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# Balancing strategic interests for network value of mobile services

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## ABSTRACT

Designing business models for mobile services is a complex undertaking. It requires multiple actors to balance different design requirements. A business model is a blueprint of four interrelated components or domains: service, technology, organization and finance. Little attention has been paid to how these different domains are related to each other. This knowledge is needed to enhance our understanding of what constitutes a viable business model. In this paper the connections between two of these domains, i.e. organization and finance domain, are explored by analyzing critical design issues in business models for mobile services, i.e. partner selection, network openness, network governance, and network complexity in the organization domain, and pricing, investments, division of costs and benefits, and quantifying contributions and benefits in the finance domain. A causal framework is developed, which links these critical design issues to expected network value and business model viability.

## Keywords

Business Models, Mobile, Organizational Networks, Finance.

## INTRODUCTION

The mobile telecom industry is currently facing several opportunities that may radically change the field of mobile telecommunication. The development of new networks like GPRS (2,5 G), UMTS (3G), WLAN (WiFi), and Personal Area Networks (beyond 3G) will spark the development of mobile Internet services. With 'mobile services' we mean all kinds of innovative services that combine technologies and concepts from the domains of (mobile and wireless) telecommunication, information technology, and consumer electronics. These new technologies and concepts, and the 'convergence' of the domains offer opportunities for the mobile telecom industry.

Most industry players currently lack the resources and capabilities to exploit these opportunities. Mobile services are increasingly being developed and provided by networks or value webs of cooperating organizations. Flexible 'value webs' will arise and replace traditional, static and linear 'value chains' (Moschella, 2003). In a 'value web' each player contribute different capabilities and resources. Innovation thrives on the combination of these capabilities and resources of different players. Cooperation in value webs is by no means a straightforward task. Various studies (Harrigan, 1988; Bleeke & Ernst, 1993) indicate that companies encounter serious difficulties in achieving the anticipated benefits from co-operation, 40 to as many as 60 percent of all co-operations fail. Given the disappointing success rates of inter-firm co-operations and the risks and cost involved in the introduction of new mobile services, it is not surprising that practitioners and academics pay a great deal of attention to the viability of business models. In our view a business model is a blueprint for how a network of organizations co-operates in creating and capturing value from new services or products from technological innovation (Chesbrough & Rosenbloom, 2002). Designing business models is a complex issue. Technical, financial, organizational, and professional user or consumer's needs and requirements have to be balanced. For instance, what makes sense from a technical point of view (better specs of positioning technology) may not make sense from a financial (higher costs) and user perspective (privacy concerns). Moreover, organizations have to balance their different interests and business logics to create a 'win-win' situation, in which each player has incentives to co-operate, and in which the combined benefits are higher and the combined efforts are smaller compared to each player working separately.

Although literature on strategic alliances in the telecommunication domain (Carlson, 1996) and network formation (Gulati, Nohria, & Zaheer, 2000) is available it fails to provide insight into the subtleties involved in the design of viable business models for the provisioning of mobile services in value webs. Literature on business models has thus far been on defining and classifying business models. Little attention has been paid to how the business models are related to critical design issues. In this paper we will present research into design issues that are related to business models of new mobile services that are delivered by complex value networks in order to understand what constitutes a viable business model. Before we present our research, we will discuss our theoretical framework.

## BUSINESS MODELS

There is little consensus on how to define business models (Bouwman & Van den Ham, 2003a). Some researchers equal business models with revenue models. Others reserve the term to denote the value creation logic of new business initiatives. Each of these approaches provides a rather limited perspective on *cross-company* collaboration in complex value networks because they focus on business models of a single company. The different definitions of business models have some common components, which are described in our ontology (Faber et al., 2003):

- **Service domain:** a description of the service offering, its added value, and the market segment at which the offering is targeted
- **Technology domain:** a description of the technical functionality required to realize the service offering
- **Organization domain:** a description of the structure of the multi-actor value network required to create and distribute the service offering (organizational arrangements)
- **Finance domain:** a description of how risks, investments and revenues are divided over the different actors of a value network (financial arrangements).

The field of business modelling has developed over the past few years from defining business models, via exploring business model components and classifying business models into categories, to developing descriptive models (see for an overview Pateli & Giaglis, 2003). The emphasis in more recent literature is shifting away from classifications to representations or descriptive models of business models. The majority of researchers (see e.g. Tapscott et al., 2000; Weill & Vitale, 2001) focus on the actors, relationships, and value objects exchanged. Little attention has been paid to conceptualising the linkages between variables of the different business model domains (see Figure 1). In this paper we limit discussion of our results to the organization and finance domain (Figure 1).

In general, *organizational arrangements* revolve around the resources and capabilities that have to be available either within the organization or in the organizational environment. Although the resource based approach (Barney, 1991, Porter 1985) assumes that resources and capability's should be organized internally, we observe that organization do not control all the necessary resources, specifically in the domain of mobile and wireless services. In their analysis of business models Hedman & Kalling (2003) conclude that the bottom line is that economic value is determined by a firm's ability to trade and absorb ICT-resources, to align (and embed) them with other resources, to diffuse them in activities and manage the activities in a way that creates a proposition at uniquely low costs or with unique qualities in relation to the industry in which the company is operating. Collaboration, in-sourcing and network formation are possible strategies to obtain the necessary resources (Pfeffer & Salancik, 1978). Therefore, organizations increasingly work together to deliver customer value in 'value networks' (Kothandaraman & Wilson, 2001). Depending upon the competitive environment, industry sector and the operating risks involved, specific actor(s) contribute key assets, in the case of mobile services most of the time technological and marketing resources, in the creation of value and a different configuration of actors is likely to result, some taking structural, integrative roles and others supporting, facilitating roles (Hawkins, 2003).

Governance of organizational arrangements becomes particularly relevant in environments where market opportunities technological developments and regulatory conditions are dynamic as is the case in the mobile and wireless communication domain. It is possible to distinguish three phases in value network governance (Kaplinksy & Morris, 2001). First the basic rules for participating in the value network have to be set. Secondly, it is necessary to audit performance and check compliance with the set rules. Thirdly, value network participants may be supported in meeting the rules. However, the most basic question is who is the 'governor' or the 'center of gravity' in the network and how is the legitimacy of exerting governance established.

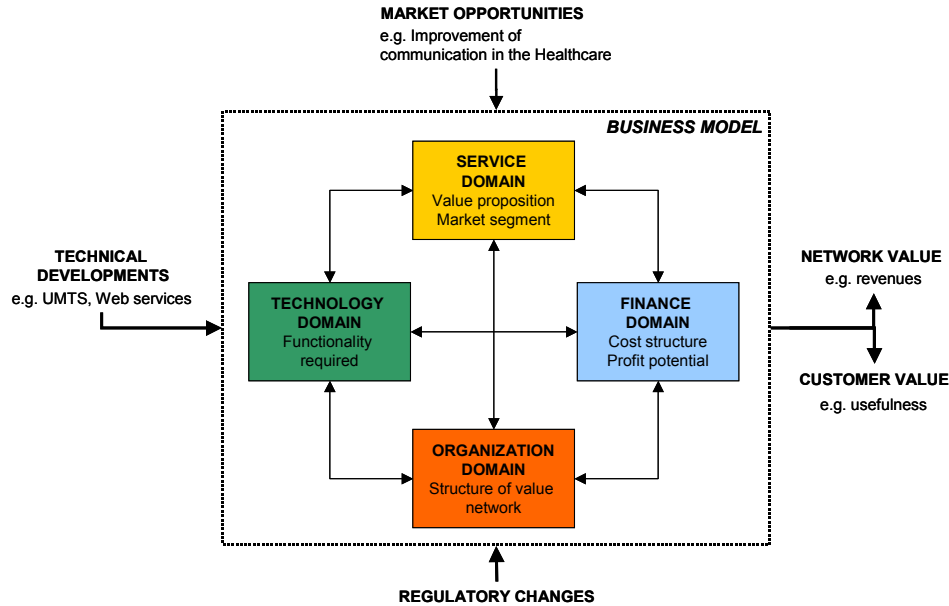


Figure 1. Descriptive business model framework

With regard to *financial arrangements*, there are three main issues: investment decisions, revenue models and revenue sharing arrangements. Financial methods are aimed at average cost-effectiveness, net cash worth, and internal return (Demkes, 1999; Renkema, 1996). Some methods go beyond the merely financial considerations, for example real option theory, a more detailed elaboration on the net cash worth concept that explicitly puts a value on managerial flexibility to respond to future developments (Demkes, 1999). Generally speaking the cost side is reasonably well charted. As far as the revenue side is concerned, which from our point of view includes realizing cost reductions but also long term advantages that stem from intangibles, literature is less uniform (Boulton, Elliott, Libert & Samek, 2001).

An important question is how investments are arranged within complex value networks. Important stakeholders in complex value systems are next to the core or structural actors, actors that invest. Investment decisions weight the interests of the actors involved and take mutual benefits into account. To facilitate inter-organizational investments, organizations go through a collective, lengthy decision-making process, which require multiple rounds of negotiation, in which conflicting interests have to be sorted out (Demkes, 1999): Inter-organizational investments require explicit articulation and collective agreement on the terms of investment and timing (Miller & Lessard, 2000). The share of each participant, in terms of financial and technical expertise, and the corresponding partnership ratio must be defined. The success of these arrangements hinge on whether or not the role of each member within the terms of institutional framework is clearly defined (ibid.). So there is a clear relation between organizational and financial arrangements.

## DESIGNING BUSINESS MODELS

In designing a business model one needs to take into account both *customer* and *network* value. Creating customer value is not an easy task due to the difficulty of extracting user requirements and *conflicting design requirements*. Design choices in the service domain may affect those of the technology domain and vice versa, as illustrated in the introduction. Creating value for business actors (network value) is a rather complex task due to the conflicting strategic interests of partner organizations (e.g. generate traffic, extend services to customers, generate transactions). Design choices in the organization and finance domain have to serve strategic interests of involved actors. For instance, operator and content providers may disagree how to brand an information service and who needs to pay whom.

Knowledge on how to effectively balance requirements and strategic interests is largely missing in the business model literature. To develop insight into how organizations can design 'balanced' business models researchers need to go beyond identifying simple success prescriptions and understand the critical design issues and their interdependencies. In this paper our focus is directed to critical design issues regarding the organizational and finance domain in relation with network value.

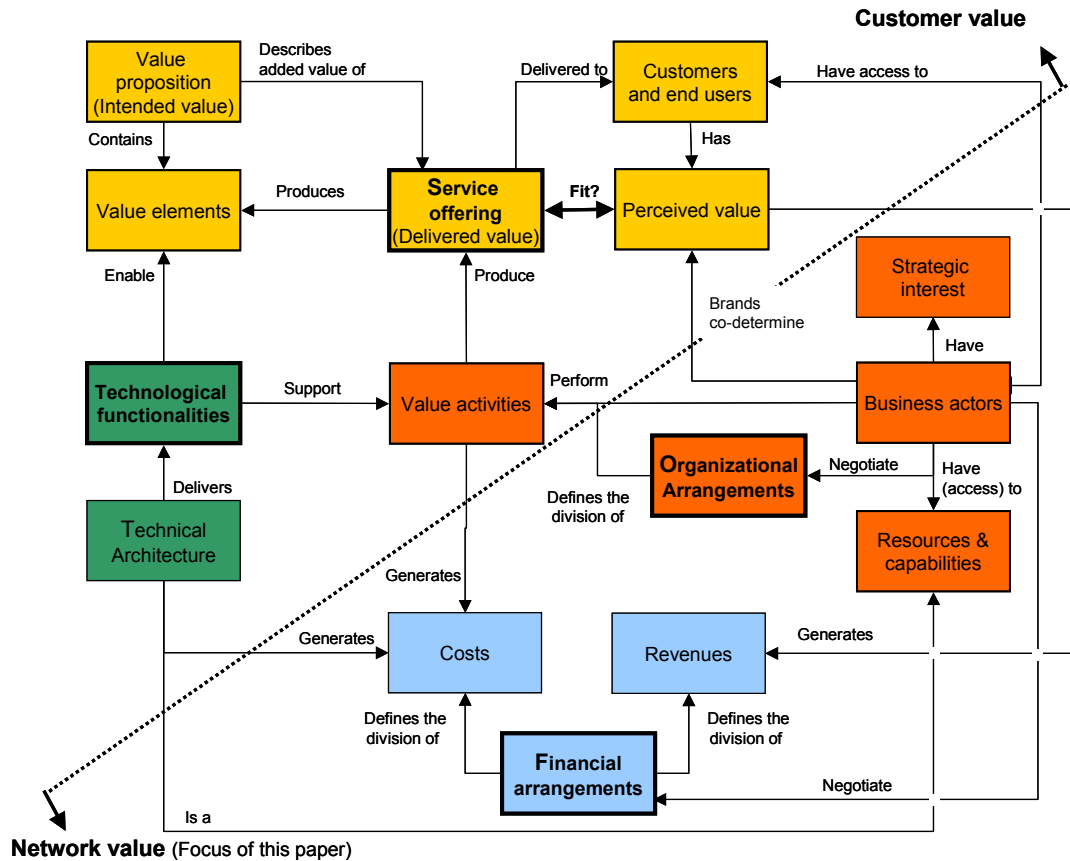


Figure 2. Elaborated descriptive business model framework

**RESEARCH METHODOLOGY**

Our research approach contains three steps. First we started from our descriptive conceptual framework (ontology) describing the most important design variables and the relationships within the four domains (see Faber et al., 2003a). We use the term “design variable” to denote that our framework focuses on variables that can be influenced by design teams, business developers, and managers. Second, a considerable number of (business models of) mobile services have been analyzed (see table 1). Case selection criteria were innovativeness (2.5 G, mobile payment services), relevance of specific aspects for instance domain (health care, entertainment) or context (community services). For the case study, case and interview protocols (Bouwman & Faber, 2003) were used. Interviews were recorded and transcribed. Data from interviews were supplemented with information from company websites, industry reports and academic literature. Data were systematically coded and analyzed. Interviewees validated results.

The case studies had as objective to detect critical design issues. A critical design issue is defined as a design variable that is not nominal in nature, i.e. availability of a network or of investments, but is perceived to contribute to the feasibility and viability of the studied business model and that can be influenced by designers, business developers et cetera. When practitioners explicitly mentioned an issue as nominal or critical, the researchers coded this accordingly. Based on the case studies, specific critical design issues were extracted and systematically clustered for every domain. Based on the recurrence of issues and/or the perceived relevance for the viability of business model, as indicated by the interviewees and coded as

such, these issues were qualified as critical. Third, knowledge on critical design issues has been used to build causal frameworks describing the interrelatedness of design variables and their relationship with business model viability.

Application domain	Cases	Published case analysis reports
Mobile entertainment services	My Babes, Radio 538 ringtunes	Maitland et al., 2003, Kar et al., 2003
Mobile tracking & tracing service	TMC4U (Traffic Management Channel for You), Taphic SMS alerts (Vialis), Finder i-mode service	Faber et al., 2003b
(Mobile) Community services	I-Karos, Vaccination Database, Botfighter	Rietkerk & Timmerman, 2003
(Mobile) Presence and Instant messaging services	ICQ for Imode, Splendo MiMessenger & NewsMessenger, MSN messenger, Jaytown Post-@	Kijl & Timmerman, 2003
Business to employee services	P-info, Lucio, Zorgpas, and Caremore	Bouwman & Van Ham, 2003b
Mobile payment services	Moxmo, Mobile2Pay, and Mobipay	Faber & Bouwman, 2003

Table 1. Overview of cases

### CRITICAL DESIGN ISSUES IN ORGANIZATION DOMAIN

Critical design issues in the organization domain are partner selection, network openness, governance, and complexity. **Partner selection** An important design issue in all cases is access to resources and capabilities necessary for a service offering. Some business actors provide indispensable and irreplaceable (critical) resources and capabilities, and others provide supporting resources and capabilities. For instance, in the traffic information cases (Taphic SMS alerts and TMC4U) an important issue was the inclusion of the government. Given the cost of acquiring and processing raw traffic data, government funding is seen as a critical resource for any 'commercial' traffic service. In the mobile payment cases (Moxmo, Mobipay and Mobile2pay) an important issue was the inclusion of financial institutions as transaction enabler and trusted third party. Whereas Moxmo decided to operate independently from the financial institutions to reduce transaction costs, Mobipay and Mobile2pay decided to include financial institutions in the value network to enhance trust. Access to critical resources and capabilities (e.g. customers, content, funds etc.) is an important strategic interest when selecting partners.

**Network openness** The extent of openness indicates the degree to which new actors can join the value network. In the cases we have observed two different organizational arrangements emerge: the closed model in which a relatively fixed consortium of partners collaborate, and the walled garden model in which new partners are able to join the value network if they comply to certain rules. In the mobile entertainment, the I-mode Finder, and community cases portal providers used a walled garden model to control the quality of the content. Whereas in the presence instant messaging cases we found instances of a closed model (Splendo News messenger and Jaytown Post-@). Surprisingly no instances were found of an open model in which partners are free to join the value network and offer services and content (e.g. Kazaa). When choosing between various degrees of network openness the desired control, exclusiveness and customer reach of the service were main strategic concern. The higher the desired control and exclusiveness the more likely partners are to adopt a closed model. Whereas high customer reach is an argument for an open model.

**Network governance** in all cases a dominant actor, often the ones with access to customers and end-users or the principal developers of the service offering, were managing the value network. These actors often approached and selected collaboration partners, set the rules for collaboration, and monitored the compliance with these rules. For instance, in the entertainment, community, and the PIM cases that focused on B2C applications (ICQ for I-mode, Splendo MiMessenger) the portal provider is the dominant actor. Whereas in the business to employee cases and some PIM cases (MSN messenger, Splendo News messenger & Jaytown Post-@) the application service provider is the dominant actor. Typically actors with access to customers shield these relations from others in the value network. Whereas actors lacking these contacts often strive to move up in the value network from for instance content provider to service provider. Customer ownership is the key strategic concern.

**Network complexity** The studied cases differ with respect to network complexity. Network complexity may arise from the number of relations a focal actor needs to manage and from the effort needed to couple actors' IT applications and systems (technical architecture). The latter is out of scope for this paper. We found that business actors tend to reduce network complexity by using intermediaries, which act as single points of access. For instance, in the I-mode Finder case we found

that the portal provider (network operator) chose to reduce network complexity by using an intermediary actor to manage the relations with the different content providers. In the Zorgpas case we found that the high number of organizations (20), which needed to collaborate, resulted in an enormous network governance load and efficiency losses. Finally, Mobipay’s transaction platform for mobile payment requires the acceptance and collaboration of all major financial institutions in Spain. Mobipay had to deal with a considerable degree of network complexity. Moxmo, on the other hand, chose to bypass the financial institutions, and so reduced network complexity. There is a trade off between reduction of complexity and access to critical resources and capabilities.

**CRITICAL DESIGN ISSUES IN FINANCE DOMAIN**

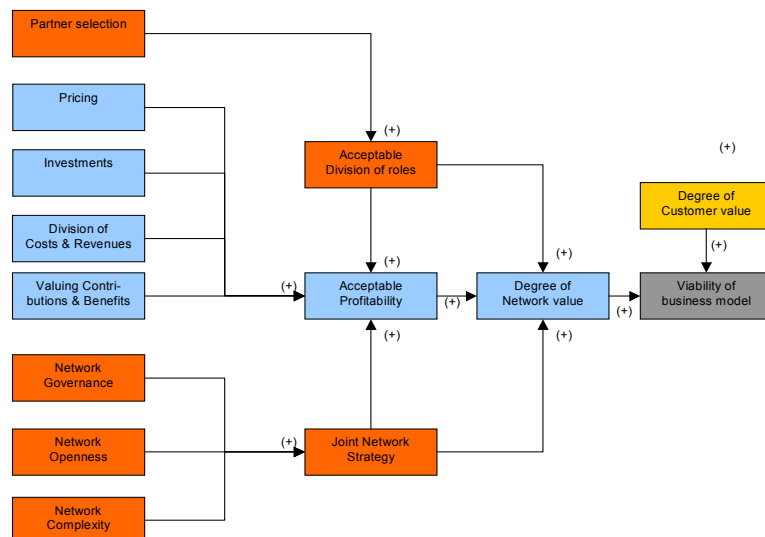
Critical design issues in the finance domain are pricing, investments, division of costs & revenues, valuing contributions & benefits.

**Pricing.** A customer pays a certain price to use a service. The perceived customer value must balance or exceed the price of the service. In Mobile Payment cases the service is free of charge and even entitles to reduced prices for purchased goods. The aim is to attract and retain customers. The traffic information service TMC4U offers traffic messages via the RDS channel on car radios. It is free of charge. However, to appreciate this service as a truly personalized service, the driver needs to invest in a car navigation system equipped with a TMC module. VDO Dayton sponsors the service with a small amount for each car navigation system with TMC module it sells. The Traffic SMS alerts user pays a premium SMS price. The service is characterized by relatively high variable costs and virtually no fixed costs for end-users. The I-mode services (i.e. Mybabes, Finder) share identical pricing: they require users to invest in an I-mode phone, operator subscription, I-mode subscription, flat fee service subscription and fees depending on data traffic. The height of the fees, including those for the services offered by third parties, are set by the dominant actor, the operator. Pricing seems to be aligned with the strategic objectives of the dominant actor, e.g. maximizing profits or creating market share.

**Investments** in a new service involve financial risks. In the B2E service Caremore some of the uncertainty was resolved by following a phased (investment) approach. Prior to actual rollout of the service it was tested in pilot groups. Traffic information services like TMC4U and Traffic SMS alerts rely on the government for large investments in the infrastructure for acquiring and processing raw traffic data. In the mobile entertainment cases content providers are responsible for the investments needed to provide content in a format that is acceptable for the operator. Nordic operator Telia introduced a location-based game (Botfighter), which was targeted at the youth segment. Telia regards the investments in the game as a means to win the (long term) loyalty of the youth. However, to reduce the upfront investment Telia did not develop the game itself. This was done by It’s Alive!, which in return gets a monthly fee plus a share from the SMS revenues. The division of investments matches partners’ profitability and risk profile.

**Valuing contributions & benefits.** For fair and viable revenue sharing arrangements it is important to value the contribution of each partner to the service offering and the (intangible) benefits each partner receives. In the Caremore case the choice for a specific operator was based on an existing trust relation and superior network coverage. Also, the valuation of the system integrator changed over time. At the moment Caremore had the required system integration competences itself, the original systems integrator was considered too expensive and dropped from the value network. For Microsoft the benefits from its (free) MSN Messenger are mostly intangible: it ties users to the portal and software of Microsoft. Some revenues are distributed to Microsoft, but the service provider provides a strong positive contribution. It is the service provider that acquires the network and prepares to depend on its intangible benefits.

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Figure 3. Tentative causal framework

## CONCLUSION AND DISCUSSION

In contrast with existing business models research, our approach is directed towards the design of viable business models for mobile services developed by organizations collaborating in complex value systems. Our research shows that there are critical interdependencies between service definition, technical architectures, organizational, and financial arrangements in the development of mobile (wireless) services. In this paper we focused on the interrelatedness of critical design issues in and between the organizational and the financial domain. Based on extensive case-studies we found four critical design issues in the organizational domain, i.e. partner selection in order to acquire critical resources and capabilities, and network openness, complexity and governance; and four critical design issues in the financial domain, i.e. pricing, investments, division of costs and revenues and valuing contributions and benefits. Critical design issues from both domains are directly related to each other. Organizational design issues enable and solve critical design issues in the financial domain.

This paper and the results have some limitations. In the first place, material presented in this paper can impossibly reflect all the data, analysis and research steps. We only presented the most general insights and result. Furthermore we focused only on value creation from the organizational network and financial point of view. Similar analyses have been done with the focus on the value creation for customers and end-users from perspective of the service concept and of from a technological perspective (Faber, Haaker & Bouwman, 2004; Haaker, Faber & Bouwman, 2004). When these viewpoints are included we have a more holistic framework and even more design issues have to be balanced. This makes the model more complex but also harder to validate. Therefore as a next step in our research, we start from the more holistic model in design sessions (making use of the Freeband Business Blueprint Method) and, based on these sessions, derive more detailed insight in the importance of specific design issues. Furthermore, we initiated a large-scale survey in which we assess the critical nature of specific design issues. Both research steps should result in a more parsimonious model. Furthermore, we did not analyze and discuss the business models of individual organizations. We only addressed critical design issues in the organizational and financial domain on the level of the over-all business model.

The validity of our results strongly depends on the sampling of our cases. Seen the fact that selected cases are quite heterogeneous in nature, targeted customers, technology focus and innovativeness, we may expect that our results are not biased due to case selection. Although we focused our case studies on mobile services we observed that many of the extracted critical design issues seem to be more generic in nature. Follow up research has to prove to what extent this is the case. Also, the steps from critical design issues to causal framework is open for discussion. The causal framework as presented needs further testing to validate our results. This validation can be done by experts and by analysis of a large number of cases. Both directions will be pursued.

The value of our case studies and causal framework for designers, managers and business developers in the mobile domain lies in its practical nature. The model helps practitioners to select critical design issues and to balance the design choices to be made. The trade offs between different choices can be identified and analyzed. Based on the critical design issues and the causal framework we have developed a design methodology (Freeband Business Blueprint Method) that supports managers and business developers in the mobile domain to develop viable and feasible business models (Haaker et al., 2004). In session that were held in a totally different setting, i.e. an insurance company, the Freeband Business Blueprint Method proved to be valuable for managers to define services and design business models.

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