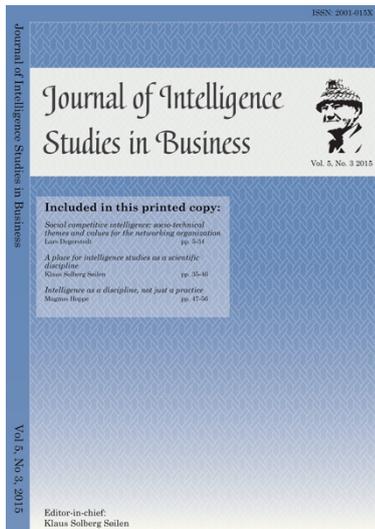


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Social competitive intelligence: socio-technical themes and values for the networking organization

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Social competitive intelligence: socio-technical themes and values for the networking organization

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ABSTRACT This article introduces the notion of social competitive intelligence, meaning competitive intelligence (CI) for the networking organization. A novel socio-technical framework called the Social CI Framework (SCIF) is presented, intended for analysis and design of social CI processes, methods and tools. By using a socio-technical perspective, both social and technical aspects are considered together in SCIF. The framework is founded on a theory related to enterprise 2.0 and wikinomics, and is intended to be used to study social CI using principles such as openness, participation, sharing and co-creation. The presented results are based on a literature review and an exploratory study with interviews of CI experts from Swedish organizations. SCIF explicitly distinguishes between task-oriented models and collaboration models, and models of different socio-technical perspectives. Moreover, SCIF uses the mechanisms of socio-technical themes and a socio-technical value map that relate the theoretical and empirical characteristics with the SCIF modeling method.

KEYWORDS community, competitive advantage, competitive intelligence, computer-supported collaborative work, enterprise 2.0, information systems, knowledge management, networking organization, social computing, social learning, social media, social networking, social organization, socio-technical systems, strategic management, wikinomics

1. INTRODUCTION

A major trend in the world today is the increasing competition in global and digitalized markets where the speed of change and innovation is becoming faster than ever before. The development is fueled by developments in information technology (IT) and is likely to continue for a long time. In order for organizations to keep up with the rapid change, a systematic approach to understand the surrounding world is needed. An existing solution is called *competitive intelligence* (CI), which is a *systematic process* whereby an organization (division, unit or

person) gathers, analyzes, and transforms information into actionable intelligence, see e.g. Murphy (2005) and Sharp (2009). The objective of CI is to understand how the surrounding competitive environment¹ will impact an organization – by monitoring events, actors, trends, research breakthroughs, and so forth – in order to be able to make relevant strategic decisions.

Furthermore, in a situation with continuous innovation and change, organizations are relying more and more on informal social networking structures and individual decision making as a means to increase rapid response

¹ The term *competitive* in CI can be traced back to the economic notion of competitive advantage, see e.g. Porter (2008) and Barney & Hesterly (2012). The notion of competitiveness is used within the context of CI to emphasize that the intelligence is related to any aspect of the surrounding competitive environment with strategic significance, cf. Sharp (2009). In Swedish, the two terms “omvärldsbevakning” (monitoring) and “omvärldsanalys” (analysis)

are often used instead of CI. The Swedish terms are slightly more general than CI since the term “omvärld” means “surrounding world” and refers to any aspect of the surrounding world that has strategic significance (which makes sense in particular for non-commercial organizations such as public authorities). For this article, CI is used as an English synonym for “omvärldsbevakning” and “omvärldsanalys” which follows Swedish practice.

and agile creativity within the enterprise. These (*socially*) *networking organizations*² often rely on the use of social technology with features from web 2.0 as an important part of their collaborative networking platform. A major promise of using networking for work is the use of mass-collaboration, i.e. increased participation and collaborative possibilities that allows people to influence and take advantage of other people's knowledge in new and flexible ways (Tapscott & Williams 2008; Bradley & McDonald 2011).

The underlying question of the presented research is how mass-collaboration and social networking can be utilized for CI, and vice versa how CI should be adapted for the (*socially*) networking organization. A new term called *social CI* will be used to refer to any CI process, method or tool that is adapted for the networking organization³. Social CI relies on notions of enterprise 2.0 and wikinomics, using systemic principles such as openness, participation, individual freedom, democracy, self-organization, sharing and co-creation (Mcafee 2006; Tapscott & Williams 2008; Malone 2004; Li & Bernoff 2011; Bradley & McDonald 2011).

From the viewpoint of social CI, the CI process is viewed as a (unique) form of knowledge work (Nonaka & Takeychi 1995; Davenport 2005; Liebowitz 2012) that combines:

- a) an information-gathering and analytical methodology for strategic decision support, cf. Porter (1980); Murphy (2005); Sharp (2009);
- b) a social community-based learning process, cf. Wenger (2000); Brandi & Elkjaer (2009);
- c) integration with and decision support of the networking organization, cf. Cross & Parker (2004); Tapscott (2009); Gray (2012);
- d) use of social IT that supports collaboration and networking for analytical work, cf. McAfee (2009); Li & Bernoff (2011); Crumlish & Malone (2009); Wodtke & Govella (2009).

² The term (*socially*) *networking organization* is used as an umbrella term for organizational use of work models that rely on informal and self-organizing social networks, instead of relying mainly on more formalized roles and work units. Networking work models can be physical, virtual (based on social technology), or a combination of both. In practice, virtual solutions are often a necessary component of the network and mean the adjustment of work processes by using the emerging web 2.0 technologies in the enterprise. There are various related terms, e.g. (virtual) social networking, mass collaboration, enterprise 2.0, social business and the social organization (Cross &

In the article a socio-technical framework called the Social CI Framework (SCIF) is introduced, intended to be used as a conceptual foundation for analysis and design of social CI. By using a socio-technical perspective, both social and technical aspects are considered together with the SCIF.

The presented results are based on a literature survey and an exploratory study with in-depth semi-structured interviews of nine CI experts from Swedish organizations that work either in firms that supplies CI services or deliver expert CI knowledge in relation to teaching and research. From these findings the SCIF has been deduced, which consists of four parts that will be discussed in the remainder of the report:

- a) *a theoretical foundation* of social CI with a selection of relevant theory, based on a literature review. A theory-based perspective denoted people-media-people strategy is introduced. See Section 2.
- b) *socio-technical themes* that cluster relevant socio-technical design requirements for social CI, which have been extracted from identified tendencies in the CI field according to the interviewed experts. See Section 3.
- c) *a socio-technical value map* that is a form of pattern language for properties that reflect the underlying characteristics and gains of social CI, from selected studies of the literature review. See Section 5.
- d) *a socio-technical modeling* method is outlined where the other parts of the framework are used together for practical analysis and design of social CI. See Section 6.

The current study is based mainly on the expertise in the supplier organizations and existing theory rather than the customer organizations using CI. The customer organizations using CI will be the object of study in forthcoming studies, which will

Parker 2004; Traudt & Vancil 2011; Bradley & McDonald 2011; Mcafee 2006; Tapscott & Williams 2008; Li & Bernoff 2011)).

³ The related term social intelligence has been used in a report from McKinsey (Harrysson et al. 2012). The main emphasis in this work concerns how the character of the information flows changes due to the use of social networking media, which seems to complement the findings reported in this article. Social media intelligence is perhaps a better term for this, which is an overlapping notion with social CI, but they are not identical since CI emphasizes the strategic character of the collected intelligence.

further compliment the findings of the proposed framework.

The presented SCIF is to the best knowledge of the author a novel approach. In previous work, Von Krogh (2012) and Haefliger et al. (2011) discuss how social software challenges strategic thinking by introducing more open and distributed ways of working with strategy, e.g. in connection with the notion of open innovation (Chesbrough & Appleyard 2007). Haefliger et al. (2011) introduce a framework for research on social software and strategy based on three domains: strategy, technology and community. In contrast, the categories of the theoretical foundation of social CI are more specific and emphasize a socio-technical perspective. By introducing the notion of social CI, the term “social” is preferred ahead of a concept such as community, since it is important to distinguish explicitly between the individual behavior and the communal structure. Razmerita et al. (2014) identifies how social networking media support both personal and collective knowledge management, which is related to the socio-technical perspective of social CI. Alternative research frameworks related to social CI can be found in a) the work by Pawlowski et al. (2014), where sub-fields are distinguished based on research method; and (b) in the work by Quoniam (2011), where competitive intelligence 2.0 is introduced as an umbrella term for various developments in the competitive intelligence field in relation to web 2.0 and social technology.

In relation to the choice to use a socio-technical approach for social CI, a taxonomy of approaches is presented by Earl (2001) that makes distinctions between technocratic, economic and behavioral approaches to knowledge management. Handzic (2011) studies empirically how social and technological factors advance in public administrative organization, using a socio-technical approach.

Von Krogh (2012) outlines a research agenda for strategic thinking, knowledge management and social technology in the form of six research questions. These questions are useful guidelines for future research related to social CI. In particular, two of the questions (4.5 and 4.6) deal with how the use of social technology will influence the competitive advantage of the firm and how it will affect the firm's boundaries (and thus indirectly the business model).

There are also a number of results in favor of a socio-technical approach to be able to utilize social technology in a strategic process, see e.g. (Denyer et al. 2011; Leonard & Barley 2010; Roblek et al. 2013; Holtzblatt et al. 2013; Saldanha & Krishnan 2012; Turban et al. 2011). Simply inserting social technology into a process, in general or into a strategic process in particular, will not in itself change the work flow to become more open, social or participatory, cf. Denyer et al. (2011). Vuori has shown that the emergence of social media affects how knowledge sharing is done within CI processes (Vuori 2011). Her findings have also identified motivational factors and barriers related to willingness to share competitive knowledge, identifying obstacles and possibilities. From the perspective of social CI, sharing is one important aspect among several others, such as openness and peering.

Cross et al. (2006) investigated how social networking analysis can be used to improve the productiveness of the collaborations and the generated value with communities of practice. These techniques seem useful also in the context of social CI. Kolfshoten et al. (2010) offers a method for collaboration engineering using socio-technical design patterns called ThinkLets. The ThinkLets approach seems like a promising complementary approach for the collaborative aspects of social CI, see e.g. Azadegan et al. (2013).

A related framework with an aim similar to the SCIF has been proposed recently by Jin & Bouthillier (2013). Their proposal seems to be the closest of existing results that have been found for the SCIF. They emphasize the connection between collaboration and information sharing and access, which seems somewhat related to the work by Vuori (2011) on knowledge sharing for CI. Four general research questions are pointed out by Jin & Bouthillier (2013), and Activity Theory (AT) is identified as the appropriate research method, which is one way to describe actions in socio-technical systems, cf. McMichael (1999). This means that the discussion of AT in their context also seems relevant for the SCIF. Based on AT, Jin & Bouthillier (2013) introduce a model with four nodes that looks similar to the socio-technical perspectives of the SCIF (structure, behavior and technology). A fourth node holds a model of the CI cycle. In contrast, however, the SCIF contains six models, separating task and collaboration for each of the socio-technical perspectives.

2. THEORETICAL FOUNDATION OF SOCIAL COMPETITIVE INTELLIGENCE

The field of social CI consists of a combination of competences from, at least, five knowledge areas. An overview of the knowledge areas is shown in Figure 1. The knowledge areas have been ordered in layers, where the lower layers are of a more general character and the upper layers are more specific to social CI. In the remainder of this section these five knowledge areas are presented in more detail.

2.1 Socio-technical analysis and design

On a fundamental level, the proposed SCIF is a framework for social CI that supports socio-technical analysis and design of methods, services and tools (denoted as Layer 1 of the theoretical foundation in Figure 1). The socio-technical viewpoint is important, since the use of IT in social CI should always be done in alignment with the whole process, which

altogether is a more complex type of requirement than technical or user interaction requirements.

In the SCIF, the CI work process is seen as a particular form of socio-technical system (STS) where "social and technical aspects integrate into a higher level system with emergent properties", (Whitworth 2009, page 4). In other words, an STS is a social system built on top of a technological base, where the technology is an essential integral part of the habitat for the human actors. In the context of CI, the technology is primarily IT through which the human actors can discover, aggregate, refine, present and distribute information⁴. The systemic level of analysis of an STS is by definition *communal*, where focus is placed on how humans interact, which in turn determines the interaction between humans and technology (Coiera 2007). Therefore, the perspective on IT within social CI will mainly be that IT is a mediator of information between humans.

Layers	Theoretical areas	Key concepts	Selected sources
1	Socio-technical analysis and design	socio-technical level of analysis, systemic analysis and design, integration of social and technology, information centric, mediation, social IT	(Hevner et al. 2004) (Alter 2008) (Whitworth 2009)
2	Knowledge work	knowledge as value, judgement and collaboration, collaboration worker	(Drucker 1993) (Nonaka & Takeychi 1995) (Brown & Duguid 2000) (Davenport 2005)
3	Networking work model	decentralized work, mass collaboration, principles of wikinomics, coordinate and cultivate, pull principle, people-centered, co-creation, social organization	(Cross & Parker 2004) (Malone 2004) (Tapscott & Williams 2008) (Vargo & Lusch 2008) (McAfee 2009) (Li & Bernoff 2011) (Bradley & McDonald 2011)
4	Social learning community	creation and transformation of knowledge, process of knowing, collaborative practice	(Nonaka & Takeychi 1995) (Wenger 1998) (Hansen et al. 1999) (Brown & Duguid 2000) (Brandt & Elkjaer 2009)
5	Strategic decision making process	Strategic decisions, open-ended, trade-offs, external predictions, risk, CI specific work process for external analysis	(Murphy 2005) (Porter 2008) (Bose 2008) (Nutt & Wilson 2010) (Barney & Hesterly 2012)

Figure 1. Areas that form the theoretical foundation for social CI and the SCIF.

⁴ In the article, the term *information* is understood as data that is contextualized, categorized, calculated and condensed, where the

context gives the data its meaning and purpose (Davenport & Prusak 2000).

Brown & Duguid (2000) calls for a process of socializing technology that is useful in the context of the SCIF. The term *social IT* (also sometimes referred to as social technology) is a term used for the SCIF to denote IT that is an appropriate mediator of information within the context of an STS and where humans are seen with the full complexity of social beings. Finally, using the notion of an STS, the CI work process flow can be analyzed as an information system (IS), or alternatively a work system (Alter 2008). That is, the CI work process is seen as a system consisting of people, tools and information, with the purpose to collect, process and use information about the surrounding world. The IS of CI work can be seen as a particular perspective on the STS in which the perspective is information-centric, which is relevant since CI is centered around the handling of information and its mediation that is meaningful for the organization.

presents a conceptual model for socio-technical analysis of CI processes that identifies three mutually interdependent perspectives: structure (S), behavior (B) and technology (T). The model, referred to as the SBT perspectives model, can be seen as a slight generalization of the Information Systems Research Model which uses the perspectives people, organizations, technology (Hevner et al. 2004, Figure 2, p. 78). Another related notion is the Multiple Perspective Model, cf. Mitroff & Lindstone (1993, e.g. Table 6.1). It is important to note that the (social) *structure* consists of social networks where humans are individuals each with complex unique (social) *behavior*. Collective structure between humans emerges as a consequence of their interactions and relations together. Behavior and structure form a dual human aspect which is mutually

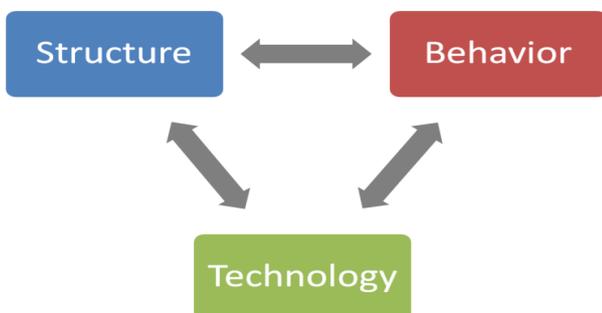


Figure 2 The socio-technical SBT perspectives model. The perspectives structure, behavior and technology are mutually dependent in socio-technical analysis and design.

interdependent with technology, forming the duality of the STS.

It may also be practical to divide the perspectives further, but such distinction is not needed at this point for social CI. For example, technology can be further divided into technology for the individual and the collective, see e.g. Davenport (2005). Another possible refinement is to focus explicitly on information and information processing in the technology component, see e.g. Jin & Bouthillier (2013).

The presented research and the SCIF follow the scientific methodology of design science that seeks to "extend the boundaries of human and organizational capabilities by creating new and innovative artifacts" (Hevner et al. 2004; Herbert 1978; Hevner & Chatterjee 2010). Thus, the purpose of the SCIF is not that of behavioral science to "explain or predict human or organizational behavior" – instead the focus is primarily intended as a basis for analysis and design of useful work methods, services and tools for social CI.

2.2 Characteristics of knowledge work

According to many researchers, including Drucker, we have in recent decades entered a new era where knowledge⁵ has become the new basic economic resource that creates value (Drucker 1993). Organizations are relying more and more on systematic knowledge creation and learning as a key asset for continuous innovation (Nonaka & Takeuchi 1995). The increased importance of knowledge and learning can be seen, for example, during the last twenty years in the rapid growth of new knowledge-centric academic disciplines such as the fields of knowledge management and organizational learning where "knowledge is applied to knowledge" (Drucker 1993, p. 40), see e.g. Easterby-Smith et (2011); North & Kumta (2014).

Characteristic for knowledge work is that it is less structured than administrative and production work (Davenport 2005, p. 15). Its exploratory nature means that knowledge work typically has inputs and outputs which are less well defined, and information is less targeted. Instead the main purpose of knowledge work is rather to make sense of an unclear situation, interpret conflicting aspects and increase general understanding of the

⁵ In this article, the term knowledge is understood as "a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new

experiences and information." (Davenport & Prusak 2000). Moreover, the term knowledge work is defined as "work with the primary purpose to create, distribute or apply knowledge" (Davenport 2005, p. 10).

phenomena at hand (Brown & Duguid 2000). Davenport (2005) points out the following basic principles of knowledge work: knowledge workers like autonomy; detailed step-by-step processes are less valuable; knowledge workers usually have good reasons for doing what they do; commitment matters; and, knowledge workers value their knowledge; they do not share it easily. An implication of this is, according to Davenport, that knowledge workers cannot be "managed" in the traditional way.

According to Drucker (1993, p. 51) the organization of knowledge work is a destabilizer, an organization that is built for change – and continuous innovation. Drucker claims that the knowledge-based organization must have three practices that are fueled by systematic knowledge creation: continuous improvement, ability to exploit earlier successes, and systematic innovation. However, as Davenport (2005) points out, not all knowledge work is equal, and it makes sense to place efforts of improvement and interventions to work that are most expensive first. Davenport uses two dimensions to distinguish the level of complexity of the knowledge work: judgment and collaboration, which is illustrated in Figure 3.

From this viewpoint, the knowledge work that should be focused on the most is work combining advanced forms of judgment and collaboration. This clearly motivates why a socio-technical methodology is valuable for social CI, which combines strategic judgment and a collaborative work model in such an advanced way. Davenport (2005, p. 66-67) also describes the *collaboration worker* as "the most difficult to address in traditional process terms". Similar to expert workers, collaboration workers prefer to work with high level guidelines only, and it is difficult to structure the format of their work. Instilling some form of customer-orientation or a sense of

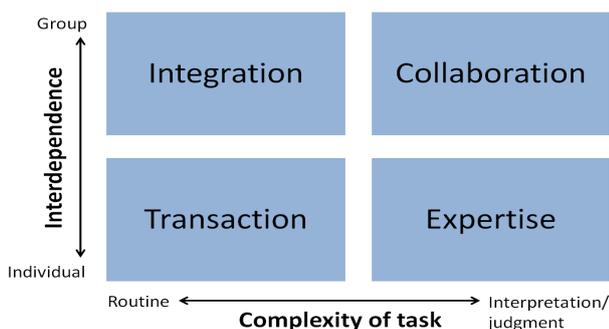


Figure 3 Categorization of knowledge work using the two dimensions: complexity of task and interdependence.

urgency, are suggestions of intervention approaches (rather than detailed process flow charts) given by Davenport. Moreover, as pointed out by Davenport, it is still unusual that work of this category is fully mediated and structured by a computer. This is also a motivation for the SCIF – to contribute with new and better tools for the collaborative knowledge workers of social CI. Davenport points out two forms of IT-tools for the collaborative work: knowledge repositories and collaborative aids. However, he emphasizes that such tools must be used voluntarily. The more unstructured and collaborative the work is, the harder it is to foresee and thus build knowledge repositories in advance that support the current situation. Instead information is typically sought in multiple ways and using multiple channels. Instead, the collaborative workers need time and support to seek and share knowledge from various different sources and repositories (Davenport 2005, p. 91).

2.3 The networking work model

A combination of the Internet, cheap computers, web-based software, open-source projects such as Linux or Apache and publicly available information sources such as Wikipedia are mixing together to dramatically reduce the transaction costs of doing work beyond the traditional hierarchical organizational structures. The new tools have made new ways of collaborating possible. Malone (2004) discusses how general developments in IT and communication technology have drastically lowered the cost of communication which has profound implications on how we can organize work. New more decentralized work models, utilizing a higher information sharing density, have become realistic choices. One important gain of a more decentralized work model is that larger groups of people can be directly involved in decision-making that matters to them, with the gain of increased individual freedom (Malone 2004). From the perspective of the organization a main advantage is increased connectedness between workers and the surrounding world, cf. Gray (2012). In particular, the increased connectedness between the organization and the surrounding world has become crucial since today's markets often follow a service-dominant logic where the generated value-in-use is sensitive to the customer's situation or preference (Vargo & Lusch 2004).

Using new social technology, people have developed new behaviors and new skills. The

society is thereby being transformed into new forms of social spaces and structures where people are connected and collaborate in new ways and on a massive scale (Tapscott & Williams 2008). According to Tapscott & Williams (2008), the business logic in this new digital economy follows the laws of “wikinomics”, which are based on four powerful principles of mass collaboration: openness, peering, sharing and acting globally. Internet and social technology are in this sense general-purpose technologies and applying the principles of wikinomics are potentially enablers of complementary innovations and growth, cf. Brynjolfsson & Hitt (2000).

The decentralization of work implies a shift in focus for management, from models based on command-and-control to models based on coordinate-and-cultivate (Malone 2004). On a principal level decentralization can be seen as a shift in the perspective from push to pull (Siegel 2009; Anderson 2004; Hagel III et al. 2010). In a highly connected situation with an abundance of information, the basic work operations must by necessity be that of “pull” – by information customization (“only to the right persons”) and goal-directed (“only at the right time”), cf. Shirky (2008). Moreover, to be able to exploit the power of information abundance is to take advantage of the capability to keep massive amounts of information for specific situations, a phenomenon sometimes called the long tail (“scarce usage”) of information, cf. Anderson (2004). Customization, goal-directedness and scarce usage are all variants of the operative work mode of pull. In the push-model (i.e. the command-and-control model), the basic metaphor is an information-processing

machine. In its simplest form this becomes sequential phase-based filter architecture, a hierarchy, or a combination of these two models. In contrast, from the perspective of pull (i.e. the coordinate-and-cultivate model) the basic metaphor becomes an organism, cf. Gray (2012). In its simplest form the organism can be seen as a network, which is living, dynamic, learning and adapting. The different work models are illustrated in Figure 4.

Viewing the organization from the perspective of pull consequently also means a shift of focus to people rather than artifacts, such as documents and IT-systems, in the models. In other words, the management models of the decentralized organization naturally become *people-centered* rather than artifact-centered, with a focus on co-creative ecosystems instead of product-centric producer-consumer chains (Vargo & Lusch 2008).

Decentralized knowledge-creating organizations can naturally be described in the form of social networks, i.e. network structures that take into account the full complexity of human nature. Social networks facilitate analysis of knowledge-creation as a process where individuals and productivity are primarily driven by intrinsic motivators such as autonomy, mastery and purpose (Pink 2009) and social rewards (Cross & Parker 2004), rather than driven by extrinsic or formal rules. In other words, from the perspective of pull, the focus should be placed primarily on the informal, or social, aspects of the organization of work.

The development of new social networking technologies related to the Internet, web 2.0 and social media make dramatically more

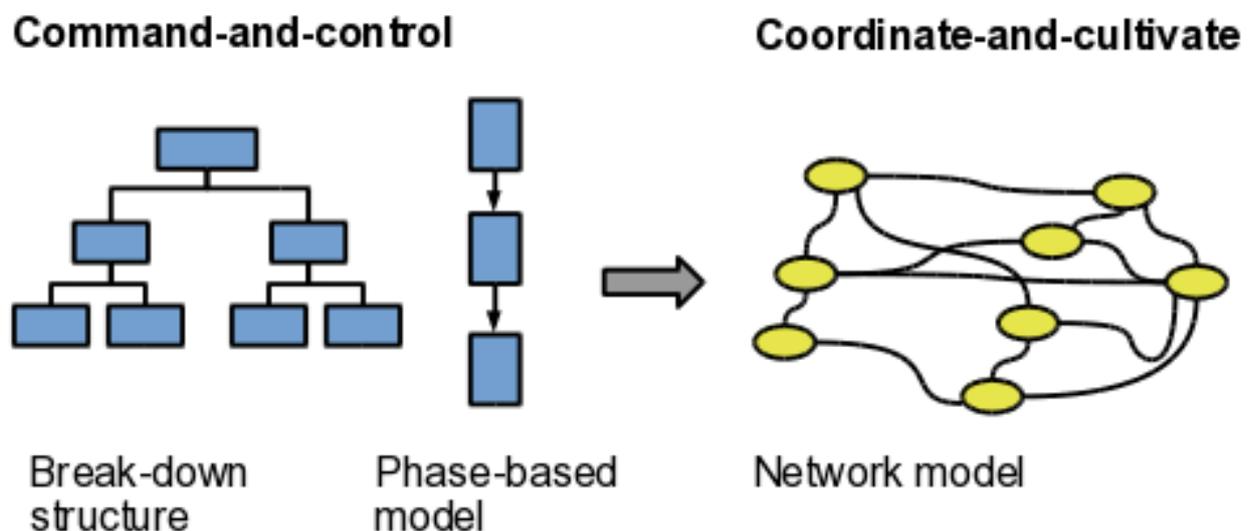


Figure 4 Illustrations of the work models of command-and-control vs. coordinate-and-cultivate.

decentralized ways of working possible and desirable. These new technologies have created new great possibilities for how to organize work, and the choices made will have great impact on professional life. Malone (2004) emphasizes the importance that decisions are not only economically sound but also consistent with deep human values in general. For example, the new social networking technology makes it possible to realize many of the promises of decentralization such as self-organization, self-management, individual empowerment, social emergence, democracy, participation, people-centeredness and so forth. However, to be able to utilize such new possibilities in the context of social CI, a socio-technical perspective and work method seems both natural and necessary.

The new social networking technology that is being developed within an organizational context has been jointly referred to as *Emergent Social Software Platforms* (ESSPs) by McAfee (2006a). An organization that uses ESSPs to pursue its goals is called *Enterprise 2.0*. However, although Enterprise 2.0 is defined in terms of its enabling technology the new phenomenon is actually a socio-technical phenomenon, which also involves new solutions for organizational and management levels in order to become useful. Such new uses of social networking media in organizations enable the use of mass collaboration (Bradley & McDonald 2011; Li & Bernoff 2011). By mass collaboration, it is possible to form collaborative communities where large and more diverse groups of people can pursue a mutual purpose that creates value, for example by increased levels of transparency and participation. In this type of *social organization*, work is organized using collaborative communities that allow everyone along the value chain to create value together in new more decentralized ways (Bradley & McDonald 2011).

2.4 Social learning community

Nonaka & Takeuchi (1995, p. 6), propose that success in a knowledge-creating company comes from understanding and utilizing the dynamic nature of the knowledge conversion process between *tacit* and *explicit* knowledge – “from outside to inside and back outside again in the form of new products, services or systems.” The main dimensions of such

dynamics of knowledge conversion are the conversions between, on the one hand, tacit to explicit knowledge, and on the other hand the conversion of knowledge between the individual and the collective, creating the now well-known SECI model⁶. Brown & Duguid (2000) also emphasize the importance of not oversimplifying the notion of information as an artifact or explicit coding that can be understood without understanding the full complexity of the social context. They point out that if IT is not used in a proper way it can easily lead to solutions with less collaborative support for the individual, making their role more difficult, stressful and ineffective. Brown & Duguid (2000) conclude that although a well-defined overall view of organizational processes can be important, it cannot replace the importance of support for the informal and collaborative *practice* of the people who work in the processes and bring them to life, and this is especially true for knowledge-intensive work. Hence, when designing new socio-technical solutions, the informal aspects of work practice, sociability and collective knowledge exchange are important factors that must be encountered and emphasized according to their analysis.

According to the social learning theory of Wenger (1998), people are social beings that construct their understanding from participation in practice within a group or organization, see e.g. Wenger (1998, p. 4). In this sense, social learning cannot be avoided but is a ubiquitous part of everyday life and work. It takes place not only inside the minds of individuals but is also processes of participation and interaction. Learning therefore becomes a relational activity in a social context, not simply an individual process of thought. The locus of social learning is the patterns of *participation* of the members of a group or organization, where the learning takes place (Brandi & Elkjaer 2009). Wenger (1998) makes a useful distinction between participation and reification to describe the process of social learning in a community of practice, see Figure 5 for details.

A distinction related to push versus pull has also been made within the field of knowledge management where two schools of thought have been identified: the codification strategy (people-to-document) and the personalization strategy (people-to-people) (Hansen et al.

⁶ SECI stands for the conversions: Socialization; Externalization; Combination; Internalization.

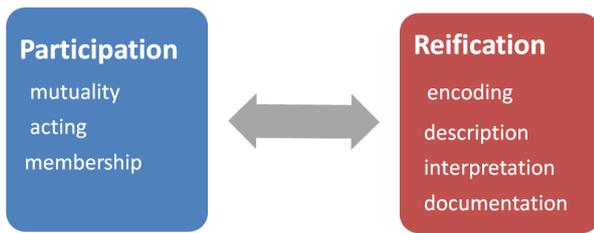


Figure 5 Participation and reification – two dual aspects of social learning in a community of practice. Participation denotes the active process of social experience for members of a community of practice. Reification denotes the process of producing artefacts.

1999). Originally, these two strategies were placed as opposites and historically organizations have tended to favor one at the expense of the other (Hansen et al. 1999). However, as argued by Wenger using the terms participation and reification these two aspects are actually co-dependent, but care must be taken regarding exactly what should be codified and not (Wenger 1998, pp. 264-265).

Moreover, Wenger views "learning as the engine of practice" where communities of practice come together through learning in an open, emergent and informal process that negotiates its own meaning and identity, see Wenger (1998, p. 96). From a social constructive point of view, knowledge thus becomes synonymous with the active process of knowing (Brandi & Elkjaer 2009). The active social knowledge can be said to leave and use codification footprints in media, e.g. articles, digital conversations and webinars used to co-create, educate and generate social activity. However, social learning as a *complete* process of knowing can only be understood by focusing on human actors and social aspects of the socio-technical system.

2.5 The strategic decision making process and the role of competitive analysis

In a situation where competition on markets has become more open with continuous change,

strategic thinking has become more important than ever before. Understanding the forces that shape business competition is the first step towards deciding on a strategy (Porter 2008). Strategic decisions typically occur in elusive open-ended business situations with choices that are hard to define precisely (Nutt & Wilson 2010). To understand a problem of strategic nature normally requires an extensive interpretative analysis to gain understanding before generating a solution. There rarely exists one best solution, but several solutions which are typically trade-offs with different priorities. It is also usually difficult to predict how competitors and markets will evolve. Strategic solutions are therefore typically at a high level, still full with ambiguity and uncertainty, even after systematic strategic analysis, cf. Barney & Hesterly (2012). The benefit of a strategic decision also typically comes with considerable risk. To handle this complexity, a systematic strategic process is needed. Figure 6 illustrates a principal strategic management process in the form of a phase-based process, adapted from Barney & Hesterly (2012).

By conducting an external analysis of the surrounding world, a firm identifies threats and opportunities in its competitive environment. The external analysis relates the external world with the mission and objectives of the firm, which together with an internal analysis results in decision basis for the strategic choice phase. The systematic process of research and assessment about external factors that could endanger or enhance a company's revenues and profits is also known as competitive intelligence, see e.g. Murphy (2005); Kahaner (1997); Sharp (2009). In spite of the name, CI is not limited to competitor benchmarking but focuses on any external factor that can affect the ability of a firm. The CI professional gathers relevant information, turning raw data into actionable intelligence, where its significance and value comes from

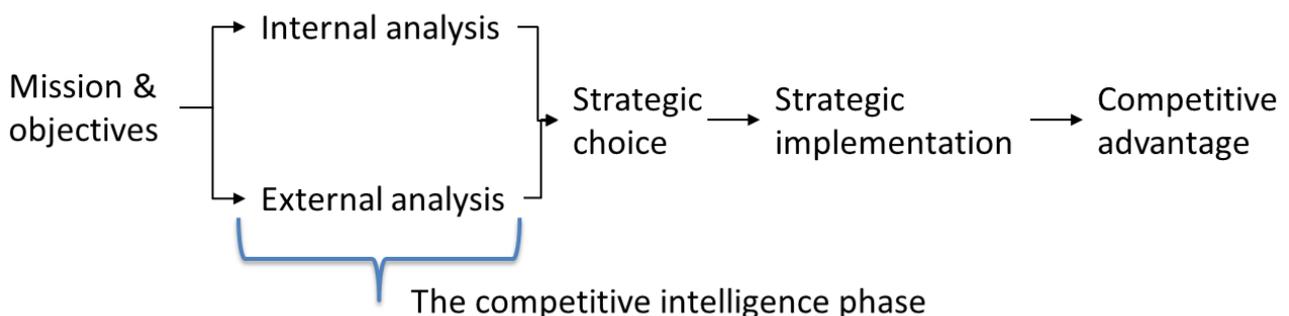
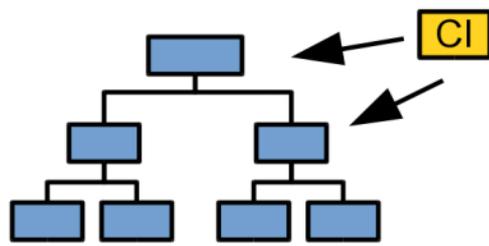
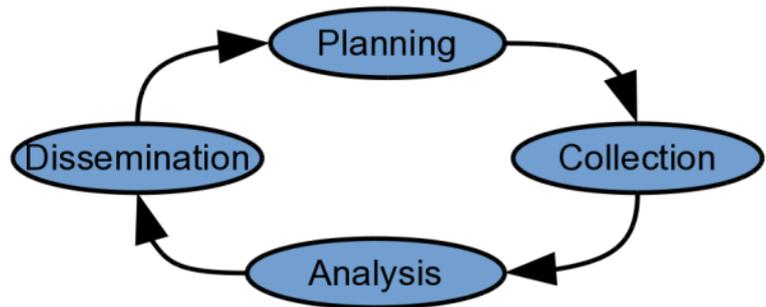


Figure 6 A systematic strategic management process.

Command-and-control CI work models



Functional Unit



Phase-based Intelligence cycle

Figure 7 Two models of command-and-control for CI.

the results of the action taken. Contributing to firm-wide CI is of course something that is relevant for any knowledge worker. However for CI to become efficient there is normally also a need for an individual or a group with the specific *responsibility* of CI and coordination of CI activities within the organization (Murphy 2005). Traditionally, two models with a focus on "command-and-control" for CI processes have been used: positioning CI as a functional unit and a phase-based process model for the CI-process, as illustrated in Figure 7; see e.g. Murphy (2005); Bose (2008)⁷.

The CI work process can be seen as a particular form of knowledge community, or community of practice. However, the process has a number of specific characteristics such as:

- a) A collection of well-defined objectives: the CI process should always work towards a collection of well-defined objectives in the form of analysis for strategic decision support. This contrasts the general notion of community of practice, where the overall and open-ended aim is to strengthen the competence of its members. In particular, this means that CI focuses on creating so-called *actionable* knowledge, i.e.
- b) knowledge that becomes a strategic resource, see e.g. Drucker (1993, p. 42); Carter (2014); (Barney & Hesterly 2012); Hedin et al. (2011, pp. 49-61); Sharp (2009, pp. 17-18).

- c) A well-defined research process: CI consists of a research process with a number of well-defined steps or phases, each of which with tools and methods that support them. The CI research methods and tools are related to and build on those of other analytical research processes such as business administration, information science, media studies and general academic research. However, the methods and tools of CI have a specific focus on delivering strategic support; see e.g. Håkansson & Nelke (2015); Hedin et al. (2011); Murphy (2005); Hamrefors (1999); Bose (2008).
- d) Analytic techniques for determining competitiveness: the techniques for competitive analysis come from general research in strategic management and competitive advantage (e.g. Porter (1980); Krogerus & Tschäppeler (2008); Barney & Hesterly (2012)) but have also been further developed in CI literature (e.g. Sharp (2009); Murphy (2005); Håkansson & Nelke (2015)). The purpose of these techniques is to support how raw data and information can be turned into intelligence (i.e. actionable knowledge).
- e) A nuanced understanding of different types of information seeking, information behavior and information quality: CI centers on information – gathering, interpreting, analyzing and reporting. The end result of the CI process is some form of well-founded

⁷ The phases in the phase-based intelligence cycle exist in many variations around a similar theme. In the figure the phases originate from Kahaner (1997) as a simple illustrative example of the

principles of a phase-based model only. For a more recent, but related phase-based process model for CI, see e.g. Pellissier & Nenzhelele (2013).

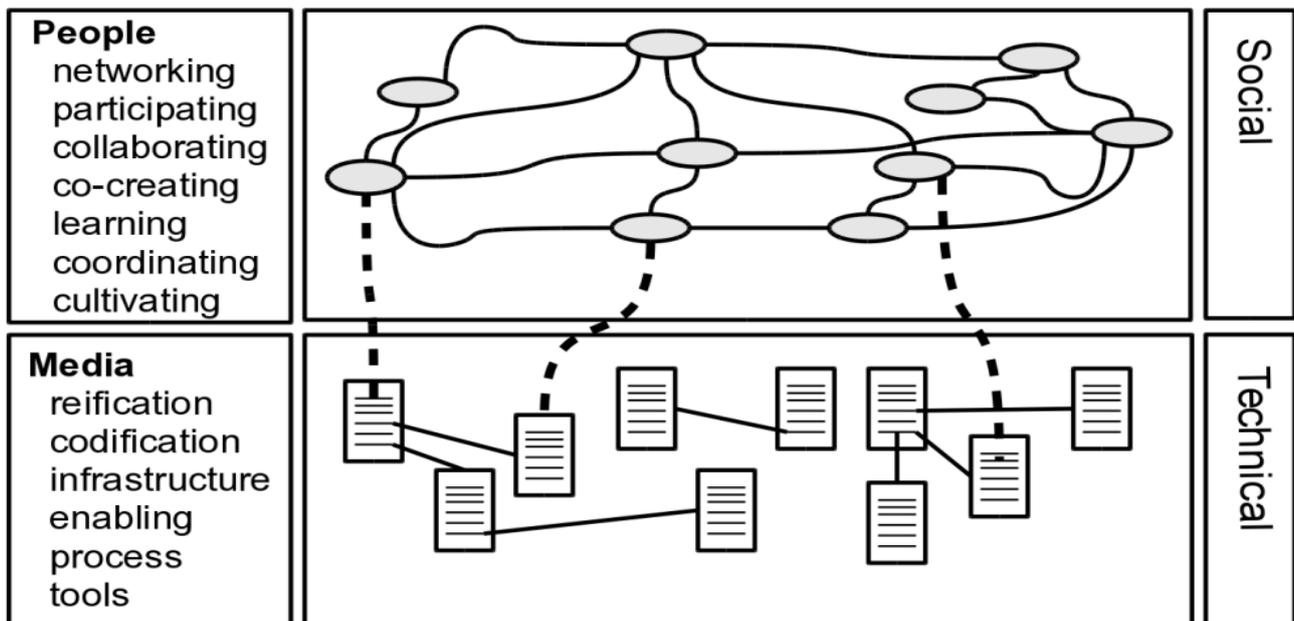


Figure 8 The people-media-people strategy, which is a part of the theoretical foundation of the SCIF.

analysis or recommendation that will be used as decision-support. CI relies on the rich tradition of media analysis from communication studies and information science when analyzing sources and content, see e.g. Murphy (2005); Håkansson & Nelke (2015); Case (2012).

2.6 Theoretical implications for social CI

The introduction of organization models that rely on social technology creates new opportunities for how CI work processes can be designed and integrated in the enterprise. However, for this to be possible new knowledge about this new role of CI in enterprise 2.0 and the kind of tools and services are needed. It is also clear that there are best practices that CI in enterprise 2.0 must learn from to be successful, cf. Li & Bernoff (2011); Bradley & McDonald (2011).

On a conceptual level, the study of social CI and the SCIF contributes with knowledge about how to apply the ideas of enterprise 2.0 and ESSPs in networking organizations. Solutions based on the SCIF should be based on the five knowledge areas presented above and also synthesize new solutions by combining insights from them. As a first step, a new conceptual strategy called the *people-media-people*⁸ strategy, which constitutes a human-centered and socio-technical viewpoint

on the social CI process, is introduced here and illustrated in Figure 8.

The new strategy generalizes and subsumes the two perspectives of personalization (people-to-people) and codification (people-to-document) perspectives, which were discussed previously in Section 2.3.

In the people-media-people strategy the two (partial) viewpoints people-to-people and people-to-document are seen to complement each other with a focus on the dynamic transformational character of knowledge and media, in a way similar to Nonaka & Takeuchi (1995); Liebowitz (2012, p. 1). The two levels of the new strategy can be analyzed further using the dual notions of participation and reification, from the theory of communities of practice (Wenger 1998). The proposed strategy suggests using a network approach to organize the CI process in an open and participatory fashion, based on the theory of network organization (discussed above in Section 2.2). The network approach relies to a larger extent on emergent strategies and strategic experiments, which mean that CI professionals and other contributors are needed in various positions in connection with the social CI work process. For this to be possible, an approach such as the people-media-people strategy is required, which contrasts the traditional view, where strategic choices have been seen as the exclusive responsibility of senior executives.

In an open strategy process, value for the firm is also to a larger extent created by

⁸ The notion of *media* is used here in its most general sense and can be everything from face-to-face and signs on a wall, to webinars,

Internet searches, knowledge bases and smart phone apps, cf. McLuhan (1964).

external resources not owned by the firm in question, such as co-creating customers, innovation communities and surrounding business ecosystems (Chesbrough & Appleyard 2007). In such an open context, the role of social CI is also naturally seen as a more open social knowledge creating process, or a form of learning community, based on theories of social learning (discussed in Section 2.3).

For tools and techniques of the technical media level, these are naturally based on a combination of Enterprise 2.0 (McAfee 2009) and existing tools specialized for CI, which are a necessary core of any CI process. This new hybrid must avoid making tools for experts only. Moreover, the tools should focus on the collaboration worker (Davenport, 2005). Successful examples exist within social technology that social CI can learn from, for example the Wikipedia community that also has proved to be competitive with its traditional alternative Encyclopedia Britannica (Jemielniak 2014; Giles 2005).

3. TENDENCIES IN THE AREA OF COMPETATIVE INTELLIGENCE

The expert interviews have been performed in an exploratory semi-structured way with the intent to let different experts freely express what they believe are the main issues of CI as we entered the age of social networking and social IT. The questions were open-ended and discussed challenges and possibilities of CI in general, and the networking organization and social CI were not emphasized by the interviewer. The data material has here been structured in terms of eight *tendencies* of CI, as shown in Figure 9. The tendencies have been identified after the interviews, as a way to organize similar remarks in the material. In the remainder of this section, we will summarize the views of the experts for each tendency.

3.1 Tendency 1: Changing business models for CI

One theme discussed by several experts was how the business situation for the CI industry is changing, similar to how the business models of the media industry in general are changing. One observation was that in the past, there has been a close relationship between "regular" news media and CI, where public news has been one of the primary sources for the CI companies. Traditionally, these sources had a content-oriented business model based on "paid content" (often a mixture of paid content and

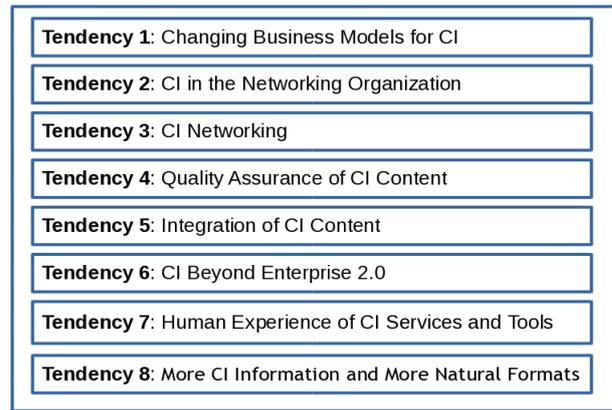


Figure 9 Eight tendencies of the area of CI identified in the expert interviews.

advertising), which has also been discussed by e.g. (Wirtz et al. 2010). One expert commented that such changes have ripple effects along the value-chain leading to how CI services are delivered and what are suitable business models. Several interviewed CI experts pointed out that it is not possible to know exactly what will be working business models and market structures for CI companies in the future, but what was considered certain was that they will change in some way.

A recurring theme in the interviews was also a concern with how new competition from "general Internet services" with a strong end-consumer orientation, such as Google and Facebook would affect the CI industry. (No expert offered a more exact description of what exactly the competing industries were here, and perhaps the situation is somewhat blurred at present.) The "general Internet services" were pointed out to have features and functionalities that are partly overlapping with those services from the CI industry, as well as those of traditional media. In contrast to traditional media, the "general Internet services" have business models that can be said to be context-oriented rather than content-oriented, i.e. their primary value lies in structuring and accessing information that already exists, rather than creating new content (see e.g. Wirtz et al. (2010)), which is similar to how many CI firms operate as well.

One observation was that the CI industry, therefore, needs to look more at how to connect and refine knowledge generated from general Internet services instead of traditional media. One of the experts emphasized how this also means that the CI industry may inherit the uncertainty that surrounds the rapidly evolving business models of Internet-oriented information services that often lack a clear focus and are highly sensitive to change even

for larger companies. Another expert noted that since CI services are relatively expensive services they need to add substantial value "on top" of the Internet-oriented information services to be able to motivate their value for their customers. For example, new CI services could add value by offering different mixtures of more extensive service solutions, adding more analytical power, offering more advanced forms of filtering of information or by making the collaborative and social dimensions of the tools more advanced.

Several experts observed that on the one hand the market need for advanced information services has increased, but on the other hand so has the competition, where different kinds of services compete on a new Internet-based global market, including actors such as Google and Facebook. The challenge in this new situation is how to reach out and connect to the new users and customers on this market. The CI providers must find ways to explain to their future customers what added value their solutions give and how they are intended to use their products, on this new market, was another observation. A related discussion with some of the experts was seen in the fact that on this global market many different notions exist and it can be hard to understand the differences for the non-expert, such as the notions of competitive intelligence, business intelligence, knowledge management and market intelligence and so forth. It was also pointed out that when users of the intelligence services are no longer "CI specialists", it is crucial that they are simple to use and it is easy to understand the benefits.

3.2 Tendency 2: CI in networking organizations

Several of the interviewed CI experts noted that the need for handling information flows is infinitely large today due to the increased availability of information (which is similar to the view taken in e.g. Manyika et al. (2011)). This development was observed to be driven by a combination of increased market-orientation and technological innovation that offer both opportunities and challenges for the CI services.

One expert observed that traditionally the CI analysts have often worked as single self-governed experts or in a small group of specialists. They worked exclusively with CI sources and other related database and news-based services for expert usage. Typically, they have either delivered tailored analysis for

management decision-support, or competence support for the whole firm in the forms of information portals or pamphlets. The question is how that work role will change in the networked organization. When the company is no longer divided into clear-cut functions but works more in interdisciplinary teams, then the CI services for that environment must also become more general-purpose to fit that situation. At the same time, it was noted that the worker in a decentralized knowledge-intensive organization is accustomed to manage large flows of information. Moreover, it was noted that information about the surrounding business environment of an organization is useful in many different places, roles and situations in the organization.

Today, it seems that competitive intelligence as a specialist profession is mostly self-taught, at least in Sweden, according to one of the experts. There are some minor courses or education, but the initiatives lack a larger clear professional context and clear academic identity. According to the expert, this reflects the fact that CI is largely a work behavior that all professionals should have in a knowledge-intensive organization. The CI industry and earlier CI scholars made the distinction between *spontaneous* and *organized* CI, cf. Hamrefors (1999). The point made by several CI service providers has been that they focus on organized CI only. This seems to contradict the fact that most companies focus on spontaneous, "self-taught" CI according to one expert. It was suggested that perhaps the distinction between spontaneous vs. organized CI needs to be revisited, in the light of the networked organization, and, thus, any tool or service that is strictly specialized in nature will not fully fit the new needs.

At the same time, according to several of the interviewed experts, the use of networked work methods is still distant for many larger organizations today. Well-established larger industrial enterprises have close ties between their traditional way of working and their core business idea. For these organizations, it seems unclear how they can become networked without challenging their core business values at the same time, as was noted by two of the interviewed experts. Interestingly, it was also pointed out in the interviews that contracts with major IT enterprise service-providers were thought to be an impeding factor in the transformation to networks. This goes against the idea that IT in general is a progressive force in the context of organizational development.

In this case, it seems that the Internet-centered information providers are considered progressive, but traditional enterprise IT providers are considered impeding. An interesting question here is what more “progressive” alternatives of CI services would look like, if this is true. Can CI solutions and services be a key driving force of growth and innovation that transforms the way organizations work as well? Another discussion centered on how to help large companies that have realized that they are “stuck” in an industrial way of working, and provides CI solutions, perhaps in combination with other organizational development solutions, that would help these companies transform into more networked ways of working.

CI solutions are typically a mixture of automatic tools and the services of human CI analysts. Several of the interviewed CI experts noted how increased automation was a driving force that “pushed” the human experts towards more advanced forms of analysis work. According to some of the interviewed experts, it is unclear exactly what will be the professional role of the CI analyst of the future, depending on which way the technological development goes. For example, will automatic text summarization become good enough so there is little need for humans to intervene at all, or will automatic tools only be used to empower the CI analyst when interpreting and analyzing a text? In other words, the understanding of how the boundaries between technology and human experts work will develop into an important part of the competence of the CI professional. In that sense, the CI professional needs to understand the socio-technical nature of CI, together with content creation and communication.

3.3 Tendency 3: CI Networking

The details of the CI process can vary and external experts may not always have insight into them, according to several of the interviewed experts. However, the CI process was described by several of the interviewees as a chain of information refinement steps where the initial step is usually starting from public sources, such as daily press and trade journals. Intermediate steps are typically done in specialized CI service organizations that aggregate and refine information relevant for different industries or sectors. The final steps are taken within the user-organization that will also use the final information. One of the observations was that larger user-

organizations often have their own specialized analysts that further aggregate and refine the information. The final analysis, that turns knowledge into action, is typically done by the end-receivers of the information in the business processes. Another observation was that the CI analysis chain is mainly motivated by efficiency, but another important factor is to guarantee high quality.

An interviewed expert noted that when the automatic information seeking tools become more powerful the CI analysis chain will be affected in several ways. One suggestion was that the chain may be shortened, where some intermediate steps in the chain can be skipped. For example, the need for internal expert analysts in the user-organization may not always be needed anymore. Instead, information may go more directly from external sources to an end-receiver in the core business process, the interviewed expert noted. Similarly, studies in social networks of research and development also suggest that the role of a single “gatekeeper” is transformed into a network of specialists (Whelan et al. 2013).

One interviewed expert noted that the role of the CI analyst may have to evolve when automatic solutions become more advanced. One suggested adjustment on the human side of CI is to improve the quality of the analysis by adding more insight into it. For this to be possible the analyst must broaden or deepen the analysis somehow. The interviewed expert suggested that the CI analyst must become more of a domain expert as well. Another suggested alternative was to increase the complexity of the analysis and for example look at more variables and larger data sets. A third suggested alternative by an interviewed expert was to use more advanced forms of collaboration during analysis, in order to make the analysis richer and more multidisciplinary. At some point, migrating to a networked work model is probably the way to handle the increasing complexity of the analysis work, which is also what is indicated in Whelan et al. (2013).

3.4 Tendency 4: Quality assurance of CI content

One way to add value to the CI process is to work with information quality (Eppler 2006) in order to systematically raise the level of insight in the analysis and also make the level explicit to the receiving party. This type of work seems

to be at an early phase, at least in Sweden, according to one interviewed expert.

Content analysis of CI is analysis of texts and other media, which is related to methodology from social sciences and humanities. However, the quality of CI should be determined based on its quality for business analysis purposes, similar to business intelligence (BI). For BI it is natural to use the notion of data quality systems since data is normally numerical, where the quality measures can be easily automated. CI is different from BI since it deals mainly with text and media, i.e. with so-called "unstructured" information, or information in free form. It deals with information, in the sense that it is a contextual, coherent message of "potential knowledge" (Eppler 2006, p 22). But even though the content is in free form and its interpretation requires human thought, the analysis includes both qualitative and quantitative approaches, similar to other kinds of methods for media analysis and media evaluation. One of the interviewed experts raised an open-ended question about how exactly this kind of quality assurance should be done, and how it could be communicated in a transparent and understandable way to the receiving party (that may not be a specialized CI analyst). It can also be noted here that to use more rigid quality management systems in the domain of CI and knowledge management "is a dangerous undertaking" due to the unpredictability of knowledge work (Eppler 2006, p. 13).

3.5 Tendency 5: Integration of CI content

The typical knowledge worker that uses CI has many information processing systems they work with. To define and redefine the position and role of a CI service in such an environment is an important question, according to several interviewed experts. For the user of information, it is important to understand the basic function, or added value, of the CI service and how can it be connected with other streams of information. The needs and requirements for tools that can handle information integration is highly dependent on the level of IT sophistication in the organization. Today this level can vary substantially depending on industry and the kind of organizational model that is used. However, several of the interviewed experts pointed out that these issues of integration of services are needed and important. In particular, there is a demand for

CI services to be able to connect to general-purpose information systems in the enterprise, such as intranets and Microsoft Sharepoint. Even though this is possible on a technical level, the solution is often not satisfactory. The general-purpose platforms often lack important functionality that is required to really take advantage of CI content, such as advanced search functions and metadata filtering mechanisms.

Information integration has increased in importance for a more networked organization, cf. Grey (2012). The division in a more decentralized organization is more self-organized, continuously changing and informal. Therefore, there is no way of knowing in advance who will need what information. However, the usages of social media services are still also poorly integrated in many organizations today, according to several of the interviewed experts. There was a belief of these interviewees that the integration will continue, but the exact way is still unclear. One tested alternative has been to introduce social enterprise software with similar functionality found online, but that has not worked well according to several experts. On the other hand, if employees start groups on external services, such as Facebook, the information becomes even more scattered for the organization, which was another observed problem.

3.6 Tendency 6: CI beyond enterprise 2.0

The basic principles of web 2 and social media are not really enough anymore, according to several interviewed experts. Something beyond the vision of enterprise 2.0 (Mcafee 2006) is needed, but exactly what was not clear to them. Early attempts of Enterprise 2.0 that simply introduced social software in organizations have not worked well in the experiences of these experts, which is supported also by e.g. Li & Bernoff (2011); Bradley & McDonald (2011). The problem is not new, earlier attempts with so-called groupware as well as earlier attempts of knowledge management systems show even more problems in their approach (Koch 2008; Levy 2009). It seems that solutions from enterprise 2.0 solve some of the problems of earlier methods, but perhaps not all. There seems to be a gap between technical feasibility and the social requirements that may simply be too large for certain organizations (Ackerman 2000).

Organizations are on different levels of maturity with regards to both CI and the usage of advanced social technology, according to several interviewed experts. It seems that some organizations may be advanced in one of two ways, either in their usage of CI analysis in their work (cf. Hedin et al. (2011)), or in their use of social technology (cf. Li & Bernoff (2011)). However, it still seems uncommon that an organization is advanced in both ways at the same time, at least from the experience of some of the interviewed experts. This indicates that ways to combine advanced CI methods and enterprise 2.0 is still an open question.

Another phenomenon that was noted by the interviewed experts was that organizations that are not so technically advanced are in a similar situation today that, for example, telecommunication companies were in the 1990s. But the difference is that the technological tools they require are more mature today, whereas the tools in the 1990s were tailored by the organizations themselves. To guide these organizations forward, more support is needed on the technical side and the solutions must be made simpler and more attractive. On the one hand, the clients cannot be assumed to be that visionary concerning technological choices, here they need finished solutions. On the other hand, these same organizations may be mature when it comes to knowledge work and CI competence, either organized or spontaneous, compared to the technologically advanced industries.

3.7 Tendency 7: Human experience of CI services and tools

The fact that CI services and tools simply "function well" does not give it a competitive edge anymore, according to several of the interviewed experts. The basic technological problem is in a sense solved according to the experts, and most providers build their solutions on these solutions. What is still not solved is how to design the experience for CI, cf. Forlizzi & Battarbee (2004). Attention is a scarce resource for CI professionals today, as one interviewed expert pointed out. The way to require minimal effort is to have an experience design that gives instant and non-intrusive access to information in a way that is attractive. In a similar way, the value a CI service gives to an organization must be quickly understandable, for it to get any attention at all in the first place. It is a daunting task to make productivity tools such

as CI tools that demonstrates direct value. Tools that give the organization as a whole value, rather than the individual, can have values that are not instant but pay off in the long run. Typical long term assets can lead to a better reuse of knowledge, better collaboration, better use of experts in the organization and so forth. However, neither of these organizational assets are "instant" in nature. It will be crucial to bridge this and make these values explicit somehow, according to one interviewed expert.

The expected experience of the users of CI services is often influenced by their usage of consumer services such as Google and Facebook, according to several of the interviewed experts. An observation was that this places the bar fairly high for experience design of specialized CI tools such as knowledge portals. In general, for all knowledge work, this is problematic because it is expensive and solutions risk being specific for a particular organization, cf. (Davenport 2005). Furthermore, it can be hard to get permission to study CI processes at all, due to their often sensitive strategic nature according to some of the experts. Users also need to understand that the consumer services online and tools within an organization have different purposes and functionality, something that is not obvious to the non-technical user. Organizational systems also have a hard time keeping up with updates of systems and hardware in the same way as the individual consumer. This limits the technical possibilities in using cutting-edge technology such as the latest graphical code libraries for web browsers, according to some of the interviewed experts.

Younger people also tend to come with new behavior and are less patient with poor design experience, according to several of the interviewed experts. No matter what the order from the superior has been, they tend to use their own consumer services to solve problems instantly instead of using the organizational solutions. Exactly what this change stands for and its universality is a question for debate, but in practice it seems to be a problem that needs to be dealt with somehow. On a positive note, the same interviewed experts said that they learn a lot from looking at how younger people use technology, both in companies and in their private lives. In that sense, the consumer market seems to lead the way when it comes to experience design, and productivity tools follow, whereas at an earlier stage when the focus was on technical issues, the roles

were reversed. This seems to fundamentally change the situation for the development of specialized tools such as for the CI industry.

3.8 Tendency 8: More CI information and more natural formats

The amount of information that the CI professional needs to handle seems to continue to increase, according to several interviewed experts. In general, this increase of information is "unstructured" in the sense that it comes from many different sources, formats and has different types of content. However, from a human and social perspective it is rather that the new formats are more *natural*, a perspective we prefer (Ackerman 2000). This naturalness is of particular importance in relation to collaborative work, as pointed out by Kock (2004).

Today, many organizations have to use substantial effort to handle the increase of information volumes (Manyika et al. 2011). For the CI professional, increased text volumes means less time to spend on each information item, on average. So, there is an increasing need for succinct material in "small chunks", according to one interviewed expert. Another way is to rely more on advanced forms of metadata or other structures that classify and filter material for the CI professional. A general question is how the value of information can be improved on the level of the individual, as one interviewed expert noted. This relates to questions of how to avoid information overload (Eppler & Mengis 2003).

The increase of information is also a consequence of increase digitalization in general, cf. Castells (2010). This means that more information is easily accessible as a basis for decisions. The goal of CI is to understand the surrounding world of the organization as much as possible. With more information available in digital form, it should be possible to further increase the level of predictive accuracy in the CI analysis. Due to the amount of information, new solutions will definitely have to rely on advanced forms of automatic data analysis combined with expertise in data science (Davenport 2014).

4. EXTRACTING SOCIO-TECHNICAL THEMES FOR SOCIAL CI

The tendencies identified above can (and should) be used as a basis for any further development of social CI. To make the expert knowledge more manageable, the tendencies

are viewed here as a general discussion about *socio-technical design requirements* concerning the CI work process, which is viewed as an STS. As pointed out by Whitworth (2009), requirements can exist on several levels. In the context of social CI, the chosen level for requirements is the socio-technical level using the SBT perspectives model, according to the discussion in Section 2.1.

Moreover, since the tendencies are fairly general, they are not so easily seen as design requirements as they are discussed above. Therefore, in order to extract the most relevant parts and make the data material more succinct, six so-called *socio-technical themes* have been deduced and selected from the data material, two for each perspective in the SBT perspectives model, as illustrated in Figure 10.

Each theme constitutes a cluster of relevant socio-technical design requirements within the context of social CI. The identified socio-technical themes can be described and motivated as follows:

- a) Network coordination: Using a CI network means that we deliberately minimize hierarchical control. However, a key to successful mass collaboration is still to have an effective coordination of the network, see e.g. Bradley & McDonald (2011). Therefore, network coordination is critical for the social CI approach. In particular, the style of coordination of a CI network must balance the need to work in a self-managed style, with the demands on the CI work process to deliver results in accordance with its given tasks.
- b) Collaborative analysis: Collaborative analysis is a way to both speed up the analysis part of the CI work process but also obtain results on levels not possible using solitary CI experts. Collaborative analysis may include using techniques such as brainstorms, seminars, work

Perspectives	Themes	
Structure	Network coordination	Collaborative analysis
Behavior	Creative thinking	Visual communication
Technology	Engagement	Complex information

Figure 10 Socio-technical themes structured using the SBT perspectives model.

sessions, feedback, peer-reviewing and so forth. Moreover, when the topic covered is getting more complex, mixing expert capacities of a multi-disciplinary team can potentially generate insights on a higher level than single discipline teams can achieve.

- c) Creative thinking: The reason why social learning and community-based techniques are so useful for more advanced forms of knowledge work is because they support creative thinking. However, for this to work the individual must also be motivated and prepared to focus on creative thinking. There are various techniques that could be used here. Common to them is the fact that they do emphasize divergent and lateral thinking, as well as using means other than those that are strictly intellectual such as beliefs, values, emotions and narratives. In CI this is useful when we want to make original contributions in all aspects of CI such as making interpretations, drawing consequences, or arriving at a novel analysis.
- d) Visual communication: Visual techniques are one of the main tools to communicate complex information and transfer holistic awareness of a non-linear situation. This theme emphasizes education and facilitation so people in the CI community can communicate visually with each other. It is important both to be able to create messages visually and to receive and understand visual presentations of information and social data.
- e) Engagement: A key to creating a well-functioning CI network is to create a social and technical platform that engages people for them to join and contribute. The voluntary character of the networking work style puts demands on making the CI platforms attractive, easy-to-use and to include instant intrinsic and extrinsic reward systems.
- f) Complex information: To be able to handle increasingly more complex

information is and will continue to be an important aspect of the CI work process. The increase in complexity comes in various forms: the amount of available data is increasing ("big data"), the available data is unstructured ("noise"), the covered topics are becoming more advanced, the topics are changing more rapidly, and world changes are becoming harder to foresee, making the "unknown unknowns" more important to look for. Moreover, the media format of information is no longer restricted to numbers or text only, but comes also in the forms of photos, movies and sound and other formats closer to real life.

The themes are derived from the tendencies identified in the expert interviews. Hence, these themes are not the only possibilities, and it is expected that others can be added as well. In particular, when customer organizations using CI are studied in more detail, new themes will most likely occur. However, the notion of socio-technical requirement themes is likely to be useful there as well.

5. SOCIO-TECHNICAL VALUES OF SOCIAL COMPETITIVE INTELLIGENCE

The socio-technical themes are support for which areas of functionality the socio-technical design should focus on, based on the empirical experiences of the experts. However, the theoretical foundation of social CI points to other, more general, related aspects that social CI needs to be considered as well. In order to facilitate using theoretical results in socio-technical analysis and design, a coherent format is called *socio-technical values*⁹. These values contain value propositions intended to capture basic human needs and systemic benefits mainly from a utility perspective. The socio-technical values are typically related to needs (or desires) on a social level, useful for both socio-technical analysis and design.

Three areas of study have been selected as the basis for extraction of the socio-technical values of social CI, with one study for each of the perspectives of the SBT perspectives model. The three selected areas of study are *collective intelligence*, *the networking individual* and

⁹ A more detailed discussion of the notion of value is outside the scope of this article. However, we refer to a good discussion about value-in-use and co-created value in the context of service-dominant logic (Vargo & Lusch 2004) and the importance of human value in the context of decentralized work (Malone 2004, pp. 170-182). Whitworth

(2009) uses the notion of socio-technical performance requirements in the WOSP system, but makes no explicit reference to the notion of human values. Another perspective on human value in relation to computing are questions of moral and ethics, which are not (so much) in focus for social CI at this point (Friedman et al. 2008).

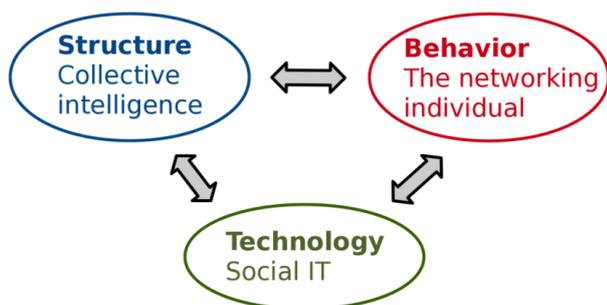


Figure 11 The three areas of study for socio-technical values related to the SBT perspectives model.

social IT, which is illustrated in Figure 11. The remainder of this section briefly recaptures the relevant parts of the theories and formulate a map of socio-technical values for social CI. For a more detailed description of the areas see the Appendix.

Collective intelligence. Loosely organized groups can work together in surprisingly effective ways when given suitable networked support. This phenomenon can be described in terms of *collective intelligence*¹⁰. Malone et al. (2010) have identified a relatively small set of building blocks, or *genes* that are combined and recombined to support collective intelligence. Similarly, Bradley & McDonald (2011) have investigated the new way of working that comes with the use of some form of social technology in the organization. Bradley & McDonald (2011, Figure 4-1, pp. 41-42) introduce a collection of characteristics where collective intelligence (they use the term community collaboration) will be most beneficial to use. The socio-technical values of social CI for the structure perspective use a combination of the genomes and genes of Malone et al. (2010) and the characteristics for community collaboration by Bradley & McDonald (2011).

The networking individual. Tapscott (2009) (and others), have studied the Net generation born between 1977 and 1997 that have "grown up digital" and found that they have distinctly new behaviors where social technology is an important factor (Tapscott 2009; Palfrey & Gasser 2008). These new behaviors can actually be seen more or less with most people today, so we will use Tapscott's result as an indicator of a more general change in behavior triggered by the fact that social technology has become a general purpose technology. Of course, one should also be careful not to oversimplify the complexity of new behavior

(Jones et al. 2010) but there are some interesting indicators of how the CI process should be adapted to follow the new behaviors related to social technology. Tapscott has described these new behaviors in terms of eight new norms, which summarize behaviors that are different compared to earlier generations. These eight norms have been selected for the socio-technical values of the behavior of social CI.

Social IT. It seems that computing reinvents itself approximately once each decade, following technological development. At each stage the complexity of the system seems to push the level of analysis upwards. According to Whitworth (2009), the latest stage is a move from the level of human-computer interaction to the social computing level, in other words, to the level of the socio-technical systems, and thus social IT. One way to approach socio-technical design and social IT is to understand it in the form of *architectural patterns of social spaces* (Wodtke & Govella 2009). Patterns are systematic ways to describe problems or needs that occur over and over again, followed by a general solution to such situations (Alexander et al. 1977). In particular, Wenger (1998, pp. 225-240, Figure 10.3) describes how identity and belonging are important aspects of learning. The socio-technical values of the technology perspective have been extracted from a patterns catalog for social interfaces (Crumlish & Malone 2009) combined with the principles of the learning architecture from Wenger (1998).

5.1 Extracting a socio-technical value map for social CI

Socio-technical values are intended to be used to capture specific needs or wanted benefits of individuals or the community. Similar to the socio-technical themes, the values capture clusters of possible requirements of an STS. One way to look at socio-technical values is in the form of relevant and generic patterns of STS properties, similar to how the notion of (design) patterns for design solutions (Alexander et al. 1977). The socio-technical values reported in the surveyed literature have, in fact, all evolved in an emergent fashion similar to the emergence of (design) patterns. Moreover, the socio-technical values form a kind of "language" that becomes a common ground for the socio-technical systems in

¹⁰ Collective intelligence is closely related to the notions of mass collaboration (Tapscott & Williams 2008), enterprise 2.0 (McAfee 2006b) or crowd sourcing (Doan et al. 2011). We prefer the term

collective intelligence, since it focuses explicitly on the notion of "intelligence" that comes from various forms of collaboration, emergent or planned.

Perspectives	Values			
Structure	What	Who	Why	How
Collective intelligence	Create Decide	Crowd Hierarchy	Money Love Glory	Collection Collaboration
Behavior	Moral	Delight	Task	
The networking individual	Freedom Integrity Scrutiny	Entertainment Customization Speed	Collaboration Innovation	
Technology	Personal	Connectivity	Communication	
Social IT	Identity Engagement Presence	Relationships Reputation Keeping up Locality Community Management	Broadcasting Gathering Feedback Sharing	

Figure 12 A socio-technical value map for social CI. The values are sorted using the BST perspectives and the selected areas of study. Within each perspective they have been further organized in groups (the bold face headings in the Values column).

general, and social CI in particular. Here, such a language is called a *socio-technical value map*¹¹.

A socio-technical value map for social CI has been extracted from the selected studies discussed previously in this section and is shown in Figure 12. The collection of socio-technical values in the map are divided using the SBT perspectives model. In general, socio-technical values can be *any* kind of relevant characteristic of the studied system within its three dimensions, some are useful as a basis for specific socio-technical requirements while others are more holistic in nature. The socio-technical value map is intended to be used to systematically understand the underlying properties and forces that generate the socio-technical systems. The specific values have been discussed in relation to the selected studies above, and hence will not be discussed further here.

6. MODELING METHOD FOR SOCIAL COMPETITIVE INTELLIGENCE

Generally, conceptual modeling helps to structure requirements in order to reduce complexity and thereby make them easier to understand, discuss and realize. The requirements and models of a system must follow the level of analysis of the modeled system. On the socio-technical level, added requirements on the social (i.e. communal) level must be handled well (Whitworth 2009). Six socio-technical models are suggested for social CI, as illustrated in Figure 13.

The modeling structure has been deduced from the theoretical foundation of social CI and insights from the expert interviews, and can be described and motivated as follows:

- a) Community model: Besides being a task-driven work process, the CI network is also a collaborative community that must be coordinated and cultivated in terms of meetings, interactions and relations. Various contributions exist for how to manage a community, for details see e.g. Bradley & McDonald (2011); Li & Bernoff (2011); Bacon (2012). A community model should at a minimum contain a purpose statement, a purpose road map and schedules for coordination and community activities.
- b) Process model: The CI network has a specific task-related purpose. In this sense, the CI network can also be seen as a form of loosely organized work process, but the purpose and the result of the CI work process must be carefully and clearly stated. This means that a well-defined CI-process must be defined that facilitates, makes the results predictable and assures quality in a suitable way.
- c) Role model: For people in the CI network, community roles can be identified, both formal and informal. A basic categorization of online community roles is: moderators and mediators, professionals, general participants, provocateurs, and lurkers (Preece, 2000). In the context of social CI this could, for example, be: CI coordinators, CI professionals,

Perspectives	Models	
Structure	Collaboration	Task
Structure	Community model	Process model
Behavior	Role model	Work phase model
Behavior	Role model	Work phase model
Technology	Social features model	Information model
Technology	Social features model	Information model

Figure 13 Six socio-technical models for social CI related to the SBT perspectives.

¹¹ The corresponding notion for patterns is a pattern language (Alexander et al. 1977). Malone et al. (2010) uses the notions of genes

and genomes for collective intelligence, but we prefer a less metaphorical notion in the context of social CI.

participants, external experts and information users. Furthermore, a CI community as an enterprise is normally connected physically as well as a virtually.

- d) **Work phase model:** The CI work process consists of a series of steps that are often referred to as the intelligence cycle. A typical series of phases are: plan and prioritize, capture, manage, analyze and communicate and follow-up. Exactly how these phases are implemented depends on the purpose of the CI operations, such as if they are ad hoc studies, regular processes or continuous (specific or unspecific) scanning, see e.g. Håkansson & Nelke (2015). For social CI, they will probably often be composed in partially new ways.
- e) **Social features model:** The social features model is a model over what kind of social functionality should be supported by the technological tools and platforms. This can, for example, consist of information architecture patterns for social spaces. It is important to note that this model is only indirectly related to the task model. Instead the main focus here is on how to support users as social beings. That is, social features are various mechanisms that support meeting, interaction and relations between people in the community.
- f) **Information model:** An information model is required for social CI and describes what kind of information formats, flows, sources and metadata the process uses. There are many variations but the information model can, for example, include a world model (e.g. actors, topics, events and trends), a content-related model (e.g. authors, source and content classifications), social data (e.g. rating and comments), a source list, links and reference mappings, personalization rules and a controlled vocabulary.

The proposed modeling method of social CI is that these models are used in combination with insights and analysis based on the socio-technical themes and the socio-technical value

map. A suggested basic work method for modeling of a CI STS is:

1. Select and study how socio-technical themes apply to the STS.
2. Create socio-technical models for the STS, with a focus on selected themes.
3. Refine the socio-technical models until they agree with the corresponding socio-technical values.
4. (*Optional design stage*) Create prototypes or live implementations of the STS based on/integrated with the models.

Evaluate the relevance of the socio-technical models of the STS. Update, refine and reiterate steps 1-4 until the evaluation is satisfactory, or until requirements change.

The modeling method can be used either for analysis only, or for analysis and design (using the optional design step 4). An illustration of the modeling method of the SCIF is shown in Figure 14.

The modeling method is intended to be used in various ways as a conceptual tool for analysis and design of CI STSs, where relevant parts of the framework can be used as needed. The relation between models and design prototypes can be more or less integrated, where prototypes and artifacts can be seen as a part of the model or not. There can also be a close relationship between the behavior and structural model in practice. However, it is important to separate the two social aspects in some way, similar to how the perspectives are separated in a social network analysis for good reasons, cf. Cross et al. (2006).

A strength of the method is the close socio-technical connection between, on the one hand, the models, and, on the other, the theoretical and empirical findings. Thereby, the socio-technical values and requirements naturally become a point of focus for the whole analysis and design process. In this way the modeling is kept “on target” and focuses on aspects that are relevant from a socio-technical perspective. Furthermore, the SCIF is a conceptual toolkit that leaves maximal flexibility which allows for adaption and tailored usage, which is important on the socio-technical level to handle vagueness and complexity of requirements.

7. CONCLUSIONS

In this article, a new notion called *social CI* has been introduced. Social CI identifies a new knowledge and research area around methods

and tools for competitive intelligence in the networking organization.

During this investigation it has become clear how the purpose of social CI is to facilitate what Davenport (2005) calls collaborative knowledge work in the realm of strategic management. Four bodies of work converge in synthesis with social CI:

- a) established methods from the area of competitive analysis and strategic decision making;
- b) knowledge and know-how concerning collaborative knowledge work in general;
- c) use of collective intelligence to increase the level of performance;
- d) use of social technology as a key enabler for collective intelligence.

From a theoretical perspective, further studies of social CI can be motivated by the fact

that collaborative knowledge work, herein understood as collective intelligence, is the most advanced form of knowledge work, and thus potentially will deliver the most sophisticated results. An important assumption is that social technology is the enabling technical platform needed to achieve such intelligence in a systematic and replicable way.

The selection of interviewed experts in the presented work has focused on the viewpoint of the suppliers of CI. Two separate interview studies have also been performed with focus on the CI analyst in various domains and organizations that will be presented elsewhere. A third possible group of expertise is professionals with experience in knowledge networks, communities of practice and use of social technology in the enterprise, that would complement the results found here. The intention of the socio-technical themes is that they can be used to adapt the basic framework

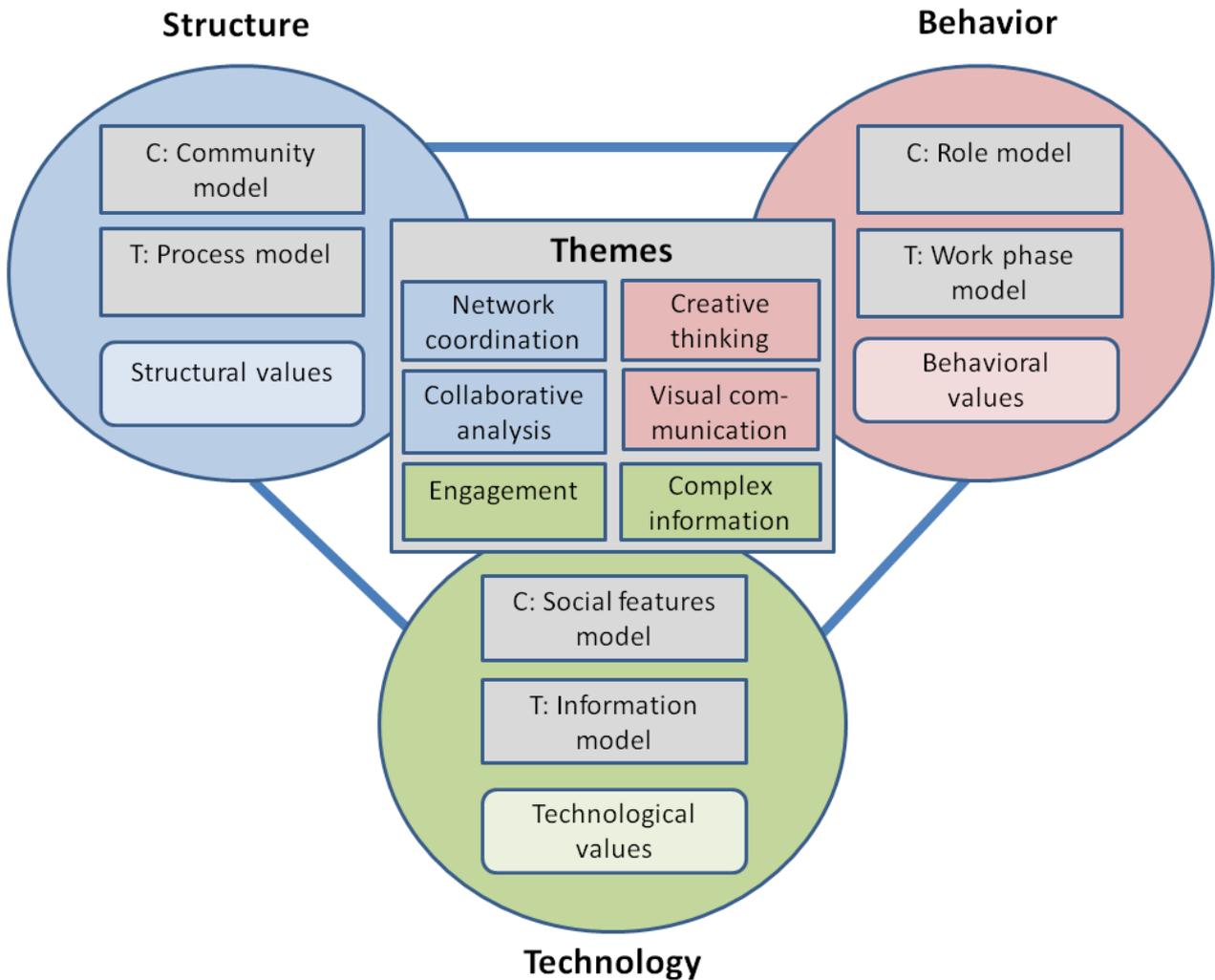


Figure 14 Illustration of the modeling method of the SCIF. The picture shows how each BST perspective has one collaboration model (C) and one task model (T). Each perspective also has a collection of socio-technical values (shown in detail on the socio-technical value map). The socio-technical themes are also related to different perspectives (illustrated by the color code and position in the figure).

depending on new insights from further interviews and other experiences. Moreover, the semi-structured interview technique also has its built-in limitations. Another interesting way to proceed is to use creative workshops to further design and develop new work methods for social CI.

The presented SCIF is to the best knowledge of the author a novel approach, where the closest alternative is a framework proposed recently by Jin & Bouthillier (2013). As discussed above, there are various details that differ but there are several points where sharing of results should be possible in forthcoming work, such as the use of Activity Theory by Jin & Bouthillier (2013) versus the use of a socio-technical viewpoint in the SCIF. A major strength of the proposed SCIF is that the field of social CI is placed in a coherent conceptual frame at the socio-technical level of analysis, thus making the issues at hand more manageable. Another strength of the SCIF modeling method is that it explicitly distinguishes between task-oriented models and collaboration models, which relates social CI to the dual view of knowledge work by Davenport (2005). In subsequent work, the SCIF will be used as a platform for development of methods and tools for social CI.

Finally, a motivation for the presented work has been to create a conceptual platform for forthcoming work within the area of social CI. The SCIF fulfills this objective in a way that is on the one hand flexible enough to be used in various settings, and on the other hand sufficiently concrete to support further practical work with methods and tools for social CI.

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9. APPENDIX

This appendix contains an overview of the selected areas used for the socio-technical values map of social CI in Section 5.1

9.1 Collective intelligence

The socio-technical values of social CI for the structure perspective uses a combination of the genomes and genes of Malone et al. (2010) and the characteristics for community collaboration by Bradley & McDonald (2011). This section contains an overview of these two sources.

Malone et al. (2010) have identified a relatively small set of building blocks, called *genes*, which are combined and recombined to support collective intelligence. The genes are organized as answers to four questions, called *genomes*:

- a) What. The first question to answer is what is being done? Two genes are identified: *create* and *decide*. The create gene is used when the actors in the collective intelligence system should generate something new. The decide gene is used for the evaluation and selection of generated alternatives.

Typically, a complete genome needs both a create part and a decision part.

- b) Who. Malone et al. (2010) make a distinction between activities done by a *crowd* or a *hierarchy*. The crowd gene is preferred in situations where many people have resources and skills needed, or you cannot tell in advance who has these resources and skills. A major gain when using a crowd is that you can tap into a larger number of independent competences as a collective resource.
- c) Why. There are three identified genes for why people participate in a collective intelligence system: *money*, *love* or *glory*. Financial gain (the money gene) can be in the form of direct payment, or increased likelihood of future earnings. Intrinsic enjoyment, socializing or feelings of contribution to a bigger cause are examples of the love gene. Recognition from peers or others is the third gene called glory.
- d) How. In collective intelligence systems hierarchies are still used, but the novel part is their use of crowds. A main determinant for the work is whether members can make their contributions and decisions independently or not. Four genes of how crowds perform using the create or decision genes are identified: *collection*, *collaboration*, *individual decision* and *group decision*. The collection gene occurs when members contribute independently. The collaboration gene occurs when members work together to create something that cannot be divided into independent parts

In the social organization community collaboration will work best when the following characteristics are met (Bradley & McDonald 2011, Figure 4-1):

- a) Broad observation. Community collaboration is appropriate when larger groups of people can contribute with different complementary pieces of knowledge in a work process. A gain with this approach is that it gives broader understanding of the studied phenomenon and is more likely to find innovative solutions. Community observation tends not to lead to the same depth of analysis as work done by

recognized experts and these should be seen as complementary ways of working.

- b) Independence. The work method in community collaboration should be structured so that participants can work and contribute independently of each other. It is typically done in a more free-form where people can choose freely when, how and what they contribute. The participants should also be able to enter and leave the process freely. However, from an organizational point of view it is important that the community is kept connected to the organization.
- c) Complementary information. Community collaboration is socially adaptive and emergent in nature. It is typically focused around some focal point, such as a "shared interest, an idea, a concept, an opinion, a product design, a political position, a common experience, or a medical condition" (Bradley & McDonald 2011). The contributions naturally will be of a complementary nature that cannot be predicted in advance.
- d) Open information. A community builds on the fact that contributions can be freely shared. If contributions are of a sensitive nature, a community approach will not work very well. In a community, the contributions that will be put forward will typically gravitate towards information that people have self-interest in sharing.
- e) Collective wisdom. A strength of a community is that the wisdom of people with expertise and experience can easily be put forward when it is needed. Using a transparent work process means that everybody can put forward their views at any particular point.
- f) Direct. Community collaboration is good at getting contributions directly from those who are affected.
- g) Diversity. In a community that is typically multidisciplinary, it is often hard and not even desirable to find consensus on most questions. Instead community collaboration embraces the fact that there are different opinions.
- h) Innovation. The broad emergent and diversified approach taken in

community collaboration may lead to innovative idea generation. When people come together from different backgrounds on a common theme, new associations and ideas will naturally come to light.

9.2 The networking individual

Tapscott (2009) has described new behaviors related to social technology and wkinomics in terms of eight new norms, which summarize behaviors found in the Net generation that are different compared to earlier generations. These eight norms are used here as indicators of a general change in behavior, suitable as a basis for the socio-technical values in the behavior perspective of social CI.

The eight new norms of *the networking individual* can be described briefly as follows:

- a) **Norm 1: Freedom.** The networking individual revels in freedom – freedom in what she consumes in what she learns, in her relation to work and career, when to be social and with whom, and in how she selects her sources of information. She expects to be able to choose when and where to work. Often she prefers to integrate social and work life, and uses technology as a way to avoid traditional office space and hours.
 - b) **Norm 2: Customization.** For the networking individual it is essential that the product or service has the potential to be personalized, even if she will not use that functionality in the end. Personalization has more to do with experience than with functionality. She prefers media services similar to the Internet itself, where they can consume content when they want to, such as YouTube, rather than traditional television channels. For the networking individual, IT gadgets have also become fashion accessories.
 - c) **Norm 3: Scrutiny.** The networking individual is accustomed to dealing with different levels of uncertainty of information. She has developed a new sensibility of how to tell fact from fiction and has a high level of awareness about the world. The networking individual uses digital technology to find out about the world, rather than traditional media. She
- "trusts but verifies" – facts are double-checked also when they come from traditional authorities such as teachers, doctors, politicians or journalists. As a consumer, she always searches for information thoroughly before she consumes, and she trusts few claims from companies or services at face value. She is aware of known facts and demands that companies and services become more transparent.
- d) **Norm 4: Integrity.** The networking individual cares about integrity-based values such as: being honest, considerate, tolerant, transparent and fulfilling commitments. She wants societal institutions to behave honestly, considerately, accountably and openly. The new behaviors are perhaps in part self-centered, but in part it is only a new way to approach everyday life. The networking individual often has little problem with illegal ways to obtain information products, which she may motivate with the claim that she has payed indirectly in some other way.
 - e) **Norm 5: Collaboration.** The networking individual collaborates whenever it is possible. For the networking individual it is natural to use virtual meeting places for informal chat and contacts at work, instead of the coffee machine. She likes to collaborate online both for pleasure and efficiency. As a consumer, she is willing to collaborate with the producing organizations to develop better goods and services. At work, the networking individual wants to feel that her opinion counts. The networking individual mass collaborates in many aspects of her life. The collaborative work style is informal and often goes beyond the borders of traditional team work.
 - f) **Norm 6: Entertainment.** For the networking individual work should be fun. Thus, if an organization wants to attract the networking individual, they should make the work intrinsically satisfying. The new digital infrastructure built around the Internet also intertwines professional support and amusement. The historically strict border between private and professional consumption is

not felt by the networking individual. She has no problem with blurring of roles, which can be seen as the next step after what has been called *consumerization of IT* (Gens et al. 2011; Harris et al. 2012).

- g) **Norm 7: Speed.** The networking individual expects quick responses from everyone, everywhere, at any time *by default*. They expect humans to react at a speed similar to automatic services such as search engines. If a peer does not respond quickly they get annoyed and worried that something is wrong or that they are ignored. E-mail is often used for dialog with organizations, but in close relations instant messaging may be preferred to get quick responses. The networking individual typically prefers continual feedback from employers.
- h) **Norm 8: Innovation.** The networking individual is accustomed to and appreciates continuous innovation. She wants to have the latest version of a product or service whether it is to improve service quality, or simply for social status and self-image. In the workplace this means they prefer work processes that encourage creative collaboration. The networking individual is impatient with bureaucracy; instead she wants the work environment to be leading edge, dynamic, creative and efficient.

9.3 Social IT

The socio-technical values of the technology perspective have been extracted from a patterns catalog for social interfaces (Crumlish & Malone 2009) combined with the principles of the learning architecture from Wenger (1998).

In the following list, groups of patterns for social interfaces are listed extracted from Crumlish & Malone (2009):

- a) **Engagement.** Working with social IT is similar to planning and hosting any other social event. You need to think about how to invite people, create an interesting mix and keep the interest alive. It is important to identify and engage the early adopters and use them to spread the word and help development.

- b) **Identity.** Social IT is concerned with people – who they are, how to know them, what they contribute with. When people use social IT they want to present themselves and make personal collections. They also want to be able to connect to other social sites and interconnect with other social networks.
- c) **Presence.** It is critical that social IT is perceived as a space that is inviting and "full of life", which will attract people to spend time there. In a digital environment, presence can be defined as various ways of "leaving footprints in the digital sand" (Wodtke & Govella 2009).
- d) **Reputation.** People who take part in social structures expect to develop social reputation and learn about the social status of others. However, the design of support structures for inventiveness must include a delicate balance between making success and thus also failure explicit.
- e) **Gathering.** Collecting is a basic human need. This behavior can be exploited as a driving force of social IT, such as saving, favorites, tagging and displaying. Collecting gives people a tool to organize and make sense of their experiences. In a social space, where the basic structure is highly dynamic, gathering becomes a central functionality to introduce a level of order.
- f) **Sharing.** Social IT should always support sharing so that people can access information from one another. This can be used both for informal, private sharing and for more systematic public "word of mouth" that markets new ideas in a viral way.
- g) **Broadcasting.** People in digital social spaces often want some form of individual arena that they can use to broadcast ideas to larger audiences in a natural way.
- h) **Feedback.** Feedback is a simple and effective way to engage people in a community. Having an opinion is an important first step in how to engage people in a community.
- i) **Communication.** There are many different modes of communication, one-

to-one, one-to-a-few, one-to-many, and many-to-many. For social IT, these modes should be used in a well-balanced mix.

- j) **Collaboration.** Support of collaboration is an important feature of social IT. There are many different modes of collaboration that can be supported in different ways, for example formal vs informal, small vs large groups, temporary vs long term relations, and so forth.
- k) **Keeping up.** In a social space where it is easy to share and broadcast it is also important to support how to follow and keep up with new events.
- l) **Relationships.** The possibility to see and connect with other people is an integral part of a social experience. Not all acquaintances are equal, some have strong ties, and some have weak ties. Social IT should support different modes of relationships, for different situations and needs.
- m) **Community management.** A community needs rules and norms that guide them in how to behave. In social settings norms are more important than rules. To enforce them, community management must be visible for, and actively participating in, the community.
- n) **Local connection.** People are social beings that like to meet face-to-face. Social IT is most effective when combined with real life events, locations and contacts.

Wenger (1998) describes how identity and belonging are important aspects of learning. For a learning architecture to support identity formation in a social learning system three modes of belonging should be met (Wenger 1998, Figure 10.3):

- a) **Engagement:** achieving a sense of belonging by active involvement in processes of negotiation of meaning. This can include shared histories of learning, relationships, interactions and practices.
- b) **Imagination:** achieving a sense of belonging by creation of images of the world and seeing connections by extrapolating from experience. This can include images of possibilities, images

of the world, images of the past and the future, and images of the community.

- c) **Alignment:** achieving a sense of belonging by coordination of energy and activities in order to fit into broader structures and joint contributions. This can include discourses, coordinated efforts and energy, finding common ground and creating boundaries.