

Program 'Responsible Innovation' of NWO - Grants awarded to 3TU.Ethics members (April 2009)

For a description of the grant program, see www.nwo.nl/mvi.

Telecare at home:

Anticipating conflicting norms in telemonitoring technologies for chronic patients

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Amount: €506.000

This research aims to increase understanding of how engineers can anticipate conflicting norms concerning surveillance and autonomy implied by the use of telemonitoring technologies. These ICT technologies can be used to monitor or diagnose patients at home and are widely claimed to have the potential to improve the quality of health care. Telemonitoring technologies are an important innovation because they can contribute to closing the gap between the growing demand of care and the scarcity of health-care professionals by delegating certain tasks, normally conducted by doctors, to nurses, to patients and their informal networks of carers and to ICT systems. The adoption of these technologies implies a transition in health care because they challenge existing distributions of tasks and responsibilities, including norms of care. On the one hand, telemonitoring technologies aim to increase the responsibility of patients and nurses for monitoring diseases, thus bringing more control and autonomy to patients' lives and nurses' work. On the other hand, telemonitoring applications are expected to replace people and take over responsibilities and control for monitoring diseases.

These conflicting norms play an important role in the acceptance of these innovative technologies. The central question of the proposed research is therefore: *How can telemonitoring technologies be developed to achieve a careful balance between surveillance by technological devices and control and autonomy of patients and nurses?* To answer this question, we will conduct a constructive, ethical technology assessment in which we investigate the design and use practices relating to use of telemonitoring devices in chronic care that are currently developed and implemented in Europe. Based on these insights, we will develop tools that can support engineers to find a balance between these conflicting norms.

Persuasive technology and social values

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Amount: €550.000

Social values can be in conflict with the interests or preferences of individual persons. Sustainability, for example, is widely viewed as crucial for our future. At the same time it is recognized that technology alone cannot bring about a sustainable society. Individual agents need to change their behavior as well. How do we motivate agents such that they realize our social values, even when these values conflict with their own private interests? This is where persuasive technology comes into the picture. It aims at *persuading* human agents to behave in socially-valued ways, by giving information, providing feedback, and taking over actions. The success of a persuasive technology that serves the public interest depends on the integration of sound technology, effective persuasive principles and careful attention to ethical considerations.

This research program investigates the psychological mechanisms and the ethical dilemmas of persuasive technology in two ways. First, we develop an in-depth empirical study of a concrete case where persuasive technology is under development: the energy management and safety of vehicles (cars, trucks). Vehicle simulators will be used to observe human agents using various forms of persuasive technology, where the most important variable will be the amount of control transferred from the user to the technological system. Second, we analyze the general psychological mechanisms and ethical dilemmas at stake, which will result in design recommendations for developers of persuasive technology. Since persuasive technology is a perfectly generic technology our results will be important for many other areas as well.

Technology and human development; A Capability Approach

Main applicant: Prof.dr. Jeroen van den Hoven, TU Delft / [3TU.Ethics](#)
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Amount: €550.000

Some influential theories of distributive justice, fairness and equality, like that of John Rawls, discuss fair distribution in terms of shares of primary goods available to people. The main criticism of philosopher and Nobel laureate in economics Amartya Sen of these views is that it is not the goods that are ultimately important, but what they allow us to do and be, the kind of lives they enable us to live. Giving everyone a laptop or some other piece of technology is no good in and by itself, according to Sen's approach. Some people will be able to make good use of it and increase their level of functioning, but others who are illiterate or do not have access to reliable power supply cannot possibly convert their possession of the technology into anything useful in their lives. Human functionings and capabilities are therefore at the centre of Sen's work, referred to as the 'capability approach'. Although it has been widely adopted in development thinking, hardly any work has been done on the interrelations between the capability approach and technology. This is remarkable, since technology by definition aims at expanding human capabilities. This project investigates how the capability approach can be utilized in (thinking about)

technological innovation and engineering design. The context of application for this project is innovation for the so-called 'Base of the Pyramid' (BoP) or the poor in developing countries. Case studies are taken from three engineering areas: ICTs, healthcare/medical technology and sustainable human settlements.

Responsible early diagnostics for Alzheimer's Disease

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Amount: €550.000

Dementia in general and Alzheimer's disease (AD) in particular impose an increasing burden on aging societies. The Dutch LeARN project is presently developing early diagnostic technologies for AD, including PET, MRI and CSF tests. These molecular diagnostics promise to advance AD diagnosis and improve its reliability, and thus may reduce uncertainty in people suffering from cognitive dysfunctions. However, they raise new uncertainties as well, for example about usefulness in clinical practice, the response of potential users, the potential transformation of care practices, and the desirability of early diagnostics for AD, especially when effective therapies are lacking. Responsible innovation in this context means that such uncertainties and the concomitant stakeholders are systematically addressed at an early stage of technology development. The proposed research project aims to contribute to a morally desirable and socially robust diagnostic practice for AD, by (i) identifying scientific and clinical uncertainties in technology development, (ii) analyzing the social and cultural as well as the (iii) moral implications of existing and alternative ways to deal with them, and (iv) to design strategies for responsible uncertainty reduction in innovation of AD diagnostics. Since uncertainties, stakeholders and strategies are often interconnected, the research will be interdisciplinary. In addition, engagement of future users and stakeholders in the innovation process will be an important tool to anticipate and moderate the potential impact of the proposed innovations. The ultimate goal is to design a model for responsible innovation of diagnostic technology in a translational setting.

Biosecurity and dual use research

Main applicant: Prof.dr. S.R.M. Miller, TU Delft / [3TU.Ethics](#)
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Amount: €125.000

Many pathogenic agents that are important in life sciences research can be misused for developing biological weapons. To describe and analyse this situation a new concept was introduced in the vocabulary of the life sciences: dual use research. Discussions in scientific and governmental circles show that this new concept and the policy based upon it, is not

always clear and undisputed. In this project questions will be treated that are related to the use of the dual use concept in life sciences and in society:

1. What is the scope of dual use issues, e.g. what are the experiments of concern and why?
2. What is - from a moral point of view - a realizable and acceptable policy in dealing with dual use issues?
3. What regulatory framework should be put in place to deal with dual use issues; one that is morally acceptable, but also politically and scientifically feasible?

Aim of this project is

1. Developing an acceptable, adequate and applicable definition of the dual use concept for researchers, universities, companies and policy makers.
2. Describing and analysing moral and political implications of coping with dual use research in order to develop policy guidelines that are applicable and acceptable for science and government use.

The results will be translated in conclusions and recommendations for science and politics. This regards issues as: who should decide on the qualification of a research project as dual use? What are the implications? Which oversight measures and regulatory frameworks are desirable or feasible?

Responsible Innovation in Food Technology: about the intricate web of soft impacts, (ir)responsibilities, and mutual lack of trust

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Amount: €475.000

Thus far, 'responsible innovation' restricts itself to taking into account negative impacts of emerging technologies on safety, health and environment. But many technologies also impact our culture, morals and politics. The public holds technologists accountable for these 'soft impacts', but the latter typically feel unable, or unwilling, to integrate those impacts in their research, judging them non-quantifiable, controversial, or – at best – private. This research seeks to improve the dialogue between of science and society – considered to be the hallmark of any responsible innovation – on these soft impacts, and their integration into innovation. This is necessary, because societal acceptance of emerging technologies depends partially on society trusting technologists to take these wider concerns into account. A complication is that societal appreciation of soft impacts is not stable, but is co-shaped by the technological innovations. Thus, the dialogue between society and science is bound to be dynamic and permanent. Our research combines alpha, beta and gamma expertise, providing an overview of the 'soft' controversies regarding food technology, organizing fruitful stakeholder interactions, and investigating if and how those concerns can be translated to research. The betas provide the state of the art and prospects of their fields. The philosophy PhD student surveys the controversies regarding food technology, expands the parameters of public reason so that these can encompass soft impacts, and analyses techno-moral change. The social sciences PhD student studies the 'rhetoric' of discussions concerning soft impacts and research agendas, and designs ways to make stakeholders self-reflexive about the contingencies of hard/soft and public/private distinctions.

Moral fitness of military personnel in a networked operational environment

Main applicant: Mr.dr.ir. L.M.M. Royackers, TU Eindhoven / [3TU.Ethics](#)

Co-applicants: Prof.dr. D.Verweij, Netherlands Defence Academy
and others (t.b.a.)
Amount: €550.000

Military operational personnel are increasingly confronted with unprecedented complexities in their expeditionary missions. Collaboration between diverse partners is an essential requirement in these operations. Military organisations increasingly make use of network technology to foster information sharing and interactions between the parties in the network. We use the phrase Network Enabled Operations (NEO) to describe the added value of a well-networked operational environment. Mission success is increasingly determined by the soldier's capabilities to evaluate high-stake situations, to make balanced decisions, and to collaborate in ad hoc alliances. Ethics and morality play a crucial role in dealing with diversity of perspectives and balancing multiple interests of collaborating parties and own interests. This research program will investigate *the critical competencies of military personnel needed for moral decision making in network enabled operations*. This central question is subdivided into three subquestions: What characterizes moral fitness in a networked operational environment; which are the psychological and social conditions that enable morally responsible decision making in a networked operational environment; and, in what ways does a networked operational environment affect military behaviour? The analyses address three issues in NEO: information sharing, collaboration, and delegation of authority. The aim of this research program is to theoretically analyse and empirically assess the drivers of moral fitness for adequate decision making and collaboration. This should contribute to the strengthening and insurance of morally responsible actions and decisions of military personnel in a networked operational environment, resulting in changes in education, training and mission preparation for military personnel.