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DEVELOPING SOCIAL RESPONSIBILITY OF MEMBERS OF ISD PROJECT TEAMS

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Abstract

Information systems development (ISD) affects individual workers, organizations (e.g., computerization of work places and quality of work) and the surrounding society (e.g., reliability and safety of software). It is relevant to consider social responsibility of those who design and implement information systems (IS) because of these effects of ISD. We combine results of studies on bases of orientations of ISD team members and the literature on responsibility to provide ISD team members with guidelines. These guidelines aim to develop team members' sense of responsibility by focusing on the ISD process, the product itself and this product in the practice context. The guidelines are finally linked to IS education and practice of ISD, and recommendations for future research are presented.

Keywords: information systems development, project teams, social responsibility, diversity.

# 1	INTRODUCTION

Information systems development (ISD) has many types of impacts on lives of involved stakeholders. Collins et al. (1994) recognize four principal stakeholder groups in the software process: the provider (i.e., the developer), the user, the buyer and the penumbra (i.e., other affected stakeholder groups). The provider is the most principal stakeholder group in providing other groups with responsible software. The penumbra has least to do in the software process but it is along with users affected by acts of the provider. ISD team as a provider of an information system (IS) is typically comprised of characteristically different developers with different backgrounds (e.g., IS professionals and end users).

Team structure and characteristics of team members significantly affect the process and results of an ISD project. Studies on moral psychology argue individuals to have different capabilities in moral behavior like in the recognition of morally relevant issues (Clarkeburn 2002; Myyry & Helkama 2002). Therefore, accordingly, it is assumed that in ISD project teams there are individuals, who differ, for example, in the sense how they recognize morally relevant effects of ISD on stakeholders (cf., moral sensitivity; Rest 1994).

IS professionals are argued to ignore social, political, and psychological issues in their work (Jiang et al. 1999). Lacking appropriate capabilities in dealing with IS-related change is also an issue of concern for many other types of stakeholders, not only for IS professionals as Brooke and Maguire (1998) seem to argue. We approach the work of ISD by adopting the idea of helping ISD team members to become – in terms of Mathiassen and Purao (2002) - reflective systems developers in relation to morally relevant issues in ISD. The work of ISD is here considered from the viewpoint of "voices" of design, from the viewpoint of overall perspectives of ISD (Timpka & Sjöberg 1996). Three primary "voices", the voice of participatory design (focus is on the ISD process), the voice of engineering (focus on the product) and the voice of practice (focus on the product in the practice context), have been found in the background of orientations of ISD team members (Timpka & Sjöberg 1996). Representatives of voices highlight different issues in ISD. We examine these three voices through the concept of responsibility (Ladd 1989). A synthesis is provided. Descriptive assumptions of each voice are transformed to a set of recommendations. Some complementary recommendations are derived from related literature. With these recommendations, representatives of the voices are assumed to be able to develop their awareness of morally relevant issues, and thus become more reflective developers in the sense of the moral aspect of their work.

This study is constructive and normative (Järvinen 2001, p.88) in the sense that tentative action-guiding recommendations for developing social responsibility are our main contribution. This article is comprised as follows. After the introduction, voices of design and responsibility in ISD are considered. Then, we construct a framework for developing ISD team members' sense of responsibility in a social context, and open up ways to improve IS education and practice of ISD.

# 2	LITERATURE REVIEW

## 2.1	Diversity in the voices of design in ISD project teams

A cohesive ISD project team has been preferred over a loosely coupled one in some studies on project structure (e.g., Hawk & Dos Santos 1991). High-performing teams have sometimes been argued to be more cohesive than low-performing ones (Yang & Tang 2004). In the former, domain knowledge is characteristically held by one central participant, and there is less conflict between participants during ISD (Yang & Tang 2004). This implies that cohesiveness, centrality and consensus in a project team

would lead up to successful ISD. However, the impact of backgrounds of participants on project success is ignored in Yang and Tang (2004). This is because they studied university students. Yet, there is more to successfulness than quantitatively measured high team performance. ISD can be successful also in more qualitative terms, for example, in terms of being able to take into account diversity of stakeholder perspectives during ISD. Diversity means that "more choices are made available for people to manage organizational and societal affairs" (Flood & Romm 1996, p.46), and that no choice is "free of dilemmas" (ibid., p.57). Recognizing diversity of stakeholder perspectives and benefits of potentially resulting conflicts does not necessarily lead up to a counter-productive ISD. It has been argued that interpersonal conflict can be negative (Barki & Hartwick 2001; Trimmer et al. 2000) whereas task conflict may have positive impact on ISD (Trimmer et al. 2000). Task conflict can be triggered, for example, by differences in educational background, functional position and organizational tenure (Pelled 1996).

Project team structure thus is very important for successful ISD. For example, members of overly cohesive teams may find it difficult to solve design problems. Therefore, diversity of perspectives, of perceptual skills (White 1984) and of personality traits (Trimmer et al. 2002) is needed during ISD. Heterogeneity of perceptual types of team members is beneficial in solving *unstructured* problems during ISD (White 1984) but of equal importance are different types of professional orientations (Klein et al. 2002). In a successful team, both user, sociopolitical and technical orientations are needed (Jiang et al. 1999; Klein et al. 2002). Different orientations can help in bringing questioners and openers of threads of discussion to the team. With them, serious errors in judgment that result from the lack of constructive criticism (Brown et al. 1990) may be avoided.

Technically oriented IS professionals rate high IS staff commitment, careful planning and the use of structured techniques (Klein et al. 2002). End-user oriented practitioners emphasize the necessity of addressing real user needs and the ability to implement changing user requirements (Klein et al. 2002). Last but not least, the sociopolitical orientation demands "the interaction of system development activities with the intra-organizational distribution of power, defined objectively, in terms of horizontal or vertical power dimensions, or subjectively, in terms of symbolism" (ibid., p.83).

There is a *voice* (Bakhtin 1981) in the background of each orientation. The term "voice" refers to the 'speaking consciousness', that is, the speaking subjects' overall perspective, conceptual horizon, intention and world view (Wertsch 1990). Voices can be used to explain differences in orientations. In the studies of mind and culture, corresponding voices have been recognized. These are voice of participatory design (PD), of practice and of engineering (Timpka & Sjöberg 1996). Voice of PD guides through anecdotal design stories to focus on the ISD process in terms of its apparent diversity. The one then helps the others keep abreast of the progress of a situation. For example, a representative of the voice of PD aims to make it possible for technical-oriented and practice-oriented group members to take part in discussion. Voice of practice guides through a set of real life narratives to address the product in the practice context. For example, with the voice of practice ISD team members become aware of users' work flows and environment. Voice of engineering helps to approach the product in terms of technical possibilities and constraints. For example, in the case that client demands high reaction time in the IS, but it is technically impossible, the response for this claim comes in the form of the voice of engineering. Neither orientations nor underlying voices are mutually exclusive but they more likely coexist. Every team member can basically act in any one of the voices.

2.2   The subjective and objectives sides of responsibility

A representative of ISD team may be considered as responsible for his or her acts to other stakeholders. From an individual's viewpoint, being responsible or accountable for something means, Johnson (2001, p.173) argues, that an individual is an appropriate agent to respond, for example, by giving a report about what happened, or she can be held accountable for a compensation (or even imprisonment) or accountable in the sense that she should feel remorse or regret. In a broader viewpoint, a viewpoint of a corporation, the term "social responsibility" has been used. Carroll (1999,

p.142) summarizes the following four social responsibilities of business: profitability, legal obedience, engaging in ethical practices, and philanthropy (concern for individuals). Although profit-making can be considered as the up-most responsibility in business, a morally responsible corporation treats employees well and engages in ethical practices. This means, for team members of an ISD project team, that their responsibility is to satisfy IS needs of the client and take into account how ISD affects stakeholders.

In the context of ISD, we aim to develop ISD project team members' sense of social responsibility as follows. First, we take the distinction between the subjective and objective sides of responsibility as a relevant starting point for analyzing responsibility of a member of an IS project team. This division (Ladd 1989) considers that the subjective (mental) side relates to concern, or lack of concern, for welfare of other individuals, and that the objective side means causal connections between individuals' actions and outcomes of those actions. We interpret the subjective side to contain that which can be interpreted as mental processes of an individual. Moral sensitivity — awareness of morally relevant issues, the construction of alternative courses of action in moral conflicts, and the ability to assess how these actions affect others — is a key component in moral behavior (Rest 1994; Clarkeburn 2002). Bridging between knowing what is morally right and actually doing it has been researched in the field of moral psychology. Bebeau (2002, p.285) states that understanding responsibility of one's acts is a key question in bridging between knowing the right thing and doing it. Nucci (1997) uses the term "character" to describe the tendency to act in accordance with what one understands to be morally right. However, character building cannot only rely on the development of moral reasoning but it also means habituating oneself to morally good virtues. For example, in the case of group work, the ability to listen to group mates can be considered as a virtue. Aristotle (1994, p.27) states that one becomes virtuous by practicing a virtue, that is,

> "…by doing acts that we do in our transactions with other men we become just or unjust, and by doing the acts that we do in the presence of danger, and by being habituated to feel fear or confidence, we become brave or cowardly."

Singer (1994, p.169) refers to the two studies, which suggest that Aristotle may be right. In those studies blood donors and their motives for donating blood were investigated. The results suggest that incentives of external forces (e.g., a friend was donating) were substituted by internal motivations (the sense of personal responsibility towards one's community), as the donators continued donating. The studies suggest that practicing a virtue may make us internally virtuous.

Here, our aim is to provide ISD team members with means to develop their internal virtues. In the next section, we outline guidelines to develop the awareness of representatives of voices of ISD (the subjective side) in a way that they are better able to take into account diverse stakeholders and produce good outcomes for them (the objective side).

3 DEVELOPING SOCIAL RESPONSIBILITY THROUGH VOICES OF DESIGN

How to develop members' social responsibility in project teams through different voices is concerned in this chapter. Table 1 combines social responsibility and the voices of design in a way that can be helpful in ISD. We provide each voice with a set of recommendations that have been derived from research literature. Each recommendation aims to develop social responsibility of members of project teams in the course of ISD.

The voice of PD and of practice can to some extent be traced back to the Scandinavian PD tradition (Schuler & Namioka 1993). Some remarkable differences, however, bring these voices closer to the North American Joint Application Development (JAD) (August 1991) tradition (Carmel et al. 1993). The main difference between PD and JAD is that PD is an instance of *consensus design* where responsibility is by design assigned to the users whereas *representative design* is concerned in the latter, and responsibility is shared in it between different types of developers (e.g., users, managers and

IS professionals) (Carmel et al. 1993). In addition, PD is focused on the user-developer interaction around PD tools whereas JAD is concerned with group facilitation and dealing with group dynamics (e.g., resolving disagreements) (Carmel et al. 1993).

Our framework (see Table 1) is in line with PD and JAD in the sense that, in both of them, users are emphasized as active participants in design formulation and actual decision making. This standpoint, however, is in stark contrast to *consultative design* whereby users have been regarded as passive sources of information (Carmel et al. 1993), and thus treated morally wrong. Yet, our standpoint concerns more diverse set of participants than users and developers only. The aim is to extend the scope to cover different types of team members, individuals within organizations and individuals in the surrounding society. A sense of responsibility is shared between individuals if social responsibility has been developed successfully. Individuals thus feel co-responsible for other stakeholders.

		SOCIAL RESPONSIBILITY	
		Subjectivity	Objectivity
V O I C E S	Voice of PD	Knowing and doing	Consequences
	Voice of Engineering		
	Voice of Practice		

Table 1.   Framework for developing social responsibility.

Morally relevant issues that have been derived from the voices of design are next discussed in terms of two subjective sides of social responsibility, *knowing* what is morally right (sections 3.1-3.3) and *doing* the right thing (sections 3.1-3.3). They are also discussed in terms of the objective side of social responsibility (i.e., *consequences*) (section 3.4) but only in general. With a resultant set of recommendations, each member of ISD project team can be expected to develop his or her social responsibility.

3.1   Knowing and doing through the voice of PD

The voice of PD, as a mediatory one, "bridges the gap between work practice and technology", and the terms, provided by this voice, can be used "to balance knowledge and understanding of both technical design issues and the actual workplace" (Timpka & Sjöberg 1996, p.191). This voice is "constructive", yet "passive, unobtrusive, and not claiming its rights" (ibid., p.191). Without the voice of PD, one of the other voices may remain outside the main line of conversation or remain 'unheard' as part of this conversation in the course of ISD. In the case that one IS professional is in charge of conversations, the voice of practice can remain a marginal voice. In the case that one representative of the client organization (e.g., a manager) is in a prominent position during conversations, however, technical issues may remain in the marginal zone.

Without the voice of PD, the development of social responsibility might not be possible. How to deal with diversity of orientations during ISD is the main concern of the voice of PD. It is, in these recognized ways, geared towards 'pulling strings' with the purpose to guarantee the successful ISD process. The following set of recommendations (Table 2) is a possible starting point to develop social responsibility of a member of project team.

Becoming aware of diverse voices (Timpka & Sjöberg 1996) is the starting point of morally sustainable ISD. With this voice of PD, diversity of orientations can be recognized and biases of standpoints avoided. This is, however, not possible without the continuous dialectics between different voices. Timpka and Sjöberg (1996) argue that this voice helps one to encourage and moderate discussion. Simply being aware of diverse voices is thus insufficient. Recognizing the significance of understanding different voices in discussion is still insufficient if multiple individuals' understandings of the content of the dialectics are not emphasized (cf., Gustavsen 1992). These ways to develop the subjective side of social responsibility are needed to prepare oneself for doing morally right things.

Knowing
Becoming aware of diverse voices (Timpka & Sjöberg 1996)
Becoming aware of the usefulness of dialectics between diverse voices (Timpka & Sjöberg 1996)
Becoming aware of every team members' need to understand diverse voices (cf., Gustavsen 1992)

Doing
Letting diverse voices 'be aloud' in same conversations (Timpka & Sjöberg 1996)
Making sure that every team member understands the dialectics between diverse voices (cf., Gustavsen 1992)

Table 2.   Recommendations from the standpoint of the voice of PD.

One also needs to be aware of how to do morally right things. Letting the recognized voices be 'heard' in ISD conversations (Timpka & Sjöberg 1996) can support the development of the subjective side of social responsibility. One also needs to be ready to assure that different members of a project team understand the dialectics between voices (cf., Gustavsen 1992). There may be no use of multiple voices in ISD conversations without these understandings.

3.2   Knowing and doing through the voice of engineering

With the voice of engineering, arguments in other voices can be evaluated as 'good' and 'bad' or 'possible' and 'impossible' (Timpka & Sjöberg 1996). What is technically possible and what is not are the main concerns of this voice. Voice of engineering, for this reason, means one has a great responsibility for outcomes of the ISD process. This is because the technical product implements planned changes that may have a great effect on individual workers, organizations and even the surrounding society. This voice helps to paraphrase discussed issues in technical terms and to evaluate risks and hazards of technology (Ferguson 1992; Kling 1996). In the case that one IS professional acts as a project manager, the marginalization of the voice of engineering is hardly an issue of concern. In the case that one client representative of the organization acts as a project manager, however, technical issues may remain to some extent in the marginal zone.

The development of social responsibility might not be possible without the voice of engineering. Without it, many potential risks and hazards of a new product could unconsciously be engendered. Recommendations, presented in Table 3, are a possible starting point to develop social responsibility of a member of project team from this engineering perspective.

Becoming aware of issues of the product (Timpka & Sjöberg 1996) is one central standpoint that is needed in morally sustainable ISD. Responsible features of the product (or its technology) need to be regarded as a prerequisite for successful ISD. Developing awareness of outcomes of the ISD process only through an 'opportunist' attitude seems to be insufficient according to Timpka and Sjöberg (1996). The assessment of the product quality thus needs to be emphasized both in negative and positive terms. This is possible through recognizing the significance of the continuous evaluation of technical possibilities and constraints of the product (Timpka & Sjöberg 1996). To become aware of these helps to develop the subjective side of social responsibility from the engineering perspective.

Knowing
Becoming aware of the product (or technology) (Timpka & Sjöberg 1996)
Becoming aware of technical possibilities of a new product (Timpka & Sjöberg 1996)
Becoming aware of technical constraints of a new product (Timpka & Sjöberg 1996)

Doing
Letting voice of engineering inform others about possibilities and constraints of a new product (Timpka & Sjöberg 1996)
Making sure that every team member understands each possibility and constraint of a new product (cf., Gustavsen 1992)

Table 3.   Recommendations from the standpoint of the voice of engineering.

Becoming aware of how to do morally right things in the course of ISD from the standpoint of this voice is also needed. Timpka and Sjöberg (1996) emphasize that informing other members of project team about both negative and positive qualities of the product is important in the course of ISD. This may support the development of the subjective side of social responsibility. One also needs to be ready to make sure that every member understands each possibility and constraint of the product (cf., Gustavsen 1992). If this is not the case, the voice of engineering may be useless in the course of ISD.

3.3   Knowing and doing through the voice of practice

The voice of practice may have many variations which is dependent on the location of an individual in his or her workplace. With the voice of practice, an individual "speaks from the individual practitioner's point of view and expresses experiences from work practice and use of technology in a situated context" (Timpka & Sjöberg 1996, p.192-3). Without this voice, the standpoint of workers would be ignored, and this would be morally unsustainable. Leaving out the workers (i.e., users) could impose serious consequences on work and workers, for worker health, human rights, job satisfaction and work processes (Bravo 1993).

The technical product implements changes. It is therefore a key element of successful ISD. Nevertheless, changes cannot be morally sustainable if multiple voices of practice have not been 'heard' before implementing changes through the technical product. The voice of practice thus helps in providing a foundation for technical change. In the case that one IS professional is in charge of discussions, the marginalization of the voice of practice may be an issue of concern. Moreover, in the case that one management representative of the client organization acts in a prominent position, work practical issues may still remain in the marginal zone. Work professionals can bring, with voices of practice, a real contribution to the product that could then be seen in the practice context.

Recommendations, presented in Table 4, are one possible starting point to develop social responsibility of a member of project team from this type of work practical perspective.

Knowing
Becoming aware of the product in the context of work practice (WP) (Ehn & Kyng 1987; Timpka & Sjöberg 1996)
Becoming aware of users of technologies as experts in their WPs (Ehn & Kyng 1987)
Becoming aware that WP terms are as relevant as technical terms, and that IS is a network of people, WP and technology in their organizational contexts (CPSR)

Doing
Letting voice of practice inform others about WP issues (Timpka & Sjöberg 1996)
Making sure that every member in a team understands how WP shapes a new technological product that facilitates users in their daily lives (cf., Gustavsen 1992)

Table 4.   Recommendations from the standpoint of the voice of practice.

Becoming aware of the product in the context of work practice (WP) (Ehn & Kyng 1987; Timpka & Sjöberg 1996) is one central standpoint that is needed in morally sustainable ISD. Responsible products in the WP context can be developed if users of technologies are recognized to have relevant WP experience (Ehn & Kyng 1987). Computer Professionals for Social Responsibility (CPSR), as a kind of public interest alliance, has promoted design in the context of WPs for about 15 years. In CPSR's web site[1], one of the key ideas of PD, of which to become aware in project teams, is that WP terms are as relevant as technical terms, and that IS is a network of people, WP and technology in their organizational contexts. To become aware of these morally relevant issues, the development of the subjective side of social responsibility from the WP perspective may be possible.

Becoming aware of how to do morally right things in the course of ISD from the standpoint of this voice is also needed. Timpka and Sjöberg (1996) emphasize that informing other members of project team about WP issues is important for developing new products for right contexts. This informing may promote the development of the subjective side of social responsibility. One also needs to be ready to ensure that every team member understands how WP shapes the development of the product (cf., Gustavsen 1992). Without doing so, the voice of practice may be rather needless in ISD.

3.4 A few words about objective consequences of doing right things

The discussion above is concerned with the development of the subjective side of becoming socially responsible in the course of ISD. Becoming aware of what is right and how to implement this right in ISD practice is a starting point to become a socially responsible member, that is, one whose acts have positive consequences for other individuals in an ISD project team, in an organization and even in the society. Our recommendations provide ISD team members with means to jointly reflect ISD efforts from the viewpoint of how their own acts may have many types of impacts on stakeholder groups such as the user, buyer and penumbra in terms of Collins et al. (1994).

Effective impacts of one's acts on others, that is, how the others will think about a new IS and what they then do in a team to develop this IS, become important then. Yet, effective causal connections between actions and their outcomes (Ladd 1989) can hardly be predicted. Despite that, one participant of an ISD project team can always contemplate possible effects of his or her own acts on other individuals, organizations and the surrounding society. Succeeding in predicting outcomes before even acting, doing things, may be partial at best. Problematic situations are likely to emerge as a consequence of doing things in one way, even in a right way. These situations need to be regarded as "a source for development" (Bjerknes 1991). An action research attitude is also needed. By this, we mean that the normative recommendations we have outlined above, could be inquired into in the course of ISD (Mathiassen 1998) through *reflection-in-action* (Schön 1983), not only applied blindly. Learning from the causes of negative results (Lyytinen & Robey 1999) may then lead up to the development of both the subjective and objective side of social responsibility. This attitude explains why we have not outlined consequences for the user, buyer and penumbra. These consequences abound.

4 DISCUSSION

We approached the work in ISD from the viewpoint of "voices" of ISD and outlined a collection of guidelines deriving from associated literature. It is assumed that with the guidelines ISD team members are able to develop their moral sensitivity (Rest 1994), that is, become aware of morally relevant issues in ISD. By adopting these guidelines into action ISD, team members may internalize the ideas behind the guidelines. Thereby, they may develop their internal virtues (Aristotle 1994) so

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[1] http://www.cpsr.org/issues/pd/introInfo

that they are, for example, able to take stakeholders into account in ISD. It is assumed that an ISD team member represents one or more voices, and therefore different members are assumed to be aware of different stakeholders in different ways. Different capabilities in moral sensitivity can be interpreted as strength because representatives of the voices may educate each other about morally relevant issues in the course of project encounters. Different capabilities may be interpreted as a weakness as well if an ISD project team lacks one of the voices or, for some reason, representatives of these voices are not able to share their concerns with others.

We interpreted - based on Timpka and Sjöberg (1996) - that all voices have significant role in ISD albeit the voice of PD probably has the most significant role in advancing the development of the awareness of other representatives of voices. Each voice represents some significant expertise in one field. This means that a representative of one voice should educate him/herself about his/her primary area but he or she should also educate other team members about the most significant aspects emerging from his/her expertise.

4.1   Implications for practice

The aim of this study was to develop ISD team members' sense of social responsibility. To attain this aim, we recommend that the following issues are considered in IS education (and practice of ISD): the three voices of design (the voice of PD, of engineering and of practice; Timpka and Sjöberg 1996), the orientations needed in a successful ISD project team (user, socio-political, and technical orientations; Jiang et al. 1999; Klein et al. 2002), and guidelines outlined for each voice. We also recommend the promotion of *reflection-in-action* (Schön 1983) or *experiential learning* (Kolb 1984) type of contemplation for moral aspects in ISD. As moral development occurs when individuals interact with each others, group-based ISD project courses can provide a possibility to encourage students to contemplate morally relevant issues of ISD. Indeed, group-based projects are a common form of IS education (Mathiassen and Purao 2002; Gorgone et al. 2002), and they have been recognized to have social benefits for students as they learn, for example, communications skills (Pigford 1992), and team-building and interpersonal skills (Roberts 2000; Ross and Ruhleder 1993) throughout the project. It is assumed that group-based project courses positively affect moral development of IS students.

4.2   Limitations

The guidelines presented in this study aim to develop awareness of ISD team members. The sense of responsibility has to grow from within the mind of an individual (Nucci 1997). Therefore, if the recommendations are conducted, for example, in educational institutes, it is noteworthy that in educational interventions the problem of indoctrination should be carefully dealt with. Indoctrination means that teachers impose doctrines upon students who may receive them uncritically or on the basis of unquestioned authority (Warnock 1975; Lisman 1998; Macklin 1980). According to the belief of liberal neutrality we should respect a student's right to make up his or her mind about ethical issues (Lisman 1998). We respect students' rights by avoiding indoctrination, and it is done by teaching our students theoretical virtues like criticality, and rationality, and by letting the students formulate their own decisions (Airaksinen 1995). The collected set of recommendations are at a meta-level. They have consciously been left abstract to avoid the problem of indoctrination. Thereby, our guidelines should not prescribe single acts. Furthermore students need to be encouraged to critically assess our guidelines.

One practical limitation can be assumed. The implementation of the guidelines put forward in this study probably confronts practical problems in the course of ISD. It is assumed that individuals differ in the sense of how they are able or willing to externalize their knowledge to other team members or receive knowledge from other team members.

4.3   Future research

Empirical research on ISD professionals' and IS students' perceptions on responsible ISD is needed to develop IS education – especially teaching of professional ethics in IS. In addition to this, reflectivity in moral contemplation in ISD related issues should be dealt with in future research. Usefulness and usability of our guidelines should be evaluated in real ISD projects, and the applicability of the guidelines in educational interventions should be evaluated. With the evaluations the guidelines could be further developed. Instruments for assessing moral sensitivity of individuals representing certain professions have been developed. For example, Myyry and Helkama (2002) developed an instrument to measure moral sensitivity of social psychology students. An instrument measuring moral sensitivity in ISD would be beneficial, for example, in assessing effects of IS education.

5   SUMMARY

For the development of social responsibility in ISD, we reflected the work of ISD from the viewpoints of the voices of design (the voice of PD, of practice and of engineering) and moral responsibility, and collected guidelines from literature for each voice. With the guidelines, ISD team members can be expected to be able to adopt practices, which develop awareness of morally relevant issues of ISD. Recommendations for practice and research were presented together with limitations of this study.

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