

# Ethical Heuristics – A Tool for Applying Ethics in User-Involved IS Projects

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**Abstract.** User involvement in information system development, as well as in digital innovation processes, is viewed as a key element for success. By introducing users in IS projects, ethical consideration is needed. Even though ethical theoretical frameworks are available in the IS (and other) spheres; cheap and fast methods and tools for applying ethics efficiently and effectively in everyday design and development work remain scarce. This paper presents a suggested heuristics-based tool that bears the promise of quick integration, and effective and efficient application of ethics in user-involved IS projects.

## 1 Introduction

Ethics is defined as moral principles guiding choices and decisions (Ianinska and Garcia-Zamor, 2006). In every situation where people are involved, ethics is something that should be considered as it forms a foundation for the interplay between people. Ethics can often be an intangible concept that is hard to approach in a structured manner in the involvement of end-users in information systems development (ISD). For example, in a research project aiming to enrich the social life of seniors the design of a social network service is being developed. The plan is to introduce the system in a longitudinal usage study. By illuminating the project from an ethical perspective, we might be able to identify an ethical problem of closing down the service after the study has been finished and reported. In this example case, the system close-down presents a risk of effectively removing a life-quality enhancing system from the senior users that have gotten used to the service. Identifying activities that have ethical implications on involved users, and that take place before, during, and after system design and deployment is an important aspect of successfully launching IS projects.

A discussion and suggestions about how ISD practitioners can apply emancipatory and ethical principles in ISD have been ongoing during the last decades (see e.g. Hirschheim and Klein, 1994). One of the most explicit examples is the ETHICS method, which is very much in line with the ideas of considering the ethical aspects when developing ISs (Mumford, 1983; Mumford, 1993). However, these discussions have primarily concerned different streams of participatory design (PD) related

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examples. Within the IS discipline, research about user-centered design (UCD) (Norman and Draper, 1986), PD (Bødker et al., 1987) and cooperative design (Greenbaum and Kyng, 1991) emerged in the late 70s and early 80s and have either directly, or indirectly, had a connection to ethics. However, there are still few examples of practical applications of ethical frameworks in ISD.

Today, user involvement in both traditional organizational ISD processes, as well as digital innovation processes, is viewed as a key element for success (Henfridsson and Lindgren, 2010). By tradition, research within the IS field has been focused on organizational environments where ISs are designed to support defined working roles and tasks. One important aspect of PD has therefore been to empower the workers/users by involving them in the development processes (Greenbaum and Kyng, 1991). With today's increasing digitalization, users do not solely use computing capabilities for organizational purposes, but they also interact with computing technologies in much broader social contexts. This has led to that traditional notions such as usability need to be extended to user experience (Yoo, 2010). Furthermore, it has become important to identify customer needs and experiences to be able to launch successful IT innovations targeted towards consumer markets (Rosted, 2005). As a response to this, several new trends such as Open innovation (Chesbrough, 2003) and User innovation (von Hippel, 2005) include user involvement aspects as means to strengthen innovation and development processes.

Based on these changes, and the fact that a wider practical application of ethical frameworks in ISD is still lacking, we suggest that ethics need to be incorporated into the practice of user involvement in ISD and digital innovation processes. In this paper we propose a first step for making ethics tangible for both IS researchers as well as practitioners working with user involvement in IS development and digital innovation processes. Inspired by the simplicity, rapidness and impact of heuristics for practitioners within the field of usability inspection (Nielsen and Molish, 1990; Nielsen, 1995), we have created a first set of ethical heuristics. The proposed heuristics are meant to be used when users are involved in the development of ISs, as a way of integrate ethics in an easy and time efficient way. Similar to usability heuristics, the ethical ones are primarily planned to be used to evaluate ethical issues regarding user involvement in ISD and digital innovation processes. However, just like the usability siblings, they can also be used to design a user involvement process to ensure that ethical issues are considered. The heuristics are designed to be an efficient toolkit that transfers the theoretical ethical frameworks into practical application within the IS field, both for practitioners as well as researchers. Furthermore, as usability practitioners and HMI experts often are the ones who are responsible for user involvement activities in IS projects, the use of heuristics should be familiar to them. This could hopefully mitigate the barriers for ethical evaluations and considerations, and help transferring (the much-needed) ethical frameworks to the IS field, when working with user involvement.

This paper aims to present and elaborate the idea of a lightweight and rapid ethical toolkit based on heuristics. The toolkit is founded in a literature overview that both investigates the occurrence of ethical perspectives within the IS field as well as ethical frameworks from other fields such as business ethics. Ethical issues in IS are quite well presented and discussed within the field, however, the word ethics and moral is often interchangeable in these discussions. Furthermore, a lot of effort has been put into discussions of the overall impact of IS, and not specifically ethical aspects in relation to user involvement, which arguably is a practice becoming more and more common in IS projects.

To be able to present a first set of heuristics, existing ethical frameworks from other fields have been used as inspiration to be able to create categories relevant from a generic ethical perspective. These have then been adapted for evaluation of IS projects (pre-, during and post-processes) with user involvement components. By describing existing user involvement practice as well as ethical frameworks from other fields, the ethical heuristics proposed in this paper are created. As such they are meant as a first step of making ethical aspects tangible and easy to incorporate in IS projects when involving users. However, these heuristics needs to be empirical evaluated in upcoming studies before they are launched to the community of IS researchers and practitioners.

The rest of the paper is structured as follows: In section 2 the literature overview is presented. In section 3 the ethical heuristics are presented and elaborated based on the literature overview. Finally, section 4 presents our discussion and is concluded with suggestions for future work.

## 2 Literature overview

In this section a literature overview on user involvement and ethics and ethical frameworks is presented. This forms the foundation for the heuristics presented in section 3.

### 2.1 User Involvement in IS projects

User involvement in both organizational ISD processes, as well as digital innovation processes, is today viewed as a key element for success (Henfridsson and Lindgren, 2010). User involvement can be traced back 40 years within the IS field. One example is the PD movement which has had several approaches that specifically brought in the ideas of user involvement in ISD processes. One of the main reasons for involving end-users into ISD was the idea of achieving a high level of communication between developers and end users (Wanyama and Zheng, 2010). According to Zhang (1999) a high level of communication can lead to better collaboration, understanding, and exchange of information between individuals. This is considered important to avoid misunderstandings between end-users and developers. Johansson (2005) suggest a collaboration of several actors when working with a PD approach. End-users are generally involved differently throughout the stages of a development process (Preece et al. 2007). Several authors have tried to categorize methods and techniques for user involvement according to different phases of an ISD or a digital innovation process, e.g. Idea, Concept, Prototype, and Market phase. For example, Schumacher and Feurstein (2007) provide an overview of suitable methods for integrating the customers into a product development process. Kusiak (2007) proposes a classification and assignment of innovation-fostering methods that is suitable when working with user involvement.

Another categorization of methods from the field of human-centered design is described by Hanington (2003). The author divides these methods into three categories: traditional, adapted, and innovative methods. The first category consists of traditional methods, which include market research, focus groups, surveys and interviews. The data acquired through these methods provides a good overall view of the design field, however, it do not fulfill the needs of the design process for innovative IT products due to the lack of individual and exceptional properties (Gaver et al., 2004; Hanington, 2003). The second category consists of applied methods, which refers to using research and development methods from different disciplines in design research. Examples of applied methods are qualitative methods of ethnography, sociology and culture studies, including observation, self-documentation and interaction methods such as think-aloud protocols or heuristic evaluations. Finally, the last category is innovative methods, which are mostly appropriate at the beginning of the design process. These methods are used to gain understanding of people's emotions, feelings, values and dreams (Hanington, 2003).

Traditional quantitative methods are more appropriate for examining large groups, whereas innovative methods are suitable for qualitative analyses to generate in-depth results when examining (smaller) groups or individuals.

### 2.2 Ethics and Ethical Frameworks

Ianinska and Garcia-Zamor (2006) conclude that ethics can be traced to two different translations. Ethics may come from the Greek word "ethos" which, if translated into Latin, has the same meaning as morality, which involves an understanding of what is right and wrong in a society (Ianinska and Garcia-Zamor, 2006). The word ethics can also be translated from the Greek word *etho*, which instead means "to be used in order to do something". Ethics is described by Velasquez (2001) as a study of the moral principles of what is right and wrong, how we should conduct ourselves as human beings and how we should act.

When an ethical decision is made, the legal aspect of a situation is not in priority (Payne and Landry, 2005). Ethics also provides a series of rules and guidelines to facilitate moral decisions and behavior. Payne and Landry believe that ethical decisions always include the individual's own perception of what is right or wrong. Ethical decisions, according to Leonard et al. (2003) are affected by many factors. The authors list eight factors that are important when an individual should take

ethical decisions that are listed as the following: professional environment, social environment, religious beliefs, personal values, personal environment, legal environment, business environment and impacts. There are many scholars who believe that ethical thinking is instinctive, while other studies show that ethics can be learned (Lau, 2010).

Ethics has been established as an important subject that needs to be noticed and prioritized within IS construction and use (Cordeiro, 1997; Payne and Landry, 2005; Himma, 2007). The industry appreciates the importance of ethics and is willing to admit the need for training in ethics of their professional practitioners (Ianinska and Garcia-Zamor, 2006). Ethical codes, as they are described by Payne and Landry (2005), are “effective instruments when it comes to maintaining professionalism and protecting the society”.

Payne and Landry (2005) points out that IT personnel is always surrounded by various stakeholders in their working environment. The stakeholders’ big influence (Preece et al, 2007) is a reason for why ethics is so important within IT (Himma, 2006). With an ethical framework, Payne and Landry suggest that IT staff could get help with decision making in cooperation with the company's stakeholders. An existing framework could calm stakeholders in contact with the company if they know that it exists and is used. The stakeholders are also likely to be more conscious about the staff’s obligations against them and the society. Another advantage that occurs is that the staff would be educated within the subject and could use the framework as a support for decision making (Payne and Landry, 2005). Payne and Landry’s framework is based on the following concepts: consistency, respect of individuals, justice, autonomy, integrity, utility and competence.

*Consistency*, in this case, is defined as “everybody should behave similarly”. It is important to set up rules or guidelines to facilitate communication and to create a feeling of safety (Payne and Landry, 2005). The authors mean that if everybody in the company would have a shared vision of how things should be done, the stakeholders would be affected in a positive way. They would get an idea of how the development is supposed to and usually goes.

*Respect of the individual and justice* is of big importance in order to avoid conflicts which could compromise impartiality of design solutions and the environment of which the design process is taking place (Payne and Landry, 2005). According to Dickert (2009) you will be able to achieve respect by combining and actively showing two recognitions; the appreciation of peoples values combined with your own personal principles and beliefs.

*Justice* is described by Hegtvedt (2005) as fairness to many and promise for the wellbeing of the group. Gagnon and Cornelius (2000) suggest that this will be achieved by creating rules and regulations of how people in a society should act upon each other joined by disciplinary actions if any of the rules is not followed. The authors describe various different methods to achieve justice, one of them being the opportunity to education in your work and to make this opportunity accessible to everyone.

*Autonomy* is described as giving a person the possibility and freedom to express themselves as they find appropriate in their working place (Payne and Landry, 2005). By taking one individual’s personal freedom into account, Payne and Landry (2005) suggest that the individual will be able to create important relationships and a way of thinking which can be valuable to the company.

*Integrity* can be shown by protecting an individual’s private information or private life (Hedin, 2000). A way of doing this might be to create a confidential relation between end users and developers, if wished for (Preece et al., 2007; Payne and Landry, 2005). If personal data is required, permission is needed before data is collected or used (Boddy, Boonstra and Kennedy, 2009). According to the Fair Information Policy the person of whom the information is about always has the right to know what the data is used for and may approve or disapprove of this (Boddy, Boonstra and Kennedy, 2009).

*Utility* is described as consequences of actions. It is important to be honest and candid with everyone involved to avoid the negative consequences of untruthfulness (Ianinska and Garcia-Zamor, 2006; Preece et al., 2007). Many times dishonesty will create short-term benefits but may have lasting negative effects (Jehn and Scott, 2003). Dishonesty detected by stakeholders lead to broken collaborations and that information about the dishonesty that occurred can be spread, according to Jehn and Scott (2003).

*Awareness* means that an individual understands the consequences of decisions and actions. The author believes that awareness is important to understand and is something that can be improved through training (Lau, 2010).

*Responsibility* involves taking moral responsibility of what an individual considers to be her own moral values and that the individual holds on to her ethical principles (Himma, 2006). Doing so also requires that an individual understands what ethics means and can rationalize about what is moral or ethical (Janinska and Garcia-Zamor, 2006).

### 3 Ethical Heuristics – A toolkit for user involvement in IS

As IS use and integration in society increases, actors in the IS field (research as well as practice) realize the urgent need for ethical considerations in software development organizations. Rapid penetration of ethics in the “idea-marketplace” of ISD organizations can be facilitated by cheap and fast methods and techniques, since they then can be tested without significant overhead in both training and resource investment. Knowledge of practitioners needs to be broadly applied, due to the large variety of ISD organization operations and contexts. Furthermore, introducing a new toolset and technique must be possible to easily integrate in established system development processes and practices. These requirements seem to point to a tool designed similar to style guides, or inspection heuristics.

A tool fulfilling such requirements harbors the potential of providing quick gratification: protocols with scores assessing the ethical status of the project are available immediately after application and produces concrete evidence of aspects that may merit attention.

The Ethical Heuristic toolkit is primarily based on the five concepts presented by Payne and Landry (2005). These heuristics were then completed by including other ethical attributes from Lau (2010) and Himma (2006). We chose to merge *utility* (Payne and Landry 2005) with *awareness* (Lau, 2010) and *responsibility* (Himma, 2006) since they intimately related. Utility and awareness is described in the same way by both authors and we choose to implement the word awareness as it describes the concept better. *Responsibility* emerges from the understanding of consequences from one's' actions, which is supported by *awareness*.

We suggest that the heuristics are used in three different phases of user-involved processes. As presented in section 2.1, user involvement can be categorized in several different ways. Here we suggest that the toolkit is used in three different phases of an ISD process, namely *pre-*, *during*, and *post-*development. By evaluating the ethical aspects of user involvement *before* an ISD process is launched, there is an opportunity to act proactively on issues identified. Therefore the heuristics also serve as a tool for planning and designing user involvement activities to ensure that ethical considerations are conducted. Furthermore, by expanding the view to pre- and post-stages, ethical issues which otherwise run the risk of being neglected can be detected and remedied. For example, ethical issues arising from removing a service after users have gotten used to it can be proactively managed if identified before launch. By extending over pre-, during, and post-stages, the tool encourages continuous assessment, and makes it possible to monitor ethical issues throughout the project process – possibly by several actors throughout and beyond the project life-span. Based on the literature overview, six ethical concepts are highlighted (see Table 1).

		<b>A. Pre</b>	<b>B. During</b>	<b>C. Post</b>
1	Consistency	<i>A1</i>	<i>B1</i>	<i>C1</i>
2	Justice	<i>A2</i>	<i>B2</i>	<i>C2</i>
3	Respect	<i>A3</i>	<i>B3</i>	<i>C3</i>
4	Integrity	<i>A4</i>	<i>B4</i>	<i>C4</i>
5	Autonomy	<i>A5</i>	<i>B5</i>	<i>C5</i>
6	Awareness	<i>A6</i>	<i>B6</i>	<i>C6</i>

Table 1. Ethical Heuristics; protocol for aligning ethical aspects of user-involvement to *pre-*, *during*, and *post-*development stages.

In the following subsections the six heuristics are presented further as well as a set of questions to be asked to evaluate ethical aspects *pre-*, *during*, and *post-*development.

### 3.1 Consistency

A policy regarding user involvement is suggested to achieve consistency (Payne and Landry, 2005). By answering the questions of existing policies and the users' routines, the developers might be able to design user involvement based on the consistency heuristic which then can be implemented early on in an ISD process.

*“Can already established working policies be implemented in the working scenario?”*

*“Are the users aware of existing policies?”*

### 3.2 Justice

It can be difficult to decide who owns what when the user helps to create different solutions. This needs to be sorted out before the process begins to avoid ethical issues. Questions that could be asked here are: “Does the user create the solution or do they bring inspiration to the developers?” and “How should the users be acknowledged if they invent something?” Eriksson et al. (2005) mentions that there should be an “incentive system in place that secures pay-back to all the actors involved”, when innovations and ideas comes from involved users.

*How will ownership rights be decided and handled?*

The users need to be aware of what is asked of them and how information from them is handled.

*Have the users' accepted all decisions and results?*

It is important to know that the users not only need to understand, but also accept, the decisions taken in the process. They need to know on which turns they participate and what that means for them.

*What do you do if the users don't want to agree with the terms?*

### 3.3 Respect

Respect in this case is evaluated by considering if all involved users have had the chance to provide their input and being able to share it with others. This might also include the sense of autonomy depending on which opinions being expressed. To increase the users support it's important that they are able to discuss their opinions (Gulliksen and Göransson, 2002).

*Have everybody's opinions been considered?*

It is important that everybody involved in the development process feel they have the same possibilities. Different people feel comfortable in different situations and with using different methods or tools (Preece et al., 2007). The suggestion is that decisions regarding which tools to use should depend on the end users strengths and weaknesses, what they already are familiar with and what they feel safe with (Johansson, 2005).

*Are the conditions the same for all involved?*

Justice and respect can be achieved by making sure that everybody feels involved in the process. To make sure they do our suggestion is to create a plan for how the users' visions and needs should be met.

*How will the developers find and meet the users' visions and needs?*

### **3.4 Integrity**

Data and user integrity is in many cases covered by the law when working with user involvement activities. However, we suggest that integrity can be secured by other means as well, providing security to the involved by answering questions about what happens with given information.

*Who owns the information created in user involvement activities?*

### **3.5 Autonomy**

When users are involved in projects they might want to quit due to various reasons. This might lead to ethical issues concerning both the user and the developer. The developer need to respect the integrity of the user if the users want to stop their involvement, which can give the end-user a sense of autonomy and power over their own involvement if wished for. Responsibility should also cover these users who no longer want to be involved in whichever segment the development process is in. Ending such a relationship might include feelings of abandonment (Tonnquist, 2009).

*How will users who no longer want to be involved be approached?*

*How should the information from the former user be handled?*

As mentioned in the respect heuristic, the use of tools that users are familiar with can make it easier for them to be creative and autonomous.

*How do developers encourage the users' autonomy?*

### **3.6 Awareness**

Problems found in this area today can be found in the use of e.g. use cases (Gulliksen and Göransson, 2002). The users might not always understand how their work situation will look like in the future by looking at the use cases (Gulliksen and Göransson, 2002). This creates ethical issues since the use cases aren't adapted to the users; they're created from the developers' perspective of how the system should work. For the same reason that prototypes are used as tools to help stakeholders understand the developers visions (Gulliksen and Göransson, 2002), developers may use prototypes to understand the users visions and understandings of what a development project might result in.

*Is the design made from the developers' as well as the users' perspective?*

*What do we do to make sure that the user understands the purpose of their involvement?*

### 3.7 Applying Heuristics

In order to keep the assessment fast, we suggest working through the questions in Table 1, shifting focus from **pre-**, **during-**, and **post-**stages for each question listed in sections 3.1–3.6. This exercise can aid the team in uncovering ethical issues in a structured manner, and open discussion points that can be effectively managed appropriately. While the tool in itself does not prescribe a more specific application method yet, it is reasonable to postulate that each cell in a protocol resembling Table 1 could be rated with a score (e.g. 1–5, where 1 could be low or unsatisfactory, and 5 represents that the issue is resolved in a highly satisfactory manner). Furthermore, since IS projects are highly diverse, certain issues might be more relevant than others depending on the context, and cells could thus be weighted (e.g. 1–3, where 1 could correspond to “severe implications for the project”, and 3 meaning “this issue has little or no effect in this project”).

In the research project mentioned earlier the design of a social network service is being developed, and the plan is to introduce the system in a longitudinal usage study. By working through an ethical heuristics protocol, we might be able to identify the ethical problem of closing down the service after the study has been finished and reported, and effectively removing a life-quality enhancing system from the senior users that have gotten used to the service. (This would arise from the **post-process** perspective on *respect* and *integrity* (cells C3 and C4 in Table 1); which will in turn most likely have an effect on how the team handles *awareness* in the **pre-process** stage (A6 in Table 1).

Refinement of the score and weight mechanics and method of application is pending evaluation of the tool in future work. Just as with usability inspection, we suggest that several evaluators work with the heuristics, to ensure that the evaluation is not biased by the current mindset of just one evaluator (Nielsen, 1995).

## 4 Conclusion

We view the presented tool as a first step to let ethical issues influence the mindset of involved actors in the pre-process, process, and post-process stages of ISD projects. In the same way as heuristic usability inspection served as a starting point for getting interaction design and user experience on the team’s radar, we think that this tool could serve a similar purpose when it comes to ethics. To enable that, there is a need for a quick, cheap, and easy evaluation approach to reach for an easy industry uptake, comparable to e.g. usability heuristics (Nielsen, 1995).

The general heuristics presented here are designed to serve as a starting point, and could be fleshed out to an extensive library of genre- or company-specific set of heuristics; and can even serve as design guidelines if considered at project initialization.

We have tried cutting the complexity of the theoretical ethical frameworks and adapt it for an ISD environment by presenting a small set of six heuristics. These smaller sets of principles are more suited as the basis for practical heuristic evaluation. Whilst working with these heuristics, applying them on earlier user involvement activities in our own cases, we have raised our awareness about ethical issues considerably. This is a first step, not to solve all ethical problems with user involvement in an ISD project, but to raise awareness and start working actively with ethical issues. Furthermore, as presented in section 3, we suggest that the evaluation should be conducted **pre-**, **during**, and **post-**development. This to ensure a possibility to act before and during user involvement activities as well as to learn after these has been conducted.

The validity of the ethical heuristics needs to be tested in further studies, preferably in a set of different cases where user involvement is conducted. Future work also includes refinement of the heuristics score and method of application. In regards to other future developments, we see a potential in introducing this kind of tool in Informatics education. IS design and development naturally affect IS use in our increasingly digitalized society. This is dependent on the actions of future generations of IS designers and developers. By introducing approachable tools for ethical considerations in their training, future ISs could benefit society to an even greater extent.

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