Ethics self-assessment: misuse of technology, requirement no 1

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Revision history

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20/12/2017	Chiodelli, Luce	Draft version
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Scope of the deliverable

This deliverable aims to present one ethical issue raised in the context of the ULPEC project : the misuse of its technology.

We will start presenting here the legal context surrounding misuse of technology and Horizon 2020 project outputs; then we will place the focus on ULPEC's strategy, in order to comply with the international, European and national regulations.

This document is to be considered a work document.
Although listed as a deliverable, we aim to keep reflecting on the social and ethical impact of the technology we are developing in the context of ULPEC, letting this document evolve through time, accordingly with the evolution of our project.

Addressing misuse of technology

A definition

Generally speaking, misuse of research results relates in academia to the stretching of findings, the fabrication of results, their falsification or plagiarism of research publications.
However, any innovation leads to a social impact, either positive or negative, which is important to be taken into consideration.

Following ULPEC's ethics screening, the following definition of misuse applies:

> Potential misuse of research results
> *"This section concerns research involving or generating materials, methods, technologies or knowledge that could be misused for unethical purposes. Although such research is usually carried out with benign intentions, it has the potential to harm humans, animals or the environment"*
>
> - Excerpt from the Horizon 2020 Ethics Self-Assessment Guidelines

Upon evoking "potential to harm humans", the above-mentioned definition of misuse also relates to the problematic of dual-use technology and its appropriation for military purposes. This ethical issue is addressed by the ULPEC consortium in the deliverable *8.9 – Ethical requirement: Dual-use items*.

Elements of strategy to prevent misuse

Questions we must ask ourselves, as innovators

Among scientific communities, the focus point of disseminating and exploiting research results is usually placed on the technological and economic impact of innovation.

However, awareness of the social dimension of research has to be raised among researchers and engineers, who must gain full consciousness of the value and potential of their findings, either positive or negative.

Awareness and prevention of misuse start by asking ourselves the following questions:

On social impact:

- How could my research potentially affect and/or change the day-to-day life of citizens?
- Could it affect their quality of life ?
- Could it have impact at socio-cultural level?

- Would it have a negative impact on traditional societies?
- Would my technology contribute to the destruction of societies, or animal habitat or ecosystems?
- Could my research directly or indirectly affect the health of the citizen?

On safety issues:

- Would the technology be used for ill-oriented purposes, which could threaten human rights and liberties?
- How could my technology potentially land in the wrong hands (criminal organisations, terrorist organisations, dictatorships)?
- Which consequences would it have if my results were hijacked?
- How could it prevent such a threat to happen?
- Which safeguards can I establish?
- Which institution or organisation may help me protect my results from unethical use?

Upon reflecting on social impact, one can only conclude that conclusions on the potential social impact of the technology must be drawn from the first sparks of an idea. The type, dimension and replication of the consequences generated by the use of technology must be foreseen and well-thought ahead of design.

But the assessment shall not be made once – social impact has indeed to be monitored then when carrying out research, as well as when research results are about to be sold and passed onto companies, in order to bring it on the market.

Social Impact Assessment

Social Impact Assessment (SIA) is a scientific methodology developed to help policy-making in the 1970s. Initially designed in the United States to evaluate the consequences of environment-related policy, which would impact local communities, SIA has grown to become a usual practice among large-scale public institutions. Since then, it was gradually enhanced in order to become applicable to implementation and monitoring of any type of policy.

Social Impact Assessment is nowadays namely carried out by large policy-making entities, such as the United Nations or the European Union and determine the implementation of top-down policies.

The questions we listed in the previous section of this document also underpin the structure of the assessment, which can be carried out by organising public consultations, working on impact factors and specific indicators provided by several stakeholders of civil society.

As a matter of example, several actors have been publishing guidelines on the subject:

- The International Association for Impact Assessment – IAIA has published on its website a dedicated page o allow any innovator or any policy-making/public institution to carry out social impact assessment. This page provides the public with elements of definition and lists all the aspects of social impact, which must be addressed;

- The United Nations also published in 2006 a Comprehensive Guide For Social Impact Assessment which helps policy-makers conduct the survey;

- The ASSERT Project, a European research project funded within the 7th framework programme (FP7), developed methodologies in order to assess social impact and published their conclusions for replication.

To learn more on Social Impact Assessment within the European Union, a dedicated page is regularly updated: European Commission- Law-making process - Planning and proposing law.

Ethics guidance in the European Union

Guarantors of ethical research at European level

The European Union has its own board of Ethics Advisors, the European Group on Ethics in Science and New Technologies (EGE).
They can be contacted for advice on ethical issues on emergent technology and regularly publish reports and white papers on several ethical aspects related to research and innovation.
A list of their publications can be retrieved on their website: EGE Experts' Group: Opinions and Statements.

Recommendations and guidance for Horizon 2020 projects

Applicants are expected to develop a comprehensive approach: A detailed strategy addressing the specifics of the situation, putting the necessary safeguards in place.

1. *Awareness – Project applicant should be sufficiently aware of the potential risks (the direct risks for the participants and the risks for the society as a whole). Possible measures can be an ex-ante biosecurity assessment, an early flagging system for biosecurity and biosafety problems and education and training.*
2. *A strategy – Project applicants should develop appropriate and detailed procedures to deal with dangerous or restricted materials or information. Biosecurity and biosafety risk management procedures should comply with relevant standards. These procedures can include access controls, assignment of confidentiality levels, the effective control and monitoring of all procedures and the reporting of near misses.*
3. *Independent expertise – Expertise on biosecurity and dual use should be included in the project management structure or in an independent ethics advisory board. It is the role of experts to oversee and assist in the creation of a comprehensive risk management system.*
4. *Dissemination, communication and exploitation of the results – Can the research results be shared with a wider public? What are the risks and possible consequences? How would the public opinion react? Independent experts can assist in the development of a strategy.*

- *Excerpts from the guideline Research, Risk-Benefit Analysis, and Ethical Issues, published by the European Commission*

Further guidelines and recommendations on misuse are listed in the Resources section of this deliverable.
For documentation related to dual-use items and exclusive focus of Horizon 2020 research results, please read the Resources section of the deliverable *8.9 – Ethical requirement: Dual-use items*.

Measures taken in the context of ULPEC

Awareness

As we already mentioned when addressing the issue of developing technologies with a dual-use character in Deliverable *8.9 – Ethical requirement: Dual-use items,* the ULPEC consortium is fully aware of the potential for misusing its technology and related questions have been asked to the concerned partners by the University of Bordeaux, in its role of a coordinator.

The consortium abides to the engagements it has taken towards society, also complying with our objectives of a Responsible Research and Innovation.

In addition to general knowledge, a specific project library has been created by the University of Bordeaux on the project workspace. Partners may access directly to all the necessary guidelines and information to tackle the ethical issues we may have to face. Elements of the library are listed in the deliverable *8.2 - Project Management Guidelines.*

Independent expertise

ULPEC Ethics Advisor is also appointed to provide safeguards against potential deviations from our engagements to carry out research in line with the requirements of the Horizon 2020 framework programme and to strive to develop responsible research and innovation.
He is has a mandate to interview and to be fully informed by each consortium member of the whereabouts of the technologies we design and of their running-up exploitation, without being conflicted with our confidentiality policy. We also rely on his expertise in order to help the consortium assess the related risks and to provide advice on their on-going management.

Shall any irregularity arise, the Ethics Advisor shall ring the alarm by informing the coordinator and - to a further extent - the funding authorities and other competent national and European authorities.

Exploitation

As we previously evoked in ULPEC's deliverable *8.9 – Dual-use of technology*, ULPEC's exploitation strategy of research results is already settled and monitored over the course of the project, focusing on marketable technology responding to societal needs.
Upon exploiting ULPEC's research results beyond project life, the consortium agreement clearly settles responsibilities and rights in terms of intellectual property. This namely implies for a partner exploiting the technology to inform in due time and negotiate with the other partners involved in the design, therefore leaving the possibility of an additional safeguard against misuse.

Dissemination and communication over the project

In compliance with ULPEC's dissemination and communication plan, as well as its exploitation strategy, the consortium will disseminate its results in open and free repositories for public consultation ("open access").

However, due to confidentiality motives towards exploitation, the consortium has opted out of the default obligation for Horizon 2020 projects to ensure access to research data (generally mentioned as "open data"). By doing so, we keep control over the quantity and quality of information we grant access to, therefore limiting potential hijack from unknown stakeholders for malevolent purposes.

Likewise, when applying to a funding for Horizon 2020, the choice was made to grant all technical deliverables a confidential dissemination level, for economic and technological reasons – the research fields we investigate are very competitive and potentially very lucrative as well. This option allows us again to limit the sharing of information to a very restricted number of actor, allowing us to keep track of its propagation and use.

Strategy

ULPEC's partners have developed their own internal safeguards against potential "leaks" – namely internal control processes and procedures, non-disclosure agreements for all personnel, including administrative and temporary staff.

However, the misuse risk is also included in ULPEC's risk management plan, which was designed by project launch. Some risks were already foreseen upon applying for a funding, and we kept enhancing our plan ever since.

The University of Bordeaux keeps itself and the consortium informed of all new regulations and governance bodies, which could help prevent technological hijack of any kind. The Ethics Advisor also contributes to the elaboration of a joint strategy and risk mitigation measures throughout the project life.

As of 2017, we do foreseen the strategy and risk management plan to be enhanced, as the results start showing and the exploitation strategy can effectively be carried out (starting the standardisation and patenting processes).

Resources

- Guidance note: How to complete your ethics self-assessment
- Explanatory note on potential misuse of research
- Guidance note — Potential misuse of research
- Guidance note: Ethics Advisors discuss research ethics and integrity
- Research, Risk-Benefit Analysis, and Ethical Issues
- ASSERT Project website and toolkit: *assessing security research - tools and methodologies to measure social impact*
- ASSERT Project: *Report on methodologies relevant to the assessment of social impacts of security research*
- Smart Regulation: *Guidance for assessing Social Impacts within the Commission Impact*
- United Nations' guidelines for Social Impact Assessment
- European Convention on Human Rights
- CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION (2000/C 364/01)