and specifications, to ensure interoperability among devices and services, and to promote NFC applications. In 2011, the Forum had grown to over 150 members from many industries affected by NFC such as telecom manufacturers, application developers, financial services and others working together to promote the use of NFC technology.

To drive the technical standardization and promotion of NFC applications also other global policy networks with partly different industry origins, were formed. In addition to NFC Forum three dominating global policy networks take an active role: GSM Association (GSMA), MobeyForum, and European Payment Council (EPC).

The *GSMA* represents the worldwide mobile communications industry including not only operators but also handset manufacturers, software companies, equipment providers, internet

companies, media and entertainment organizations. GSMA's Mobile Money Transfer (MMT) project aimed at international remittances and its Pay-Buy-Mobile (PBM) project aimed at the use of NFC for daily commercial transactions are initiatives in which the financial and mobile industries cooperate to develop global policies.

The *Mobey Forum* was formed and driven by banks to advance development of systems for mobile financial services. In addition to the strong presence of leading international banks, key mobile operators, handset manufacturers, payment processors and others are active in Mobey Forum. The *European Payment Council* (EPC), established in 2002, is the coordinating body of the European banking industry in relation to payments. EPC collaborates with mobile operator associations, mobile payment pilot organizations standardization bodies, payment processors, system and infrastructure manufacturers and service providers.

To some extent, these global policy networks competed with each other, pushing systems for mobile payments that would be advantageous for their own members, e.g. banks vs mobile operators. Despite partly competing interests between the policy organizations they cooperate to solve problems of mutual interest. Mobey Forum, e.g. has working relationships with EPC, NFC Forum, Infocommunicational Union (ICU), dotMobiAdvisory Group (MAG) and Open Mobile Alliance (OMA).

A large number of local NFC trials all over the world start around 2005.
In parallel to the global technical standardization and promotion activities by the global policy organizations, a large number of mostly local pilots and trials, mostly focused on a single service, were started all over the world. NFC service application trials included identification and access services, ticketing, payment, marketing and loyalty programs. Some of these trials included many cooperating organizations, others were limited to two dominating cooperation partners. The NFC trials opened up for extensive collaboration between companies and industries previously not directly engaged in cooperation projects, including telecom operators, banks, credit card companies, transportation companies, restaurant chains, super markets and more.

While many of the early trials had been simple technical feasibility tests, later were pre-commercial ones. Banks and operators had worked together to run field trials of NFC technology, but it was predicted that they would soon find themselves in competition for control of resources. Many commercial NFC enabled service applications would have only one leading actor. Strong banks, for instance, would be able to make deals with weaker mobile network operators to become the leading actor, while strong mobile network operators would make deals with weaker banks. "We now expect a competitive market to develop between mobile operators and banks in each market…Here, overall leadership will not be determined by what business the company is currently in. Instead, it will be based on their overall business strength, on how well they execute their NFC strategy and on the alliances that they put into place." (NFC World, 14 Jan 2010).

Local NFC trials in France
France was to be a forerunner in the launch of pre-commercial trials and in full scale commercialization of new NFC services. In mid 2009, Christian Estrosi, then the French minister for industry and deputy mayor (later mayor) of Nice, announced funding for 13 innovation projects in a competition among French projects in the NFC and RFID (Radio Frequency Identification) fields. After initiative of its City Council, Nice had won government funding to become the 'city of reference' for a pre-commercial phase of NFC testing. At least three of the thirteen winning projects were directly connected to the Nice region: 1) Nice Future Campus won funding to enable it to carry out testing of a multi-

function NFC-based campus card solution at the University of Nice-Sophia Antipolis, 2) Connecthings won funding for Smart Muse, a visitor information system for museums that will deliver contextualised, multimedia information on particular works of art to a visitor's NFC, 3) Veolia, the public transport operator for the Nice Côte-d'Azur urban area and which operated in 28 countries, received funding to develop a method of storing a rechargeable transport ticketing pass on an NFC phone. Furthermore, Nice Airport also announced an NFC trial in 2009.

An important forerunner to these projects was a mobile payment project, started in 2007. AEPM, (Association Européenne Payez Mobile) had published functional and technical specifications for Payez Mobil, an NFC solution developed by the leading French banks and mobile operators. It had been tested in Caen and Strasbourg since November 2007 in a trial run by six banks and four mobile operators in conjunction with Visa and Mastercard. AEPM members were France's leading banks and mobile operators.

A second important forerunner was the publication by Ergosum, a consortium of France's leading retailers, mobile operators and store card providers, of specifications for use of NFC at points-of-sale. In 2008 Ergosum announced large scale trials in which customers would be able to use their mobile phones to pay for purchases in stores, to store and to redeem mobile coupons and to replace their existing store cards with virtual loyalty cards held and updated on their phone.

Other forerunners to the Cityzi project in Nice

As mentioned above four projects in the Nice area (University, Museum, Public Transportation, Airport) were immediate forerunners to Cityzi. Relating to security aspects there were also connections to other projects. E.g. the Trusted Service Manager (TSM) which an internatioanl leader in this field, Gemalto, was to deliver to a participating bank (Credit Mutuel, CIC) complied with previous standardization work within the AEPM policy network, involving also AFSCM (Association Francaise du Sans Contact Mobile) and the previously established EPC and GSMA standards.

A very important step was creation of the AFSCM organization in 2008, two years before the Nice project, by the mobile operators Bouygues Telecom, Orange France and SFR. However, as it developed AFSCM also came to include other operators, service providers and technology providers.

The project predecessors laid a platform for a number of interconnected mobile services in the Nice project. The core of the planned Nice project was that users should have the chance to initially access four types daily services on their Cityzi mobiles: (1) bank payment for use at retailers equipped with compatible payment terminals, (2) public transport where passengers could buy fares remotely and validate them with their mobiles, get real-time access to bus and tram timetables, etc., (3) money-off coupons including loyalty cards for shops, and (4) interaction with the urban environment, via Cityzi tags including tourist information, on-demand advertising, etc.

Rolling out the Cityzi project in Nice

In June 2009, a pre-commercial pilot project in Nice was announced, presenting the first major roll-out of a set of mobile services based on NFC. In May 2010 the Cityzi project was initiated, a project to make Nice a "contactless city".[1] (source: smartinsights). The long anticipated NFC project in Nice, was launched, under the authority of Christian Estrosi, the Minister of Industry, Mayor of Nice, and Chairman of the Nice Cote d'Azur Urban Community. The whole project was to be identified under the brand name Cityzi, owned by

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[1] http://www.smartinsights.net/?2010/05/27/313-cityzi-nice-contactless-city-starts

AFSCM. The logo was considerd important because it would help users to easily identify where, and how, the mobile phone could be used for the different services. **A**part from the 3000 customers/citizens and the quickly growing number of retailers (over 1000 after a year) that soon joined the project, organizations heavily involved at the outset are listed in Table 1.

Table 1 about here

At the outset of the project in 2009-10, the Cityzi services only ran on a Samsung mobile phone, the especially equipped Samsung Player One Cityzi handset. The 3000 consumers normally could get this from their respective mobile operator.

Project participants acknowledged that the pre-commercial pilot should go ahead without a prior plan for how revenues and costs would be split between the participants in a future commercial roll-out. Experience during the pre-commercial phase, especially about the value created for users, was hoped to provide the partners with information to jointly develop a long-term business model. (source: NFC World). Compared to other NFC pilots, the Nice pilot differed. NFC phones went on sale to the general public for the first time and the scope of the project was larger. It included cooperating actors from a larger number of different sectors. NFC functionality was expected to be rolled out gradually, in a bid to turn Nice into France's 'NFC City'. (ibid).

Next, we illustrate aspects of cooperation, competition and coopetition from the perspectives of different actors.

AFSCM, cooperation between mobile operators
AFSCM initially brought together mobile network operators Orange, Bouygues Télécom and SFR. A big problem facing NFC initiatives with a wide scope is coordination of the extensive number of network relationships between cooperating and competing actors. Cityzi partly overcame these problems by AFSCM's guiding role as "facilitator". AFSCM, created under the leadership and technical perspective of mobile network operators, ultimately succeeded to get acceptance for its idea to put the NFC based services and applications on the secure element/SIM card of the mobile phone. Bouygues Telecom, wanting to capitalize on the recent interest of the banks and mass transit companies and connect both services with NFC, realized that since it was only the third largest operator, they could not start such an extensive project alone. Bouygues also recognized that the banks and the mass transit operator did not care what mobile operator their customers were using as long as they were using their services. Orange, the leading operator, agreed to join Bouygues, to form ASFCM in mid 2008. First, ASFCM had to identify whether there was a business opportunity or not in NFC. Second, they created tests of technical specifications in different cities, testing only one application at a time. Then AFSM was ready to organize a "last rehearsal before launch" with real customers using real phones that they would buy with real money in real shops, downloading real services to use in real life. The goal of AFSCM in the Cityzi project was to offer service providers a simple technical solution. Therefore, operators in ASFCM needed to cooperate to develop a unique technical solution, to be proposed to the various service providers, while later compete with each other on prices, etc. Throughout the Cityzi project, AFSCM participated in and extended the cooperation. To ensure that it did not become a French-only solution AFSCM initiated cooperation with international interest organization and firms such as Visa and Mastercard. International openness was important to convince international handset makers (e.g. Samsung) to develop NFC handsets.

AFSCM cooperated locally with the transit operator Veolia and with banks, also with actors, like HighCo involved in mobile phone application of loyalty programs. The loyalty programs were considered less important to begin with. The mass transit services turned out

to be a success while payments did not succeed to the same extent. While the mass transit Cityzi services were easy to use and understand, AFSCM learned that payments required more extensive work, information, and explanation.

The banks had supplied more than 1000 merchants in Nice with equipment for mobile payments. Rather than pushing for the common Cityzi logo, they used terms like Pay Wave and Pay Pass. AFSCM decided to promote Cityzi offering store employees a chance to win prizes when customers paid with Cityzi phones. As a result, many participating retailers placed the Cityzi logo on the door. This created tensions with the banks who preferred that the retailers should use the bank's payment solutions. Also, many retailer employees were not properly educated about the Cityzi payment service and customers should use their handsets. Another problem experienced by AFSCM was the bank-credit card company relationships. Visa was in the hands of the banks, preferring that the banks bought the Visa solution.

Credit Mutuel, CIC, a banking group
Three French banks joined the Nice project: Crédit Mutuel CIC, Société Générale and BNP Paribas. Crédit Mutuel CIC also owns NRJ Mobile, a virtual mobile network operator, also engaged in Cityzi. In France, Crédit Mutuel CIC was a forerunner in mobile NFC payments. Considerable investments were needed to develop the Cityzi's mobile NFC payment service. Much was spent on defining and testing the specifications, some of which benefitted both mobile NFC and contactless cards.

Interaction between the issuer and the customer differed between ordinary bank cards and mobile payments as regards the issuing process. Instead of issuing a card, a device owned by the bank Crédit Mutuel CIC issued the payment application that would then reside on a third party device, i.e. a mobile phone provided by the customer's mobile operator. The bank needed to interact with this application remotely. To deal with the changes in the issuing process, Crédit Mutuel cooperated with actors that were new to payment services, the mobile network operators and the trusted service managers (TSM). The decision to use the SIM card, the only solution that was working at the time, as the secure element was discussed. Crédit Mutuel CIC was also a virtual MNO, issuing SIM cards, which made them keen to use the SIM card. The handsets were subsidised and provided mainly by the operators. The operators would not handle anything that was not included in their offers. Crédit Mutuel CIC developed new relationships with TSMs to be able to exchange information remotely between the bank and the secure element, the SIM card. The TSMs had no independent commercial roles but became suppliers to the banks.

Collaboration with other banks and operators was important: "*our customers are customers of several operators and the operator's customers are customers of several banks*" (interview). Hence, banks cooperate to improve common technical standards including security standards. However, competition was strong in other areas: "*on the offers, on the features of the product, and on the prices of course*", interview). Cooperation was needed to create the interoperable solution: "*We (the banks) are very strong competitors but the problem is that we need to cooperate. It is exactly the same with the operators; they are really competitors. We have an approval to cooperate under the competition law on certain aspects, and these aspects include the benefits for the customers. The only way to be able to have an interoperable service for the customer is to cooperate.*" (interview).

For Crédit Mutuel CIC, the Cityzi brand was a way to interface with the operators. It was a way to ensure consistency for the users, knowing that the services were supported by the operators. However, various bilateral agreements were also needed to provide good services for the customers of Cityzi branded services. Branding created some tensions in the marketing of the mobile NFC services. First, payment brands such as MasterCard, PayPass, and VISA existed. Second, retailers had their own brands. Third, public transportation used different

brands in different regions. Fourth, Cityzi brand was not familiar to users coming from abroad.

The actors had discussed what would be the best way to communicate the availability of NFC services: "*If you see a MasterCard PayPass brand, you can use a contactless plastic card or you can use a mobile. There is no difference between the two, it will be accepted using the same brand. If you use Cityzi, it is only for mobile.*" (interview).

Launching their mobile NFC payment services, Crédit Mutuel CIC made use of the other actors' communications efforts. The bank used all the materials that were used by different actors in the project, building on the launching and marketing campaigns organised by MasterCard, Visa, by Cityzi, by the operators, etc. The biggest complaints coming from the bank's consumers were initially related to availability. The services were not available on all mobile phones and initially there were too few locations, and retailers involved. The bank worked with the big retailers to convince them that services were attractive for the users. The bank was involved in the installation of contactless point of sales terminals. Crédit Mutuel CIC could refer to early pilots with some retailers, e.g with Casino in Marseille. Carrefour and other big retailers in Nice were leaders in investing in the new equipment. To the smaller retailers, Crédit Mutuel CIC rented the terminals and upgraded the terminals.

Credit card company: Visa

Visa Europe started mobile NFC pilots in 2010 learning that payments by NFC were well accepted by consumers. VISA also learned to work with all the involved actors: "*And this is one very important point to be successful, and on the other hand, this is really difficult for us. Of course, each actor has its own strategy, and want to earn money from the business, and this is the difficult part to plan out.*" (interview). Technical issues was easier than collaboration between actors as regards business models. For Visa Europe, the key benefit of the Cityzi project was that it was "live". Cityzi was an opportunity "*to test all the pieces, which are the technical part, the marketing part, the communication part, the collaboration, and the implementation part of this new service*" (interview). Especially, Cityzi was considered by VISA a "*good opportunity to work with all the actors and to have all the actors work together in the same direction*" (interview). The company got to work with all the major actors in France, a major market for Visa Europe. The French banks were considered to be very innovative and it was important for Visa to support these banks in the project.

The Cityzi brand was not adopted by Visa. Visa argued that Cityzi was less known and trusted for payment services than Visa. Visa preferred to see Cityzi as purely technology-related, indicating that the phone accepted the payment and the NFC applications. Visa's role in the Cityzi project was to coordinate the work done by banks. Visa provided the technical solution for the banks, and the banks then implemented the service and presented it to their customers. The banks were responsible for consumer research and service improvement. Visa stayed out of this. Visa collaborated also with the operators and the city of Nice. Both Visa Europe and MasterCard were active in the Cityzi project, but did not really cooperate between themselves. The NFC projects was considered too be in too early stages for them to engage in collaboration. Visa and Mastercard developed their own services and proposed them to the banks.

Visa Europe's technical specifications for mobile NFC payments were finalized in 2011. The technical parts still evolved but they had something ready and working. There were still lots of discussions to have on the financial parts, but Visa Europe let these discussions to the banks. For Visa, it was now the banks that were to deal with the operators. Likewise, Visa saw the TSMs as the "technical partners" to the banks.

Public actors: The City of Nice and the French Government
As mentioned in the Prehistory, The French government and the City of Nice by various measures stimulated the Cityiz project. The involvement of the city of Nice in Cityzi was part of the city's innovation strategy. They hoped that the initial collection of NFC services would serve as a base on which other private service initiatives could be built.

One idea concerned a mobile NFC enabled tourism pass allowing tourists to have access to and information about the transport network, restaurant and hotel services, entertainment, autoguided tours of museums etc. Three French firms (Inside Contactless, Connecthings and Sagem Wireless) formed a joint consortium started early to work with the city on the Smart Muse NFC tour guide project

The role of the city was that of coordinator of the Cityzi common project and to make sure that all the different services would be simple and coherent from the point of view of the citizens, avoiding different technological solutions for different services. The city helped to coordinate communication: "*so that the same idea was given to the citizen, and was not just some single initiatives performed by individual actors, which would have been more difficult for the citizens to understand in the end*" (interview). The Cityzi initiative meant intense collaboration, changing over time, between the city and different actors. In the beginning of the project, a charter committing the parties, was signed by the City of Nice, the local government of the Nice area, four mobile network operators and the public transport operator. For a year, spanning the months before, during, and after the launch of the Cityzi initiative, the actors had a project management organization that monitored the development of different services, got feedback, and solved problems.

The Trusted Service Managers:Gemalto, Oberthur
Gemalto and Oberthur Technologies were the main Trusted Service Managers involved in Cityzi. Gemalto had been globally involved in NFC trials since 2006.[2] According to Oberthur Technologies, the challenge in the emerging NFC market was to develop an interoperable and standard solution that the end-users could use irrespective of mobile operator, bank, transport operator or preferred retailer. Oberthur Technologies participated actively in the development of such specifications aimed at formulating a global standard. Gemalto offered TSM services to service providers, such as transport providers, banks and retailers. TSM services included securely provisioning applications to end-users. As an independent and trusted party, Gemalto could manage neutrally the keys stored in the SIM and validate applications before loading in order to ensure a secure environment for each party. Oberthur Technologies acted as TSM for BNP Paribas, managing the mobile payment service on behalf of the bank via an over the air platform. This project with BNP Paribas was considered by Oberthur to strengthen its position in the expanding market of NFC services where they already provide solutions for operators. The experience from Cityzi was how important co-operation was for interoperability and standardization.

The Transportation Company Veolia Transdev
The public transport network in the Nice region, Lignes d'Azur, was outsourced to the public transport operator Veolia Transdev. BPass+, the NFC application was designed, integrated, financed and operated by Veolia Transdev. Veolia Transdev had different types of contracts with public service buyers: as a supplier to the local public transport authority or as operator at a commercial risk. Most of the contracts put Veolia in charge of customer relationships, including the distribution of information and ticketing services. Veolia's investments in mobile NFC were motivated by operating cost reduction for information and ticketing. Also,

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[2] http://www.gemalto.com/telecom/upteq/nfc.html

mobile NFC was expected to improve the attractiveness of the public transport network. Veolia had started working with NFC in 2004. The first trial in late 2005 included only one mobile network operator and was followed by additional trials in Southern France. The scope of the trials grew as Veolia first worked with one, then two, and then three mobile operators. The commercial launch of BPass+ took place in Nice in May 2010 as part of the launch of Cityzi. Initially, Veolia cooperated with all four mobile network operators in Cityzi, and with only one type of handset supplied by Samsung. Successively this number was extended to seven NFC enabled mobile phones from Samsung and other manufacturers.

Couponing Services in the Retail Market: HighCo
An important part of Cityzi inclusion of retailers and provision of various retail related services to the 3000 test consumers. One of HighCo's key activities is to manage coupon collection and clearing campaigns for brands. They thus intermediate between retailers and brand suppliers. HighCo saw Cityzi as an opportunity to test the NFC technology based "couponing wallet" solution with regard to security and the process of transacting the coupon from the NFC mobile handset to the cash desk. Franprix, a French retail chain, agreed to work with HighCo for a trial in Nice. Franprix, a leader in technology development in the retail sector let HighCo set up the necessary systems to test NFC couponing in three of the five Franprix stores in Nice. The test would provide Franprix with data on consumer behaviour related to mobile coupons. Franprix also introduced HighCo to its cash desk system supplier, Toshiba. To manage transmission of discount coupons to NFC phones HighCo needed to interface also with the mobile operator network. To participate in Cityzi, HighCo had to comply with the specifications written by AFSCM. This dependence on the operators had a negative effect due increased costs to deploy the NFC solution. To comply with Cityzi specifications, HighCo needed to find a TSM to secure the download of their "couponing wallet". HighCo could either buy the services of a TSM already involved in Cityzi, i.e. Gemalto or Oberthur or they could develop their own TSM platform. HighCo found the prices asked by the two existing TSMs too high and decided to develop their own TSM platform. HighCo accepted the mobile operators' business model for the test but they realized that this was probably not the one they would adopt when the services after the test were commercialized. Ideas of a future revenue sharing model emerged, based on partnerships with the mobile operators.

The roll-out continues
"The launch of Cityzi mobile contactless by Bouygues Telecom, NRJ Mobile, Orange and SFR marks the culmination of a several-year-long project with partners from the worlds of transport, banking, retail and local authorities. This open approach has resulted in a coherent and sustainable ecosystem which incorporates the specific features and responsibilities of each player." In early 2012, around 4,000 Cityzi mobiles were actively in use across all mobile networks and the anticipation was to have 15,000 Cityzi mobiles in operation in Nice by the end of 2012. Received feedback from local citizens revealed that 90 percent of those questioned were satisfied with the service.
In an interview with Didier Durand, Director of Mobile Contactless Services, Orange France he stressed the following.
-The overall aim of Cityzi was to show mobile NFC applications in real life action.
-We also wanted to build a business case and prove that competing actors, such as mobile network operators and banks, can work together and achieve successful contactless deployments. "
-Nice was selected for the multi-application implementation, as its size and existing services suited the project's requirements.

-Preparatory work to inform the customers and build Cityzi as a trustworthy brand was central to the start of the project in May 2010.

-The main challenges was to integrate all applications onto one secure element and to define and apply a correct level of security for all participating applications.

-We relied heavily on standards and specifications, including previous standardization work, by various industry associations to ensure both security and interoperability across project members.

After Nice

Geographical spread of the Cityzi concept

As shown below the Cityzi project in Nice was followed by similar projects in other cities.

After the commercial NFC launch in Nice the AFSCM telecom operator members announced their aim to make Cityzi NFC mobiles widely available across France.

Connecting the Nice project internationally

Orange would begin introducing NFC services in the majority of countries in which it had a presence in 2011. The company was Europe's third largest mobile network operator and had 144.5 million mobile customers worldwide. Orange would begin issuing NFC SIM cards to subscribers "in most of the Group's European operations" and worked with handset manufacturers to ensure that more than half the new smartphone models it buys have built-in NFC functionality. In France, the company was to begin distributing Samsung's Player One Cityzi NFC phone nationwide and aimed to sell a total of 500,000 NFC-equipped mobile phones in France during the year.

The diffusion to new cities

 A total of thirteen cities responded to the French government's call for proposals for three to five more cities to receive funding to run large scale NFC field trials similar to the Cityzi project. In January 2011, Paris, Bordeaux, Caen, Lille, Marseille, Rennes, Strasbourg and Toulouse were announced to join Nice in the next stage of the French plan to deploy a national NFC infrastructure. The government funding was aimed to speed up rollout of commercial NFC services in France as well as to help the country's NFC technology suppliers position themselves as leaders in the world market.

Other cooperation projects

After Cityzi, four banks and four mobile network operators participating in Nice were committed to roll out commercial NFC services on a national scale based on established specifications and international standards. Visa signed an agreement with AEPM that works to develop NFC payments standards. This will allow Visa-branded payments solutions to be commercially deployed across France. MasterCard signed a similar agreement in December 2010. Visa continued to work closely with the banks as Cityzi expanded to other cities and also with banks that had yet to introduce their solution.

   L'Office du Commerce et de l'Artisanat de Nice (OCAN), representing independent retailers in Nice, launched Carte Magique, an NFC-based retail loyalty programme designed to increase traffic to local retailers as a whole as well as to allow members to promote their businesses to shoppers. French banking group Société Générale signed a contract with Oberthur Technologies to provide trusted service manager (TSM) services for the bank's continued roll out of NFC services. In November 2011, another of the involved banks, BNP Paribas, announced the formation of a strategic business partnership with the operator Orange to jointly launch a new, entirely mobile, banking service. From November 2011, BNP Paribas would be able to offer mobile banking to customers in all of the group's branches and through

its internet banking channel. Both BNP Paribas and Orange were heavily involved in Cityzi. abroad. For Orange, this partnership was an opportunity to explore new territories and to continue offering its customers more and more innovative services.

AFSCM and AEPM continue to develop
Within AFSCM, collaboration is evolving. Mobile operators take the next step to reorganize the association, possibly into an operational joint venture, As stated by the organization, the two main objectives of cooperation are to reduce costs and to create a unique mobile wallet based on the Cityzi wallet. The aim is also to jointly develop simple, common Cityzi loyalty applications for small merchants. Each retailer has to sign a contract with each operator and to test its application with each retailer. AFSCM has to invent new ways to do that in one unique way for all four operators. In order to move in this direction, the operators within AFSCM initiated discussions on closer cooperation, deciding on what activities they would be ready to share and do in common, define a budget for it, and to set up this new organization in 2012.

As for the cooperation and competition between the banks, some actors in the Nice project suggested that the banks seemed to be more collaborative on the card issuing side of their business, where they needed to create something new and interoperable, whereas they appeared to compete more fiercely on the acquiring side of the business where the operations were based on the standards set Visa and MasterCard:

> "In fact, you have two banks regarding payments: acquiring banks and issuing banks. Regarding the issuing parts, the banks are really working in a coopetition situation because they need to invent very similar applications that can be managed in the same way with the different MNOs. Regarding the acquiring side, the banks compete, and the competition is rather fierce between banks because mobile contactless payments are part of the different payments they have to propose to the merchants, including normal chip and pin cards, contactless cards, and contactless mobile payments. They do that based on the international standards proposed by Visa and MasterCard." (interview)

A summary of some major characteristics of the 3 stages described in the case is illustrated in table 2.

Table 2 about here

Analysis

The case illustrates how coopetition processes in dynamic network contexts drive technique based service innovations towards use in practice. First, we argue that *overlapping* between, according to different criteria, bounded networks is an important aspect of coopetion during innovation processes. Overlapping may concern spatial dimensions (e.g. local-local, local-global), technical dimensions (different knowledge areas, different industries) and different functions for a product, or in our case a service, for a user (e.g. money transfer and access to information). Second, coopetition processes involve *tensions* between actors when actors prefer different alternative outcomes of cooperation, as concerns, for example, change in network positions. Network-level coopetition is complex, and it is difficult to "balance" coopetitive relationships and ensure that all involved gain benefits of coopetition (Bengtsson et al. 2010). When actors' positions differ in different overlapping networks, for example in a locally bounded and a global network, or regarding different types of services, this may cause tensions. Hence, coopetition in a dynamic network context will be complex, assymetrical, and dynamic. Third, *stabilization* is an important aspect because during innovation processes many uncertainties and tensions need to be resolved for the innovation to be used in practice.

Overlapping of networks
During the process there are examples of spatial, technical and function for users overlapping that affects coopetition.

Spatial overlapping
Major service innovation processes, like the one in this paper, initially, before extensive use in practice, encompass a large number of projects (experiments, tests, full scale commercialization) in delimited geographical areas and/or concerning limited services. These projects include actors that cooperate in the project but who might also be competitors outside the project. The extent to which two actors cooperate and or compete may vary over time and across projects and across stabilized practices for the new, and old, established services.

Local project networks, potentially resulting in local business practice, involve business actors that may or may not participate in other local project networks. There are overlaps between local networks. The local project networks are embedded in wider networks in which both established technologies for service production and new technologies develop, as indicated in the prehistory to the Nice project. To understand technology enabled service innovation processes it is important to consider interaction in local networks, between local networks and between wider networks and local ones.

Cityzi is a local project overlapping with earlier, contemporary and future local projects in the sense that actors in Cityzi, like Visa, Gemalto, Orange, and BNP are related to these other project bounded networks. Such overlapping affects how actors are related to each other along coopetition dimensions and it increases learning through interaction between involved actors. Coopetition also serves to develop not only technical standards and interoperability, but also development of business models for commercialization, stimulating some actors to cooperate for further expansion to other localities (e.g. spread of the Cityzi concept to other French cities) and with a global aim (e.g. Visa agreement with AEPM).

An interesting dynamic aspect of coopetition involves Veolia. Before Nice, Veolia began to cooperate in various locations with one mobile operator at a time to develop the transportation ticketing service. Successively, they added more operators to develop and introduce the service. When the Nice case started Veolia began to cooperate with four, partly competing, operators in the same project. This was made easier because the pilot could only be based on one single type of mobile phone, a model provided by Samsung, the single supplier of phones in the project.

In the first phases of the Nice project, many actors considered it an important pilot test to take part in. In the later stages, some actors used it to introduce the innovative services to other cities. In late 2011, based on what had been learnt in Nice, BNP Paribas and Orange created a new powerful alliance for mobile payments in France (and maybe elsewhere). Concurrent coopetition processes may take place in different geographical regions. VISA initially opposed the participating banks' acceptance of the SIM card solution, but as this was gaining ground in other parts of Europe, VISA agreed to cooperate in Nice and in other French cities.

Technical overlapping
Development of new techniques requires inputs from different knowledge areas and different industries. Converging technologies and converging industries are concepts characterizing information technology applications to telecommunications, mass media, entertainment, financial services etc. that have been and are in focus for much interest(e.g. Pennings and Puranam 2001; Ancarani and Costabile 2010). Preceding the Nice case is the development of

contactless cards in Japan. Based on this technical development, global cooperation later began to develop technical conditions for interoperability. Three leading firms in telecommunications organized an association/policy network, NFC Forum, initiating overlapping with other industries such as mobile operators, banks, application developers, retailers, etc. related to application of NFC techniques. NFC Forum is an example of a coopetitive network since its members include direct competitors who also cooperate to promote technical solutions and service applications. Also other policy networks, initiated by actors in one industry have, as we described in the case, attracted members from other industries to solve technical issues. Furthermore, policy network organizations interact, coopetitively, to solve technical aspects regarding specific services. Examples are how MobeyForum interacts with EPC and NFC Forum.

After general standardization has been accepted, further technical development complying with the standards are needed, for local service development, as is shown in Citizi. The French AFSCM took a facilitating, "overlapping initiating", role in Cityzi to help create conditions for a commercial launch, inviting also international actors such as VISA and Mastercard. HighCo needed to extend its traditional interaction with brand owners and retailers to include mobile operators, desk system suppliers and trusted service managers. Another local example is how the participating financial actors, operators, TSMs and handset manufacturers cooperated to develop a card issuing mobile process.

"Function for user" overlapping
NFC enabled mobile services make the mobile phone into a device that can perform many services, also related to other services in which the mobile phone is not directly involved. Services are "bundled". The mobile phone initiates overlapping between networks that are defined by different types of services. Preceding the Cityzi case there were many local tests, also in Nice, of one or a few services. The aim of Cityzi was to integrate such services for personal use and to add services to the original ones. Such overlapping may initiate changes in network relationships.

An added service, "mobile couponing", shows that such overlapping related to added functions for user might be problematic. For that the user still had to use separate applications and procedures for retail payments and getting the coupon rebates. Other services, tested before Cityzi, like small payments and ticketing for transportation did not require double procedures.

Overlapping between different "function for user" networks also affect *technical* overlapping. As mentioned above the couponing service added mobile operators and TSMs changing the network position of HighCo. While cooperating on technical matters HighCo competed on the business model level with operators and TSMs to get a financial share of the traffic associated with the coupon handling.

Overlapping between *function for user* networks may also be associated with overlapping between *spatial* networks. Users of an NFC service, launched by Orange and Barkley in the UK in 2011, were able to use their NFC phones to make payments in Nice, in the Cityzi set of services backed by Orange.

Tensions due to coopetition
One type of tension was when the Cityzi project moved from the pilot stage, focusing on technical matters, to commercialization relating to actors' "business models". For the pilot stage it was agreed that focus should be on technical feasibility and not on business models and cost-revenue issues. For example, HighCo and the banks as well as HighCo and the TSMs had problems to agree on revenue sharing and cost allocation. HighCo worked on a revenue sharing model with the mobile operators. The Cityzi brand was not used by VISA

and Mastercard because they had well-known brands competing between themselves globally, and since they wanted to use both their contactless cards and the mobile phone for NFC payments. Also the banks and several retailers wanted to advertise and use their own brands for payments.

Tensions are due to changed patterns of competition and cooperation. Network boundaries are ambiguous and seen differently by different actors. Service innovation processes take place in situations of multiple, interpenetrating business contexts with only partial co-ordination between all of them. Spatial overlapping later in the process, when projects in different regions began to be connected, might be the origin of tensions. The tensions emerging as new patterns of coopetition develop, may importantly affect relations between actors (Zeitz, 1980). Tension between organizations is both system-integrative and system-destructive, as the resolution of a tension or conflict leads to generation of new ones (ibid). The case gives some indications of such tensions, e.g. between mobile operators, card companies and banks as regards changing network positions when payment flows become NFC enabled.

The dynamics of coopetition is connected to how actors handle temporality. In the Cityzi case, VISA and Mastercard deliberate took a "wait and see" or "wait and build power/knowledge" attitude to any more intense cooperation. Although they, as competitors, cooperated in general areas of card payments and card issuing, they both wanted to build more knowledge about NFC enabled mobile payments before any deeper cooperation in the pilot test in Nice.

Stabilizing coopetition outcome
Coopetition is in the literature regarded as a value creating process for individual business actors involved as well as at a societal level (e.g. Dagnino and Padula 2002). For this to be the case it is important that the value creating outcome of an innovation process eventually, at least temporarily stabilizes. The Cityzi case, launched, facilitated and coordinated by the City of Nice and supported by AFSCM seems to partly confirm this. The very complex and diverse set of companies and organizations were recruited, also based on their preceeding involvement in separate projects in the region, by the public and private policy actors. The public actors stressed that "services should be simple, easy to access and should enhance the value to end users", irrespective of what bank, operator etc. that the customers had. The City wanted to downplay the potential conflicts and tensions by stressing the "value for citizens". Some of the tensions related to competition and cooperation came when the new joint logo, Cityzi, was implemented but it must also be considered that Cityzi had a stabilizing effect.
The many processes in the big, complex network in the Nice project were assumed to be better coordinated and facilitated if a central, public actor initially assumed a leading role. Assymmetric power distribution within the coopetitive network could also have a stabilizing effect on the service innovation process when some actors take the lead and others accept and internalize the tensions from coopetition. The power of AFSCM in this respect need also to be considered.Preceeding Cityzi is also stabilizing factors related to standardization and certifications issued by the global policy network actors referred to above, such as NFC Forum, Mobey Forum, EPC.

The security issues as a central potential area for tensions, was managed by accepting a solution with many different, partly decentralized relationships. A number of different alliances between different TSMs and individual banks emerged as a result of this mode of handling the security aspects. There was no single central TSM with which the mobile operators and banks should cooperate. Instead, a number of different complementary relations involving TSMs developed. It be anticipated that the two major TSMs, Gemalto and

Oberthur, were competing for such (local) cooperation deals. Thus we consider that decentralized responsibilities, somewhat paradoxically, might be a stabilizing factor.

Finally, the extent to which a service innovation becomes accepted by users is stabilizing factor. For the Cityzi case this is too early to say.

On future research

We conclude by discussing some issues for study of coopetition dynamics with reference to the conceptual discussion in Bengtsson et al. (2010) regarding the role of the network context for coopetition involving two or more specific actors. We argue that the role of the dynamics of the network context deserves more research efforts, thus also more strongly relating coopetition and network research.

Our case suggests that the network not only *can* become the context for co-opetition it can also *determine* patterns of co-opetition in single relationships. Furthermore, when actors take action to "balance" co-opetition, it seems in the case that single actors take larger parts of the context into consideration. Actors' practices and constructions of how to cope with co-opetitive tensions in single relationships seem to include constructions on a network level.

Our case suggests that there is probably behavior from the actors in a relationship that could be interpreted as "…balance and manage the contradicting logics of interaction within the relationship". But the more spatially and temporally separated the different activities of competition and cooperation are the more likely it is that balancing of co-opetition in one focal relationship is *a result* of several separate actions within in a broader network context.

Our case seems to indicate that an innovation process goes through different phases. In our Cityzi stage, *the overall network,* (not a specific singular co-opetitive relationship), was characterized by *strong cooperation/weak competition*. This does not seem to have led to hampered development, due to overembeddedness. Since network overlapping is an important aspect of dynamics, we can assume that actors perceived a certain degree of competitive tensions in other parts of their networks. (i.e. outside of the Nice project).

Our suggestion, which needs more empirical research in forthcoming studies, is that the continuous emergence of tensions due to network overlapping over time can be important origins and explanations for the problems to cope with emerging tensions, because tensions somewhere else in the network, which will cause further actions, etc.

The service innovation process that we studied illustrating a specific development project with shifting activity focus over time (see Table 2). Cooperation and competition dynamics vary depending on what activities actors compete and cooperate on.

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1. Public organizations:	6. Mobile network operators:
French government	Bouygues Telecom
Nice City Council	SFR
Nice Côte d'Azur Urban Community	Orange
2. Trusted service managers:	NRJ Mobile (virtual operator)
Gemalto	7. Transportation and associated suppliers:
Oberthur Technologies	Veolia (Lignes d'Azur)
3. Banks:	ACS
Crédit Mutuel-CIC	Connecthings
Société Générale	Airtag
BNP Paribas	8. University:
4. Card companies:	Nice Sophia Antipolis University
Visa Europe	9. Retailers:
MasterCard	Game
5. Mobile handset supplier:	La Croissanterie
Samsung	10. Museum:
	Museum of Modern and Contemporary Art

Table 1. Actors involved in the start-up of the Cityzi project

Phases (I-III)	I. Prehistory (1980-) 2000-2009	II. The Cityzi Project in Nice 2009-2011	III. After Nice 2012 -
Innovation focus	Technology development and standardization	Development of services and applications	Business model development
Innovation process focus	Technical trial processes, small scale, local service pilot studies, global standardization processes	Large scale, local pilot project, integrated service development processes, and initial business development and commercialization processes	Commercialization and service diffusion processes across regions
Cooperation	-The formation of global, cooperative policy networks to set technology standards -The global policy networks enhance cooperation between actors both within the same and across different industries (banking, telecom)	-Increased cooperation *between* the global policy networks -Cooperation to connect and coordinate several, local networks focused on different service applications -Cooperation between public and private organizations in order	-Cooperation to diffuse service innovations from local networks to other regions and to a national level -Internal cooperation within global organizations (e.g. mobile operators) to connect locally developed service

	-Small, local cooperation networks are formed around trials focused on single applications	to create single standards and simplicity of services towards end users	innovations -Towards mixed intra- and inter-industry cooperation with an increasing importance of global alliances
Competition	-Competition between global policy networks associated with different industries to create dominating technical standards and solutions -Competition between companies within the same industries to be "first to market" in testing new applications -Competition within local technology and service trials on the position in relation to end users	-Increased competition between companies for dominant network position, within industries, in relations to end users when larger sets of end-user services and applications are bundled -Competition between different types of actors within the same industry for network positions associated with the new bundled services (e.g. banks, card companies, TSMs) -Competition between geographical regions for "technology leader reputation" associated with the new services - inter-industry competition (e.g. operators vs financial institutions)	-Increased overall competition between companies when moving from the "pre-commercial" to "commercial" stage due to increased need to adapt/develop business models -From local to regional to national to international competition when local service innovations are connected to the global context via global companies (e.g. global mobile operators) -Increased competition between nets of inter-industry alliances created in order to commercialize service innovations (e.g. bank-operator alliances)
Coopetition focus	"Intra"- industry cooperation and "Inter"-industry competition in parallel, simultaneous processes of pilot and test trial	Local/regional network coopetition: increased blurred boundaries between intra- and inter-industry competition and cooperation including involvement of public organizations in pre-commercialization processes	Towards stronger "intra-net-cooperation" and alliances and "net vs. net" competition in global markets when moving towards commercialization of service innovations

Table 2. Summary of main shifts in innovation focus, and in cooperation, competition and coopetition in the three phases of the case narrative