

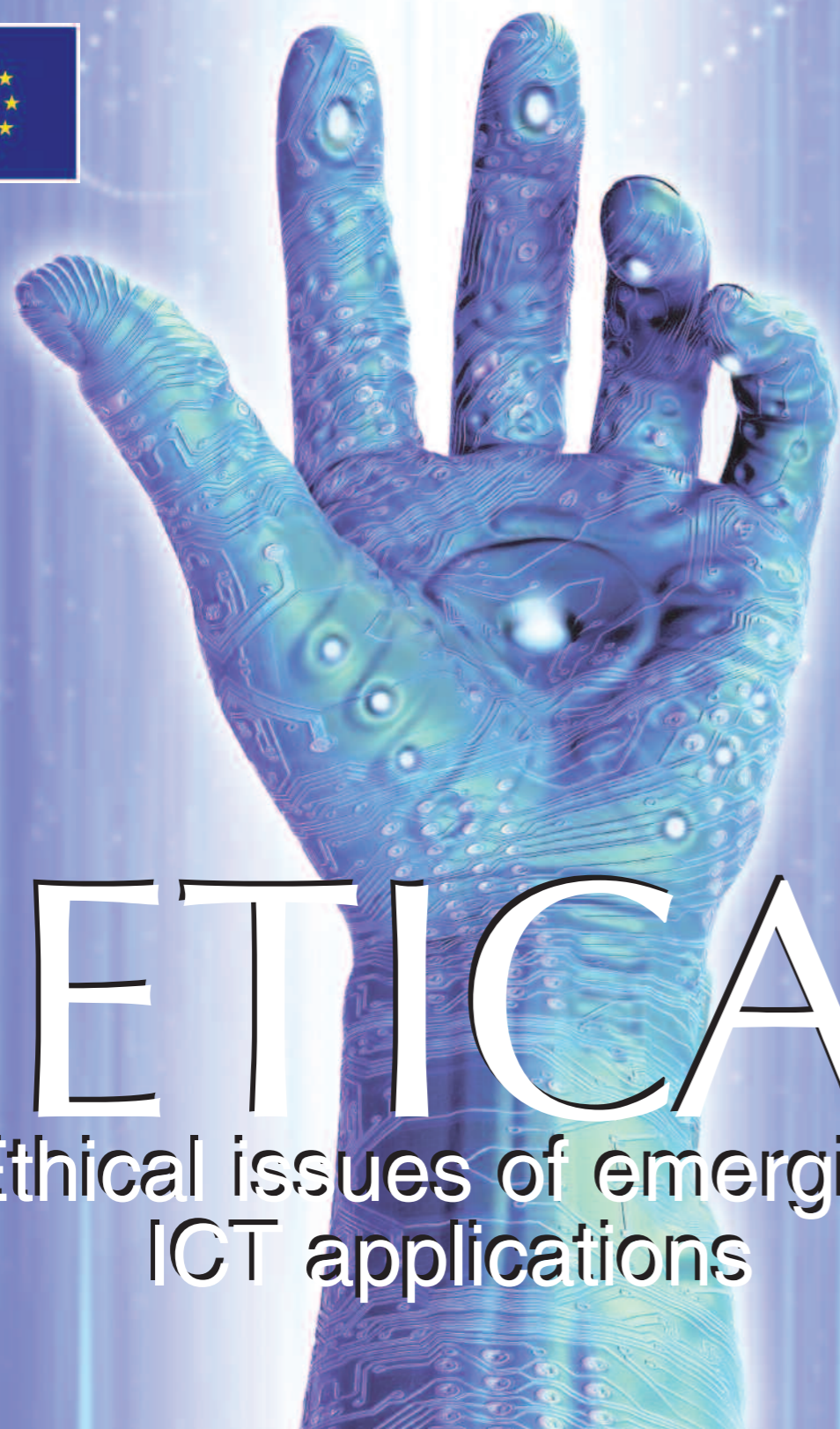
# EIEX

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ISSUE 6



# ETICA

Ethical issues of emerging  
ICT applications

# Mapping the moral future of ICTs

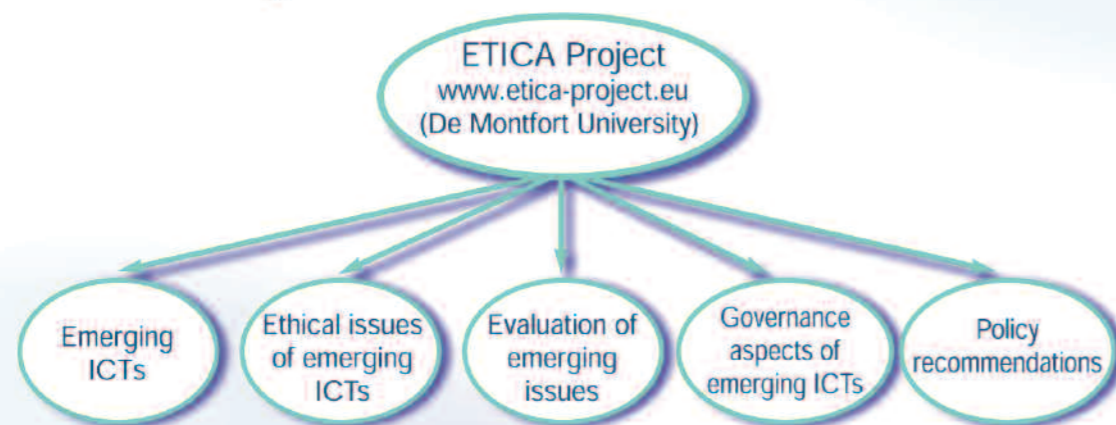
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### Expert research teams

- De Montfort University
- VTT Technical Research Centre of Finland
- Technical University of Delft
- Forschungszentrum Karlsruhe
- University of Namur
- Steinbeis Hochschule
- Eotvos Karoly Public Policy Institute
- University of Lodz

### Advisory board

- The European Association for E-Identity and Security
- Analytica
- Eurexcel
- Teleregions Network



By understanding the ethical issues of emerging technologies, ETICA intends to develop guidelines for policy makers on how ethical issues in ICTs can be addressed.

[www.etica-project.eu](http://www.etica-project.eu)

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**A** look at today's newspapers will probably reveal there has been some headline to do with the use and misuse of information and communication technology. Data may have been lost by a government, an official may have used a police database to spy on a potential girlfriend, a company may have sold data of underage users, or a file sharing provider may have been sued by an intellectual property holder. These are all ethical issues that are caused by or at least related to ICT. As ICTs spread further into the fabric of personal and social lives, as new technologies and applications get distributed in more and more activities, we can expect this type of ethical concern to increase. It is easy to guess that new types of data collected for many different purposes will create bigger concerns with regards to privacy and data protection. IP issues will continue to gain relevance in societies that are increasingly information driven.

While ethical issues of ICT will remain with us for the foreseeable future, our current ways of addressing these are problematic. In most cases we wait until a significant problem arises. Following public outcry, and political and media attempts to pin the blame, western societies start to consider how another instance of the same problem might be avoided. This is a standard way that societies deal with problems. However, rather than wait until the problem is there and the solution has to be fitted to the existing technologies and social structures, would it not be better to think about them early and prevent problems?

The ETICA project started with the assumption that such an approach was both desirable and possible. It set out to identify emerging technologies that can be expected to be socially relevant in the next 10 to 15 years. These technologies were then investigated and it was asked whether one can make reasonable and transparent predictions about the ethical issues they may raise when they come into wide-spread use. On this basis, ETICA evaluated the different technologies and their likely consequences from the perspectives of law, gender, institutional ethics and technology assessment.

A final question picked up by ETICA concerns current and possible governance arrangements. The idea behind this is that simple knowledge about the future is not sufficient to ensure that appropriate actions are taken. Even if we could exactly predict which ethical issues a novel technology will raise, it is by no means clear what should be done about it. The project therefore looked at current governance arrangements that are used to identify and address ethical issues. It critically questioned the assumptions behind those arrangements with a view to coming to recommendations that will allow taking account of ethics early.

This magazine recounts the main activities of the ETICA project. It explains the logic of the different activities and work packages and how they fit together to answer our questions. It details methodologies, approaches and their justification. It also lists the main recommendations of the project and explains how they can contribute to the overall project. The magazine is aimed at all those individuals and organisations that have an interest in the ethics of ICT. It will hopefully contribute to a better understanding of the issues involved and thereby lead to a more thoughtful and reflexive use of such technologies. In the end, ethical sensitivity contributes to better products, more satisfied customers as well as a better society in which citizens' needs are taken seriously. ■



# VTT – identifying the next big thing

Part of the Finnish innovation system controlled by the Ministry of Employment and the Economy, VTT produces research, development, testing and information services for both the public and private sector



THE central question that ETICA had to answer in order to successfully complete, the identification stage, was how to come to an understanding of the future that is relevant to policy makers. This question can be further divided into two separate sub-questions: how can we know about emerging technologies; and how we can identify the ethical issues that these technologies will raise?

Due to the multiplicity of emerging technologies and their uncertain nature, the ETICA consortium had to decide on an approach that was academically sound and simultaneously feasible within the resource constraints of the project. The principle of the identification of emerging technologies and ethical issues agreed is that it will be a distillation of published views on these issues. ETICA relies on a range of available sources to identify which technologies are likely to emerge, and which ethical issues these are likely to raise.

Having settled on the principles of the bottom-up approach, the next question was what to look for in the data. The central question here was how we could make sense of the broad field of emerging and future ICTs while keeping in mind the resource constraints of the project. For the purpose of high level policy advice the most important item needed is a general understanding of which technologies are emerging. The focus of analysis therefore needs to be at a relatively high and generalisable level. Individual artefacts or applications are only of interest in so far as they can improve the understanding of general and high level technologies.

## Core characteristics

As it is impossible to envisage all possible applications of such a high level overview of technologies, it was decided to identify what could be called the 'core characteristics' of the technologies in question. Identifying the essence or characteristics of the technology, the data analysis needs to give an answer to the question about in what way the technology changes the manner that humans interact with the world.

In order to address the problems of what counts as a 'high level' technology, three different types of technolo-

- The description of each technology consists of:
- Technology Name
  - History and Definitions (from discourse analysis and other sources)
  - Defining Features ('essence' of technology, how it changes our interaction with the world)
  - Application Areas/Examples
  - Relation to other Technologies
  - Critical Issues (ethical, social, legal and related issues)
  - References

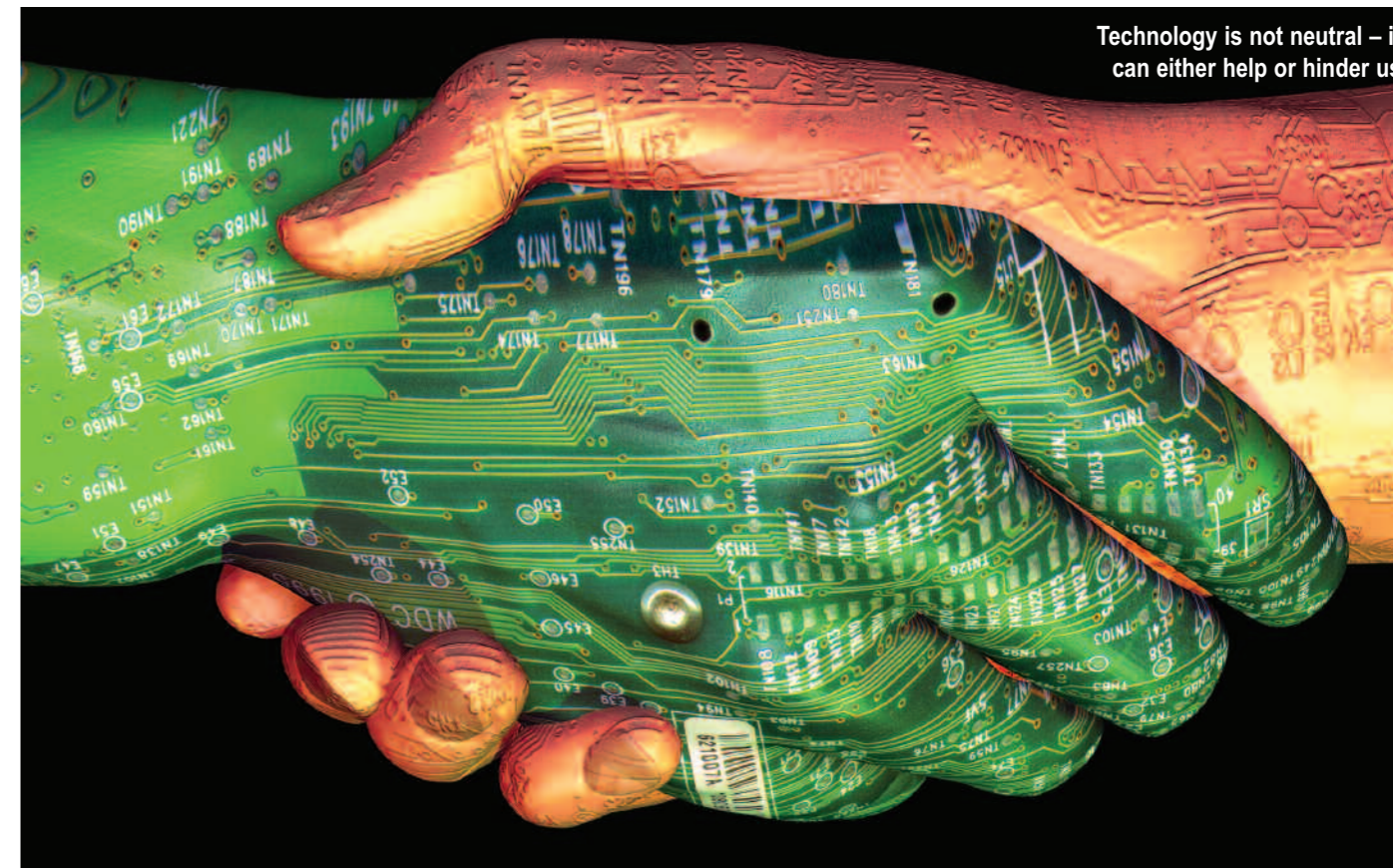
gies were defined: technologies, application examples, and artefacts. This distinction, along with the possibility of defining relationships between different entities allowed more flexibility in the identification process. The aim of the data analysis was to identify the most important emerging ICTs on the basis of relevant sources and to provide a description of the way in which these technologies are expected to make a difference.

While such an abstract description is required to come to an understanding of emerging technologies, it may be too brief to provide useful pointers to ethics, which is always contextualised. It was therefore decided to enable richer descriptions of technologies or 'vignettes' that would allow ethical analysis of the emerging ICTs.

Naturally we also looked at relationships between different technologies in order to understand more profoundly the semantics and nature of those technologies. After thorough clustering and categorisation of our data we have selected the following titles to present the most presumable future emerging ICTs:

- Affective computing
- Ambient intelligence
- Artificial intelligence
- Bioelectronics
- Cloud computing
- Future internet
- Human/machine symbiosis
- Neuroelectronics
- Quantum computing
- Robotics
- Virtual/Augmented Reality

It was decided to identify what could be called the 'core characteristics'



Technology is not neutral – it can either help or hinder us

## Nano technology will make hardware smaller and smaller

We are aware that these technologies may overlap with each other and the level of these technologies may vary in many ways. For example, one issue is if most of these technologies could be subordinated to Ambient Intelligence, or if Bioelectronics and Neuroelectronics are pretty much under the same developmental and application area. Our decision for this selection of emerging ICTs is based on studied discourses by governments and research institutions. Therefore we also use several other methods to ensure that the list of technologies will be reasonable. These consist of a set of focus groups with technology users, a survey of technology development project leaders, and a technology assessment made by experts.

## Vision

The main characteristics of future emerging information and communication technologies that came up from technology descriptions may also vary in their format while some technologies (e.g. Ambient Intelligence) have a clear vision of how it will change the way humans interact with the world but on the other hand other technologies (e.g. Quantum Computing) visions are not so much on an application level, but more on higher technology level. However it is already at this point possible to highlight some of those main characteristics that bring out the essence and developmental targets of these technologies.

It seems that there is an ongoing strong trend towards convergence and transdisciplinarity in ICT development. ICT is already distributed throughout our everyday lives and it seems that this kind of trend is going to be even stronger in the future. Malleability, one of the characteristics of future ICT, will make it possible to think of all conceivable ways to utilise ICT in different application areas and possibly even applications we can't even think of yet. Development of nanotechnology will make hardware

smaller and smaller and it is presumable that in the future so called invisible computers are reality. Of course if and when our technologically augmented environment comes little bit more invisible and more complex there will be issues of user control and comprehension of this kind of new intelligent environment.

## Augmentation

Many technologies also envisage human augmentation in one way or another. Augmented reality applications are already available for various platforms, but how and with what speed development will take further steps is still hard to predict. Intelligence (including e.g. context-awareness, pervasiveness and adaptivity) is one of the main characteristics that underline developmental work of future emerging ICTs. Through intelligence there are lots of possibilities to support different kind of technologies, applications and services, but there will be also many already identified threats and obstacles in utilising these applications.

Generally there is also strong emphasis at the moment towards virtualisation of services and communication. How for example civil society will accept service virtualisation and digitalisation is under discussion. Tradeoffs between clear benefits and harsh disadvantages, especially for some special groups, have to be made and justified. All in all new services and applications that are enabled by future emerging ICTs will require more computing power with less energy consumption. One of the possible solutions to this dilemma will be provided by the development of quantum computing. How prevalent the quantum computing paradigm will be after the next ten to 20 years is of course still an open question. ■

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# Visualising the ethical boundaries

Delft University of Technology is using cutting-edge programs to visualise how the key concepts studied by ETICA interact

THE research team from Delft University of Technology (TU Delft) has been responsible for identifying ethical issues arising from information and communication technologies in the coming 10 to 15 years.

To this end 'Ethics of emerging technologies' was defined as 'aiming at the identification and articulation of ethical issues of technologies that do not exist yet, but are likely to emerge.' In practice this amounted to describing what scholars in computer and information ethics say about the identified emerging ICTs from a pluralist as well as a descriptive stance that allows a number of different voices to be heard.

The analysis started off by creating a topical mapping of the discourse using specialised software called the VOSviewer. An overview of academic literature containing 1038 references, abstracts and keywords from leading ethical sources was constructed as input for the bibliometrical analysis. Although VOSviewer still is in an experimental phase, for the majority of technologies analysed in the ETICA project it distilled an adequate overview of ethical values and concepts.

Building on the results of the bibliometrical analysis a traditional ethical analysis (EA) was done for each of the eleven emerging technologies discerned in the ETICA project. Each Analysis was delimited by basing it on the defining features of the technology identified previously and independently in the Technology Descriptions. Next, relevant references were drawn from the overview of ethical academic literature constructed in phase 1. In case the references drawn from the overview of academic literature proved rather small for a specific technology, further literature was consulted from other relevant academic sources.

## Literature

As was expected, not all of the analysed emerging technologies were equally well represented in literature. On the one hand for some technologies, most notably Quantum Computing and Bioelectronics, almost no relevant articles in the extant literature were found. As a result for those technologies almost no articulation of ethical issues was discovered, both in the ethical and other literature. On the other hand research showed that certain technologies received significantly more attention in literature than average: Artificial Intelligence, Robotics



and Human-Machine Symbioses in particular are discussed in depth in both ethical and subject related academic articles.

A remarkable finding of the research was that the amount of speculation underlying ethical issues mentioned in the analysis ranged widely. On one end of the spectrum there are issues that seem purely hypothetical. The technology implicated in some issues on Robotics and Affective Computing for instance at the moment are beyond the immediate reach of R&D and practical implementation.

On the other end of the spectrum a great deal of issues were discussed in the ethical analysis that already can be found relatively frequently in daily life and in public debates. For instance, many of the issues identified in the analysis of the Future Internet are exacerbated instances of issues encountered on the internet as we know it today.

As was anticipated in the Technology Descriptions, many of the technologies discussed are found to be closely related to each other. This can partly count as an explanation for the overlap found in issues stemming from different technologies. Especially the more generic issues such as 'privacy' and 'autonomy' came to the fore-

Above and right: two of the visual maps created by VOSviewer

Speculation underlying ethical issues mentioned in the analysis ranged widely

The old moral categories and concepts still apply



front as relevant in most of the Ethical Analyses. This does not necessarily imply that the ethical implications of the issue are similar for all of these technologies.

Take Autonomy, for instance. Two different accounts of autonomy can be found in two analyses. In the discussion of Neuroelectronics a possible infringement of autonomy is mentioned as systems take over certain human functions. In the discussion of Artificial Intelligence autonomy is discussed as a requirement for a machine to become a genuine moral agent. These are different, although related, notions of autonomy.

Besides overlapping issues the research also brought forward ethical issues that were unique to a technology. Especially more specific traits of technologies are bound to give rise to more specific issues. The issue of 'Robots going out of control' for instance is only addressed in the Ethical Analysis of Robotics.

Furthermore research showed that to a large extent the old moral categories and concepts (say pre-internet) still apply to new technologies and are predominantly used. It should be noted however that in order to be made relevant and applicable to new technologies some of the categories and concepts need to be reconstructed and new conceptions of old concepts need to be articulated. Steps toward this re-conceptualisation were found in multiple sources that were analysed.

## Enabling

The type of relationships that was found to occur most often between the different technologies is an 'enabling' relation. Artificial Intelligence for instance can be viewed as an enabler for Robotics as AI is a necessary requirement in the construction of more advanced robots. By discovering which technologies are enabling which technologies a sort of hierarchy can be established. At the bottom of this hierarchy more basic or 'fundamental' technologies are found such as Quantum Computing and Neuroelectronics that enable technologies such as Artificial Intelligence and Human-Machine Symbiosis. At the top end Ambient Intelligence can be placed. Given that Ambient Intelligence seems to encompass almost all

of the other emerging technologies as they enable certain capabilities needed to realise it, this position is warranted.

Generally it is safe to say that technologies at the bottom of the hierarchy have fewer practical applications than the ones positioned higher up. As a result ethical issues stemming from these technologies tend to be discussed in terms of technologies positioned higher up in the hierarchy. Issues that occur in lower positioned, enabling technologies may thus have a huge impact as they affect all technologies that are enabled by them.

To assess to what extent the findings of the ethical analyses correspond with views and practices of outside stakeholders, the findings of the literature study are compared with the outcomes of two empirical studies. First the opinions of lay people were examined via focus groups, second a survey was sent out to FP7 ICT-projects to examine the opinion of technology researchers.

## Analyses

The issues that were brought forward in both empirical studies to a very large extent conform to the issues as discussed in the Ethical Analyses of the emerging ICTs. On the other hand many issues that were found in the Ethical Analyses were not mentioned at all either in the focus groups or the survey. It may be concluded that (academic) ethicists succeed in addressing the concerns that felt among the public, but that the public itself is either (still) not aware of all (potential) issues or does not agree on the assessment done by the ethicists.

In case these issues indeed are relevant to the public it subsequently may lead to the conclusion that ethicists do not manage to create awareness amongst the public of some of the ethical concerns and issues that indeed are relevant to them. To ascertain which conclusion is warranted it is recommended further research should be undertaken into the relationship between academic ethical discourse and the concerns and issues felt in by the public ■

# Karlsruhe puts personal values into the mix

Karlsruhe Institute of Technology's ITAS focused on the environmental, economic, social, political and institutional issues

ETICA's work on 'Evaluation' combined work from partners with specialised expertise to examine the key technologies identified at previous stages of the project from the perspectives of technology assessment, ethical panels, gender and legal studies. The goal was to produce a ranking of emerging technologies according to the severity of the issues they raise. The separate assessments were discussed at an expert workshop and combined into a single report with the help of an assessment grid produced at the beginning of the project. Simply stated, each partner had the task of judging the importance of the key technologies for future activities in their field of expertise.

Michael Rader of the Karlsruhe Institute of Technology, Institute for Technology Assessment and Systems Analysis led the work package and, with Alex Antener, contributed an analysis from the viewpoint of technology assessment.

## Technology Assessment

For each of the 11 key technologies identified by ETICA, a small case study drawing on technology assessment studies and related work, served to illustrate the likelihood and urgency of expected controversies concerning ethical aspects and social impacts linked with these technologies. An important consideration is the time frame for their expected diffusion and practical applications. All 11 technologies raised sufficient concerns to justify ethical analysis or consideration of potential societal impact at the stage of evaluating research proposals. In the case of quantum computing and cloud computing, the outlines of practical applications are as yet indistinct and thus it seems advisable to monitor technological developments closely before deciding on the topics of ethical or social analyses.

The aim of technology assessment is to disentangle fact from fiction, in particular to separate hype from likely reality. Enthusiasm for a technology, for whatever reason, might suggest that its impact is imminent, while it

might still have a long way to go before it finds routine use. Too much hype can distract from a promising core of a technology as could be said to be the case for artificial intelligence which has experienced two "winters" due to its failure to meet exaggerated expectations.

Technology assessment makes most sense when we are considering practical applications or approach the technology from the viewpoint of societal problems, for which applications of technology might provide a possible solution. In such cases, non-technical solutions to the problem should be considered as an alternative to those involving technology.

Coming back to the key technologies, it seems advisable to treat some together, e.g. all related to close human-machine interaction or those in some way involving attempts to equip machines with human-like intelligence. If the realisation of a technology is far on the horizon, it is not really a candidate for ethical debate, but could be the subject of a more technology oriented technology assessment which attempts to identify trajectories for its realisation, possible applications and time horizons.

## Ethics of European Institutions

The ethical evaluation was carried out by Rafael Capurro and Michael Nagenborg (SHB). In a first step the "Ethics of European Institutions" were reconstructed in order to estimate the likelihood of ethical issues. One of the main indicators was a potential conflict with the values and principles of the EU Charter, the Opinions of the European Group on Ethics in Science and New Technologies (EGE) as well as of other National (Bio-)Ethics Committees (NEC) and other official EU documents. The core values of European institutions highlighted in this analysis included human dignity, freedom, freedom of research, privacy, and justice. We also took into consideration the principle of proportionality, the precautionary principle and the principle of transparency as key principles. According to this framework we concluded that the following technologies have a very

Lack of trust: who is holding your data?



high likelihood of becoming an ethical issue as far as they concern or might concern human dignity, namely: Ambient Intelligence, Human-machine symbiosis, neuro-electronics, and robotics. Other technologies such as Affective Computing, Artificial Intelligence, Bioelectronics and Virtual/Augmented Reality can be seen, according to the analysis, as having a high degree of likelihood. Since the ethical analyses carried out in WP2 was based on an overview on Computer and Information Ethics it could also be demonstrated that current academic research – unlike the Ethics of European Institutions - is very much human-centred. There is little to no research on animals or environmental issues. Here, we would like to encourage our colleagues to take some inspiration from the Ethics of the European Institutions and to overcome the bias towards humans.

## Gender Studies

Work on gender issues in ETICA was performed by a team from the Women's Studies Center of the University of Lodz in Poland: Prof. Elzbieta H. Oleksy (WSC's director, later replaced by dr. Edyta Just), and the Department of Transatlantic and Media Studies of the same university: ( Dr. W. Oleksy- the coordinator of ETICA at Lodz University, and K. Zapiedowska, M.A).

The team's task in ETICA (WP3, Deliverable 3.2.4) was to assess ethical aspects of selected ICTs from the perspective of whether and to what extent gender issues are represented in the literature on the selected ICTs. A critical review of available literature (over 100 publications) was performed (methodologically based in Critical Discourse Analysis and evaluative instruments worked out for WP 3) to arrive at recommendations that would be of relevance to various stakeholders involved in ICT design, production and distribution as well as to the general public.

The main findings of the group are the following:

- Some ICTs have received little (Neuroelectronics, Quantum Computing) or minimal attention (Human-Machine Symbiosis, Robotics) in the literature gender wise so the ethical impact of their applications in the future is hard to estimate;
- Such ICTs as Affective Computing, Ambient Intelligence, Augmented Reality, Artificial Intelligence, Bioelectronics, Cloud Computing have been found to have the potential of positively affecting gender power relations and thus improve gender equality in the labour market across EU countries and worldwide;
- More research on the relationship between gender and ICT design, application and representation is needed so as to enhance a better understanding of ethical issues resulting from unequal participation

of women and men in all aspects of ICT production and implementation.

The group also contributed definitions of gender-related concepts to ETICA's theoretical apparatus called Glossary and participated in ETICA's events and dissemination activities.

## Legal evaluation

The purpose of the evaluation was to explore the legal implications which might be relevant to the ethical aspects of emerging technologies. The evaluation was performed by researchers of the Eötvös Károly Policy Institute, Budapest (EKINT): Iván Székely, Beatrix Vissy and Máté D. Szabó.

The starting points of the analysis were the fundamental values as well as principles distilled from the values forming the cornerstones of Western constitutional democracies, such as human dignity, equality and the rule of law. For the purposes of the evaluation of the selected emerging technologies, both an empirical and a speculative approach were employed.

In the course of the empirical study – using the method of analysis of documents and databases – legal databases were used covering the whole corpus of EU law. As a main finding, it can be established that the legal implications of emerging technologies are not reflected in the EU legal documents and attracted only a minimal legislative attention in the competent bodies of the EU.

The speculative findings have been divided into two groups: the first group contains findings from the aspects of those applying and using emerging technologies, while the other presents the findings from the aspects of lawmakers. Among the recommendations formulated, it was emphasised that new basic principles and criteria should be worked out in detail for the use of emerging technologies with special regard to individual choice, consent and transparency, and that legal science should work out adequate regulatory strategies for different scenarios regarding such technologies.

The evaluation took into consideration the fact that in the so-called new European democracies the moral value order of society is less stable than in traditional democracies, therefore in these countries the legal guarantees of moral postulates are even more important than in other countries of the EU, when introducing emerging technologies.

All components of the evaluation exercise confirmed the importance of the eleven key technologies which had been identified at earlier stages of ETICA. The current exception, quantum computing, will probably not achieve maturity during ETICA's time horizon of approximately ten years. There are also doubts about the true importance of "cloud computing", which is the subject of much attention in the media and by policy makers. The concept repackages many ideas, such as shifting software from the desktop into a central "cloud", that have been in existence for some several years already. The question is whether it will break through as a pervasive approach to computing or remain restricted to certain applications or types of user. This is obviously an issue for further research. ■

Contact: [www.kit.edu](http://www.kit.edu)

# Measuring the impact of emerging ICT

FUNDP's role in the ETICA project was to reflect upon current ethical governance approaches and to advise on an ethical governance strategy

**FUNDP seeks to address the issue of ethical issue determination and resolution in ethical governance approaches and ICT development. The way this is approached is to rethink the relation of norms and contexts in current approaches.**

'Norms' deal with what we ought to do, in distinction with what we can do. In current approaches to ethical governance, norms are treated as separable from contexts. This results from presupposing that a norm is successfully articulated when it is issued with good intentions or that good things flow as if by logic from its articulation.

Given a norm is prescriptive, the context in which it is articulated is of central importance. Arguments about issues are not sufficient for ethics. Action is required, and action doesn't necessarily result from even the best arguments.

Norms embody values, interests. The problem is that ethical issues are broadly determined by experts in established approaches. The ways in which issues are determined and norms established are those that come most naturally to experts from given fields. The way experts see problems are constrained by their framings. Expertise is often quite remote from day-to-day experience, however. The issues detected (or not) by experts can fail to map onto those felt by people in general. Experts tend to conflate standards of justification with those of application of norms.

FUNDP, in Work Package 4, examines the very nature of norms. This approach is adopted in order to get to the very root of the problem of ethical reflection. In getting to the root of that problem, ethical issue determination is made possible. The alternative to a normative approach would be a descriptive approach. 'Norm' in such an approach would merely be a statistical entity – rather than referring to what people ought to do it would refer to what people actually do. This is insufficient for ethics as ethics deals with 'oughts'.

Self-reflection must be sought in approaching ethical governance. Even using sophisticated tools such as

technology assessment risks 'framing' issues in a narrow way. Reducing contexts to factors presupposed in a framing leads to inadequate norm-construction. The problem is how to include the perspectives of the proposed addressees of a norm as it is their context that will be affected by ICT research and development.

Seeing things from another's point of view is a central part of governance insofar as accountability in a democratic context relies upon the notions that:

1. no particular point of view is ruled out in principle;
2. the possibility of maximising convergence by some fair means exists.

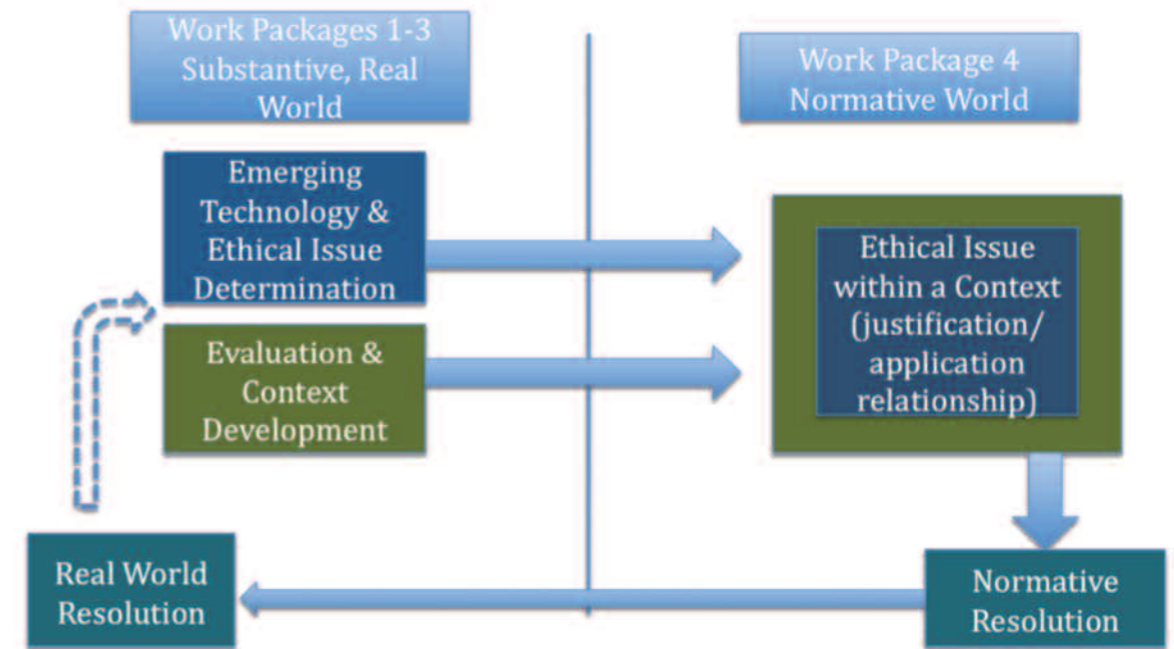
However, through years of careful training, research and experience certain modes of governance have taken on the status of reflexes.

## Expertise

Between the 1980s and 2000s (between the Single European Act and the Lisbon Summit), various committees were set up to maintain supranational accountability across Europe. Committees of experts are thought to have special insight into any given topic at hand. In ethics concerning emerging ICT development, these experts might be technologists, sociologists, philosophers, political scientists or anyone else with an expertise. What they have in common is a role in tempering the process of research in order to factor in concerns that the public at large might have about the trajectory in general of technology, or the specific implications of a particular piece of technology in development.

ETICA has found via its research that, contrary to the aim of putting civil society views centre-stage, these approaches in fact result in an inadequate account of public concern. Rather, the use of experts very often has the effect of posing technological development in terms relevant to narrow, sectoral interests. Experts also tend to reduce all problems to problems of justification, rarely thinking about application of solutions. Good arguments, however, don't automatically encourage action.

Experts tend to reduce all problems to problems of justification



**Figure 1: Relationships between WP4 and other Work Packages**

For instance, a technologist may have perfect faith in the inherent goodness of scientific progress. Such a faith can fail to pick out what might be genuinely felt concerns among the public about a possible effect of a development in, say, computing. Affective computing might represent an exciting breakthrough from the perspective of a technology expert, and one too good to be restrained. A member of the public might fear the possibilities for surveillance or integrity. The problem is between sensors and sensibilities.

The stakes for the split communities of expert and lay public are often different. Experts in technology enjoy scientific progress in itself, and see the exciting benefits that can be offered by its pursuit. For the public, ways of life and interpersonal relations are what's key. These can easily be threatened in a context of unfettered scientific and technological advance. An expert simply telling the public that they have good arguments for the development does nothing to allay fears.

What this might suggest is that the current reflexes regarding governance are based on uncertain ground. Naturally, the whole edifice cannot be ripped down. Revisions of the elements of the reflex are possible. After all, the elements of governance have emerged via 20+ years of experiment and research. The status quo represents a contingent arrangement of the various elements. So it can be seen that a rearrangement is both possible and in the spirit of the broader conception of governance.

**Using Expertise – Ethics as a Creative Component**  
Through attention paid to the construction of context, people can come to an informed view of an aspect of

R&D. Through a dialogue approach in which the public have a say, framed in terms of ethics by experts, framings are opened both on the public and expert side. The matter of discussion is also kept to the ethical.

Public participation needn't be thought of as a resolution tool. In using the notion of context as part of the problem at hand, this recognises a distinction between determining an ethical issue and determining the apprehension of the problem. Determining that apprehension is where the distinction between significance and meaning takes hold, and where the difference in technical understanding and self-understandings take hold.

A change in mindset is required. This is simple in that all it takes is a realisation, but difficult as that realisation is a subtle one. The ethical perspective required is a reflexive one, one wherein views are constructed in terms of the view-holder – the necessity of constructing norms in terms of the context of application. This requires getting out of the intellectual reflex of utilising argumentative reason – stopping the resort to 'the force of the better argument' as the only means of addressing integration of different views. Narration, interpretation and reconstruction are also key elements of human reason and understanding.

The place of narration can be seen as illustrated by the following problem: when contradictory arguments are aired, it is required that the parties involved will submit themselves to nothing but the force of the better argument. But the acceptance of arguments will itself be conditional on values. Thus, narration doesn't fit within argumentation, but rather argumentation decentres narrative authenticity.

The stakes for the split communities of expert and lay public are often different

Instead, the reflexive view needs to ask, for example, why a belief is held? What it means for the believer? What incentive would be required to alter that belief? This is rather than the status quo wherein one would seek abstract arguments for a counter point that might be logically valid, but fail to develop a meaning for the believer. This would amount to a domination of logic over self-understanding. Each is a legitimate aspect of human reason, but the domination is not justified. For ethics to be effective it must be overcome.

### Recommendations

Incorporating ethics into ICT research and development requires that industry, researchers, civil society organisations realise explicitly that ethical sensitivity is in the interest of ICT users and providers; that they distinguish between law and ethics and see that following legal requirements is not always sufficient to address ethical issues; that they engage in discussion of what constitutes ethical issues and are open to incorporation of gender, environmental and other issues.

These realisations will facilitate ethical reflexivity in ICT projects and practice as they allow stakeholders to realise that ethical issues are context-dependent and need specific attention of individuals with local knowledge and understanding and to simultaneously consider the identification of ethical issues and their resolutions. This is a creative force as it allows stakeholders to be open about the description of the project and its ethical issues and to encourage broader stakeholder engagement in the identification and resolution of ethical questions.

From a policy-making perspective, this approach needs to be facilitated by an emphasis not just upon outcomes, but on incentivising the ethics procedure. This can be done by providing a regulatory framework which will support Ethical Impact Assessment for ICTs.

Emphasis currently is on ethical issue determination as an end in itself. But this is centred upon ideas of compliance, consent or authorisation. This must be re-oriented in order to incentivise the entire process of ethics (from determination of issues) to resolution.

There needs also to be the use of policy instruments concurrent with a project's development over time, not simply at the start, again to combat the notion that ethics is a compliance measure to 'get through'. The policy instruments used ought to include negative incentives (i.e. sanctions) for lack of compliance and absence of the will to comply.

In order to facilitate learning in a meaningful way, and one that allows the expansion of reason beyond the merely argumentative, we recommend that policy makers create an 'observatory' for ethics that would serve as a resource open to all, thereby extending the resources of ethics and ethical governance practices beyond the realm of established expertise. In a similar vein, in order to facilitate the ongoing exchange of ideas and best practices, and in a mode not unlike that of the NEC forum, we recommend that policy makers institute a 'stakeholder forum'.

This forum would facilitate interchange between existing bodies in a manner that would be institutionalised. In this, it would facilitate the ongoing discussion of relevant issues (indeed, would contribute to discovering



what issues are 'relevant'). Given the horizontal, egalitarian makeup of such a forum and the diverse membership, this is a means of incorporating more than just argumentative reason (i.e. narrative, interpretive and reconstructive reason) in policy deliberation. This means there is a means to include value as well as norm in policy deliberation, overcoming one of the major obstacles to ethical norm construction in context and thereby making a central contribution to ethical governance in ICT development.

Through these changes in mindset, incentivised by policy:

- The gap between expert and lay-people is closed.
- The construction of norms in context is permitted.
- Allowing the question of which norms upon which ethical issues ought to be determined to be opened.
- Dialogue is predicated on a basis broader than argumentation.
- Content shapes the approach rather than form annexing content.

Through this, ethics in emerging ICT development is made a real possibility. ■

*Professor Philippe Goujon is a professor of philosophy embedded within FUNDP's Computer Science department, who has a particular interest in the relationships between science, technology, and society. His background is in epistemology and ethical reflection on emerging technologies such as Genetically Modified Organisms, as well as ethical governance of technologies, which makes him ideally placed to lead the Governance work package of the ETICA project.*

*Dr. Catherine Flick has a background in computer science and computer ethics, with a recently conferred PhD on informed consent in ICTs. She joins Prof. Goujon to work on ethical governance in emerging ICTs.*

Contact: [www.fundp.ac.be](http://www.fundp.ac.be)

These realisations will facilitate ethical reflexivity in ICT projects

# Outcome: telling truth to power?

The main aim of the ETICA project was to give guidance to policy makers on how ethical concerns need to be intertwined with technological progress

ONE of ETICA's research outcomes is to give recommendations particularly to policy makers on how to look at and deal with ethical issues of emerging technologies with the view that these will be thought through and incorporated early on as a technology emerges.

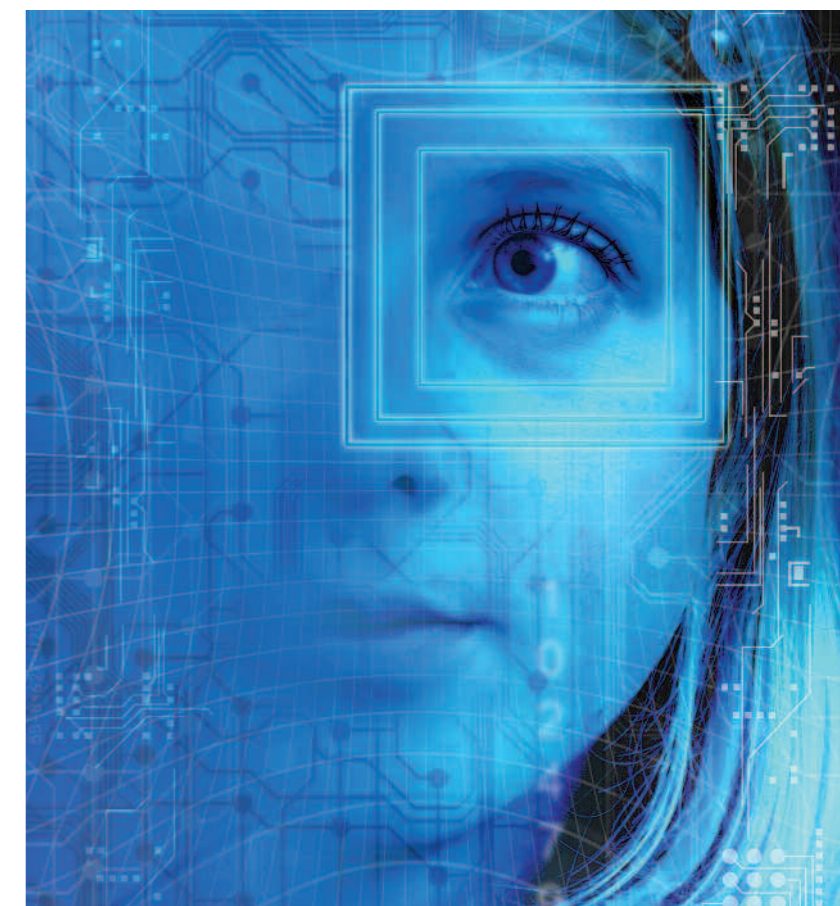
Through its various work packages and dissemination activities which attracted input and feedback from various quarters of society, recommendations have begun to emerge as research and analysis has progressed. This section gives a synthesis of these recommendations. To provide a scientifically based approach the recommendations have mainly emerged from the different stages of the work undertaken by each work package (WP) beginning with:

- WP1 which identified emerging technologies
- WP2 which identified and analysed ethical issues of these emerging technologies
- WP3 which evaluated and ranked the ethical issues from different perspectives according to their severity and likelihood
- WP4 which continues to look at governance structures of ethical issues.

As each of the above WPs fed into each other's WPs to produce an overall picture of the research findings and eventual recommendations, the recommendations come from different components of the ETICA project. The different components add value to the type of recommendations that will be outlined because they ensure that different facets of ethics of emerging technologies are dealt with.

By exploring technologies, ethical issues and current ways to address these, the ETICA project has developed the following recommendations. These recommendations are relevant to policy makers involved in science and technology policy, industry and civil society with the aim to facilitate the integration of ethical reflexivity into technical research and development. This will allow addressing ethical issues efficiently.

The recommendations are aimed at two different sets of stakeholder: policy makers and users or developers of new ICTs.



### Recommendations for policy makers

Policy makers have an important role to create the regulatory framework and the infrastructure to allow ethics to be considered in ICT. ETICA recommends the following three main areas of policy activity:

Provide regulatory framework which will support Ethical Impact Assessment for ICTs

- To raise awareness of the importance of ethics in new ICTs
- To encourage ethical reflexivity within ICT research and development
- To provide appropriate tools and methods to identify and address ethical issues

- To establish a forum for ongoing consultations with the public and stakeholders to provide position papers for policy input
- To address the wide range of current and new ethical issues arising from ICT, modelled along the lines of environmental, privacy or equality impact assessments
- To allow ICT professionals to use their expertise in emerging ICTs to contribute to ethical solutions
- To raise awareness of ethical reflection regarding animals and environmental issues

#### Establish an ICT Ethics Observatory

- To collect and communicate the conceptual, methodological, procedural and substantive aspects of ICT ethics
- To provide a community-owned publicly accessible repository and dissemination tool of research on ICT ethics
- To give examples of approaches and governance structures that allow addressing ethical issues
- To disseminate past and current research ethics and ICT including relevant work packages and deliverables and relevant National Ethics Committee opinions
- To facilitate the Ethical Impact Assessment
- To provide an early warning mechanism for issues that may require legislation

#### Establish a forum for stakeholder involvement

- To allow and encourage civil society and its representations, industry, NGOs and other stakeholders to exchange ideas and express their views
- To exchange experience between to develop ethical reflexivity in the discussion
- To reach consensus concerning good practice in the area of ethics and ICT
- To build a bridge between civil society and policy makers.

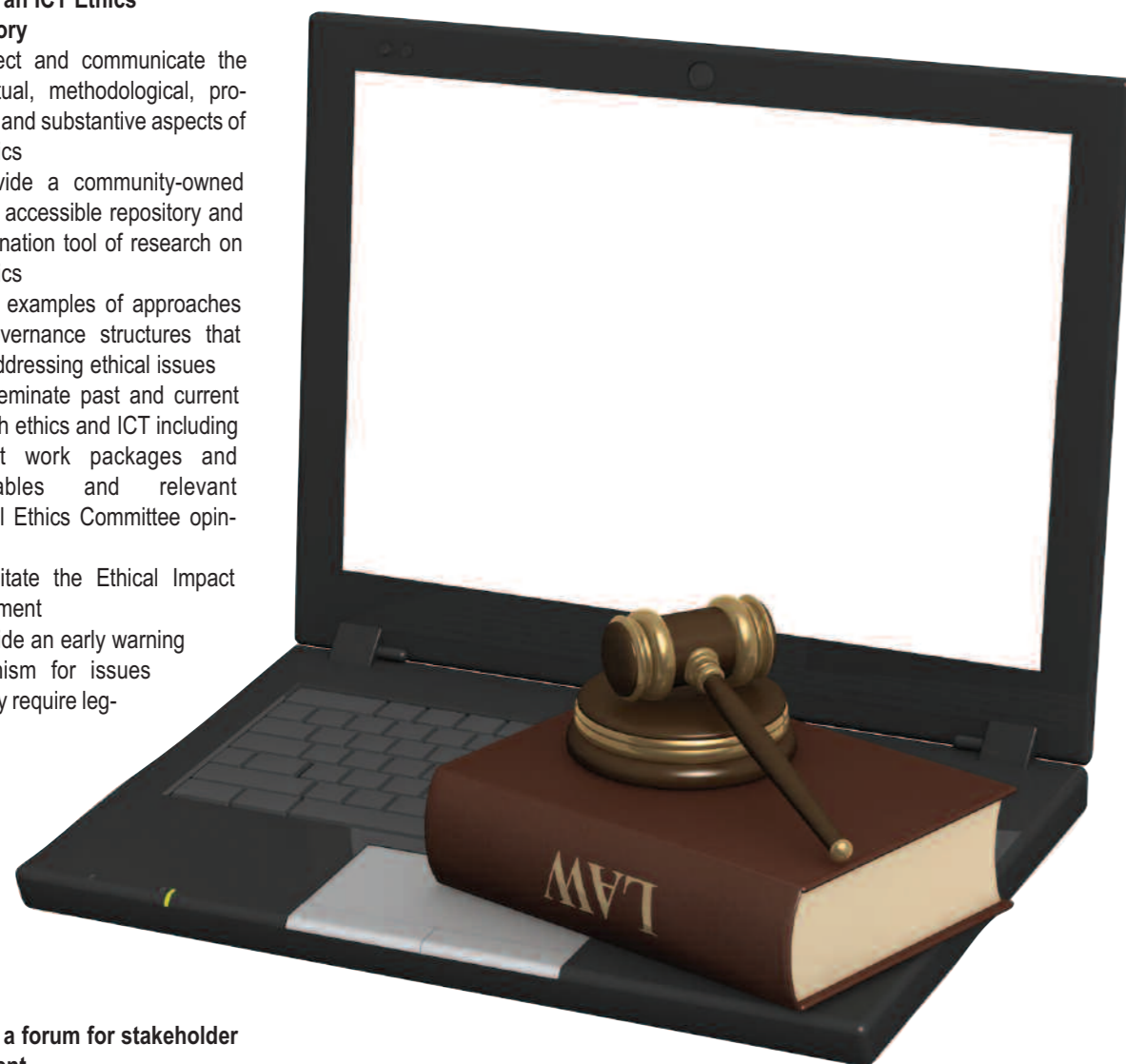
#### Recommendations for Industry and Researchers and CSOs

Industry, researchers and other individuals or organisations should adhere to the following recommendations in order to be proactive and allow innovation to be socially responsible.

#### Incorporate ethics into ICT research and development

- To make explicit that ethical sensitivity is in the interest of ICT users and providers
- To distinguish between law and ethics and see that following legal requirements is not always sufficient to address ethical issues
- To engage in discussion of what constitutes ethical issues and be open to incorporation of gender, environmental and other issues

**Policy makers have an important role**



#### Facilitate ethical reflexivity in ICT projects and practice

- To realise that ethical issues are context-dependent and need specific attention of individuals with local knowledge and understanding
- To simultaneously consider the identification of ethical issues and their resolutions
- To be open about the description of the project and its ethical issues
- To encourage broader stakeholder engagement in the identification and resolution of ethical questions.

The ETICA project provides details, suggestions and a starting point for all of these recommendations. ■

# Getting the message out

The ETICA project has used a number of different methods to explain to the wider public the importance of its research into the ethics of technology

**DURING the project's lifespan, ETICA has employed a number of dissemination activities targeting various stakeholders who have included the academic community encompassing researchers and students sharing and interested in the ideas of ETICA, potential policy influencers and lay-people from the general public.**

In addition, the project has disseminated its findings through other platforms such as conference paper presentations and journal publications. This is in addition to the project website, brochures, deliverables and reports that have been part of the process of dissemination.

#### ETICA Conference

Notable dissemination avenues have included the first ETICA Conference. The conference was held in Tarragona, Spain on 13 April 2010. In line with the projects objective, the theme of the conference was "The Future as we see it: Emerging ICTs and resulting ethical issues". As the theme suggests, the aim was to discuss, share and debate matters concerning future technologies and their potential related ethical issues.

The event attracted 44 participants from different geographical regions which included Europe, India and the US. To ensure maximum shared knowledge and ideas, the conference was deliberately held a day before the ETHICOMP conference, which is a series of conferences attended by delegates from all over the world that takes place every two years and is one of the leading international events on computer ethics and social responsibility. The combination of the two meant that there were diverse attendees from diverse geographical locations who shared and exchanged different and interesting views on aspects of emerging technologies and ethics. This is also reflected in the different presentations given whose focus ranged from a discussion on morality and mobile phones which touched on surveillance, to ethical problems in developing including a focus on ethics of digital film and guidelines to ubiquitous healthcare in China to mention a few.

The open discussion brought out several issues one of which was how to decide issues of ethics and ethical thinking and how future ethical issues can be considered. This is one of the issues the ETICA project has been looking at and part of the solution has been to be proactive at an early stage of technology development in order to



A previous issue of the ETICA magazine

identity potential problems of the future. The other has been to engage and bring round different stakeholders to engender ethical thinking as they get involved with technologies and its use. An added solution is to look at governance structures of emerging technologies and how these might deal with the concern raised.

The project will hold one more conference scheduled for March 2011 at the European Parliament and will involve Policy makers responsible for ICT and ICT research policy, ICT industry and researchers as well as Researchers and administrators working on ICT and ethics. The idea is not only to disseminate findings and recommendations to this important group of stakeholders, but to explore and discuss with them ways of how such findings and recommendations might be relevant to their day-to-day work. This takes us back to the point raised in the editorial which was of moving from reaction to proactive engagement when dealing with concerns that come up when something goes wrong with technology. By engaging with these relevant stakeholders, there is a window of opportunity for them to start thinking of ways of being proactive in thinking about ethics of emerging technologies at a far earlier stage.

#### Policy Briefing Session 1

Another dissemination avenue was the Policy Briefing Session (PBS) that took the form of an ETICA panel at the EuroScience Open Forum (ESOF) ([www.esof2010.org](http://www.esof2010.org)) in Torino, Italy on 6 July 2010. ESOF is a biennial meeting that has been running since 2004 and is dedicated to scientific research and innovation.

It allows the opportunity to discuss new discoveries and

The open discussion brought out several issues

debate the direction that research is taking in the sciences, humanities and social sciences fields. ESOF is unique in that it is both international and multidisciplinary and presents breakthroughs in varied disciplines, through a range of different formats including lectures, workshops, lunches etc. ESOF therefore presents and discusses the frontiers of scientific and technological research in Europe, contributes to the development of a European Scientific identity together with bridging the gap between science and society and stimulates policies to support scientific research.

It is due to the opportunities described above that ESOF offered that prompted ETICA to disseminate at the venue. The idea was to give a policy brief on ETICA's research activities to a cross-section of participants who consisted of attendees from the Education sector, ICT industry and Science sector. The aim was to get feedback as well as understanding their stance on ethics and emerging technologies.

By engaging with a cross-section of ESOF attendees, ETICA not only disseminated but also collected information that would be valuable for its research outcomes, particularly when considering its recommendations. To this end, the policy brief outlined ETICA's research rationale via the presentations given by the different Work Packages of the research project. Some of the issues raised by the audience were on how ethics can be thought on in relation to globalisation and reflexivity. Also raised was the issue of policy makers' proactiveness, or lack of it, when it came to emerging ICT's. What these issues reflect is the importance of the ETICA project, which has already begun to address them in some of the solutions that the project seeks, such as the involvement of policy makers as stakeholders in addressing ethics of emerging ICTs.

#### Focus Groups

The project has always felt that the contribution of different stakeholders in the process of its research is paramount. This meant that views and perceptions of lay-persons as targeted end-users of emerging technologies were an important element to the dissemination activities of ETICA. To this end, ETICA held three focus groups in the UK and three in Finland with ordinary member of the general public on the following themes:

1. User Perceptions of Future and Emerging Technologies.
2. Ethical Issues of Future and Emerging Technologies.
3. Evaluation and Ranking of Ethical Issues.

Findings from the focus group discussions suggest that participants have interest in technologies that would make a difference and improve lives in areas of health as well as climate change. On ethical issues of future and emerging technologies, the discussions revealed a wide range of ethical issues which included isolation, loss of jobs, privacy, inequality, digital and more. The evaluation and ranking of the ethical issues showed that participants ranked the issues according to the context and application of the technology.

For example, Affective Computing was seen as one of the technologies that would present major ethical issues due to the fact that it would perceive human emotion, something participants were not too keen on. From inception, the ETICA project has been of the view that wider



Dr. Kutoma Jacqueline Wakunuma at a team meeting

stakeholder participation in the project's research process would always be enriching. This has meant that the project would not confine itself to researchers or ICT industry personnel only, but rather that the project would incorporate wider end-user and public participation. This has made the project open and inclusive to a cross section of stakeholders who have been able to include varying views of what and how they consider emerging technologies and ethics might impact them.

#### Summer School

As a way of engaging with leaders of tomorrow, the ETICA project thought it prudent to hold a summer school as another way of disseminating and getting further feedback on its research activities. This time the target audience was mainly research students and researchers interested in various areas of emerging technologies and ethics. The summer school was linked with PrimeLife/IFIP summer school and attracted around 75 participants. Of particular importance was the mutual exposure of ETICA with high level representatives of industry (e.g. IBM, Google) and policy makers (e.g. the US White House and the German Ministry of Interior). While the impact of such exposure is impossible to quantify, it fulfils part of the core mission of ETICA, namely to engage with policy makers.

#### Major Publications

The project has also been able to produce a good number of journals, book contributions as well as conference papers during its lifetime. These can be accessed from the ETICA website at [www.etica-project.eu](http://www.etica-project.eu) under the publications link. Publications are still being planned even after the ETICA project comes to an end in May 2011. In addition, as part of the ETICA legacy, a project WIKI is being developed which will allow interested parties in the area of ethics and emerging technologies to have access to the projects research findings and outcomes.

The main running theme of the dissemination activities of the ETICA project is engaging with a cross-section on stakeholders. This has clearly been a success and will be vital to the research outcomes of the project because rather than just presenting the projects outcomes from ETICA as a single entity, what will be presented, particularly in the recommendations to policy formulators and those that influence policy formulation are views and perceptions of diverse groups of people and organisations who have given their time to engage in and with ETICA. ■

As part of the ETICA legacy, a project WIKI is being developed

# ETICA: where we go from here

ETICA must build upon its successes by continuing its engagement with policy makers and raising awareness and support for an institutional framework

THE ETICA project ends in May 2011. The development and use of ICT will not end, and neither will the ethical issues that are caused by such technologies. ETICA has made a valuable contribution to our understanding of emerging ICTs and their ethical consequences. The findings of ETICA allow researchers, industry and policy makers to develop a deeper understanding of possible and likely consequences of technology. ETICA provides a set of tools that allow those stakeholders to be proactive about such issues.

However, as stressed throughout the project, this perspective is fallible. On the one hand, there is no guarantee that the ETICA analysis has indeed identified the most important technologies. The ethical issues raised about these technologies may or may not come to pass. On the other hand, it is more than likely that novel technological developments will appear that were impossible to detect using the methodological approach of the project.

In any event, it is important to understand that ETICA provides a snapshot of what currently seem to be issues one can reasonably expect to become relevant. Such a snapshot, by its very nature, loses currency quickly. It is therefore important to think about how the ETICA findings can be used as a basis for a sustainable way of dealing with ethics of new ICTs.

#### Perceptions

To answer this question, it is useful to distinguish between the substantive and the procedural aspects of the ethics of ICT. Substantive issues are those that directly pertain to moral views and perceptions. Those are the things that are good or bad, that are subject to debate and that are contested between stakeholders. In the ETICA project, work package 2 was dedicated to identifying those substantive issues and they were subsequently evaluated by work package 3.

Procedural issues are those that have to do with the question of which processes or procedures will allow identifying and addressing substantive issues. Those are related to more abstract questions of ethical evaluation of moral issues, but also to procedures that may allow addressing ethical issues. In the ETICA project, such questions were to a large degree covered by the question of ethical governance as investigated by work package 4.



Professor Bernd Carsten Stahl with a presentation

In order for ETICA to continue to have relevance, both, the substantive and the procedural aspect need to be built upon. Substantive questions are often linked to specific technologies and are therefore subject to frequent change. Procedural issues are more abstract, but may find different relevance in different contexts. Both aspects will need to be continually updated. Technical experts, just like end users, and industry may find new problems and new solutions. The ETICA findings provide a starting point for a continued debate, but this debate will need to be continued, using broad stakeholder input.

Some of the earlier recommendations aim to develop the institutional basis of such an ongoing discourse. The idea of the ICT Ethics Observatory is to develop a community-based and publicly accessible resource where substantive issues can be collected and evaluated. At the same time, the Observatory could provide pointers towards possible procedural means of dealing with issues. There may be numerous governance structures that allow for heightened levels of reflexivity and the Observatory would allow the exchange of ideas about it.

While such an observatory would be an invaluable tool in a debate about ethics of emerging ICTs, it requires institutional support and the perception of the relevance of the topic. ETICA therefore needs to raise awareness and support the development of an institutional framework. By presenting ETICA findings and gathering stakeholder feedback in the European Parliament, by providing training to EU Project Officers and Ethics Experts as well as collaborating with the European Parliament's Science and Technology Options Assessment panel, ETICA has laid the groundwork for this continued engagement which will contribute to better technologies and a higher quality of life in Europe and beyond. ■

ETICA has laid the groundwork for this continued engagement

# Europe's leading e-security group

Non-profit association eema has been educating and informing its members on e-identity and security issues for the past 23 years

FOR 23 years, EEMA has been Europe's leading independent, non-profit e-Identity & Security association, working with its European members, governmental bodies, standards organisations and interoperability initiatives throughout Europe to further e-Business and legislation.

EEMA's remit is to educate and inform over 1,500 Member contacts on the latest developments and technologies, at the same time enabling Members of the association to compare views and ideas. The work produced by the association with its Members (projects, papers, seminars, tutorials and reports etc) is funded by both membership subscriptions and revenue generated through fee-paying events. All of the information generated by EEMA and its members is available to other members free of charge.

Examples of recent and upcoming EEMA events include: The European e-Identity Interoperability Conference, Brussels, Belgium; Kuppinger Cole e-ID Conference & Cloud 09, Munich, Germany; The European e-Identity Management Conference, London, UK; e-Identity as a Business, The Netherlands; Information Security Solutions Europe (ISSE), Berlin, Germany; Smartphone Security, London, UK and Creating Business Value with Access Governance, Gent, Belgium.

EEMA and its members are also involved in many European funded projects including STORK, ICEcom, SSEDIC and ETICA.

## Organisations

Any organisation involved in e-Identity or Security (usually of a global or European nature) can become a Member of EEMA, and any employee of that organisation is then able to participate in EEMA activities. Examples of organisations taking advantage of EEMA membership are Volvo, KPMG, Deloitte, ING, BankID Norge, Rabobank, Bankenes Standard, Sonofi Aventis, Verisign, Verizon, Thales eSecurity, Novartis, The Metropolitan Police, PGP, McAfee, Adobe, Magyar Telecom Rt, National Communications Authority, Hungary, Ministerion de Trabajo, Nokia, European Commission, Microsoft, NETS, Orange, Consult Hyperion and Siemens, to name but a few.

EEMA decided to become involved with the ETICA project as we felt it was looking to contribute an essential piece of the jigsaw, and as a member of the

20 ■ ETICA



Advisory Board (AB) we felt that we could bring a business and practical focus to the outputs of the project, which has actually been achieved over the duration of the project. For example the AB may see that there may be a far more beneficial methodology available as we may be able to 'see the wood for the trees' that the rest of the partners may not. ■

Contact: [www.eema.org](http://www.eema.org)  
+44 (0)1386 793028  
[info@eema.org](mailto:info@eema.org)

eema brings a business and practical focus to the project

# High level input

The Advisory Board played a key role in allowing ETICA to achieve its aims

**AN important aspect of the structure of the ETICA project was the high level input from the Advisory Board. The Advisory Board represented a range of stakeholders, offered feedback mechanisms, and ensured that dissemination is successful. Advisory Board members are full members of the project.**

Their contribution included the expertise from former projects as well as the representation of important stakeholder groups such as industry, in particular SMEs, and different European regions. The advisory board also provided input from the point of view of prior European research in the area. The breadth of experience of the Advisory Board allowed its members to effectively evaluate research results and put them in the wider European perspective.

One important role of the Advisory Board when viewed from the overall project perspective was that of risk management. The project contended with a number of uncertainties and risks and the Advisory Board provided valuable input in addressing these. Salient examples of such risks included:

**Representation of relevant stakeholders:** The risk with regards to stakeholder representation is that too large a collection will render the project unmanageable, but too narrow a set will leave the project's viability open to question. The solution to this was in the membership of the consortium and in particular the Advisory Board as it represented a number of important stakeholders.

**Viability of recommendations:** A further and related risk to the relevance of the project would be the creation of policy recommendations which turn out not to

be viable. This was addressed through the stakeholder and consultative approach taken by the project, which ensures a maximum of input from a range of stakeholders. This, in turn, guaranteed the maximisation of the knowledge base and allowed an early recognition of problematic recommendations.

The Advisory Board, in particular, watched over the viability of findings and recommendations. The bottom-up approach of the project, which will deduce policy recommendations from individual governance structures of particular issues and problems which furthermore decreased the risk of recommendations that are not grounded in political and organisational reality.

## Overregulation

It was recognised that there is a risk that the project will be perceived as an attempt to create more bureaucracy and that the disadvantages of the creation of governance structures and policies will outweigh the benefits. Such a view from main users (eg. the ICT industry) could lead to user resistance and might jeopardise the success of the project.

In order to mitigate the risk, ETICA consulted widely with a range of stakeholders, in particular with industry and SMEs to ensure their views were considered and represented in the policy recommendation process. This is one aspect where the ETICA Advisory Board ensured the viability of the project outcomes. ■

Contact: [www.etica-project.eu](http://www.etica-project.eu)

# Integrating the regions

**TELEREGIONS Network (TRN) is an International Non-Profit Organisation of European Regions. Founded in 1997 by key regions from Austria, Belgium, France, Germany, the Netherlands, Finland, Spain, Sweden and the UK. TRN has been actively participating in the field of Regional Development and Information and Communication Technologies (ICT).**

The TeleRegions Network is involved in improving cooperation to enhance regional opportunities in the information society – to foster regional development in and through ICT. TRN offers practical solutions for the challenges of regional development and ICT by combining successful solutions, promising solutions and available solutions.

To achieve its objectives, TRN promotes cooperation – cooperation between regions, as well as cooperation

between regions and other stakeholders. TRN follows the successful Nordic best practice example of a Triple Helix approach. A close cooperation between the public authorities, enterprises and academia appears to be the best way to successfully foster regional development. An increasingly important part of this cooperation for TRN and its stakeholders are the ethical issues. As the emerging technologies are playing an increasingly dominant role in the development the consequences of this development must be addressed.

TRN along with the other members of the Advisory Board has provided feedback into the various ETICA deliverables as well as disseminating the project through various industry events. ■

Contact: [www.westsweden.se](http://www.westsweden.se)

In order to mitigate the risk, ETICA consulted widely

TRN offers practical solutions

# Promoting SME research benefits

EurExcel helps its members adopt innovation as part of their business strategy

**EUREXCEL Membership Projects Ltd is committed to helping SMEs reach the global market and benefit from innovation and the capital available through the results of European research projects.**

To best achieve this EurExcel works very closely with other professional associations, researchers, RTOs and SMEs themselves, our aim being to put real technological advance into the hands of our SME members.

Through its network activities EurExcel helps its members to adopt innovation as an essential and integrated aspect of both their business strategy and cultural relationship with their customers. This is done by improving their access to, and exploitation of, new and emerging technologies and knowledge. EurExcel also serves to better equip small firms with the skills and contacts to help them secure existing domestic European business and attract new business from other global markets.

## Independent

EurExcel is an independent association made up of SMEs from all parts of the European area. The mission of the organisation is to assist SMEs in gaining benefit from the European Commission research funding, whether to complete their required research or to assist in the valorisation of the results. It is made up of members from many industrial sectors, however there is a definite focus on hi-tech business areas such as ICT.

Alongside the other members of the Advisory Board EurExcel has provided feedback on the research as it is completed, based on the industry facing 'real world' view of the association, helping to ensure that the project's



outcomes are valid, relevant and effective. EurExcel provides many areas of expert advice within the business area of EC funded research projects from preparation of proposals through to dissemination and exploitation of project results – this latter having been a part of our contribution to ETICA. One of the deliverables for which EurExcel has been responsible is the magazine you are reading now – EurExcel has assisted in the publication of a number of 'project specific' magazines in support of the dissemination needs for various projects. In addition, EurExcel's membership database serves as an effective dissemination route for the project results which should stimulate a high level of further activity post project.

We are also delighted to have able to help facilitate the ETICA final event at the European Parliament. ■

Contact: [www.eurexcel.eu](http://www.eurexcel.eu)

There is a definite focus on hi-tech

# Two decades of research

**ANALYTICA Social and Economic Research Ltd is a small UK-based company that has been providing research and consultancy to a range of clients, including many international and national policy-making bodies, for over two decades.**

Ursula Huws, the founder and director of Analytica, has been carrying out research on the social and economic impacts of technological change since the 1970s. She directed the RESPECT project (2002-2005) funded by the European Commission's DG Infoc, under the 5th Framework Programme, to develop professional and ethical codes of practice for the conduct of socio-economic research in the information society

and also provides consultancy on research ethics to a number of bodies including acting as an independent expert for DG Research in the evaluation of research proposals. She is also an expert on research methodology, having published on the topic and designed and taught courses on it at undergraduate and postgraduate levels.

Analytica has utilised its background and experience to feed into the ETICA Project deliverables and contribute to the dissemination plan. ■

Contact: [www.analyticaresearch.co.uk](http://www.analyticaresearch.co.uk)

# Contacts

## ETICA Consortium

Organisation	Region	Website
De Montfort University	UK	<a href="http://www.dmu.ac.uk">www.dmu.ac.uk</a>
VTT Technical Research Centre of Finland	Finland	<a href="http://www.vtt.fi">www.vtt.fi</a>
Technical University of Delft	Netherlands	<a href="http://www.ethicsandtechnology.eu">www.ethicsandtechnology.eu</a>
Forschungszentrum Karlsruhe	Germany	<a href="http://www.kit.edu">www.kit.edu</a>
University of Namur	Belgium	<a href="http://www.fundp.ac.be">www.fundp.ac.be</a>
Steinbeis Hochschule	Germany	<a href="http://www.steinbeis-hochschule.de">www.steinbeis-hochschule.de</a>
Eotvos Karoly Policy Institute	Hungary	<a href="http://www.ekint.org">www.ekint.org</a>
University of Lodz	Poland	<a href="http://www.uni.lodz.pl">www.uni.lodz.pl</a>

## Advisory Board

The European Association for E-Identity and Security – eema	UK	<a href="http://www.eema.org">www.eema.org</a>
Analytica	UK	<a href="http://www.analyticaresearch.co.uk">www.analyticaresearch.co.uk</a>
EurExcel – EurExcel Membership Projects Ltd	UK	<a href="http://www.eurexcel.eu">www.eurexcel.eu</a>
Teleregions Network	Sweden	<a href="http://www.westsweden.se">www.westsweden.se</a>

## Other useful contacts

CORDIS (Community Research and Development Information Service) [http://cordis.europa.eu/home\\_en.html](http://cordis.europa.eu/home_en.html)  
<http://cordis.europa.eu/fp7/dc/index.cfm>

CORDIS Partners Service <http://cordis.europa.eu/partners-service/>

Open FP7 Energy Calls [http://cordis.europa.eu/fp7/energy/open-topics\\_en.html](http://cordis.europa.eu/fp7/energy/open-topics_en.html)

SME Participation in FP7 Report Autumn 2009 [http://ec.europa.eu/research/sme-techweb/pdf/fp7\\_report\\_autumn\\_2009.pdf](http://ec.europa.eu/research/sme-techweb/pdf/fp7_report_autumn_2009.pdf)

IGLO – Informal Group of RTD Liaison Offices <http://www.iglortd.org/>

European Innovation Exchange <http://www.eiex.eu/>

ETICA <http://www.etica-project.eu>



ETICA

[www.etica-project.eu](http://www.etica-project.eu)