

**COPENHAGEN BUSINESS SCHOOL**  
**HANDELSHØJSKOLEN**  
SOLBJERG PLADS 3  
DK-2000 FREDERIKSBERG  
DANMARK

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Hybrid Organisations



**Copenhagen  
Business School**  
HANDELSHØJSKOLEN

# Hybrid Organisations

A study of the Open Source – business setting

**Malgorzata Ciesielska**

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# **Hybrid organisations.**

**A study of the Open Source –  
business setting.**

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**Malgorzata Ciesielska**

Department of Organization

Copenhagen Business School

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*The essence of software design, like writing of poetry, is a creative process. The role of technology and organization is to liberate that creativity to the greatest extent possible and to facilitate its translation into working code. Neither new technology nor a “better” division of labor can replace the creative essence that drives the project. (Weber, 2004:59)*

# Table of contents

<b>ACKNOWLEDGEMENTS</b> _____	<b>4</b>
<b>ENGLISH SUMMARY</b> _____	<b>5</b>
<b>DANSK RESUMÉ</b> _____	<b>9</b>
<b>INTRODUCTION</b> _____	<b>14</b>
Inspirations _____	14
Disposition of the thesis _____	16
<b>THEORETICAL BACKGROUND</b> _____	<b>18</b>
Institutions and logics _____	20
The outcomes of institutional contradictions _____	23
Hybridity as an organisational phenomenon _____	25
Derivative forms of hybridity in Internet mediated work environments _____	29
Towards the Open Source-business hybrid _____	31
Framework for understanding Open Source-business collaboration _____	33
<b>METHODOLOGY</b> _____	<b>38</b>
The ethnography-inspired case study _____	38
Data sources _____	39
“Nested” levels of analysis _____	45
Limitations and quality of data _____	47
The data analysis _____	49
<b>REFERENCES</b> _____	<b>54</b>
<b>INDIVIDUAL PAPERS</b> _____	<b>64</b>

*PAPER 1.*

**KNOWLEDGE INTEGRATION AND ORGANISATIONAL PRINCIPLES OF AN OPEN SOURCE-BUSINESS HYBRID.**

*PAPER 2.*

**THE TWO-DIMENSIONAL TAXONOMY OF TRUST IN AN OPEN SOURCE-BUSINESS COLLABORATION.**

*PAPER 3.*

**“WE” AND “THEY” IN THE OPEN SOURCE-BUSINESS CONTEXT.**

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# English summary

## **Hybrid organisations: a study of the Open Source – business setting.**

This research project examines how the conflicting institutional logics are dealt with in a hybrid organisational form. The empirical setting of the study is an Open Source – business collaboration in software development projects. The idea of making a case study of the Open Source – business collaboration is interesting from both theoretical and business perspectives. Since companies realised that the world's most talented people are distributed throughout various organisations, rather than members of a single team or corporation, the open innovation model could be neither underestimated nor ignored by the business. However, that solution brings new challenges, especially for business-oriented organisations. The challenges come from the significant differences between new open models and the classic closed-innovation model, which grew on the concept of the institution of the intellectual property rights. Open Source, on the contrary, is intrinsically an anti-corporational, pro-knowledge-sharing and creativity motivated movement. As a result, in the era of open collaboration in knowledge-integrating platforms the everyday problems are constituted of dealing with mixture of institutional backgrounds, business models and professional identities.

The literature on Open Source - business opportunities concentrates on how Open Source ideals are different from pure business orientation and how this may change general relations within projects. However, too much attention is put on anonymity and self-regulating coordination mechanisms, where many projects are very hierarchical and decision-making is concentrated in the core-developer group. Moreover, not only is business influenced by Open Source standards, but business also touches the whole Open Source field. As a result Open Source also becomes more business-oriented. The question is then, how a corporation can become an Open Source chameleon and use Open Source logics to engage in their activities while running business as usual.

The theoretical framework for understanding the Open Source-business collaboration concentrates on contradictory institutional logics and the



organisational hybridity concept, which can be identified within the boundary organisations that deals with institutional paradoxes. In particular, this research project aims to understand how hybrid organisations, can function and survive at the intersection of several conflicting institutional logics. This approach links macro and micro perspectives and enables investigating whether the rivalry and competition at institutional level can be transformed into collaborative activities at the organisational level. The answer may be positive because even if many different logics are available for various organisational participants, it is necessary for people to manage their interests to achieve common organisational goals. Most recent literature on hybrid organisations concentrates on formal and structural issues of governing and funding mechanisms or fulfilling goals of the new public management and environmentally aware businesses. Although the existence of hybrids is noticeable in academic research, they have not been the subject of extensive studies. No coherent approach has been developed. As such, they still pose important theoretical and practical questions.

A better understanding of hybrid organisations as a place where heterogeneous institutions, logics of actions, ideologies and identities meet, is developed by examining three dilemmas: How the contradictory logics of action can become a basis for organisation creation, how to ensure successful collaboration among diverse participants and how to deal with identity choices at the organisational level. Those topics are dealt with in three separate papers, which are focusing respectively on: The hybrid Open Source - business knowledge integration model, trust relations, and identification issues. In order to give an empirical insight into those problems, this dissertation analyses the particular example of the Nokia corporation and its involvement in two Open Source Software projects. On the one hand the Open Source Software is a major part of the today's technology economy. On the other hand, Nokia, being traditionally a business-oriented organisation that has moved towards an open collaboration, has encountered several hybrid structure dilemmas.

The first paper aims at bridging the knowledge integration literature with insights from organisational hypocrisy and institutional theory and argues for a cross-level analysis. In this manner, it also expands the scope of the knowledge integration studies into situations, in which knowledge semantic and syntax differences are not crucial, but logics of actions differ significantly. By investigating innovative activities and external contributions to the knowledge base in an Open Source - business initiative this paper emphasises the importance and influence of the institutional contexts in creating and shaping Open Source

innovation platforms as well as possibilities for knowledge integration. The presented descriptive model of creating and enacting hybrid knowledge integration, in the context of a heterogeneous institutional environment, explains the empirical case and shows possible future research agenda. The findings demonstrate that enabling knowledge integration in Open Source - business organisation requires not only securing the right participants and contributions, ensuring smooth submission processes, and adjusting its formal business model and textures to two competing logics of action, but also pushes the organisation in a struggle for legitimacy. As a result the hybrid organisation gets involved in both real actions and discursive practices by means of which it couples and decouples from the institutional pressures. The dual organisational hypocrisy helps maintaining the Open Source - business project. While practical implementation of the formally constructed hybrid knowledge integration model leads, by enacting conflicting principles, to an organisational hypocrisy, it is a matter of future research to see whether this will result in changing the institutional arrangements. Some clues and current change processes in the Open Source field indicate that it might.

The second paper highlights the importance of trust in the Open Source-business setting. Trust, traditionally perceived as a prerequisite for successful collaboration and resource for building social capital, becomes a problematic and complex issue in a hybrid organisation. Simultaneously, behind the popular trust discourse and community-building activities, Open Source – business collaboration is not free from the exercising of power and the role of politics. By overcoming scepticism about the possibilities of creating trust relations on the Internet and the clear distinction between co-operation built on trust or power relations, this paper contributes to the trust literature by drawing on empirical insights into the trust-power struggle in the Internet-mediated projects. The contributions of this paper are twofold. First, it offers an empirical description of how the power relations affect the discussions about trust and trust relations themselves. In particular the analysis of the case of Maemo.org shows that trust and power can co-exist in the same setting. The problem of unequal power distribution and the façade of trust at the political level, does not completely close the possibility of trust development in the other aspects. While power dominated at an inter-organisational level (Nokia to Maemo developers' relation), at the interpersonal level trust in expertise was achieved among developers, independently of their organisational affiliations. Second, this paper is going beyond institutional and social trust literature and shows that the cognitive aspects

of trust, play an important role in a hybrid setting. In particular, the empirical study indicates the cognitive trust-related problems, which business organisations face while switching from closed to open or hybrid innovation mode, and this leads to forming a two-dimensional taxonomy of trust; political trust and trust in expertise. This model explains that not only it is important to show expertise and gain trust as a group of professional contributors, but it is equally important to be open and truthful in their own declarations. At the same time two targets of trust must be addressed and conferred to enable a successful and satisfactory collaboration for all parties. Although the case indicates that when the political element is not fulfilled, the higher-level solutions may be applied, for instance in a form of trust in the legal system (contracts, licences) and/or exercising of power (sponsoring, supporting only chosen projects).

The third paper focuses on the intersection of institutional logics and individuals' organisational practices to understand mechanisms of maintaining the multiple organisational identities. The theoretical framework of this paper is based on the multilevel research approach to the hybrid organisational identity. The social identification processes are approached as balancing between "we" and "they" with a particular focus on discursive practices. The theoretical perspective is combined in the model of organisational hybridisation, which shows the multiply identities as a medium between institutional logics and hybrid organisation. The case analysis is based on the links between the corporate business logics and the Nokia-employee identity as well as on the parallel between logics of Open Source and a hacker-activist professional identity. As both identities need to coexist in the hybrid organisation, the analysis concentrates on mechanisms, which sustains those contradictions. Observed organisational hybrid identity is a means of reconciling tensions among ideological standpoints to create a path in which one is both an organisational and community member. In order to achieve this, developers engage in the shifting mechanisms of organisational identification and disidentification. From the mode, in which they try to influence organisational change, provide knowledge, contacts, and the possibility of learning, they swap, on other occasions, to a withdrawal mode, in which they avoid or comply with corporate logics.

# Dansk resumé

## Hybride organisationer: En undersøgelse af Open Source - forretningssetup.

Dette forskningsprojekt undersøger, hvordan de modstridende institutionelle logikker håndteres i en hybrid organisationsform. Det empiriske grundlag for undersøgelsen er Open Source - forretningssamarbejde i forbindelse med software udviklingsprojekter. Ideen om at foretage en case study af Open Source - forretningssamarbejde er interessant ud fra både et teoretisk og et forretningsmæssigt perspektiv. Eftersom virksomhederne har indset, at verdens mest talentfulde mennesker er spredt i forskellige organisationer, snarere end de er medlemmer af en specifik afdeling eller virksomhed, kan den åbne innovationsmodel ikke længere hverken undervurderes eller ignoreres af virksomhederne. Men denne løsning medfører nye udfordringer specielt for forretningsorienterede organisationer. Udfordringerne kommer fra de betydelige forskelle mellem nye åbne modeller og den klassiske lukkede innovationsmodel, som hviler på begrebet om institutioners intellektuelle ejendomsret. Open Source er tværtimod en kreativt motiveret bevægelse, der er stærkt anti-korporativ samt pro videndeling. Som følge heraf bliver hverdagens problemer at håndtere en blanding af institutionelle baggrunde, forretningsmodeller og faglige identiteter på videnintegrerede platforme i en tid med åbent samarbejde.

Litteraturen om Open Source - forretningsmuligheder koncentrerer sig om, hvordan Open Source idealer er forskellige fra ren forretningsorientering, og hvordan dette kan ændre de generelle relationer inden for projekter. Men der er for meget opmærksomhed på anonymitet og selvregulerende koordinationsmekanismer, mange projekter er meget hierarkisk opbygget og beslutningsprocessen er koncentreret i kerneudviklingsgruppen. Derudover er det ikke kun forretningen, der påvirkes af Open Source standarder, men omvendt berører forretningen også hele Open Source området. Som et resultat heraf bliver Open Source også mere forretningsorienteret. Spørgsmålet er så, hvordan en virksomhed kan blive en Open Source kamæleon og bruge Open Source logikker

med det formål at deltage i deres aktiviteter, mens virksomheden fortsat driver forretning.

Det teoretiske grundlag for forståelsen af Open Source – forretningsamarbejde koncentrerer sig om modstridende institutionelle logikker og det organisatoriske hybridiseringskoncept, som kan identificeres inden for organisationernes grænser, og som beskæftiger sig med institutionelle paradokser. Det er hensigten med dette forskningsprojekt at forstå, hvordan hybride organisationer kan fungere og overleve i skæringspunktet mellem adskillige modstridende institutionelle logikker. Denne fremgangsmåde sammenkæder makro- og mikro-perspektiver, og gør det muligt at undersøge, om rivaliseringen og konkurrencen på institutionelt plan kan omdannes til samarbejdsindsatser på det organisatoriske plan. Svaret kan være positivt, fordi selvom mange forskellige logikker er tilgængelige for forskellige organisatoriske deltagere, er det nødvendigt for folk at styre deres interesser for at opnå fælles organisatoriske mål. Den nyeste litteratur om hybride organisationer koncentrerer sig om formelle og strukturelle spørgsmål vedrørende styrings- og finansieringsmekanismer eller opfylder målene i new public management og miljøbevidste virksomheder. Selvom eksistensen af hybrider er mærkbar i akademisk forskning, har de ikke været genstand for vidtgående undersøgelser. Ingen sammenhængende tilgang er blevet udviklet. Som sådan udgør de stadig vigtige teoretiske og praktiske spørgsmål.

En bedre forståelse af hybride organisationer som et sted, hvor heterogene institutioner, indsatslogikker, ideologier og identiteter mødes, er udviklet ved at undersøge tre dilemmaer: Hvordan modstridende logikkers indsats kan blive et grundlag for skabelse af organisationer, hvordan man kan sikre et vellykket samarbejde mellem forskellige deltagere, og hvordan man skal håndtere identitetsvalg på det organisatoriske plan. Disse emner behandles i tre separate artikler, der fokuserer på henholdsvis: Den hybride Open Source – videnintegrationsmodel, tillidsrelationer og identifikationsspørgsmål. For at give en empirisk indsigt i disse problemer, analyserer denne afhandling et særligt eksempel; nemlig Nokia Corporation og virksomhedens inddragelse i to Open Source software projekter. På den ene side er Open Source software en vigtig del af nutidens teknologiske økonomi. På den anden side er Nokia en traditionel forretningsorienteret organisation, der har bevæget sig i retning af et åbent samarbejde, men er stødt på flere hybride strukturdilemmaer.

Den første artikel tager sigte på at slå bro over litteraturen om videnintegration, med indsigt i organisatorisk hykleri og institutionel teori, og argumenterer for en

analyse på tværs af niveauer. På denne måde udvider det også rammerne for undersøgelser af videnintegration i situationer, hvor vidensemantiske og -syntaktiske forskelle ikke er afgørende, men hvor indsatslogikker er meget forskellige. Ved at undersøge innovative aktiviteter og eksterne bidrag til videngrundlaget i et Open Source - forretningsinitiativ vægter denne artikel vigtigheden og indflydelsen af de institutionelle sammenhænge til at skabe og forme Open Source innovationsplatforme samt mulighederne for videnintegration. Den præsenterede beskrivende model om at skabe og vedtage hybrid videnintegration i forbindelse med et heterogent institutionelt miljø, redegør for den empiriske case og viser et muligt fremtidigt forskningsprogram. Resultaterne viser, at aktivering af videnintegration i Open Source - forretningsorganisation kræver ikke blot sikring af de rette deltagere og bidrag, men også en smidig accept af processer, justering af virksomhedens formelle forretningsmodel og strukturer til to konkurrerende indsatslogikker, men de skubber også organisationen ind i en kamp for legitimitet. Som følge heraf bliver den hybride organisation involveret i både reelle handlinger og diskursive praksisser, hvor den sammenkæder og afkobler det institutionelle pres. Det dobbelte organisatoriske hykleri hjælper til at opretholde Open Source - forretningsprojekt. Mens den praktiske gennemførelse af en konstrueret hybrid videnintegrationsmodel resulterer i et organisatorisk hykleri pga. vedtagne modstridende principper, er det et spørgsmål for fremtidig forskning at dokumentere, om dette vil resultere i en ændring af det institutionelle setup. Nogle spor og nuværende forandringsprocesser inden for Open Source tyder på, at det kunne.

Den anden artikel understreger betydningen af tillid til Open Source - forretningssetup. Tillid, der traditionelt opfattes som en forudsætning for et vellykket samarbejde og en ressource for opbygningen af social kapital, bliver et problematisk og komplekst spørgsmål i en hybrid organisation. Samtidig, bag den populære tillidsdiskurs og de fællesskabsopbyggende indsatser, er Open Source - forretningsamarbejde ikke fri for udøvelse af magt og den politiske rolle. Ved at overvinde skepsis over for mulighederne for at skabe tillidsrelationer på internettet, og den klare skelnen mellem samarbejde baseret på tillid eller magtforhold, bidrager denne artikel til litteratur, som omhandler tillid ved at trække på empiriske indsigter i tillidsmagtkampen i internetbaserede projekter. Bidragene i denne artikel er dobbeltsidede. For det første giver de en empirisk beskrivelse af, hvordan magtforhold påvirker diskussionen om tillid og tillidsrelationer i sig selv. Især analysen af Maemo.org casen viser, at tillid og magt kan eksistere i

samme setup. Problemet med ulig magtfordeling og facaden af tillid på politisk plan lukker ikke helt muligheden for udvikling af tillid i andre aspekter. Mens magt dominerer på et interorganisatorisk niveau (fra Nokia til Maemo udviklernes forhold), bliver eksperttilliden på det interpersonelle niveau opnået blandt udviklere uafhængigt af deres organisatoriske tilhørsforhold. For det andet går denne artikel længere end den eksisterende litteratur om institutionel og social tillid og viser, at de kognitive aspekter af tillid spiller en vigtig rolle i et hybrid setup. Især tyder den empiriske undersøgelse af kognitiv tillidsrelaterede problemer, som erhvervsorganisationerne står over for, på, at de skifter fra lukket til åben eller hybrid innovationsmodel, og det fører til en skabelse af en todimensionel taksonomi af tillid; politisk tillid og eksperttillid. Denne model forklarer, at ikke alene er det vigtigt at demonstrere ekspertise og få tillid som en gruppe af professionelle bidragsydere, men det er lige så vigtigt at være åben og sandfærdig i egne erklæringer. Samtidig er der to mål af tillid der skal adresseres og tildeles for at muliggøre et vellykket og tilfredsstillende samarbejde for alle parter. Selv om casen viser, at når det politiske element ikke er opfyldt, skal et højere løsningsniveau anvendes, f.eks. i form af tillid til retssystemet (kontrakter, licenser) og/eller udøvelse af magt (sponsorering; kun støttende udvalgte projekter).

Den tredje artikel fokuserer på skæringspunktet mellem institutionelle logikker og den enkeltes organisatoriske praksis for at forstå mekanismerne for opretholdelse af de mange organisatoriske identiteter. Den teoretiske ramme for dette oplæg er baseret på flere niveaurs forskningstilgang til hybride organisatoriske identiteter. De sociale identifikationsprocesser er grebet an som en afvejning mellem "vi" og "de" med særlig fokus på den diskursive praksis. Det teoretiske perspektiv er kombineret i modellen for organisatorisk hybridisering, som viser flerdoblede identiteter som et medium mellem institutionelle logikker og en hybrid organisation. Caseanalysen er baseret på sammenhængen mellem erhvervslivets logikker og Nokia-ansattes identitet samt de mange lighedspunkter mellem logikker af Open Source og en professionel hacker-aktivist identitet. Da begge identiteter skal sameksistere i en hybrid organisation, koncentrerer analysen sig om mekanismer, der opretholder disse modsætninger. Observeret organisatorisk hybrid identitet er et middel til at forene spændinger mellem ideologiske standpunkter og at skabe et sted, hvor man både er et organisatorisk medlem samt et medlem af fællesskabet. For at opnå dette, varierer udviklerne mekanismerne ved organisatorisk genkendelse og anonymisering. Måden hvorved de forsøger at påvirke organisatoriske ændringer, skaber viden, kontakter og

mulighed for at lære; ved andre lejligheder benyttes en tilbagetrækningsvariant, hvor man undgår at opfylde virksomhedernes logikker.



# Introduction

## Inspirations

In popular culture, Open Source Software is often perceived in relation to the Microsoft products—namely, court cases about limiting users' freedoms and competition on the market as well as discussions about the superiority of Linux-based systems over Windows. Although in operating systems for personal computers, Windows and other proprietary software still dominate most of the market, when considering industrial use as well (servers, etc.) Open Source Software plays an important role. Moreover, this proportion is changing in favour of the latter.

From the historical perspective, the software development sector has been ruled by two alternative approaches that are not technology dependant, but (socially) constructed around different logics. Many traditional business corporations, like Microsoft, build their R&D mostly on in-house solutions. The close-innovation models together with the institution of intellectual property rights secure their source code from misuse and illegal copying. However, this is not the only development model existing in this industry. The alternative perspective on building software solutions is an Open Source philosophy, which is based on free access to the source code, giving users the possibility to make changes and introduce innovations from the broad community of developers. Because Open Source Software is a major part of the today's technology economy, it can be neither underestimated nor ignored by business-oriented organisations.

The co-operation between business and the Open Source community programmers seems to be inevitable for those companies aimed at moving from close to open innovation models. The world's intelligent people are not members of any single team, but are distributed throughout various organisations, whose

boundaries are not as fixed as may be perceived. Customers and users can easily contribute to a company's R&D processes with their explicit and tacit knowledge. One of the possibilities for the mutual benefits is the Open Source community, in which businesses and (semi-) independent coders may work on the same project. Consequently, big companies like IBM or Intel have been trying to incorporate open innovation models for years in order to strengthen their creativity and profits (for open innovation, see for example, Chesbrough, 2006; Chesbrough, Vanhaverbeke and West, 2006).

Such co-operation is especially interesting in the setting of Open Source Software (OSS) communities, where contributors / coders participate both as private persons and as companies' employees. This creates a situation in which groups ruled by competing logics are to work on the single OSS project and raises a question of possible bases for this co-operation.

This research project aims to understand how organisations can function and survive at the intersection of several conflicting institutional logics. The boundary organisations that deal with such paradoxes are addressed in neo-institutional theory and business literature as hybrid organisations. Most current literature on hybrid organisations concentrates on formal and structural issues of governing and funding mechanisms or fulfilling goals (Koppell, 2003; Boyd *et al.*, 2009). Although the existence of hybrids is noticeable in the academic research, they have not been the subject of extensive studies, and no coherent or overall approach has been developed. As such, they still pose important theoretical and practical questions.

This dissertation, based on an institutional logics perspective, focuses on the particular example of the Nokia corporation and its involvement in Open Source Software development. Since Nokia has traditionally been a business-oriented organisation that has moved towards open collaboration, it has also encountered important hybrid structure dilemmas. As in other similar examples, the situation of logics coexisting in the single field posed a problem of partners' legitimisation to satisfy contradictory institutional, organisational, and individual requirements. Thus, this dissertation analyses the following research question:

*How are the conflicting institutional logics dealt with in a hybrid organisational form?*

As such, this dissertation aims to develop an understanding of organisations as a place where conflicting logics meet and practices allow them to co-exist. The discussion examines the research question in three papers focusing on knowledge

management and the Open Source - business model, trust relations, and identification issues. Three dilemmas are present in the hybrid organisations: sustaining conflicting logics as a basis for organisation creation and knowledge integration, ensuring successful collaboration among diverse participants, and dealing with identity choices at the organisational level.

This study demonstrates that hybrid structures exist in not only public-private partnerships, but also other settings (e.g., hi-tech industry and software development). Moreover, some of these are part of the mainstream corporate world and have been adapted or trying to adapt to new opportunities. To gain profit and stay on the market, they become involved in the production of public goods and allow missionaries of this approach to enter their premises, thereby changing the balance in the corporate world. Consequently, the logics try to fight for legitimacy on different fronts. This study aims to explore this gap by contesting that people constantly have contradictory logics from which to choose and with which to deal; they must maintain the balance between them. The problems and practices of overcoming them are explained by analysing collaborations in terms of the evolving hybrid organisation.

## **Disposition of the thesis**

The dissertation consists of three academic papers and the cover chapter. The first introductory part provides the theoretical background and broader description of the data-collection and data-analysis methods used during the field study. The theoretical subchapter provides an overview of the background and the issues addressed in the research, which includes connecting the theories and concepts of contradictory logics and its effect on the studied setting (i.e., the Open Source - business collaboration). Furthermore, the consequences of the institutional duality for the organisations and individuals are considered. In this section, the state-of-the-art literature review about organisations incorporating different logics is presented. This leads to the main frame of reference for the thesis, which is the concept of the hybrid organisation. The conflicting logics approach and organisational hybridity constitutes the theoretical framework for understanding the Open Source-business collaboration.

The results of the empirical case analysis are presented in three papers, which raise three important issues related to the Open Source-business hybrid. The first paper - *Knowledge Integration and Organisational Principles of an Open Source-Business Hybrid* - gives an overview of the Nokia business model for knowledge and organisational integration. This part focuses on the linkage between OS and the business model and how this influences the organisational model itself, encouraging decoupling strategies observed in other settings or even dual organisational hypocrisy.

The second paper - *The Two-dimensional Taxonomy of Trust in an Open Source-Business Collaboration* - highlights the trust problem in the Open Source-business setting. The relations between Nokia and two types of external collaboration networks indicate the role of politics and expertise in the dual logics environment and leads to a two-dimensional taxonomy of trust. This creates a specific foundation for collaboration, where creating and sustaining interpersonal and inter-organisational trust relations are difficult.

The third paper - *“We” and “They” in the Open Source-business Context* - focuses on the mixed identity issues. Observed hybridity in developers’ professional identity constitutes a means for reconciling tensions among ideological standpoints to create a path in which one is both an organisational and community member.

# Theoretical background

This dissertation is placed within the interpretative paradigm and the social constructivist epistemology. Interpretative sociology is rooted in works of German idealists, but has mostly been shaped and influenced by phenomenology and hermeneutics; it sees the social world as being in a continuous process of reaffirmation or change. The interpretative paradigm is based on the assumption that “the social world is no more than the subjective construction of individual human beings who, through the development and use of common language and the interactions of everyday life, may create and sustain a social world of intersubjectivity shared meaning” (Burrell and Morgan, 1979/1997:260). Everyday life is interpreted by people and the subjectivity that is meaningful to them. Meanwhile, the world of everyday life is taken for granted as reality by ordinary members of the society in the subjectively meaningful conduct of their lives. Common sense contains pre- and quasi-scientific interpretations of all events and interactions. To describe the common sense reality, it is necessary to consider the taken-for-granted character within phenomenological brackets. Reality per excellence (i.e., reality of everyday life) is normal and self-evident, ordered, objectified, and organised around the here and now.

Following Berger and Luckmann (1966/1991), this dissertation asserts that language is an important system of human society because it is essential for understanding everyday life. Language is inevitably connected to the social stock of knowledge. Social distribution of knowledge originates in the fact that people do not know everything known to others and vice versa. This results in systems of expertise, which embrace types of social actors (roles). The world becomes subjectively real to humans in the process of the internalisation of roles. They represent the institutional order and are mediators of sectors of the common stock of knowledge. Institutional theory develops these aspects even further by revealing established social structures and their influence on human behaviour. Institutionalised rules, according to Berger and Luckmann (1966/1991:72), are shared “reciprocal typifications of habitualized actions [that] are built up in the course of a shared history by types of actors interpretations”. Meyer and Rowan

(1977) emphasise that institutions are also built into society classifications of reciprocal interpretations.

More specifically, this dissertation develops the heterogeneous approach in neo-institutional theory (Haveman and Rao, 1997; Thornton and Ocasio, 1999; 2008; Kitchener, 2002; Seo and Creed, 2002; Reay and Hinings, 2005; 2009; Lounsbury, 2007; Green Jr. *et al.*, 2008). Changing social relations within and between institutions leads to producing new truths, new models, and a new form of behaviour and material practices. This dissertation goes along with Friedland and Alford's (1991) conclusion that social analysis should primarily aim at understanding institutional logics' contradictions and how they shape organisational practices. Although many previous researchers have looked at the competing institutional logics at the field (Kitchener, 2002; Reay and Hinings, 2005, Greenwood and Suddaby, 2006; Lounsbury, 2007) or industry levels (Thornton and Ocasio, 1999; Thornton 2002; 2004), the current work focuses on drawing conclusions at the organisational level while simultaneously applying nested-level analysis (Friedland and Alford, 1991).

This chapter explains the theoretical foundations of the study, starting by framing this dissertation in the institutional literature—especially within the concepts of logics. It examines how a dialectical perspective informs the institutional theory about the fact that legitimacy, adaptation, conformity, and isomorphism can lead to stability but can also produce institutional contradictions. Linking these framework concepts together provides a context for understanding institutional heterogeneity and its impact on organisations. Therefore, the idea of hybrid organisation is introduced. This includes a literature review that acknowledges the co-existence of conflicting logics and the effect at the organisational level. Both early writings on the topic, concentrated primarily on forms of business alliances (external hybrids), and more recent research that deals with internal hybridity are presented, followed by a conceptualisation of the Open Source-business collaboration in terms of both competing logics and the creation of a hybrid organisation. Finally, the framework used to understand the case study is summarised, and three emerging research topics that became the cornerstones of the analysis are presented: hybrid business model for knowledge integration, trust, and identity.

# Institutions and logics

The institutional theory focuses on understanding the main social structures and highlights the role of norms, rules, and typifications. Earlier contributions explained how institutions secure stability by shaping organisations, fields, and identities. In addition, institutional change was previously understood through institutional diffusion and sustainability and studied to explain how people and groups start to behave alike. Understanding institutional dynamics at the organisational level comes mostly from the concept of legitimacy. Internally, legitimacy justifies who has the power of control and co-ordination; externally, it influences which organisations can gain access to resources. Legitimacy does not refer to what is best and most efficient; rather, it refers to perceptions and assumptions of what is desirable, appropriate, good, and valid (DeJordy and Jones, 2008). Legitimacy creates a connection between institutional arrangements and the shape of organisational and individual practices and routines (DiMaggio and Powell, 1983). It is the force that pushes for organisational changes or efforts to sustain the status quo. Not surprisingly, since 1995, social science literature has shown growing interest in exploring this phenomenon (Deephouse and Suchman, 2008). The main contribution of such studies was the development of the isomorphism explanations of the fact that organisations tend to apply similar solutions—not necessarily for efficiency reasons, but just to gain legitimacy (Scott, 1995). However, the concept of one central and dominant logic had its drawbacks as it put too much emphasis on uniformity.

Recently, the emphasis shifted to investigate institutional heterogeneity and its role in social change (Delmestri, 2008). Moreover, the focus moved from the macro level of analysis to cross-level studies, in which a clear link between individual and social institutions was made. This follows Friedland and Alford's (1991) argument that most institutional theories focus on organisational homogeneity without contesting why the institutional arenas are patterned in a certain way and what conditions shaped the institutional forms while they were developing. However, institutions are both material and ideal, non-observable symbolic systems and observable social relations, rational and transrational supraorganisational patterns of human activity through which individuals and organisations (re)produce this materiality and organise time and space. Therefore, equally important for understanding the institutional influence on organisations

and individuals is to be able to refrain from totalising the view of social institutions and see that individuals are often exposed not to one, but to several co-existing and rivalry logics. As such, institutional changes are also material and symbolic: “Institutional transformations are therefore associated with the creation of both new social relationships and new symbolic orders” (Friedland and Alford 1991:250). What ultimately leads to change is the ideas and sense-making of organisational practice, new language, new explanations, and actions (Cooper *et al.*, 1996). Meanwhile, it is noticeable that individuals, groups, and organisations try to use institutional orders to their advantage. Particularly important is the fact that individuals and organisations are recognised as being able to transform the institutional relations by exploiting potential contradictions and multiple logics:

“When institutions are in conflict, people may mobilize to defend the symbols and practices of one institution from the implications of changes in others. Or they may attempt to export the symbols and practices of one institution in order to transform another.” (Friedland and Alford 1991:255)

However, beyond isomorphic explanations, it is also observable that in the long run institutionalisation has its by-products that have become sources of contradictions. These contradictions both enable and constrain institutional changes. Such inconsistencies arise for two main reasons: (1) maladaptation, which is linked either to a lock-in in present structures and inability to further adapt or to isomorphisms that contradict efficiency or divergent interests within organisations, and (2) at institutional level, the lack of one dominant regime that is valid in every situation (rather, various contradictory logics are available).

Similarly, Seo and Creed (2002) propose four sources of institutional contradictions: (1) legitimacy at the expense of efficiency, (2) adaptation lock-in, (3) isomorphism that conflicts with divergent interests, and (4) inter-institutional incompatibilities. First, isomorphism as a result of striving for legitimacy may help organisations secure the necessary resources, enhance their reputation, and increase survival chances. However, complying with institutional arrangements may still remain in contradiction to common sense of technical efficiency (Meyer and Rowan, 1977; Scott and Meyer, 1991). Logic of efficiency requires diverse and customised solutions, whereas institutional rules are general. The gap between institutional and efficiency needs becomes the source of contradictions and often leads to selective decoupling of formal structures from technical activities that may be possible starting points for change (Meyer and Rowan, 1977). Second, sometimes successful adaptation to institutional requirements—although



increasing legitimacy—may cause the organisation to be less adaptable in the future. Once structure or practice is institutionalised, it may be taken for granted, perceived as natural, and unquestioned (Berger and Luckmann, 1966/1991; Powell, 1991; Zucker, 1991). Psychological and economical lock-ins in the present institutional order lead to a lack of response for environments, which then leads to accumulating contradictions between them. Third, since the dominant institutional order tends to reflect the dominant group's interests, actors who are unhappy with such arrangements are potential change agents or even institutional entrepreneurs (Battiliana, 2006; Greenwood and Suddaby, 2006).

Finally, the dialectical perspective used by Seo and Creed (2002) asserts that institutional phenomena are seen as produced and reproduced in various locations and levels, to a certain extent autonomously from one another. This makes the co-existence of several institutional logics possible, which can support, depend on, or weaken each other (Friedland and Alford, 1991; Thornton, 2002; 2004). Individuals and organisations conform to different institutional arrangements at the same time, thereby creating inconsistencies with behavioural expectations at different levels and sectors of society. Seo and Creed (2002:283) propose that:

“The degree and number of interinstitutional incompatibilities increase the likelihood of praxis for institutional change by increasing the number of frames and logics available for the construction of alternative models of institutional arrangements capable of legitimizing and mobilizing change efforts. This effect will be mediated by actors' skills at adopting and deploying the available institutional logics and frames in legitimizing and mobilising their change efforts.”

All institutions have their central logics (i.e., practices and symbolic constructions that serve as organising principles). Individuals and organisations have many available institutional logics upon which to elaborate, modify, manipulate, and act. They indicate means by which valued ends can be achieved (Friedland and Alford, 1991). As Lounsbury (2007) points out, the concept of logics refers to broader cultural beliefs and cognitive patterns that guide decision making in the field. The current thesis follows Thornton and Ocasio (1999: 804), who emphasise the connection between individual agency and socially constructed structures, defining institutional logics as “the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality”. Therefore, the institutional

logics approach differs from neo-institutionalism by shifting the focus from isomorphism to the heterogeneous view of institutions and the effects of differentiated logics on individuals and organisations. It links the macro structural perspective and micro process, providing a connection between institutions and actions (Thornton and Ocasio, 2008).

According to the logic perspective, society is an inter-institutional system. Each of institutional sectors requires a different set of human and organisational behaviours. According to Thornton (2002; 2004,) six key logics exist in society: the market, corporations, professions, the state, families, and religions. To fully understand how logics work, travel, and are reinstitutionalised, it is important to include in the analysis the ideological interest-laden component (Delmestri, 2009). This dissertation takes a closer look at the intercession of the corporate, business logic and the Open Source Software, professional logics. The corporate logic is rooted in managerial and business ideology; as such, it not only focuses on the economic outcomes, but also incorporates the managerial discourse, corporate career-building strategies, and authority within hierarchy. The professional logic of an OSS developer values creativity and expertise, but also freedom and access to knowledge—the main components of Open Source ideology. From default positions, institutional logics in the professions are antithetical to the goals and acceptable means of corporations (Thornton, 2002).

The next section of this chapter will concentrate on sources and possible outcomes of the institutional contradictions and multiple logics to introduce the concept of hybrid organisation as their mezzo meeting point.

## **The outcomes of institutional contradictions**

What is seen as rivalry and competition at institutional level can be transformed into collaborative activities at the organisational level. Even if many different logics are available for various organisational participants, it is necessary for people to manage their interests; otherwise, organisational goals cannot be obtained.

Greenwood and Hinings (1988) argue that organisations can exist in three main states: archetype coherence, embryonic archetype (moving towards archetype coherence), or schizoid incoherence. Contrary to many other conceptualisations, this assumes that incomplete de-coupling can occur without complete re-coupling; thus, the organisation as an intermediate category can remain for a long period of time. As Greenwood and Hinings (1988) admit, such unresolved transformations are very important, but are too often a neglected track of organisational change.

Whenever competing logics are active, the change may happen and a new or modified institution can come onto the scene. Therefore, a significant amount of research on institutional logics has focused on the quite linear processes of shifting from one dominant logic to another (Haveman and Rao, 1997; Thornton and Ocasio, 1999; Lounsbury, 2002), particularly when managerial logic was introduced in the setting previously dominated by professional logic (e.g., Kitchener, 2002; Thornton, 2002; Suddaby and Greenwood, 2005; Reay and Hinings, 2005). An interesting example is giving by Schneiberg (2007), who analyses the role of the fragmented institutional environment and multiple logics in shaping change in the American economy in the first half of the 20<sup>th</sup> century. However, instead of looking for commonly invoked exogenous shocks or the transposition of logics across national systems to explain institutional change, Schneiberg demonstrated that within an established order there are possibilities and resources for transforming the off-path organisations, rather than simply following trends.

These works presented the outcomes of competing logics as a transitional step before institutional order once again stabilised (i.e., a new dominant logic). Yet organisational transformations are not necessarily linear. In practice, oscillations and delays often happen, and sometimes unresolved hybrids become sustainable organisational form (Greenwood and Hinings, 1988). One of the first steps towards overcoming linear perspective was made by Cooper *et al.* (1996), who argue that—when the new logic comes onto the scene—a shift between organisational/business models does not happen instantly; instead, they two models overlap until one of them becomes dominant. Thus, it is not just a simple shift. Models (“archetypes”) are sedimented (“lying down of one archetype on the top of another”, “intermingling” p. 624). Similarly, according to March and Olsen (2009:15), “in fragmented, or loosely coupled, systems, competing rules of appropriateness may be maintained over long time periods due to their separateness.”<sup>1</sup> In line with this,

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<sup>1</sup> Their logic of appropriateness is parallel to taken-for-grantedness.

Borum and Westenholz (1995) highlight the special role of actors in maintaining and changing organisational fields.

Nevertheless, not many studies have examined fields in which multiple logics coexist for the longer term and how they affect organisational practices. A few exceptions are noted here. For instance, Glynn and Loundsbury (2005) show how the clash of market and aesthetic logics in the symphonic orchestra, followed by conflict and finally strike, led to a blending of those two logics. Interestingly, this not only happened at the organisational level, but also influenced critics in their reviews. Reay and Hinings (2009) discuss four mechanisms used for managing co-existing competing institutional logics during healthcare reform in Alberta: differentiating between decision types (medical and others) and who is involved in the process, seeking informal input from the physicians in the decision-making process, working together against the government, and joint innovating in experimental sites. However, Glynn and Loundsbury (2005) fail to explain how exactly the logics are blending while Reay and Hinings (2009) give a detailed but very contextualised example of such mixing logics' collaborative mechanism without comparing findings or developing findings generalisable to other settings.

In the organisational field, organisations have to respond to and exist between contradictory logics; these are hybrids. Previous studies on hybrid structures have focused primarily on the private-public dilemma in organisations with a strong social mission, concluding that they ultimately encounter problems of growth and are based on very close, private relationships among members who believe in their mission (Boyd *et al.*, 2009). The following sections will discuss hybridity as an organisational phenomenon, referring to the Open Source-business setting.

## **Hybridity as an organisational phenomenon**

Hybridity in the business literature seems to be quite a broad topic, covering various aspects of organisational life and managerial issues. The term hybrid organisation emerged in the field of new public management together with an idea

of creating a mixture of profit and non-profit structures in which competing motives, balanced missions, and market needs (duality of objectives) are directed towards simultaneously creating social and economic value (dual value creation) (Alter, 2007). Rainey (1996), Koppell (2003), and Karré and Ribeiro (2005) have discussed the phenomenon of organisational hybrids of public-private enterprises, or social enterprises. However, the hybrid organisation is not only a mix of public and business organisations; it is a wider organisational concept based on a postmodern perspective of organisation theory. “Hybrid may occur either because designer deliberately mix forms in an attempt to blend the advantages of two or more different types or because the organization is changing” (Hatch, 2006:303).

Hybridity may refer to the creation of dynamically mixed cultures (Cohen and Kennedy, 2000). Sociologists and anthropologists, who use the expression ‘syncretism’ to refer to such a phenomenon, have long observed the evolution of commingled cultures from two or more parent cultures or transgressive acts challenging one of the cultures (in postcolonial studies). Therefore, hybridity is also a “cultural phenomenon [and] organizational form that operate in the border area between state and market and which have to combine conflicting cultural orientations” (Demil and Lecocq, 2006:3). Hybrid organisations have to combine conflicting values because they have multiple external relations and usually operate in the border area between different worlds (as in the state and market). However, hybridity does not mean that a mixture of cultural orientations, as separate cultures in hybrid organisations, is still recognisable, which is why hybrid organisations have to deal with powerful tensions that arise from the combination of conflicting sense-making patterns. It is a continuous struggle to keep all the paradoxes under control.

Similarly, organisational hybrid may be seen as having divergent or even competing identities. Puff (2000) refers to hybrid (identity) as a paradox structure—namely, identity and alterity in the same time—because identity is always inhabited by the Other and by many voices. Thus, hybridity leads to the concept of some kind of polyphonic structure that bears one or more frontiers in itself; at some point, building boundaries around itself becomes of secondary importance. Albert and Adams (2002: 35) define the hybrid form (organisational identity) as having three major characteristics: It is inviolate (no element of a culture can be compromised), incompatible (the different orientations cannot melt into a single culture) and indispensable (is not possible to get rid of one of the identities).

Organisational hybrids may grow in the process of implementing institutional hybrids. Managers can purposively re(design) new organisational constructs (e.g., corporate social responsibility) by translating it into their corporate or field contexts. As Boxenbaum (2006) argues, what she calls institutional hybrids are a combination of heterogeneous “means-ends frames”. Institutional building blocks can be taken from foreign or local institutions or recombine different logics, selecting pieces based on their perceived superiority in solving a particular problem. Institutional hybrids are “malleable entities”; that is, they can be easily rebuilt to fit new fields or contexts as actors can replace institutional blocks and incorporate new components into existing ones when they see fit. In this process, it is important to balance between novelty and familiarity.

A review of the literature on hybrid organisations reveals a very differentiated understanding of the concept. Although it seems that no consensus exists on how to define organisational hybrids, the key elements for their definition is to recognise that they are combinations of disparate elements that represent modes of adaptation to environmental uncertainty (Minkoff, 2002). This dissertation refers to and defines hybrid organisation according to categories in which Kraatz and Bloc (2008:243) describe the organisation facing institutional pluralism:

“The organization confronting institutional pluralism plays in two or more games at the same time. Such an organization is subject to multiple normative orders, and/or constituted by more than one cultural logic. It is a participant in multiple discourses and/or a member of more than one institutional category. It thus possesses multiple, institutionally-derived identities which are conferred upon it by different segments of its pluralistic environment.”

Thus, hybrid organisations are those organisations that reflect institutional heterogeneity at the mezzo level. They are a combination of different approaches rather than a simple mix of them (Karre and Ribeiro, 2005).

The main typology divides hybrids into two categories: external and internal. This distinction depends on where the boundaries are drawn in the organisational field. The external hybrid indicates that two or more legal entities decide to cooperate based on the idea that neither falls into the pure market or pure hierarchy structures. On the contrary, internal hybrids come into existence when a single legal entity (an organisation) has to deal with at least two contradictory governmental mechanisms or organisational arrangements.

## External hybrids

External hybrids are created whenever two companies remain legally separate entities but closely co-operate and co-ordinate their activities over the long term (Martin, 2002). In other words, they may be considered as forms of (sub-)contractors (Shane, 1996). Sometimes they are called “strange forms” (Ménard, 1996) or “quasi firms” (Blois, 1972). Classical examples of such structures are equity joint ventures, long-term collaborative procurement arrangements for components and technology, extended licensing, etc. Depending on the character of the competitive-collaborative relationship between partners, the hybrids can be horizontal (among rivals) or vertical (among complementary buyers and suppliers). According to Powell (1987), the factors explaining the diffusion of external hybrid organisational forms are better fit/adaptability to changing markets, organisational limits of large organisations, growing importance of speed and information, and “generalized reciprocity” resource allocation model (mutually supportive actions, trust relations; p. 82). At the same time, they can lead to restricted market access for newcomers, fears about partners performing according to expectations and benefitting accordingly, and possibilities of misperception of partners’ actions.

## Internal hybrids

Zenger (2004) defines internal hybrids as organisations having mixed governance mechanisms (i.e., originally, hierarchies infused with elements of markets). Powell (1987) points out two traditional organisational arrangements—the formal organisation ruled by authority relations (hierarchy, the state) and markets (contractual, non-bureaucratic relations)—and a hybrid one: a network form (partnerships, joint-ventures, outsourcing). However, networks are currently no longer considered to be hybrids; they are one of the types to be mixed with the other governance forms (Powel, 1991; Mitronen and Möller, 2003; Demil and Lecocq, 2006). Several examples have been studied. For instance, Mitronen and Möller (2003) discussed the case of a retailing firm as an example of a hybrid organisation (i.e., simultaneously having market, hierarchy, and network governance modes). Another interesting case is identified by Karre and Ribeiro (2005), who claim that—in the Dutch public sector—hybrid organisations are always successfully present and the need exists to keep them like that. In addition,

multi-purpose organisations, which deliberately combine volunteer-run associations, social movements features, and a third sector expressive of civil society (Hasenfeld and Gidron, 2005), can be perceived as internal hybrids. Management of such organisations requires overlapping governance mechanisms (i.e., broader performance control, well-organised hierarchical structure with support bodies and good exchange of information, regular development discussions, and specified official rules and unofficial norms).

By connecting hybrid organisations to institutional heterogeneity, the external versus internal discussion lacks importance. It becomes just a descriptive typology based on the legal aspects rather than an explanatory taxonomy explaining the hybrid organisation phenomenon. The main task for researchers—as well as this dissertation—is to understand how the conflicting logics affect the organisation and how this is maintained in the hybrid form.

## **Derivative forms of hybridity in Internet-mediated work environments**

Among organisational hybridity discussions, within Internet-mediated work environments, concepts emerge that have both intra- and extra-organisational elements: hybrid workspaces, hybrid innovation, and hybrid consumer. All are connected to the growing accessibility and usability of the Internet as a communication medium. First, hybrid workspace is a spatial arrangement of work, which is multiply located. Halford (2005) explains that the work is not only dislocated (e.g., working at home), but also relocated (working virtually). Introducing hybrid workspaces may positively affect the collaborative process. As Halford (2005) argues, people existing in hybrid workspaces are trying to maintain two distinctive sets of practices (what and how work is done) and extending private communication spaces (personal and organisational purposes). At the same time, managers tend to focus on building more personal relations with their subordinates both virtually (extended communication) and in proximate space (interpersonal engagement).

Second, the hybrid innovation concept is derived from the Open Source field mixed with business research and development logics. According to Ulhøi (2004),



this innovation model is crossed with private and collective models of agency. In the middle of the closed-open source continuum (private-collective continuum), we have hybrid models of agency in which economic and reciprocal social exchanges occur and multiple motives drive work to be done. Similarly, von Hippel and von Krogh (2003:209) write about the private-collective innovation model, which “contains elements of both the private investment and the collective action models and can offer society the ‘best of both worlds’ under many conditions.” This requires an ideological switch as traditional “pay” as a reward for private propriety cannot be maintained (at least, not fully). The outcome of such innovative actions is a quasi-public, quasi-private good. In the Open Source-business hybrid, all these elements are also present at the one time. Hippel and von Krogh (2003) point out two ideological differences between proprietary and OSS: innovators are software users rather than manufacturers and they freely reveal the outcomes of their work/innovations for further development.

This leads us to the concept of the hybrid consumer or consumer-innovator integration. Hybrid consumers (centaurs) use the Internet and new technologies (Wind *et al.*, 2002). In this regard, the demands for centaurs are related to the convergence challenges for marketing units: desire for uniqueness, personalisation bent towards customerisation, the desire for social interaction along with involvement in virtual communities, the desire for convenience that creates the need for building multiple communication channels options, the desire for value opens space that reshapes pricing strategies, and finally the desire to make better decisions to give companies the possibility to put more choice tools in the hands of customers (i.e., how to balance biased and unbiased information). Accordingly, OSS developers are both producers and consumers of their programmes.

All three hybrid aspects influence and support the creation of the OS-business hybrid organisations. Although hybrid workplaces are part of the Internet-mediated collaborative setting, this is in particular an open innovation concept in that hybrid customers turn close-coded business models upside-down and serve as incentives large enough to try to form a hybrid business model. The discussion about differences between ideal types of institutional logics is the topic of the next section.

# Towards the Open Source - business Hybrid

Open Source challenged the traditional business orientations based on keeping the intellectual property rights to the developed software. Although the core logics of the Open Source Software movement are open standards, business has long been focused on offering only right-to-use licences. While Open Source emphasised flexibility in supplier choice by giving the source code to users, business strategy usually aimed at building market power through dependence on a particular supplier by locking in the contracts (Weber, 2004). Open Source made it clear that securing exclusivity of profits and advantages of the products/outcomes was not the only incentive for R&D:

“[...] the motivations to use copyright as the legal basis to exclude others, and as the legal basis for an open source approach, differ. In the first case, the incentive effect derives from the copyright holder’s ability to prevent imitation. In the second case, the incentive effect derives from the advantages enjoyed by a community of contributors to a larger creative effort.” (Davis, 2006:136)

Kuan (2001:2) claims that OSS is an identified, “increasingly important business model” in which transactions take place over the Internet and “no money changes hands between developers of the software and the users of the software (who may be one and the same)”. This may be a bit too simplistic (or idealistic) view of the Open Source field, which also became a contractual or employment opportunity. Ultimately, various motivations came into line, including earnings or profits. For a company, the decision to participate in OSS or not is not an easy one. Both open and closed source software models have their problems. Open Source is like free-riding and other externalities, but in the statistical test OSS has a higher rate of quality upgrades and bugs being fixed faster. Open Source as a movement is meritocratic, which makes it both very professionally oriented and hard to manage. It is more like an emerging system than one driven by strategic choices.

Based on the literature discussed herein as well data gathered within this doctoral project, the following Table 1. summarises the key differences between Open Source and corporate business logics. Here, logics are treated as a far end option of the wide spectrum between the open and closed code approach. They are

presented as possible choices grounded in specific institutional regimes rather than ideal types.

**Table 1: Open Source logic versus corporate business logic**

<b>Dimension</b>	<b>Open Source logic</b>	<b>Corporate business logic</b>
<b>Main characteristic</b>	Meritocracy	Managerial capitalism
<b>Identity</b>	Hacking as a profession	Software development as an industry
<b>Legitimacy</b>	Through personal reputation and quality of work	Through market position and economic performance
<b>Authority</b>	Project founders, core developers, personal networks	Organisational hierarchy
<b>Mission</b>	Creating and releasing Open Source Software of uncompromising quality	Building a competitive advantage and strengthening the strategic position
<b>Attention</b>	Gaining users and developers	R&D to boost sales and generate profits
<b>Strategy</b>	Emergent system	Growth through acquisitions, subcontracts, networks, and the building of recurring clientele
<b>Logic of investment</b>	Building professional prestige	Building wealth and a career path

Feller and Fitzgerald (2002) divide Open Source Software companies into two groups: pure-play and hybrid companies. The purely OSS business model is represented by Red Hat, Suse, Linux mandrake, VA Linux, etc. Hybrid companies are those that mix proprietary and OSS business models, such as IBM, Apple computers, Dell, and Sun Microsystems. According to Bonaccorsi *et al.* (2006), the large majority of companies follows a hybrid business model, not a pure Open Source one (i.e., they are mixing products, license types, and revenue sources).

Similarly, Demil and Lecocq (2006) note that—with the emergence of the Internet, which enabled vast communication and extensive resource sharing, and the development of software production sites—new forms of relationships between (economic) actors have developed, resulting in specific business models/organisational structures being connected to this phenomenon. In this point, the Open Source literature adds a fourth option to the market, hierarchy, and network governance structures: the bazaar (Raymond, 1999). The central issue of

bazaar governance is the open licence institution. Bazaar governance is characterised by residual uncertainty due to low intensity of incentives and weak control. For sponsors, that means that it is unclear whether any transaction with adopters succeed, as the project may fail to attract people, there might be a time gap between releasing the open licence and the commencement of the body of transactions with adopters, only a few adopters become real contributors, no contributions are predetermined (no formal division of tasks), and/or the quality level of contributions is not secured. The potential advantages of this form include cost-effectiveness, a great number of contributors, and the reinforcement of positive network externalities. In the same time, Bonaccorsi and Rossi (2003) claim that these new business hybrids are solving some of the general Open Source movement problems, such as:

- enabling more reliability and usability by providing complementary services;
- providing funds, especially for working on unattractive elements of the projects; and
- guaranteeing future existence of the projects (prolonging product lifecycle).

The OS movement entering the business field fostered the emergence of hybrid business models as different logics clashed and appropriate organisational solutions needed to be implemented. Two methods of involvement emerged: general “support” firms (licensing additional services and tailoring solutions, consultancy, maintenance or training for OSS) and corporate hybrids, which take advantage of the ability to open source some of their own codes and/or participate in external OSS projects.

## **Framework for understanding Open Source - business collaboration**

Several aspects of hybridity are relevant for the OSS community-business field. Primarily, the Open Source business is a field in which competing logics are mixed and coexist in organisations. As such, OS-business hybrids are an interesting field for the observation of institutional logic contradictions. Institutional hybridity, mixing institutional backgrounds, proprietary–open philosophy of actions, private–

public good production, and business–community focus, leads to the creation of different practices that influence future models of governing and development patterns of organisations. Hybridity can take both an internal and external form. Internal hybrids are pushed from the external hybrid requirements (as the “traditional” business units seem to be unprepared to co-operate with outside partners). Corporations involved in the Open Source movement are pulled to hybridise their practices and introduce new, often informal hybrid structures. New managerial and strategic challenges arise from this decision, such as requirements for different modes of co-ordination, control mechanisms, and the translation of business practices into OSS platforms and vice versa (organising open source business–governance) both within and outside the organisation.

The literature on Open Source business opportunities is concentrated on how OS ideals are different from pure business orientation and how they change general relations within projects. Too much attention is put on anonymity and self-regulating coordination mechanisms, where many projects are very much hierarchical and decision-making is concentrated in the core-developers group. Moreover, business is not only influenced by Open Source standards, but also touches the whole field. Thus, an opposite process should also be adopted: making OSS a business. The question then becomes how a corporate body can become an Open Source-business chameleon and use Open Source logics to engage in business as usual—and if it is even possible.

Three topics are emerging as a result of the intersection of the heterogeneous institutional approach with the hybrid organisation concept and OS collaboration. These issues are the result of both theoretical and empirical investigations and are covered by the papers constituting this dissertation. First, the purpose of the creation of an OS-business hybrid is to enable **knowledge integration**. As previously mentioned in this chapter, an open innovation becomes a new important paradigm for industrial research and development. Consequently, the innovation processes occur at the interspaces among diverse groups and organisations (Swan and Scarbrough, 2005). Organisations that want to take advantage of a new paradigm to strengthen their creativity and profits (Weber, 2004) should make use of both internal and external ideas and paths to advance their technology and systems (Chesbrough, 2003; 2006) as well as enable customers and users to contribute their explicit and tacit knowledge (Polanyi, 1966) to a company’s R&D processes. The commonly known field in which such open innovation takes place is OSS. Open Source has become a growing part of software production projects. Existing literature suggests that the open innovation model offers many

opportunities, but also bears serious risks. A fully open R&D process makes a company more vulnerable to its competitors. Revealing the technicalities of new products may lead to minimising competitive advantages, which is why companies often decide to create a hybrid of Open Source and business models (Feller and Fitzgerald, 2002; Bonaccorsi *et al*, 2006). Since both models are rooted in two competing institutional logics, the need exists to reconcile between conflicting values and orders. To gain credibility as an Open Source partner and still be part of a corporate structure (resource dependency), organisations and their participants have to structurally and informally react to different logics of action. Chesbrough (2006:33) claims that “the loose coupling between the innovation process of the firm and its business model invites close examination of this coupling.” In line with this argument, this dissertation raises the problem of how the Open Source-business hybrid model is structured to enable internal and external knowledge integration as well as how the problem of legitimacy in both worlds is solved. One of the few answers to these questions is given by O’Mahony and Bechky (2008), who claim that the basic co-ordination tasks between corporations and community-managed OSS development projects are given to non-profit foundations, which serve as boundary organisations. However, this shows just part of the truth. Foundations are meeting points for different organisations and stakeholders; thus, they are a kind of neutral arena for interest struggles. In addition, legal entities for corporations are necessary to make direct donations to the project. Ultimately, this common collaborative arrangement does not solve the internal and external problems of companies who try to mix their business perspectives with Open Source benefits. Therefore, the first paper in this dissertation fills the theoretical and empirical gap by investigating innovative activities and external contributions to the knowledge base in a particular Open Source-business project to determine how the Open Source-business hybrid is constructed of divergent logics of action elements and how this organisation deals with gaining legitimacy. The paper emphasises the importance and influence of the institutional contexts and technology used to create and shape open-network innovation platforms as well as possibilities for knowledge integration.

Second, **trust** is perceived as one of the key elements of successful co-operation (Gambetta, 1988; Hardin, 2002; Lane and Bachmann, 1998/2000) and a resource for building social capital (Rothstein, 2007). According to Child (2001), trust is even supposed to be an integrating mechanism as it generates a willingness to overcome cultural differences and work through other difficulties that arise in collaboration. Zaheer, McEvily, and Perrone (1998) emphasise that individual and

intra-organisational trust are related, but different. In particular, interpersonal trust may not directly cause better organisational performance. As the authors demonstrated in their analysis of buyer-seller business collaboration setting, it is of first importance for an organisation to recognise and trust in its partner's impersonal structures and routines while interpersonal trust will be built secondary:

“In comparison with interpersonal trust, interorganizational trust emerges as the dominant influence on ex-change processes and outcomes. The pattern of results suggests that institutionalized practices and routines for dealing with a partner organization, as captured by interorganizational trust, transcend the influence of the individual boundary spanner. In considering the role of trust in relational exchange, we argue that firms must recognize the impersonal (Shapiro 1987) structures, processes, and routines that create a stable context within which interpersonal trust can develop and persist (Heide and Miner 1992, Parkhe 1993). The stability of interfirm exchange is not created and maintained solely by boundary spanning individuals, but rather is institutionalized in the interorganizational relationship.” (Zaheer, McEvily, and Perrone, 1998:156)

When we extrapolate this conclusion in the multi logics setting, a set of questions can be posed. It is not clear what is happening when organisational inconsistencies come into play. Furthermore, it is not clear if trust still matters in the hybrid collaboration, where stability—about which Zaheer *et al.* (1998) talk—is hardly achieved. Finally, the Open Source movement is definitely focused on personal contacts and networks, which may suggest that in OSS communities an interpersonal trust can be more valued than an interorganisational trust. However, based on Zaheer *et al.*'s (1998) conclusion, in the business-oriented organisation, the opposite may be true. In addition, the literature highlights an expansive discussion about the origins of trust relations and their basis. The particularly interesting ideas are institutional, system, or swift trust (Meyerson, Weick and Kramer, 1996) and facades of trust (Hardy, Phillips and Lawrence, 1998/2000). Not much empirical evidence exists regarding what kinds of trust occur and how trust between business and private participants in OSS projects is developed, maintained, and broken. Moreover, it is important to look beyond the trust discourse and note that the Open Source-business collaboration is not free from the exercising of power and role of politics. This multiplicity of levels and forms of trust in organisational and interpersonal contacts as well as the inclusion of the power concept in this discussion leads us to the second paper, in which the

questions concerning type and origin of trust relations in OS-business hybrids are examined.

Third, while at institutional level we can describe conflicting logics, at the mezzo level there is a hybrid organisation; at the cross-section between levels we deal with the concept of **identity**—particularly with social and organisational identification. Meyer and Hammerschmid (2006:1012) closely link identities, logics, and institutions:

“[...] shifts in institutional logics can be tracked by the extent to which actors draw on the social identities derived from the competing logics. Our findings advance the understanding of hybrid logics and identities the actors construct by mixing a new orientation with more orthodox beliefs. [...] actors pick elements of a logic, thus giving the global concept a specific local flavor [...] vocabularies and accounts that actors employ to communicate their identity claims reflect such local versions of broader logics.”

Furthermore, they claim that, when changing or replacing institutional logic, new social identities need to be available and enacted by the actors at the micro level, thereby emphasising the importance of the inclusion of identity perspective to understand the existence of hybrid organisations. The hybrid identity issues were discussed within two fairly separate streams of research. One, as previously mentioned in this chapter, concentrated on the influence of competing logics in organisations and the resulting hybrid identities (Glynn, 2000; Glynn and Abzug, 2002; Glynn and Lounsbury, 2005; Reay and Hinings, 2005; 2009). The other stream explained how hybrid identities are created by individuals who simultaneously identify and dis-identify with different organisational identities (Elsbach, 1999; Elsbach and Bhattacharya, 2001; Kreiner and Ashforth, 2004; Kreiner, 2007). To fully understand these processes, we need to combine the top-down and the bottom-up approaches as well as explain the mechanisms that maintain hybrid organisational identities in the long run. This becomes the theme of the third paper in this dissertation.



# Methodology

## The ethnography-inspired case study

This chapter describes why the particular setting of the Nokia Open Source Operation, Maemo, and GNOME were selected, how access was gained (including contact details of interviewees), how interviews and observations were conducted, problematic issues that influenced the quality and type of data collected, and finally how the data were analysed.

The collection of data was motivated by the interest in the possibilities of collaborating between business proprietary and the Open Source world. This interest was further encouraged by an interview with one of the vice presidents of Nokia, who also expressed an interest in how his company is perceived among Free/Libre Open Source Software (F/LOSS) contributors. The researcher's main interest seemed to be focused on emerging business issues. The first idea about studying Nokia OS operations came from a discussion within the institutional entrepreneurs research group, when the researcher became curious about the nature of Nokia's activities and their results. Therefore, the choice of the case and research proposal was affected mostly by brainstorming activities among the researcher, Ann Westenholz, and Gregers Petersen as well as a result of and inspired by meetings with Nokia managers.

A qualitative case study focus is chosen for this research project for several reasons. The primary reason is connected to the problematic delimitation of the scope of activities studied. Business participation in OSS is not a new phenomenon, but for years it concerned Open Source-based companies. By examining Nokia activities, it was possible to observe how this entrance into the non-corporate logic and mixture of the institutional regime were interfering with the purely business world. Moreover, it was not clear how broad the scope of the phenomenon is or how much of the context shall be studied. Thus, a very broad

approach was adopted to define the research topic and explore its complexity by studying multiple sources. These reasons all make the choice of a case study valid (Yin, 2003; 2009). The focus of this study is how collaboration between business and OS partners developed and the processes sustained to carry on the business project. The main curiosity was driven by the willingness to understand this particular case and refer to other trends in the software sector (an intrinsic case study, as termed by Stake, 1995).

## **Data sources**

During the field study, the researcher maintained this research role and avoided organisational advisor/auditor role, although sometimes the researcher was asked for a professional opinion. However, to maintain access to information, the researcher decided to keep an objective and unbiased position and withdraw from even personal advice giving. The research field is highly politicised; taking anyone's side during data collection could lead to limited access to sources.

Access was gained from three different points. The first insight was enabled through an agreement with Nokia, which welcomed the research as a person observing their OS operations but without permission to delve into classified materials. This source was primarily used as a space for interviewing as unfortunately the research was not allowed to observe real-time work in the Nokia offices and had to remain only on levels of the research centre open to all visitors. The second source was all online materials, talks, and presentations on the websites connecting developers on a daily basis. The third source was participation in a set of meetings and conferences in which project contributors met to discuss and plan their work.

## **Anthropological interviews**

The first uses of interviewing techniques date back to ancient Egyptian censuses of the population. In modern times, interviewing is widely employed in clinical

diagnosis and counselling as well as in psychology testing.<sup>2</sup> Nowadays, interviews have become the primary sociological method as well as “one of the most common and most powerful ways [...] used [in order to] to try to understand our fellow human beings” (Fontana and Frey, 1994:47). According to Kostera (2003/2005), interviewing is a basic tool in organisational ethnography. Fontana and Frey (1994:56) describe the difference between a structured and anthropological interview:

“The former [structured interview] aims at capturing precise data of codable nature in order to explain behavior within preestablished categories, whereas the latter [unstructured interview] is used in an attempt to understand the complex behavior of members of society without imposing a priori categorization that may limit the field of inquiry.”

As one of the main methods of the data collection, a classical form of unstructured interview was chosen: the open-ended in-depth interview. Its nature is purely qualitative. It is more of a conversation in which both interviewer and interlocutor take part, albeit in different roles: the interviewer listens and the interlocutor talks (Kostera, 2003/2005). The main goal of this form of interviewing is to gain an understanding of others’ points of view and perspectives on the studied case. Thus, the most important thing is to develop good contact with the interviewees. Following the basic rule for conducting an anthropological interview, the researcher kept a flexible attitude and showed total attention to what the interlocutors were saying as well as what language or jargon they used.

The preliminary list of questions was prepared to initiate the conversation rather than follow them strictly. As Spradley (1979) argues, initial questions are meant to direct the answer in a story-like form and presumably give insight into the logic of practice/doing and tactic knowing (e.g., “experience” or “hypothetical-interaction questions”). The list varied, but mostly consisted of the questions like:

- Can you please introduce yourself?
- When and why did you get into Open Source software?
- What was the first Open Source project that you got involved with?
- Have you been working for any kind of IT company before?
- How did you start working for Nokia/get involved in GNOME?

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<sup>2</sup> Psychological testing based on interviews gained popularity during World War I

- Have you got any project-related position in the Maemo community; have you been accepting patches at some point?
- Can you describe your common workday?
- Can you describe an unusual workday that happened recently?
- What do you particularly like about your work?
- What is the most difficult thing about your job? What do you think is the most difficult thing about working for Nokia in your position?
- How do you manage your external and internal networks?
- Do you seek advice and information necessary for your job outside the company? How do you do that?
- What is your opinion about Nokia Open Source strategy?
- Do you think that Nokia has an open-source mentality?
- What is Nokia's policy towards Open Source contributions, including the work done in your spare time?
- What is Maemo?
- So how open is the Internet tablet platform?

In most cases, these initial questions were helpful for sustaining the conversation until the researcher gathered enough information to make a more detailed inquiry about a specific story/description made by the interviewee. The list also changed during the interview process, and its version depended on the information gleaned from other sources/interviewees and the setting.

In total, 20 formal interviews were conducted, and many informal communications followed them. The formal interviews played an important role in the study as they not only allowed access to the Nokia premises and introduction to the OS-business realities, but also established a relationship with most of the interviewees, which helped keep in touch later on.

**Table 2: Interview summary.**

No.	Main affiliation			Project involvement		
	Nokia employee	Nokia subcontractor	Other	GNOME	Maemo.org	Other Nokia OS and tablet activities
1	●			●	●	●
2	●			●	●	●
3	●			●	●	
4	●			●		
5	●			●		
6	●			●		●
7	● →	●		●		●
8	●					●
9	●				●	●
10	●				●	●
11		●	← ●		●	●
12	●		← ●		●	
13			●		●	
14			●		●	
15			●		●	
16			●		●	
17			●	●		●
18			●	●		
19		●		●		
20		●		●	●	

## Netnography

Paralleling the interviews, which were conducted on various occasions,<sup>3</sup> the research took a closer look at the virtual workspaces of the studied projects. Taking into account limitations of accessibility to informants of online groups and the fact that most communication was done in written form, the researcher also applied netnographic (or cyberghaphic—i.e., anthropology of cyberculture as mentioned by Escobar, 1994) methods. The term netnography and the concept of netnographic interpretive methodology was coined and originally developed as a research method by Kozinets (1997; 1998; 2002) and other authors (e.g., Langer and Beckmann, 2005; Sandlin, 2007). The concept was initially used as a tool for online consumer research, but it seemed to fit well with all fields in which

<sup>3</sup> More information is provided in the section on events

communication or space for work is computer-mediated, especially when studying various virtual communities or digging into sensitive research topics or when informants are difficult to recruit (Langer and Beckmann, 2005).

The online repositories of texts and discussions were used in two ways. The researcher followed the main project and Nokia company websites on a weekly basis to remain updated on the current discussions and news. More focused reading was done to get a better grasp of the particular themes, which the researcher deemed important for understanding the hybridity phenomenon in the studied context.<sup>4</sup>

**Table 3: List of regularly followed websites.**

<b>Maemo</b>	<b>GNOME</b>	<b>Nokia</b>
<i>garage.maemo.org</i>	<i>gnome.org</i>	<i>qt.nokia.com</i>
<i>downloads.maemo.org</i>	<i>guadec.org</i>	<i>nokia.com</i>
<i>maemo.org</i>	<i>planet.gnome.org</i>	
<i>wiki.maemo.org</i>	<i>news.gnome.org</i>	
<i>bugs.maemo.org</i>	<i>live.gnome.org</i>	
<i>repository.maemo.org</i>	<i>www.gtk.org</i>	
<i>stage.maemo.org</i>	<i>2005.guadec.org</i>	
<i>lists.maemo.org</i>	<i>www.grancanariadesktopsummit.org</i>	
<i>internettablettalk.org</i>		

## **Participation in events and unstructured direct observations**

The researcher participated in several meetings not only as a background to face-to-face formal interviews, but also as a site for meeting new people and making unstructured direct observations (Agar, 1980/1996) and to follow projects' development. Except for a visit to Helsinki in June 2008, which was purely intended to meet and interview Nokia developers, all other events were organised conferences, with more or less direct connection to the OS projects' work-process.

<sup>4</sup> Later developed in three distinct papers of the thesis: knowledge management, trust issues, and mixed identities.

Depending on the various characters of those events, the researcher was able to participate in both business-oriented and OS-oriented meetings to deepen the knowledge about the case. The link among all these settings was the involvement of the same group of participants. The conferences were considered as meeting points for geographically distributed participants. This is especially true about the GNOME User and Developer European Conference and Maemo Summits, where presentations of finalised projects and future plans were discussed. The following discussion summarises the events and their scope.

- June 2007: The Third International Conference on Open Source Systems (Limerick)

Every year this conference gathers academics and practitioners interested in OS development. Most research presentations are business-oriented, which created an opportunity at the early stage of the study design to get influence from praxis-related issues. The researcher also used this conference to establish contact with Nokia vice president Arii Jaaksi, discuss the most interesting research questions from the company's perspective, and advertise the research project, asking for access permission.

- May: LinuxTag2008 and the first Maemo meeting (Berlin)

After receiving formal acceptance for the field research in Nokia, the researcher contacted the PR open source manager, Qim Gil. The researcher then met Nokia people and Maemo and GNOME community developers at LinuxTag2008 in Berlin (conducting several recorded and unofficial interviews). The main achievement of this trip was establishing contacts with independent (non-Nokia people) developers, being updated in community issues (Maemo and GNOME tracks at the conference), as well as getting to know the new Nokia guide, Qim Gil.

- June 2008: Nokia Research Centre (Helsinki)

Shortly after visiting Helsinki, the researcher spent two weeks meeting with OS developers and conducting interviews in the Nokia Research Centre. Access was not granted to office space, but the researcher spent several days sitting in the main hall of the building, meeting and talking with Nokia employees.

- July 2008: GUADEC - GNOME User and Developer European Conference (Istanbul)

In July the researcher took part in the annual GNOME conference, where people from Nokia meet other OS partners. The conference was an interesting field for

observation as Nokia—as only one of the participants—was trying to advertise its participation in the project.

- September 2008: Maemo Summit 2008 (Berlin)

In September the researcher also participated in the Nokia-sponsored event in Berlin entitled the Maemo Summit, where it was possible to make observations and talk with the involved parties. Approximately 80% of the participants were Nokia employees or Nokia subcontractors, while the rest were independent developers/users.

- July 2009: Desktop Summit (Gran Canaria)

The second GUADEC offered interesting insights into the study, especially in light of recent Nokia decisions about being less involved in the GNOME project. It was also fruitful to talk with already known and interviewed developers who at this point informally shared their opinions and concerns. Since the conference combined two Linux UI projects, it was also an opportunity to see the difference between GNOME and KDE work styles.

- October 2009: Maemo Summit 2009

The second Maemo Summit had little in common with the community event and was a “classic Nokia-organised meeting”<sup>5</sup> dedicated mostly to the business partners, subcontractors, and the press, with “the community day” in the background. This was also the event where the first fully commercialised version of the Nokia tablet was presented.

- November 2009: eCom conference

This purely business-oriented event was connected to the digital economy and e-commerce and e-services. It offered an outlook on the development and profit perspectives of some proprietary software solutions.

## **“Nested” levels of analysis**

The primary aim of the empirical study is “to acquire good knowledge about phenomenon through work with the production and caution interpretation of

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<sup>5</sup> Nokia developer [2009]



empirical material” (Alvesson and Sköldbberg, 2000:257). The data gathered during this research process take the form of various texts: interview tape scripts, chat logs, forum discussions. In addition, the Internet substitutes language for physical appearance and face-to-face contacts. It is also an imagined space where narrative is facilitated by discursive interaction and imagination.

Consequently, the material analysis is inspired by hermeneutic tradition. As Czarniawska (2002:747) noticed “every reading is an interpretation and every interpretation is an association trying the text that is interpreted to other texts, other voices, other times, and other places.” The Hernadi triad (1987, in Czarniawska, 2004) is useful for understanding the conceptualisation of this process. The hermeneutic triad shows three steps of narrative analysis: explication (What does the text say?), explanation (How/why does it say so?), and exploration (What do I think about it?); according to this pattern, the empirical material is described and analysed to form theoretically linked conclusions.

In a situation where multiple, often contradictory institutions operate, individuals and organisations apply different logics; as such, the research can benefit from multilevel analysis:

“Individual action can only be explained in a societal context, but that context can only be understood through individual consciousness and behavior. We conceived of these levels of analysis as “nested”, where organization and institution specify progressively higher levels of constraint and opportunity of individual action.” (Friedland and Alford, 1991:242)

As a result of conceiving “institutions as both supraorganizational patterns of activity through which humans conduct their material life in time and space, and symbolic systems through which they categorize that activity to infuse it with meaning” (Friedland and Alford, 1991:232), this study will reflect the particular individual and organisational field embedded in contradictory institutions and logics. Understanding social and organisational practices is only possible if we refer to both (macro-level) institutional constraints and local (micro/mezzo level) translations and practices arising from and against predominating logics. Combining levels of analysis allows us to demonstrate social and organisational dynamics. Looking at both the micropractices and organisational strategies, we gain access to how institutional change can be pursued.

# Limitations and quality of data

As a result of the research method and perspective chosen, this study is empirically driven, which means that the researcher delimits the study to particular IT professionals (mostly coders/hackers) and business representatives participating in two selected OSS projects. In these groups, various stages of engagement in the projects and different interests are represented.

The chosen settings consist of GNOME and MAEMO communities/projects and the Nokia corporation, which became involved in both projects. Consequently, all descriptions as well as deduced theories (at the organisational level) refer to these three groups. The empirical material is looked upon with the institutional “cap” by placing it in contemporary OSS and intellectual propriety discourses. Considering this study as a contribution within the social constructivist approach, the researcher does not intend to formulate grand theories. The researcher does not aspire to create grounded theory (in the sense of Glaser and Strauss, 1967) nor select cases or interlocutors based on statistical or theoretical criteria. However, ethnographic methods result in thick descriptions of the research setting, allowing for interesting insights and interpretations in terms of interplay at and between micro, organisational, and institutional levels. Thus, this study is driven by (and therefore delimited to) the logics of practice (Bordieu, 1980; Czarniawska, 2001) and focused on experience.

Several issues relate to data quality; some come with the chosen methodology while others result from the particular research field. Interviewing as a method is often accused of not providing objective data. The questions asked by the researcher are always somewhat biased. The most crucial thing is to be able to hear what is important from the interviewee's point of view—not what the researcher wants to hear. The researcher should not suggest anything; even introducing new terms is a mistake. Kostera (2003/2005) forewarns against “contaminating” the field with unknown terms, when certain concepts are not originally present in the empirical field. Rather, interviewees should be allowed to choose and define their own categories.

The other problem is pointed out by Czarniawska (1999), who speaks of the problems of translating utterances as the message can be lost while decoding and recoding into different language systems. Even when translation is not necessary,

data are textualised and, therefore, never separated from the researcher (VanMaanen, 1988). A particular limitation in the current study is that the interviews and most written materials were in English, a language that is native for only a few participants. Ultimately, the researcher's aim was to minimise such disturbances and allow the reader's reflection to parallel the researcher's story (exploration) of the field. As a result, direct quotes are used throughout all three papers.

From the practical point of view, the biggest challenge in gathering data and the most significant influence on the gathered data were the trust issues. Warren and Karner (2009) argue that building trust relations is an essential step for eliminating bias. In the case of the current study, the problem was threefold. For more than six months, the researcher sought permission from Nokia to conduct this study, including interviewing their employees. In the end, the researcher was allowed to enter Nokia premises, but only to the ground floor dedicated for guests. The formal permission was similarly a limitation. This was the first sign that—although Nokia wants to be open—the company is very protective of its actions and wants to protect itself from information leaks. In this context, the researcher was a threat.

British anthropologic Nigel Barley, whom the researcher admires very much, describes his first conversational experiences in Cameroon among the Dowayo tribe as full of failures (1983/1986). His problems occurred because for many reasons,<sup>6</sup> primarily because he was a stranger to his 'field'. Being a professional stranger (Agar, 1980) while simultaneously showing understanding and involvement in community life is a hard task. It is even harder to persuade people to share stories because in many cases interviewees are so focused on communicating 'facts-as-information' and expect to be asked direct questions. The researcher in the current study was also a stranger to the people to be interviewed. For Nokia employees, the researcher was just an external entity who could ask difficult questions. For other developers, the researcher was primarily affiliated with Nokia, and it was not clear which "side" the researcher was one. Moreover, Nokia subcontractors were afraid of the non-disclosure agreements and unwilling to talk about their work. Nokia management thought the researcher could be useful as an external researcher to provide the company with objective data as well as help to promote the corporation within the Open Source world. In the end, the researcher tried to maintain as neutral position as possible and even stopped

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<sup>6</sup> The Dowayo language is a tonal one (i.e., the words change their meaning depending on intonation), which causes a lot of problems for Europeans.

sharing personal opinions with some Nokia managers in case they would restrict access if they did not like the interpretations offered.

Although people became familiar with the researcher during the almost two-year field study, the contractual and formal access limits remained. Once the trust between the developers and the researcher was built, the researcher was able to uncover many interesting stories, opinions, and facts—most in the form of private communication. The researcher also took an introductory course in programming in C++ language to better understand the setting, characteristics of the work, and its problems. On many occasions the researcher was not allowed to record or take notes and was often told not to quote people. Although full anonymity was ensured, this was not enough. In the end, to make recognition of the informants even more difficult, all three papers use just a general indication of the person's affiliation, without the possibility of linking different quotes to any one person.

Due to the restricted access, the researcher decided to apply an opportunistic sample approach for interviews. First, the researcher approached the Nokia vice president, who then forwarded the researcher to the middle manager currently holding the position of open source advocate at Maemo Devices. He recommended a couple of developers to interview. They were asked for further contacts and recommendations of other people who could contribute to the research. Meanwhile, the online materials and events for direct participation were chosen carefully depending on their importance. In most cases the researcher also used advice, recommendations, or invitations given by one of the informants.

## **The data analysis**

The initial idea of the research project was to understand the ongoing process initiated by Nokia in relation to several OS projects and possibly focus on different outcomes. As Denzin (1997:235) observed, “all texts have multiple authors and readers, or audiences”. The researcher focused on writing up the thesis papers in a way that would allow interlocutors to speak for themselves as much as possible. The research reporting is then seen as a space for different voices and interpretations, including the researcher's own. Such polyphonic description has a great value for understanding the diversity of the field. As Steyaert (2004:13) points out, “[p]olyphony builds on the idea of the utterance where speaker and

listener emerge as co-authors, recreating a dialogic relationship.” The writing of an ethnography-inspired text involves creating an story about things heard and seen in the field. The analytical process was subordinated to these goals.

Whenever possible, interviews were recorded. One of the files was unreadable, the others were transcribed. The interviews were conducted in English, except for one (in Polish). Initially, the researcher used a small tape recorder. Because of the bad quality of the recordings and the researcher’s affection for electronic data storage, the researcher started testing a digital Dictaphone. The quality recording enabled the researcher to concentrate on listening carefully during conversations and responding to new insights (Kostera, 2003/2005). Whenever recording was impossible, either during formal or informal communication, notes were made. On average, formal interviews lasted for about 50-60 minutes, depending on informants’ availability. The online search material and notes were added to the data set before analysis was started. All data ultimately took the form of various texts: transcripts, notes, printouts, and leaflets.

The starting point of the analysis was the use of the two identified logics—business and Open Source—and their association with particular actors in the field. The researcher worked interactively among interview transcripts, field notes, other texts, and relevant literature to develop appropriate coding themes and propose interesting and informing categorisation of materials. In this, following Stake’s (1995:73) thoughts:

“Where thoughts come from, whence meaning, remains a mystery. The page doesn’t not write itself, but by finding, for analysis, the right ambiance, the right moment, by reading and rereading the accounts, by deep thinking then understanding creeps forward and your page is printed.”

During the analytical phase, the aim was to conduct a thematic analysis. Benner (1985/1999:310) defines thematic analysis as a strategy in which “the interpreter identifies common themes in the interviews and extracts sufficient interview excerpts to present evidence to the reader of the theme.” The current study’s approach also sought to confront and describe similarities and differences between stories and their contexts in order to be able to interpret them (make sense of) in terms of this co-operative setting.

Inspired by the template analysis (King, 2004), during the initial stage the researcher took a halfway position.<sup>7</sup> Based both on the literature and the empirical

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<sup>7</sup> The researcher did not strictly follow the template production in the latter stages of the analysis.

data, three general codes were picked relating to knowledge management and business model, trust issues, and dealing with mixed identities. Some concepts were taken directly from the research proposal (preliminary questions), particularly those related to the trust issues. The others were added after initial exploration of the data—namely, mixed identities, knowledge management, and organisational coordination.

During the subsequent stages of analysis, the researcher went back and forth through the material, re-reading the coded excerpts and grouping them thematically by printing excerpts and physically cutting them and shuffling them on the floor until they were grouped into the smallest number of categories. The researcher then constructed a model of understanding by looking for coherence and differences in particular quotes and among classes. The researcher was particularly careful about noting the differences in themes across the case, depending on if they concerned the Maemo.org, Nokia, or GNOME project more in the first instance. The overview of coding categories is as follows:

#### (A) Knowledge management business model issues

##### I. Intellectual property rights

- I.I. Software components
- I.II. Licensing

##### II. Membership

- II.I. Employees
- II.II. Subcontractors
- II.III. Other external collaborators

##### III. Authority

- III.I. Hierarchy
- III.II. Peer-review systems
- III.III. “Connecting-people approach”

##### IV. Incentives

- IV.I. Salaries and bonuses
- IV.II. Learning opportunities
- IV.III. Sponsoring
- IV.IV. Career/job offers

## V. Knowledge distribution

V.I. Knowledge sharing

V.II. “Competitive advantage” rule

## (B)Trust issues

### I.Nokia-Maemo relations

I.I. Nokia trust for the community

I.II. Nokia as a sponsor of the community

I.III. The council role and trust issues

I.IV. Mistrust towards Nokia politics

I.V. Trust for Nokia’s developers’ expertise

### II. Trust in Maemo.org

II.I. Trust in expertise

II.II. Self-critique

II.III. Looking for “someone trusted”

### III. Nokia politics towards GNOME

III.I. Nokia involvement

III.II. Negative/positive opinions about Nokia’s actions

III.III. Uncertainty of Nokia’s involvement

### IV. Trust in GNOME

IV.I. Trust in expertise

IV.II. Trust in Nokia’s developers’ expertise

IV.III. Trusted positions

IV.IV. Transparency

IV.V. Reputation and trust built over time

IV.VI. When trust system fails

## (C)Identity issues

### I. “We”

I.I. Nokia

- I.II. Nokia Open Source developers
- I.III. Others
- II. “They”
  - II.I. Nokia
  - II.II. OS developers
  - II.III. Maemo.org developers
  - II.IV. Other companies
  - II.V. Others
- III. Influencing the corporation
  - III.I. Bringing knowledge
  - III.II. Agitating for openness and pushing Open Source culture inside
  - III.III. Finding a way to do the OSS
- IV. Withdrawing
  - IV.I. Compromising with corporate policies
  - IV.II. Avoiding close-source work
  - IV.III. Avoiding meetings and other unproductive responsibilities

Due to the content of the data and the quantity (counted in hundreds of pages), the analysis was extremely time consuming. Sometimes it was difficult to distinguish pure discourse from the real actions; although declarations and ideological standpoints could be very polarised, the description of everyday life activities showed a less divided worldview. In addition, due to non-disclosure agreements, many interviewees remained at the very general level of description and abstracted from specific examples of what they were saying. This required interpretations of instances in a very broad context of the entire interview.



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# Individual papers

# Knowledge integration and organisational principles of an Open Source–business hybrid

## Abstract

Knowledge integration within organisations has become the subject of study in terms of project management, product development, learning models, and team-working theories. This literature enforces a very rationalistic view of the process, arguing for clearly specified goals, planning, a clear task division, and agreement on the envisioned solution. Yet it also stresses the need to create a close teamwork environment and shared values. The research on Open Source Software (OSS) movement is moving in a similar direction, claiming that community *esprit de corps* with clear norms and rules and a peer-review process make the OS model of innovation highly successful. It is often claimed that coexistence of many subgroups' social identities or external communities of practice may hinder learning and collaboration. Meanwhile, in some cases, divergent personal and institutional backgrounds among project participants can actually bring the opposite effect. Cross-functional teams and university–industry collaboration networks are examples of such cases. The diversity benefit is a richer source of knowledge base. The problem is how to make people work together. The task may be difficult for many reasons, including different professional origins or different expectations in regard to the desired outcomes.

In an era of open collaboration, mixing institutional backgrounds and professional identities is an everyday problem in knowledge-integrating platforms. Many differences among participants stem from ideological standpoints; thus,

institutional theory can offer a more comprehensive and multilevel understanding of the collaborative processes. This paper focuses on the particular example of open innovation—namely, developing Open Source Software (OSS) in the dual-logic hybrid structure. The findings demonstrate that enabling knowledge integration in Open Source-business organisation requires not only securing the right participants and contributions, ensuring smooth submission processes, and adjusting its formal business model and structures to two competing logics of action, but also pushing the organisation in a struggle for legitimacy in both worlds (business and Open Source logics). Thus, hybrid organisations must get involved in both real actions and discursive practices (talks, decisions) to couple and decouple from the institutional pressures. Dual organisational hypocrisy helps maintain the Open Source-business project while the many different corporate experiences and models affect the entire organisational field's understanding of what it means to develop business using OSS. Empirical evidence is based on a case study of the Nokia Internet Tablet Maemo Project.

This paper offers insights from organisational hypocrisy and institutional theory closer to the knowledge literature. From a more micro focus, it enables a cross-level analysis. In this manner, it also expands the scope of the knowledge integration studies into situations in which semantic and syntax differences are not crucial, while logics of actions differ significantly.

*key words: open innovation, hybrid business model, knowledge integration, organisational hypocrisy, institutional coupling, institutional decoupling*

# Introduction

Open innovation becomes a new paradigm for understanding industrial innovation. Widely distributed knowledge leads to innovation processes that occur at the interspaces between diverse groups and organisations (Swan and Scarbrough, 2005); thus, organisations should make use of both internal and external ideas and paths to advance their technology and systems (Chesbrough, 2003; 2006a; 2006b). Being open enables customers and users to contribute their explicit and tacit knowledge (Polanyi, 1966) to a company's R&D processes. Consequently, many companies are incorporating open innovation models to strengthen their creativity and profits (Weber, 2004). Open Source Software is the commonly known field in which open innovation takes place. Open Source has become a growing part of software production projects. On the Sourceforge.net web site alone, the number of registered OS projects rose from approximately 58,000 in March 2003 (German, 2007) to 230,000 in February 2009<sup>1</sup>.

Existing literature suggests that the open innovation model offers many opportunities, although it also bears risks. A fully open R&D process makes a company more vulnerable to its competitors. Revealing the technicalities of new products may minimise the competitive advantage. On the other, an open innovation model initiates organisational change as it “requires an increased emphasis on managing knowledge, both in identifying promising sources of external knowledge (and being able to recognise as such), and in linking that knowledge together with external knowledge to create new systems and architecture” (Chesbrough, 2006b:31). Moreover, “the loose coupling between the innovation process of the firm and its business model invites close examination of this coupling” (Chesbrough, 2006b:33). Meanwhile, open innovation research does not offer in-depth analysis of organisational and legitimacy problems related to switching to a different knowledge integration paradigm. Although the strategic perspective argues that open innovation is inevitable, it remains a great challenge for business organisations seeking to benefit from external knowledge sources but still operating like closed systems. The change in business model not only requires adapted structures and systems, but also the redefining of a company's role in those structures and systems. Moreover, open paradigm in many aspects challenges

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<sup>1</sup> <http://apps.sourceforge.net/trac/sourceforge/wiki/What%20is%20SourceForge.net?>

traditional businesses—especially the concept of ownership. OSS is a particularly interesting example of open innovation as it is created without any business model per se. It is a “community model of development” (Chesbrough, 2006a:45).

In line with this argument, this paper raises the issue of combining corporate business and Open Source approaches as well as the necessity to be legitimised in both worlds in order to benefit from the hybrid. The purpose of this paper is to fill this gap by investigating innovative activities and external contributions to the knowledge base in an Open Source-business project. The paper emphasises the importance and influence of the institutional contexts in creating and shaping OS innovation platforms as well as possibilities for knowledge integration.

The point of departure for this article is an empirical study of the Nokia Maemo innovation platform. As working with open source means less control over the development process, this paper will discuss how Nokia put into practice the Open Source-business innovation platform idea and how it tries to influence the projects to enable knowledge integration according to its plans. In particular, the paper focuses on the means by which knowledgeable individuals are attracted to doing the job for Nokia and how the corporation is trying to manage its hybrid by gaining internal and external credibility.

Therefore, the contribution of this paper is twofold. First, by investigating the emerging empirical setting, it offers insights into the possible ongoing institutional change in the software industry. Second, by linking this case to the knowledge integration literature with the greater spectrum between realm of institutions and realm of actions and discourse, it explains the creation of a dual-logic knowledge integration model and its possible future institutionalisation. The model shows the sequential influences among the heterogeneous institutional context, hybrid structures, and dual organisational hypocrisy. It goes beyond the current focus on open innovation, which seems to neglect the aspects of conflicting ideologies and logics as an important factor in the change of the knowledge integration paradigm.

The outline of the paper is as following. First, the differences between Open Source and business approaches to software development are examined and the concept of hybrid structures as a conceptualisation of Open Source-business collaboration is introduced. The discussion also points out the relevance of this examination for knowledge integration issues in organisations and places them in the greater framework of institutional change, coupling, decoupling, and the concept of organised hypocrisy. The case study is then presented. Finally, the

paper proposes the sequential model of creating a knowledge integration hybrid model by linking empirical findings and institutional theory insights.

## Theoretical background

The theoretical background of this paper is twofold. First, its focus is taken from the knowledge integration literature. However, most knowledge integration literature does not explain collaboration dynamics beyond the issues of creating proper cooperative structures, boundary objects, and boundary work, which would indicate a distinction between different groups of communities of practice as Wenger (2000) calls them. Second, this paper contributes to understanding knowledge integration in a dual institutional setting. The institutional point of view explains not only local interpretations, but also links between logics and organisational model as well as the coupling and decoupling between them. This discussion refers to Brunsson's (1989) concept of organised hypocrisy.

In general, two directions exist for conceptualising knowledge integration in organisational studies. The first is a content view, in which knowledge integration is considered to be a process of incorporating different pieces of knowledge into one body. The key problems are presented around the technical capabilities and absorptive capacities (Frost and Zhou, 2005). The second direction is a social / relational one, which emphasises context and boundary-spanning in communities (Swan and Scarbrough, 2005). This may lead to the conclusion that the knowledge integration process requires inputs of both intellectual capital and social capital (Newell, Tansley and Huang, 2004).

From the integrationist perspective, knowledge integration is positively related to the existence of organisation-wide social identity—namely, group oneness, trust, and loyalty. Antonelli (2006) argues that the generation of knowledge is a collective activity and as such requires substantial levels of coordination between heterogeneous agents in order to succeed. He also mentions common coherent institutional background as a crucial aspect:

“Knowledge does not spill freely and automatically in the atmosphere: dedicated efforts are necessary to create the institutional context into which external knowledge can be acquired and to reduce its uncontrolled leakage. The capability of agents both to retain some proprietary control and to



communicate and hence to access external technological knowledge depends on the and generative relationship can be implemented.” (Antonelli, 2006:234)

From a fragmentationist point of view, the dominance of social identities of external or subgroups may hinder organisational learning (Willem, Scarbrough and Buelens, 2008). Swan and Scarbrough (2005), in their study on the politics of networked innovation, highlight that the “power of the system” (Hardy, 1996) may constitute barriers to innovation and make knowledge integration efforts less or more effective. Deeply institutionalised contexts are most dangerous if taken for granted and, as such, need further research. Similarly, Enberg, Lindkvist, and Tell (2006) argue that little effort has been devoted to developing alternatives to rationalistic project management concepts of how and with what mechanisms knowledge integration processes are utilised in the context of uncertainties and political pressures.

Knowledge is localised and embedded in practice. It is also invested in practice—“invested in the methods, ways of doing things, and successes that demonstrate the value of the knowledge developed” (Carlile, 2002:446). To better understand how differentiated social worlds can contribute to the common stock of knowledge, Star and Griesemer (1989) proposed the concept of boundary object, which is broadly defined as abstract concepts or concrete “things” existing in several intersecting social worlds. The communities of practice may perceive, interpret, and understand boundary objects differently. The sense-making process among partners does not need to be fully coherent or lead to commonly accepted agreement on all aspects of cooperation. Being the link between differentiated social worlds:

“[...] effective boundary objects are in constant flux of actual (and potential) co-construction and re-construction at the hands of interacting actors. This boundary constructing, in return, leads to enriched organizational sense-making.” (Holford *et al.*, 2008:1)

Although boundary objects have different meanings and serve various informational requirements of different parties, they are also a means of translation. As such, boundary objects must be simultaneously plastic and robust—that is, being adaptable to the needs and constraints of several perspectives while maintaining a common identity between communities of practice (Wenger, 2000).

From the managerial perspective, knowledge is a resource that can and should be managed. Managers do not want to accept that this valuable resource is out of

their control; thus, they continue to try to establish themselves in the centre of knowledge resources. What makes knowledge management difficult is the fact that:

“knowledge is elusive because to a certain degree it is personal. People know things. People are bearers of insight. People are creative.” (Kreiner and Mouritsen, 2003:246)

Institutional heterogeneity and an organisational hybridity dimension were included in some investigations on knowledge integration involving cross-functional teams (Huang and Newell, 2003) and networks (Owen-Smith and Powell, 2004) and industry-university collaboration (Blumenthal *et al.*, 1986; Kennay, 1986; Kreiner and Schultz, 1993). Based on the literature, the most relevant and closest double-logics situation are studies of the biotech or medical technology cooperation among the government, academics, and the industry. However, in most cases, the institutional differences are continuously blamed for failures of those collaborative networks. An exception in this field is Kreiner and Schultz’s (1993) paper on the Danish biotech sector, which examined successful university-industry research relations. This success was created and carried out at an informal level. The cooperation was based on the following:

- mostly informal contacts and norms located in the researcher community;
- liberal information sharing;
- action rationality is more important than decision rationality; and
- non-exclusive relationship.

Meanwhile, management role was limited to facilitating cooperation. It eventually took the form of paradoxical messages, where “strictly confidential” discourse was used not to discourage people from collaboration with their external networks, but to inform them of possible exploitation and make them carefully choose partners. However, in their conclusions, Kreiner and Schultz (1993:206) encouraged further study to validate their findings that “the conspicuous absence of exploitative behaviour and the managerial coordination of networking might suggest that management’s premise control has been effectively exercised to help researchers filter out those collaborations which might otherwise have turned out to be exploitative.” In this case, the logics did not mix, but were rather kept in the paradoxical state by supporting the informal solutions over the formal limitations.

In addition to the examples provided, the institutional heterogeneity and the organisational hybridity dimension were not often considered of key importance.

Even the boundary object concept (Star and Griesemer, 1989) is bounded with the assumption of little or non-permeable boundaries between social worlds. This is usually not the case, especially if all participants are familiar with the body of knowledge and there are no technical difficulties involved. The theory of institutionalisation helps explain these situations.

In the organisational field, organisational change occurs to secure survival and legitimacy (DiMaggio, 1983). Prevailing institutional forces direct the change and isomorphic processes (DiMaggio and Powell, 1991). The focus of this paper is the situation in which organisational principles originating from different organisational models are hybridised into a new set of norms and structures. The concept of hybrid form is used to describe those organisations immersed in multiple external relations as they operate in the border area between different worlds. Hybrid organisation is a term that grew from the field of new public management, together with the idea of creating a mixture of profit and non-profit structures whereby competing motives, a balancing mission, and market needs (duality of objectives) are directed toward creating social and economic value (dual value creation) (Alter, 2007). Managers can purposively (re-)design new organisational constructs by translating them into their corporate contexts. Institutional building blocks can be taken from foreign or local institutions or can recombine different logics (Boxenbaum, 2006).

To understand relations between institutional arrangements and organisational practices, two concepts can help. First, Meyer and Rowan (1977) noted that individuals in organisations get involved in symbolic actions that aim to decouple from formal structures. Decoupling means that organisations tend to adopt various formal solutions in response to institutional pressures, but do not necessarily use or enact those structures. Since Meyer and Rowan's groundbreaking paper, the idea of decoupling has gained many followers and become part of key new institutional concepts explaining individual agency role in interpreting formal structures. Westphal and Zajac's (1994) analysis suggested the potential separation of substance and symbol in long-term incentive plans for CEO. Decoupling was stronger in companies with powerful CEOs and those with poor performance. This example indicates that the formal introduction of a fashionable motivation tool can be partly or completely ignored in the day-to-day praxis. Second, while many studies have focused on decoupling, the opposite process—that of institutional coupling—has not been in the scope of attention much. Institutional coupling is defined by Kellogg (2006:2) as “organization members' actual use in day-to-day

activities of formal structures that are adopted in response to institutional pressures.”

To some extent, the combination of decoupling and coupling was integrated by Brunsson (1989; 2003), who discovered that organisations dealing with incommensurable institutional or stakeholders’ pressures often start to couple their activities, talks, and decisions in odd manners. The current paper uses the concept of “talks” to describe all formal plans, strategies, presentations, and statements—everything that the organisation declares it will do or is doing. Meanwhile, the concept of “actions” indicates accomplished tasks or current practices. The contrast between “talks” and “actions” presents the difference between what was promised and what is done. The concept of organisational hypocrisy explains how organisations struggling for legitimacy and satisfying interests of different parties talk and decide about important issues, showing their involvement in one direction while in practice acting in the opposite direction. This implies that, if a company makes many statements and reveals future plans, actual executions may be far away (or even opposite) from those declarations. Consequently, one can expect that polluting manufacturers will present their green policies and plans more often than a truly green company. Of course the organisational hypocrisy only works if people assume that talks are leading to coherent actions and it is not revealed that the organisation is decoupling its talks from actions.

Through knowledge integration, it is possible to understand not only a process of incorporating new information into an existing body of knowledge, but also the structural aspects of collaboration translated into organisational principles that—in theory—should enhance collaborative networks and result in knowledge sharing, integrating, and distributing. In the field of software development, this includes a whole spectrum of different activities, such as securing good quality contributions at the right time and integrating them into the code repository. This paper proposes integrating knowledge and institutional studies and subsequently using them to discuss an OS–business collaboration case. This dual theoretical perspective originates from an attempt to overcome certain shortcomings of the current knowledge integration literature.

First, literature on knowledge integration in industrial clusters (Morosini, 2004), innovation-seeking alliances (Tiwana, 2008), multinationals (Frost and Zhou, 2005), and project groups (Costanzo and Tzoumpa, 2007) focuses mostly on those situations in which relationships between participants were contractual. This indicates the idea of achieving knowledge integration via a conventional step:

management from a position of control (= ownership). However, knowledge work in high-tech industries needs a more unconventional approach since the means of production are often owned by knowledgeable experts (Kreiner, 2002), who are neither available for a company all the time nor willing to be permanently employed.

Second, part of the knowledge integration literature is also connected to the boundary object concept (Star and Griesemer, 1989), which serves as a meeting point for divergent communities of practice and provides common grounds for collaboration. The boundary object's approach only partly explains an Open Source–business collaboration setting (Ciesielska and Petersen, 2008). We claim that communities of practice do not necessarily have to be rooted in other modes of knowledge, like administrators, managers, researchers, amateurs, foundations, and politicians, as in Star and Griesemer's paper on the Berkeley's Museum of Vertebrate Zoology. The mode of knowledge may be similar, but if practices and logics of actions are significantly different, the problem of knowledge integration may arise not at the technical level, but at the organisational level, especially in regard to motivating, securing contributors' participation in regard to authority, coordination, and communication. Moreover, at the goal-setting level, a compromise between different points of view on knowledge integration and distribution has to be reached. Linking the knowledge integration focus and theories on organisational coupling, decoupling, and hypocrisy allows for explaining individual and organisational behaviour. Creating common structures, systems, syntax, and boundary objects may not be enough. They can be used, enacted, or ignored in various ways. Similarly, Ruuska *et al.* (2009:1) argued that:

“Successful knowledge integration requires crossing not only temporal, spatial, and task boundaries, but also authority, social and identity boundaries that may be less visible and harder to overcome. Barriers to knowledge integration appear in the form of delimited local contexts, delimited time, and delimited power and authority that enhance context-specific, localized, and separated knowledge.”

# Methods

Collected data are used to illustrate the case of a particular hybrid structure—namely, a corporation involved in the Open Source movement. The data mainly have a qualitative character and concern a single specific development project. Thus, data are not used to test hypothesis or to bring exhaustive insights about knowledge integration into the Open Source–business collaboration. The case was chosen as an interesting example of a big media organisation, originally working on a close-code basis, which partly changed its strategy to become an OSS participant and beneficiary as well. Within the specific case examined herein, special attention was given to the Internet tablet development. This product is not fully commercialised and seems to serve more as an experimentation site for R&D while collecting feedback from the market.

The empirical work was conducted from 2007 to 2009. The semi-structured and unstructured interviews were conducted in the Nokia Research Centre in Helsinki (June, 2008) and during international conferences and projects gatherings—namely, the OSS Conference (July 2007), Linux Tag (May 2008), GUADEC (July 2008), and Maemo Summit (September 2008), where observations also were made. Secondary sources include written online materials from Nokia and cooperating projects (statements, presentations, discussions, blogs, etc.) as well as previous studies on Nokia (Ghosh, 2006; Dittrich, 2007). Due to interests of the various parties involved, identities and names of the informants referred to herein are fictive. Real names and positions are included only with publicly accessible opinions and statements quoted herein.

The methods of ethnographical interview (Spradley, 1979; Kostera, 2003/2005) and direct observation (Agar, 1996/1980) were chosen for their ability to grasp micro-level interpretation and everyday practices in order to allow for understanding others' points of view and perspectives. Moreover, participation in conferences allowed for the gathering of companies' formal policy statements. In addition, an important part of this study was the outcome of the netnographic methods (Kozinets, 1997; 1998; 2002; Langer and Beckmann, 2005; Sandlin, 2007), which took the form of following the main project and the Nokia company websites on a weekly basis to remain updated on current discussions and news. Due to the type of data, Nokia's Open Source-business model is described using

mostly publicly accessible materials; therefore, it can be understood as a declaration of change. At the same time, data from interviews allowed for the differentiation of actions and talks/decisions (Brunsson, 1989; 2003) as well as coupling and decoupling in the response to the institutional pressures (Meyer and Rowan, 1977; Kellogg, 2006).

According to Friedland and Alford's (1991) argument for a multilevel analysis in social science, the case study reflects the particular individual and organisational field of sense-making and giving (Weick, 1993; 1995) but is embedded in contradictory institutions and logics available to those individuals and organisations. The starting point of the analysis was to use the two identified logics—business and Open Source—and associate them with particular actors in the field. The researcher worked interactively between interview transcripts, field notes, other texts, and relevant literature to develop appropriate coding themes and propose interesting and informing categorisation of materials.

Inspired by the template analysis (King, 2004), the researcher initially took a halfway position between it and a thematic analysis (Benner, 1985/1999).<sup>2</sup> First, based on Lee and Cole's (2003:635) comparison of the close-code and OS model of knowledge creation, five characteristics were selected that differentiated both organisational (business) models—namely, intellectual property rights, knowledge integration and distribution, membership and incentives, authority and coordination dominant mode of communication. The main reason for choosing these were to show the main line of demarcation between proprietary and OSS development and determine how against this backdrop the practice in the case study is placed and if they were problematic to combine. However, Lee and Cole did not pay much attention to knowledge integration problems; therefore, in this study, knowledge integration aspects were added to the codes and combined with knowledge distribution. The researcher subsequently conducted a thematic analysis, looking for common themes within main codes in the interviews, notes, and texts and extracting sufficient excerpts to present evidence of the theme to the reader. The overview of coding categories is as follows:

Intellectual property rights:

- Proprietary software
- GPL and other OS licensing types

Membership and Incentives:

- Employees

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<sup>2</sup> The template production was not strictly followed in latter stages of the analysis.

- Subcontractors
- Other external collaborators
- Salaries and bonuses
- Learning opportunities
- Sponsoring
- Career/job offers

Authority and coordination:

- Hierarchy
- Peer-review systems
- “Connecting-people approach”

Knowledge integration and distribution:

- OS components
- Sources of contributions
- Internal/external organisational burdens and problems
- Knowledge sharing
- “Competitive advantage” rule

Dominant mode of communication:

- Face-to-face (in the office, conference, meetings)
- Internet-mediated

During the analytical stage, the researcher went back and forth through the material, re-reading the coded excerpts and grouping them thematically. The researcher then constructed a model of understanding by looking for coherence and differences in particular quotes and among classes.

## **The context: Open Source vs. corporate business logic**

In the early days of IT development, no particular difference existed between software and hardware. The two always went together. Close cooperation among universities, students, free developers, and corporations created an environment that promoted experimentation and innovation, yet once projects became mature and marketable, a war inevitably emerged between two alternative paradigms:



free/libre open source (F/LOSS) and closed proprietary approach (Weber, 2004). To ensure profits from software distributions, corporations like Microsoft decided to hide the source code of its programs, leading to industrial secrecy. In 1976, Bill Gates accused developers and users of stealing the source code of BASIC (uncontrolled copying). He rhetorically asked in his “open letter”:

“Who can afford to do professional work for nothing? What hobbyist can put 3 man-years into programming, finding all bugs, documenting his product and distribut[ing it] for free?” (Gates, 1976)

At that time, business and Open Source logic seemed to be incommensurable. In response to close code policies, Richard Stallman founded the Free Software Foundation in 1985 and for the first time implemented the General Public Licence (GPL), which—instead of securing copyrights—gave the right to copy, modify, and distribute the software (Subramanian and Soh, 2008). The Open Source principles are characterised by a *copyleft* rule (instead of the business focus on *copyright*). It means that licensees (users, developers, distributors) are free:

- to use OSS for any purpose;
- to make copies and redistribute them without any royalties paid to the licensor;
- to upgrade or modify OSS and distribute it without any royalties paid to the licensor;
- to access and use the source code of OSS; and
- to combine OSS and proprietary software (Rosen, 2005).

For many years, most software businesses built their R&D on close innovation models. Misuse and copying of the original products were secured by enforcing intellectual property rights. The trade-off for this strategy was a limited reservoir of knowledgeable developers participating in the projects. However, in many industries, R&D processes came to be seen as an open system, thereby forcing firms to rely on knowledge developed outside their formal boundaries. Therefore, an alternative perspective to the close-code approach—namely, the Open Source process—emerged based on free access to the source. Gehring (2006) argued that OS in fact became institutionalised.

While proprietary software practices are rooted and constrained by the institution of state, the property rights, the contract, the corporation, the market, and close-coding, OSS is based on hackers’ ethics, open licensing, and open

standards as well as free access to the source code, software architecture, and technical means to change them (Table 1). The governance structure of the OSS community is a type of “bazaar” with the open licence institution (Raymond, 1999). Bazaar governance is characterised by residual uncertainty due to low intensity of incentives and weak control. Open Source is also deeply meritocratic, while the corporate business model is characterised by managerial capitalism.

Although both models (open and closed) have their disadvantages, in statistical tests, OSS has a higher rate of quality upgrades as bugs are being fixed faster (Kuan, 2001). The existing body of literature on OSS communities (as knowledge creation entities) suggests, in line with general knowledge-integrating theories, that clear rules and norms foster high-quality teamwork. Thus, a key for successful collaboration is to maintain a balance between exploration and exploitation of knowledge as well as a strong cultural basis (Hemetsberger and Reinhardt, 2006). From a social-experimental perspective, learning and knowledge building in OSS communities are based on the ability to re-experience and engage in reflexive thinking by reading source code, e-mails, FAQs,<sup>3</sup> IRC,<sup>4</sup> tutorials and (sub)project archives. The structure and content of online archives and repositories comprises one of the cornerstones of a successful Open Source learning environment (Hemetsberger and Reinhardt, 2006).

**Table 1. Institutions’ governing productions, distribution and use of software (based on Gehring, 2006)**

Proprietary Software	Open Source Software
<ul style="list-style-type: none"> <li>- The state, the firm, the market</li> <li>- Property rights</li> <li>- Legitimate contracts</li> <li>- The code</li> </ul>	<ul style="list-style-type: none"> <li>- The ethics of hackers</li> <li>- Propriety rights (GPL, Open licensing)</li> <li>- Open standards</li> <li>- The code (source code, architecture, technical means)</li> </ul>

According to Tuomi (2001), in the OS field, knowledge is located and developed in communities organised around practices. Knowledge integration is linked to technologies and the system of meanings used to communicate and make sense of the world. The differences in knowledge integration in business can be

<sup>3</sup> Frequently Asked Questions

<sup>4</sup> Internet Related Chat

described by contrasting five organisational principles (Table 2.). The organisational principles' framework (derived from Lee and Cole (2003) and Ulhøi (2004)) is used as a point of reference while descriptive codes are used to organise the empirical material. This helps compare Nokia's approach with two contrasting knowledge integration models.

**Table 2. Firm-based and community-based models of knowledge integration (based on Lee and Cole, 2003:635; Ulhøi, 2004:1096–1106; Ciesielska and Petersen, 2008)**

Organising principles	Traditional business model	Community-based open model
<b>Knowledge integration and distribution</b>	<ol style="list-style-type: none"> <li>1. Knowledge translation, transfer, integration, and creation occur primarily between functional groups (marketing, manufacturing, engendering, finances, etc.) via planned and management-directed procedures. Burdens for knowledge creation: communication and resources. Boundary objects: the code repository, documentation, financial documentation, business plans, prototypes, etc.</li> <li>2. Knowledge distribution limited to the boundary of a firm (or formal collaborative network)</li> </ol>	<ol style="list-style-type: none"> <li>1. Few boundaries in transfer translation, transfer, and integration as the organisation is professionally driven. Burdens for knowledge creation (expanding code repository and submissions): quality of submission, reputation of the developer.</li> <li>2. Boundary objects: primarily code repository and documentation</li> <li>3. Reciprocity of knowledge dissemination and sharing results, unrestricted access beyond community boundaries</li> </ol>
<b>Intellectual Property Ownership</b>	Knowledge is private, owned by the firm, patents used	Knowledge is public, authorship is recognised and credits given, OSS licensing used (GPL, CPL, MPL, etc.)
<b>Membership restriction and Incentives</b>	<ol style="list-style-type: none"> <li>1. Membership is based on selection (limited): <ul style="list-style-type: none"> <li>- employees hired;</li> <li>- subcontractors hired</li> </ul> </li> <li>2. The private mode of agency and economic motives .Salaries and fees in exchange for the work done</li> </ol>	<ol style="list-style-type: none"> <li>1. Membership is open; the scale of the community is not constrained.</li> <li>2. The collective mode of agency. Volunteers, psycho-social motives (reputation, prestige, learning opportunities, job offers)</li> </ol>
<b>Authority and coordination</b>	Hierarchical/task control	Peer review
<b>Dominant mode of communication</b>	Face-to-face	Technology-mediated, meetings/conferences for networking (usually annual)

Intelligent people are distributed throughout the world and are not members of any single team or organisation, which is why companies like Nokia, IBM, Intel, and even P&G are incorporating open innovation models to strengthen their creativity and profits. Feller and Fitzgerald (2002) describe OS-based business models as either pure-play (Open Source firms) or hybrid companies. Hybrid companies are driven by both proprietary and OS operations, which makes it difficult to maintain coherence inside the organisation and raises a question regarding to what extent and how business model and cooperation with OSS communities are coupled and decoupled to make this cooperation fruitful.

Partly because of this growing level of collaboration between business and Open Source, the Open Source is no longer a monolith. The biggest discussion takes place between the very orthodox Free Software Foundation (FSF) and more moderate approach, allowing for various more accepting business practices. The main line of argument goes from the FSF with Richard Stallman, which considers themselves a pure Free Software in contradiction to companies like Novell, which makes an OSS based on its own rules. FSF's General Public Licence was a major standard for years. Today's fight over it, combined with increasingly various OS licensing and development models, indicate the close interference and coexistence of business and Open Source logics. Is Open Source only "the freedom we give you"? Participants' online discussions of and reactions to OSS projects indicate apparently not. One of the websites established a form of protest against the Novel company for not providing true Open Source practices<sup>5</sup> through a counter-argument conducted in an online survey:

"Is the Free Software Foundation hypocritical in seeking, and receiving, funding from companies which sell proprietary software?"

Yes: 61.6%

No: 34.4%

No opinion: 4%<sup>6</sup> [<http://boycott-boycottnovell.com>, 2010]

F/LOSS shows a situation of institutional split. New standards are developing, but the old ones are still present and are being reinforced in contradiction to change. As a result, the war has taken on the form of war discourse focused on vocabulary and the meaning of "real" or "truly free" standards.

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<sup>5</sup> Original website: [www.boycottnovell.com](http://www.boycottnovell.com), 2010

<sup>6</sup> As of Friday, 22 January 2010 11:34 , Number of voters:125, derived from: <http://boycott-boycottnovell.com/index.php/component/poll/18-is-the-free-software-foundation-hypocritical-in-seeking-and-receiving-funding-from-companies-which-sell-proprietary-software>

# The case study

## The Internet tablet/Maemo project

Nokia is a well-established and known telecommunication company associated primarily with cellular phone manufacturing, although its broader strategy is general mobile connectivity. One of the test beds, rather than a mass market product development process, is the Maemo Internet tablet project. The development process was initiated in 2002 with the Nokia 7700 media device,<sup>7</sup> but the first tablet—N770—was announced in 2005 at the Linux World Fair and Conference in New York City (Sharma, 2005). The second generation of tablet N880 was rolled out in January 2007 at the Consumer Electronics Show in Las Vegas, but in October that same year, the third-generation N810 was announced and made widely available two months later. The other players on the market (e.g., Google, iPhone) were already working on the idea of smart phones packed with Internet browsing and multimedia utilities. The Nokia project was indicated as an initial step to create “an open-source product for broadband and Internet services”, and Nokia declared that it would be coordinating and launching new versions of the software regularly.<sup>8</sup>

For a long time, the Internet tablet was a product without a SIM card<sup>9</sup> designed for Internet browsing via a Wireless Local Area Network (WLAN). As such, it is an embedded system that combines the mobility and size scale of a cellular phone and, to certain extent, the usability of a laptop in the sense that—unlike a regular phone—it is programmable according to the user’s needs and the user may develop, upgrade, and install software on it as desired.

The first N770 offered an Opera Internet browser and Internet radio and was able to play music and videos. In the next release, N800, the operating system was upgraded to Maemo 3; the device was equipped with an integrated camera, and a Skype/VoIP application was added. The latest hardware version is Nokia N810,

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<sup>7</sup> <http://www.mobile-review.com/articles/2008/internet-tablet-en.shtml>

<sup>8</sup> Janne Jormalainen, vice president of Nokia, quoted in Sharma (2005)

<sup>9</sup> Until autumn 2009

which operates a Maemo 4 system. Unlike previous tablets, it has a side-slider with a full QWERTY<sup>10</sup>-keyboard in addition to the touch screen one, a Mozilla Internet browser, GoogleTalk, and GPS.<sup>11</sup> In 2009, Nokia was working on the Maemo 5 system (codenames: Fremantle and Harmattan), which incorporates Qt libraries. In 2010, the collaboration between Intel and Nokia incorporated Maemo in the new Meego project.

**Table 3. Maemo release history; Source: Template: Release history table**  
<https://wiki.maemo.org>

ITOS Version	Maemo	Codename	Release date	Notes
OS2005	1.1	-	November 2005	
			December 2005	
			April 2006	
	2.0	Mistral	May 2006	Beta release
			May 2006	
OS2006	2.1	Scirocco	November 2006	
	2.2	Gregale	January 2007	
OS2007	3.0	Bora	January 2007	
	3.1		March 2007	
	3.2		July 2007	
			October 2007	SDHC corruption fix
OS2008	4.0	Chinook	November 2007	(N810 only)
			November 2007	Kernel upgrade only (N810 only)
			November 2007	Beta release (N800 only)
			November 2007	
			January 2008	NOLO upgrade only
	4.1	Diablo	June 2008	Adds SSU support
	4.1.1		August 2008	First SSU update
	4.1.2		September 2008	Second SSU update
4.1.3	December 2008		Third SSU update	
"Maemo 5"	5.0	Fremantle	-	Bundled community-supported Qt libraries
	-	Harmattan	-	Bundled officially-supported Qt libraries

The following section describes Nokia’ Open Source–business knowledge integration hybrid practice, taking into account key organisational principles related to intellectual property rights, knowledge distribution, membership, incentives, authority and coordination, and the dominant mode of communication.

<sup>10</sup> The most typical keyboard layout for computers and typewriters

<sup>11</sup> [http://maemo.org/intro/maemo\\_history/](http://maemo.org/intro/maemo_history/)

In each area, some level of combination of OS and business approach is achieved. In some cases, it is fairly easy to achieve, and the means are not questioned by the participants, like incentives mix or mode of communication. However, even in those situations, organisational and structural adjustments are needed on the Nokia side.

## **Knowledge integration**

The Nokia case accumulates problems related to knowledge integration from both closed and open innovation models. This happens because Nokia has to deal with internal functional divisions while externally an OSS community promotes a motivational, ideological and relatively unplanned mode of acting. Technical details and other types of knowledge translations can be problematic only internally across different functions. From the creation of the source code repository perspective, no technical problems occur. The code itself is an explicit representation of knowledge that is ready to use. Although several programming languages are available, syntax and semantics are not an issue. Components programmed in different languages can still be incorporated into the same software by special bindings. Applications “talk” to each other via special software components, like D-bus (desktop bus). However, in the OS setting, the primary burdens for knowledge creation are shifted toward more paradigmatic differences related to the goals of a project versus corporate plans and strategy in addition to problems that attract specific developers and communities to do or accept submissions that fulfil Nokia-specific tasks.

From the internal knowledge integration perspective, developers have often complained about constant reorganisations. At one point they had to adjust to new structures and processes every several months. Since Open Source operations tasks are connected only to software development, they have to cooperate with the hardware designers. Not only does the type of knowledge divide both departments, but a spatial dimension (main offices in Helsinki and Oulu) and national differences (cross-cultural, foreigners’ teams vs. Finns) also occur:

“All the documents are produced in English but if they are just speaking in between few people of their national they will come back to Finnish. Well if I called them now there would be no problem in English and if I go to Oulu for a meeting and there will be 10 Finns and me the whole meeting would be

in English. But the barrier is there regardless of language.” [Nokia Developer, 2008]

Other problematic connections include strategic management decisions and their practical consequences. On many occasions, developers have found out about Nokia’s official policies from newspapers rather than from their direct managers. Some people believe that strategic decisions are sometimes taken without real consideration for technical issues. The solution for these communication and knowledge integration problems is supposed to be a matrix structure. However, since structure and managerial posts are switched so often, there is no real gain from it, only long and often meetings. When meetings do not solve many problems, they will certainly become one themselves:

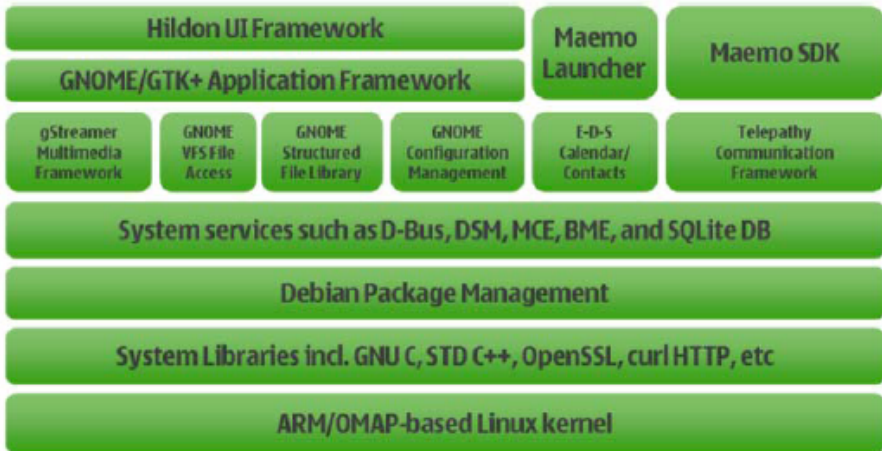
“One big difference of the corporate life is that you have meetings, which you not really normally have in the open-source project. So in the open-source project you use the online channel of the project the whole day if there is something to discuss you discuss it but it is not likely, every Tuesday we have two hours where we discuss this, and we do not leave the room before the two hours are over. And that’s sometimes a bit annoying because I get quickly frustrated if I have a whole day various meetings and especially if those meetings come on short notice and you have some plan; ‘Okay I want to look into that’. There are always enough problems so that isn’t the issue. When you have too many meetings you go home in the evening and feel like “I did nothing of those things that I had planned for the day”, and that’s a bit frustrating. Of course sometimes you need to think and have those meetings, but it quickly becomes a pain.” [Nokia Developer, 2008]

From the external collaboration perspective, there are two main ways in which Nokia becomes involved in OSS. First, it uses and contributes to well-established projects. Second, Nokia started its own OSS community: Maemo.org. Although the upstream projects became the basis for creating an operating system for Nokia’s Internet tablets, the Maemo.org project aims to produce free applications for these devices. However, not all components of the tablet’s software is open sourced. This means that the operating system and applications for the Nokia Internet tablets are quasi-public.

The basic components of the operating system are part of the Linux kernel, an open source pioneer. The operating system for Nokia Internet tablets is Maemo, which is composed primarily of F/LOSS, in which the core constitutes already

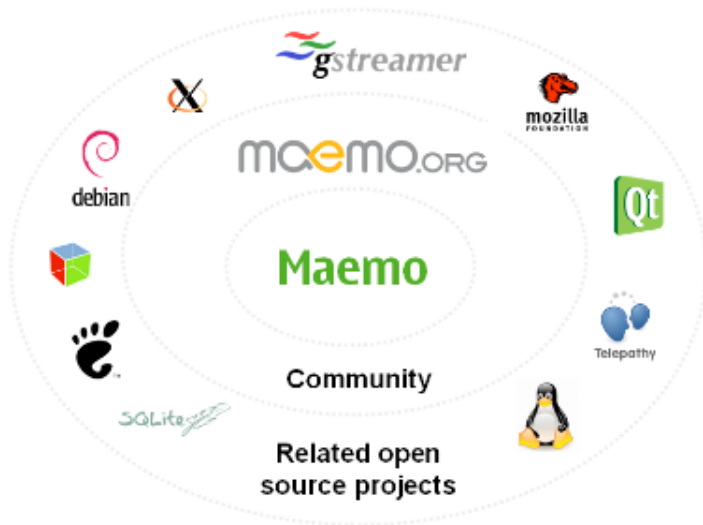


includes the Linux operating system kernel as well the GCC compiler, the GNOME UI framework (Hildon UI provides components over GNOME), GNU C libraries, Debian Packet Management, etc.



**Figure 1. The Maemo operating system components; Source: maemo.org – Intro Software Platform.**

Nokia’s current vision (or maybe propagated visualisation) of Maemo is its centrality, in the sense of taking bits and pieces from different OS projects that are compiled into the operating system via cooperation of the Nokia and Maemo community (Figure 2).

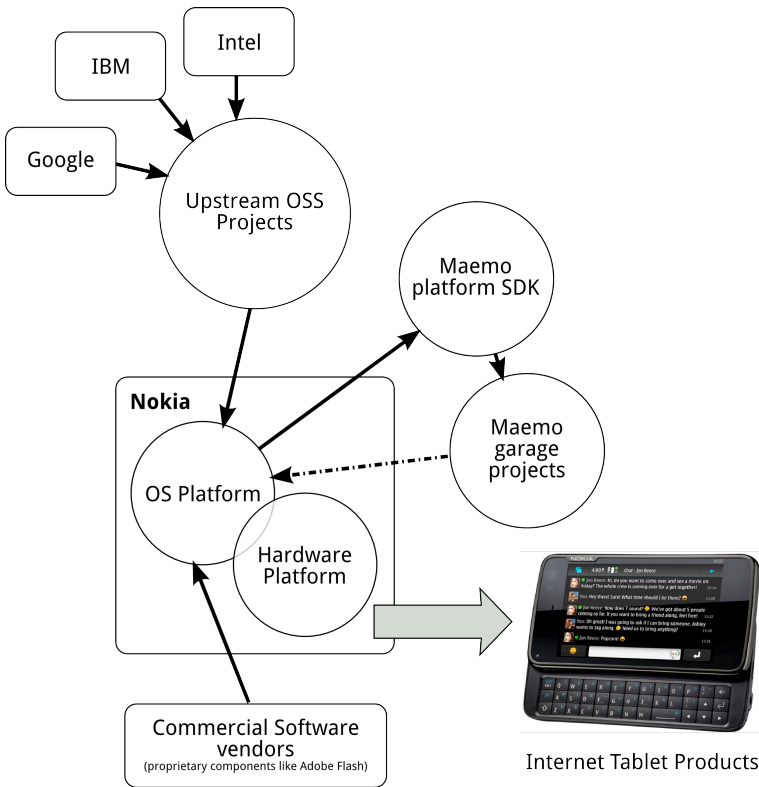


**Figure 2. Maemo and OS communities; Source: Intro Software Platform at maemo.org**

To a certain extent, this shows how Nokia management would like to perceive Maemo’s status among OSS projects—i.e., (almost) being a separate Linux distribution. However, that vision is not necessarily shared with some Nokia developers:

“Some of our managers have actually even communicated that way that it could be this sort of distribution playground where I think that would be a huge disservice to the company and the community itself because it sets [Maemo] way wrong.” [Nokia Developer, 2008]

In terms of the system design of how contributions are actually added, the picture is switched and Maemo itself is a result of mixing Open Source with Nokia’s internally worked-out and bought proprietary solutions. The central figure deciding Maemo’s development is the Nokia Corporation, which is responsible for choosing and accepting patches for its official software releases.



**Figure 3: Nokia and Maemo collaboration network; Based on Jaaksi, 2007:88, Jaaksi presentation and interview in Limerick, 2007. Photo source: Nokia.**

In 2007, approximately 25 percent of the packages on the Maemo platform were taken directly from Open Source Software upstream projects,<sup>12</sup> 50 percent of the packages originated in OS upstream projects but were modified internally by Nokia, and the remaining 25 percent of the packages constitutes proprietary components (Jaaksi, 2007). Thus, approximately 75 percent of the operating system for Nokia tablets have external inputs. As a result, upstream projects and Nokia’s participation in them enable the transfer of necessary knowledge to develop Maemo Operating System (OS), while maemo.org and its “community” plays a minor role in this process and the Maemo garage is mostly an end-user small application development platform. At the beginning of 2008, the Maemo

<sup>12</sup> Upstream in the sense that it is maintained by its original authors’/developers’ group.

community had more than 14,000 registered members and 700 development projects.<sup>13</sup> However, one of the Nokia developers even commented (June, 2008) that maemo.org is a “waste of time” and that they could do all of Maemo’s work in an easier, faster, and cheaper way:

“I think seriously I have not seen anything really useful come out of that exercise ever there are some tools that would have been developed anyway completely without having this sort of community there.” [Nokia Developer, 2008]

Yet this problem goes back again to internal cross-function misunderstandings. From a strategic and marketing point of view, the Maemo community played an important role in propagating the tablet products until they were sold on the mass market.

The other side of the coin is knowledge distribution, which is particularly important for OS, which is built on the giving-away rule. On many occasions, during conferences, meetings, blog posts, and private conversations, OS developers often accuse Nokia of creating double standards:

“It’s a double standard, everything’s open but not really. wtf?”

[a comment on the Nokia OS policy concerning Maemo platform, independent discussion forum, posted on 11 Apr 2008 at 05:09<sup>14</sup>]

When talking about becoming or being open, Nokia remains closed when it is strategically important for the organisation. As Nokia states on [wiki.maemo.org](http://wiki.maemo.org), the OSS licensing model is preferred by the company in the development of Maemo software. Nevertheless, this has been a sensitive topic, both internally and externally. Nokia indicated that there are important reasons to have exceptions from the OS licensing scheme:<sup>15</sup>

- to keep the Nokia brand strong (and avoid risks of dilution);
- to gain a competitive advantage (not let competitors have access to some areas of the software);
- for security, to avoid risks and liabilities caused by freeing access to some hardware components;

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<sup>13</sup> Compared to 12,000 registered members, more than 600 projects in the Maemo garage and more than 200 applications were available for download by May 2008 (<http://maemo.org/intro/community/> accessed 8 January 2008)

<sup>14</sup> Independent from the Nokia discussion forum: <http://marcin.juszkiewicz.com.pl/2008/04/10/the-curse-of-maemo-closed-source-components>

<sup>15</sup> [http://wiki.maemo.org/Why\\_the\\_closed\\_packages](http://wiki.maemo.org/Why_the_closed_packages)

- to avoid infringing patents, copyrights, licences, and propriety information of third parties; and
- to avoid risks of opening components that may have an unknown outcome (and just maintain them minimally).

In fact, the competitive advantage (differentiation) issue seems to be the most important factor in this case. Since there is not much to do with patented or proprietary solutions, a lot of Nokia-produced code may be hidden as well. If the ‘novelty’ rule is taken to extremes, there might be suspicions that many crucial upgrades are not returned to the upstream projects:

“[...] if something else exists that is already doing that then it is not a competitive advantage. And if you are the first one to do it then it is an advantage.” [Nokia Developer, 2008]

Of course, much of this is a matter of interpretation, and sometimes giving patches back to the upstream brings additional advantages as the software versions are aligned. However, the struggle between corporate and Open Source logics is inevitable, although it can be solved with some effort. This depends on the developer him-/herself and his/her attitude and actions:

“I mean, regardless of how good or bad it is, but it was a substantial amount of money that was poured into the development of a tool, I think it was like five guys working full-time on it. That cost a fair bit of money. But we got permission to sort of push everything out of any trouble, so I think it has quite a lot to do with the fact that you have to talk to the right people, you need to find the justification for doing it this way and I think that that is where many developers, especially if they come from outside the company, I think they are finding it unnecessarily hard to identify who are the key people that you need to convince to get the permission. Because if you can convince one of the top guys, the permission will come automatically whereas everybody else would simply work around that. So in that sense I think there is a little bit of a mindset that some things need to be close, like in our case anything that has to do with [unidentified word], any device, that is definitely difficult, but there is a lot of that, also with the developers, except the mindset that this needs to be closed.” [Nokia Developer, 2008]

However, on some occasions Nokia’s employees revealed more details of their internal work than what was formally permitted. This happened in various ways, such as by hinting at external collaborators or allowing them to test unrealised

pieces of software. Although such behaviour goes against corporate policy, there was not a single case when a developer was punished for it. Management usually gives an informal oral reprimand, but does not stop such situations.

A problematic balance seems to exist between different interests in terms of knowledge sharing. On one hand, Nokia today understands the advantages of following and directly contributing to upstream processes, although it was not like this from the beginning. Initially, Nokia tried to fork the projects and develop them internally, but it then had to subcontract companies to post factum reintegrate code, as in the GTK toolkit case. The critical point in this process was translation of Open Source logics on the corporate grounds and the developer's willingness to fight for openness and managers' ability to grasp where the OSS gains come from. According to Ari Jaaksi, Nokia's vice president, in its work with Maemo Nokia learned to avoid 'forking'<sup>16</sup> the code (Meyer, 2008). To benefit fully from the Open Source processes, if working on its own version of the source code repository, a company should make an effort not to deviate significantly from its upstream components as too many differences make it difficult to incorporate software upgrades. On the other hand, keeping some components closed, as in case of the power management, ensures that Maemo OS will not be used efficiently on anything but Nokia-embedded devices.<sup>17</sup>

Therefore, all in all, Nokia is not a 100 percent OSS participant, but it does contribute to the upstream projects—probably more than its opponents think—because it basically benefits. Ghosh's (2006) examination of Maemo's source code indicates that only 1.5 percent of it can be attributed to Nokia (mostly as part of Linux kernel patches and related projects). However, it is difficult to estimate the real Nokia input in OSS projects, as even the corporation itself claims that it does not have that data.<sup>18</sup>

## Intellectual property ownership

Nokia is a corporation that, for many years, was focused on the closed R&D model. Not long ago, the mission of its research centre was explicitly to produce more patents:

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<sup>16</sup> Forking refers to a situation where a new separate version of a community project is taken by another community or company that is working on it independently

<sup>17</sup> The battery does not last long enough.

<sup>18</sup> Private communication – June 2008, Nokia employee's opinion (unrecorded)

“One of the main targets of Nokia Research Center is to create IPR (Intellectual Property Rights) for Nokia. In this the unit has been very successful, with nearly half of Nokia essential patents originating from Nokia Research Center.

- 1407 Nokia Research Center based Invention Reports in 2005 – 31% of all Nokia invention reports
- 311 patents granted in 2005 in 268 patent families.” (Nokia Research Centre Backgrounder, 2005<sup>19</sup>)

Today, this mission is not so clear anymore. Since Nokia became involved in OSS development, it had to reformulate its strategy and—at least within OSS operations—switch goals from increasing the number of useful patents to expanding its collaborative networks:

“Nokia is strongly positioned to realise the benefits of open innovation, as well as accelerating time to market, enabling us to meet and exceed consumer expectations for leading converged devices and experiences.” [Olli-Pekka Kallasvuo, CEO of Nokia (Nokia Press Release June 24, 2008)]

Nowadays, Nokia is extensively communicating its shift from the patent-making focus to open collaboration R&D. However, Nokia’s non-OS parts are still working only internally or with subcontractors and patenting their inventions, as in areas of GSM, evolution of GSM to UMTS, CDMA2000, long-term evolution (LTE), and additional cellular technologies.<sup>20</sup> Thus, Nokia’s actions not only contradict some of the strategy presentations, but Nokia is also incoherent in its own talks.

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[http://www.nokia.com/NOKIA\\_COM\\_1/Press/Materials/White\\_Papers/pdf\\_files/nokia\\_research\\_center\\_backgrounder.pdf](http://www.nokia.com/NOKIA_COM_1/Press/Materials/White_Papers/pdf_files/nokia_research_center_backgrounder.pdf)

<sup>20</sup> <http://www.nokia.com/press/ipr-information>

## Membership restriction and incentives

The main issue facing Nokia's Maemo-related network is not a membership restriction, but rather the activation of a growing group of participants interested in developing projects. In the upstream, OSS projects are purely voluntary and include independent developers, corporate employees, Open Source firm programmers, translators, and users. Nokia becomes involved in the Open Source movement by employing developers (work contracts), by subcontracting Open Source-based programming and supporting companies (task-oriented contracts), and by sponsoring talented individuals (non-contractual 'favour-for-a-favour' relationships).

Many developers working within Open Source operations at Nokia or for its subcontractors originate and are known for their work within particular OSS projects. A clear strategy is both to gain knowledge and skills for the corporation and to advance personal reputation and position in OSS communities:

“I think that it is clear that this [Maemo and OS for Internet tablets] is an experiment for Nokia as well, so how do we handle this whole open-source stuff, and they got a lot of people like me and maybe John and so on from open-source backgrounds to somehow get this knowledge into the organisation.” [Nokia Developer, 2008]

People working for Nokia are encouraged to use their @nokia.com e-mail addresses, but many do not do so, as they do not feel that connected to the corporation. Keeping in mind that this work is only a phase in their career, they tend to use their private nicknames and e-mails to indicate their authorship of their work. Some Nokia developers distinguish work-related tasks and their spare-time Open Source projects with different e-mail addresses and signatures. This situation indicates identity problems, as a strong professional community and appreciation are often considered more important than corporate privileges and careers.

Incentives have become problematic for Nokia. Often, when necessary contributions cannot be obtained from independent OSS developers, Nokia relies on traditional business motivators. Contracts, salaries, potential job offers, and career possibilities are typically used to secure the incoming flow of code to the projects. The greatest problems occur among the brightest people within OS, when they are not willing to enter into any formal agreements with Nokia and focus primarily on task-oriented freelance jobs. Consequently, corporations need to make



an effort to interest the developer in the particular bug or problem and hope that he/she will work out a solution:

“I don't really work with them [Nokia]. I mean, from time to time they pay me a trip to Helsinki and I listen to them and I talk to them, then I think about it and maybe I will do them a favour and do something for them because I need to do it anyway, partly because it solves another problem for me that I need for other stuff. I mean, what I am working on is the Linux desktop. That is what I'm being paid for. I'm not being paid for doing embedded work. But if I know about the issues I can always recommend and give them a hint what they should do. There are a lot of problems that can actually be solved by the same solution [...]” [Independent OS developer, 2008]

Within membership and incentive aspects, Nokia is acting consistently in its declaration of mixing business and OSS opportunities. By employing, subcontracting, or sponsoring people to do the Open Source-related jobs, not only does the company push its own projects forward, but it also enables developers to make a living from their hobby-projects. In this sense, it supports the OSS community in that participants can do more Open Source jobs instead of looking for other employment. Meanwhile, it is still difficult for a corporation as many Open Source developers will not be loyally connected to them for a long time. Here, they secure their interests through non-disclosure agreements.

## Authority and coordination

Authority and control possibilities in the Open Source world are tricky topics for Nokia. Nokia supports many OS organisations as a patron of the FSF and KDE e.V., a sponsor of the GNOME Foundation and KDE Free Qt Foundation, a gold member of the Linux Foundation,<sup>21</sup> and a member of oCERT and Eclipse Mobile Industry Working Group. Nokia also supports community events (aKademy, DebConf, FOSDEM, and GUADEC).<sup>22</sup> This ensures the corporation positions on committees and a voice to influence development further—at least formally. However, it does not secure a direct impact on the decisions made by core developers. Nokia, as all other participants in this process, can download updates

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<sup>21</sup> Annual membership dues of US\$ 100,000 (<http://www.linuxfoundation.org/about/bylaws>)

<sup>22</sup> [http://wiki.maemo.org/Task:Maemo\\_contributions](http://wiki.maemo.org/Task:Maemo_contributions)

as well as produce and propose code for submission (not just submit) to the main repository. Thus, on upstream Open Source grounds, Nokia has full power over its own actions and own submissions but cannot be sure which alignments between its own code and the upstream will be made. To gain full control over the project, Nokia can simply buy it, as it did with the Qt library, or establish a new community, as it did with Maemo.org.

In contrast, the Maemo project was Nokia-dependent from the beginning. Despite some voices that maemo.org was originally a site for Nokia developers' team, it is not really a development platform for Maemo OS. "Over the past few years, maemo.org has become more and more community-driven and now is under the complete control of the community" says Tim Samoff<sup>23</sup> (2009), a member of the Maemo Community Council. He continues, stating that:

"[...] the council takes it upon themselves to help manage the Maemo community, keep the wiki up-to-date, triage bug reports, etc. Of course, being that the Maemo community is an open source organism, any member of the community can do these things—and, in fact, many people volunteer many hours in this regard. But, to aid Nokia in cutting down on some of the typical noise that is generated by a community of this size, the community decided it was time to create the council."

Nokia is everywhere at Maemo. According to Samoff<sup>24</sup>, one indicator of the importance of the project is that "Nokia funds it and pays for dedicated maemo.org employees." Nokia also participated and paid for the recent redesign and hosting of the new beta version of talk.maemo.org. Nokia admittedly is an active player in the Maemo project, staking a lot of effort and money to make it work.

In this respect, combining authority and coordination solutions from both models is more difficult. Nokia is declaring its readiness to openly collaborate with external OSS projects, yet it suffers from a lack of control of the external contributions. Therefore, it seeks possibilities to take over existing projects or establish new ones and have power over them.

Meanwhile, even when the corporation decided to pass the right to decide or co-decide many issues on to the Maemo.org community, it also started to consolidate all Maemo-related subprojects under the funding umbrella. Therefore, in practice, it continues to control its development. This happened, for instance, with the

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<sup>23</sup> [http://www.raiden.net/articles/interview\\_tim\\_samoff\\_of\\_the\\_maemo\\_community\\_council/](http://www.raiden.net/articles/interview_tim_samoff_of_the_maemo_community_council/) interview conducted by Steve Lake, posted on 05.06.2009 at 09:16am

<sup>24</sup> In 2009.

independent forum [internettablettalk.com](http://internettablettalk.com), which was bought and integrated into [talk.maemo.org](http://talk.maemo.org).<sup>25</sup>

## Dominant mode of communication

Developers working at Nokia Research Centre on non-coding areas are supposed to participate in both administrative and work-related meetings. However, being part of Open Source operations, they need to work and collaborate online with external personnel. Paralleling the discussion of the limits being open, the corporate world has created certain burdens for OS development—actions that are very much visible and were commented on by the external co-operators:

“Nokia has a lot of very good people and those people are respected from the software community, but everyone makes fun of the way that Nokia handles things about their firewall for example. Free software lists through the Internet and Nokia is basically cut out of the Internet.” [Independent OS developer, 2008]

Official Nokia policy is to block Internet connectivity in its offices for security purposes. However, Open Source work is done primarily online while annual project meetings (like GUADEC of AKademy) provide forums for summarising, planning, and socialising. As a result, dual solutions are implemented. There is a separate infrastructure available of the OSS contributors, while the rest of the employees are using the standard, well-protected network.

Nokia is also very careful about what can be publicly said about its plans and R&D. Officially, almost nothing is known until the last moment, just before the release of a product or a piece of software. However many of those plans and activities are the secrets of Polichinelle, as they were already distributed among trusted informal networks. During this research, the researcher was told many more interesting things when interviews were not recorded. At one point, an interviewee explicitly stated that recording was not possible as he did not want to be quoted or be considered as an official source of information. The same situation arises with Nokia’s Internet connectivity policy, which restricts non-protected connections. However, OS developers can access non-protected connections.

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<sup>25</sup> *Internet Tablet Talk to become talk.maemo.org* (2008), blog entry retrieved from <http://www.internettablettalk.com/2008/12/02/internet-tablet-talk-to-become-talkmaemoorg/>

Despite Nokia's declared openness, OS developers may face problems with OS communication. Officially, they are encouraged to participate in OS conferences; in practice, management can decide otherwise. For instance, several GNOME contributors paid for their own trips and were taking days off to participate in GUADEC or the Maemo summit meeting.

## **Nokia model of knowledge integration**

This case is interesting as various factors come into play. Nokia is considered a leading European information and telecommunication company. Nowadays, Nokia is also recognised as implementing an open innovation paradigm through its international innovation networks (Dittrich, 2007). Since Nokia first became interested in Open Source movement and started to participate in several OSS projects, it has come to be considered a particular example of an emerging organisational form—namely, the hybrid structure. As R&D at Nokia was originally considered to be in-house oriented, adding an external Open Source network forced the company to deal with two contrasting logics and approaches to producing software.

To a large extent, the hardware part of the Nokia Internet tablets project is run internally and on a proprietary basis, while development of software dedicated to the device (i.e., the Internet tablet) is being created on the assumption that—for its successful performance—internal and external contributions are required. To deal with the OSS, Nokia established a separate Open Source operation department and structures within the corporation and applied a hybrid Open Source-business organisation (see Table 4.). The rest of the mobile phones development as well as software and hardware are still undertaken in the closed knowledge integration mode.

**Table 4. Nokia model of knowledge integration**

Organising principles	The traditional business model	Nokia business–OS hybrid	The community-based open model
<p><b>Knowledge integration and distribution</b></p>	<p>1. Knowledge translation, transfer, integration, and creation primarily between functional groups (marketing, manufacturing, engendering, finances, etc.) via planned and management-directed procedures. Burdens for knowledge creation: communication and resources. Boundary objects: the code repository, documentation, financial documentation, business plans, prototypes, etc.</p> <p>2. Knowledge distribution limited to the boundary of a firm (or formal collaborative network)</p>	<p>1. 3 sources of code: OSS, subcontractors, and Nokia internally. Some software components are closed (proprietary) while others use OSS licensing. Main burdens for knowledge creation:</p> <ul style="list-style-type: none"> <li>- internally: lack of specialised knowledge in some areas; need to coordinate activities among departments and managers;</li> <li>- externally: securing submission solving Nokia’s—not community’s—problems; corporate plans vs. fragmented OSS process</li> </ul> <p>2. Boundary objects: the code repository, documentation, financial documentation, business plans, prototypes, etc.</p> <p>3. Most key internal solutions are kept in-house, key external solutions are incorporated; the rule of “competitive advantage”</p>	<p>1. Few boundaries in transfer translation, transfer, and integration as the organisation is professionally driven. Burdens for knowledge creation (expanding code repository and submissions): creativity, quality of submission, reputation of the developer.</p> <p>2. Boundary objects: primarily code repository and documentation.</p> <p>3. Reciprocity of knowledge dissemination and sharing results, unrestricted access beyond community boundaries</p>
<p><b>Intellectual Property Ownership</b></p>	<p>Knowledge is private, owned by the firm, patents used</p>	<p>Knowledge is quasi-public, different licensing types used</p>	<p>Knowledge is public, authorship is recognised and credits given, OSS licensing used (GPL, CPL, MPL, etc.)</p>

<b>Membership restriction and Incentives</b>	1. Membership is based on selection (limited): - employees hired; - subcontractors hired  2. The private mode of agency and economic motives. Salaries and fees in exchange for the work done	1. Membership is open (externals), although there is a core of selected employees and subcontractors;  2. Salaries, fees, sponsoring, creating learning possibilities, creating, building career possibilities, and assessing candidates for job offers	1. Membership is open; the scale of the community is not constrained.  2. The collective mode of agency. Volunteers, psycho-social motives (reputation, prestige, learning opportunities, job offers)
<b>Authority and coordination</b>	Hierarchical/task control	Problematic (peer/company review and control), the ‘connecting people approach’ (=encouraging self-organisation within the limits)	Peer review
<b>Dominant mode of communication</b>	Face-to-face	Technology-mediated, face-to-face interactions at meetings/conferences (usually more often than once a year, networking, PR)	Technology-mediated, meetings/conferences for networking (usually annual)

In terms of intellectual propriety ownership issues, a main source code of the Internet tablet operating system is a version of Linux, with elements developed within related OSS projects (like Gnome GTK+) and commercial proprietary modules. The knowledge integration in this setting is not an easy task as the burdens of knowledge creation of two models are accumulated. Approximately 75 percent of the code packets originate in Open Source projects (Jaaksi, 2007). In addition to this Open Source engagement, Nokia offers an Open Source platform—maemo.org—for developers interested in programming Maemo applications. Although internally classic functional divisions exist, with their own mindsets and goals, the applied (and often reorganised) matrix structure solves only part of the communication problems, resulting mostly in rounds of endless meetings without much real discussion. As a result, internally the main burdens lay in the corporate vertical functions representing different types of knowledge and limited communication between strategic decision-makers and the rest of team, software and hardware engineering, marketing and user interface designers, etc.

Meanwhile, within the Open Source cooperation, the main problems are not coming from technical issues and skills, as the source code is itself a boundary object, but a very explicit one with commonly understood syntax and semantic. Once source code is shared, no contraindications are needed to incorporate it into the internal repository. The main burdens for knowledge creation shift to more paradigmatic differences regarding the direction and goals of the project in relation to corporate plans, attracting specific developers to do Nokia-specific tasks.

Nokia needs to balance between closed and open knowledge integration models. Totally unrestricted knowledge sharing would make R&D processes available to direct competitors (who are often also participants in the same OSS projects). On the other hand, Nokia has learnt that sharing only OS collaboration is beneficial. Nokia is taking the source code from the OSS projects, of which two thirds is changed in-house for the Internet tablet. Nokia claims that it is making efforts to ensure that the modifications are accepted into the main projects. However, internally, Nokia employees are clearly instructed that—before returning any of their work to upstream projects—they must assess if the code they are submitting constitutes any source of competitive advantage. If so, they should keep it in closed packages. It is very easy to predict that such a policy might result in submitting only minor repairs of bugs to Open Source projects.

For a business acting in the OSS field, combining hierarchical internal structures and control possibilities with peer review-driven processes in upstream projects seems to be inevitable. Sponsors and career visions become crucial to securing some influence and providing incentives for independent individuals to work towards achieving the corporate goals.

## **Discussion and conclusions**

Both small companies and large corporations can benefit from open collaboration. Of course, the gains are not one-sided. Bonaccorsi and Rossi (2003) claim that new Open Source-business hybrids are solving some of the general OS movement problems, particularly by providing funds and guaranteeing future existence of the projects. Nevertheless, Nokia uses OSS to make money; this pure business strategy sometimes goes against the expectation of reciprocity. Some hackers express the opinion that Nokia is hiding some source code from them because of its pure

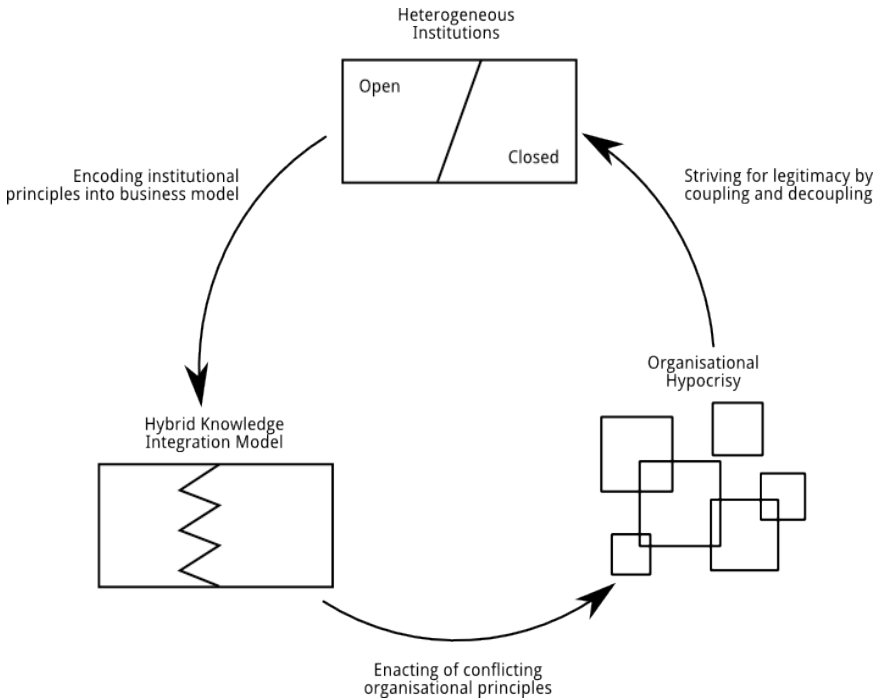
quality. Under heavy pressure, Nokia has decided to engage in Open Source more in parts of the Maemo platform in the future. In practice, much of the work is actually done within upstream projects on the OSS grounds, and while previously closed Maemo components are slowly becoming open—although not all of them, and Maemo will probably never be a fully open platform.

Developing a hybrid structure closely linked to and dependent on an exterior collaboration network requires ensuring the coexistence of conflicting values, which means both maintaining and spanning boundaries between public and private, open and closed, and contractual worker and professional developer. Since this boundary work is constantly drawing and redrawing demarcation lines between logics and institutions that stand behind social and business practices, decisions, and methods of cooperation, a special form of dual hypocrisy appears to exist to enable a hybrid form to become an institutional chameleon trying to fit both business and Open Source realms. Hybrids are never stable; they are recreated on a regular basis as a result of ongoing interactions. In the Nokia case, there are two contexts in which boundary work becomes evident: (1) strategies of the individual developers and (2) ways of dealing with organisational schizophrenia at the corporate level. The former consists of defining boundaries between contractual work and the professional identity and is theme of the paper based on the same study<sup>26</sup>. The latter includes buffering between corporate and open source realms in the form of a separate department, boundary spanning position, and campaign to create a dependent OSS community. Nokia, by deciding to go Open Source, needed to reconstruct its image and operations to suit new working realities. The symbolic and motivational work is done both outside and inside. However, the external–internal dichotomy is not so obvious; during OSS collaboration, some boundaries are blurred while others are reinforced.

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<sup>26</sup> In the paper: “*We*” and “*They*” in the Open Source-business Context.





**Figure 4. Descriptive model of creating and enacting hybrid knowledge integration in the context of a heterogeneous institutional environment.**

This empirical description informed by theories of knowledge integration and new institutionalism provide the foundation for proposing this descriptive model for creating and enacting hybrid knowledge integration in the context of a heterogeneous institutional environment (Figure 4.). At the macro level, heterogeneous institutions co-exist. Business logic is pushing organisations towards a closed mode of knowledge integration and rewards for owning patents and making profits. Open Source logic offers an alternative philosophy of free and open collaboration and rewards for knowledge sharing. Although this situation has been sustained from the very beginnings of the IT industry, most corporations for a long time did not want to get involved in the open innovation. The same was true

of Nokia, which was a typical business organisation known for its internally created, patented, or combined cellular technology. The model works clockwise.

First, since two logics simultaneously influenced the acceptable means and ends for an Open Source–business collaboration, the corporations and other organisations slowly started to discover the advantages offered by OSS. At the same time, Nokia’s main market (mobile telephones) was threatened by competitors’ investments in fast-growing smart phones segment, as Nokia’s current operating systems were insufficient for competing with Apple or Google. To address this situation, Nokia started to work internally with Linux and Linux-related software; encouraged by this experiment, it announced its shift to an open innovation model within the Maemo project. The decision of the company to work with Open Source forced necessary changes in its business and knowledge integration model. The reorganisation had to include the elements coming from the different institutional regimes. As shown in Table 4., Nokia’s approach is formally presented as being half-way between the business and Open Source logics. For example, intellectual property ownership is translated into a mixture of all possible solutions: patented, externally bought proprietary software, internally created closed and open-sourced applications, and completely OSS components. Nokia is an organisation that declares openness and help for OSS communities. At the same time, it is responsible for its performance, profits, market shares, and other aspects investors deem important. Open Source offers a good way to create better software, but it can also take a long time as it is not possible to manage the process as would be done in the closed and contracted team. At the theoretical level, combining business and Open Source seems to be an interesting approach; however, in practice it cause some troubles.

Second, individuals in organisations attempt to enact conflicting organisational principles and make sense of them. They also get responses from stakeholders connected to different logics. Since individuals and organisations cannot comply with the set of conflicting norms and principles, individuals are driven towards dual hypocrisy. As a result, organisations sequentially decouple and couple actions from talks. The concept of dual hypocrisy, in contrast to Brunsson’s (1989; 2003) and Meyer and Rowan’s (1977) original ideas, indicates that when two institutionalised logics are in place, a company cannot simply create a coherent formal structure that obeys institutional norms and fashions and coherently decouple from it to serve efficiency purposes. Dual hypocrisy requires the creation of an operational model in which more or less commensurable structural elements are supposed to work together and prepare talks and decisions showing

involvement in both logics. On certain occasions, Nokia has seemed to talk Open Source more than do Open Source. Top management's declarations of becoming an open corporation are often contradictory to certain business practices. The main rule of OSS is reciprocity. Companies who just use the code are not considered contributors. When a company declares its support for the projects, it uses and works on the Open Source code; it is also expected to give back as much work as is taken for the benefit of other users and contributors. Yet Nokia feels uncomfortable with completely open processes as such an approach reveals its actions to the competitors. Moreover, if any of the internally created code has any signs of novelty or innovation, it stays in-house as a closed-code component, rather than being open for everybody to use. So despite talks and declarations—and even decisions made—to support OSS communities, Nokia is often accused of taking more than giving. Indeed, its actions show that there is a basis for such a judgement as Nokia as a general rule does not share code if it constitutes a competitive advantage.

On other occasions Nokia talks more of a business approach while in fact applying an Open Source approach. Officially, for strategic purposes, Nokia's employees cannot give out or access unrealised versions of the software or discuss internal strategy and plans with anyone. Yet to fully profit from OSS, people need to talk and consult externally; more importantly, they need to give a rationale for the patches they submit upstream. Therefore, even if they do that at a very generic level, it is easy to figure out what Nokia is working on and in which direction it is changing its design. Sometimes, it informally gives access to developers “by mistake” so they can try out the new operating system or it allows for photo “leaks” of the product prototypes. All of this happens despite official corporate policies, but so far nobody has been blamed or punished for such “mistakes”. Kreiner and Schultz (1993) made similar remarks. However, in their case, a dominant logic was present, and management adjusted to it. In the Nokia collaboration network, this was not completely possible as all the formal corporate relations had to be equally included in the Open Source logic.

Finally, theoretical propositions have been provided for future study in research projects. As in the realm of action, individuals become involved in coupling and decoupling between conflicting organisational elements, talks, actions, decisions, declarations, statements, and policies. Such actions and emerging new business and knowledge integration models in OSS may impact the reformulating of both business and Open Source logics. Interesting ideological changes are happening in the Open Source field, pushing it towards as well as away from business

collaboration. In the next few years, this stage may become increasingly polarised between pure OSS projects and Open Source–business hybrids. The interesting, yet unanswered question is whether both can secure necessary resources and survive.

In sum, the presented empirical model based on Nokia’s knowledge integration processes offers two interesting perspectives. First, it indicates a possible background of the current Open Software versus free software discussions and changes in perceiving the Open Source movement as more business-oriented. The elements of this fight at the macro level have become more visible in recent years. The current research does not provide the explicit links between these two phenomena; thus, this needs further studying. Second, it extends the localised micro perspective of the knowledge integration literature by offering a cross-level analysis of the knowledge integration setting. The discussion also expands it by considering not only mixing types of knowledge, but also taking into account institutional logics differences. As a result, it allows for an understanding of the set of bounded problems stemming both from cross-functional misunderstandings and ideological standpoints when authentic technical burdens are nonexistent.

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# The Two-dimensional Taxonomy of Trust in an Open Source–Business Collaboration

## Abstract

Drazin, Glynn, and Kazanjian (1999:291) argue that creative processes at intra- and inter-organisational levels may emerge from a process of negotiating multiple, often competing interests and perspectives. The problem is how to integrate people for such actions. One possible answer is linked to the trust concept, which became extremely popular in organisation theory, particularly as a prerequisite for successful collaboration (Gambetta, 1988; Hardin, 2002; 2006; Lane and Bachmann, 1998/2000) and a resource for building social capital (Rothstein, 2007).

This theme is also present in studies of the commercial IT/software sector as well as the existence of online communities. Although Handy (1995) claims that trust also enhances an online collaboration, it is still a controversial issue within the Open Source Software (OSS) field. The concepts of institutional (system) trust or swift trust are examined in literature on online collaboration, but not much empirical evidence exists regarding how trust between business and private participants in OSS projects is developed, maintained, and broken. Moreover, it seems that trust issues are not the only concepts that should be under scrutiny. Behind the popular trust discourse and community-building activities, Open Source–business collaboration is not free from the exercising of power or the role of politics.

This paper looks at two cases of OSS collaboration. Analysing the Nokia Open Source operations within two specific Open Source projects—GNOME and Maemo.org—provides insight into duality of logics (communal resources of Open Source and profit/market-oriented businesses) at the institutional level and creation of specific hybrid structures in which some level of trust and credibility is produced. GNOME is a well-established independent workspace for Open Source collaboration; Maemo.org is Nokia's dependant post-purchase customer innovation platform. The projects are linked by Nokia's simultaneous participation and support, but with a different level of control over them. Special emphasis is put on explaining how power and control possibilities within the projects affect the trust discourse and on creating a better understanding of the combined role of political trust and the trust in expertise in this empirical setting.

Contrary to Hardin's (2006) sceptical approach about the possibilities of creating trust relations on the Internet as well as Hardy, Phillips, and Lawrence's (1998/2000) clear distinction between co-operation built on trust versus co-operation built on power, this paper contributes to the trust literature by drawing on empirical insights into the trust-power struggle on Internet-mediated projects and proposing a two-dimensional taxonomy of trust in Open Source-business co-operation. Although Sztompka (1999) argues that, in numerous situations, trust in different targets is mutually dependant, this paper shows two quasi-independent cognitive dimensions of trust—namely, political trust and trust in expertise, which influence Open Source collaboration. As the case shows, political trust has an interorganisational and interpersonal notion, whereas trust in expertise is primarily related to interpersonal relations. At the same time, this paper shows that—in addition to institutional and social trust previously noted in online collaboration (Jarvenpaa, Knoll and Leinder, 1998; Matzat, 2004)—the cognitive aspects of trust play an important role.

*Key words: institutional trust, political trust, taxonomy of trust, trust in expertise, Open Source Software*

Historically, the software development sector has been ruled by two alternative logics of action: close and open coding (Weber, 2004). On the one hand, the classic business approach benefits from the intellectual property rights concept. This institution of law secures profits from the produced in-house innovations. Internally developed source code is converted into binary version and offered on the market with particular licences to use it as well as restrictions about copying, modifying, and distributing. The alternative perspective for developing software solutions is an open source process, which is based on free access to the source code and permission to make changes and introduce innovations by the broad community of developers. Open licences are often characterised by the “viral rule”, which says that the modified code or software containing and Open Source code has to be distributed as the same type of licence as the original piece of code. This means that any company using Open Source code in its software development must release the altered code on the OSS licence. Here, the institution of law is used for a contrary purpose in the case of intellectual property rights. As Weber (2004:192) remarks:

“The open source process undercuts conventional business logics. The GPL<sup>1</sup> does more than just release control of the source code; it explicitly establishes a situation in which no one can control the source code. This forces a dramatic shift in the underlying structure of the software business.”

Nowadays, OSS can be neither underestimated nor ignored by business players, and many companies aim to take advantage of the Open Source movement by either passively using OSS (one-way benefit) or more actively participating in OSS projects, submitting patches and developing external collaboration networks. Nokia (Jaaksi, 2006; 2007), IBM, Intel, and even Procter & Gamble (Chesbrough, 2006) have incorporated open innovation models to expand their R&D. Customers and users can easily contribute their explicit and tacit knowledge to a company’s R&D processes as technology development and internet availability make the distinction between work and hobby more difficult (Westenholz, 2003).

The Open Source–business collaboration is especially interesting in the setting in which contributors-coders participate both as private persons and as contractual partners or employees. Moreover, the boundaries of known identities, such as a software developer and a software user and entities like a company and a community,

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<sup>1</sup> General Public Licence, one of the most common licences among Open Source Software developers.

are transgressing as a result of interactions between the two worlds (Westenholz, 2009). While in the organisational or intra-organisational context trust is considered as a means of facilitating exchange of resources and information (Uzzi, 1996; Tsai and Ghoshal, 1998), the specific setting of the competing logics (closed-proprietary products vs. quasi-public goods) possesses questions about the common grounds of the Open Source–business collaboration. Moreover, this setting is not free from the power relation, especially in OSS projects created and supported by companies.

This paper examines trust issues in this setting, focusing in particular on answering the question of whether cognitive aspects of trust matter in the Open Source–business collaboration and, if so, what types of elements are considered for the trust to be created. The discussion also takes power relations as an equivalent of the trust-based co-operation into account. The discussion first looks at possible forms and sources of trust in contrast to the façades of trust built into the power relations. Next, the specific aspect problems of trust in Internet-mediated environments are examined, with reference to online collaboration. The theoretical framework indicates that both trust and power can be used to secure required behaviour, but often power-relations are hidden behind the façades of trust. The second part introduces the two cases. The first one, GNOME, is an upstream project involving many individuals and companies. The second one, Maemo.org, is a project controlled by a single company. The linking element of the cases is the involvement of the Nokia corporation in both. The description is built on two aspects of trust: political trust and trust in expertise. These aspects were the results of the content analysis of the data and are considered empirically important according to the research participants' point of view. The discussion and conclusion integrate the findings into a two-dimensional taxonomy of cognitive trust in the Open Source–business setting, thereby explaining the trust issues that Nokia encountered as well as the use of the institutionalised solutions as a substitute for personal, cognitive trust.

## **Unfolding the trust concept**

Trust as one of the preconditions of co-operation is widely discussed in the literature

(Gambetta, 1988; Hardin, 2002; 2006; Lane and Bachmann, 1998/2000: for reference). In particular, trust is considered to be a platform for building social capital (Rothstein, 2007) and as such could constitute the basis for group work and support. Trust theories have been used to understand B2C or C2C e-commerce phenomena (Xiong and Liu, 2003; Hardin 2006, Jones and Leonard, 2008), development of dedicated commercial IT/software solutions (study of distrust by Latusek, 2007), the existence of online communities (Wiertz and Ruyer, 2007), and online collaboration in global virtual teams (Jarvenpaa, Knoll and Leinder, 1998).

In this paper, trust is conceptualised according to Hardy, Phillips, and Lawrence's (1998/2000:69) definition as "communicative, sense-making process that bridges disparate groups". Similarly, following the work of Mayer, Davis, and Schoorman (1995:712), the current discussion also argues that bridging between people and groups requires some level of "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". Within organisational and interpersonal settings, the discussion applies Hardin's (2006) approach to trust as a cognitive, calculative phenomenon. Moreover, as Lewis and Weigert (1985:456) claim, "trust is a necessary condition of social existence, but its enactment is also a matter of individual decision and interpretation." As such, it is important to be able to acknowledge that trust has been often substituted with the power relation, even if such a substitution was not initially evident. Hardy, Phillips, and Lawrence (1998/2000) further noted that—in addition to the different forms of trust—trust can be also be limited to its façades. Meanwhile, in symmetrical power structures, trust can be either spontaneous or generated; the concept of the façade of trust describes the situation of a power-based relationship in which the stronger party creates an illusion of trust. Finally, Sztompka (1999) indicates that—to understand trust-building processes in any given setting—one needs to be able to recognise and differentiate among various targets of trust that are often mutually interdependent. This particular sensitivity of targets of trust is applied in the current case study analysis.

This section presents the origins and nature of different concepts of trust, including in particular institutional and personal relations, structural, cognitive, and affective sources of trust as well as various targets of trust. It also indicates that the ability to distinguish trust from its façade, which is often the outcome of unevenly distributed

power, is also equally important. The section also looks at the current state of literature on trust in Internet-mediated environments, showing gaps in our understanding of development trust in the setting of Open Source–business collaboration. Finally, the section unfolds the concepts of political trust and trust in expertise.

## **Sources and façades of trust**

Two distinguished streams of research into sources of trust exist. Macro-level explanations are provided in studies on the institutional, system, or impersonal trust phenomena (Luhmann, 1979; Shapiro, 1987; Lindström and Janzon, 2007, Kroeger, 2009). Micro-level explanations fall in the domain of personal and relational trust concepts (Lewis and Weigert, 1985; Hardin, 2002; 2006; Rothstein, 2007, Greenberg *et al.*, 2007).

The antecedents of the macro-level system of trust are in social systems and social institutions. Lindström and Janzon (2007:461) define institutional (vertical) trust as “the trust of the citizens in the institutions, particularly the public institutions of society”. However, institutional trust also means that people trust that those institutions will be effective in sustaining the system. For instance, parties signing a business contract assume and put trust in the legal system (the courts, the police, etc.) that it is able to secure their interests. The impersonal trust concept is often used to indicate the trust relationship between a principal and an agent who serves the principal’s interest. The guardians of trust, such as certified accountants auditing the company’s bookkeeping, sustain the impersonal trust and “simulate the practices of risk spreading, personalizing, or contractually limiting agency relationship that principals ordinarily exert on their own behalf” (Shapiro 1987:636). These guardians are themselves guarded by institutionalised trust (Kroeger, 2009). A special type of a system trust is swift trust (Meyerson, Weick and Kramer, 1996), which is not based on common history, but on the willingness to suspend doubt about the other party’s involvement and good faith that they will act in the group’s best interest:

“Swift trust theory is related to early stage of group interaction when participants are acting upon their initial expectations of involvement of team



members and their focus on effective task performance. It is often presented as emerging in the context of temporary task groups. The swift trust is then understood as trust initially present at the beginning of group formation when team has yet no history or relationship worked out what so ever. But, because of the character of their collaboration—temporary and task accomplishment oriented—they must swiftly form relationships and divide roles to be able to act.” (Meyerson, Weick and Kramer, 1996:167)

On the other hand, from the micro-level perspective, trust is a personal, relational phenomenon that can be derived from past experiences, either as a calculative prediction about future behaviour or more emotional relations to the other individual. Accordingly, Rothstein (2007) argues that the literature addresses different conceptualisations of trust, although the main differences allow for looking at it as a result of utilitarian calculations (figuring out who is worth being trusted in terms of persons’ interests) or as a moral orientation (being trustful towards others). Similar remarks can be found in Greenberg *et al.* (2007), who refer to two ‘traditional’ sources of trust: (1) a cognitive trust that arises from the assessment of another person’s integrity and abilities and (2) an affective trust that is linked to social bonds and benevolence. According to Lewis and Weigert (1985), cognitive trust provides a basis for the creation of affective trust relations and, therefore, can be considered as a positive antecedent of affective trust (McAllister, 1995; Johnson and Grayson, 2005). In organisation studies, emotional, affective trust has not been focused on much. Creation of trust in the inter- and intra-organisational field is more often associated with the network analysis. The vast part of the discussions on creating trust at both organisational and social levels includes primarily the concept of predictability and expectations of reciprocity between partners. Sydow (1998/2002:48-53), for instance, mentions several structural properties of a network that enhance trust, such as the small number and similarities of networked organisations, open and frequent communication, multiplicity, and open-endedness of relationships as well as balanced autonomy and dependence. Consequently, trust in the organisational context is often theoretically defined as a relational phenomenon, whose outcomes depend on how the “real-life context” and “interactive rationality” have constructed the “mutual expectations” (Rothstein, 2007). Although this conceptualisation draws just frames for social trust emergence, it also emphasises its very local and cognitive character.

Hardin (2006) argues that only cognitive explanations of trust emergence give

interesting insights. According to him, other conceptions of trust, like moral commitments and psychological or character disposition, do not lead to a better understanding or creation of general trust theories. Although some may not completely agree with Hardin, as certain elements of the affective trust might have an impact on interpersonal and intraorganisational relations, this paper focuses primarily on the analysis of the cognitive aspect of trust—encapsulated interests, as Hardin would call them (i.e., perceived common interests of two parties)—judged by the common collaboration history and “proper” behaviour of the other party over a certain period of time. This choice was made after the case analysis and was empirically driven.

Summing up the discussion thus far, spontaneous trust emerges naturally during co-operation as predictable behaviour ensures partners in their goodwill and engagement. It can be institutionalised in the community of practice or be a by-product of social interaction. It takes the form of institutionalised system trust or personal trust. However, rarely is trust natural and fully spontaneous. On the contrary, it is often generated through communicative activities undertaken to ensure that shared meaning is mutually constructed during collaboration in order to bring about common benefit (generated trust). When meaning is shared but distorted or imposed by one partner, this can be termed a façade of trust (Hardy, Phillips and Lawrence, 1998/2000). Co-operation emerges through the management of meaning (manipulation) or dependency and socialisation (capitulation). Today, it is especially important to identify the asymmetrical power relations given the increasing number of interactions between individuals and corporations and among corporations as they are quickly growing in both size and number (Pixley, 1999). As Calhoun (1992) argues, asymmetrical relations can exist in person-to-person relations, but they are especially imminent in situations in which a “natural person” is facing corporations (markets), bureaucracy (administrative organisations), and information technology. Zaheer, McEvily, and Perrone (1998) reflect upon the facts that trust relations may occur among persons (interpersonal trust) and between persons and organisations (interorganisational trust). Although “the connection between interpersonal and interorganizational trust is based on institutionalizing processes” (1998:144), those types of trust constitute different concepts and, to a certain extent, should be treated separately. Similarly, Arrighetti, Bachmann, and Deakin (1997) suggest that organisational trust is a different construct than personal trust relations and more often

involves legal arrangements.

Contrary to these distinctions, Sztompka argues that trust among individuals and towards organisations can be easily mixed and mutually constituent. For instance he says (1999:41):

“When I trust Lufthansa and decide to fly with them to Tokyo, it implies that I trust their pilots, the cabin crew, the ground personnel, technicians, controllers, supervisors, and so forth. I don’t need to meet all of them in person to have some image of them, drawn from various sources [...]”

To understand the constituents of trust, it is important to recognise the complex balance between trust and distrust in different targets of trust. In each setting, and for each actor, a distinct bias exists towards various kinds of trust. Thus, levels of institutional and personal trust may differ dramatically.

## **Trust in the Internet-mediated environment**

Creating trust within an Internet-mediated environment is an emerging research topic in business and organisation studies and has become one of the key (business) problems for companies engaging in online activities. In particular, two contexts of Internet (trust) relations are discussed in the literature. First, trust concerns the possibilities of online commerce (Xiong and Liu, 2003; Hardin 2006). Much less was done to understand trust in online co-operation.

In the particular area of OSS projects, two trust-related issues have been raised. From the perspective of business organisations, the key question is whether companies should get involved in any Open Source activities. Articles in professional journals focus primarily on potential problems with the security of Open Source programs. Although some very enthusiastic descriptions exist of successful usage of OSS in private companies (Balog, 2007; Harrison, 1989), many concerns are still communicated (Greene, 2007). For instance, Hissam, Plakosh and Weinstock (2002) believe that OSS is more vulnerable to attack than commercially developed programs, arguing that open code helps cyber criminals gather data and facilitates their attack. Although this way of thinking is very much in line with the property rights logics, the authors point out an important aspect of online community life: the problem of

distinguishing ‘good’ members from ‘bad’ ones.

Second, OSS communities have become a field of contradictory opinions. The most serious discussion centres around the existence of trust built through online communication. For instance, Russell Hardin (2006:117)—one of the leading authorities on trust—is very sceptical, stating that:

“For most of our dealings on the internet, trust is not an issue virtually by definition because we face no risk of any significance and we do not deal in relational interactions over many rounds. There is no place for trust to take hold.”

Moreover, Hardin (2006) argues that internet relationships are typically one-shot transactions in which the use of common norms, beliefs, and sanctions does not work due to the nature of the Internet as a vast, decentralised system. In this sense, the Internet’s characteristics and dynamics make contexts for social activity peculiarly extreme; indeed, in most cases the creation of online (social) communities is not possible.

However, the results of Osterloh and Rota’s (2004) empirical studies seem to contradict some of Hardin’s conclusions. Similarly, Matzat (2004) argues that Internet usage in fact has social consequences, including the creation of online groups (communities). In addition, Jarvenpaa, Knoll, and Leinder (1998) claim that coordination in virtual teams can be achieved primarily by building trust relationships and shared communication systems; therefore, they suggest that trust is an important issue for enhancing online collaboration (Handy, 1995). Following this line of thought, it seems that most studies that primarily emphasise the role of swift trust in online collaboration deal with virtual teams, which are established to finalise a particular task known from the beginning (Jarvenpaa, Knoll, and Leidner, 1998). Yet they are temporary in terms of their existence, and collaboration is the focus in accomplishing the given target.

What differentiates OSS projects is that they have a rather continuous task: the never-ending struggle to upgrade the software code, either by fixing the bugs or by developing new functionalities. The continuity of the task is derived from the character of the work itself. New functions create new bugs; new upgrades fix one bug, but introduce others. In this sense, Open Source communities will always have work to do until participants are interested in the emerging product (software). At the

same time, OSS communities are temporal groups—not in the sense of the time span and defined task, but in terms of structures and participants. Their membership is in flux.

## **Political trust and trust in expertise**

Based on the previous discussions, the concepts of trust and trust emergence are rather underdeveloped in the field of OSS communities and require further—especially empirical—examination. In particular, further explanation of the trust issues within Open Source–business collaboration is needed. Yet studies of community aspects and swift trust focus too much on the OSS communities while ignoring the corporate partners as important and growing contributors in them. To address this gap, this paper presents an empirically driven description of the trust relations between Nokia corporation and two OSS projects. From all of the possible sources and forms and façades of trust, two cognitive elements became important in this setting: political trust and trust in expertise. Shared trust is also examined in the legal institution and justice system as a guarantor of the contract and licence agreement fulfilment. The concept of political trust is used in a different way than in most trust-related literature, where it is often related to trust in democracy and the political system as part of more impersonal trust relations. Here, political trust is a trust towards the organisation that its declarations and presentations will be followed by coherent actions. Trust in expertise is the trust given to a person that this person is professionally capable of providing quality solutions for given or taken tasks. In both cases, the trust is granted without certainty or control over the situation. The next sections are structured to present the political trust and distrust as well as trust in the expertise. The material is divided into two case studies: relationships between Nokia and its dependant Maemo.org community and between Nokia and the upstream independent GNOME community.

# Case Studies

The data are primarily qualitative in nature and concern software development processes incorporated into a single product project: the Internet tablet. However, data are not used to test hypotheses or bring about exhaustive insights about knowledge integration in the Open Source–business collaboration. Case studies were chosen as an interesting example of a big media organisation, originally working on a close-code basis, which changed its strategy somewhat to become an Open Source participant as well as beneficiary. Within the cases, special interest was given to the Internet tablet development—a product fully commercialised in 2009 and that for years has served more as an experimentation site for R&D and collecting feedback from the market rather than a source of profit.

Empirical work was regularly conducted from May 2008 until November 2009. Semi-structured and unstructured anthropological interviews (Spradley, 1979; Koster, 2003/2005) were conducted in the Nokia Research Centre in Helsinki (June, 2008) as well as during international conferences and projects gatherings—namely, the OSS Conference (July, 2007), Linux Tag (May, 2008), GUADECs (July, 2008 and 2009), and Maemo Summits (September, 2008 and October, 2009), where observations were also made (Agar, 1996/1980). Some interviews were recorded and transcribed, but many took the form of a private talk. The notes from private talks were taken *ex post*. Secondary sources included written online materials from Nokia and co-operating projects (e.g., statements, presentations, discussions, blogs, combined in a netnographic study (Kozinets, 1997; 1998; 2002)) as well as previous studies on Nokia (Ghosh, 2006; Dittrich, 2007). Due to the interests of the various involved parties, identities and names of the informants referred to are fictive. Only some publicly accessible opinions and statements are quoted using real names and positions.

During the interviews, the word “trust” was rarely used if not directly asked about. When the researcher openly asked about trust, interviewees understood trust to be a good quality of OSS. However, some of the observations and indirect questions about trust relations within projects indicated that it was a present issue in the field (although not named). For instance, one person refused to give an interview because

of a contract he signed with Nokia. He apologised profusely, but he also admitted that even in the middle of the night he would remember the fine for revealing any details about projects on which he was working. Surprisingly, contrary to the interviews, trust appeared to be an issue, but depending on the case its focus differed. However, this provided only a perspective of how the trust concept is communicated by the project participants, while the offline data were used as interpretative lenses for what we can read in on- and off-line materials.

The analysis of the material was twofold. In the first step, the projects' Internet websites were examined for trust-related discussions. Both Maemo.org and gnome.org were thoroughly searched to identify all instances containing the words "trust" and "trustworthy". This exercise was followed by a detailed analysis of all identified examples, choosing trust-related topics, which were searched through again. For instance, one of the key trust issues on Maemo.org concerned Nokia's involvement; thus, the website was again combed for the keyword "Nokia". This led to two aspects of trust being considered: political and expertise. The second step involved searching through interview transcripts and field notes for the indication of political trust/distrust and trust/distrust in expertise. During this second stage, quotes and stories related to the institutional forms of trust were identified for inclusion in this paper.

## **Nokia and Open Source**

Nokia is a well-known telecommunication company. It is primarily associated with cellular phone manufacturing, but its broader strategy is mobile connectivity. For the last several years, Nokia has been working on a new embedded system for its devices. The main test-bed is the Internet tablet project. To a certain extent, it developed in response to the actions of the other important players in the market (e.g., Google, iPhone) that were already working on the idea of smart phones packed with Internet browsing and multimedia utilities.

The development process was initiated in 2002 with the Nokia 7700 media device,<sup>2</sup> but the first Internet tablet—the N770 model—was announced in 2005 at the

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<sup>2</sup> <http://www.mobile-review.com/articles/2008/internet-tablet-en.shtml>

Linux World Fares and Conference in New York City. The second generation of tablet N880 was rolled out in January 2007 at the Consumer Electronics Show in Las Vegas, although in October that same year the third generation N810 was announced and became widely available two months later. Finally, in November 2009, the N900 was launched—the first tablet device with a SIM card dedicated for the mass market.

The operating system for Nokia’s Internet tablets is Maemo, which is composed mostly of F/LOSS<sup>3</sup>; the core comprises the Linux operating system kernel, the GCC compiler, the GNOME UI framework (Hildon UI provides components over GNOME), GNU C libraries, Debian Packet Management, etc. The Nokia project was an initial step to create “an open-source product for broadband and Internet services”; Nokia declared that it would be regularly co-ordinating and launching new versions of the software.<sup>4</sup>

Both GNOME and Maemo.org are part of Nokia’s Internet tablet development platform. GNOME is an external Open Source Software project that was already well organised and developed when Nokia decided to join it. Nokia’s interest was mostly concentrated on using and developing GNOME/GTK+ Application Framework, GNOME VFS File Access, a structural file library, and a configuration management. Some are still components of the Maemo operating system. For the most part, the Maemo operating system is built from Open Source components, although it also incorporates third-party proprietary modules and patches provided by Nokia. The operating system is internally developed and managed by Nokia, which has absolute power over releases. External contributions to the Maemo operating system are possible through mainstream projects, such as by participating in GNOME or Linux kernel projects. This means that no external developers have a direct influence on the operating system development or release: “in the end, yeah, we make the decision about what is delivered in the box” [Nokia developer, 2008].

The Maemo.org project is an open platform to which anyone can contribute directly by producing applications for the Maemo operating system, testing them, and reporting bugs. Therefore, inversely to what the name may suggest, the Maemo operating system is not developed by the Maemo.org community. The Maemo.org website is almost entirely dedicated to developers willing to work on games, instant messaging programmes, weather widgets, and other utility software for the Nokia

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<sup>3</sup> Free/Libre Open Source Software

<sup>4</sup> Janne Jormalainen, a vice president of Nokia, quoted in Sharma (2005)



tablet devices and for the Maemo operating system delivered with a software development kit (SDK) by the Nokia corporation. The names may thus be misleading.

## **GNOME**

### **Nokia's politics of involvement in GNOME**

GNOME—the GNU Network Object Model Environment—is a free software desktop project that provides both an “intuitive and attractive”<sup>5</sup> desktop environment as well as the GNOME development platform for building applications. Nokia is one of the many companies interested in GNOME, particularly the usage of some components for embedded devices. Today Nokia is part of the GNOME foundation, but it can still only try to affect the work done via its programmers. Nokia as a single company does not formally have the power to make decisions on behalf of the project.

Nokia first demonstrated at the GUADEC, the annual GNOME Users' And Developers' European Conference, in summer 2005 in Stuttgart. As a cornerstone sponsor, Nokia made a presentation on its work done with GNOME and GStreamer-related technologies.<sup>6</sup> This presentation correlated with the launch of Nokia's first Internet tablet device. The executive director of the GNOME Foundation, Timothy Ney [2005], said at that time that, “We're very excited about the release of the Nokia 770 Internet Tablet,”<sup>7</sup> and he expressed his gratitude to Nokia for donating the proceeds from the sales of 500 Nokia 770 devices to the GNOME Foundation. During GUADEC 2006, four different sessions related to the Nokia 770<sup>8</sup>. Nokia continued to contribute to Open Source and GNOME in subsequent years as well as financially sponsoring GUADEC at the gold level in 2006, 2007, and 2008. In 2009, the Nokia group Qt Software and Maemo.org became a platinum sponsor of GUADEC.

Trust relations with any of the companies involved in GNOME are rarely discussed on public Internet fora. Although this is considered a sensitive issue, the topic is present in more personal communications. Nokia is posed in contrary to companies like Red Hat, which is considered as a truly Open Source company that is

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<sup>5</sup> <http://www.gnome.org/about/>

<sup>6</sup> Presentation made by Yannick Pellet during Multimedia Track (<http://2005.guadec.org>)

<sup>7</sup> [http://2005.guadec.org/press/releases/nokia\\_donation.html](http://2005.guadec.org/press/releases/nokia_donation.html)

<sup>8</sup> <http://live.gnome.org/GUADEC2006>

very much immersed in the ideology as well. In addition, one of the GNOME founders originated from this organisation. The GNOME developer [2009] explained the researcher the difference between Nokia and Red Hat: “Red Hat runs this community disinterestedly”, which is evident in the way it hosts community servers and participates in the project. Nokia, on the other hand, is purposeful; nobody exactly knows what the company is up to for several months. However, things are not just black and white in this field; lines are blurred. Yet ultimately, doubts exist about Nokia’s open strategy:

“I think Nokia is one of the examples off the far wrong side of how things should be done. Red Hat is on the other side. But Novell is not so clearly on the side, which does it right, but they are traditionally an open-source company. While Red Hat always was an open-source company and always make everything [open] out, Novell didn’t. So inside Novell there is still this fight going on. So the line is blurry.” [GNOME developer, 2008]

Nokia’s political decision about the acquisition of the Trolltech ASA in June 2008, later renamed Qt Development Frameworks,<sup>9</sup> was crucial for its involvement in the GNOME project. Qt is a cross-platform application development framework, a well-known widget library widely used for the development of graphical user interface programs. It is free and Open Source Software distributed under the terms of the GNU Lesser General Public License.

Along with Qt, one of the most popular toolkits for the X Window System—GTK+—was developed within the GNOME project. As advertised on the official website<sup>10</sup>: “GTK+ is a highly usable, feature rich toolkit for creating graphical user interfaces which boasts cross platform compatibility and an easy to use API.” Here emerges the basic conflict of interests. During GUADEC 2009, Nokia was openly advertising the usage of Qt and offering jobs for developers, which was not appreciated by GTK+ developers. Even more ironic for the GNOME community, the non-GPL Qt library used by the KDE project<sup>11</sup> became one of the reasons for GNOME’s creation. In 1997, the GNOME project was started to develop a fully open platform.

“We don’t like them anymore” one of the GNOME developers [2009] stated,

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<sup>9</sup> <http://qt.nokia.com>

<sup>10</sup> <http://www.gtk.org>

<sup>11</sup> Similar to GNOME, an OS project offering a user interface for Linux.

expressing dissatisfaction about Nokia's actions. It was considered rather offensive to the GTK+ developers that Nokia came to their conference promoting a competitive toolkit. It was perceived as showing a lack of respect for their work. As a sponsor, Nokia had requested to put a Qt logo on the name badges, which was widely protested by covering the Qt logo with various stickers. GNOME community members showed solidarity in this protest, which surprisingly also concerned most of the Nokia-employed developers who originated from GNOME. In addition to the purely emotional reactions, Nokia involvement in Qt development means no further contribution to GTK+ and probably also much less participation in the GNOME project in subsequent years. This has happened despite previous assurances from the Nokia PR that the acquisition of Qt would not change the company's relations with GNOME. Clearly, it has.

### **Trust in expertise of GNOME community members**

Cognitive trust-building is supported by GNOME in several ways. The emphasis is on transparency and individual performance. "Can I have my pseudonym, "billsmith", as my gnome.org account name? I use it everywhere online and want to protect my real identity?" is marked as a Frequently Asked Question. The answer to this query is a simple "no":

"There must be an immediately obvious connection to your full, real name. The community is based on transparency and trust. Pseudonyms and hidden identities do not play well with that."<sup>12</sup> [AccountNameFAQ]

GNOME is also known as an originator of a special type of avatars called *hackergotchis*. These are usually head cut-outs with a shadow drop that first appeared on art.gnome.org and were subsequently used on a blog aggregator of GNOME programmers and contributors called Planet GNOME. By using *hackergotchis* as avatars, people recognise each other more easily.<sup>13</sup> They also help other people recognise contributors from around the planet and create the impression that—despite the distance—people actually get to know each other over time. More importantly, the system tracks reputation scores and badges so people can easily recognise the authors of submitted patches and expressed opinions.<sup>14</sup> Somebody with several hundred posts

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<sup>12</sup> <http://live.gnome.org/AccountNameFAQ>

<sup>13</sup> <http://live.gnome.org/ClausSchwarm/HowtoGetMoreContributors>

<sup>14</sup> <http://live.gnome.org/ClausSchwarm/HowtoGetMoreContributors>

becomes more reliable as people feel more confident about his/her professional advice and contributions. Finally, all these actions are purposeful as trust is recognised as an element of project life and a condition for its development:

“Not stated among the arguments for and against wiki is the obvious: that you can easily secure wiki behind an intranet, and that is where wiki excels, among a contained, gated community, where trust is implicit and granted on the basis of all individuals being known to the community.”<sup>15</sup> [Why Wiki Works]



**Figure 1: Examples of the *hackergotchis* heads, source: <http://planet.gnome.org>**

Being trusted or a trustworthy person is a requirement often expressed while talking about any contribution to the GNOME project. “It’s easy to build up trust over time.”<sup>16</sup> If one wants to become a GTG developer, “we have to know you and trust you for your contribution.” In practice, this means that:

“If you contribute code, we should have confidence that you are now a gtg master and that you’ve fully understood our coding rules. It usually means that your latest patches were all merged without any need to resubmit them.”<sup>17</sup>

Several levels of functions and trust-related positions exist in the projects; parallel to sysadmins, account team members, trusted translators, trusted editors, etc., there are also “superusers”—“trusted user names with wiki system administration super powers (not to be confused with ACL admin rights!)”<sup>18</sup> GNOME project participants are supposed to trust the trusted. This saves time and assures the quality of work:

“If you want to translate the documentation shipped with your application,

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<sup>15</sup> <http://live.gnome.org/WhyWikiWorks>

<sup>16</sup> <http://live.gnome.org/Sysadmin/AdvisoryMeeting/FormalTeam>

<sup>17</sup> <http://live.gnome.org/gtg/becoming%20a%20gtg%20developer>

<sup>18</sup> See [HelpOnSuperUser](#). Used for making full backups, software installation, language installation via [SystemPagesSetup](#), etc; source: <http://live.gnome.org/HelpOnConfiguration>

please contact your own language team. You can find a complete list of all the team here: <http://110n.gnome.org/teams/>.”

“Each team is very dedicated to their work and have high translation standards: all maintainers should trust the translation team and can only accept translations coming from members of a translation team.”<sup>19</sup>  
[DocumentationProject/Translations]

GNOME makes sure that translators are assessed both on their motives and drives as well as their expertise in the subject. The Team Co-ordinator within translation projects is responsible for approving individuals’ translator accounts. This process is not taken lightly, as with such accounts comes much power:

“Approving means testifying the trust to this applicant and that he or she will follow the rules and not misbehave, and testifying that the applicant is a real existing contributor to this language team and really in need of an account. The co-ordinator should not approve of applicants for which any of this is not true.”<sup>20</sup> [TranslationProject]

Similarly, it is not a threat to anonymous voting in foundation elections if the Election Committee can link ballots to members (as they are responsible for the voting process and are able to issue new ballots if a member loses the original one):

“I don’t think this can be fixed without lowering the security of the system. The committee is already trusted not to rig the election, so I don’t think this is too big of a deal.”<sup>21</sup> [Anonymous Voting]

For those interested in working as an account team member, “we need to know a little bit about you”. The most preferred candidates are existing foundation members with a history of involvement in the project. If that is not the case, the “references to any previous work you have done in the open source community, or the names a couple of Foundation Members that can vouch that you are responsible, trustworthy and of good character, etc.”<sup>22</sup> are needed.

Moreover, the need for trust is indicated as the biggest problem of maintaining an active sysadmin team. Many people want to help, but this requires giving them a

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<sup>19</sup> <http://live.gnome.org/DocumentationProject/Translations>

<sup>20</sup> <http://live.gnome.org/TranslationProject/TeamCoordinatorResponsibilities>

<sup>21</sup> <http://live.gnome.org/AnonymousVoting>

<sup>22</sup> <http://live.gnome.org/AccountsTeam>

“dangerous level of access to the GNOME systems.”<sup>23</sup> Gaining trust is primarily based on cognitive, personal aspects: quality involvement and willingness to help out with the GNOME project. If patches through a review process are perceived as beneficial, people are eventually given direct commit access. Unfortunately, people who are given a high level of trust in expertise are very often occupied with other tasks and generally are not particularly sysadmin experts. Therefore, a trust issue remains in regard to filling vacancies on the team:

“I think you’d basically have to have an application process. Candidates would need to give information about their experience with sysadmin, have a demonstrated commitment to GNOME by work on bug-triaging/translations/coding/whatever and be people known to the community. (maybe just by hanging out on #sysadmin for a few months.) The team leader, in consultation with the rest of the team, would have the responsibility for encouraging people to apply and collecting data about applicants.” [Sysadmin/AdvisoryMeeting]

Applicants need to meet two main requirements before they are admitted to the core sysadmin team:

“At least a few years of practical hands-on experience working in a Linux-based systems administration environment. A certain level of competence is required. We do not have any apprenticeship or training positions open at this time.”

“A history of practical contributions to the GNOME project. This demonstrates that you are capable of sparing time to help, are genuinely enthusiastic about GNOME and have demonstrated a certain level of trustworthiness and responsibility.” [Sysadmin/AdvisoryMeeting]

To prove their trustworthiness and expertise, candidates are strongly advised to start at least hanging out on the sysadmin discussion forum, be acquainted with day-to-day problems, and eventually join in and offer real-time advice. “[W]e would not accept anyone into the sysadmin group until we are familiar with them and know that they are capable and trustworthy enough to start dealing with any issues themselves” is clearly stated on the “Helping Sysadmin” guide.<sup>24</sup> Similar points are made in relation

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<sup>23</sup> <http://live.gnome.org/Sysadmin/AdvisoryMeeting/FormalTeam>

<sup>24</sup> <http://live.gnome.org/HelpingSysadmin>

to other subprojects and groups, as in the Linux Screen Reader (Table 1) or Subversion:

“With an increased amount of trust and responsibility, you may even be asked to start maintaining a module within GNOME Subversion—or indeed, one of your own that you may have imported.” [Getting the most out of Subversion in GNOME]

**Table 1. Linux Screen Reader - How to contribute, source: <http://live.gnome.org/LSR/CoreDevelopers>**

1. Check the project ideas page. Let us know if you want to help implement any of the short term features by emailing the LSR mailing list ([lsl-list@gnome.org](mailto:lsl-list@gnome.org)).
2. Let us hear your novel ideas. Most new features only require that you write a script or device extension to LSR rather than modify the deep internals. Discussing your ideas on the LSR mailing list ([lsl-list@gnome.org](mailto:lsl-list@gnome.org)) will ensure you're not headed for more work than is necessary.
3. Understand the concepts in the LSR workbook and the structure of the code in the LSR epydoc. Working on the core will be difficult if you don't have a working knowledge of the architecture and codebase.
4. Create a development sandbox so you can hack without having to reinstall after each change.
5. Become versed in the LSR code style guidelines. We like to run a tight ship.
6. Implement your idea.
7. Submit patches. We will review your initial contributions to the core to establish trust and pedigree.
8. Become privileged. We may grant commit permissions after one or more successful contributions to the core.

Meanwhile, developers working for Nokia are highly evaluated as experts and many trust their expertise. Many originate from the project and collaborate on it even after their contract with Nokia ends. In addition, within GNOME, developers work with people; people are respected and their professionalism noticed. It does not matter which company they subcontract to or are employed by at the moment; it is still the personal, cognitive judgement of their expertise and professionalism that counts:

“I guess for the community most of the time it's more about the name, I mean the person who is sending the patch and not the corporation. If they know you by name and they know that their work is good then it doesn't matter because you are working for Nokia today but you can be working for Intel or whoever

else tomorrow. Because that changes a lot in the free software community. You have people that are moving, so at the end of the day they are just these people. And they might have those moments but it does not really matter because they are not really tied to those corporations.” [Nokia developer, 2008]

Trust is also expressed toward Nokia managers: “Trust Quim Gil to promote it [=Hildon]”.<sup>25</sup> However, it was obvious at that time it was actually in managers’ and Nokia’s best interest to promote Hildon. Thus, this situation highlights corporate politics and Quim’s expertise based on expectations about acting according to his job description and the corporate policy. Yet in most other cases, discrepancies at the political level have resulted in the company being distrusted in a community, despite Nokia’s people knowledge and expertise. This distrust stems from unpredictability at the political level. One cannot be closed while preaching openness:

“Nokia have a lot of very good people and those people are respected from the software community, but everyone makes fun of the way that Nokia handles things [...] I mean everyone acknowledges that they do good stuff, or at least some good stuff, but on the other hand people also make fun of them due to their closeness. I mean, it is not even the people are pissed, people just think, thank God I am not a Nokia employee.” [GNOME developer, 2008]

For many Open Source developers at Nokia, the corporation is a strange environment with which to deal. Partly by ignoring it, they help progress their project:

“That was one of the things that surprised me this kind of ‘we have these Nokia values and we have this kind of brainwashing stuff’. But from the beginning it was like ‘who believes this?’ Maybe it sounds nice, I just didn’t understand it. Coming from outside all this stuff seems pointless, it doesn’t make sense. But they are still trying to go around—but this, it is ignored as part of the Nokia world. Most of us, we just ignore it. It is probably something that managers believe in. But maybe a few developers believe in this stuff also. But most of the people just don’t care.” [Nokia developer, 2008]

In addition, people’s trust is easy to lose in the end. Sometimes intrinsic trust put in a person’s quality of work and reputation is removed if that person does not perform well. One of the mentors in Summer of Code 2007 was “hard to contact and get

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<sup>25</sup> GNOME member on Hildon migration to GNOME, <http://live.gnome.org/Hildon/MigrationToGnome>



feedback about students’ progress” and consequently was described during debriefing as an “untrusted mentor”,<sup>26</sup> which probably meant the individual had no chance of working in this function again. Similarly, sometimes wiki discussion pages do not work as well as people expect because they can be easily sabotaged, either by hostile comments and ranting:

“Look for opinions. Oppose them. Generate controversy, especially heated debate over ambiguous subjects. This will raise the level of noise and frustration, driving people away.”

or by purposeful information distortion:

“Look for facts. Distort them. Replacing complicated data with slight changes can be detected, but only if a person is willing to pour over it and validate it. A difference engine and source control help when source material is changed in a complex, subtle ways. But enough accumulated errors cause a failure of trust.”<sup>27</sup> [Why Wiki Works]

Information on the official project pages is not always updated and valid. This is a classic problem facing software development projects when documentation is the least wanted task and literally unnecessary for the software to work. However, well-documented software is more likely to be further developed.

“One should really be very careful about trusting anything on developer.gnome.org other than API documentation—lots of it is so out-of-date as to be more harmful than helpful. I haven’t read through everything there thoroughly (though I have at least skimmed it at some point in the past), so I can’t comment on all of the links below but this general warning should be noted.” [developer.gnome.org]

## **GNOME: Summary of findings**

The GNOME community has worked out a system that supports building cognitive trust. They have focused on securing transparency in the project, making sure that people and their contributions are easy to track. Using real names and real photos as well as linking patches and opinions to particular developers makes this collaboration

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<sup>26</sup> <http://live.gnome.org/SummerOfCode2007/Debrief>

<sup>27</sup> <http://live.gnome.org/WhyWikiWorks>

more personal. Reputation ranks and badges instantly indicate an individual's level of involvement and expertise. Important (i.e., "trusted") positions are given to developers who have proven their expertise and political coherence. Trust in an individual's professionalism and expertise is easy to lose if one is not acting accordingly to the expectations.

On the other hand, the participants of GNOME are also corporations like Nokia. On several occasions Nokia showed that its declarations and plans might have little to do with subsequent actions. The company simply did not realise that Open Source is not about promises, but about outcomes. Talks and public relations have no importance if they are not followed by genuine involvement. This strategy made GNOME developers distrustful of Nokia's political decisions. Programmers can make fun of Nokia's closeness, but when Nokia unexpectedly withdrew from a large portion of the community project, it caused a serious threat for the whole project.

## **Maemo.org**

### **Nokia's politics towards Maemo.org**

Maemo.org is both a created and still largely sponsored community that exists thanks to Nokia's Internet tablet project. Initial discussions related to the website are dated May 2005; by the end of that year, it had become an active forum with more than 100 posts per month. However, it seems that the community has practically ceased to exist since 2008. One Nokia developer [2008] stated that "[my] feeling is that we [Nokia] don't have the [Maemo.org] community"; he further explained that "there is a community, but it is mostly users or people trying to port an application". Of course, a growing number of people also started to contribute to the Maemo project, albeit in a very individual manner, developing their own small applications and uploading them on Maemo.org on an Open Source basis. In 2008, Nokia made an effort to reactivate the Maemo.org community spirit by organising a face-to-face meeting with several chosen developers. Further meetings and Maemo summits included not only sponsored Maemo.org users, but also—and often in the majority—Nokia's subcontractors. The first official Maemo summit in September 2008 also served as the inauguration of the Maemo Community Council, whose mission is "to represent the

Maemo community's best interests to Nokia, and to act as a community conduit for Nokia-generated information."<sup>28</sup> Meanwhile, Nokia decided to establish several paid positions to support Maemo.org. Interest in Nokia's Internet tablet project was growing with the launch of new devices. At the same time, Maemo.org developed into a fairly interesting application site, but still not as socially integrated as Nokia would have liked to see it.

"We do trust this community": Nokia is widely communicating its support and trust in the Maemo.org and people involved. "We believe the Maemo community is good-willing and mature enough to have a mature and good-willing council" said the "open source advocate @ Maemo Devices" Quim Gil during one of the monthly sprint discussions in April 2009. Moreover, the full community's salaries and hiring professionals who take care of Maemo.org during times of economical crisis are used as key arguments for the given "trust" and "exposure":

"Nokia would not fund full community salaries in these times when so many corporate salaries are being cut and it wouldn't have the amount of trust it is putting in the Maemo.org team and the council if we didn't believe that you are professional, responsible, and able to manage that work [...]."

"Only if you think the council is opinionated and unprofessional. If we thought so, we wouldn't give them such decision, nor the trust and exposure we are giving them in other areas." [Quim Gil on behalf of Nokia, 2009]

Nokia has also expressed that "personal trust" is given to community members, trying to convince them that they "are getting much more personal trust, understanding and appraisal than an average employee would get in an average corporate job". In addition, Nokia claims that it shows its gratitude for the work done on Maemo.org, often reiterating its financial input into the community's existence:

"We do say thanks and congratulations. We do help as well. But even more importantly (in my opinion at least) we do trust this community and this is why we fund a lot of Maemo.org work. By funding the Maemo.org team and the server infrastructure, we let the community organize about two thirds of the Maemo Summit and so on." [Quim Gil on behalf of Nokia, 2009]

Such efforts have been noticed by some community members. However, Nokia's central role as both a strategic (and only) business partner and the sole sponsor is

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<sup>28</sup> [http://wiki.maemo.org/Community\\_Council](http://wiki.maemo.org/Community_Council)

emphasised. Even the community's council is not defined on its own terms, but as a proxy between Nokia and the community:

“Nokia pays all the bills for the server, and lets the community decide what should be done with it, and supports whatever decision we make. The community council comes in here. They're kind of a proxy between Nokia and the rest of the community.” [Maemo user, 2009]

One of the council members (2008-2009) also takes Nokia's side, expressing his excitement about the opportunity to employ the firm's official webmaster for Maemo.org and the recruitment process, in which Nokia was not initially (at the beginning of 2009) involved. Apparently, “[t]his speaks wonders for Nokia's desire (and trust) for the Maemo community to be open and autonomous.”

It seems that part of “the trust of Nokia's policy” problem stems from the unclear position of Maemo users. Whether they are recognised by the developers' community or just simply customers, different expectations have been attached to the positions. Nokia's motives are mixed, which introduces uncertainty and sometimes distrust of its actions. The political trust in Nokia's expressed motives and strategies is not shared by Maemo users. Many doubts and misunderstandings have emerged regarding Nokia's Open Source actions, as evident both on Maemo.org discussions and as expressed by OSS developers.

In one argument, not only Nokia as a company, but also Quim Gil personally was attacked for hindering Open Source work by limiting access to one of the software packages. Although it appeared that ultimately it wasn't even Nokia's job to manipulate the official repository or any planned action, but rather the fault of the author of that particular package, this discussion revealed some concerns about the corporation and ease with which the trust is suspended and bad intentions inscribed.

“Come on, Quim... what good excuse are you going to tell us now...? Is Nokia (or Maemo) trying to save our souls from the sin of using kismet? Is it just a coincidence? (How many of them... nevertheless)”

“In fact, I've already downloaded kismet from a private repo, and now that I do NOT trust Maemo anymore... I'm storing my own repo site, collecting the deb packages for my 770 and anyone who cares about freedom of use and continued service (what kind of service are we receiving from Nokia as Maemo users?... we're supposed to be customers!).” [Maemo user, 2008]

As this indicates, even when everyone claims that a self-governing community exists, Nokia is central to this project, as both a sponsor and a decision maker. As such, it is expected to be an active player and guardian—and consequently the one to be blamed for many organisational problems. Nevertheless it is obvious that:

“Nokia is in this for the money, not for others’ benefit or because it’s the right thing to do. That means ‘planned obsolescence’ is in effect, as well as control (in other words, \*not\* true FOSS<sup>29</sup>) and other things...[...] I’m just a unsatisfied customer [...] Perhaps you could quit blaming the victims and start dealing with the real problems?” [Maemo user, 2008]

Although it seems to be a known truth within the Maemo community, the Nokia business strategy can be also very harshly criticised for not taking enough care and responsibility for its products and the development process:

“Nokia wants to divorce itself from any responsibility for these devices by sloughing off all support to the ‘Maemo community’, but they’re living in a dream world if they think that’s even possible, much less advisable.” [Maemo user, 2008]

In this context, the privileged Nokia position and its overall control over the project seem to create burdens to trust development, yet power relations remain strong. Maemo users have no other choice than to accept Nokia’s presence in the project and assume that Nokia’s goodwill is shared by some participants. Contradictory statements or a lack of actions may be translated as the need to co-exist in a dual Open Source–business environment, while corporate laws remain opposed to Nokia’s Open Source staff’s personal opinions. People tend to explain themselves and divide between what is politically correct for Nokia’s employees and their “real” engagement and expertise.

“I’m sure they [Nokia Open Source staff] care. It’s just a matter of what they’re officially allowed to say on behalf of Nokia.” [Maemo user, 2008]

“I think they try to keep it informal to give it an open view, instead of a Nokia driven view. They’re definitely here.” [Maemo user, 2008]

The truth is that Maemo.org serves Nokia in many ways, delivering usability to their product. At the same time, not much is given back to the community. Of course Nokia

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<sup>29</sup> Free Open Source Software

sponsors servers, fulfilling some community-related tasks and meetings, but that does not support the creation of a community. In many cases, this project attracted developers who in a way hope for appreciation from Nokia and maybe a job offer in the future. However, if Nokia can have their work and time for free, why would it pay them? A very obvious example of such logic occurred in 2009, before launching the first fully equipped smart Maemo mobile phone (N900). One of the developers resigned from his position in order to be able to catch up with Maemo-related tasks before the official release. He did so because he was involved in the project, but he also expected a reward for his commitment. Nokia never offered him a job or any other support.

### **Trust in expertise on Maemo.org**

In projects like Maemo.org, it is impossible to do all tasks in a limited group or control the quality of all submitted patches. Instead, a high level of uncertainty exists connected to the free flow of people going in and out of the project. Yet some level of trust in others' expertise seems to be necessary to carry on the work.

“Some of the Flash content on the web is not really ... well ...No that's not how the rules are. Bad content may not crash applications, especially if you can't trust the guy how created the content. If a Flash file is broken it might not load, not crash the browser.” [Maemo user, 2006]

In many cases, it is also a matter of the level of expertise in the particular area and language:

“Besides that, I can't really comment much on the code, I'll have to trust that you tested the code and can modify the list\_plugins. I tested this type only from Python, I really don't know (yet) how to make list\_plugins use it :P” [Maemo user, 2009]

Moreover, the participants are also self-critical about their skills; being humble when asking for help is a virtue:

“Just wondering after failing to locate a relevant Wiki page. What's the recommended way of getting a python binding for a lib into extras? I'd do it myself, but I don't trust my packaging skills enough to do it right off the bat and chances are that people might start using it so it's not as carefree to update

as an application in extras-devel, there might be policies about bindings, etc....”  
[Maemo user, 2009]

To a large extent, Mamemo.org mimics the behaviour and style of work on upstream projects. Newcomers to the project need to prove the quality of their work by participating in the process or gaining recommendations from respected and trusted users. Once their capabilities are known, they can obtain certain privileges from the administrator. For example, it is said in the official advice on “Getting started” that:

“The initial admin also has to gain the trust of developers that are being added to a project unless their intent is already known. There are times when a ban may be required. The GNU MailMan software provides these support options. Additional user and developer lists may be developed as your project matures.”<sup>30</sup>

The “someone trusted” is required at many levels and throughout of process of software development. One of the discussions on the Maemo forum focused on the issue of enforcing requirements for the “extras” applications; for example, they must “have been tested by someone trusted before” being made available for download. Moreover, people who are given privileges within the project are those who needed to earn enough credits for their work and therefore should be trusted:

“I read the discussion but I do not see, why I should trust anybody to change the package who should not be allowed to change the maintainer:-)” [Maemo user, 2009]

“2 weeks and 10 testers may be a guideline but we should trust the people who are given upgrade privileges to make the decision.” [Maemo user, 2009]

One of the special positions within the community are council members. After the first Maemo Community Council vote, in September 2008, community members expressed their satisfaction with the choice and mentioned trust in the successful candidates:

“Congratulations :) I like it, the one I voted for is in there. He won’t betray me, will he? :)” [Maemo user, 2008]

“My congratulations to the successful candidates! I trust you will represent the community well.” [Maemo user, 2008]

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<sup>30</sup> <http://maemo.org/community/community-projects/getting-started/>

Some traces of broader discussions about community–council trust relations were evident as well as the possibilities of pushing council members to take action where necessary:

“You’ll just have to trust the judgment of your representatives to keep stuff open, and nag at them to do so through threads like these.” [Maemo Council Member, 2008]

Council members themselves were also concerned about “council-to-community trust”, which became one of the topics of council meetings (see Table 2). The problem of the representativeness and the role of the council member in fulfilling Maemo users’ requests was raised.

**Table 2. Part of the discussion during the Council meeting, source: <http://Maemo.org/Maemo-meeting/council-meeting-2009-06-08.html>**

RST38h	4. Council members should carefully MONITOR each thread and make decisions based on WHAT PEOPLE WANT in that thread
timsamoff	IRC should <u>not</u> be a place for community-related discussion, imho.
Jaffa	RST38h: There's a fundamental assumption in your proposal: that the council has matters which the community needs to bring to its attention. I'm not sure what those things *are*, since the <u>original</u> intent of the council was for them to be perusing the various comm channels to find said things.
RST38h	5. If a council member thinks that he knows what people want, this council member should first of all refer to point #4 above.
timsamoff	I like the idea of having one place for community-related subjects, though.
RST38h	JaffaL I can give you a few examples
timsamoff	Maybe we can do an sjgadsby style aggregate of monthly subject-matter?
* Jaffa would love concrete examples of *what* a “council” matter is. I don't like dealing in the abstract here, because I'm not aware of what a council matter *is* (apart from this meta-meeting)	
RST38h	Jaffa: a) various aspects of Maemo.org infrastructure b) topics council should raise with Nokia
GAN800	The blog aggregates important stuff, and discussion takes place wherever it's most relevant.
* qole likes timsamoff's idea	
RST38h	Jaffa: c) logistics for public events

In this discussion, the concern about the satisfaction of Maemo users’ wants and wishes becomes a must, which leads to spoken statements about a twisted understanding of the democracy. The question of whether a council member should in fact do whatever “people want” has broader consequences. If a council member is trusted within the community, s/he is also trusted in making decisions based on the



goodwill and best available knowledge and skills:

“To me, interfacing with the paid Maemo.org team is one of the primary jobs of the council. The team is accountable to the community, and we’re the community’s representatives, so we need to keep pushing to get the team to open up and tell everyone what they’re doing.” [Maemo Council Member, 2009]

Indeed, there is a lot of trust for Nokia developers’ expertise. Most people working in Nokia Open Source operations are freelance software developers employed from outside the corporation. Nokia searched for recommended OSS project participants, so their knowledge and professionalism have been well evaluated externally and internally:

“I think they [Nokia developers] are good. I don’t see any lack of knowledge so that is fine” [Nokia developer, 2008].

One of Maemo’s users describes how he got help with his Maemo project:

“I was having difficulties with was getting SDL-games, SDL is a media library, to implement pixel-doubling, pixel-doubling is a way to change the effective resolution of the screen to a lower resolution so that you can update the screen more quickly. And [name of Nokia developer] is the guy who ported the X-server, he works at Maemo now, and he’s like on the planet the guru on this area and I mailed with something who came in ‘I don’t understand, I don’t understand, this does not work’ and he didn’t jump and stop all his work to help me but he gave me a couple of pointers and then I put together a couple of demonstration applications.” [Maemo user, 2008]

Sometimes Nokia developers may even unofficially share internal information or not-yet-released versions of the software. When this happens, it is appreciated and respected by the community: “[T]hey didn’t share it so they kept it to themselves [...] It is all very civilized and quiet and polite and professional” [Nokia developer, 2008].

### **Maemo.org: Summary of findings**

The tag “community” in relation to Maemo.org is in fact problematic since developers do not contribute to any single large project, but several people are working on their small applications. As such, it is more of an individual, fragmented project than

teamwork. Many guides and semi-official posts on the website try to mimic large upstream projects by establishing a rank system and advising about who to trust and who should be considered as trusted. In reality, not many people use it as they work individually or in small groups. However, expertise and helpfulness are highly valued. Developers are humble; if they do not know the answer, they seek advice. Similarly, Nokia's developers are trusted experts in their field, although their direct participation on Maemo.org is not that visible. A large proportion of discussion about "trust" issues concerns Nokia's community relations, but rarely within the community. In fact, Maemo.org is dependent on Nokia's products, involvement, and support. Maemo.org serves as a free applications garage for the Internet tablet range, similar to Apple's application store. Despite the "trust" and gratitude often expressed by Nokia towards Maemo developers, it does not go along with many more actions beyond sponsoring any discounts on products. Similarly, Maemo's council has practically no power in managing the project while its scope of decisions depends on Nokia's goodwill. Since the corporation has so much power and control over the project, no situation of vulnerability exists. In the worst-case scenario, Nokia would have to encourage business-oriented developers to create applications on a contractual or licence basis. In this setting, Nokia's trust talk constitutes a façade of trust, when in fact it is more about the management of meaning (manipulation) and trial of attracting and socialising new participants into free-for-Nokia work.

## **Two-dimensional taxonomy of trust**

Trust is not a straightforward clear phenomenon. In the case of the Open Source–business hybrid co-operation, it is especially evident how not only expertise and professionalism count as a positive clue of trustworthiness, but the concept of political (dis)trust also comes into play. Consequently, trust should be analysed as a two-dimensional phenomenon; acting toward just one side is not enough to be considered as a "trusted" partner. Trust in the Open Source setting is a mix of both professionalism and motivations, expertise and politics. Although the political aspect of trust seems to have more organisational-level significance, trust in expertise and professionalism is the basis for the whole Open Source process and cannot be achieved without it. Trust in expertise is always personal, regardless of organisational

or corporation affiliations. In both cases this trust is a cognitive construct. It is given and withdrawn during interactions as a calculative outcome of the evaluation of other people and organisations’ behaviours. Institutionalised solutions are only used to secure the co-operation in situations of distrust between parties. Institutional trust refers to the higher order and is detached from the interorganisational and interpersonal relation and the Open Source–business setting.

**Table 3. Comparison of GNOME and Maemo.org projects**

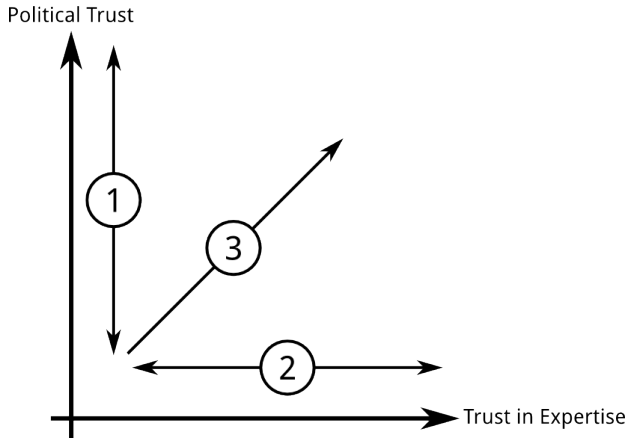
<b>Dimensions</b>	<b>GNOME</b>	<b>Maemo.org</b>
Project characteristics	Software for general use: <ul style="list-style-type: none"> <li>- the GNOME desktop environment for Linux</li> <li>- the GNOME development platform (an extensive framework for building applications that integrate into the rest of the desktop)</li> </ul>	Software dedicated for Nokia Internet tablet phones: <ul style="list-style-type: none"> <li>- Many little applications, mostly developed by one or up to several developers (weather applets, calendar, games, etc.)</li> </ul>
Participants	Relatively independent: <ul style="list-style-type: none"> <li>- several bigger companies involved (Red Hat, Novell, Canonical)</li> <li>- several smaller, subcontracting ones (Collabora, Igalia, etc.)</li> <li>- independent developers</li> </ul>	Relatively dependant: <ul style="list-style-type: none"> <li>- Nokia (assistance and SDK<sup>31</sup> releases)</li> <li>- Nokia subcontractors (support functions only)</li> <li>- Independent developers (applications development)</li> </ul>
Nokia’s involvement	Several subprojects, particularly GTK+ (until 2009)	Project hosted and fully sponsored by Nokia
Institutional	OS licences to secure open access to all forked and upgraded versions of the software (Nokia forced to use OSS licensing, a threat to Nokia’s competitive advantage); formal contracts for co-operating companies/developers	OS licences in favour of Nokia (free use of Maemo.org applications dedicated only for Nokia devices)
Political	Intraorganisational and intrapersonal character: <ul style="list-style-type: none"> <li>- Reciprocity, openness, and coherence between spoken intentions and actions are appreciated and help building trust in the long run.</li> <li>- Nokia’s incoherent declarations and actions lead to political distrust.</li> </ul>	Mostly an intraorganisational character, concerns about Nokia’s politics towards the community: <ul style="list-style-type: none"> <li>- Nokia’s management of meaning (mimic of the upstream OSS communities and community “feeling” to attract developers); lack of reciprocity</li> <li>- Nokia’s purposeful awarding projects that it likes (with earlier access to devices, for instance)</li> </ul>

<sup>31</sup> SDK – Software Development Kit

Expertise	Personal character: transparency, trusted people’s recommendations, long-term commitment, and proofed proven professionalism as a basis for trusted positions	Personal character: Not many interdependencies between subprojects, but good-quality applications and involvement are the basis for reputation and trust judgements
Nature of the Open-Source–business co-operation	Co-operation is based on political trust and trust in collaborators’ expertise	Co-operation is achieved through the management of meaning, socialisation, and trust in collaborators’ expertise

As described, Nokia’s involvement in OSS is twofold. First, the company participates, uses, and develops upstream projects like GNOME. Second, Nokia created its own product-related Maemo.org website, which is aimed at encouraging the independent development of practical applications for Nokia’s devices on the open basis. Since the Open Source movement is considered to be meritocratic and professionally oriented, the primary concerns and Nokia’s actions were directed at gaining the necessary expertise. Meanwhile, acting according to traditional business public relations, Nokia started to advertise itself as a corporation seriously engaged in open co-operation. However, the political and expertise dimensions were in a way treated separately, although they both constitute necessary conditions for the trust-building relationship (see Figure 2).

In order to be able to deal with the Open Source style of work, Nokia successfully recruited, employed, or subcontracted good developers—mostly those already working on the chosen projects. The company used their skills and reputations to gain expertise and trust in this expertise. Simply using this hiring strategy enabled Nokia to move along the horizontal axis and gain—interpersonal in its character— trust in expertise (2). After all, Open Source Software communities—particularly GNOME in this case—are focused on transparency and evaluation of individuals.



**Figure 2. Two-dimensional taxonomy of trust in the Open Source–business setting**

However, it is also important for people to believe in the company’s motives and declarations. Here, the political trust issue reveals its importance. Nokia entered the Open Source world with a clear account. The gain of political trust was mostly a matter of keeping promises and maintaining coherent behaviour. Yet this was not always the case. The extensive public relations and workload efforts put into GNOME were to some extent lost because of top corporate decisions. Some were difficult to make not only for the external OSS projects, but also for the Nokia Open Source operations. In the political sense, the discrepancy between words and actions led to a loss of political trust and less and less positive feedback for any new corporate declarations of support.

Both political trusts and trust in expertise have played important roles in GNOME. Nokia developers working on the Internet tablet project have mostly come from the upstream OSS communities; they have already gained trust and are respected in GNOME and Maemo.org. The trust in Nokia’s people expertise is high in both cases, but there are differences in the political dimension. To a certain extent, in Maemo.org Nokia could ignore the political issues because it maintains almost total control over the projects. The trust discourse presented on Maemo.org and during summits and other meetings is a form of management of meaning. Nokia’s public relations created

a façade of trust despite having no real participation or inclusion of the community; meanwhile, Nokia's genuine opposition is hardly present or taken seriously. Movement towards the Maemo community's independence is fairly ostensive, but not many real decision powers have been relocated. Eventually it became obvious that Nokia does not have to take care much about its political trust, and most Maemo.org users came to understand the imbalance of power. Ironically, for Nokia, in assessing the trust issues, the two cases should be considered. Maemo.org is not just a peripheral project that only a few people look at. On the contrary, what is happening there is also observed and commented on in the wider OSS community. Nokia's actions never occur in a vacuum, and the failure to understand this made the company unable to move up the political trust axis (1).

Trust in the Open Source setting is gained through long-term involvement, building both political trust and trust in one's expertise along arrow (3) on the graph. Due to the common lack of political trust, the institutions of contracts and licences are used to ensure appropriate behaviour. They are detached from the personal or intra- and inter-organisational relations and relate to the higher social order and punishment mechanisms. Companies make sure that the responsibilities and consequences of not delivering the service are in place by introducing contracts. Similarly, Open Source developers are free to choose the licence type for their code and by the law enforce the correct behaviour.

## Conclusions and limitations

The contribution of this paper is twofold. First, it offers empirical insights into two Open Source projects, indicating how the power relations affect the discussions about trust and trust relations themselves. Hardy, Phillips, and Lawrence (1998/2002) distinguished among situations in which co-operation is built on trust and those in which it is based on power. However, as the analysis of Maemo.org shows, trust and power can co-exist in the same setting but at different levels. In the company-created and -controlled community, there is not much space for building trust between a powerful company and individual developers. However, the trust talks are an important element of corporate discourse aimed at attracting contributors. In Maemo.org, Nokia's control, management of meaning, and domination substituted for

political trust. The problems of an unequal power distribution and a façade of trust at the political level do not completely close the possibility of trust development. While Nokia's power dominated Maemo developers' relations (interorganisational level), trust in expertise was still possible to achieve among developers themselves regardless of their organisational affiliations (interpersonal level). Accordingly, all developers have to deal with Nokia's policies, but participation in small projects is based on the trust in the expertise of people with whom they choose to collaborate.

Second, the empirical study of cognitive aspects of trust led to the formation of a two-dimensional taxonomy of trust. This model indicates the trust-related problems that business organisations face when switching from closed to open or hybrid innovation mode. It is not only important to show expertise and gain trust as professional contributors; it is equally important to be open and truthful in its declarations. When the political element is not fulfilled, the higher-level solutions are applied—here, in the form of trust in the legal system or/and the exercise of power relations. This model leads to two conclusions. On the one hand, while Sztompka's (1999) argument was that in many cases the targets of trust are often combined and mutually dependant, trust relations at different levels can significantly differ and be quasi-independent. Meanwhile, several targets of trust must be conferred to enable the successful and satisfactory completion of all parties' collaboration. On the other hand, this paper develops a discussion about the “trust on the Internet”, going beyond transaction-oriented concepts of trust, which deal with depersonalised and occasional contacts of unknown individuals or companies. Contrary to Hardin's (2006) conclusion that Internet relationships are typically narrowly focused and reflect commercial transactions, this paper has shown that among online communities of collaborators valuable and long-term interactions can occur in which political and expertise targets of trust play a critical role. Furthermore, this paper demonstrated that—in addition to institutional and social trust previously noted in online collaborations (Jarvenpaa, Knoll and Leinder, 1998; Matzat, 2004)—the cognitive aspects of trust play an important role.

This research is highly relevant for practitioners, especially in business organisations that want to pursue Open Source but have no Open Source background. The discussion has outlined the potential dangers of talks / action decoupling strategies. The paper is also informative for academics, showing that empirical investigations of trust need to be conducted at different levels of analysis and that

those levels (sometimes) constitute different solutions to the same trust-related problem. Finally, it shows that the organisation's power position does not necessarily eliminate the possibility of building interpersonal trust.

This study has several limitations. First, it is based on a longitude study of only one company and two OSS projects. Therefore, without additional studies, the findings may be difficult to translate into more general conclusions. Second, the analysis concentrates primarily on written materials and interview transcripts and less on long-term observations and—because of the company's policy—totally lacks the researcher's participation in the internal Nokia–Open Source subcontractors work. The data contain a local understanding of trust. As this paper aimed to provide insights into localised understanding of trust, without imposing theoretical concepts on the field of study, the interviewees were not directly asked about the trust relationship. However, it would be relevant to continue this research and explore other cases, comparing their results in order to identify similarities and differences. Finally, using different methodology, focused either on quantitative queries or on localised storytelling, would allow for new perspectives on the findings.



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# “We” and “They” in the Open Source-business Context

## Abstract

The current paper discusses the institutional logics as well as organisational practices and mechanisms maintaining the multiple identities in the hybrid organisation. The identities are shaped individually and collectively and involve simultaneous considerations of participation and non-participation (i.e., identification and disidentification). Within a particular empirical setting—namely, the Open Source—business organisational hybrid, the paper identifies two institutional logics (i.e., Open Source and business), correlating them to professional and corporate identities. Their interplay results in two forms of identities. The observed hybridity poses questions of reconciling tensions between ideological standpoints and creating a path in which one can find oneself as both an organisational and professional community member. The paper develops the institutional logics theory, focusing on disidentification and ambivalent identification processes by indicating that—beyond the inconvenience for an organisation—they may also be necessary to maintain hybridity. Finally, it explores the mechanisms dealing with conflicting logics by shifting between professional and corporate logic.

*Key words: multiply / hybrid identity; Open Source Software; ambivalent identification; disidentification, institutional logics*

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Individuals generally have a tendency to attribute legitimacy to and are receptive to identification with organisations in which they participate (Pfeffer and Salancik, 1978). However, individuals differ in their propensity to foster a sense of belonging. Glynn (1998) called this variable the need for organisational identification (i.e., *nOID*). The identity position may be changed; this is not as uncommon as one may think (Sveningsson and Alvesson, 2003). Following the idea of the *nOID* and the fact that individuals may be more or less willing to identify or disidentify with the group, this paper uses the concept of identity not as a stable, continuous, and secure state, but more as a fragmented state of belonging and differentiating. Using a qualitative case study, this paper shows that identity fragmentation and shifting mechanisms are everyday realities for participants of a hybrid organisation. This paper further develops how individuals can switch between participation and nonparticipation as well as identification and disidentification with an organisation. In a single organisation multiple separate identities may exist to be dealt with, which is referred to as a hybrid organisational identity in the current paper. The literature (e.g., Foreman and Whetten, 2002) sometimes refers to this concept as a multiple-identity organisation. The current text uses multiple or hybrid organisation interchangeably.

The main contributions of this paper are twofold. First, it goes beyond already studied influences of competing logics on organisations' existence (Glynn, 2000; Glynn and Abzug, 2002; Glynn and Lounsbury, 2005; Reay and Hinings, 2005; 2009) and individual-organisational identity issues (Elsbach, 1999; Elsbach and Bhattacharya, 2001; Kreiner and Ashforth, 2004; Kreiner, 2007), combining both end approaches by linking levels of analysis to more fully explain the phenomenon of organisational hybridity. On the one hand, the social identification theory—particularly an extended social identification model—deals with issues of simultaneous identification and disidentification with an organisation, creating ambivalent participation and enabling hybrid identity to exist. On the other hand, organisational hybridity was originally linked to the duality of stakeholders' expectations, governing regimes, and goals derived from competing institutional logics. Ultimately, both approaches—the former bottom-up and the latter top-down—are complementary and give a fuller view of the processes leading to hybridity. This is summarised in the proposed amended model of organisational hybridisation.

Second, as there still very little effort has been made to explain the mechanisms sustaining hybridity at the organisational level, the empirical case gives insights into how competing logics enable two different organisational identities within a single corporation and how this conflicting-dual-identity is perceived by individuals engaging in not only the reconciling mechanisms of ambivalent identification, but also actively influencing and/or withdrawing from discussions on the organisational logic of action. This takes the form of shifting, identification and disidentification, and influencing and withdrawing mechanisms.

Here mechanisms refers to items “composed of chains or aggregations of actors confronting problem situations and mobilizing more or less habitual responses” (Gross, 2009:368). The current paper refers directly to Reay and Hinings’s (2009:641) study of “mechanism of managing the rivalry between competing logics”, in which they describe ways in which organisational tasks can be accomplished by groups despite the fact that they are guided by different institutional logics. As Hedström and Swedberg (1996) mention, the search for mechanisms means that the study is aimed at a specific explanation that brings the relationships into existence—in the current case, how developers confront a situation of competing logics and what sustains a hybrid organisation in its existence.

The theoretical framework of this paper is based on a combination of four standpoints: (1) hybrid (organisational) identity understood as a similarity and difference, (2) constructed via social identification processes with (3) a particular focus on discursive practices and (4) investigated using a multilevel approach. Although the paper takes into account the nested levels of analysis, it is aimed at explaining hybridity phenomena at the organisational level, demonstrating that people as individuals engage in balancing mechanisms to identify themselves with various groups ruled by different institutional logics. In this way, they allow for the coexistence of conflicting logics and identities in an organisation. Consequently, the main explanatory focus is on the organisational level whereas the analysis is carried at the aggregated levels. This design stems from the character of the studied phenomena resulting from the intersection of macro, mezzo, and micro.

First, the construction of identity is understood as a process of differentiating from the other, creation of the ‘we–they’ distinction. Identities are constructed through this difference. In this process, the external is as important as the internal



characteristics and involves the conscious non-participation. Therefore, the current paper examines the social identification processes resulting from self-descriptions based on perceived overlap of professional and corporate identities.<sup>1</sup> The current discussion is influenced by the social identity theory, which concentrates on the explanations of group belonging consequences and related behaviour, like discrimination and competition. This theory is based on the assumption that subjects accept the assigned social category “as relevant self-definition of the situation” and that the social categorisation creates social identity. According to Turner (1967/1987), categorisations are highly variable and context dependent; as such, the “same” may be considered as “different” depending on the context. The current paper goes beyond simple assumption that positive stereotyping members of a social group and negatively stereotyping others build their social identity (Rao *et al.*, 2003). Social groups are never totally polarised, especially when different logics and different communities and professions come into play (Glynn, 2000). In certain situations, the multiple/hybrid approach is necessary as “hybridity encompasses partial identities, multiple roles, and pluralistic selves” (Smith, 2008:5). It is not only about the single choice of membership, but about combining elements of different identities and integrating them at the individual level.

Second, identities, logics, and institutions are closely linked in both directions. On the one hand, the availability and importance of the particular identity types are tied to institutions’ validity and their range of jurisdiction. On the other hand, “for an institutional logic to change or to be replaced, not only are shifts in the rationality criteria, new forms and practices, technologies, or regulations required, but also new social identities need to be available and enacted by the actors on the micro level” (Meyer and Hammerschmid, 2006:1004). Institutions are enacted and changed by actors, yet they are also built within discourse in specific historical, situational, and institutional sites. Therefore, identity can best be understood through its expressions in a form of historical and technical means. Subjects need practices, techniques, and strategies to relate to and make sense of themselves (Jensen and Westenholz, 2004). They emerge within specific discursive practices as the play of specific modalities of power. More than naturally constituted entities, they are the outcome of the “marketing of different and exclusion” (Hall, 1996). Following Hogg and Terry’s (2000) suggestion, this paper contributes to a new phase of research in organisational behaviour by

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<sup>1</sup> Kreiner and Ashford (2004) define social identifications as self-descriptions based on a perceived overlap of individual and group identity. Therefore, it is a concept that transcends the analytical research levels (micro and mezzo).

concentrating on multiple/hybrid identity-related phenomena using a multilevel and cross-level approach. “By acknowledging the importance of work-related identities to people's sense of self, a social identity perspective adds to our understanding of organizational attitudes and behaviour by drawing on the important link between such identities and the person's sense of self” (Hogg and Terry, 2000:135). Meanwhile, such acknowledgement makes clear links to the institutional level and its influence in the form of available logics for a hybrid-creating context.

Third, the paper is rooted in the organisational sociology, especially the theories of identity construction through discursive practices. This standpoint leads to focusing on narratives and, within them, how specific organisational members position themselves between professional and corporate identities. Richards (2006) points out that even a single sentence or action is enough to express/represent a specific identity. As Reff Pedersen (2008) argues, the definite advantage of including analyses of professionals’ extended quotes and narratives in which they describe their roles and the ‘we–they’ relation in the workplace is a better understanding of the construction of the identity as a phenomenon at both individual and organisational levels. Linguistic choices help define membership (‘us’) and relations with the other (‘they’). As Miller (1994:282-283) explains:

“Institutional discourses consist of the fundamental assumptions, concerns, and vocabularies of members of settings and their usual ways of standardized frameworks for anticipating, acting in, and reflecting on social settings and interactions. They allow and constrain setting members to organize their interactions as instances of standardized types of social relationships and produce conditions for responding to issues in predictable ways.”

In addition, to a certain extent this paper attempts to abstract from the clear distinction between individual and collective identity and concentrate on the social identification processes.<sup>2</sup> It does not aim to deny the distinction, but rather to avoid a simple dichotomy; thereby indicating that identity concept in fact simultaneously links what is individual and social. Consequently, the discussion rather focuses on the (institutionalist) definition of identity as “a set of claims to a social category, such as industry grouping, a status ranking or an interest set” (Glynn, 2008:419). In everyday life, it is difficult to distinguish purely individual from purely community

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<sup>2</sup> Social categorisation theory originates in the perception of the difference and influence between social and personal identity.

spheres. Ultimately, it is more important to go beyond those levels of analysis and focus more on their mutual constitution. This follows Wenger's (1998:146) line of thought:

“Each act of participation or reification, from the most public to the most private, reflects the mutual constitution between individual and collectiveness. Our practices, our languages, our artifacts, and our world views all reflect our social relations. Even our most private thoughts make use of concepts, images, and perspectives that we understand through our participation in social communities.”

Similarly, multiply and hybrid identities were investigated—mostly at the individual level. This concern is especially evident in situations of conflicting cultures (Delmestri, 2006), such as immigrants who need to comply to new culture logics while being raised and connected through their family to the other one (Plaza, 2006; Kostogriz and Peeler, 2007; Smith, 2008); clashes of two or more different logics of action, usually related to market logics versus activist (Sachs, 1999) or aesthetic logics (Glynn, 2000); and situations of mixing several professional regimes (Whitchurch 2006; Mintzberg, 1973; Sveningsson and Alvesson, 2003; Serra, 2008; Pratt and Rafaeli, 1997). However, it seems important to note that hybrid identity at the organisational level does not have to include the hybrid identity struggle at the individual level. As employees or organisational members, people have to deal with different logic regimes, yet they do not necessarily have to identify with them or internalise them. Going beyond purely psychological and individual levels of discussion, this paper begins with the individual perspective by analysing developers' interviews to analyse the organisational ambivalent identification processes to understand the mechanisms sustaining the hybrid organisational form.

The outline of the paper is as follows. The paper starts with a discussion about hybrid identities, including their origins and current research. Two streams of studies lead to organisational hybridity: (1) the neoinstitutional theory focusing on the coexistence of competing logics and (2) the social identification theory and the ambivalent identification concept. The discussion demonstrates how these theories may ultimately distract researchers from noticing the importance of individuals and the mechanisms into which they are getting involved to make their life easier in the hybrid form and prolong its existence. A comparison between the current literature model of understanding organisational hybridity and the model proposed in this paper is also presented. After the theoretical considerations, the paper examines the

case study by focusing on developers' and managers' points of view that reveal the "we–they" identity shifts immersed and rooted in conflicting institutional logics, discourses, and organisational dilemmas as well as that affect willingness to influence or withdraw from changing the competing logic. Finally, the paper summarises how the shifting mechanisms inform current identification and hybrid identity theories.

## **From competing logics to hybrid organisations**

All institutions have their central logics (Friedland and Alford, 1991). The concept of logics refers to broader cultural beliefs and cognitive patterns that guide decision-making in the field (Lounsbury, 2007). Institutional logics are practices and symbolic constructions that serve as organising principles. They influence logic of action as they define means by which valued ends can be achieved. Individuals, groups, and organisations are both restricted by and interested in using institutional orders to their advantage.

When contradictory logics enter the organisation level and the reconciliation between the logics is hard or impossible yet at the same time all are necessary for the organisation to exist, the hybrid form comes into play. Hybrid organisation is a term first mentioned in relation to the new public management. This caused the mixture of profit and non-profit structures in which competing motives, duality of objectives (public mission vs. business), and dual value creation (social vs. economic value) are directed towards creating social and economic value (Alter, 2007).

From this perspective, the understanding of the idea of hybrid organisations developed and today is used to describe an organisation with multiple external relations and which usually operates in the border area between different worlds, consequently having to combine conflicting logics and values. As Minkoff (2002:382) says, "there is no consensus on how to define organizational hybrids; these definitions converge on the conceptual point that they are combinations of disparate elements—structural or institutional—that represent modes of more or less formal adaptation to environmental uncertainty." Legitimacy creates the necessity to comply with divergent logics, which indicates that many

organisational hybrids also have divergent, competing identities. Puff (2000) refers to hybrid (identity) as a paradox structure—namely, identity and alter-identity at the same time—because identity is always inhabited by “the other” (i.e., by many voices). Thus, hybridity leads us to the concept of some kind of polyphonic structure that bears one or more frontiers in itself while, to some extent, building boundaries around itself is of secondary importance.

Several possible outcomes of multiple logics and identities for organisations exist. The extreme solutions are (1) keeping the old dominant logics or (2) shifting completely to a new one. In between these solutions are the hybrids, in which several logics and identities co-exist. When the old identity is not seriously threatened, it may be just slightly adapted or localised to the new situation and a new identity emerges. For example, Henkel (2005) describes reinforcement of the professional academic identity while adapting to the new rules of funding research by influencing the output evaluation; as such, the need for planning research activities encounters resistance, creating a dissonance between discipline-based and domain-oriented research. Yet such adaptation did not challenge academic values or identities. Some academics exploited new funding sources whereas the discipline-based reputational system motivations that focused on the production of knowledge did not change: “while epistemic and organizational boundaries in academia have weakened, the strength of disciplinary community membership remains, even if it is less coherently reinforced by universities [...] Major changes in the funding research and the contexts in which it is carried out have not created major disturbances in academic values or academic identities” (p. 173). Similarly, Meyer and Hammerschmid (2006) showed that, in the moment of a trial in which the old administrative orientation is changed to new managerial logics in the Austrian public sector, actors picked just some elements of a new logic; its adaptation was biased on the translation process. Ultimately, they concluded that, “new public management is mainly an ‘identity project,’ at least so far it has not been successful in superseding the ‘old’ administrative orientation” (p. 1013).

On the other end of the continuum are examples when the new identity takes over the old one, such as Thornton’s (2002) analysis of shifts in the publishing industry from professional identity related to the notion of the craft industry changing the logic of the market. Rao *et al.* (2003) further demonstrated this in their study of passage from the old French restaurateur to the French nouvelle cuisine logics. The change was possible because institutional gaps arose when movement activists developed reasons why the old logics and identity were no

longer effective and agitated towards adaption of the new logics and identity. Similar works have examined the isomorphic processes that led to applying similar logic in fields or industries to become legitimised (Glynn and Abzug, 2002). An even more dramatic investigation of the “battlefield” between medical profession and the new logic of business-like health care (Reay and Hinings, 2005) draws attention to the idea that this kind of conflict may recompose the whole organisational field. In this case, the battlefield resulted from an intervention—namely, the introduction of a new actor and new structure—into the relatively stable equilibrium of the old dominant logic. However, the field has not completely changed to the new logic. Some parts of it still believe in the old logic, which prolongs the process of transformation.

Between the adaptation of a new logic and the defending of an old one, several possible outcomes exist, including transitional hybridity (Reay and Hinings, 2005), logics blending (Glynn and Lounsbury, 2005), and the incorporation of multiple conflicting identities without mixing them (Sachs, 1999; Sveningsson, and Alvesson, 2003), which sometimes requires multiple logics that compromise strategies (Glynn, 2000). For example, Sachs (1999) argues that, in the specific field of teachers in Australia under conditions of significant change (governmental reform), two discourses—democratic versus managerial—gave rise to two distinct forms of teacher identity: entrepreneurial and activist. The resulting segmented hybrid identity is a response to the external conflicting requirements. Glynn and Lounsbury (2005) give an example of the Atlanta Symphonic Orchestra in the situation of the growing domination of market logics over aesthetic logics. As several stakeholders were involved, including musicians, management, and critics, the blending of logics was affected by those groups. For instance, critics defended the traditional aesthetic logic, but they simultaneously shifted some language of their texts to fit the market logic. Internally within the orchestra this situation ended in a massive conflict that took a long time to negotiate; in the end, both logics remained, although the market one has been slowly gaining domination (Glynn, 2000).

# From social identification to creation of hybrid identities

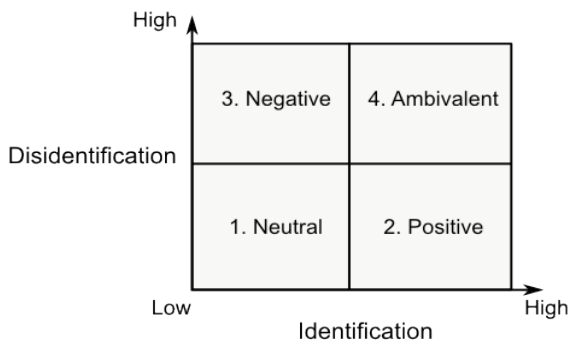
Lewin's (1951) classic role / identity transition process comprises three steps: unfreezing, change, and refreezing. This drives us to a very stable view of identity creation whereby an existing identity is challenged or replaced by an alternative one. The change occurs by unlearning the old and incorporating the new. Although this model has become the basis for many role/identity exit-entry studies and has contributed to developing the corresponding rites of separation, passage, and incorporation theories<sup>3</sup> (Van Gennep, 1960; Maddern, 1990; Bell, 2003; Barton, 2007), it is rather short-term focused and does not explain the dynamics of ongoing organisational dis- and identification processes. Moreover, it lets us think that the period of identity disruption is a temporary state of anomaly, whereas a more dynamic view of identification processes allows us to notice that hybridity is a more common situation. Thus, the research focus should shift to explain how it is possible to pursue this state for longer periods. The most common situation in which multiplicity becomes visible is the role transition period, when one needs to reconcile between different identities. However, these are not the only moments when reconciliation between alternative identities is needed. People engage in or are forced to coexist within different groups and communities of practices; as such, identity is not necessarily a coherent monolith. Most people are likely to have multiple social or role identities because they are members or occupants of multiple categories, groups, and communities (Ashford, 2001). The individual's choice of referring to several identities is forced to navigate between, negotiate, and deal with them (Dent and Whitehead, 2002).

Contrary to previous theories, an expanded model of organisational identification (Elsbach, 1999; Kreiner and Ashforth, 2004) and the stream of related research provides important insights into the process of creating not only a coherent and strong organisational identity, but also explains the basics for exploring multiple identification and hybrid identification phenomena. A key to understanding this complexity is recognising and including not only the positive relations between individuals and organisations, but also those neutral,

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<sup>3</sup> Especially in anthropology.

conflicting, and strongly (Fig. 1.). Although identification is linked to the self-perception of oneness with the organisation, disidentification is based on cognitive separation of the individual and organisational identity as well as negative categorisation (splitting) of the individual and the organisation (Elsbach and Bhattacharya, 2001). Identification and disidentification are two overlapping dimensions, not a simple continuum. This theoretical standpoint allows us to think of hybridity as an intrinsic state for some organisations and draws attention to the mechanisms that allow competing logics and identities to coexist. This approach further confirms the importance of the ‘we’/‘they’ distinction for appropriately diagnosing type and strength of organisational identification and also shows that situations exist beyond the commonly recognised continuum between strong positive identification with the organisation (2) and the negative relational categorisation and strong disidentification (3). In fact, the third option is a situation in which a possible newcomer or outsider can be placed, which is very weak identification but also weak disidentification (1). Neutral identification might be considered as a starting point for identification processes or as a permanent state whereby an individual detaches him-/herself from relating (in a positive or negative way) to the organisation.



**Figure 1. Forms of organisational identification. Adopted from Elsbach (1999).**



However, the most interesting case—and simultaneously the starting point for taking the multiple/hybrid identities into account—is the concept of the ambivalent (or schizo-) identification (4). Schizo-identification exists in evolving or particularly complex organisational relationships. The main examples of such situations are conflict or divided loyalties when stakeholders love some aspects of the organisations while hate others. Kreiner and Ashforth (2004) identify two antecedents positively correlated with ambivalent identification: intra-role conflict and organisation identity incongruence.

Again, hybridity grows out of necessity, when completely abandoning the “old” or one identity is impossible, difficult, or not truly beneficial. That is why the multiply/hybrid identities are especially observable in minority groups, regardless of whether they are ethnic and language-based (Sebba and Wootton, 1998) or sexual-orientation and gender-related (Fingerhut, Peplau and Ghavami, 2005). In addition, the intra-role conflict caused by the incompatible demands and opposite forces acting on the individual will grow through the probability of ambivalent identification.

Similarly, people react to contradictory or mixed messages sent by the organisation itself. Many organisations are characterised by multiple identity narratives, with inconsistencies and incongruities that affect identity formation. These inconsistencies and incongruities are rooted in the multiplicity of available logics, discourses, and ideologies that affect actions. Multiple/hybrid identities are often linked to a particular type of organisation, which is a specific meeting point for various professionals (Glynn, 2000) or conflicting logics—especially provisional vs. corporate managerialism, simultaneous public and private claims, and local vs. global thinking. Hamilton (2001:231-232) notes this connection in the cases of education and healthcare, where tensions between institutions and professions are particularly visible. The institutional claims affect professional structures as well as how people practice their work.

The disidentification dimension is often linked to negative consequences, such as counter-organisational actions and organisational criticism (Elsbach and Bhattacharya, 2001). Kreiner (2007) notes that hybrid identities may cause identity and identification dysfunctions. In addition to weak identity boundaries leading to over-identification, work-self intrusion linked to disidentification, a work-self distance resulting in neutral identification, and incongruent multiple identities are sources of ambivalent identification. The focus is placed here on

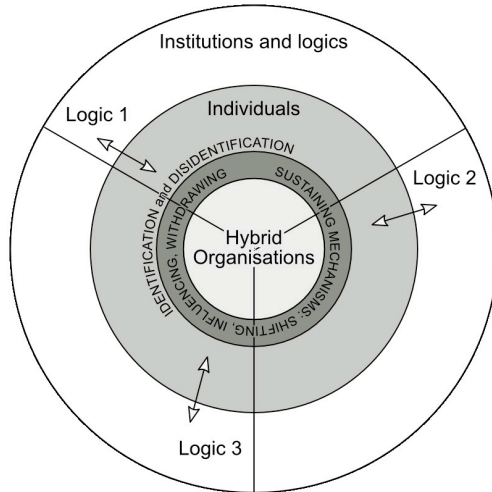
quite dramatic examples when competing multiple identities are likely to cause increased role conflict and a sense of self-fragmentation. Similarly, ambivalent identification is associated with pulling organisations in different directions, especially when confusion over organisational identity results in groups or departments assigning conflicting salience to different parts of the organisation. Furthermore, Elstak and van Riel (2005) argue that ambivalence leads to apathy and a lack of organisational change. However, very little evidence is gathered to show the positive sides of hybrid identities, with the exception of “tampered radicals”, who identify with their organisations but are simultaneously committed to an external community fundamentally different from the dominant identity of their organisations. Meyerson and Scully (1995) argue that tampered radicals in organisations are a unique source of learning, transformation, and vitality.

## **The organisational hybridity model and role of sustaining mechanisms**

Theoretical models of organisational hybridity originating from the two presented streams of research can be summarised as follows. The top-down perspective of institutional theory focuses on multiple logics that offer various appropriate ways of acting for individuals. Here, the hybrid organisation has to deal with conflicting logics and expectations. Meanwhile, the bottom-up perspective creates a link between individuals and the organisation, particularly the processes of organisational identification and disidentification that create ambivalence and ultimately lead to hybrid identity. In the current literature on hybrid organisations, the institution level dominates; by imposing logics on the individual and trying to adopt methods at the mezzo level, this level attempts to integrate individuals into a structure.

However, considerations about organisational hybrids must emphasise individual and agency roles in creating and sustaining multiple / hybrid organisational identities and structures. Although the competing co-existing logics are the foundation of the hybrid organisation concept, the mechanisms through which individuals deal with the multiplicity of logics and identities allow the hybridity to remain rather than be a transformative stage on the way

to the new dominant logic. To avoid polarised views, by concentrating on shifting from one dominant logic to another and noting the importance of individuals' identification struggle, this discussion proposes a model for sustaining organisational hybridity (Fig. 2).



**Figure 2. Proposed model of the sustaining organisational hybridity**

This model is based on the assumption of mutual constitution of institutions and individuals' actions.<sup>4</sup> Logics affect actors, but actors also have the power to change the institutional logic. When individuals have several logics available and at least couple of them are similarly important and recognised as appropriate, multiple / hybrid identity may arise from the trial of incorporating those conflicting logics, which can happen at both individual and organisational levels. However, the multiple/hybrid identity goes beyond the individual. For its creation, individuals do not necessarily have to develop their own hybrid identity; rather, the hybrid organisation exists when its members remain within their logics of actions (professionals, for instance), although organisational members still have to deal with other co-existing logics.

The model focuses on two intersections: logics–individuals and individuals–hybrid organisation. The first intersection indicates that institutions form a frame for individuals' actions. Logics do not determine those actions, but influence them by offering acceptable ways of dealing with problems. If

<sup>4</sup> Like Gidden's (1984) mutual constitution of structure and agency

several logics are available to the individual, any one of them can become dominant or two or more of them can be internalised as a hybrid individual identity. The second intersection shows that the same individuals are organisational stakeholders. Although individuals outside the organisation may not experience identification tensions, it is inevitable that they will deal with conflicting logics if they become part of the hybrid organisation. As participants, individuals cannot remain ignorant of other logics because hybrid organisations' rationale—as with any type of organisation—is to fulfil common goals. To make that possible, individuals in organisations need to deal with competing logics and multiple identities to please external and internal stakeholders. Yet this requires the employment of specific mechanisms that allow differences to exist in a quasi-balance and enable the organisational tasks to get done. Consequently, focusing on sustaining mechanisms is important.

Very few investigations have examined the mechanisms that maintain ambiguity and hybrid identity in organisations. Meyerson and Scully (1995) investigate four of them, referring to them as strategies of change and ambivalence. Change-oriented strategies are “small wins” and “spontaneous authentic actions” whereas “language styles” and “affiliations” aim to sustain the ambiguity. Small wins are a mechanism that leads to incremental semi-strategic reforms, similar to boundary spanning (Pfeffer and Salancik, 1978). Spontaneous authentic actions refer to direct expressions of beliefs, feelings, or identities that demonstrate alternative logics of action. In addition, changing language styles according to the audience and maintaining affiliations with people representing different identities or logics are helpful actions for avoiding categorisation and maintaining a hybrid state. In a more empirically oriented manner, Reay and Hinings (2009) discuss four mechanisms used to manage competing institutional logics during healthcare reform in Alberta: differentiating between decision types (medical and others) and those involved in the process, seeking informal input from the interested group (physicians) in the decision-making process, working together against the third player (government), and joint innovating in experimental sites. The previously mentioned studies can be summarised in three groups of mechanisms: leading toward change, ensuring cooperation where possible is presented, and maintaining the differences (Table 1.).

**Table 1. Mechanisms maintaining hybrid structures and identities. Based on Meyerson and Scully (1995); Reay and Hinings (2009).**

Towards change	Maintaining distinctions/ambivalence	Towards cooperation
Incremental change strategy	Language shifts	Working together against something
Spontaneous actions	Sustaining various affiliations	Working together for a common goal
Engagement by seeking informal input	Differentiating decisions depending on group expertise/logics	

Thus far, this discussion has examined two coexisting approaches to hybrid organisational identities, integrated into a single model. It has also introduced the concept of mechanisms maintaining hybrid identity, giving a few examples available from the literature. In the next section, the paper moves to the empirical setting, exemplifying the developed theoretical model and providing insights into specific sustaining mechanisms.

## Research setting and methods

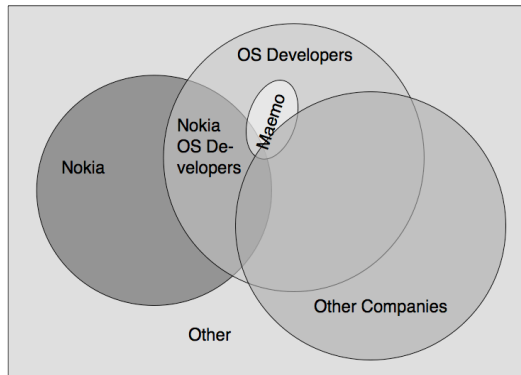
This paper is an outcome of a longitude study of the Nokia corporation’s involvement in two distinct Open Source Software (OSS) projects. It important to emphasise that Nokia has never been an Open Source company. As such, the openness of its processes and plans is still limited. However, the corporation is trying to use the new Open Source logics in two fields: its own hosted Open Source project (Maemo.org) and—primarily—within upstream OSS projects. Nokia Open Source Software developers were mainly hired to fit into the Internet tablet/Maemo project. Most were regular contributors to the upstream OSS projects like Linux kernel or GNOME; they had previously worked within OSS communities and knew people, processes, and/or necessary skills. This was the corporation’s first attempt to change the original purely proprietary close-code approach, which meant working only with created internally or purchased software solutions. Prior to that, the organisation had no experience

with this type of software development or with the particular areas linked to Linux and Linux-based systems which it started to use.

The current study employed ethnography-inspired methodology, based primarily on open-ended, unstructured interviews, non-participant observations, and various text analyses (Spradley, 1979; Van Maanen, 1988; Kozinetz, 1997; Kostera, 2003/2005). The study was enabled by the Nokia corporation, which welcomed the researcher as a person interested in its Open Source operations. This source was primarily used as a space for meeting and interviewing Nokia's developers. The second source was all online materials, talks, and presentations on websites that connect developers on a daily basis. The third source was participation in a set of meetings and conferences in which project contributors discussed and planned their work. In total, the researcher conducted 20 formal interviews and many subsequent informal communications. The initial list of questions was used in all of them, mostly to help start the conversation until enough information was received to form more detailed inquiries about a specific instance described by interviewees.

The 11 formal interviews conducted with Nokia's employees included 3 managers and 8 developers. Only 7 of those interviews were recorded. The remaining four interviewees (all three managers and one developer) did not agree to be recorded and made it clear that they did not want to be quoted directly. In these cases, the research took notes and other materials (e.g., public presentations and blog texts). To secure anonymity of all informants, this paper will refer to them only by their function (developer, manager). Only quoted public speeches and official presentations use the real names and positions of their authors.

The coding of the material was a two-step process. In the first phase, full interview transcripts were searched for the words “we” and “they”. In each case, each usage was coded with the sticker of the group to which it was related: Nokia as a whole company, Nokia Open Source Developers, Open Source Software Developers, Maemo Users and Developers, or Other Companies. The categorisation was difficult due of two issues. First, the indicated groups are all overlapping, and one always occupies the identity space of several categories at the same time. Second, in many cases it was possible to classify the definition and relation of “we” or “they” to a particular group only through the analysis of the quote in the broad context. Therefore, the results are dependent on the researcher’s knowledge of the setting and judgement of the pronoun meaning.



**Figure 3. Coding categories of identities and groups and their relationships.**

In the second phase, all of the quotes containing references to the coded groups were read once again and coded a second time depending on the subject of the story. This step focused in particular on the relation between the Nokia OSS Developers group and the Nokia corporation, which resulted in three categories: the hybrid of Open Source and business (contending with difficulties), influence of the corporate identity, and avoidance of corporate logics.

# The Nokia case: Conflicting logics and identities

The description of the case starts with an introduction of competing Open Source and corporate-business logics. Next, the identification processes in this structure, by focusing on the usage and context of the pronouns ‘we’ and ‘they’, lead to the analysis of shifting mechanisms between identities and logics. This is followed by recalling quotes showing the developer’s perceived hybridity of the organisation.

## I. Institutional logics: Open Source Software professional versus corporation

The logics of the profession provide an environment for the development of communities of practices (Wenger, 1998) and professional identity (Richards, 2006) of Open Source Software developers. These communities are collegial and negotiated, and they form and reform around professional movements. Some have a more radical background and are rooted in the hacker identity, which is contrary to the contemporary society of consumerism created by corporations and promotes freedom of choice, knowledge, and the right to explore. The hacker manifesto (1986)<sup>5</sup> states:

“This is our world now... the world of the electron and the switch, the beauty of the baud. We make use of a service already existing without paying for what could be dirt-cheap if it wasn't run by profiteering gluttons, and you call us criminals. We explore... and you call us criminals. We seek after knowledge... and you call us criminals. We exist without skin color, without nationality, without religious bias... and you call us criminals.

You build atomic bombs, you wage wars, you murder, cheat, and lie to us and try to make us believe it's for our own good, yet we're the criminals.

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<sup>5</sup> Written by Loyd Blankenship (The Mentor)



Yes, I am a criminal. My crime is that of curiosity. My crime is that of judging people by what they say and think, not what they look like. My crime is that of outsmarting you, something that you will never forgive me for.

I am a hacker, and this is my manifesto. You may stop this individual, but you can't stop us all... after all, we're all alike.”

At the user (utility) level, the main idea behind the Open Source Software and hackers'/developers' collective effort is believed to promote the public good of freely redistributable software, which can be modified to fit changing needs. At the professional level, Open Source is a meritocratic community, in which only the skills and active participation in the project can prove the quality of the developer's work. The Open Source model gives the possibility to both enter the professional community and learn with the help of others as well as offer the recognition and reputation scores for those who contribute with the best codes. On the one hand, for many students learning by doing the software engineering relates to the old vocational training. People remain in OS because of the ego-busting linked to community evaluations of their individual work. Peers' recognition and individuals' career concern incentive for future job offers are some of the major driving-forces of OSS professionals (Lerner and Tirole, 2000). A similar logic prevails among other professions, like academics and artists (Weber, 2004).

This paper examines differences in the OSS movement and various attitudes to the proprietary software and types of licensing as such discussions—although influential for some decision-making in the field—do not touch the main professional goal of the OS movement, which is developing the quality, elegant code and safe and modifiable software. The code is open so everyone can see its beauty and elegance, but it is also credited to a particular professional and is part of his/her online CV.

Meanwhile, the corporate logics draw attention to the economic consideration and loyalty issues related to the organisation and includes the managerial ideology, with focuses on career paths. As Freidson (1994; 2001) notes, professionalism must be concerned with the status of its members and the position of the institution as an occupation. This requires effectively counter-opposing the market and bureaucratic ideologies. Friedson shows an ideal typical contradiction between the logics of the profession and the market (consumerism) and bureaucratic control (managerialism):

“Consumerism assumes that workers are motivated primarily by their

desire to maximize their income, with the particular work they do being secondary [...]. In the case of managerialism, work is the means by which a production plan can be realized, with workers being motivated more by their desire to hold on to jobs and their prospects within the organization than by their commitment to any particular kind of work.” (Freidson, 2001:108-109)

Similarly, the OSS developer profession is placed in contradiction to the modern corporate world.

## **II. Individuals: “we-ness” versus “they-ness”**

### **We–the Nokia**

The Open Source developers in the interviews used the pronoun “we” in relation to Nokia in two basic contexts: (1) the Open Source Operations’ (Maemo devices) teams or (2) Nokia as a whole. By carefully looking at the seven recorded and fully transcribed interviews with the Open Source developers working for Nokia in their research centre in Helsinki, the frequency and different usages of the pronoun “we” were evident. The aim was to search for “we” in the text and analyse the context and meaning to decide what is meant by “us”. The results are summarised in Table 2. below.

**Table 2. The frequency of the usage of “we” in the fully recorded interviews with the Nokia Open Source Operations software developers as a reference to a particular group.**

INTERVIEWEE	NOKIA - THE COMPANY	NOKIA OS OPERATION DEVELOPERS	OTHER
A	15	25	1
B	34	50	1
C	15	82	2
D	35	20	4
E	1	19	2
F	56	71	6
G	5	10	3
SUM 457	161	277	19
%	35%	61%	4%

Developers referred to “us” as either the organisational members of Nokia or the professional group of Open Source Software programmers working for Nokia. In the majority of cases, they considered themselves members of the professional community; the broader quotations indicated a closer affiliation with the ideological standpoint of the Open Source movement and the way of work practised within OSS communities. The pronoun “we” is used to describe what “we” do as Open Source developers in Nokia projects, how ‘we’ cope with working in the situation of dual logics, and how “we” are influencing the corporate environment by either propagating Open Source ideals or avoiding the organisational machine and concentrating on the job. It is interesting that developers rarely identify directly with their OSS colleagues; “we” is used almost exclusively to indicate a closely collaborating group. Meanwhile, the OS ideals are present, and the professional approach to the OSS project is considered the leading, most appropriate logic in the majority of situations.

However, on a significant number of occasions “we” also referred to the whole company, which means that the OSS developers accept part of the organisational discourse and are not necessarily in total contradiction to it. Some understanding is shown towards the business-oriented corporate identity and feeling of belonging to the Nokia’s innovative projects. Developers often quoted their supervisors, mentioning that managers use the form “we” in the sense of Nokia to include everybody in the tasks, problems, and decisions—even if most decisions are made without any notice or internal discussion.

There is a push towards creating a Nokia culture/community that meets some resistance among developers. Meanwhile, on several occasions the same developers identified with the organisation and its business policies. They expressed understanding and belonging to the Nokia employees' group even if it did not lead to close collaboration.

“We stay aware of what the other sites are doing, we share some ideas, but it doesn't go that much further. “I was thinking of doing this”, “oh this is a good idea”, “Do this instead”—and that's about it.”

“We sort of work on our products in one-year cycles. And you have a fairly good idea what to do. [...] This is what we need to do, this is how we are going to do it. It makes sense. There is usually one way to do it and even if there are two, people don't care that much.”

“[We] share a lot with the Open Source, but we have some own components because we use some specific hardware in the books so we have to do some adaption of our own stuff. We also try to give many of those improvements that we make during the product work; we give them back to the open-source project.”

The only strong and declared association with Nokia was heard from a developer who was part of the Open Source Operations, but he was hired to do this job because of his skills even though he did not have any Open Source background. He said he always uses his Nokia e-mail to indicate his connection to the corporation because “I see myself more as—I am Nokia.” However, this is more an exception than the common case. Very rarely was “we” used to indicate a relation to other groups (family, previous workplaces, the researcher and the interviewee).

### **They—the Nokia**

In the same way as with the pronoun “we”, the researcher scrutinised the transcripts from developers' interviews to examine the use of and the meanings attached to the pronoun “they” (see Table 3.). Here the choice was much broader. Four main categories emerged: Nokia, OSS developers (upstream projects), Maemo community (developers and users), and other companies (competitors, previous employers). The other usage of “they” included references to the software, patches, problems, devices, countries, or people in general. What is noticeable about both Nokia and Open Source communities is

that they are almost equally considered as ‘they’ by Nokia Open Source Software developers. This indicates that those people also feel as if they are in between those two groups, as they do not identify 100% of the time with any of them. However, the paper does not develop this idea further, but rather concentrates on developers’ relations to Nokia.

**Table 3. The frequency of usage of “they” in the fully recorded interviews with the Nokia Open Source Operations software developers as a reference to a particular group.**

INTERVIEWEE	NOKIA - THE COMPANY	OSS DEVELOPERS or COMMUNITIES	MAEMO DEVELOPERS or COMMUNITY	OTHER COMPANIES	OTHERS
A	24	13	4	-	4
B	16	21	13	2	9
C	69	10	8	5	6
D	25	14	15	3	7
E	15	21	-	2	11
F	30	18	28	-	3
G	17	1	-	3	1
SUM	196	98	68	15	41
418					
%	47%	23%	16%	4%	10%

Thus, it became obvious that in addition to “our” Nokia, there is also a “their” Nokia: the part of corporate practices and disfunctionalities that developers disidentify with. In particular, two groups were considered as “they” within the organisation: (1) managers and non-OSS employees and (2) lawyers in the legal department. They are associated with the corporate, business-like approach to developing software that values the intellectual property to gain a competitive advantage, which “takes a lot of fun out of the game”:

“If you are not disclosing anything and if there are no patents on what you are working on and so on, then it is fine I think if you contribute the code back—it is what the company would like to happen. The problem is quite often the things we are asked to do—they are either patented or what they call a competitive advantage. So then they don't really want that to be shared because it is an advantage. [...] So, basically they would like you to report bugs if they are not like feature bugs but simple bugs and shared discussions about general things.”

One of the reason why managers and non-OSS people are treated with some distance is that “there are dozens and dozens of people who have their own agendas for trying to build a career for themselves and nowadays Open Source is one of the big things around which you can build a career in Nokia on. So you have a lot of people involved in these tasks who don't have any personal drive for the technical aspects of the Open Source projects. They are just there for the money anyway.”

These people are inevitably part of corporate life and work. From just a hackers' team, the Open Source Operation started to grow rapidly after releasing the second device. Since then they have come to be perceived as an innovative experiment that can help Nokia fight top-end product competitors (e.g., Apple's iPhone) as well as a good place to continue the corporate career:

“But when it started to grow, then people from outside—all parts of Nokia, people coming in from Simbian, 6-40, or whatever—they started to join. And these people, they don't know much at all about free software. So there has started to be a problem. Because now we have a lot of people who—they are here and they know all the Nokia stuff, all the processes and how the corporation works, but they do not know how free software stuff works. I think it has been a problem, lately. And then management, I think they understand, they grasp the surface of the free software, so they know that there is stuff for free on the Internet and that you can take it and that there is this community stuff so that you can collaborate and there are these developers who do work for free. But I don't think they really understand the concepts. I guess, I mean—either you research the stuff or you are involved directly. If you have been looking at it, then you can understand it, but for people who sit at the table and they just manage stuff, I don't think they are actually grasping what free software is all about. I don't know, lately we have seen these internal meetings, but lately there has been these blogs by [Ari Jaaksi]. I get the impression that he doesn't really know what the Open Source stuff is about. Talking with other people from the team, they will have the same feeling. It is kind of disappointing that we are supposedly the Open Source team in Nokia that only that low levels developers know, the people that are involved directly. And I guess that most of the relationships between Nokia and the outside, because people who are already involved outside, we try to push all patches and have a good relationship with upstream projects. But that is mostly because of the developers, not the management.”

In particular, middle managers are perceived as not very useful as they are very sensitive to what the absolute top management is saying: “if the top guys say that Open Source is good, then all of the middle guys are saying ‘Open Source is really good’ but it flip-flops very easily.” The legal department is another thing. It is a nuisance that the legal department may stop developers from their regular work with an Open Source community. They have the real power over development work and clear agenda:

“There are always legal checks, but once they say it is okay that you do that, you can go directly; otherwise, you should have your private mirror patches. And then when they release what is done, they decide what things are Open Source. With the license you should really use the source code and so on. So they do it.”

The multitude of legal checks and managerial expectations sometimes call into question what—if any—code can be revealed and sent upstream without formal permission. These concerns were shared by some developers:

“My job description is quite small, I think. I don't know about the whole contract, if it mentions that, but I don't think there is any[thing]. At the time that I joined, I don't think I signed anything regarding the Open Source contributions and so on. But when you produce software within the company, you should not provide it before somebody really says okay.”

### **III. The shifting mechanisms**

Developers shift from identification to disidentification, showing their support or understanding of particular organisational identity. This depends on the extent to which they are able to relate to particular logics of actions. However, they know that if they are going to be a part of this organisation, even if they identify strongly with only one logic, they will also integrate a part of the competing corporate logic or at least learn how to deal with the identity conflicts. This happens at different levels in different cases, but the tendency proves that this mechanism is widely used by the Open Source developers at Nokia. The special type of shifting mechanisms directed towards change involves balancing influences or withdrawing. On the one hand, the hacker identity and Open Source logics lead to some influences that make Nokia more

open and allow for everyday development. On the other hand, hackers understand that radical changes are almost impossible and in this case may also be unnecessary; thus, they choose their fights carefully. In some situations they withdraw, letting the business logic rule and the corporate identity exist. Being proactive can be associated with “we-ness” and identification with the organisation, whereas passive behaviour can be associated with “they-ness”.

### **Influencing Nokia’s business**

Developers consider themselves to be the driving force behind making Nokia really more Open Source-like:

“I think almost all of the problems could be solved in a way that would be possible to be the Open Source. I think some people, sort of—especially since we have a lot of old managers who have worked in absolutely closed mode for a long time, actually for their entire career— they don't help in identifying Open Sourceable ways. They don't even know what they would be and what they would like.”

Developers focusing on originating the Open Source are keen on doing as much open work as possible, especially if they continue working on the existing upstream projects and most of them are very clear about it:

“[W]e try to do as much in open as possible. So we do the design and open source instead of sitting down and writing it ourselves; [we] send the patches to an open mailing list and get review and feedback [...] When it’s done, it’s merged up with upstream and then we can pull it back from there. So in a way, rather than doing it within Nokia and pushing it out, it sort of comes back through Open Source, which is nice.”

Developers are bringing knowledge into the organisation, pushing OS culture inside and promoting openness and change. They have forced creation and use of the mailing lists as an internal communication tool. Technical changes and open components have been pushed by the Tablet core team. Developers advise managers how things can be done better. They also try to find a way to do the Open Source work, which requires a very good understanding of how the corporation works. For instance:

“So that is why it is always very important, when you're trying to get the permission to publish something, then you do get that permission, you need



to publish something at that specific point in time. You never know what will happen in a couple of months...”

“[W]e have all these corporate tools that we don't—most of us—won't even use [and I will try to avoid [them] really hard. So if you want us to read the stuff, put it on wiki or send an e-mail. So I think in a way we have been successful.”

The business-oriented part of Nokia limits open collaboration. From the formal point of view, the developers' hands are tied. At the same time the corporation wants to benefit from the OSS while still keeping its secrets safe since the internal rules and strategy burden the OS work. When OS activism clashes with corporate interests, developers need to navigate between two identities, trying to take advantage of the open collaboration and be in accordance with organisational policies:

“It's sometimes a bit difficult as you cannot talk about project schedules or upcoming features, so if you want to discuss something related to a feature which is planned for a new product that has not yet been publicly announced, then it sometimes happens that the community members ask: “What do you want to do actually?” So if you explain to them: “Wouldn't it be nice if you could have this and that”, and they say: “I don't really see the use, so what is your plan, what are you doing?” “Well, I can't tell you really.” “Well, if you can't tell I can't really discuss this with you...” There are some people who are also a bit like... I mean, you have to come up with something that, like some alternative example so that they can understand what the issue is, what problem you are dealing with. That's sometimes a bit difficult. But we are creative. So in the end, the worst thing that happens is that you have to subcontract some guys and put them on the [project], and explain what you are doing, but it's not ideal. But of course, I also understand that because of the nature of the business work you cannot really reveal certain things. Of course, if there is just some new video format or something, that's not always an issue, but major features, they have to be kept [confidential].”

### **Avoiding corporate tasks**

Sometimes developers withdraw from pushing the change internally and avoid corporate solutions. Some just openly refuse to do any close-coded work:

“I don't touch anything [closed]. I might touch stuff that is closed, but I try to avoid it—as much as possible.”

They also ignore management's request to use Nokia e-mail addresses as default in all situations, while many developers are driven by the rule that “I have my identity outside of Nokia from beforehand so I prefer to use my own name.”

Avoiding confrontation may lead to compromise as developers give up on the Open Source work:

“On the other hand, I think we also restrain ourselves, and we try to avoid talking outside because it is more painful than helpful as then we have to consider what we can say and what we cannot say.”

Less openly, but on a larger scale, OSS developers rejected many of the corporate symbols and values, especially if these were outcomes of managing Nokia culture and opposed any corporate team-building managerial practices:

“That was one of the things that surprised me—this kind of “we have these Nokia values and we have this kind of brainwashing stuff”. But from the beginning it was like “who believes this?” Maybe it sounds nice, I just didn't understand it. Coming from outside all this stuff seems pointless, it doesn't make sense. They are still trying to go around about this, but it is ignored as part of the Nokia world. Most of us, we just ignore it. It is probably something that managers believe in. But maybe a few developers believe in this stuff also. But most of the people just don't care.”

From the work organisation point of view, the biggest problems are endless meetings:

“One big difference of the corporate life is that you have meetings that you do not really normally have in the Open Source project. [...] When you have too many meetings, you go home in the evening and feel like “I did none of those things that I had planned for the day.”

One of the developers warned that, “if you're unknotty careful, then you get stuck in various meetings” as this is “a very management-heavy organisation so it's really tough not to drown in it” and most of the meetings are “honestly pointless bullshit” he added. Thus, it is not surprising that meetings are widely avoided.

## IV. Developers on Nokia's hybrid of Open Source and business

Developers often described their company in terms of cultural clash, which refers to the fact that it is a Finnish company, employing Finns in most parts while only in the Open Source Operations department has a mixture of different nationalities. This of course creates some cultural barriers, but the real clash of values and logics is connected to the fact that the organisation is constituted by two separate logics: Open Source and the business–corporate one:

“The most difficult has been the interaction with the world of Nokia rather than the technical side. [...] Nokia people—I mean the corporate people—they think that they are changing really fast and that they are reorganizing teams, which has been changing means of staff really often and shuffling positions, moving people around. And in that sense it is really dynamic. But then for other staff it is really slow. So even projects like [Open Source project name] that are supposedly really, really slow in releasing, even then they seem really fast in comparison to all this work here. And if there is that something doesn't work then we discuss it and try to fix it. Then we just deploy it; if it makes sense, we do it. It may take some time—even years—but at some point is going to be fixed. But here it is like, this is the way we have done it forever so you really need to have really, really strong arguments to switch something. Sometimes there is this fear of change. It's weird because coming from outside I have the feeling that the community is organic and then Nokia is this mechanic, solid thing that it takes huge amounts of time to change.”

Open Source is considered organic whereas the corporate side is mechanic. Corporate people are overly concerned with internal politics and career paths, but ultimately the organisational processes are slow and there is a lack of vision and strong leadership. Poor communication also occurs, which is related to the “bad organisational structure”, because they are not attuned to the needs of a growing team. Management lacks an understanding of the Open Source practices and the technical skills to become partners in a sensible discussion:

“The big problem is that the senior managers or senior middle managers—we have so many layers that I think that they have slightly lost touch with the actual technology itself.”

The “corporate mentality” is compared to the advantages of the Open Source and is generally counterproductive for projects:

“So the problem is that there is this mentality of corporate mentality that any difference or diversion is an advantage, so that is something that is hard for them to release. It is something that they regard as distinguishing them from the competition. Giving that away is sort of like giving away the treasures. And they don't understand that it is actually good, that if you collaborate with other people then you can make even better products. But that is the problem—I mean, they understand the stuff a bit, but they don't have the concepts within in...”

The differences among logics, identities, and types of career paths are visible and contested by developers and managers. At the same time, both logics are considered necessary for organisational existence, and both identities need to be maintained. People know they have to learn how to deal with them:

“There is a very real cultural difference between corporate culture and the open-source culture. And I can really feel it, it is very clear that we have these different people. Sometimes there are also surprises where you think this guy is a corporate guy, but in the end you find out that he is actually doing a lot of Open Source—he has just adapted so well to the corporate way of doing things that you don't really notice anymore. I have to learn it, they have to learn it.”

This experience is considered beneficial by some developers, even if they do not agree with some of the mixed attitudes to Open Source logics and the hacker identity:

“It is good and I have learned stuff that I didn't know, like all the corporations, all the product stuff, how you launch a product—mostly that, how does the company's work. But at the same time, I am not really happy about the whole the software being Open Source stuff, the way it is here. And I don't think it's improving. If at some point I see that it is too bad, then I would leave. And I have been considering that, so I don't think I will be sticking around for long. I mean, it has been good, and I have gotten to know a lot of people. It has been a good experience but I am not really happy with how things are going.”

In some cases, developers not only ambivalently identified with the corporation, but indicated that the dual organisational identity has an impact on

their own individual identities. One of the interviewees called this situation “a split personality”:

“Yeah, I remember at some point I was talking to some people, but I was saying that it was sort of like having a split personality because here I am this person and then I use this role and I will interacting this way, but then when I'm outside I am a different person. So are you a different person people then ask? In a way, yes. I guess it is kind of difficult, but outside we are also used to this so you may have different rules even outside, so you might have different roles for different projects in the free software world.”

On the other hand, Nokia managers seem to (discursively) ignore the conflicting identities and include every employee under the Nokia name, regardless of their origin and the logic with which they identify. They try to create the impression that Nokia has a strong, coherent identity. A Nokia vice president responsible for Open Source operations, Ari Jaaksi, in his keynote speech on the Third International Conference on Open Source Systems in Limerick (2007), repeatedly used the pronouns ‘*us*’ and ‘*we*’ to describe joint efforts and common gains of OSS teams and management:

“We have an open source strategy at Nokia.”

“We want to use Open Source [but] it’s not out of a business context.”

“It’s not that we want to use open source because it’s good for human kind but we want to use open source—and this is true because we believe that’s the way of running a profitable hi-tech company. It’s as simple as that.”

In his white paper “Building consumer products with Open Source”, he describes:

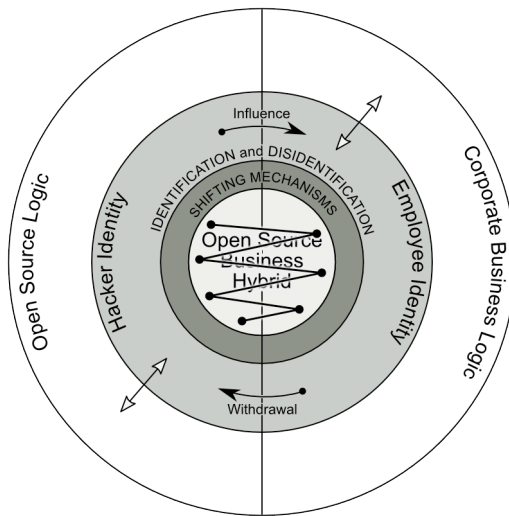
“We used open source extensively in the creation of the Nokia 770. We favoured components that were developed by active communities and already used by many users. Thus, instead of an embedded version of a component, we rather used a mainstream desktop component when possible.”

Jaaksi (2007) also underscored that “many companies outsource tasks” in Open Source projects. Nokia, on the contrary, is involved in the OSS communities. He said, “[we] want our hands to get dirty.” This process is based on the individual developers’ participation in the project: “An individual person gets

an assignment that you are now responsible for this part of say GTK work and you make sure that you are on the mailing list, you fill your credits and your reputation in the community.” Similar managerial discourse was used by other managers during interviews and public presentations. In 2009 Quim Gil stated during his presentation the Nokia’s mission is to bring open source and Linux to mainstream consumers, but it seems to be easier said than done. Only for PR purposes is it simple to combine managerial control and planning and the Open Source way of work.

## Findings

This paper has focused on the intersection of institutional logics and individuals’ organisational practices to understand mechanisms maintaining the multiple organisational identities. The identities are shaped individually and collectively and involve simultaneous considerations of participation and non-participation (i.e., identification and disidentification). Within a particular empirical setting—namely, the Open Source, the business organisational hybrid—the researcher identified two institutional logics and related them to professional and corporate identities. Their interplay resulted in two forms of identities. The corporate business logics created the basis for the Nokia-employee identity in which managerialism, the market, planning, and strategies influence how developers perceive themselves and their roles.

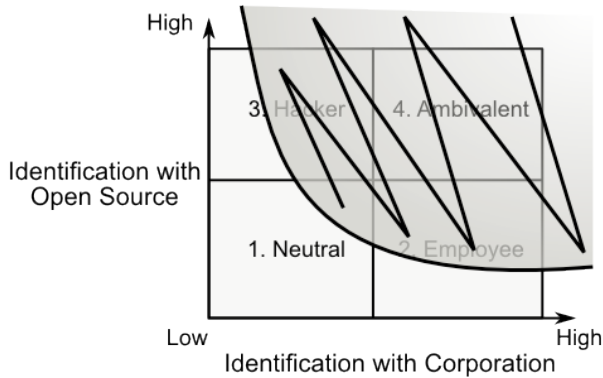


**Figure 4. Nokia’s organisational hybrid**

Meanwhile, the logics of Open Source gave rise to a hacker-activist professional identity in which the collaborative culture as well as open and high quality standards were an integral part of these developers’ everyday work practices. As both identities need to coexist, the analysis concentrated on mechanisms that, like a needle and thread, sew the hybrid organisation (see Figure 4.).

Nokia developers are creating a balance, shifting back and forth from their Open Source hacker identities to identification with the organisation as a whole with its corporate background. Most decided to stay somewhere in between, remaining neutral, being just a hacker or transforming into a loyal employee— or maintaining ambivalence. On a daily basis they use discursive strategies and real actions to show their involvement in particular logics/identities. First, they shift between hacker and employee identity. Even if they are originating from Open Source, they also try to adapt to the internal organisational situation. They identify with Nokia to the extent of the common goals of the projects in which they are involved. They want the project to succeed and want to do their job to the best extent possible. However, they disidentify with all

organisational dysfunctions and managerialism from corporate logics. They are Nokia as long as they represent their work; they oppose inefficiency of managers and structures. They work hard on their project, but are not afraid to openly criticise decisions they do not approve of, distancing themselves from the corporation per se.



**Fig 5. The identification choices and shifting mechanisms in Nokia**

Second, developers also get involved in changes in the organisation. They influence how it deals with the project and slowly—officially and unofficially—work more and more in the open. They provide knowledge, contacts, and the possibility of learning. However, this proactive attitude is not constant. It is swapped with withdrawal times, when hackers give up discussions and just follow corporate decisions. Sometimes it takes the form of dodging or avoiding unpleasant corporate tasks, like attending boring meetings. In sum, this process of shifting includes both discursive practices and real actions. It requires some effort to influence the corporate side whenever possible. Yet it also requires withdrawing and complying with competing logics on other occasions. These findings are summarised in Figure 5.



# Conclusions

As Quintas (1991) noted almost 20 years ago, introducing the software engineering paradigm into organisations (professionalism, focus on tasks, well-documented processes) will encounter resistance in more rigid organisations; success depends on overcoming the institutional, social, and cultural barriers. Developers are resistant to managerial practices, and many think negatively of the corporations and believe that managers are in general incompetent (Jemielniak, 2007). Still, relatively little advancement has been made in research related to the human side of software engineering, and this research concerns mostly group dynamics, team composition, management, and culture (Sharp and Robinson, 2005). Based on these ideas, this paper has used the theoretical background of institutional logics, social identification, and a case study approach to develop a more cross-level understanding of how hybrid organisations are sustained by individuals involved in shifting mechanisms between identities and logics. Most studies and the presented theories either assume that competing logics are temporary or—if they identify such situations—still lack insights regarding how co-existing logics internalised in hybrid organisational identities are sustained (Reay and Hinings, 2009). Focusing only on institutional or even field levels did not result in answering questions about how competing logics can be maintained, but not merged (Reay and Hinings, 2005), which ultimately became the main interest of this paper. Therefore, based on previous literature, this paper proposed a modified theoretical model of organisational hybridisation processes, thereby directing attention to the importance of mechanisms sustaining the hybrid state. It places the hybrid organisation at one end of the creation chain, while institutional logics and individuals bring it to existence. This conceptualisation offers a new understanding of sustaining organisational hybrids for the long term and provides the foundation for further research.

The Nokia case illustrates the proposed way of thinking about the creation and maintenance of organisational hybrids. Through this example, the current paper has demonstrated that the fundamental way of dealing with hybridity is to shift between logics and identities. These mechanisms take the form of balancing between identification with Open Source and the corporate world, leading to the simultaneous switching from actively influencing the competing logics to withdrawing and letting competing identities act on their own logic.

Such a situation resembles a modern fencing match, where gaining dominance is associated with going further, pushing the competitor backward, while dodging or withdrawing is the reaction to being attacked. Most matches comprise a balance between dominance and withdrawal. The same movements were observed in the studied organisation.

This research has several limitations. The model of organisational hybridisation was confronted only through the study of one empirical setting and based on data consisting mostly of interviews and public written materials. The focus of the case was limited due to the availability of resources, time, and primarily the access rules instigated by the company. Since the study was very localised in a specific Open Source business context, it is not clear if similar phenomena may be observed in other hybrid organisations. However, some insights from previous studies (Meyerson and Scully, 1995; Reay and Hinings, 2009) suggest that the results discussed herein may indicate tendencies that are present in other hybrid groups as well. Moreover, the type of data gathered did not allow for the following of each actor's individual perspectives in order to observe how particular developers perform the described mechanisms in their everyday professional lives. Thus, future research should incorporate direct participant or non-participant observations, including in particular shadowing, as such an approach would help further grasp the nature of social interaction and identification in hybrid settings. Finally, this paper—although it mentions the perspectives of managers and other non-Open Source people—mostly refers to the Open Source Software developers' perspective. As such, focusing more attention on various groups within organisations, including top and middle managers, lawyers, assistants, and marketing and finance employees, would broaden the investigation by allowing for an analysis of their relationships to competing logics, identities, and other groups.

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