Addressing Governance and Ethics in European Technology Development Projects through Scenarios

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Abstract. Failures to consider the ethical aspects of technology development and design have resulted in significant negative impacts on individuals over the last decade. In consequence we have seen the emergence and growing interest in technology design movements such as "value sensitive design" and "privacy by design" aimed at specifically addressing issues of social and ethical impact. However, there is still a long way to go in raising awareness of ethical issues in technology design. This paper presents research undertaken as part of the European co-funded project "EGAIS" which addresses precisely this issue of ethics consideration in technology development. A key component of the awareness raising initiative in technology design is the use of scenarios to prompt thinking across a range of stakeholders, and with this in mind the authors conducted a workshop at this IFIP Summer School using a scenario to stimulate discussion and promote 'context aware' thinking. A summary of the discussions, key points, and suggestions for further work are included here.

Keywords: Technology projects, design ethics, privacy by design, research governance, Ambient Intelligence, Europe.

1 Introduction

The utilisation today of Information and Communication Technologies (ICT) in almost every aspect of life in the developed and developing world is evidenced by the processes in place to manage interactions between individuals and business, health, education and other societal services and between individuals on a more personal basis. Work and home computers, mobile phones, and smart cards are some of the technologies that mediate these interactions. With an increasing demand for a digitally-enabled life (from industry, governments, and consumers) it is important to produce technologies that good for business and in line with social norms and expectations. However, many media reports over the last few years highlighting issues of privacy (whether loss of personal data, theft of data, increasing surveillance in the streets and on-line) indicate there is still room for improvement both in choices of application, professional practice, and in technology design and development.

Given that these developments are creating extensively, among others, social and ethical implications, it is vital to consider such potential aspects "before" and during the technology is being developed, and involve all the relevant actors in this process.

The EGAIS[1] project, in which the authors are partners, is funded by the European Commission's (EC) Science in Society Programme, aims to address how ethical considerations could be embedded into the technology development culture of European research. The key premise of our research is that there is a wide gap between the ethical and technical communities in attending to ethical problems in technology development projects, and that ethics should be addressed systematically in European research.

In this context, we conducted a workshop with IFIP Summer School participants on the identification of ethical aspects of a proposed project development. The participants of this Summer School were considered representative of EU technical development research projects, that is, a combination of technically oriented researchers and developers (Ph.D. students as well as experts) and researchers representative of the human aspects of ICT with backgrounds in Human Computer Interaction, social science, policy, politics, and philosophy. The purpose of the exercise was to draw out from the participants the basis on which they founded their ethical interpretations, that is to explain and justify the ethical standpoint. We employed a scenario-based approach using a scenario selected from a project within the Ambient Intelligence (AmI) field funded by the European Commission[2]. The particular scenario was chosen because it included ethical issues related to the intended use of the technology, and because the ethical issues had not been noticed by the technical team prior to its development. A second scenario, that showed an improved attempt at ethical issue determination and planning, was also proposed as a second stage of the workshop. This second scenario exercise aimed to explore issues from a stakeholder involvement process. However, the extensive discussions and interactions of the groups in session 1, together with a changed timetable for the afternoon, meant that sufficient time to explore scenario 2 was not ultimately available.

As a framework, we used the theoretical insights that lie at the crux of EGAIS and allowed the participants to realise ethical aspects of new technologies from different angles and "open-up" their reasoning processes by questioning the ways with which they address an ethical problem in relation to technology development.

The workshop followed the sequence below:

- Setting the scene: Theoretical and conceptual scope

- o Conceptual definitions of ambient intelligence, ethical governance and reflexivity[3]
- o Introduction of the link between technology, ethics, governance from EGAIS perspective
- Ethical issue determination exercise:
  - o Case Study: Participants discuss in groups with the facilitators' moderation a technological case developed as part of an AmI project which includes privacy as one of the ethical aspects but does not involve users as one of the essential stakeholders in technology design.
- Group feed-back and roundtable discussion, synthesis made by the facilitators about ethical behavior determination approaches, revisiting the link between ethics, technology and governance

In the following sections we give an overview of the EGAIS project to show the relevance of the workshop to uncovering ethical and social issues in technology design and promoting discourse between disciplines The following section presents the theoretical background, Section 3 gives an overview of the research undertaken, followed by the findings – all of which informed the design of this workshop (discussed in Section 4).

2 Ethics, technology and reflexive governance

In the EGAIS project we argue that currently the determination and questioning of ethical problems in technology development projects may be viewed as an ad hoc strategy, and often seen as a "ticking the box" type of activity. The reason for this is that on one side technologists tend to see ethical problems as the domain of ethical experts, and on the other the ethical community lacks some understanding of technology development processes. Each side is therefore constrained by their own perspective (in EGAIS terms, their 'cognitive framing') which makes it difficult for each to see the problems and ask the questions that would be meaningful to the other: questions either about the technology development and its specific characteristics, or about ethics and the values considered to be important as humans in a society. The research of the project is to demonstrate this gap between the two communities with the aim of reducing the gap by emphasising the context in which an ethical norm becomes practically instantiated. How the norm is constructed and implemented is important as far as its validity is concerned, and this includes the reasoning behind (and beyond) the construction of the norm.

According to the position outlined above, special emphasis is put on addressing the conditions needed to allow for an effective ethical reflexivity within technological development. An effective ethical reflexivity would include a comprehensive

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[3] In brief, reflexivity here refers to the governance mechanisms that allow for a continuing process of critical reflection on ethical issues that includes not only awareness of issues, but also on what basis they are deemed ethical, and how they might be addressed. A discussion on the different concepts and definitions can be found in Deliverable 2.1, EGAIS project.

reflection on ethical aspects that can be traced to social norms and the value principles that are behind them, and that the issues identified will be addressed and hopefully resolved in the technical development. In essence we are looking for a 'grounded' and 'substantiated' view of ethics that is achieved through learning rather than an unthinking adherence to given rules.

The question of how groups of people conceive of, and agree on, ethical norms is challenging and controversial. Some theories emphasise discourse or argumentation as approaches used to rationalise ethical norms, but these approaches have been criticised in that they presuppose the conditions necessary for reasoning. In brief, Lenoble and Messchalsk [3] refer to 'intentionalist, mentalist and schematising' presuppositions that in essence characterize conceptions of the world[4]. These preconceived notions have implications when considering ethical issues and their resolution in technology projects. All of these types of presuppositions are limited in that they ignore the context in which the norm is conceived and applied. Cultural backgrounds (personal, institutional, academic background) influence how a norm is conceptualized. The context in which the norm is to be applied also has an influence on its appropriateness, or adequacy, in how it becomes manifest.

Context plays a key role, so understanding the conditions of the construction and implementation of the norm in a specific context will help to demonstrate the limitations of the theoretical approaches in question. The users, beneficiaries, and those who are involved in developing and shaping the technology will also develop the capacity through an interactive process for a contextual ethical norm (in relation to a specific technology) to be determined and implemented. When the context, the users, or actors change the interactive process will change through which the ethical norm is determined.

Governance mechanisms can supply the process that allows for these considerations [4]. According to Jessop the concept of governance is "the reflexive self-organization of independent actors involved in complex relations of reciprocal interdependence"[5]. In the case of European Union co-funded research projects the notions of independent actors (e.g. partners) in complex relations of reciprocal interdependence (seeing the project to a mutually successful conclusion) finds resonance. Reciprocal interdependence requires all types of stakeholders at a variety of levels to engage in a social learning and collaborative problem solving process. Taking this perspective, a "reflexive governance" approach [3] reviews its own mechanisms to ensure institutional learning. So, returning to the important role of context in determining and implementing an ethical norm, governance also plays a key part in constructing the context through a reflexive course of action. This process allows several stakeholders to learn from each other and form their cognitive and reflexive capacities in an interactive way to facilitate consideration of the ethical issues relevant to the technology project. The research area of ambient intelligence (AmI) is well suited to this type of approach as stakeholders represent diverse backgrounds with similarly diverse understandings of the ethical norm.

Recognising the importance of context and the role to be played by using governance mechanisms to facilitate a democratic way of determining norms is

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[4] A comprehensive treatment of these ideas can be found in D.2.1.

important in allowing a new, shared, perspective to emerge through a learning process [2].

In summary: (i) a reflexive governance process that allows a learning process among actors would lead to the empowerment of actors (ii) deconstructing the initial framing of the context and offering different perspectives allows for an 'opening up' of disciplinary framings (iii) the whole procedure will involve a learning process.

What we are seeking above all is the need to understand the conditions for effective insertion of an ethical norm into a context from the beginning of a technology development project.

3 Ethics and Governance in EU co-Funded Technology Projects

As part of the research of this project we coordinated an analysis of a number of EU-funded technology development projects to understand whether the ethical and social aspects of the technologies being produced were recognised, and if so, how the project partners resolved the issues, and what the governance arrangements were [2]. The initial focus of the research was in the domain of Ambient Intelligence (AmI) where the potential ethical dimensions are varied (due to technical invisibility, complexity, and ubiquity in most areas of life, including home and health).

The aim of this aspect of the research was to investigate whether any ethical considerations took place in EU-funded AmI projects (completed under FP6) and if so, how the project leaders identified and tackled the issues that were raised. To explore these issues, a grid-based questionnaire was used to collect data about the approaches used in projects to identify and consider ethical issues (such as reference to ethical principles, rights, or theories) as well as any governance tools used to identify or address ethics issues, such as focus groups, expert panels, etc. The questionnaire was sent to project leaders and was followed by interviews either held face-to-face or by telephone with a smaller sample of project leaders in order to gain a deeper understanding of their engagement with ethics in their projects. The questionnaire was developed with reference to a number of analytical parameters informed by EGAIS' theoretical standpoint. These were:

- Ethical issue identification and specification: What are the ethical issues?
- Ethical approach: What approach did they use?
- Reflexivity: Is there any reflexivity throughout the technology project? At what stage and what type?
- Governance arrangements: Is there any governance tool used to deal with ethical problem(s)?
- Implementation: Are the governance tools effective? To what extent?

The sample included 23 AmI projects selected according to the ethical problems apparent in the technologies being developed from EGAIS perspective, and from which we had received agreement from the Project Coordinators to take part in our research.

3.1 Summary of Findings

Questionnaire responses indicated that less than half of the sample considered a number of ethical issues relevant to their projects at the beginning, and just over half of them engaged with any social issues. Among the most mentioned ethical perceptions were: technology's impact on social life, privacy of individual data and informed consent.

Only five of the projects went through the EU ethical review process, very few of the projects dedicated a separate work package or deliverable to addressing the ethical aspects of their projects. There were a number of strategies chosen to reflect upon the ethical issues arising in the projects. Among these it was found that following ethical guidelines or creation of ethical codes were the most preferred strategies by these few projects. On the other hand, more than half of the sample used one or more governance tools as ways of institutional arrangements used for the implementation of ethical issues in the projects. Technology assessment (TA) was the most preferred tool followed by questionnaires, focus groups and expert panels. Interestingly, TA was also found the most effective tool compared to others.

As a second step we analysed the publicly available material, i.e. deliverables, reports and publications of the selected projects to compare the answers received from the questionnaires (i.e. the understanding of the project leaders) and the implicit evidence of ethical issue determination contained in the project outputs. From this we found that although more than half of the project leaders suggested there were no ethical/social issues relevant to their projects, the picture seen in the project documentation was different for some. We found (and interpreted from our perspective) the ethical/social issues to be addressed in the projects explicitly or implicitly evident in the project materials.

We were particularly interested in the discipline approaches brought to the projects by the participants, i.e. the 'cognitive framings' of the project participants, or brought to the project from a discipline perspective. In the main, the theoretical / paradigmatic approaches behind the projects' designs ranged from human computer interaction (HCI) perspectives to technological and organisational approaches.

Both of the data sources indicated a lack of understanding of the ethical and social aspects of technology development in the majority of the projects analysed. There was a tendency towards leaving "the ethical" in the hands of ethical experts, but for those which engaged with internal ethical advisory boards the projects appeared to be more alert to the problems. The conditions that drive the consideration of ethical issues in projects and how they are reflected on are directly related to the recognition of an ethical issue initially and then to acting upon it. After putting an action in place, the next step is reflecting on whether the first action is working and if not, what other tools can be used to address the ethical issue. This is what we called first-order and second-order reflexivity.

We found that a number of the projects appeared to follow approaches that are fairly standard to research projects, such as ethical guideline principles on check lists, or some consensual procedures that allowed for discussion – thus reaching first-order reflexivity, but not second-order reflexivity.

3.2 Ethical Issue Determination Exercise

In order to explore the ethical questions which are embedded in technology development process, the empirical data collection aspects of the EGAIS project were presented via a workshop to the AmI project leaders of the projects under investigation. We first presented a summary of our findings from the questionnaire responses showing inconsistencies in ethical issues identification and follow-up. A case study was then introduced to the participants for them to discuss and also question the validity of their existing reasoning processes. The participants had different disciplinary backgrounds, world views, and cross-cultural research experiences, and the value of the exercise was in breaking through the boundaries of their existing (bounded) framings to open the door to a wider perspective through interacting with each other.

We selected the scenario exercise from among a number of completed FP6 Ambient Intelligence (AmI) projects we have investigated in EGAIS. We needed to find a case that would require addressing social and ethical issues within technical development. The scenario had been used successfully within a project as means of engaging technical developers in the consideration of ethical and social issues related to the development projects they were working on. We did not give or mention the ethical aspects of the scenario to the participants of the workshop. The feedback from the workshop indicated that new learning had taken place, that 'eyes were opened' to aspects of technology development, and overall participants were positive about the session.

The rationale for the workshop and the approach used informed this Summer School workshop, which is described below.

4 Summer School Workshop

The workshop began with setting the context, research problem and definition of key concepts from EGAIS' perspective [1], [2]. A case study was then introduced to the participants for them to discuss. The case study is the same one that was used as part of EGAIS.

Case Study: Bank's ATM Scenario:

This scenario concerns ATMs located in bank vestibules. The problem to be addressed by the technology development is the use of the vestibule by vagrants seeking shelter at certain times (e.g. winter, night time) which has an impact on the security of the bank's customers wishing to obtain money, and their consequent avoidance of the service offered in the vestibule. The specific problem addressed is to detect people using the space for longer than the "average" time. Main technologies involved in this scenario are; use of camera(s) to detect and record such an incident utilising body-tracking, background subtraction and trajectories. Questions that will be raised are: why this scenario records and analyses such data; what the expected results may be; who the end-users would be; who the people overseeing the

monitoring would be and the effects of this type of technology on the people monitored.

With this exercise we tried to ensure the students and other participants were able to explore:

- Whether, and how, the group members identified an ethical problem:
- What type of governance arrangements were used to identify and address the ethical problem
- Whether any relationship can be detected between the context of technology application and social or ethical norms:

In this respect we divided the audience into two groups and handed them an exercise template to work on. The sheet included three questions for them to discuss and reflect on. These questions were:

- Does this project raise ethical issues, and if so, what are they?
- Could you justify how you identify them?
- Would you differentiate the social and ethical issues?

4.1 Reflections on the scenario

Participants consisted of members of EU projects (one coordinator of currently funded two EU projects on privacy and technology), academics and Ph.D. students (some involved in projects, some not); and experts in privacy and policy.

Their opinions on the scenario language and tone were critical. According to this, the detail in the scenario provided by the technical developers did not match the justification for the technology development; participants used words such as, 'false security, hidden agendas (in terms of analyzing users and customers' behavior), obscuring the real aim'. The key problem with the technology integrated in the scenario demonstrated that the system was excluded from the use of technology and the real time analysis of the use would be highly problematic. One of the key questions raised was regarding the insufficiency of information at stake. That is, nothing was mentioned about other uses of the technology in different contexts (the question was "where else could, or would, such technology be used?")

Ethical issue determination. The ethical problems identified by the participants were:

(i) The actual use of such technology and the context of use. Participants thought that the technology developers were not clear in their justification of use, and indeed some said they thought they were *lying* about the use. Terms such as 'normal' or 'suspicious' behavior were used without characterising what is 'normal' or 'suspicious'. It was also noted that the claim to provide "immediate help" if a 'suspicious event' was seen on camera was unlikely to be true given that a security guard would have to see the incident 'immediately'; and either alert another guard to go to the scene, or the guard looking at the camera to leave his/her post, or possibly call the police. All of these actions would take time.

(ii) From a technical standpoint the application of the technology as described raised issues concerning the means by which data would be communicated or stored. There seemed *no transparency of processes* regarding these issues, nor any mention

of how the public would be informed about the camera surveillance, which would impact on the ability to gain '*informed consent*'.

(iii) The technology creates a *departure from the 'norm'* in that uniform behavior from individuals is expected. How long should a "normal" process of cash retrieval be considered non-problematic? What is normal? When it comes to slow elderly people, it would be difficult to estimate a normal processing time for achieving their aim, and for the technology to decide not to operate the alarm. In the scenario information on what exactly would cause the alarm to be raised was missing, as well as what the resulting implications would be for the individual(s) concerned. If an individual causes an alarm which for some reason is a false alarm, and the event is connected to the individual's identity, that person could be classified as a trouble maker.

(iv) Underlying the motive for utilising this technology are generalised assumptions about certain people in society, i.e. the *technology takes a discriminatory view*. The assumption is that homeless people are bad. Of course, a bank (as the owner of an ATM vestibule) might argue that homeless people in a vestibule are indeed 'bad for business' in that customers would not use the facilities provided, or that they are not meeting their 'duty of care' obligation to their customers. In other words the Bank need to be mindful of their duty to customers by providing a 'safe' environment.

(v) In general the technology challenges the *freedom of society* and threatens the *treatment of people as human beings*, in that the free will of the subject (of surveillance) was challenged. For example, an alarm bell for someone to ring that would alert a guard could be a less intrusive way of addressing the problem.

(vi) The *dual use issue* (one of the criteria to be addressed on the ethics list for project proposals) was evident to participants, for example the technology could be used for detecting employees who do not move; or to detect children who move. If this technology application were to be used in schools for some reason the justification for its use would need to be very strong as the issues arising, i.e. those mentioned above, could have significant negative outcomes. Thus the intended use described in the scenario, and its justification, was considered to be prejudged with no further reflection on other possible uses.

Justification of the approach. Absolute universality related values related to freedom were the main framing used to justify the ethical problems identified with this scenario. At stake was the treatment of human beings in society. The technology creates discrimination among people.

The groups used interactive methods to identify the issues. One especially referred to social constructivisim in aid of coming to a common understanding of the [ethical] problems. Dialogue as a method of justification was mentioned.

Ethical versus social. The difference between ethical issues and social issues was not clear to participants. The question of legality in this respect was the main point of departure: people's right to access; customer's property rights, and detection of people in danger were considered socially-related justifications. However, the end aim of the technology, as the participants argued, was different: it was about a way to present depersonalization of the action.

Overall, there was a consensus from the group that the language used to present a scenario is crucial to give a clear and precise understanding, and that setting the

context of use (and possibly boundaries) is important, because the issues change as the context changes.

5 Conclusion

The workshop clearly demonstrated that the EGAIS research problem is placed in a strong position, and that it is timely and important to raise the problem of ethical issues vis-à-vis technology development.

We would argue that the problem addressed by the EGAIS project is not one of identifying and determining an ethical issue, per se, but to look beyond the existing picture. It is about *how* solutions to the ethical problems in relation to technology development are derived and executed.

Addressing ethical issues in technology development projects in a European context needs to be considered as an essential element of technology design processes. Ethics should be more than an ad hoc strategy, especially when it comes to an unexpected [ethical] problem. EGAIS project's goal, in this context, is to attempt to embed and practice responsibility by 'prompting' awareness and recognition of ethical aspects in technology development. We have shown through the workshop at this summer school that deeper insights can be gained by sharing views, perspectives, and reflecting further on those views and perspectives – thus prompting further exploration, reasoning and explanations. Through the chosen scenario, the participants had the opportunity to learn from each other's "different" cognitive framings, and were able to learn to question the validity of their ethical issue determination approaches.

The EGAIS project attempts to rescue ethics from the boundaries of closed cognitive approaches formed by stocks of knowledge. In doing so we take an exploratory conception of the "context", and recognise that the problem of the context requires a pragmatic understanding. The workshop clearly demonstrated that the contextual use of technology, the language of its depiction to society, and the relation between the determination of the [ethical] norm and its own implementation are not free from context.

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