

A framework for the ethical impact assessment of information technology

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Abstract This paper proposes a framework for an ethical impact assessment which can be performed in regard to any policy, service, project or programme involving information technology. The framework is structured on the four principles posited by Beauchamp and Childress together with a separate section on privacy and data protection. The framework identifies key social values and ethical issues, provides some brief explanatory contextual information which is then followed by a set of questions aimed at the technology developer or policy-maker to facilitate consideration of ethical issues, in consultation with stakeholders, which may arise in their undertaking. In addition, the framework includes a set of ethical tools and procedural practices which can be employed as part of the ethical impact assessment. Although the framework has been developed within a European context, it could be applied equally well beyond European borders.

Keywords Ethical impact assessment · Ethical issues · Ethical tools · Respect for autonomy · Nonmaleficence · Beneficence · Justice

Introduction

Objective

The objective of this paper is to propose an ethical impact assessment framework that could be used by those developing new technologies, services, projects, policies or programmes

as a way to ensure ethical implications are adequately examined by stakeholders before deployment and so that mitigating measures can be taken as necessary. The framework could be used in many different contexts, wherever the decision-maker perceives a need to take the ethical considerations of stakeholders into account.

Here are some examples of where an ethical impact assessment could help or could have helped project managers or policy-makers identify ethical issues before deploying a technology or service:

- Google introduced its Buzz social network in February 2010 without adequate consideration of the ethical or privacy impacts. Google developed Buzz as a rival to Facebook by creating instant and automatic social networks for users of its Gmail service. The snag was that it did not ask users whether they wanted a social network composed of the people whom they e-mailed, no matter how frequently. As a *New York Times* reporter observed, “E-mail, it turns out, can hold many secrets, from the names of personal physicians and illicit lovers to the identities of whistle-blowers and antigovernment activists.”¹ Surprised by the firestorm of criticism, Google had to make changes to Buzz within a few days of its introduction. If it had carried out an ethical impact assessment in advance of making Buzz operational, it might have avoided the flak.
- Is it ethically acceptable to electronically tag those with incipient dementia who may go wandering from assisted living facilities? While it may be ethically correct not to hold such people as virtual prisoners within the confines of a residence, is it ethically acceptable to keep them under constant surveillance? Even if they consented to be tagged, can their consent

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¹ Helft (2010).

be regarded as informed? Whose view should be accepted if, in moments of lucidity, the senior citizen did not want to be tagged, while his or her adult children did want him or her to be tagged?

- The UK government is introducing an electronic health record scheme for the entire population of the country on the basis of implied consent—patients are assumed to agree to the creation of a record unless they refuse. How ethically acceptable is the notion of “implied consent”?
- Following the attempt at blowing up an aircraft on its way to Detroit at Christmas in 2009, the US, UK and some other countries introduced full body scanners at airports, which may or may not be successful in detecting liquid explosives. While such scanners may enhance security, they do so at the expense of the passenger’s privacy. Which is the ethically correct choice?

These and many other examples indicate the utility for the technology developer, policy-maker or project manager in carrying out an ethical impact assessment in consultation with stakeholders before the technology is deployed. One of the objectives of the ethical impact assessment is to engage stakeholders in order to identify, discuss and find ways of dealing with ethical issues arising from the development of new technologies, services, projects or whatever. Stakeholders may have some information or ideas or views or values which the project manager had not previously considered. They may be able to suggest alternative courses of actions to achieve the desired objectives. They may be able to suggest some safeguards which would minimise the ethical risks that might otherwise explode after a technology or project is launched. By consulting stakeholders before launch, the project manager may be able to lower his liability and avoid some nasty surprises. As a minimum, the policy-maker or project manager will earn some good will by consulting stakeholders who might otherwise be among his chief critics.

Method

The ethical impact assessment framework proposed in this paper draws on data selected, collected and analysed from various sources. Among those sources, Hofmann for one has commented that no general method for assessing the moral implications of (health) technology has been established.² The framework proposed here offers a solution. The need for an ethical impact assessment framework also

² Hofmann refers specifically to health technology, but his observation may well be applicable to any technology. Hofmann (2005, p. 288).

seems apparent by virtue of the fact that the relevance of ethical principles and social values may be influenced by the context in which they are considered. The idea or need to consider ethics in context is not new. For example, in his 1985 essay, “What is Computer Ethics?”, Moor observed that “A typical problem in computer ethics arises because there is a policy vacuum about how computer technology should be used... A central task of computer ethics is to determine what we should do in such cases, i.e., to formulate policies to guide our actions.”³ He added “Computer ethics is not a fixed set of rules which one shellacs and hangs on the wall. Nor is computer ethics the rote application of ethical principles to a value-free technology. Computer ethics requires us to think anew about the nature of computer technology and our values.” An ethical impact assessment would be a way of addressing Moor’s concerns.

Helen Nissenbaum, author of the influential essay “Privacy as contextual integrity”, argued along somewhat the same lines. She presented a model of informational privacy in terms of contextual integrity, namely, that in determining privacy threats, one needs to take into account the nature of a situation or context: what is appropriate in one context can be a violation of privacy in another context.⁴ Again, given the need to consider ethical issues in context, an ethical impact assessment would be more appropriate than prescriptive rules.

If a prescriptive ethical guidance is problematic because contextual factors influence the ethics, then a better approach would be to ask questions, which is what the European Commission and others do, and which is the approach adopted here too.⁵ Those making proposals for funding under the Commission’s Framework Programmes of research and technological development must respond to a set of ethical questions (e.g., “Does the proposal involve tracking the location or observation of people?”). Questions aimed at identifying issues also feature in the privacy impact assessment models in countries such as Canada⁶ and the UK.⁷ Scholars such as Gary Marx have also formulated sets of questions aimed at uncovering ethical issues.⁸ In preparing the ethical impact assessment framework presented in this paper, the author drew on the approach and questions presented by these and other sources.

³ Moor (1985).

⁴ Nissenbaum (2004).

⁵ http://cordis.europa.eu/fp7/ethics_en.html#ethics_cl

⁶ Treasury Board of Canada Secretariat 2002.

⁷ [UK] Information Commissioner’s Office (ICO) 2009.

⁸ Marx (1998). Van Gorp also proposed a list of questions “that helps researchers doing research in technological fields to identify ethical aspects of their research.” Van Gorp (2009).

Target audience

The ethical impact assessment proposed in this paper is primarily aimed at those who are developing or intend to develop an information technology project, policy or programme that may have ethical implications. More specifically, this would include industry players when they are developing a new technology or planning a new service as well as policy-makers and regulatory authorities when they are considering a new policy or regulation. In addition, the ethical impact assessment framework should be of interest to civil society organisations, so that when they become aware of proposals or plans for new technologies, they can advocate the framework's use and their involvement in the decision-making process. Other stakeholders, such as academics, may find the ethical impact assessment framework of interest too and, as a consequence, may be able to suggest improvements or to analyse its use. It might also be of interest to the media as background to any stories they prepare on the introduction of a new technology or service, which in turn will help raise the awareness of the public and other stakeholders about the associated ethical issues.

Nominally, an ethical impact assessment of a new or emerging technology should target stakeholders interested in or affected by the outcome. In the first instance, the policy-maker or technology developer or project manager should identify the stakeholders he or she thinks relevant, but in most cases he or she should be open to or even encourage other stakeholders to contribute to the assessment.⁹ To ensure those participating in an ethical impact assessment are truly representative of the relevant stakeholder groups, the technology developer or policy maker may need to make some special efforts to engage the relevant stakeholders in order to avoid something akin to regulatory capture.

How the paper is structured

This paper contains five main parts, namely, this introduction, a section on ethical principles and issues, a section on ethical tools, a section on procedural aspects and the conclusions. Not only does the paper advocate use of ethical impact assessments, but it also provides a structure for undertaking such assessments, i.e., it identifies key ethical principles and issues that should be addressed in an assessment as well as ethical tools that can be used in undertaking an assessment.

⁹ Dekker says ethical reflection in technology assessment requires an engagement of experts from different disciplines for two reasons: "Firstly, the technical, economical, legal and social aspects are deeply cross-correlated with the ethical reflection. And secondly, participating in such interdisciplinary discussions enables an ethical reflection which keeps in touch with the real world." See Dekker (2004).

Some of the principles and "issues" are also values, while other issues are related to tactics, policies or regulations adopted by decision-makers in pursuit of values (like data protection). The word "issues" has been used here because both the values and policies can be debated. Indeed, one should expect that in the ethical impact assessment of a new technology, they *will* be debated. It is why an ethical impact assessment that engages stakeholders in the debate is necessary. Nevertheless, the identification of values and policy design are two different needs, although the former supports the latter and they may be served by the same ethical impact assessment framework. For example, in this framework under the principle of respect for autonomy, dignity is a social value (indeed, a fundamental right) while informed consent is a matter of policy. However, in particular situations, say with regard to the consequences of the application of a new technology, stakeholders could debate whether dignity is being respected or whether consent has truly been informed.

The ethical tools can be used to engender debate over the extent to which social values are respected by a new technology (or whatever) and what might be the ethical implications arising from the application of a new technology.

The section on procedural aspects or practices relates to the process of undertaking the assessment, stakeholder engagement and consultation, risk assessment, accountability, third-party review and audit, providing information, responding to complaints and good practice. It also briefly presents a step-by-step procedure or guidelines for undertaking an ethical impact assessment. There is a close relationship between the ethical tools and some of the procedural aspects. Employing the ethical tools is a way of engaging stakeholders. Providing more information and responding to complaints are also ways of engaging or interacting with stakeholders.

Previous studies and the role that IT plays

The construction of an ethical impact assessment framework, as proposed in this paper, draws on various sources with regard to values, different types of impact assessment and the role that IT plays.

With specific regard to values, it draws on those stated in the EU Reform Treaty, signed by Heads of State and Government at the European Council in Lisbon on 13 December 2007, such as human dignity, freedom, democracy, human rights protection, pluralism, non-discrimination, tolerance, justice, solidarity and gender equality.¹⁰ These values are also stated in the Charter of Fundamental

¹⁰ <http://eurlex.europa.eu/JOHtml.do?uri=OJ:C:2007:306:SOM:EN:HTML>

Rights of the European Union,¹¹ and constitute the key frame for design and implementation of all EU policies.¹²

The values set out in these texts could serve as an ethical guidance. In fact, it has been adopted here as the baseline for identifying the key values or ethical principles or issues that must be taken into account in the development of new technologies, etc. Other important policies dealing with ethical issues or touching upon such issues are also mentioned.

With regard to impact assessment, the paper draws on the work that scholars, experts and policy-makers have done, especially over the last 30 years or so. There are various types of impact assessments, including

- environmental impact assessments (which includes the notion of the precautionary principle which was given its impetus at the UN Rio Conference or “Earth Summit” in 1992),
- risk assessment, which changed from purely technical analysis to an assessment involving stakeholders, those interested in or affected by a risk,¹³
- technology assessment,¹⁴
- regulatory impact assessment or simply impact assessment,¹⁵
- privacy impact assessment,
- etc.

In the context of other writings on IT, ethics and impact appraisal, this paper can be situated or should be positioned as the logical descendent of these antecedents.

All of these impact assessments, at least in their more progressive manifestations, have in common a recognition of the need to involve stakeholders in the assessment process. Authors such as Moor, Dekker, Skorupinski and Ott, Palm and Hansson, Beekman et al. have seen a relationship between participatory technology assessment and ethics. Stakeholder engagement and ethical consideration

are key features of the ethical impact assessment framework proposed here too.

The notion of examining the ethical impacts of information technology has been gaining traction ever since Moor published the article cited above more than a quarter of century ago. Of more recent provenance is the work done by Skorupinski and Ott who argued that technology assessment (TA) is not “detachable” (their descriptor) from ethical questions for several reasons, among which are

- TA is generally regarded as a policy instrument, to render responsible decisions possible in the realm of scientific and technological development.
- Certain central aspects in the concepts of TA lead to ethical questions. These include, for instance, the function as an early warning system, which would highlight undesirable consequences or the aspect of how manipulation in TA arrangements can be avoided.

The judgement to regard a certain technological option as preferable in contrast to others as the result of a TA arrangement is not possible without reference to norms and values.¹⁶

They pointed out that technology assessment has several functions, which underscore the relationship between TA and ethics as well as the need to engage stakeholders, including the public, in the assessment process:

One of the key functions of TA is *early warning*.... A warning presupposes an altruistic or at least a well-meaning attitude. The attempt to prevent something undesirable occurring requires a value judgement about what is undesirable. The persons who make that attempt cannot at the same time be neutral observers.

Another function of TA is *counselling*. Giving advice is not possible without having made value judgements on which course of action should be preferred. The notion of counselling as one of the tasks of TA leads to several ethical and conceptual questions.... *Assessing risks*... is not possible without reference to norms and values.¹⁷

More recently, Beekman et al. view the ethical assessment of the application of new technologies as complementary to rather than an alternative to scientific risk assessments and economic cost-benefit assessments. Taken together, they say, these ethical, scientific and economic assessments should provide a sound basis for socio-political decision-making.¹⁸

¹¹ http://www.europarl.europa.eu/charter/pdf/text_en.pdf

¹² European Commission 2007.

¹³ For a state-of-the-art review, see Renn (2008).

¹⁴ Technology assessments as an instrument for counselling political decision-makers were given a major impetus with the establishment of the Office for Technology Assessment (OTA) by the US Congress in 1972. Similar organisations were subsequently established in Europe, both at the Member State level (e.g., the Danish Board of Technology) and at the European level (e.g., the European Parliament’s office of Science and Technology Options Assessment (STOA)). STOA is a member of the European Parliamentary Technology Assessment Network (EPTA). Other EPTA members are the national parliamentary technology assessment bodies of Denmark, Finland, France, Germany, Greece, Italy, the Netherlands and the United Kingdom.

¹⁵ For a good overview of developments in this area, see Kirkpatrick and Parker (2007).

¹⁶ Skorupinski and Ott (2002, p. 97).

¹⁷ Skorupinski and Ott, p. 98.

¹⁸ Beekman et al. (2006), p. 13).

And more recent still, Palm and Hansson concur with the view that the primary task of an ethical technology assessment is to identify potential ethical issues associated with a new technology.¹⁹ They offered a preliminary check-list of ethical issues, i.e., including:

- Dissemination and use of information
- Control, influence and power
- Impact on social contact patterns
- Privacy
- Sustainability
- Human reproduction
- Gender, minorities and justice
- International relations
- Impact on human values.

Most of these issues can also be found in this paper.

The collection of essays brought together by Paul Sollie and Marcus Düwell in their book *Evaluating New Technologies* advanced even further the state of the methodological art of ethical assessment of new technologies.²⁰ In their introductory chapter, the editors note that “Although technology is easily one of the most permeating and consequential features of modern society, surprisingly, an ethics of technology is still in its infancy. Important reasons for this ‘underdevelopment’ of a methodology for morally evaluating technology development are related to its complex, uncertain, dynamic, and large-scale character that seems to resist human control.”²¹

Regarding the role that IT plays, in conducting an ethical impact assessment of a new technology, one should not treat the technology as a kind of black box. “Technologies always help to shape human actions and interpretations on the basis of which (moral) decisions are made,” comments Verbeek. “When technologies are always influencing human actions, we had better try and give this influence a desirable and morally justifiable form.”²² Technologies are neither neutral nor value-free. Hofman agrees: Technology expresses and influences the norms and values of its social context.²³ Orlikowski and Iacono rightly say that “because IT artefacts are designed, constructed, and used by people, they are shaped by the interests, values, and assumptions of a wide variety of communities of developers, investors, users, etc.”²⁴

They reviewed 188 articles published over 10 years in the journal *Information Systems Research* (ISR) and found a broad array of conceptualizations of IT artefacts.²⁵ They make the point that “IT artefacts are not static or unchanging, but dynamic... different features are developed... and users adapt the artefact for new and different uses.... Given the context-specificity of IT artefacts, there is no single, one-size-fits-all conceptualization of technology that will work for all studies.”²⁶ Furthermore, they say, the tendency to take IT artefacts for granted in IS studies has limited our ability as researchers to understand many of their critical implications—both intended and unintended—for individuals, groups, organisations and society.²⁷ While it may be impossible to foresee all of the ethical and other consequences of an emerging technology, nevertheless, an ethical impact assessment, involving different stakeholders from different disciplines and backgrounds, may be a good way of avoiding the traps discerned by Orlikowski and Iacono—i.e., of not seeing the context specificity of a technology and of not examining its critical implications for individuals, groups, organisations and society.

In addition, we must recognise that the (ethical) complexity of a technology multiplies as it converges with other technologies. The Internet was originally conceived as a way for scientists to exchange documents, but has changed beyond recognition as it has brought together and “absorbed” new broadband technologies, high speed servers, a multiplicity of low-cost, high-performance user devices, the vast storage capacity of cloud computing, GPS, networking sensors and actuators, ambient intelligence, the so-called Internet of Things and so on. In less than the time span of a single generation, the Internet has gone from something few people had even heard of to a point where broadband access to it is increasingly and widely described as a fundamental right. We can assume that even the US Defense Advanced Research Projects Agency (DARPA) could not have imagined the immeasurable benefits, nor the dangers of a virtually ubiquitous Internet—the reductions in privacy, the proliferation of ID theft, child grooming, spam, cybercrime and cyberterrorism, nor the extent to which our society and economy are underpinned by what has become a critical infrastructure.

In considering whether the *architecture* of an IT system matters in and of itself in terms of impacts, the Internet (or rather the World Wide Web) provides a case in point. Just as the architecture of the Internet has changed, and continues to change as we progress towards Web 2.0, Web 3.0 and the semantic Web, we can see that the architecture

¹⁹ Palm and Hansson (2006). An extensive set of criteria, some of which are ethical, for assessing emerging technologies can be found in Kuzma et al. (2008). Kuzma et al. also use a question approach for assessing emerging technologies.

²⁰ Sollie and Düwell (2009).

²¹ Sollie and Düwell, p. 4.

²² Verbeek (2009, p. 67, 71).

²³ Hofmann, p. 289. He observes (p. 288) that there appears to be broad agreement among scholars that technology is value-laden.

²⁴ Orlikowski and Iacono (2001, p. 131).

²⁵ Orlikowski and Iacono, p. 130.

²⁶ Orlikowski and Iacono, p. 131.

²⁷ Orlikowski and Iacono, p. 133.

of this colossal IT system does matter. However, what the impacts might be will depend on the specifics of the architecture. It might be possible to minimise or eliminate any negative impacts by modifying the architecture, as Web 2.0 is regarded as a solution of sorts to the existing WWW.

What I might regard as negative in the architecture of, let's say, a national IT system for electronic health records may well differ from what the designers think. This is clearly why it is useful (necessary) to engage all relevant stakeholders to discuss the consequences, to minimise information asymmetries and for all stakeholders, especially the proponents of the architecture, system, project, technology or whatever to engage with their peers with an open mind and a willingness to address problems and to recognise that it will most likely be in their own interests to do so at an early stage, rather than when the system or architecture is installed and when there may be significant antipathy on the part of other stakeholders.

Thus, an ethical impact assessment must not only focus on the ethics of a technology, but on the technology itself, its values, how it is perceived and how it is used or might be used in the future, not only by itself but as a component in a larger technological framework.

Ethical principles

The framework is structured on the four principles posited by Beauchamp and Childress²⁸ together with a separate section on privacy and data protection. Under these major principles are some values and/or issues followed by some brief explanatory text and a set of questions aimed at the technology developer or policy-maker to facilitate a consideration of the ethical issues which may arise in their undertaking. Values and issues are clustered together because of their relation to the overarching principles and because they will generate debate among stakeholders. For example, everyone would subscribe to the shared value of dignity, but dignity could also become an issue in particular contexts—i.e., does an emerging technology respect the dignity of the individual? Is dignity compromised? What is meant by dignity in the given context?

The framework draws on various sources (see the References) in compiling these questions. No doubt more issues and questions could be added, and some questions could be framed differently, and if so, that's fine. To some extent, the issues and questions set out here should be regarded as indicative, rather than comprehensive.

Respect for autonomy (right to liberty)

According to Beauchamp and Childress, "Personal autonomy is, at a minimum, self-rule that is free from both controlling interference by others and from limitations, such as inadequate understanding, that prevent meaningful choice. The autonomous individual acts freely in accordance with a self-chosen plan... A person of diminished autonomy, by contrast, is in some respects controlled by others or incapable of deliberating or acting on the basis of his or her desire and plans... Virtually all theories of autonomy agree that two conditions are essential for autonomy (1) *liberty* (independence from controlling influences) and (2) *agency* (capacity for intentional action)."²⁹

Autonomy, equated with liberty, is a right enshrined in Article 6 of the European Charter of Fundamental Rights as well as Article 3 of the UN's Universal Declaration of Human Rights of 10 December 1948.³⁰

Questions

Does the technology or project curtail a person's right to liberty and security in any way? If so, what measures could be taken to avoid such curtailment?

Does the project recognise and respect the right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupational integration and participation in the life of the community?

Will the project use a technology to constrain a person or curtail their freedom of movement or association? If so, what is the justification?

Does the person have a meaningful choice, i.e., are some alternatives so costly that they are not really viable alternatives? If not, what could be done to provide real choice?

Dignity

Dignity is a key value, as evidenced by its being the subject of Article 1 ("Human dignity is inviolable. It must be respected and protected.") of the Charter of Fundamental Rights as well as Article 25 which specifically refers to the rights of the elderly ("The Union recognises and respects the rights of the elderly to lead a life of dignity and independence and to participate in social and cultural life.")

Dignity also features in Article 1 of the UN's Universal Declaration of Human Rights, which states that "All human beings are born free and equal in dignity and

²⁸ Beauchamp and Childress (2001).

²⁹ Beauchamp and Childress, p. 58.

³⁰ www.un.org/Overview/rights.html

rights.” Article 1 of the Charter of Fundamental Rights provides that dignity is to be not only “respected”, but also “protected.” This means that public authorities are required not only to refrain from tampering or interfering with an individual’s private sphere, but also to take steps in order to bring about the conditions allowing individuals to live with dignity.

Dignity means that citizens should be enabled to live in dignity and security and be free of exploitation and physical or mental abuse, according to Boddy. Citizens should be able to participate actively in the formulation and implementation of policies that directly affect their well-being. They should be treated fairly regardless of age, gender, racial or ethnic background, disability or other status, and be valued independently of their economic contribution.³¹

The fact that some citizens need to be in assisted living residences does not mean that they have lost their entitlement to their fundamental rights and dignity. The LOCOMOTION report rightly makes this point: “Clients should be enabled to enjoy human rights and fundamental freedoms when residing in any shelter, care or treatment facility, including full respect for their dignity, beliefs, needs and privacy and for the right to make decisions about their continuing care and the quality of their lives.”³²

Respect for the dignity of senior citizens can be manifested in different ways, including in the use of devices by or for senior citizens—i.e., as far as possible devices “should not make users feel different from others or make them appear to be something ‘less’ than the rest of us.”³³

Questions

Will the technology or project be developed and implemented in a way that recognises and respects the right of citizens to lead a life of dignity and independence and to participate in social and cultural life? If not, what changes can be made?

Is such a recognition explicitly articulated in statements to those involved in or affected by the project?

Does the technology compromise or violate human dignity? For example, in the instance of body scanners, can citizens decline to be scanned or, if not, what measures can be put in place to minimise or avoid comprising their dignity?

Does the project require citizens to use a technology that marks them in some way as cognitively or physically disabled? If so, can the technology be designed in a way so that it does not make them stand out in a crowd?

Does the project or service or application involve implants? If so, does it accord with the opinion of the European Group on Ethics (EGE)?³⁴

Informed consent

It has been said that consent must be meaningful: “Give us your data or we won’t serve you” is not meaningful consent.³⁵

The EU Directive on clinical trials (2001/20/EC) provides good guidance on informed consent. It says that a person gives informed consent to take part in a trial only if his decision:

- is given freely after that person is informed of the nature, significance, implications and risks of the trial and either:
- is evidenced in writing, dated and signed, or otherwise marked, by that person so as to indicate his consent, or
- if the person is unable to sign or to mark a document, his consent is given orally in the presence of at least one witness and recorded in writing.

The Directive says the following conditions apply to the giving of informed consent by a capable adult:

- The subject (end user) has had an interview with the investigator, or another member of the investigating team, in which he has been given the opportunity to understand the objectives, risks and inconveniences of the trial (research activity) and the conditions under which it is to be conducted.
- The subject has been informed of his right to withdraw from the trial at any time.
- The subject has given his informed consent to taking part in the trial.
- The subject may, without being subject to any resulting detriment, withdraw from the trial at any time.
- The subject has been provided with a contact point where he may obtain further information about the trial.

The Directive says that in the case of other persons incapable of giving their consent, such as persons with dementia, psychiatric patients, etc., inclusion in clinical trials should be on an even more restrictive basis. Medicinal products for trial may be administered to all such individuals only when there are grounds for assuming that the direct benefit to the patient outweighs the risks. Moreover, in such cases, the written consent of the patient’s legal representative, given in co-operation with the treating doctor, is necessary before participation in any such clinical trial.

³¹ Boddy (2004, p. 39). LOCOMOTION was a project funded by the European Commission’s Fifth Framework Programme (FP5).

³² Boddy, p. 40.

³³ Boddy, p. 48.

³⁴ For ethical considerations re implants, see the European Group on Ethics in Science and New Technologies (EGE) 2005.

³⁵ Goldberg et al. (2001).

The posture of the Directive toward informed consent is not only relevant in clinical trials, but also in trials and applications of information technology too, in instances where persons might use a particular technology of their own free will or might be obliged to use it in a situation where they cannot give informed consent (for example, because they suffer from dementia). Informed consent is also addressed in Article 7 of the EU Data Protection Directive: “Member States shall provide that personal data may be processed only if: (a) the data subject has unambiguously given his consent.” Many online services should obtain informed consent with regard to the collection and use of personal data.

Questions

Will the project obtain the free and informed consent of those persons to be involved in or affected by the project? If not, why not?

Will the person be informed of the nature, significance, implications and risks of the project or technology?

Will such consent be evidenced in writing, dated and signed, or otherwise marked, by that person so as to indicate his consent?

If the person is unable to sign or to mark a document so as to indicate his consent, can his consent be given orally in the presence of at least one witness and recorded in writing?

Does the consent outline the use for which data are to be collected, how the data are to be collected, instructions on how to obtain a copy of the data, a description of the mechanism to correct any erroneous data, and details of who will have access to the data?

If the individual is not able to give informed consent (because, for example, the person suffers from dementia) to participate in a project or to use of a technology, will the project representatives consult with close relatives, a guardian with powers over the person’s welfare or professional carers? Will written consent be obtained from the patient’s legal representative and his doctor?

Will the person have an interview with a project representative in which he will be informed of the objectives, risks and inconveniences of the project or research activity and the conditions under which the project is to be conducted?

Will the person be informed of his right to withdraw from the project or trial at any time, without being subject to any resulting detriment or the foreseeable consequences of declining to participate or withdrawing?

Will the project ensure that persons involved in the project give their informed consent, not only in relation to the aims of the project, but also in relation to the *process* of the research, i.e., how data will be collected and by whom, where it will be collected, and what happens to the results?

Are persons involved in or affected by the project able to withdraw from the project *and* to withdraw their data at any time right up until publication?

Does the project or service collect information from children? How are their rights protected?

Is consent given truly voluntary? For example, does the person need to give consent in order to get a service to which there is no alternative?

Does the person have to deliberately and consciously opt out in order *not* to receive the “service”?

Nonmaleficence (avoiding harm)

Beauchamp and Childress say that “The principle of non-maleficence asserts an obligation not to inflict harm on others” and that “Nonmaleficence only requires intentionally refraining from actions that cause harm. Rules of nonmaleficence, therefore, take the form of ‘Do not do X’.”³⁶ Under this broad principle, this framework includes several ethical values and issues, as follows.

Safety

Article 38 of the Charter of Fundamental Rights deals with consumer protection: “Union policies shall ensure a high level of consumer protection.” It is the subject of Article 153 of the EC Treaty: “In order to promote the interests of consumers and to ensure a high level of consumer protection, the Community shall contribute to protecting the health, safety and economic interests of consumers, as well as to promoting their right to information, education and to organise themselves in order to safeguard their interests.” Consumer protection at European level is also provided by (amongst others) Directive 93/13 on unfair terms in consumer contracts, Directive 97/7 on consumer protection in respect of distance contracts and the Directive on liability for defective products (85/374/EEC).

Questions

Is there any risk that the technology or project may cause any physical or psychological harm to consumers? If so, what measures can be adopted to avoid or mitigate the risk?

Have any independent studies already been carried out or, if not, are any planned which will address the safety of the technology or service or trials? If so, will they be made public?

To what extent is scientific or other objective evidence used in making decisions about specific products, processes or trials?

³⁶ Beauchamp and Childress 2001, p. 113 and p. 115.

Does the technology or project affect consumer protection?

Will the project take any measures to ensure that persons involved in or affected by the project will be protected from harm in the sense that they will not be exposed to any risks other than those they might meet in normal everyday life?

Can the information generated by the project be used in such a way as to cause unwarranted harm or disadvantage to a person or a group?

Does the project comply with the spirit of consumer legislation (e.g., Directive 93/13 on unfair terms in consumer contracts, Directive 97/7 on consumer protection in respect of distance contracts and the Directive on liability for defective products (85/374/EEC))?

Social solidarity, inclusion and exclusion

The European Council's Lisbon Strategy adopted the notion of e-inclusion which "refers to the actions to realise an inclusive information society, that is, an information society for all."³⁷ To achieve this objective, which is a manifestation of the value of social solidarity, Europe must tackle the root causes of exclusion and e-exclusion. There are various reasons why some people are excluded from the Information Society, but cost and knowledge are among the principal ones.

Questions

Has the project taken any steps to reach out to the e-excluded (i.e., those excluded from use of the Internet)? If not, what steps (if any) could be taken?

Does the project or policy have any effects on the inclusion or exclusion of any groups?

Are there offline alternatives to online services?

Is there a wide range of perspectives and expertise involved in decision-making for the project?

How many and what kinds of opportunities do stakeholders and citizens have to bring up value concerns?

Isolation and substitution of human contact

Isolation is the objective condition of having too few and too poor social ties, of not being in any relevant social network. New forms of communication—from phone calls to e-mails, instant messaging, Web meetings, social networking, wireless personal area networks and so on—help to alleviate, if not overcome, isolation. By the same token, however, new communication tools may become a substitution for face-to-face contact and could, thereby, make

social isolation worse. Palm and Hansson rightly observe that "even if communication is facilitated, it is not self-evident that this will bring people together. There is a tendency for electronically mediated contacts to substitute face-to-face contacts."³⁸ Moreover, many senior citizens and the disabled are already isolated because new technologies and services are not affordable or are otherwise inaccessible. In any event, the availability of new communication technologies may diminish the interest in going outside the home, which would only compound the reduction in face-to-face contacts.

Questions

Will the project use a technology which could replace or substitute for human contact? What will be the impact on those affected?

Is there a risk that a technology or service may lead to greater social isolation of individuals? If so, what measures could be adopted to avoid that?

Is there a risk that use of the technology will be seen as stigmatising, e.g., in distinguishing the user from other people?

Discrimination and social sorting

Article 21 of the European Charter of Fundamental Rights prohibits "Any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation."

Discrimination occurs, not only in employment but also in access to goods and services such as banking, education, transport and health. Aiming to guarantee equal treatment in these areas, the European Commission proposed legislation on anti-discrimination outside the field of employment in the summer of 2008. The European Parliament adopted the Directive on 2 April 2009.

Profiling technologies have raised a host of ethical, legal and other issues including privacy, equality, due process, security and liability. Profiling technologies make possible a far-reaching monitoring of an individual's behaviour and preferences. Profiling technologies are by their very nature discriminatory tools. They allow unparalleled kinds of social sorting³⁹ and segmentation which could have unfair effects. The people profiled may have to pay higher prices, could miss out on important offers or opportunities, and

³⁸ Palm and Hansson, p. 552.

³⁹ Social sorting is a process of classifying people and populations according to varying criteria, to determine who should be targeted for special treatment, suspicion, eligibility, inclusion, access and so on. See Lyon (2003, p. 20).

³⁷ European Council resolution on e-Inclusion 2001.

may run increased risks because catering to their needs is less profitable. In most cases, they will not be aware of this, since profiling practices are mostly invisible and the profiles themselves protected by intellectual property or trade secret. This poses a threat to the equality of and solidarity of citizens.⁴⁰

Questions

Does the project or service use profiling technologies?
 Does the project or service facilitate social sorting?
 Could the project be perceived as discriminating against any groups? If so, what measures could be taken to ensure this does not happen?
 Will some groups have to pay more for certain services (e.g., insurance) than other groups?

Beneficence

Beauchamp and Childress say “Morality requires not only that we treat persons autonomously and refrain from harming them, but also that we contribute to their welfare. Such beneficial actions fall under the heading of ‘beneficence’... principles of beneficence potentially demand more than the principle of nonmaleficence because agents must take positive steps to help others, not merely refrain from harmful acts.” They cite two principles of beneficence: “*Positive beneficence* requires agents to provide benefits. *Utility* requires that agents balance benefits and drawbacks to produce the best overall results.”⁴¹

Questions

Will the project provide a benefit to individuals? If so, how will individuals benefit from the project (or use of the technology or service)?
 Who benefits from the project and in what way?
 Will the project improve personal safety, increase dignity, independence or a sense of freedom?
 Does the project serve broad community goals and/or values or only the goals of the data collector? What are these, and how are they served?
 Are there alternative, less privacy intrusive or less costly means of achieving the objectives of the project?
 What are the consequences of not proceeding with development of the project?
 Does the project or technology or service facilitate the self-expression of users?

Universal service

Universal service means an obligation imposed on one or more operators of electronic communications networks and/or services to provide a minimum set of services to all users, regardless of their geographical location within the national territory, at an affordable price.⁴² Universal service is broader than basic telephony service. Now the notion of universal service in Europe encompasses broadband and Internet access for all. The European Commission and various Member States have recognised that it makes economic and social sense to extend broadband Internet access to all citizens. It is also the ethically correct thing to do. They have made commitments with specific deadlines to achieving this objective.⁴³ Finland has recently made broadband access to the Internet a basic right.⁴⁴

Questions

Will the project or service be made available to all citizens? When and how will this be done?
 Will training be provided to those who do not (yet) have computer skills or knowledge of the Internet? Who should provide the training and under what conditions?
 Will the service cost the same for users who live in remote or rural areas as for users who live in urban areas? How should a cost differential be paid?

Accessibility

With some exceptions, industry is reluctant to factor the needs of the disabled and senior citizens into their design of technologies and services and to adopt a design-for-all approach. The accessibility (user-friendliness) of devices and services are prerequisites for the e-inclusion of citizens in the Information Society. Markets tend to overlook the needs of senior citizens and the disabled: there are few guidelines, voluntary or mandatory standards and related regulatory frameworks.⁴⁵

Others have said commitment to accessibility is widespread throughout the ICT industry, that there is a strong willingness on the part of software and hardware vendors to create accessible products; however, vendors’ ability to develop and deploy accessible products is held back by the need to comply with multiple standards. Thus, there needs to be greater convergence between the accessibility

⁴⁰ For more on profiling and social sorting, see Hildebrant and Gutwirth (2008) as well Lyon, op. cit.

⁴¹ Beauchamp and Childress, p. 165.

⁴² European Parliament and Council 2002.

⁴³ On 28 January 2009, the European Commission announced its aim to achieve 100 per cent high-speed Internet coverage for all citizens by 2010. See European Commission 2009. <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/35>

⁴⁴ Johnson (2009).

⁴⁵ European Commission 2007.

standards in force in different areas—such as Europe and the US—so that vendors can develop products that can be marketed and sold worldwide.⁴⁶

Although the initiatives of some in the private sector to improve accessibility are welcome, overall, there is still a far from adequate supply of affordable, accessible ICTs.⁴⁷ According to the European Commission, a lack of accessibility persists in many areas, including websites, digital television, phones, emergency services and public information terminals. New barriers to accessibility are appearing, often because of market failures, even though the markets for accessible products and services are worth many billions of euros. With 15 per cent of the EU population suffering some form of disability, they represent a mass market.

Questions

Does the new technology or service or application expect a certain level of knowledge of computers and the Internet that some people may not have?

Could the technology or service be designed in a way that makes it accessible and easy to use for more people, e.g., senior citizens and/or citizens with disabilities?

Are some services being transferred to the Internet only, so that a service is effectively no longer available to people who do not (know how to) use computers or the Internet? What alternatives exist for such people?

Value sensitive design

Some experts have argued that technology is not neutral with respect to values. Among those that argue in favour of Value Sensitive Design, Flanagan, Howe and Nissenbaum say that the design of technologies bears directly and systematically on the realisation, or suppression, of particular configurations of social, ethical and political values.⁴⁸ They also observe that “the values of members of a design team, even those who have not had a say in top level decisions, often shape a project in significant ways as it moves through the design process. Beliefs and commitments, and ethnic, economic, and disciplinary training and education, may frame their perspectives, preferences, and design tendencies, resulting eventually in features that affect the values embodied in particular systems.”⁴⁹

⁴⁶ See the statement by Oracle: “Oracle Welcomes New EU Policy on e-Inclusion.” <http://www.oracle.com/global/eu/public-policy/fs/new-e-inclusion-policy.html>

⁴⁷ European Commission 2007, p. 4.

⁴⁸ Flanagan et al. (2008).

⁴⁹ Flanagan, et al., p. 335.

Questions

Is the project or technology or service being designed taking into account values such as human well being, dignity, justice, welfare, human rights, trust, autonomy and privacy?

Have the technologists and engineers discussed their project with ethicists and other experts from the social sciences to ensure value sensitive design?

Does the new technology, service or application empower users?

Sustainability

Sustainability, as used here, refers to a condition whereby a project or service can be sustained, can continue into the future, either because it can generate the financial return necessary for doing so or that it has external support (e.g., government funding) which is not likely to go away in the foreseeable future. In addition to economic and social sustainability, more conventional understandings of sustainability should also be considered, i.e., decisions made today should be defensible in relation to coming generations and the depletion of natural resources. Often new technological products can be improved, for instance, through the use of more recyclable materials.⁵⁰

Questions

Is the project, technology or service economically or socially sustainable? If not, and if the technology or service or project appears to offer benefits, what could be done to make it sustainable?

Should a service provided by means of a research project continue once the research funding comes to an end?

Does the technology have obsolescence built in? If so, can it be justified?

Has the project manager or technology developer discussed their products with environmentalists with a view to determining how their products can be recycled or how their products can be designed to minimise impact on the environment?

Justice

Beauchamp and Childress draw a distinction between the terms *justice* and *distributive justice* as follows:

The terms *fairness*, *desert* (what is deserved), and *entitlement* have been used by various philosophers in attempts to explicate *justice*. These accounts interpret

⁵⁰ Palm and Hansson, p. 553. See also Anke van Gorp who also includes sustainability in his checklist of ethical issues and in this sense. van Gorp, op. cit., p. 41.

justice as fair, equitable, and appropriate treatment in light of what is due or owed to persons. Standards of justice are needed whenever persons are due benefits or burdens because of their particular properties or circumstances, such as being productive or having been harmed by another person's acts. A holder of a valid claim based in justice has a right, and therefore is due something. An injustice thus involves a wrongful act or omission that denies people benefits to which they have a right or distributes burdens unfairly.

The term distributive justice refers to fair, equitable, and appropriate distributions determined by justified norms that structure the terms of social cooperation. Its scope includes policies that allot diverse benefits and burdens, such as property, resources, taxation, privileges, and opportunities. Distributive justice refers broadly to the distribution of all rights and responsibilities in society, including, for example, civil and political rights.⁵¹

Questions

Has the project identified all vulnerable groups that may be affected by its undertaking?

Is the project equitable in its treatment of all groups in society? If not, how could it be made more equitable?

Does the project confer benefits on some groups but not on others? If so, how is it justified in doing so?

Do some groups have to pay more than other groups for the same service?

Is there a fair and just system for addressing project or technology failures with appropriate compensation to affected stakeholders?

Equality and fairness (social justice)

One commentator has distinguished between equality and fairness, thusly:

The terms "justice" and "fairness" are often used interchangeably. Taken in its broader sense, justice is action in accordance with the requirements of some law. Some maintain that justice consists of rules common to all humanity that emerge out of some sort of consensus. This sort of justice is often thought of as something higher than a society's legal system. It is in those cases where an action seems to violate some universal rule of conduct that we are likely to call it "unjust." In its narrower sense, justice is fairness. It is action that pays due regard to the proper interests, property and safety of one's fellows. While

justice in the broader sense is often thought of as transcendental, justice as fairness is more context-bound. Parties concerned with fairness typically strive to work out something comfortable and adopt procedures that resemble rules of a game. They work to ensure that people receive their "fair share" of benefits and burdens and adhere to a system of "fair play."

The principles of justice and fairness can be thought of as rules of "fair play" for issues of social justice. Whether they turn out to be grounded in universal laws or ones that are more context-bound, these principles determine the way in which the various types of justice are carried out...

The principles of equity, equality, and need are most relevant in the context of distributive justice, but might play a role in a variety of social justice issues. These principles all appeal to the notion of desert, the idea that fair treatment is a matter of giving people what they deserve.⁵²

Questions

Will the service or technology be made widely available or will it be restricted to only the wealthy, powerful or technologically sophisticated?⁵³

Does the project or policy apply to all people or only to those less powerful or unable to resist?

If there are means of resisting the provision of personal information, are these means equally available or are they restricted to the most privileged?⁵⁴

Are there negative effects on those beyond the person involved in the project or trials and, if so, can they be adequately mediated?

If persons are treated differently, is there a rationale for differential applications, which is clear and justifiable?

Will any information gained be used in a way that could cause harm or disadvantage to the person to whom it pertains? For example, could an insurance company use the information to increase the premiums charged or to refuse cover?

Privacy and data protection

Privacy is guaranteed as a right in the European Charter of Fundamental Rights, the European Convention of Human Rights, the UN's Universal Declaration of Rights as well as

⁵¹ Beauchamp and Childress 2001, p. 226.

⁵² Maiese (2003).

⁵³ Marx, p. 174.

⁵⁴ Marx, p. 174.

the EU's Data Protection Directive (95/46/EC), the e-Privacy Directive (2000/58/EC), etc.

Article 12 of the Universal Declaration of Human Rights says "No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence."

Article 8 of the Council of Europe's Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocol No. 11, Rome, 4.XI.1950, addresses the right to respect for private and family life.⁵⁵

The 1980 OECD Guidelines on the Transborder Flows of Personal Data and the EU's Data Protection Directive (95/46/EC) identify a set of fair information practices or principles which are important in any consideration of ethical issues that might arise in matters affecting privacy and data protection.

The complexities and intricacies of issues relating to privacy and data protection have received huge attention from policy-makers, regulators, academia, the mass media and many other stakeholders, including ethicists. "Privacy... is now recognized by many computer ethicists as requiring more attention than it has previously received in moral theory. In part this is due to reconceptualizations of the private and public sphere brought about by the use of computer technology, which has resulted in inadequacies in existing moral theory about privacy."⁵⁶

Although privacy in the sense of protection of personal data has received lots of attention in the computer age, privacy extends beyond computers and data protection. Some years ago, Roger Clarke identified four dimensions of privacy:

- privacy of the person;
- privacy of personal behaviour;
- privacy of personal communications; and
- privacy of personal data.⁵⁷

All four of these dimensions are referenced in the pages that follow.

Collection limitation (data minimisation) and retention

The OECD guidelines say there should be limits to the collection of personal data and any such data should be

⁵⁵ <http://conventions.coe.int/treaty/en/Treaties/Html/005.htm>

⁵⁶ Brey (2000). Previous to this, Moor commented that "From the point of view of ethical theory, privacy is a curious value. On the one hand, it seems to be something of very great importance and something vital to defend, and, on the other hand, privacy seems to be a matter of individual preference, culturally relative, and difficult to justify in general." He goes on to argue that privacy has both instrumental value (that which is good because it leads to something else which is good) and intrinsic value (that which is good in itself). Moor (1997).

⁵⁷ Clarke (2007).

obtained by lawful and fair means and, where appropriate, with the knowledge or consent of the data subject.⁵⁸

Data retention concerns the storage of call detail records of telephony and Internet traffic and transaction data, the phone calls made and received, e-mails sent and received and websites visited. These data provide an idea of who stays in contact with whom, when and how frequently. Further identifying information could be added as well as location data. The content of calls or e-mail is not (supposed to be) retained indefinitely. The Data Retention Directive (2006/24/EC) obliges service providers to retain call data for at least 6 months and up to 2 years. Such data may be viewed by law enforcement authorities.⁵⁹

Questions

How will the project determine what constitutes the minimum amount of personal data to be collected?

Who will determine what constitutes the minimum amount of personal data to be collected?

Will any data be collected which is not necessary for fulfilling the stated purpose of the project?

Is information collected in ways of which the data subject is unaware?

Is information collected against the wishes of the person?

For how long will the information be retained?

Will the information be deleted when it is no longer needed for the purpose for which it was collected?

Data quality

The OECD guidelines say that personal data should be accurate, complete and kept up-to-date. Similarly, Article 6 of the EU's Data Protection Directive says that personal data must be accurate and, where necessary, kept up to date.

Questions

What measures will be put in place to ensure the quality of the information gathered?

What assurances exist that the information collected is true and accurate?

Has the information been collected from others than the person to whom it pertains?

If the information collected is not accurate, what consequences might ensue?

⁵⁸ The Guidelines don't specify or define what "where appropriate" means.

⁵⁹ European Parliament and Council 2006.

Purpose specification

The OECD guidelines say that the purposes for which personal data are collected should be specified not later than at the time of data collection. Similarly, Article 6 of the EU's Data Protection Directive says that personal data must be collected for specified, explicit and legitimate purposes and not further processed in a way incompatible with those purposes.

Questions

Regarding the project, technology or service, are individuals aware that personal information is being (is to be) collected, who seeks it, and why?

Has the purpose of collecting personal data been clearly specified?

Has the project given individuals a full explanation of the purpose of the project or technology in a way that is clear and understandable?

Has the person been informed of the purpose of the research, its expected duration and the procedures by means of which the data is being (will be) collected?

Is there an appropriate balance between the importance of the project's objectives and the cost of the means?

How have the goals of the data collection been legitimated?

Is there a clear link between the information collected and the goal sought?⁶⁰

Use limitation

The OECD guidelines state that personal data should not be disclosed, made available or otherwise used for purposes other than those specified except with the consent of the data subject or by the authority of law. Similarly, Article 6 of the EU's Data Protection Directive says that personal data must be adequate, relevant and not excessive in relation to the purposes for which they are collected and/or further processed.

Questions

Is the personal information used for the purposes given for its collection, and do the data stay with the original collector, or do they migrate elsewhere?

Is the personal data collected used for profit without permission from or benefit to the person who provided it?⁶¹

Who will have access to or use of the data collected?

Will the data be transferred to or shared with others?

⁶⁰ Marx, p. 174.

⁶¹ Marx, p. 174.

Confidentiality, security and protection of data

One of the principles in the OECD guidelines deals with security safeguards and states that "Personal data should be protected by reasonable security safeguards against such risks as loss or unauthorised access, destruction, use, modification or disclosure of data." Similarly, Article 17 of the Data Protection Directive provides that "the controller must implement appropriate technical and organizational measures to protect personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorized disclosure or access, in particular where the processing involves the transmission of data over a network, and against all other unlawful forms of processing."

Questions

Has the project taken measures to ensure protection of personal data, e.g., by means of encryption and/or access control? If so, what are they?

Who will have access to any personal data collected for the project or service?

What safeguards will be put in place to ensure that those who have access to the information treat the information in confidence?

Many service providers who provide service via the telephone say that conversations are monitored for training or quality control purposes. Will that happen in this project or service? What happens (will happen) to such recorded conversations?

Transparency (openness)

Transparency is a precondition to public trust and confidence. A lack of transparency risks undermining support for or interest in a technology or service.

The OECD guidelines contain an openness principle which states that "There should be a general policy of openness about developments, practices and policies with respect to personal data. Means should be readily available for establishing the existence and nature of personal data, and the main purposes of their use, as well as the identity and usual residence of the data controller."

While the Data Protection Directive does not explicitly mention openness in this way, recital 63 does say that data protection supervisory authorities "must help to ensure transparency of processing in the Member States within whose jurisdiction they fall."

Vedder and Custers have opined that "With the growing speed of the information and communication networks, two characteristics of the Internet are further enlarged. First, as the number of content providers and the ease of uploading information further increases, assessing the true nature of

sources and intermediaries of information becomes more difficult. Second, as the technologies involved become more sophisticated and complicated, the processes of interaction become less transparent.”⁶²

Philip Brey comments that “It is part of the job of computer ethics to make computer technology and its uses transparent, in a way that reveals its morally relevant features.”⁶³ He proposes an approach which he calls disclosive computer ethics, which is concerned with disclosing and evaluating embedded normativity in computer systems, applications and practices.

Questions

If a new database is to be created or an existing database extended, has the data controller informed the data protection supervisory authority?

Has the data controller made known publicly that he has or intends to develop a new database, the purpose of the database, how the database will be used and what opportunities exist for persons to rectify inaccurate personal information?

If a database is breached or if the data controller has lost any data, has he informed the persons whose data have been compromised and/or the data protection authority? What activities will be carried out in order to promote awareness of the project, technology or service?

Will such activities be targeted at those interested in or affected by the project, technology or service?

Has an analysis been made of who are the relevant stakeholders?

Are studies about the pros and cons of the project or technology available to the public?

Individual participation and access to data

The OECD guidelines contain an individual participation principle which states that “An individual should have the right (a) to obtain from a data controller, or otherwise, confirmation of whether or not the data controller has data relating to him; (b) to have communicated to him, data relating to him within a reasonable time, at a charge, if any, that is not excessive, in a reasonable manner, and in a form that is readily intelligible to him; (c) to be given reasons if a request is denied, and to be able to challenge such denial; and (d) to challenge data relating to him and, if the challenge is successful to have the data erased, rectified, completed or amended.”

Similarly, Article 12 (Right of access) of the Data Protection Directive says that

Member States shall guarantee every data subject the right to obtain from the controller:

- (a) without constraint at reasonable intervals and without excessive delay or expense:
 - confirmation as to whether or not data relating to him are being processed and information at least as to the purposes of the processing, the categories of data concerned, and the recipients or categories of recipients to whom the data are disclosed,
 - communication to him in an intelligible form of the data undergoing processing and of any available information as to their source,
 - knowledge of the logic involved in any automatic processing of data concerning him at least in the case of the automated decisions referred to in Article 15 (1);
- (b) as appropriate the rectification, erasure or blocking of data the processing of which does not comply with the provisions of this Directive, in particular because of the incomplete or inaccurate nature of the data;
- (c) notification to third parties to whom the data have been disclosed of any rectification, erasure or blocking carried out in compliance with (b), unless this proves impossible or involves a disproportionate effort.

Questions

Have measures been put in place to facilitate the person’s access to his or her personal data?

Is there a charge for access to data and, if so, how has that charge been determined?

Is the charge stated on the website of the project or service?

Will the charge be perceived as reasonable by those whose data are collected and by the data protection supervisory authority?

How long should it usually take to respond to requests for access to personal data and to provide such data?

Can the person whose data are collected rectify easily errors in those data? What procedures are in place for doing so?

Anonymity

According to the ISO/IEC 15408 standard on evaluation criteria for IT security, anonymity ensures that a subject may use a resource or service without disclosing his or her identity.⁶⁴

⁶² Vedder and Custers (2009, p. 25).

⁶³ Brey, op. cit., p. 126.

⁶⁴ International Organization for Standardization 1999.

The OECD guidelines note that “The precise dividing line between personal data in the sense of information relating to identified or identifiable individuals and anonymous data may be difficult to draw and must be left to the regulation of each Member country.”

Article 6 of the e-Privacy Directive (2002/58/EC) says that traffic data relating to subscribers and users processed and stored by the provider of a public communications network or publicly available electronic communications service must be erased or made anonymous when they are no longer needed for the purpose of the transmission of a communication. This also applies to all location data processed for the purpose of the conveyance of a communication on an electronic communications network.

The Article 29 Data Protection Working Party (which represents the data protection authorities of the EU Member States) has considered anonymity to be an important safeguard for the right to privacy and recommended:

The ability to choose to remain anonymous is essential if individuals are to preserve the same protection for their privacy online as they currently enjoy offline.

Anonymity is not appropriate in all circumstances... Legal restrictions which may be imposed by governments on the right to remain anonymous, or on the technical means of doing so (e.g., availability of encryption products) should always be proportionate and limited to what is necessary to protect a specific public interest in a democratic society...

The sending of e-mail, the passive browsing of World Wide Web sites, and the purchase of most goods and services over the Internet should all be possible anonymously.

Some controls over individuals contributing content to online public fora are needed, but a requirement for individuals to identify themselves is in many cases disproportionate and impractical. Other solutions are to be preferred.

Anonymous means to access the Internet (e.g., public Internet kiosks, prepaid access cards) and anonymous means of payment are two essential elements for true online anonymity.⁶⁵

In its later opinion on search engines, the Article 29 Working Party said that “search engine providers must delete or anonymise (in an irreversible and efficient way) personal data once they are no longer necessary for the purpose for which they were collected.” It called upon search engines to develop appropriate anonymisation

schemes. It also said it did “not see a basis for a retention period beyond 6 months.”⁶⁶

Questions

Has the project taken steps to ensure that persons cannot be identified from the data to be collected?

Have pseudonyms or codes been used to replace any data that could identify the individual?

Is there a possibility that data from different sources could be aggregated or matched in a way that undermines the person’s anonymity?

Privacy of personal communications: monitoring and location tracking

Clarke (op. cit.) explains privacy of personal communications by saying that “Individuals claim an interest in being able to communicate among themselves, using various media, without routine monitoring of their communications by other persons or organisations. This includes what is sometimes referred to as “interception privacy.”

For many decades, technology has existed for intercepting and monitoring communications and tracking an individual’s movements. The technology has become increasingly sophisticated, and even the user’s technology (e.g., mobile phones) makes it easy to pinpoint where someone is making a call. There are laws, of course, against monitoring communications without the consent of the user unless it is legally authorised, e.g., by a court-authorized warrant.

Article 5 of the EU’s e-Privacy Directive states that

Member States shall ensure the confidentiality of communications and the related traffic data by means of a public communications network and publicly available electronic communications services, through national legislation. In particular, they shall prohibit listening, tapping, storage or other kinds of interception or surveillance of communications and the related traffic data by persons other than users, without the consent of the users concerned, except when legally authorised to do so in accordance with Article 15(1). This paragraph shall not prevent technical storage which is necessary for the conveyance of a communication without prejudice to the principle of confidentiality.

In essence, it means that interception or surveillance of communications can only take place when legally authorised.

The same Directive also addresses location data, defined as “any data processed in an electronic communications

⁶⁵ Article 29 Data Protection Working Party 1997. http://ec.europa.eu/justice_home/fsj/privacy/workinggroup/wpdocs/1997_en.htm

⁶⁶ Article 29 Working Party 2008.

network, indicating the geographic position of the terminal equipment of a user of a publicly available electronic communications service.” Article 9 prohibits the processing of location data unless it is made anonymous, or with the consent of the users. The service provider must inform the users, prior to obtaining their consent, of the type of location data which will be processed, of the purposes and duration of the processing.

Questions

Does the project monitor or record a person’s communications? If so, is it with the person’s consent?

Does the project involve observation or monitoring of individuals or tracking their movements or whereabouts? If so, is it with their consent?

If the project or other action involves interception of private communications, has such interception been properly authorised (e.g., has a warrant been obtained from a judge)?

Privacy of the person

According to Clarke (op. cit.), privacy of the person, sometimes referred to as “bodily privacy”, is concerned with the integrity of the individual’s body. As examples of issues, he cites compulsory immunisation, blood transfusion without consent, compulsory provision of samples of body fluids and body tissue and compulsory sterilisation. We could add examples such as body searches (e.g., at customs and immigration), body scanning at airports, requirements to provide fingerprints or eye scans upon entering countries such as the United States, and so on.

Questions

Does the project or the service or policy or program involve body searches or body scanning?

Does the project involve biometrics, e.g., taking fingerprints or eye scans?

Is the individual informed in advance of such requirements?

How long will such data be retained and who will have access to such data?

Have third parties been consulted with regard to the necessity of such data collection?

Have less privacy-intrusive alternatives been considered?

Privacy of personal behaviour

Privacy of personal behaviour, explains Clarke (op. cit.), “relates to all aspects of behaviour, but especially to sensitive matters, such as sexual preferences and habits, political activities and religious practices, both in private

and in public places. It includes what is sometimes referred to as ‘media privacy’.”

In the UK (especially), it’s been said (by former Information Commissioner Richard Thomas) that we are “sleep-walking into a surveillance society”, and there can be no doubt about it in view of the thousands of CCTV cameras that festoon our streets, shopping malls, subways, airports and so on. CCTV cameras and other surveillance and dataveillance technologies record our behaviour and activity.

Surveillance is not only about catching terrorists or criminals or owners who allow their dogs to foul the pavement, but it is also about monitoring senior citizens afflicted with dementia or the disabled to ensure they do not harm themselves or others.

Questions

Does the project involve surveillance of individuals or groups of people? If so, what is the legal basis of such surveillance?

Have any signs or other notifications been made to alert people to the presence of CCTV cameras or other surveillance devices?

How long will images or data be retained?

How will such images or data be used or erased?

Who will authorise the surveillance practice, whether in public places such as city streets or banks or in assisted living residences?

What measures will be put in place to avoid abuses where, for example, surveillants watch others engaged in behaviour that generally accepted social norms would regard as intimate or private?

Ethical tools (value appraisal techniques)

This section identifies various ethical tools which can be used by decisions-makers to engage stakeholders in considering the principles, values and issues contained in the previous section.

Although the European Union has increasingly placed emphasis on involving the general public in regulatory processes with respect to modern technologies, Beekman et al. are of the view that the tools needed to effectively take ethical concerns into consideration—and to satisfactorily involve the general public—are not fully developed or described. What is needed, they say, is a comprehensive, transparent and democratic procedure that gives all ethical arguments fair and balanced consideration.⁶⁷ Ethical tools, as they go onto say, are a way of doing so.

Ethical tools refer to practical methods designed to improve ethical deliberation by capturing all ethically

⁶⁷ Beekman (2006).

relevant aspects of an issue.⁶⁸ The tools can be used to include ethical issues in public consultation and involvement; to support systematic reflection upon ethical issues in decision-making; and to support explicit communication about values.⁶⁹ They are designed to facilitate ethical assessments and decision-making, but not to replace ethical judgement.⁷⁰

Beekman et al. rightly argue that “It is unlikely that a single tool will suffice for a full assessment of the whole range of divergent ethical issues involved in the introduction and application of new technologies.” Thus, they developed a toolbox, in which particular tools are more applicable for certain purposes and/or in certain contexts.⁷¹

In a separate paper, Beekman and Brom argue that if the issues at stake and technology have societal impacts, lay perspectives need to be taken into account. Instruments to facilitate broadening the debate need to be comprehensive, transparent and democratic tools that give all arguments fair and balanced consideration.⁷² The use of ethical tools contributes to improved transparency in governance throughout the European Union⁷³ (or anywhere, for that matter).

Various tools exist to help determine whether a project raises ethical issues. A set of questions such as those given in the preceding section is one such tool. Other tools are given in the following pages. An important distinction can be made between tools that are more “procedural”, i.e., prescribe a certain method of how to trigger ethical responses among public groups, and those tools that are more “substantive”, i.e., provide some ethical content as input for further analysis.⁷⁴

Consultations and surveys

Consultations and surveys are frequently used by policy-makers to gather the views of stakeholders before

implementing policies. Typically, in a consultation, the government will pose a set of questions posted on its website and invite comments from interested stakeholders. Stakeholders may have the opportunity not only to respond to the questions, but also to prepare papers in which they elaborate their views on the policy issue at stake. Consultations have the virtue that they are open and transparent. Anyone can respond to the questions and, if they wish, to send in a letter or paper. They are transparent too in that the government will publish the results of the consultation on their website, so that one can see who responded and how (although in some cases of commercial or competitive sensitivity, the stakeholder can request that its views not be published). The snag is that the response rate is usually quite low and confined to those who are aware of the consultation and have a vested interest (even if their vested interest is acting on behalf of civil society organisations and/or the public) in the outcome of the deliberation. Furthermore, the policy-maker cannot be assured that the outcome of the consultation genuinely represents a cross-section of the public.

Hence, policy-makers and the private sector sometimes resort to surveys that are intended to provide a reflection of the public’s views of a particular issue (within plus or minus three per cent). The snag with surveys is that they do not necessarily reflect informed views and usually they do not provide an opportunity for a detailed or nuanced response. Survey questionnaires are designed to elicit responses that can be easily quantified statistically. Thus, the questions are relatively simple so that the response is either yes, no or don’t know or multiple choice, in which case the choice is limited to those contained in the questionnaire.

While consultations and surveys are useful tools, they are dangerous if the policy-maker were to rely solely on them as inputs in making a policy decision. Additional tools are needed.

Expert workshops

The European Commission, European agencies (such as ENISA⁷⁵) and many other organisations convene expert workshops or stakeholder panels, often to complement consultations and sometimes surveys. Ideally, such workshops bring together representatives from various stakeholder groups to discuss issues. The workshops often consist of a mixture of presentations by those representatives and discussions on one or two or, at least, a limited number of issues, which can be addressed in the course of a one or 2-day meeting. Sometimes, just a single workshop is

⁶⁸ Beekman et al., p. 14.

⁶⁹ Beekman and Brom (2007, pp. 3–4).

⁷⁰ Beekman et al., p. 21.

⁷¹ Beekman et al., p. 6. Although Rowe and Frewer do not focus specifically on ethical tools, nevertheless, they do provide a long list of different mechanisms for engaging stakeholders, including the public, some of which could be used to facilitate an ethical impact assessment. See Rowe and Frewer (2005). Also of interest in this regard is Essays 9 & 10 in Chap. 8 in Renn, *op. cit.*, pp. 273–352. Renn says, “A combination of analytic and deliberative instruments (or stakeholders and the public) is instrumental in reducing complexity, necessary for handling uncertainty and mandatory for dealing with ambiguity. Uncertainty and ambiguity cannot be resolved by expertise only” (p. 350). The two essays are useful guidance for ethical impact assessment as well as risk governance.

⁷² Beekman and Brom, p. 6.

⁷³ Beekman et al., p. 46.

⁷⁴ Beekman et al., p. 20.

⁷⁵ ENISA is the acronym of the European Network and Information Security Agency. www.enisa.europa.eu.

held, at other times, there may be more, say, three, over a period of 6 months or so. At still other times, the convened experts may agree to work collaboratively on a report in between the workshops. Usually, the workshops result in a report, which is posted on the host organisation's website. The success of the workshop depends very much on the chairperson of the workshop and how the meeting is structured and, to some extent, the chemistry that develops between the participants. Often the time for discussion is derailed by too many presentations. The principal benefit of an expert workshop is that it allows more in-depth, face-to-face discussion by a range of different stakeholders than, say, a consultation or a survey. If the experts convened for a workshop such as those convened by ENISA are tasked with preparing a report, there is another important advantage, which is that they produce a consensus report, i.e., there is an opportunity for stakeholders to learn from each other and to reach a shared view. The principal disadvantage is that, despite inviting representatives from different stakeholder groups, the host organisation may still not get a representative view of the ethical considerations of a cross-section of individual stakeholders (as distinct from stakeholder groups).

Checklists of questions

A checklist of principles, issues and questions, as provided in the preceding section, is itself an ethical tool. Stakeholders can use the checklist as a way of appraising the ethical sufficiency of a (proposed) design or decision.

Not all experts or ethicists favour a checklist of questions because they fear that responding to such questions will become routinised or that somehow they will lead to a "dumbing down" of thoughtful consideration of the issues at stake. While that is a risk, nevertheless questions do seem a useful way of provoking consideration of the issues at stake by those undertaking new projects or designing new technologies or services. In any event, other measures such as ethical reviews or audits by a committee of independent ethicists will surely spot a too-casual response to the questions.

Van Gorp proposes a list of questions to help researchers doing research in technological fields to identify ethical aspects of their research.⁷⁶ "It is difficult if not impossible to make a complete checklist of ethical issues that is valid for researchers in all technological research. New research might bring forth new ethical issues that are not foreseeable. A checklist can therefore never guarantee that all ethical issues will be identified. The checklist can, however, make sure that ethical issues that are foreseeable are indeed identified.... The checklist is only a tool to quickly

identify ethical issues. If ethical issues are identified then a thorough ethical analysis should be made."

This is an important point. The checklist should not be used simply to answer the questions. The answers should form the basis for discussion among stakeholders. Thus, if the answer to the question "Has the project taken any steps to reach out to the e-excluded (i.e., those excluded from use of the Internet)?" is No, then the stakeholders should consider whether, given the context, it is an ethically satisfactory answer. If the context involves a company developing a computer game targeted at a market of young and highly skilled users, then it may be difficult for stakeholders to hold the company as being ethically deficient. In a different context, for example, involving the development of electronic tools for e-voting in communities, the consideration might be quite different. Thus, the contextual factors are important to take into account when considering the responses to the questions.

Ethical matrix

The ethical matrix and the two following tools (ethical Delphi and consensus conference) were discussed in the report by Beekman et al. of their ethical tools project which was funded by the European Commission under its Fifth Framework Programme. The consortium considered a variety of ethical tools, but particularly focused on these three. The descriptions for these three tools have been extracted from their report.⁷⁷

The ethical matrix applies a number of *prima facie* principles to a set of specified interest groups. The three principles used in the standard version are respect for well-being, autonomy and fairness, and together they form the columns of the ethical matrix. The rows consist of the "interest groups" (i.e., affected parties) that are relevant to the issue in question. These might include different groups of people, such as consumers and food producers. Users can apply the ethical matrix to map ethical issues. When making a judgement or forming an opinion, the ethical matrix can be used as a structured approach for reflecting on competing ethical impacts. The aim of the ethical matrix is to help users identify ethical issues raised by the use of novel technologies and to arrive at intellectually defensible decisions. However, the ethical matrix does not prescribe any particular decisions.

Ethical delphi

The ethical Delphi is an iterative process for exchanging views and arguments between experts. The method is

⁷⁶ van Gorp, *op. cit.*

⁷⁷ See Beekman et al., p. 21, pp. 28–29. The ethical matrix concept was developed by Ben Mepham. See Mepham (2005).

structured around the notion of a virtual committee where the exchange of ideas is conducted anonymously and remotely through a series of opinion exchanges (in the form of “rounds”). The ethical Delphi is used to map the ethical considerations that experts believe are pertinent and significant. It indicates the extent of agreement as well as drawing out divergence in expert opinion on a given topic. The ethical Delphi can be used to characterise and map the ethical issues raised by the use of novel technologies. One of the benefits of the ethical Delphi is the combination of “scoring” and reasoned arguments where it is possible to see the importance of an issue (using a Likert scale) and the relevant arguments.

Consensus conferences

The participatory consensus conference was initially developed by the Danish Board of Technology and represents a further development from the original consensus conferences arranged by the US Office of Technology Assessment (OTA). The aim of the OTA conferences was to expose expert views and to reach consensus among experts regarding a given topic. Consensus is still (in most cases) an aim, but instead of striving for consensus among experts, consensus is sought among laypersons. The reason given for the importance of involving laypersons in such conferences is typically to give citizens the opportunity to influence decisions having an impact on their lives, to affect the public debate or to overcome limitations in expert knowledge. Laypersons should be entitled to choose the type of experts they want invited to and question at the consensus conference.

Citizen panels

A variant on the consensus conference is the citizen panel. Skorupinski and Ott argue that “The model of consensus conferences needs further advancement, especially in regard to the questioning of experts. The rigid form of lay people questioning experts should be replaced by a more dialogic modus.” In this respect, they say, the model of citizen panels seems to be superior to consensus conferences.⁷⁸ Citizen panels are groups of randomly selected citizens who are asked to compose a set of policy recommendations on a specific issue. The objective is to provide citizens with the opportunity to learn about the technical and political facets of a given issue and to enable them to discuss and evaluate these options and their likely consequences according to their own set of values and preferences. Citizens are informed about the potential options and the corresponding consequences before they are asked

to evaluate these options. Citizen panels require a large investment of time and money and are not suitable for all types of problems and all contexts. If the problem is highly technical, it may be impossible to bring citizens up to the necessary level of understanding.

Procedural aspects or practices

This section contains procedural aspects or practices which should feature in an ethical impact assessment. They serve as a complement to the ethical tools mentioned in the previous section. To help decision-makers in their consideration of the utility and relevance of these procedural aspects, a set of questions follows each of them. In some instances, there is no one correct answer to the questions. The applicability and relevance of some questions may depend on the context and on the willingness of the decision-maker to employ these practices. For example, to the question “Is there a process for engaging stakeholders?”, the decision-maker might say yes. If there is, that’s fine. However, the decision-maker might say no, and his or her response might be equally valid, because he or she does not believe the project or new technology raises any ethical issues that need to be considered by stakeholders. And he or she could well be right. If they are wrong, however, they may be held accountable and suffer certain liabilities.

Process: consulting and engaging stakeholders

An ethical impact assessment should not consist of questions only. A process for engaging and consulting with stakeholders should be put in place to help policy-makers, technology developers and project managers in ensuring that ethical issues are identified, discussed and dealt with, preferably as early in the project development as possible.

There are various reasons why project managers should engage stakeholders and undertake a consultation when developing new technologies or projects. For one thing, Article 41 of the Charter of Fundamental Rights of the European Union, entitled the Right to good administration, makes clear that this right includes “the right of every person to be heard, before any individual measure which would affect him or her adversely is taken...”, which suggests that consultation with stakeholders is not only desirable but necessary.

But there are other reasons too. Stakeholders may bring new information which the project manager might not have considered and may have some good suggestions for resolving complex issues.⁷⁹ Also, technology development is often too complex to be fully understood by a single

⁷⁸ Skorupinski and Ott (2002, p. 119).

⁷⁹ Stern and Fineberg (1996).

agent, as Sollie and others have pointed out.⁸⁰ Palm and Hansson state that “It would be delusive to believe that technology developers are conscious of all the effects of their products. In many cases, negative side effects come as a surprise to technology developers themselves. If they could have anticipated the negative consequences, they would, in the vast majority of the cases, have done their best to avoid them out of social concern or for commercial reasons, or both.”⁸¹ Furthermore, by engaging stakeholders, project managers may avoid subsequent criticism about a lack of consultation. Engaging stakeholders before the project is implemented may be a useful way of testing the waters, of gauging the public’s reaction to the project. In any event, “A central premise of democratic government—the existence of an informed electorate—implies a free flow of information.”⁸² Even if participation does not increase support for a decision, it may clear up misunderstandings about the nature of a controversy and the views of various participants. And it may contribute generally to building trust in the process, with benefits for dealing with similar issues in the future.⁸³

The process of identifying, discussing and dealing with ethical issues should be ongoing throughout the project and perhaps even after it has been implemented, if only because new ethical issues may arise that were not evident at the outset of the project development. Moor has made this point: “Because new technology allows us to perform activities in new ways, situations may arise in which we do not have adequate policies in place to guide us.” Ethical problems can be generated at any point, says Moor, “but the number of ethical problems will be greater as the revolution progresses.”⁸⁴

The process of engaging stakeholders in consideration of ethical issues that may arise from the development of a new technology or the new use of an existing technology or a new policy or programme is arguably as important as the result. The policy-maker or technology developer can use some or all of the ethical tools mentioned in the preceding section to facilitate the process. He or she can also use the procedural practices mentioned in this section to lend more credibility to the process. While stakeholders can make a substantial contribution to the decision-making process, at the end of the day, however, it is the policy-maker or technology developer

who must take a decision whether to proceed with the technology or to modify it or to build some safeguards into its use in order to accommodate the concerns raised by stakeholders. It is the policy-maker or technology developer alone who will be held accountable for the decision.

Palm and Hansson caution that “the search for consensus in controversial issues should not be overemphasized since it may lead to the closure of issues at a too early stage. In ethical TA, conflicts and different opinions should be highlighted rather than evened out.” They also urge that the assessment “should seek to identify all relevant stakeholders, i.e., a broad spectrum of agents and therefore also a broad spectrum of responsibilities.” They see the task of an ethical assessment as being “to delineate and analyze the issues and point out the alternative approaches for the final analysis that are available.”⁸⁵

It would make life easier, undoubtedly, if the stakeholders reach a consensus about how to deal with the ethical considerations raised and if the decision-maker agreed with the consensus. In real life, that does not always happen, so the decision-maker will need to decide which considerations are given greatest weight and to explain why he or she took that decision. The decision-maker should make clear to stakeholders when he or she first reaches out to them what the rules of the game will be, how and by whom that ultimate decision will be made.

When a decision-maker ends up disagreeing with the results of the consultation processes, this calls for explicit argument, as Beekman et al. point out. It does not follow that the decision-makers should always follow the results of the use of ethical tools. Ethical tools are not decision-making machines for ethics. However, when such a situation occurs, the great advantage of ethical tools is that they force the decision-maker to state why he or she prefers a different conclusion.⁸⁶

Questions

Has the policy-maker or technology developer developed a process for identifying and considering ethical issues?

Will the project engage in consultations with stakeholders? If so, when?

Have all relevant stakeholders (i.e., those affected by or with an interest in the technology or project) been identified?

Have they been invited to participate in a consultation and/or to provide their views on the project or technology?

Is the process by means of which decisions are made clearly articulated to stakeholders?

⁸⁰ Sollie (2007, p. 302). Moor (2005, op. cit., p. 118, also supports better collaboration among ethicists, scientists, social scientists and technologists.

⁸¹ Palm and Hansson, p. 547.

⁸² US National Research Council 1989, p. 9.

⁸³ Stern and Fineberg, pp. 23–24.

⁸⁴ Moor (2005). In his paper, Moor proposes the following hypothesis, which he calls “Moor’s Law: As technological revolutions increase their social impact, ethical problems increase.”

⁸⁵ Palm and Hansson, pp. 550–551.

⁸⁶ Beekman et al., p. 26.

How many and what kinds of opportunities do stakeholders and citizens have to bring up concerns about values or non-technical impacts?

How long will the consultation last? Will there be sufficient time for stakeholders to conduct any research which they may need to do in order to represent their views to the project manager?

How will conflicting views of stakeholders be taken into account or resolved? Are some stakeholders (e.g., industry) given more weight than others (e.g., civil society organisations)?

Has the project manager made known to the public the options—and the pros and cons of each option—available with regard to the development or deployment of the project, technology, service, etc.?

Is there a process in place for considering ethical issues at later stages in the project or technology development that may not have been considered at the outset?

Risk assessment, uncertainty and unintended consequences

Much has been written about risk assessment over the last few decades. One of the best guidances is Ortwin Renn's recent book on *Risk Governance*.⁸⁷ While risk experts, such as Renn, have considered how to deal with uncertainty, "uncertainty is a concept scarcely scrutinised in ethics in general and ethics of technology in particular", according to Paul Sollie.⁸⁸ He says the uncertainty arising from the unpredictable, unforeseen and unanticipated nature of technology development has many causes, one of which is that technology designed for specific purposes often ends up being used for completely different activities. He notes that uncertainty is not simply the absence of knowledge. Uncertainty can prevail even in situations where a lot of information is available. New information does not necessarily increase certainty, but might also augment uncertainty by revealing the presence of uncertainties that were previously unknown or understated.

The European Commission's Communication on the precautionary principle⁸⁹ aims to build a common understanding of how to assess, appraise, manage and communicate risks that science is not yet able to evaluate adequately. It says the precautionary principle should be considered within a structured approach of risk assessment, management and communication. Decision-makers need to be aware of the scientific uncertainties, but judging what is an "acceptable"

level of risk for society is an eminently political responsibility.

The Commission says the decision-making procedure should be transparent and involve all interested parties at the earliest possible stage in the study of various risk management options once the results of the scientific evaluation and/or risk assessment are available. Where action is deemed necessary, measures based on the precautionary principle should be, inter alia:

- proportional to the chosen level of protection,
- non-discriminatory in their application,
- consistent with similar measures already taken,
- based on an examination of the potential benefits and costs of action or lack of action (including, where appropriate and feasible, an economic cost/benefit analysis),
- subject to review, in the light of new scientific data, and
- capable of assigning responsibility for producing the scientific evidence necessary for a more comprehensive risk assessment.

Questions

Has the project performed a risk assessment of the technology to be used or service supplied?

Has the project considered less privacy-intrusive alternatives?

Has the project considered the possibility of unintended consequences of a technology or service? For example, a revolving door may keep out the cold, but may make it impossible for a person in a wheelchair to enter a building.⁹⁰

Has the project identified ways of eliminating or mitigating those risks?

Is there a human review of machine-generated results?

Can the technology or service be used for purposes other than that for which they have been designed?

Is there a risk that the project or service or application will create an unwanted precedent?

Is there a risk that the project may have a negative effect on those who are implementing the service or application as well as on those who are subject to the application?

Have different types of risks been considered, i.e., political, social, economic, technological, environmental, as well as risks to individuals?

Are some risks foreseen, but difficult to quantify?

Are there uncertainties about use of the technology and its long-term consequences?

How will the project distribute any costs or risks? Will some stakeholders bear greater risks than others?

⁸⁷ Renn, op. cit.

⁸⁸ Sollie 2007, op. cit., p. 295.

⁸⁹ European Commission 2000.

⁹⁰ Verbeek, p. 72, uses this example.

What are possible applications and consequences of the new technologies or services?
 Who is affected and to what extent?
 What status do stakeholder values and opinions have and how are these integrated into an ethical analysis?

Accountability

The Data Protection Directive says the data controller should be accountable for complying with the principles stated in the Directive.

In the development of new technologies and services, however, “many of the actors and stakeholders involved (in their development)... only have a very restricted insight into the opportunities and risks involved. Moreover, many of them have restricted means to respond. For instance, engineers are involved in the first phases (of research and development), but have limited influence on the introduction of new technologies into the market/society. End users may have effect on how the new technologies are introduced into society and how the new technologies are actually used. However, end users have restricted means to influence research, development and production of new technologies.”⁹¹ Vedder and Custers argue that it is undesirable to assign all responsibilities to just one group of stakeholders. Instead, they argue in favour of “joint responsibilities.” “Instead of creating gaps in the responsibilities, i.e., parts of the research and development process where nobody is responsible, this may create joint responsibilities. We consider overlapping responsibilities an advantage rather than a drawback in these cases.”⁹²

René von Schomberg also argues along these lines. He claims that the idea of role responsibility cannot be used any longer in the complex society in which we live. No one person has an overview of all consequences of a technological development and therefore he argues for an ethics of knowledge policy and knowledge assessment and says that citizens should be involved in the assessment and policy-making.⁹³

Questions

Does the project make clear who will be responsible for any consequences of the project?

Who is responsible for identifying and addressing positive and negative consequences of the project or technology or service?

Does the project make clear where responsibility lies for liability, equality, property, privacy, autonomy, accountability, etc.?

If the project or technology is complex and responsibility is distributed, can mechanisms be created to ensure accountability?

Are there means for discovering violations and penalties to encourage responsible behaviour by those promoting or undertaking the project?

If personal data are transferred outside the European Union, what measures will be put in place to ensure accountability to the requirements of the Data Protection Directive?

Third-party ethical review, evaluation and audit

The final phase of the privacy impact assessment (PIA) methodology recommended by the UK’s Information Commissioner’s Office (ICO) is the review and audit phase, the purpose of which is to ensure that the design features arising from the PIA are implemented, and are effective. Implementation of an ethical impact assessment could take a leaf out of the ICO PIA manual in this regard. An ethical review and audit by a third party would ensure that an ethical impact assessment has been effectively carried out. As mentioned in the introduction, a third-party review and/or an audit is a way of ensuring that responses to the questions are not merely perfunctory.

Unless an organisation appoints an independent ethical review panel, there will be a lacuna in ethical impact assessments and, in particular, a review of the adequacy of such assessments. Although the European Commission has established the European Group on Ethics in Science and New Technologies (EGE)⁹⁴ and Member States have similarly independent ethics committees,⁹⁵ these committees do not have a mandate to perform an ethical audit of individual organisations. Rather they are appointed to provide advice on issues of ethical importance, which are either referred to them (by the Commission, for example) or that they initiate themselves. Nevertheless, a review and audit of ethical assessments by an independent third-party would obviously confer considerable credibility on any reviews undertaken by individual projects.

⁹¹ Vedder and Custers, p. 30.

⁹² Ibid., p. 32.

⁹³ von Schomberg (2007).

⁹⁴ Article 2 of the mandate given to the EGE states: “The task of the EGE shall be to advise the Commission on ethical questions relating to sciences and new technologies, either at the request of the Commission or on its own initiative. The Parliament and the Council may draw the Commission’s attention to questions which they consider to be of major ethical importance. The Commission shall, when seeking the opinion of the EGE, set a time limit within which an opinion shall be given.” http://ec.europa.eu/european_group_ethics/mandate/index_en.htm

⁹⁵ http://ec.europa.eu/european_group_ethics/link/index_en.htm#4

Questions

Has the project, its objectives and procedures in regard to treatment of ethical issues been reviewed by independent evaluators to ensure that ethical issues have been adequately considered?

Has the decision-maker considered evaluation of its ethical impact assessment with a view to improving the process of conducting such an assessment?

If the project involves the development and deployment of complex technologies, an ethical impact assessment may need to be ongoing or, at least, conducted again (perhaps several times again). When does the project manager envisage submitting its ethical impact assessment to a review by an independent third party?

Providing more information and responding to complaints

An important consideration in undertaking an ethical impact assessment is to provide (proactively) information to stakeholders. The results of an ethical impact assessment should be communicated as widely as possible. The choice and design of future technologies should not be restricted to a well-educated and articulated elite.⁹⁶ It is also important that the project manager respond to complaints about either the way the ethical assessment has been conducted or the way in which a particular ethical issue has been considered. The name and contact details of the person responsible for conduct of the ethical impact assessment should be made publicly available (for example, on the project manager's website).

Questions

What steps will the project manager take to make relevant information available to relevant stakeholders as soon as possible?

Are relevant stakeholders aware of the findings of ethical assessments and how they were generated?

Has the project instituted a procedure whereby persons can lodge their complaints if they feel that they have been mistreated by the project?

Are there procedures for challenging the results, or for entering alternative data or interpretations into the record?

If an individual has been treated unfairly and procedures violated, are there appropriate means of redress?

If anyone objects to the project, does the project make clear whom they can contact to make known their objection?

Have the contact details been published or posted on the relevant website where a person may obtain further information about the ethical impact assessment?

Good practice

Examples of good practice in ethical assessments may be strategically important from a policy point of view in the sense that they might encourage other organisations to undertake similar assessments, which might also be an objective of policy-makers. Examples of good practice are also practically important in the sense they provide guidance on how to undertake ethical assessments. The utility of good practices depends on how well information about such good practices is disseminated and how easy it is for project managers to find relevant good practices.

Questions

Would the project, technology or service be generally regarded as an example of ethical good practice?

Will the technology or project inspire public trust and confidence?

Have the designers or proponents of the project examined other relevant good practices?

Guidelines on integration (synthesis)

This paper has provided guidelines on identifying ethical impacts, perspectives and boundaries; now it is time to offer guidelines on integration or synthesis for a structured approach to conducting an ethical impact assessment. In doing so, two models in particular have influenced these guidelines. The first comes from Skorupinski and Ott's paper on "Technology assessment and ethics." They present a comprehensive concept for participatory and discursive TA in 12 "modules" or steps.⁹⁷ The second model comes from the privacy impact assessment (PIA) manual published by the UK Information Commissioner's Office (ICO). From these two models and taking into account the foregoing sections of this paper, we can distil key guidelines as follows:

- The organisation proposing a technology with ethical implications should prepare a briefing paper for stakeholders which describes the technology, the ethical issues foreseen, who will benefit from the technology and who might bear the consequences, and possible ways of addressing the ethical issues. The briefing paper should state what the "rules of the game" will be, i.e., it should indicate the process (the plan) to be followed and the timeframe for conducting the ethical impact assessment.
- The organisation invites relevant stakeholders, including the public, to participate in the assessment of the ethical impacts of the technology. A neutral facilitator

⁹⁶ Palm and Hansson, p. 550.

⁹⁷ Skorupinski and Ott (2002, pp. 117–120).

should manage the process. A variety of ethical tools, such as those described above, should be employed. The organisation should be honest about its willingness to take on-board recommendations. If it will proceed with its plans for the technology, no matter what the outcome of the ethical impact assessment might be, then it should at least say so and bear the consequences to its credibility and public trust.

- All participants should be treated equally, their views respected and reflected in the ethical impact assessment. Information asymmetries should be avoided. Participants should have equal access to information and to independent experts.
- Led by the facilitator, the participants should consider the ethical principles and issues and associated questions provided in the second section of this paper. As mentioned there, these issues and questions are intended to be indicative, not comprehensive, so participants may raise additional issues and questions which should also be addressed in the course of a specific ethical impact assessment.
- The facilitator should seek consensus, but not at any price. Dissenting views should be reflected in the final report, which should describe how the process was conducted and should spell out how a final decision on the technology was taken and what the consequences of that decision are expected to be. The report should be published on the organisation's website (unless there are legitimate commercially competitive or security reasons for not doing so, in which case the role for independent third-party evaluation becomes even more critical).
- The process for the ethical impact assessment should be reviewed by an independent evaluator whose findings should be published. The extent to which recommendations are implemented should be audited. If new information subsequently comes to light that changes the basis of the recommendations, the process should be repeated if necessary.
- As far as possible, the conduct of an adequate ethical impact assessment should be tied to a decision on funding the technology development.

Conclusions

This paper has proposed an ethical impact assessment framework that could be used by those developing new technologies, services, projects, policies or programmes as a way to ensure that their ethical implications are adequately examined by stakeholders before possible deployment and so that mitigating measures can be taken as necessary.

The paper argues that an ethical impact assessment is needed of new and emerging technologies because technologies are not neutral, nor value free. Technologies, how they are configured and used, reflect the interests and values of their developers and owners. Over time, other stakeholders, including users, may become developers too by creating new applications for the technology or by adapting the technology for uses unforeseen when the technology was originally developed. An ethical impact assessment is also needed because ethical considerations are often context-dependent. What may be ethically acceptable in one context may not be acceptable in another context.

It is very difficult to identify impacts resulting from the interaction of the technical and social because the impacts will depend on the contextual factors, as Nissenbaum and others have said. It may be that over time, as we gain more experience in the use of ethical impact assessments, we will be able to spot similar impacts arising in similar situations. One might need to perform a detailed ethical impact assessment the first time, but more abbreviated EIAs might be possible as time goes on where, for example, new projects use similar or identical technologies. Generally, however, we should not adopt any kind of formula or make assumptions about the impacts arising from the interaction of the technical and social. One must examine each case on its own merits.

It is in the interests of policy-makers, technology developers and project managers to conduct an ethical impact assessment, involving stakeholders interested in or affected by the technology, as early in the development cycle as possible in order to minimise ethical risks that may arise once the technology is launched. The paper gave some examples at the outset of instances that could profit or could have profited from an ethical impact assessment. In some sense, an ethical impact assessment, like a privacy impact assessment, can be regarded as a form of risk management—i.e., the purpose of conducting the exercise is to avoid any nasty fallout from consumers or policy-makers who might feel that the technology as implemented works to the detriment of generally accepted social values.⁹⁸

The framework proposed here consists of a set of ethical principles, values and issues followed by a set of questions the aim of which is to facilitate ethical consideration of the

⁹⁸ Verbeek indirectly offers at least two reasons supporting an ethical impact assessment. "Two forms of designer responsibility can be distinguished here. First, designers can anticipate the impact, side-effects and mediating roles of the technology they are designing. On the basis of such anticipations, they could adapt the original design, or refrain from the design at all. Second, designers can also take a more radical step and deliberately design technologies in terms of their mediating roles. In that case, they explicitly design behavior-influencing or 'moralizing' technologies: designers then inscribe desirable mediating effects in technologies." Verbeek, p. 70.

new technology. The framework is supported by ethical tools (or value appraisal techniques) and procedural aspects or practices. The ethical tools will help the technology developer to get a better idea of how the technology is perceived ethically by stakeholders and what measures could be adopted to ensure that the technology is ethically acceptable or what alternatives might be at his or her disposition. The procedural aspects are aimed at ensuring the ethical impact assessment is conducted in a way that engages stakeholders, ensures the transparency of the whole process and provides for independent evaluation and audit.

The key to a successful ethical impact assessment is finding a way to engage stakeholders effectively. While some decision-makers may think engaging stakeholders is a hassle or risks delaying development, the benefits of engaging stakeholders are numerous and should outweigh any such thoughts. Stakeholders may have some information or ideas or views or values which the project manager had not previously considered. They may be able to suggest alternative courses of actions to achieve the desired objectives. They may be able to suggest some safeguards which would minimise the ethical risks that might otherwise explode after a technology or service is launched. By engaging stakeholders, the technology developer has a better chance of minimising liability and avoiding subsequent criticisms and, possibly, costly retrofits downstream.

While consulting and engaging stakeholders is important, ultimately in most cases the decision-maker—the technology developer or policy-maker—will need to take the final decision about whether or how to proceed. If he or she takes a decision at variance with the generally accepted ethical considerations of stakeholders, he or she may (will) need to explain his or her reasons for doing so.

The ethical impact assessment framework proposed here builds on work by other researchers and policy-makers. Even if the exact words—an ethical impact assessment—have not been used previously, others have seen the need for something like it. Verbeek, for example, has emphasised that “Technologies are morally significant; they help human beings to do ethics, by informing our moral decisions and by giving shape to our actions. In order to deal adequately with the moral relevance of technology, therefore, the ethics of technology should broaden its scope. Rather than approaching ethics and technology as belonging to two radically separated domains, the interwoven character of both should be central.”⁹⁹ Palm and Hansson noted that new technologies often give rise to previously unknown ethical problems and argued in favour of a continuous dialogue and repeated assessments as preferable to

one single large-scale assessment since moral implications may arise at all stages of technological development.¹⁰⁰ Furthermore, they add, “Predicting the future of a technology is a vain undertaking with low chances of success. Ethical technology assessment should therefore avoid crystal ball ambitions. The ambition should not be to see as far as possible into the future, but to investigate continuously the ethical implications of what is known about the technology under development.”

Building on the work of these and other experts, the framework proposed here offers a new and structured approach to assessing the ethical legitimacy of new technology. While models and methodologies exist for undertaking privacy impact assessments, environmental impact assessments, policy and programmatic impact assessments, technology assessments, regulatory impact assessments and so on, that has not been the case for ethical impact assessments. Furthermore, the framework can be applied not only to new and emerging technologies, but also to products, services, policies and programmes, indeed virtually any undertaking that is likely to raise ethical concerns.

Although it has not been within the scope of this paper, the author believes there could be a case for integrating an ethical impact assessment and privacy impact assessment. Privacy and data protection raise ethical issues, although ethical impact assessment addresses issues beyond simply those of privacy and data protection. Nevertheless, there would seem to be value in further research exploring the possibility of developing an integrated privacy and ethical impact assessment.

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⁹⁹ Verbeek, op. cit.

¹⁰⁰ Palm and Hansson, op. cit., pp. 547–548, p. 550. Moor (2005, p. 118), makes a similar point: “We can foresee only so far into the future... We cannot anticipate every ethical issue that will arise from the developing technology... our ethical understanding of developing technology will never be complete. Nevertheless, we can do much to unpack the potential consequences of new technology. We have to do as much as we can while realizing applied ethics is a dynamic enterprise that continually requires reassessment of the situation.” See also Brey, op. cit.

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