CRI-program proposal[i] - Center for service innovation (CSI)

1. State of the art in service innovation

Since the late 1990's, service innovation has gained considerable attention (e.g. Forfas, 2006; 2008; BERR, 2008; FI, 2008; EC, 2009). There are several reasons for this. Nearly all of the European employment growth between 1995 and 2007 has been due to growth in services (EC, 2009). The GDP of service intensive countries is higher than that of less service intensive countries, and the development of a knowledge intensive service sector is closely linked to the quality of working life (Forfas, 2008) and the wealth of a country (EC, 2009). Knowledge intensive service activities (KI-SA) and knowledge intensive business services (KIBS) are believed to be drivers of innovation in many sectors. Finally, due to ICT and new forms of organization, international service trade is growing and is expected to grow even more in coming years (Forfas, 2008).

Despite these positive characteristics of services and service innovation, significant *challenges* exist at the regulatory, industry and firm levels[1]. At the *regulatory level* it is difficult to design policy measures, partly because the service sector is a heterogeneous collection of industries and partly because more and more manufacturing industries also engage in service activities (servitization). The sources of market and system failures of services are not well understood (EC 2009; Rubalcaba et al., 2010) and services productivity seems to be a particular challenge in Europe (van Ark et al., 2008). At the *industry level*, it is suggested that we lack statistics properly describing service innovation (Miles, 2007). We have applied, sometimes inappropriately, theories, models and concepts from innovation in manufacturing industries to services. We now know that service sector innovation is different, though not necessarily less, than that of manufacturing industries. For example, innovation in the service sector is less likely to be driven by regional clusters, inter-firm exchange is more important than exchange with R&D institutions, and service innovation by SME is not, as yet, reflected in statistics (EC, 2009).

At the *firm level*, service attributes (Zeithaml et al., 1985) and the logic of service (Vargo and Lusch, 2004) have been used to identify service innovation challenges. Research indicates that service innovations are more incremental and less radical than product innovations (Johne and Storey, 1998). Service innovation is also less technology based (Cooper and de Brentani, 1991) and its results are more difficult to protect, through patents for example (De Brentani, 2001). Service innovation processes are less formal than product innovation processes (Kelly and Storey, 2000) and it is more difficult to apply a stage-gate process model to these processes. Service innovation is often customer driven and customer involvement is important, however, intangibility makes this more difficult (Alam, 2002). Human resources are more important in service innovation (De Brentani, 2001) and it to a greater extent requires value network collaboration and complementing organizational innovations (Sirilli and Evangelista, 1998). Service innovation effects are more often qualitative (Tether, 2003) and difficult to measure (Aas and Pedersen, 2010a). Finally, successful service innovation methodologies may differ from product innovation methodologies (Nysveen and Pedersen, 2007).

Despite these challenges, *opportunities* are underexpolited. A recent initiative termed Service Science Management & Engineering (SSME) highlights the opportunities from combining knowledge in service professions into a Service Science (Maglio and Spohrer, 2008). A related opportunity lies in applying service logic to ICT-services in areas of service oriented computing and in combining ICT-services, traditional services and other resources to design integrated service eco systems (Alter, 2009). Componentization and standardization of services are important innovation principles in these perspectives. A contrasting opportunity lies in knowledge intensifying services and in encapsulating products with knowledge intensive services as a means to obtain competitive advantage (Oliva and Kallenberg, 2003). The transformation to servicizing business models has also been proposed as a means to more sustainable development of manufacturing companies (Rothenberg, 2007).

[1] The term firm level is used throughout the proposal covering both the company and network levels.

The above challenges and opportunities have also gained considerable attention in *Norway* (St.meld. 7/2008-9, Econ, 2005, Haugstad and Carlsen, 2006). National initiatives similar to those of Ireland and Finland, however, have not been taken. Until now, there have been few opportunities for academic institutions to fund SSME-centers or similar coordinating research initiatives. Facts on Norwegian service innovation challenges must thus be based on the Norwegian version of the Community Innovation Survey (CIS) (e.g. Pedersen, 2005), case studies (e.g. Econ, 2005), separate surveys (e.g. Aas and Pedersen, 2010b) and desk research (e.g. Haugstad and Carlsen, 2006). From these sources, it seems that the challenges identified above are at least as relevant in Norway as in EU. To further determine the prevalent opportunities and challenges of service innovation among Norwegian service firms and servitizing manufacturers, we conducted an empirical study with the present Center for research driven innovation (CRI) as the frame of reference. During the autumn of 2009, two professors interviewed 64 Norwegian business development managers and experts on service innovation representing 45 service firms, industry association, government agencies and research institutions[2].Their unanimous recommendation was that the service innovation capability of Norwegian companies is best improved by addressing their main *innovation challenges*, and *not* by focusing on a few specific and pre-defined innovations. We found that *regulation* is perceived as both a barrier to and a source of service innovation, but the innovation policy system is perceived as complex and without a sufficient understanding of *service logic*. At the industry level, *structural innovation* is an important source of value creation. The respondents, however, mainly focused firm level challenges. The most challenging and important antecedent of service innovation is a better understanding of *customer experiences*. Innovation is democratized with new customer experiences partly being created beyond the control of the service firm. Service innovation processes are difficult to formalize, and *open and co-creating processes* are particularly challenging, partly due to resource imitation. The two most challenging service innovation types are *business model innovations* and scalable service innovations balancing scalability and customization. To develop new differentiating services, service providers need to *coordinate* innovations in customer experiences, business model innovations and organizational change through guidelines and new *best practices of service innovation management*.

Consequently, the value creation potential of service innovation is fulfilled at the firm level, but a precondition for its fulfillment is a better understanding of the interactions of challenges at the regulatory, industry and firm levels. Based on these findings, the Center for service innovation (CSI) will focus on four *innovation challenges* representing considerable opportunities for service driven value creation, namely: "*Innovations in the customer and brand experience*"; "*Open and co-creating innovation processes*"; "*Business model innovations*" and, finally; "*Infrastructure and structural innovations*". Focusing these themes, CSI will simultaneously increase the quality, efficiency and commercial success of CSI-business partners' service innovation projects and enhance researchers' and policy makers' understanding of service innovation beyond state of the art.

2. Research method

The four innovation challenges identified as the four top priority research themes in service innovation by the companies interviewed in Pedersen and Nysveen (2010) represent the short and intermediate term research themes of CSI.

Research themes

Innovations in customer and brand experiences (Theme 1)

Holbrook and Hirschmann (1982) are often credited for introducing the customer experience construct – focusing the esthetic, hedonic, and symbolic experience of consumption – a total experience developed over time through different contact or touch-points (Verhoef, et al, 2009; Grewal et al, 2009). The importance of creating great experiences comes from its positive effects on variables such as satisfaction, loyalty (Brakus et al, 2009) and profitability (Lywood et al, 2009). As a result

[2] The complete methodology and results are presented in Pedersen and Nysveen (2010).

of the intangible and heterogeneous character of services, and the fact that its value is inseparable from customers' own efforts, the creation of customer experiences is particularly challenging for services. Verhoef et al (2009) point to marketing mix, brand perception, social environment, service interface, co-creation and prior consumer experiences as main antecedents. Companies are facing significant challenges in creating consumer experiences because of social mechanisms, customers' co-creation of customer experiences (Hilton, 2008) and the interplay between brand experiences and customer experiences pointed out by Verhoef et al (2007). Companies therefore must focus on the customer experience in a holistic way, in which co-creation, marketing mix, brand perception, social environment, and the service interface require integration and coordination. Research on consumer and brand experience is however limited and fragmented and is to be found scattered across design-, marketing- and consumer behavior journals. It is scarcely present in innovation journals, where it is dominated by conceptual contributions and case studies.

CSI will specifically integrate the perspectives of innovation, design and marketing through projects that are truly cross disciplinary. The focus of this activity is to provide tools and process support for the NSD process together with measurement tools for experience evaluation. In addition, the consequences for organizations, of a customer experience approach, will be explored and formalized in best practices and organizational guidelines.

Co-creation and open innovation processes (Theme 2)

Chesbrough's (2003) original idea was that while innovation traditionally is conducted within the boundaries of a company (closed innovation model), companies should bring their in-house innovation activities to market and open up for collaboration between internal employees and external stakeholders (open innovation model). According to the theory, these purposive inflows and outflows of innovation resources will increase the innovation capability of the company, and through this, its competitive advantage. While the open innovation perspective include co-innovation by most internal employees and external stakeholders, a research direction related to open innovation, co-creation (Vargo et al, 2008), typically focuses consumers' co-creation of value in virtual environments (e.g. Füller, 2010). Most of the research on open innovation is typically published in management journals. Many of the contributions have a conceptual approach, but the number of empirical studies is increasing (Laursen and Salter, 2006). Enkel et al. (2009) point to the lack of understanding of how and where open innovation can add value. Hence, research should focus on performance effects of co-creation and open innovation under various conditions, including service specific conditions that extend beyond open innovation in software firms (von Krogh and von Hippel, 2006). Such an understanding is critical for managing open innovation activities and for establishing a platform for open innovation and co-creation that balances their pros and cons. For co-creation in particular, given its focus on customer involvement in innovation, efforts may be specifically directed to understanding frontline employees as a source for both incoming ideas and innovation implementation (Cadwallader et al, 2010), given their direct contact with customers.

CSI includes both open and co-creation perspectives on service innovation and is unique in its inclusion of large service providers, KIBS-partners, research institutions and bridging partners representing SME-networks into its research environment. This allows for deeper studies of innovation processes crossing firm boundaries and for conducting real life experiments in open innovation and co-creation.

Business model innovations (Theme 3)

Business models are defined in many ways (e.g. Osterwalder et al, 2005; Zott and Amit, 2007), but the definitions seem to converge along dimensions such as revenue model, governance form, value propositions and market strategy (Methlie and Pedersen, 2007). While much of the research has discussed business model concepts, taxonomies of business models, and descriptions of specific companies' business models, fewer studies have investigated factors influencing the optimal adaptation of the business model dimensions including the interrelationships between dimensions. Research on effects of business model choices is also limited, and only a few contributions have fo-

cused systematically on potential effects of business model choices (Methlie and Pedersen, 2007; Zott and Amit, 2007). For companies to succeed, smart business models have to be developed to solve problems related to energy waste, pollution, inefficiency and social responsibility (Rothenberg, 2007).

Studies of business models are published in a broad specter of journals such as management, strategy, marketing, information systems, and organizational journals. Broader empirical studies of business models are rare (e.g. Zott and Amit, 2007). CSI will study empirical antecedents of business model choices, the interrelationships of business model dimensions and how business model choices affect performance under various contingencies, including contingencies of service specific elements. Business model innovation must also complement strategy and the dynamics of evolving business models must be focused in longitudinal studies over time (Morris et al., 2005). In CSI, such studies will be the basis for best practice recommendations and the development of normative frameworks for business model innovations of CSI partners and the service innovation community reached through our bridging partners.

Infrastructure- and structural innovations (Theme 4)

Governments act as an environment for innovation e.g. by being a source of capital for R&D and a regulator. (Afuah, 2003). Regulations related to innovation on the supply side include R&D incentives, patent protection, tax laws and export policies while price regulation may be relevant on the demand side (Afuah, 2003). Despite regulatory efforts, both market failures and systemic failures are present in services, preventing effective and efficient innovation (e.g. van Cruysen and Hollanders, 2008; Rubalcaba et al, 2010). One potential approach to overcome these failures may be a softer regulation, a co-regulation between government, industry, and the consumers (Desmarchelier and Szabo, 2008).

Research on regulation and innovation is typically published in economics journals and in industry or sector specific journals. The understanding of innovation systems has increased significantly in recent years, but is still rather under-theorized, while terminology and definitions have to be made more precise (Daugeliene, 2008). A question remains if the innovation system perspective sufficiently captures the importance of firm level interactions and socio-cultural determinants of service innovation. Complementary perspectives will thus be applied (Kox and Rubalcaba, 2007; Bruno et al., 2008) in CSI. Of particular relevance to service innovation are empirical studies of the firm level interactions of the innovation system. Along with this, research will focus on how the innovation system interacts with infrastructural elements that may influence the potential for innovation, such as transport, communication, and ICT services. Studies of policy measure effects will be included as part of a broader survey due to potentially differing sources of market and systemic failures in services and manufacturing.

Approach and general method

Due to the uncertainty of future service innovation challenges, CSI is organized into long and short term activities with corresponding research tasks and methods. To ensure *business partner control*, governance of the above research themes and their corresponding research activities is organized as illustrated in Figure 1. Governance of long-term research themes is guided by a running Foresight/insight project (WP11). This project informs the CSI-board and ensures that research themes reflect business partner innovation challenges and opportunities

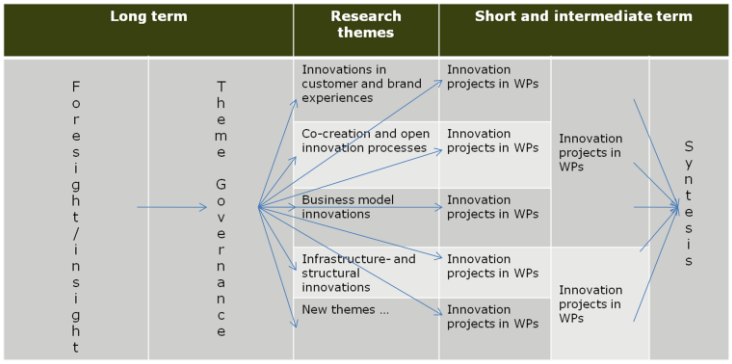

Figure 1. Research themes and governance

over the lifetime of the program. Initially, CSI will focus on the four research themes introduced above, but the CSI-board decides how themes are added or replaced. The Foresight/insight WP also guides the content of individual innovation projects designed within and across research themes. Innovation projects are the short and intermediate term project activities of CSI and constitute the basis for most research activities. These projects are intentionally termed innovation projects to underline that they are research-supported innovation projects encapsulating the ongoing service development (NSD) projects of CSI's business partners. These innovation projects are organized in WPs. The encapsulation principles are illustrated in Figure 2. Business partner NSD-projects are brought into a richer research environment provided by CSI. This research environment will support analyses of service systems, business models and structural conditions of the partner NSD-projects brought into CSI. CSI also supports analyses of customer experiences, customer perceptions of value propositions and the relationships between the service offering and its service-providing infrastructure. Further supporting activities provided by CSI are specified for individual WPs and some WPs span more than one research theme. The WPs covering this type of innovation projects typically lasts for 2-4 years.

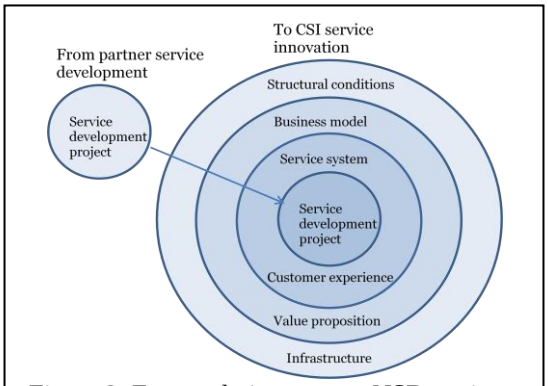

Figure 2. Encapsulating partner NSD-projects

Each research theme is further supported by intermediate term research activities developing a knowledge base common to all innovation projects. These activities are also organized in WPs. Typically, such activities are designed to develop best practices in innovation process management, methodology and business model design, and last for 3-5 years or longer. Within the first two years of CSI operation, the CSI-board will define and start a synthesis WP (WP12) which will aggregate results across innovation project WPs.

3. Research tasks

CSI research tasks are organized in WPs. The WPs are mainly associated with each research theme and organized accordingly, but some WPs span more than one research theme. The 11 WPs are listed in Table 1 showing theme association, national partner involvement and liaison roles (bold), scholarships and interdependencies between innovation projects. The WPs define the research activities of CSI's first 5 operating years during which research themes and new WP's will de defined by the CSI board as described in section 2.

Table 1. WP themes, partner association, liaison roles, scholarships and interdependencies

No	WP	Theme	Telenor	DnB-NOR	Posten	Storebrand	Tryg-Vesta	EDB	PwC	inFuture	BEKK	NHO-Graf.	Abelia	NARF	HSH	Argentum	Induct	ND	NHH/SNF	Sintef	AHO	PhD/P.Doc	Relation
1	Service innovation test resource center	1	x	x						**x**									x		x		2,3,4,7
2	Customer and brand experiences as a source of service innovation	1	**x**	x	x	x	x		x	x	x							x	x		x	x	1,6
3	Scalable service innovations	1		x		x	x	**x**	x	x	x								x				4
4	Best practices in service innovation processes and methods	2	x	**x**				x	x	x	x	x		x	x	x	x	x	x	x	x	x	5,7
5	Open and co-creating service innovation platforms	2	x	x	x			x				**x**	x				x		x	x		x	4,6
6	Frontline employee and customer interactions in service innovation	1,2	**x**	x				x	x		x			x					x	x	x	x	5,2
7	Best practices in business model innovation	3	x	x	x					x	**x**				x	x		x	x	x			3,8,10
8	Smart business models	3					x		**x**			x	x	x				x	x			x	7
9	Regulatory and infrastructural innovation	4	x		x	**x**		x	x					x	x				x	x		x	4,5
10	Service innovation systems, capital markets and structural innovation	4							x				x	x		**x**			x			x	4,7
11	Foresight/insight project	All		x						x									x			x	All

The aims, research and deliverables of each WP are now presented, organized by the main research theme associated with each WP.

Innovations in customer and brand experiences (Theme 1)

WP1 - Service innovation test resource center. CSI-partners manage a number of service innovation and development projects and almost daily implements incremental innovations. The effects of these innovations are seldom investigated using systematic and scientific. This is partly due to mea-

surement difficulties and partly due to procedures and methods that are not easily applicable. Due to inseparability, service innovation effects must be tested at the touchpoint between provider and customer. CSI will develop and make a collection of test resources available to CSI-partners. Creating servicescapes (Bitner, 1992) and experience rooms enabling service test-drives is another way to integrate customers in the co-creation of innovative service experiences (Edvardsson et al, 2005). While parts of the collection will be available as online and mobile resources, other parts will be located at the CSI ServiceFutureLab at Fornebu, established together with Telenor[3] and inFuture. In particular, resources directed at the visualization and demonstration of service innovations will be made available here. ServiceFutureLab will also host researchers working temporarily in Oslo. The resources of the ServiceFutureLab will be mobile, and visualizations and demonstrations will be disseminated as part of a suggested Smart Business Model RoadShow in WP8. Resources will be based on findings from the best practice studies in WP4 and 7, but will also be developed through joint resources already held by many of the larger service provider partners of CSI. For example, visualization and test equipment owned by Telenor and inFuture will be integrated with instruments and experimental procedures already developed by many of the academic partners (e.g. Pedersen and Nysveen, 2009; Clatworthy, 2009; Edvardsson et al., 2005).

Deliverables from the WP include effect measurement instruments, experimental procedures and designs, test software, visualization equipment and online services. In addition, 5-8 scientific publications on the development and design of these resources will be published. The WP will also organize the Nordic Service Design Conference currently hosted by CSI-partner AHO and utilize the resources at the ServiceFutureLab for its organization.

WP2 - Customer and brand experiences as a source of service innovation. As outlined in section 2, service providers are now more aware that customer and brand experiences are created beyond service provider control. Global reach and information transparency follow from more demanding and informed customers, supported by social media services. This represents an innovation opportunity to service providers. Innovations in the customer and brand experience may be behavioral innovations (Michel et al., 2008), be informed and co-created with regular customers and be based on already existing brand associations (Merz et al., 2009). Customer experience innovations are founded in the value in using the service (value in use) rather than guided by what is technologically possible. From a service provider view, customer experience innovations start with the integration of customer experiences across touchpoints and channels, but this is only an initial source of customer experience innovations. The brand is also believed to be instrumental in creating customer experiences, and seems to be important to both consumer and business service brands. Innovation in the brand experience is also important to reach consumers or businesses without prior relationships. Such innovations involve traditional media, social media/networks, 3rd party touchpoints[4] and behavioral conditions/habits where the brand experience to a lesser degree is controlled by the service provider.

Telenor currently represents best practice in advanced use of Twitter-integration in its customer support system but face considerable challenges in integrating the customer experience across channels. Both Telenor and DnBNOR will encapsulate their own channel integration projects with studies of customer and brand experience performed at CSI[5]. CSI will co-develop customer and brand experience guidelines with Telenor and DnBNOR, and use these guidelines to develop new customer interfaces, and new, segmented service concepts (e.g. new touchpoint concepts). CSI will assist Telenor in creating service brand extensions (communication to financial services) and in multi brand and global brand experience design[6]. TrygVesta has established a 6-year customer ex-

[3] Norwegian brand names are used for all partners throughout the proposal.

[4] This is of particular importance to Posten because much of the innovations in customer and brand experience are now created through 3rd party touchpoints (e.g. Post i Butikk).

[5] Telenor "Customer Journey" and DnB NOR "Customer Experience Management" and "Multichannel of the Future" projects.

[6] Telenor "Financial Services – Future Models" and "Telenor Brand Portfolio" projects.

perience project which will also be brought into the research context of CSI along with a similar initiative that has been taken by PwC. Finally, a development project in Posten capitalizes on their Posten/Bring branding efforts for brand extending innovations in customer touchpoints, and bridges CSI research on innovations in customer and brand experiences.

Two PhD or postdoctoral position will be associated with this WP. Deliverables from the WP include new service and interface designs (e.g. new financial service interfaces), customer and brand experience studies and experience design guidelines. Academic deliverables include an edited textbook on customer and service brand experience, 8-10 scientific articles including an article-based PhD dissertation and 10-12 master theses at NHH and AHO.

WP3 - Scalable service innovations. Due to heterogeneity and to customers being an important source of service innovations, a dilemma seems to exist between developing services for individual customers and scaling services to serve larger markets, increase productivity and improve financial results. A dilemma also exists between standardizing a service and maintaining knowledge as a non-imitable source of competitive advantage. This is particularly evident in business services. This WP will explore the concept of customer self-scaling services, an extension of customer self-service principles, as a solution to these dilemmas. Customer self-scaling services are based on an understanding of how customer experiences and customer value evolve through service use and are based on a componentization of the value proposition. The principles are currently tested in DnBNOR's online banking services to SME-customers. Storebrand has initiated two innovation projects on self-service and scalability directed at business customers in the employment pension area and consumers in the insurance area. PwC has initiated a project expanding their sustainability services where scalability is particularly focused[7]. The DnB NOR, Storebrand and PwC projects will be brought in as objects of service innovation in WP3. In addition, the customer experience effects of the Storebrand-projects will be analyzed as part of WP2. Being a major supplier and enabler of service innovation in the Norwegian financial services area, EDB will serve as a liaison of this WP.

The WP will be informed by longitudinal studies of how customer value evolves through use in both consumer and business service markets. The longitudinal study will be used to develop principles of customer self-scaling in service design. Deliverables from the WP will be guidelines for identifying scalability and for designing customer self-scaling services. 3-4 scientific articles will be published and 3-4 master theses will be associated with the WP.

Co-creation and open innovation processes (Theme 2)

WP4 - Best practices in service innovation processes and methods. While professional organizations like PDMA and ISPIM publish guidelines and best practices of product innovation processes management and methodologies, few of these explicitly discuss normative implications for service innovation. As suggested in section 1, service innovation processes are often less formalized, less supported by established business practice and less focused in academic studies. Research projects managed by CSI partners (e.g. TIPVIS, Enhance; BeyondBudgeting, AT-ONE, SAMOT, KUNNE), other institutions (e.g. Tekes, CEN, EuropeINNOVA) and practices established by CSI business knowledge partners (inFuture, BEKK, EDB) represent new efforts in establishing best practices for service innovation process management and use of methodologies. Currently, both research and practice sources are fragmented in this area, and much can be gained by organizing previous efforts into easily available databases of best practices and making these easily accessible to both CSI partners and to the service innovation community through CSI bridging partners. Comparison and systematic analysis is required to reveal best practices in service innovation (Aas, 2010) and to avoid the pitfalls of previous best practice studies (Pfeffer and Sutton, 2006). Furthermore, best practices are always relative to structural conditions.

[7] Storebrand "Pension plan Self-services", "Electronic Insurance Settlement" and PwC "Sustainability Program" projects.

Three sub-projects have been defined to organize previous, reveal recent and develop future best practices. A theoretical study of service innovation practices and methodologies will be conducted. An empirical study of partner practices will then be conducted along with the identification of benchmarking organizations in communication, financial and logistics services. CSI-partners have agreed to systematically share best practices and CSI will be used to coordinate this knowledge transfer. Finally, a broader study will be conducted to identify the structural conditions for best practices and to identify how practice differences may be attributed to differences in financial performance. In each of these studies best practices in the areas of innovation process management, innovation climate and knowledge development, and service innovation methodologies are covered. DnB NOR will serve as the liaison of this WP[8]. In addition, best practices in open and co-created innovation, and employee and customer involvement based on WP5 and 6 will be made available to the best practice collection. Deliverables will include an online searchable database and contextualized guideline of best practices (decision support tool), a service innovation best practice handbook, and 8-10 scientific articles. A PhD or postdoctoral position will be associated with the WP along with 6-8 master theses.

WP5 - Open and co-creating service innovation platforms. As described in section 2, open innovation principles are already influential in ICT and some other service industries, but intangibility, inseparability and lack of IPR-mechanisms may require us to adapt these principles specifically to individual service areas. Platforms for open innovation and co-creation are also developed extending beyond ideation. For example, due to standardization, transaction and accounting services may be provided as cloud services that are used in platforms for open innovation. Like other governance forms, open innovation requires stable governance mechanisms based on rules, incentives and trust. Once such mechanisms are established, however, the potential is tremendous for co-creation in service systems spanning traditional service areas through open innovation. Telenor has two open innovation initiatives in mobile services, but plans new initiatives involving regular customers/users and extending beyond mobile services. CSI business partners also offer services that are in a transition to cloud service for communication, transaction and logistic services and that may be offered as platforms for open innovation in an innovation space complementing today's market place. Academic partner SINTEF also coordinates the EU-funded NEFFICS-project which aims to develop infrastructure for cloud-based business operations platforms linked to open innovation community services.

Research activities will be organized in two sub-projects. The first sub-project will support and study the effects of open innovation principles in a range of service areas (financial, insurance, communication and logistics services). Empirical studies will be based on ongoing open innovation projects in branchless banking[9], near-field communication services (NFC-service eco systems), M2M-infrastructure[10] and 3PL[11] to further enhance CSI industry partners' own open innovation platforms and initiatives. The second sub-project will stimulate and experiment with open service platforms in new service development projects among CSI business partners. It will extend the platforms applied in the NEFFICS and NetworkedPower projects to involve open service innovation beyond ideation. Induct provides a service for open innovation that constitutes an experimental platform for CSI, and this sub-project will also address how open innovation platforms should be adapted to the requirements of SME's. Among the deliverables will be guidelines for open service innovation, an online service in the form of an experimental innovation space/community for CSI-partners and 8-10 scientific articles. Researchers and knowledge partners in the WP will also contribute to the deliverables of the CEN TC389 on Innovation Management. Two PhD or postdoctoral positions will be associated with the WP, along with 10-12 master theses.

[8] DnB NOR will integrate their planned "Open and Customer Driven Innovation Methods" project into the WP.
[9] EDB project "Branchless Banking" for service providers DnB NOR and Telenor.
[10] Machine-to-machine communication infrastructure. Project working title "Connected Objects".
[11] Project "Horizontal Collaboration", a 3PL open innovation initiative by Posten.

WP6 - Frontline employee and customer interactions in service innovation. Co-creation typically takes two directions. The open innovation direction reflects a particular type of involvement by members of a value chain or value network in innovation. It may also involve the co-creation of new value that takes place between employees, customers and other participants not traditionally described as actors in a value chain or value network. Three examples are a) when customers co-create new value through simultaneous behavioral innovation, such as the development of common SMS or MMS communication genres; b) when employees and customers co-create new value by altering their roles, such as the development of online universities or the creation of "furniture assembly experiences" (IKEA); and c) when customer, employee or professional networks spanning traditional service areas co-create new service systems, such as in "entertainment media tourism" or some forms of crowdsourcing services. While open innovation principles are focused in WP5, this WP mainly focuses the forms of co-creation indicated in a) and b) above. The WP also integrates with WP2 because it will explore the brand and customer experience effects of customer and employee co-creation. It is believed that involvement in customer, employee and customer/employee co-creation enriches the brand experience (Brodie et al, 2009). Methods for customer and employee involvement in innovation have, however, been elitist and have focused on interactions between lead users and innovation professionals. In service innovation, the co-creation of new value and services by frontline (customer centric) employees and regular users is believed to be particularly important, and particularly challenging (Cadwallader et al., 2010).

The WP will build on the research of CSI-partner CTF on regular customer involvement in service innovation (e.g. Magnusson et al, 2003) and further develop these methods in the direction of frontline employee involvement and involvement through frontline employee/customer interaction. Experiments will be conducted at CSI-partners Telenor and DnB NOR. Results will be used to design systems, procedures and guidelines for co-creation. Co-creation is not limited to consumer services. For example, in a transition effort initiated by NARF and supported by CSI, co-creation methodologies will be used to transform accounting services into consulting services. Customer co-creation methodologies will also be used by EDB to develop services allowing their financial services clients to cluster competence while retaining customer closeness. Experiments will be followed by empirical investigations of the long term effects of co-creation on customer and brand experiences, loyalty and financial performance. Additional deliverables includes best practice inputs to WP1 and 4, partner and bridging partner associate workshops and 8-10 scientific articles. Two PhD or postdoctoral positions will be associated with the WP along with 8-10 master theses following customer involvement experiments, particularly at Telenor (globally).

Business model innovations (Theme 3)

WP7 - Best practices in business model innovation. As described in section 2, very few empirical studies exist on the relationship between business models and performance. It is believed that these relationships are moderated by structural conditions (Methlie and Pedersen, 2007). Business model dimensions are also interrelated, change over time and must de aligned with strategy (Zott and Amit, 2008). Understanding these relationships is crucial to business model innovation. Still, much normative guidelines and prescriptive theory (e.g. Osterwalder and Pigneur, 2009) encourage business model innovation as a design task without empirical documentation of these relationships. Service providers operating in global markets or in several service areas often have to manage multiple business model designs, avoiding ones that cannibalize on each other. Longitudinal process studies are needed in order to gain a better understanding of how new business models develop over time. The design of business model innovations in the form of more flexible or dynamic business models is, consequently an additional challenge. For many services, destructive competition makes it unprofitable for firms to innovate if they employ standard business models and in other services, business models for two-sided markets must be developed. CSI researchers have made significant contributions to resolving these issues (Foros et al., Kind et al, 2009).

Best practices should inspire business model crossovers but also clarify the limitations on business model transferability. The WP includes a review of service area business models based on the

combined framework of Osterwalder and Pigneur (2009) and Methlie and Pedersen (2009). Business model best practices have been identified as a particularly important source of innovation among CSI business knowledge partners (inFuture, BEKK). Service provider partners Telenor, DnB NOR and Posten will use CSI to develop and test new business models in the areas of trusted service management (TSM), converging mobile banking/payment services and cross-channel newspaper distribution. CSI partners will provide material for empirical studies of business model performance effects, but such studies must also be based on other secondary data sources. As for other best practice WPs, the dissemination of results is particularly important. CSI will make tools for business model innovation assessments available to the broader service provider community and organize a number of dissemination workshops. In addition, 4-6 scientific and popular/professional articles will be produced. This WP is mainly sourced by senior researchers and senior business knowledge partner professionals, but will include 4-6 master theses facilitating and analyzing business partners' use of the developed business model assessment tools.

WP8 - Smart business models. Smart business models refer to the use of servitization (EU)/servicizing (US) business models (Rothenberg, 2007) to products and product/service systems. Types of servitization may be organized along a continuum, but the most extensive forms are extremely challenging due to simultaneous changes in organizational culture and business models (Neu and Brown, 2005). Smart business models are servicizing business models of these more challenging types that may be used to increase the sustainability of manufacturing industries and reduce waste, emission and carbon footprints (Rothenberg, 2007). Innovations in smart business models requires an in-depth understanding of *service logic* and its facilitation may be offered as a new knowledge intensive service by innovation enablers like the KIBS-partners of CSI. Due to increasing transparency, there is a relationship between the use of smart business models for sustainability, corporate social responsibility and brand experiences that is relevant to both manufacturing and service firms. Smart business models represent one of the few service innovation principles where an understanding of service logic is the basis for the innovation. This understanding represents a competitive advantage of service industries that may be transferred and used to combine economic growth, sustainability and firm level performance improvements. Empirical studies of the transition into smart business models, its challenges and performance effects are even more lacking, than research on business model innovation transferability (Rothenberg, 2007).

As for business model innovations in general, developing smart business models is an opportunity particularly focused by CSI KIBS-partners (PwC). TrygVesta's transition project[12] also seeks to develop smart business models to embrace corporate social responsibility principles and create new brand experiences. Grøset, a partner in the TIPVIS-project and SME-associate (NHO Grafisk) in CSI, is exploring smart business models to further strengthen its sustainability as a manufacturer. As in WP7, empirical studies of these relationships are critical. Due to the novelty of smart business models, many of these empirical studies must be conducted as qualitative studies, e.g. case studies. Consequently, a PhD or postdoctoral position graduating in qualitative methodology is appropriate. 4-5 master theses will also be associated with the WP. 5-7 scientific articles will be produced. Popular press and possibly a Smart Business Model RoadShow may be used to disseminate popularized results (also from other WPs) and demonstrate the knowledge advantage of service firms in this area. The qualitative approach also justifies consultation/action research deliverables in close cooperation between case firms and CSI-representatives.

Infrastructure- and structural innovations (Theme 4)

WP9 - Regulatory and infrastructural innovation. In our interviews regulation and infrastructure were perceived more important at the firm level than we had initially expected. We expected these factors to be important at the policy and industry level, but most service firm representatives pointed to regulation as one of the most important sources of service innovation. This difference

[12] See the Letter of interest from TrygVesta.

between product and service innovation is not revealed from CIS data because regulation as a source or barrier to innovation is not covered by the CIS questionnaire. Furthermore, we revealed a lack of understanding of the importance of regulation in service innovation among regulators. This suggests that there is considerable potential in developing innovation considerate regulation. Sometimes we refer to this as soft regulation, but it also involves the development of negotiation based regulations, used to resolve other Norwegian economic issues, e.g. labor stability. Applying similar collaborative principles to include innovation considerations in regulation may lead to unique competitive advantages in the Norwegian service economy. All CSI-partners from firms in the strongly regulated service sectors have shown interest in initiating forums and develop principles for soft and collaborative innovation considerate regulation. Examples are Telenor, EDB, Posten, Storebrand, PwC and NARF. Infrastructural innovation also involves opening public and private infrastructures for service innovation. Examples include access to public data offered as services but also extend to offering public and private infrastructural services as cloud services. Regulatory and infrastructural innovations represent new forms of co-creation, public-private co-creation that has not received much attention in the innovation literature.

CSI will establish a Forum for Regulatory Innovation into which CSI-partners invite regulatory and other government authorities. The forum is supported by research comparing regulatory practices across service areas and countries as well as by theoretical and industrial organization studies of the implications of various regulatory practices. The initial focus will be regulatory practices in the financial, insurance, postal and accounting sectors. A project on regulatory innovation in the mandatory occupational pension area at Storebrand will be used as a case. Another case, of relevance to Telenor, is the regulation of automatic meter reading. Such case studies span the relationship between regulatory change and microeconomic behavior at the firm level. In addition, Forum for Regulatory Innovation will be informed by the broader surveys described in WP10 and 11. Activities will be further informed by experiences from WP6 on co-creation and from WP5 on best practices in the area of regulatory principles. A sub-project will focus on infrastructural innovations, extending the work of the SINTEF NEFFICS research on cloud-based business operations platforms into open *infrastructural* platforms (Berre 2010). SINTEF has started the development of a Value Delivery Metamodel for further OMG standardization, providing a basis for the analysis of value exchanges in the context of service interactions for networked businesses and organizations. This will be extended in an Internet of Services infrastructure, which also embeds a service link to Internet of Things (for connected objects). The sub-project will conduct trials and contribute to OMG standardization. The focus is on how to transform from business level services to realization support for this through an Internet of services infrastructure, and how service innovation might take place through composition and enhancement of existing services. An example includes the linking of CSI partner services (DnB NOR, Posten and NARF) and open public services through an infrastructural platform to facilitate service innovation. Telenor's projects on connected objects, bridge the two sub-projects by integrating regulatory issues with infrastructural platform innovations. A PhD or postdoctoral position and 8-10 master theses will be associated with the WP producing 6-8 scientific articles together with the senior researchers allocated to the WP.

WP10 - Service innovation systems, capital markets and structural innovation. Recent studies reviewed in section 2 suggest the service innovation system differs from the innovation systems reflected in traditional innovation studies. Much attention has been given to knowledge intensive services, but the interdependencies and dynamics of the firm level part of the service innovation system are still not well understood. Analyses of CIS-data suggest these dynamics are particularly important in services (Hipp and Grupp, 2005). It is also possible that the roles taken by research institutions, entrepreneurship and innovation policy agencies, and capital market institutions are not optimal in extracting the value potential of service innovation. For example, much may be learned from institutions using capital market instruments to facilitate structural innovation in immature service industries and from investigating how private equity investment funds specializing in services innovations assess the potential value of their engagements and manage risk without the secu-

rity of an underlying asset. A hypothesis is that best practices in picking successful service innovation projects may be identified from investment fund analyses and by following the innovation path of these investors and projects. Among the CSI partners, Innovasjon Norge and Argentum hold valuable data on these subjects. In addition, business knowledge partners (PwC) and bridging partners (Abelia, NARF) will use best practices in these areas to offer new consulting services to their clients/members.

The WP includes two interrelated sub-projects. One focuses on the firm level dynamics of the service innovation system. This informs a CIS-complementing survey, further described in WP 11. The data from this survey is integrated with the combined CIS/accounting database held by SNF and made available to other research institutions. This project also informs WP9, by identifying relevant sources of market and systemic failures that are important to regulatory innovation in services. The other sub-project utilizes service innovation project information held by Innovasjon Norge and investment funds data held by Argentum to identify best practices in identifying and supporting successful entrepreneurs. The WP informs WP4 and 7 because best practices must be designed with a comprehensive understanding of regulatory, industry and firm-level interactions in service innovation. A PhD or postdoctoral position and 4-5 master theses will be associated with the WP producing 6-8 scientific articles together with the participating senior researchers.

WP11 - Foresight/Insight project. Being an 8-year CRI-program, the research themes of CSI must be dynamically updated with new research tasks. A Foresight/insight project will inform this process. Foresight methods may be input, analytical, interpretive or prospective methods (Voros, 2003). While most foresight initiatives apply one of these methods (e.g. Schoemaker, 1995), it may be appropriate to further develop or combine methods that better capture the drivers of new service innovation opportunities (Miles, 1999; Toivonen, 2004). As seen from the characteristics of service innovation in section 1, societal and behavioral factors may be among the most important drivers whereas ICT may be an important enabler. Methods must also inform CSI as well as its business partners, tapping directly into their strategic analyses. CSI partners represent communication, financial/transactional and logistics services, and opportunities may be identified by sharing insights across service areas. Foresight methods should thus combine with insight methods, stimulating learning and knowledge transfer within peer-groups of business partner representatives and across the larger user community. Public data on service innovation challenges may further inform CSI-priorities, but as seen from section 1, public surveys like CIS only partly capture relevant service innovation challenges and opportunities (Miles, 2007).

The Foresight/insight project of CSI will apply three methodological approaches. Foresight methods will be adapted to fit the service innovation focus of CIS. This adaptation will include the combination, particularly of trend spotting and scenario methodologies. Insights will be provided through peer insight methodologies, typically combined with input and analytical foresight methods. CSI-partner inFuture has a particular competence in trend methodology and will use CSI to develop these methodologies further and offer services that combines the foresights of CSI research themes with foresights for individual CSI service partners. Finally, a bi-annual survey capturing the opportunities of particular service innovation types, service innovation success factors and effects, as well as innovation process challenges will be conducted. This survey will complement the CIS-survey and public access to the data will be offered. A PhD-position and 4-5 master theses will be associated with the Foresight/insight WP, contributing to method development and to bridging foresight/insight methods and CSI-partners' strategic analysis. Among the deliverables will be 10-12 academic articles, publicly available data sets and an annual professional publication termed "ServiceHorizons" mapping trends in service innovation opportunities and challenges.

4. Research education and recruitment

To comply with the complexity of service innovation, scholars will be recruited to cover a broad specter of subject areas – meaning that doctoral and post doctoral scholars will be recruited for all four research themes and for the Foresight/insight WP. Most of the doctoral/post-doctoral students

will be recruited at NHH, covering subject areas as strategy, marketing, management, organization, economics, finance, accounting, auditing and law. Eight students will be recruited to WP2, 4, 5, 6, 8, 9 and 10 and supervised by professors at NHH. Several Telenor researchers hold qualifications at the professor and associate professor level and will co-supervise PhD-students as part of Telenor's CSI-contribution. Given the importance of designing customer experiences (WP2), one or two scholars will be recruited to AHO's own PhD program in design research under the supervision of Simon Clatworthy, professor in Interaction Design. Also, one or two of the PhD students will be dedicated to WP5 and 10, focusing service innovation platforms. Associate professor and chief scientist Arne Berre at SINTEF will be responsible for this/these student(s), and the scholar(s) will be enrolled at the University of Oslo, the PhD program at the Department of informatics and co-supervised by associate professor Tone Bratteteig. Finally, one student will be dedicated to the Foresight/insight WP and affiliated with the PhD program at MBS under the co-supervision of professor Ian Miles. In total, 11 scholars will be incorporated at the CSI during the first 5 years. The allocation of students after the first 5 years depends on the innovation projects at that time (as determined by the CSI Board), but the total number of scholarships is currently estimated to be 18. The share of doctoral versus post-doctoral students will be about 50/50. In addition, a one-year scholarship, termed the CSI-scholarship, will be fully financed by Telenor and DnB NOR. The CSI-scholarship will be announced yearly and be designed to attract both PhD/postdoctoral researchers and senior researchers (e.g. different target groups every second year).

All involved university partners hold internationally recognized PhD programs. Together we will extend our joint course portfolio of service innovation subjects and organize doctoral colloquia in service innovation. Services employ a relatively high share of women, and further research on services will increase the competence and status of service professions. The relatively high share of women in services may also ease the recruitment of well qualified women to doctoral and post-doctoral positions. Hence, 50 percent of the scholars recruited will be female. In addition to recruitment of PhD scholars, we seek to recruit at least 70 students at the NHH master level to write their theses on assignments generated from the WPs defined for the first 5 years and more than 100 in total for all years. The same policy will be employed at the Oslo School of Architecture and Design and at the Service Research Center, Karlstad University. These master students will be associated with a Service Innovation Alumni service that works to strengthen their professional identity. The master students will be supported by service innovation courses that will be included in regular and executive masters programs. CSI also aims to develop an executive master program in service innovation, either as an extension of the executive master in Brand Management at NHH or as a master in SSME through a joint initiative of the CSI university partners.

5. Value creation and innovation

According to Lepak et al. (2007) value creation may be understood at the individual, firm and societal level. We focus here on the last two of these and point to sources of value creation (e.g. Amit and Zott, 2001) and value creation processes (Lepak et al. 2007) that are affected by CSI. At the *firm level*, the 5 CSI service provider partners and the 2 largest business knowledge partners generated over 205 billion NOK in revenue in 2007. A 1% increase in revenue from new services or a corresponding 1% increase in the productivity of these partners as a result of their CSI engagement represents a return on the investment in CSI of over 1400% during its 8-year period. Such figures are difficult to estimate exactly, but illustrate the value creation potential of CSI at the firm level. These figure, however, reflect direct exchange value. By taking the use value into consideration, it is not unlikely that the return on the CSI investment exceeds these figures. The partners of CSI serve at least three roles which will influence value creation at the firm level. First, as shown above, their individual value creation potential from innovation is considerable. Second, they serve as demanding customers of 3rd party suppliers, driving service innovation among these firms. Finally, together they control a substantial service infrastructure, which if opened or made more accessible

for joint and/or 3rd party service innovation may create entirely new services and service systems[13]. Thus, CSI creates value through novelty, directed by new services. The new procedures, methodologies and practices developed in CSI are equally important, as these create value through increased efficiency and effectiveness, both of service operations and of service innovation processes. CSI also contributes to the value creation of individual CSI partners through complementarity and competitiveness. For example, innovations in customer and brand experiences often come from uniting service experiences in a service eco system of complementary services. Equally important, however, is the development of positive brand experiences as a means to competitive advantage through customer loyalty. For global competitors like Telenor and Nordic players like DnB NOR, Storebrand, TrygVesta and Posten, loyalty is an extremely important source of value creation and a foundation for introducing new services. In addition to the service provider partners, business knowledge partners (PwC, EDB, BEKK, inFuture) thrive from CSI-membership as means to develop new methods, procedures and guidelines that may be offered as new services to their clients. Efficiency effects from better assessments of the service innovation potential of clients and customers are also invaluable to the value creation of Argentum, DnBNOR, Storebrand and TrygVesta.

At the *society level* the opportunities lined out in section 1 indicate a potential for increased demand for and efficiency in existing services as well as growth through new services. New services are also expected to constitute an important national competitive advantage in a continuously more knowledge intensive service sector. CSI address this potential through the partners participating in the center, but at the society level it also contributes to value creation in our bridging partners' network of SMEs. CSI also contributes more directly to society level value creation by focusing structural innovations and by pursuing an underutilized source of society level value creation and regulatory innovation, as in WP10. Through our educational programs and variety of dissemination activities, we also contribute to value creation in the larger community of service providers.

All research partners involved in CSI have a long record of *contributions to service innovation.* NHH/SNF have participated in a number of research projects related to new service development and the efficiency of service firms in such service sectors as financial services (Multimedia Banking; Pedersen, 2000), tourism (eTour; Thorbjørnsen et al., 2002), telecommunication (mCommerce; Nysveen et al., 2005/Economics of Telecommunication[14]; Foros et al., 2009), media (Seamless[15]; Kind et al., 2009), graphic arts (TIPVIS; Aas and Pedersen, 2010) and accounting (Enhance[16]; Døving and Gooderham, 2008). AHO has contributed to service innovation methodology through the AT-ONE project (Clatworthy, 2009) and SINTEF in the area of knowledge intensive services (RECORD; Følstad, 2008/KUNNE; Carlsen, 2006). Our international partners represent outstanding contributions to value creation in service innovation through large, internationally known initiatives such as CTF at KAU (Edvardsson et al, 2005), CRIC at MBS (Miles, 2007) and Open Innovation Search at CBS (Laursen and Salter, 2006). Further documentation is found in the attached LOIs from each research partner. To ensure relevance and positive value creation effects of all WPs, an Impact Monitoring Program continuously measuring CSI's contribution to partners' innovation capabilities will be established.

6. Organization

The organization of CSI may be described along two dimensions. First, the formal organization of CSI is shown in Figure 3. The partner categories and partner interactions are shown in Figure 4. CSI will be established by a consortium of 4 core national research partners, 3 international research partners and 15 user partners. It will be hosted by the Norwegian school of economics and business administration (NHH) in collaboration with its contract research unit Institute for research in economics and business administration (SNF). The additional national research partners are SINTEF and Oslo School of Architecture and Design (AHO). To serve as a national *hub for service innova-*

[13] For example, Telenor Objects, a subsidiary of CSI-partner Telenor maintains a platform for such service systems.
[14] Economics of Telecommunications was 10-year research program fully financed by Telenor and NHH
[15] Seamless infrastructures, business models and cultural diversity
[16] Enhancing the performance of SMEs through business advisory services

tion, CSI will also invite additional Norwegian research institutions as associate research partners on relevant WP's. The international research partners are described in section 7.

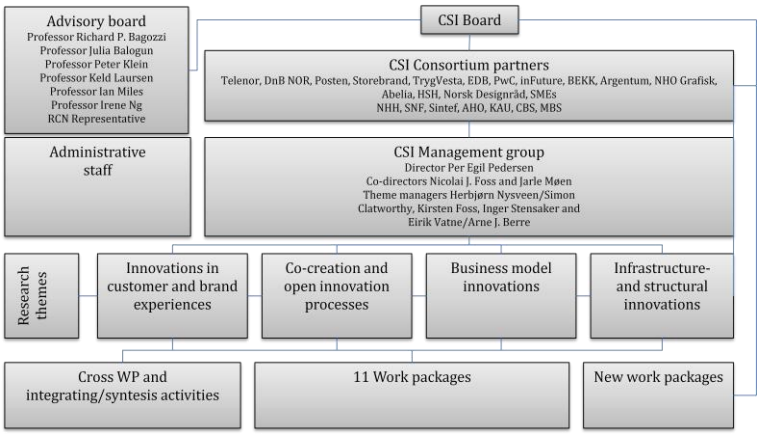

Figure 3. CSI Organization

The user partners include 11 business partners and 5 additional user partners. The business partners are Telenor (2[17]), DnBNOR (13), Posten (16), Storebrand (17), TrygVesta (73), EDB (60), PwC (301), inFuture, BEKK, Induct and Argentum, and the additional user partners are NHO Grafisk, Abelia, HSH, NARF and Norsk Designråd. Further presentation of the user partners, their interest in taking part in CSI, and their contributions are given in the attached LOIs. In addition, SME consortium members will be recruited in an associate member role. The following SME's and SME-networks have indicated an interest in taking such a role: Grøset, Telenor Objects, Q-free, Orchestration, SMC, BrandManagement, IKT-Grenland, ConnectNorge, Strålfors IM, 07/GAN, Polytec, EFF, Transfish, NCE-Tourism/FjordNorway. The user partners hold the *majority positions on the CSI Board*, on which the research partners are also represented. All user partners are either directly or indirectly represented in the CSI Board.

The CSI Board is responsible for developing and adjusting research themes and new innovation projects (WPs) over time. The CSI Board also benefits from an Advisory Board, composed of six internationally prominent researchers in subject areas of relevance to service innovation and a RCN-representative. For the first year, the *CSI management group* will be headed by professor Per Egil Pedersen assisted by professors Nicolai J. Foss and Jarle Møen. During this year, these positions will be appointed to obtain a better gender balance. Dedicated *theme managers* will be responsible for each research theme. Professors Herbjørn Nysveen and Simon Clatworthy will jointly manage the "Innovation in customer and brand experiences" theme, professor Kirsten Foss will manage the "Co-creation and open innovation processes" theme, associate professor Inger Stensaker will manage the "Business model innovations" theme and professor Eirik Vatne and associate professor Arne J. Berre will jointly manage the "Infrastructure- and structural innovations" theme. The management group is supported by an administrative staff of 2 FTEs. Formal responsibility for progress and deliverables is held by individual *project managers* for each WP, but each WP will also have a coordinating project *liaison*, appointed by the most highly involved WP user partner with whom this responsibility is shared (see Table 1).

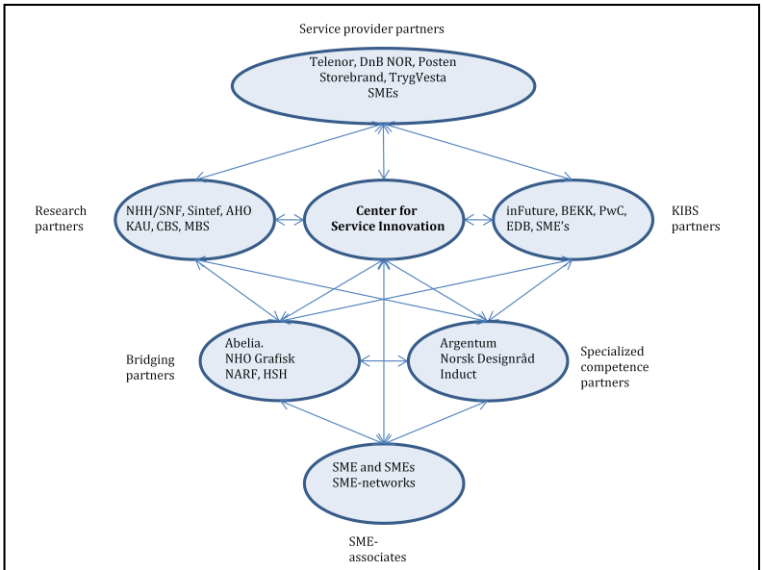

Figure 4. Partner categories and interactions

An indication of partner roles and interactions are given in Figure 4. Final partner categorization is subject to negotiation should the proposal be granted, and partner roles may also differ in

[17] Figures refer to placement in the list of Norway's 500 largest companies.

terms of the WPs in which a partner is engaged. The principles for partner roles are: A service provider is a business partner holding a service development project that is brought into CSI as part of a WP. Service providers mainly take a lead role in WPs, but CSI is open for SME-partners taking a less demanding associate role more suitable for SMEs. The service provider contribution to CSI depends on the partner taking a lead role or an associate role. Telenor, DnB NOR, Posten, Storebrand and TrygVesta are the main service provider partners covering service areas telecommunication, financial services and logistics. They are large Norwegian service providers with *international expansion through service innovation* as a strategic priority. Knowledge partner roles are held by research partners and business knowledge partners. Most business knowledge partners are KIBS-firms. Service provider partners' R&D/business development, marketing, HR and finance departments (KISA-departments) may also take a knowledge partner role in individual WPs. Business knowledge partners have a particular responsibility for taking mediating roles in ensuring research partner relevance to service provider partners. KIBS partners also include technology enablers (EDB and BEKK). The main business knowledge partners are EDB, PwC, inFuture, BEKK and associate SME's (e.g. Orchestration). Bridging partners play a particularly important role in disseminating results from CSI to the wider service innovation community. Main bridging partners are NHO Grafisk, Abelia, NARF and HSH. They also represent first hand access to relevant SME and SME-networks and play an important role in recruiting relevant SMEs into associate roles in the CSI consortium. The service provider and CSI's business knowledge partners sub-contract hundreds of SMEs as suppliers to their service development projects. CSI will facilitate such SME involvement in service development projects brought into the CSI environment. CSI also includes specialized knowledge partners such as Argentum (capital market competence), Induct (open innovation platform) and Norsk Designråd (service design competence) that serve a combined bridging partner/knowledge partner role. Through its organization, CSI incorporates the *interactions between large services providers and KIBS-firms* directly into its research environment instead of studying their roles and interactions from the outside. Through bridging partners it also enables more SME's to take part in open innovation driven by the largest buyers of sub-contracted services in Norway.

7. International cooperation

Three international institutions participate as cooperating partners: Karlstad University (KAU), Copenhagen Business School (CBS), and Manchester Business School (MBS). Our cooperating partner representative at KAU is professor *Bo Edvardsson*, director of CTF- Service Research Center – a multidisciplinary service research center. Bo Edvardsson is professor of service management, known for his research on service innovation using service simulations and natural experiment designs (Edvardsson et al., 2010). He also assists the National University of Singapore Center for Systems Science in developing a strategy for service innovation. Professor Edvardsson will contribute mainly as a service researcher on consumer experience and co-creation WPs and will co-supervise scholars in these WPs. *Keld Laursen*, professor of the economics and management of innovations, is affiliated with the Department of Innovation and Organizational Economics and is our main partner representative at CBS. He is the research leader of the CBS center of excellence in open innovation, making his work particularly relevant to research theme 2 at CSI. He is also a member of the Danish Council for Independent Research, Social Sciences. The main contribution of professor Laursen will be as a member of the CSI Advisory Board, setting out CSI's research direction. *Ian Miles* is a professor of Technological Innovation and Social Change at the Centre for Service Research and Manchester Institute of Innovation Research (MIoIR) at MBS. Miles conducts analyses on service in general, and is particularly associated with research on knowledge intensive business services (KIBS). Broader interests include social and employment implications of changing technology and foresight methods and practice. Given his broad experience in service innovation research, Miles will be part of the CSI Advisory Board. In addition, he will be associated with the Foresight/insight WP (WP11), and will co-supervise the research scholar connected with this WP.

Through CSI's affiliation with these three internationally well recognized service innovation milieus, CSI will connect to the larger network of European and global research centers on service

innovation. Examples include affiliation with the SMI[18], SRII-partners[19], Cambridge Service Alliance[20] and AMSI[21]. CSI will also offer attractive research opportunities for these and other international research partners through our measurement and visualization facilities, availability of data sets, access to empirically relevant experiments and dissemination activities, resources and partner network. CSI will support CSI-scholars staying at KAU, CBS and MBS during their engagement and offer visiting positions to relevant researchers from these partner institutions. In addition, the CSI-scholarship will be used to attract internationally renowned researchers and to generate public attention to service innovation research.

8. Gender equality

As indicated in section 4, women represent a majority of employees in many service sectors and in many corporate service activity functions. Thus, academic initiatives, focusing on service innovation, open up new academic and research career opportunities for women. Government funding for CSI legitimizes both the academic interest in innovation in the private sector functions and the service activities performed by female employees. As the relative number of female academics in the sectors and functions is large, our goal is to continually hire 50% women at the doctoral and post-doctoral level. Further description and measures to enhance the recruitment of women will be outlined in CSI's gender action plan, which will be developed during the initial month.

9. Environmental effects

As discussed in sections 2 and 3, servicizing business models are believed to improve the sustainability, for manufacturers as well as service providers (Rothenberg, 2007). Consequently, an entire WP (8) is dedicated to this perspective on service innovation, and is covered by the term Smart Business Models. Servicizing affects value creation at the firm level through increased efficiency (e.g. waste or materials reduction) as well as increased competitiveness (e.g. corporate social responsibility effects in transparent markets). It also affects societal value creation through a general transition to a more sustainable economy. The term "green servicizing" has been applied to these perspectives (EPA, 2009). Dematerialization is another service innovation principle that is believed to have a positive environmental effect. (Heiskanen et al., 2001). Examples are the replacement of paper and the elimination of transport through digital distribution. Consequently, this type of service innovation is driven by ICT services. The research partners behind CSI have contributed to innovations through dematerialization in financial services (Multimedia Banking), tourism (eTour) and transportation (SAMOT).

References

Aas, T.H. (2010). "Management control of service innovation activities: An exploratory investigation of best practice", Accepted at *the 11th International Research Seminar in Service Management*, La Londe, France, May 25-28.

Aas, T.H. and Pedersen, P.E. (2010a). The firm-level effects of service innovation: A literature review", Accepted for publication in *International Journal of Innovation Management*.

Aas, T.H. and Pedersen, P.E. (2010b). The Impact of Service Innovation on Firm Level Financial Performance. Accepted for publication in the *Service Industries Journal*.

Afuah, A. (2003). *Innovation Management. Strategies, Implementation, and Profits*, 2nd Edition, Oxford University Press, NY, USA.

Alam, I. (2002). An exploratory investigation of user involvement in new service development. *Journal of the Academy of Marketing Science*, 30:250-261

Alter, S. (2009). Mapping the Domain of Service Science, *AMCIS 2009 Proceedings.* Paper 414.

Amit, R. and Zott, C. (2001). Value creation in e-business. Strategic Management Journal, 22(6/7): 493-520.

BERR (2008). *Supporting innovation in services.* Report from the Department for Business Enterprise & Regulatory Reform, London, UK.

Brakus, J. J., Schmitt, B. H., and Zarantonello, L. (2009). Brand Experience: What Is It? How Is It Measured? Does It Affect Loyalty?, *Journal of Marketing*, 73:52-68.

Bruno, W.J., Miedzinsky, M., Reid, A. and Ruiz-Yaniz, M. (2008). *Socio-cultural determinants of innovation*. EUROPE Innova, Innovation Watch, WP10, EC.

Brodie, R.J., Whittome, J.R.M. and Brush, G.J. (2009). Investigating the Elements of the Service Brand: A Customer Value Perspective, *Journal of Business Research*, 62:345-355.

[18] http://www.smi.ethz.ch/

[19] http://www.thesrii.org/

[20] http://www.cambridgeservicealliance.org/

[21] http://www.abs.uva.nl/amsi/home.cfm

Cadwallader, S., Jarvis, C. B., Bitner, M. J., and Ostrom, A. L. (2010). Frontline Employee Motivation to Participate in Service Innovation Implementation, *Journal of the Academy of Marketing Science*, 38: 219-239.
Carlsen, A. (2006). Organizational becoming as dialogic imagination of practice. The case of the Indomitable Gauls. Organization Science 17(1): 132-149.
Chesbrough, H. W. (2003). The Era of Open Innovation, *MIT Sloan Management Review*, Spring: 35-41.
Clatworthy, S (2009). *Bridging the gap between brand strategy and customer experience in services: the target experience tool*. Presented at the First Nordic Service Design Conference. Oslo, November 24-26.
Cooper, R.G. and de Brentani, U. (1991). New industrial financial services: What distinguishes the winners. *Journal of Product Innovation Management*, 8(2):75-90.
Daugeliene, R. (2008). The Streamline of Research and Experimental Development's Infrastructure in Lithuanian National Innovation System, *Engineering Economics*, 57(2): 61-69.
De Brentani, U. (1991). Success Factors in Developing New Business Services. *European Journal of Marketing* 25(2):33-59.
Desmarchelier, P. M. and Szabo, E. A. (2008). Innovation, Food Safety and Regulation, *Innovation: Management, Policy & Practice*, 10: 121-131.
Døving, E. and Gooderham, P.N. (2008). Small firm accountancy practices as business advisors: A dynamic capabilities view of their scope of services. *Strategic Management Journal*, 29:841-857.
EC (2009). *Challenges for EU support to innovation in services – Fostering new markets and jobs through innovation*. Commission Staff Working Document SEC(2009)1195, Commission of the European Countries, Brussels, Belgium.
Econ (2005). *Innovasjon i tjenester*. ECON-rapport nr. 2005-080, Econ Analyse, Oslo.
Edvardsson, B, Enquist, B, and Johnston, B. (2005). Co-Creating Customer Value Through Hyperreality in the Pre-purchase Service Experience, *Journal of Service Research*, 8(2): 149-161|.
Edvardsson, B. Gustafsson, A and Witell, L. (2010). Customer Integration in Service Innovation. In F. Gallouj, F. Djella, F. and Gallouj, C (eds.). *The handbook of Innovation and Services*, In press.
Enkel, E., Gassmann, O., Chesbrough, H. (2009). Open R&D and Open Innovation: Exploring the Phenomenon, *R&D Management*, 39(4): 311-315.
EPA (2009). *"Green Servicizing" For a More Sustainable US Economy: Key concepts, tools and analyses to inform policy engagement.* EPA530-R-09-006, US Environmental Protection Agency, Washington DC.
FI (2008). *Innovation og innovationsbehov i servicesektoren*. Udgivet af Forsknings- og Innovationsstyrelsen for Rådet for Teknologi og Innovation, Copenhagen, Denmark.
Forfas (2006). *Services Innovation in Ireland– Options for innovation policy*. A report commissioned by Forfas from CM International, Forfas, Ireland.
Forfas (2008). *Catching the Wave. A Services Strategy for Ireland*. A report commissioned by Forfas, Forfas, Ireland.
Foros, Ø, Kind, H.J., and Hagen, K.P. (2009). Price-dependent Profit-Sharing as a Channel Coordination Device. *Management Science*, 55(8): 1280-1291.
Füller, J. (2010). Refining Virtual Co-Creation from a Consumer Perspective, *California Management Review*, 52(2): 98-122.
Følstad, A. (2008). Living Labs for Innovation and Development of Information and Communication Technology: A Literature Review. *Electronic Journal of Organizational Virtualness*. 10: 99-131.
Grewal, D., Levy, M., and Kumar, V. (2009). Customer Experience Management in Retailing: An Organizing Framework, *Journal of Retailing*, 85(1): 1-14.
Haugstad, B. and Carlsen, A. (2006). *Forskning i tjenesteyting. En utredning for BIA-programmet.* Rapport nr. STF 50 A06092, Sintef, Trondheim.
Heiskanen, E., Halme, M., Jalas, M., Kärnä, A. and Lovio, R. (2001). *Dematerialization: The Potential of ICT and Services.* Report 11/1/2001, Ministry of the Environment, Helsinki, Finland.
Hilton, T. (2008). Leveraging Operant Resources of Consumers: Improving Consumer Experiences or Productivity?, *The Marketing Review*, 8(4): 359-366.
Hipp, C. and Grupp, H. (2005). Innovation in the service sector: The demand for service specific innovation measurement concepts and typologies. *Research Policy*, 34(4): 517-535.
Holbrook, M. B. and Hirschman, E. C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun, *Journal of Consumer Research*, 9(September): 132-140.
Johne, A. and Storey, C. (1998). New service development: a review of the literature and annotated bibliography. *European Journal of Marketing*, 32, 184-251
Kelly, D. and Storey, C. (2000). New service development: initiation strategies. *International Journal of Service Industry Management*. 11(1), 45-62.
Kind, H.J., Nilssen, T., and Sørgard, L. (2009). Business Models for Media Firms: Does Competition Matter for How They Raise Revenue?, *Marketing Science*, 28(6): 1112-1128.
Kox, H. and Rubalcaba, L. (2007). The contribution of business services to European economic growth. In Rubalcaba, L. and Kox, H. (eds.). *Business Services in European Economic Growth*, Palgrave, NY.
Laursen, K. and Salter, A. (2006). Open for Innovation: The Role of Openness in Explaining Innovation Performance among U.K. Manufacturing Firms, *Strategic Management Journal*, 27: 131-150.
Lepak, D.P., Smith, K.G. and Taylor, S.M. (2007). Value creation and value capture: A multilevel perspective. *Academy of Management Review*, 32(1): 180-194.
Lywood, J., Stone, M., and Ekinci, Y. (2009). Customer Experience and Profitability: An Application of the Empathy Rating Index (ERIC) in UK Call Centres, *Database Marketing & Customer Strategy Management*, 16(3):207-214.
Maglio, P.P. and Spohrer, J. (2008). Fundamentals of Service Science. *Journal of the Academy of Marketing Science*, 36(1):18-20.
Magnusson, P.R., Matthing, J., and Kristensson, P. (2003). Managing User Involvement in Service Innovation: Experiments with Innovating End Users. *Journal of Service Research*. 6, 111-124.
Merz, M.A., He, Y. and Vargo, S.L. (2009). The evolving brand logic: a service-dominant logic perspective. *Journal of the Academy of Marketing Science*, 37(3):328-344.
Methlie, L.B. and Pedersen, P.E. (2007). Business Model Choices for Value Creation of Mobile Services. *Info - The journal of policy, regulation and strategy for telecommunications*, 9(5):70-85.
Michel, S., Brown, S.W. and Gallan, A.S. (2008). An expanded and strategic view of discontinuous innovations: deploying a service-dominant logic, *Journal of the Academy of Marketing Science*, 36:54-66.
Miles, I, (*1999*). Services and Foresight, *Services Industries Journal*, 19(2):1-27.
Miles, I. (2007). Research and Development (R&D) Beyond Manufacturing: The Strange Case of Services R&D, *R&D Management*, 37(3):249-268.
Morris, M., Schindehutte, M., and Allen, J. (2005). The entrepreneur's business model: toward a unified perspective. *Journal of Business Research*, 58(6): 726-735.
Neu, Wayne A. and Brown, Stephen W. (2005). Forming Successful Business-to-Business Services in Goods-Dominant Firms. *Journal of Service Research*. 8(1):3-17.
Nysveen, H., Pedersen, P.E., Thorbjørnsen, H. (2005). Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons. J*ournal of the Academy of Marketing Science*, 33(3): 330-346.
Nysveen, H. and Pedersen, P.E. (2007). *Service Innovation Methodologies I*. Research Report No 134, Agder University College, Kristiansand, Norway.

Oliva, R. and Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management*, 14(2): 160-172.
Osterwalder, A. and Pigneur, Y. (2005). Clarifying Business Models: Origins, Present, and Future of the Concept, *Communication of the Association for Information Systems*, 16. 1-25.
Osterwalder, A. and Pigneur, Y. (2009). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. Self published (http://www.businessmodelgeneration.com/).
Pedersen, P.E. (2000). Behavioral effects of using software agents for product and merchant brokering: An experimental study of consumer decision making. *International Journal of Electronic Commerce*, 5: 125-141.
Pedersen, P.E. (2005). *Tjenesteinnovasjon og tjenestekategorisering. Variasjon i tjenesteegenskaper og betydning for innovasjonsprosesser og innovasjonstyper*. SNF-rapport nr. 24/05. Samfunns og næringslivsforskning, Bergen.
Pedersen P.E. and Nysveen H. (2010). *Service innovation challenges at the policy, industry, and firm level: A qualitative enquiry into the service innovation system*. SNF Working paper No. 10/10. Samfunns og næringslivsforskning, Bergen.
Pfeffer, J. and Sutton, R.I. (2006). Hard Facts, *Dangerous Half-Truths, and Total Nonsense*. HBS Press, Boston, MA.
Rothenberg, S. (2007). Sustainability Through Servicizing, *MIT Sloan Management Review*, Winter: 82-91.
Rubalcaba, L., Gallego, J. and Den Hertog, P. (2010). The Case of Market and System Failures in Service Innovation, *The Service Industries Journal*, 30(4): 549-566.
Schoemaker, Paul J. H. (1995). Scenario Planning: A Tool for Strategic Thinking, *Sloan Management Review*, Winter: 25-40.
Sirilli, G and Evangelista, R. (1998). Technological innovation in services and manufacturing: Results from an Italian study. *Research Policy*, 27:881-899.
St.meld. nr. 7/2008-9 (2008-2009). Et nyskapende og bærekraftig Norge. Nærings- og handelsdepartementet, Oslo.
Tether, B.S. (2003). The sources and aims of innovation in services: Variety between and within sectors. *Econ. Innov. New Techn*., 12(6), 481-505.
Thorbjørnsen, H., Supphellen, M., Nysveen, H. and Pedersen, P.E. (2002). Building Brand Relationships Online: A Comparison of Two Interactive Applications. *Journal of Interactive Marketing*, 16:17-34.
Toivonen, Marja. (2004). Foresight in Services: Possibilities and Special Challenges. *Service Industries Journal*. 24(1):79-98.
van Ark, B., O'Mahony, M. and Timmer, M.P. (2008). The Productivity Gap between Europe and the United States: Trends and Causes. *Journal of Economic Perspectives*, 22(1): 25-44.
von Krogh, G. and von Hippel, E. (2006). The Promise of Research on Open Source Software. *Management Science*, 52(7): 975-983.
Vargo, S., R. F. Lusch. (2004). Evolving to a New Dominant Logic for Marketing. *Journal of Marketing*, 68(1):1-17.
Vargo, S. L., Maglio, P. P., and Akaka, M. A. (2008). On Value and Value Co-Creation: A Service Systems and Service Logic Perspective, *European Management Journal*, 26: 145-152.
Verhoef, P. C. et al (2009). Customer Experience Creation: Determinants, Dynamics and Management Strategies, *Journal of Retailing*, 85(1): 31-41.
Voros, J. (2003). A Generic Foresight Process Framework, *Foresight*, 5(3):10-21.
Zeithaml, V. A., Parasuraman, A., and Bery, L. L. (1985). Problems and Strategies in Service Marketing, *Journal of Marketing*, 49: 33-46.
Zott, C. and Amit, R. (2008): The Fit Between Product Market Strategy and Business Model: Implications for Firm Performance, *Strategic Management Journal*, vol. 29, pp. 1-26.

[i] The complete proposal includes budget, total and per partner and detailed progress plan with milestones. These elements have been left out in this public version of the proposal.