

# Ethics self-assessment: dual-use of technology, requirement no 1

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# Revision history

Date	Editor	Changes to the document
20/12/2017	Chiodelli, Luce	Initial draft
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# Scope of this deliverable

This deliverable aims to present one ethical issue raised in the context of the ULPEC project : the dual-use of its technology. Indeed, the project output aims to design a camera, which will determine driving for unmanned vehicles. The components and systems, which relay and build the camera up, can be retrieved on all types of automated device.

While ULPEC's first objective is to ensure automated driving of vehicles (our exploitation strategy aims namely towards selling the technology to car manufacturers), its functionalities could also potentially be applied to other types of objects, from vehicles of all sizes to aircrafts.

In an era where the military considers research artificial intelligence and robotics as new playgrounds, our aim is to guarantee that the technology we develop in the context of ULPEC stays solely oriented towards civil applications and societal development as a whole. By doing so, we also comply with Horizon 2020's regulation to develop civil-oriented applications only, unless specifically defined in the context of a call.

We will start presenting here the legal context surrounding dual-use 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 technology we are developing in the context of ULPEC, letting this document evolve through time, accordingly with the evolution of our project.

# Dual-use items: elements of context

## European Regulation on dual-use items

The core legislation, which addresses the topic of dual-use items produced on European soil is the [Council Regulation \(EC\) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items](#).

### Definition

*'Dual-use items' shall mean items, including software and technology, which can be used for both civil and military purposes, and shall include all goods which can be used for both non-explosive uses and assisting in any way in the manufacture of nuclear weapons or other nuclear explosive devices.*

- Article 2, paragraph 1, [Council Regulation \(EC\) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items](#).

### Dual-use items: categories

The Annex 1 of the Council Regulation 428/2009 lists all the items, which would be fall under the category of dual-use items. Are considered dual-use items, products or technologies which can be linked to the following categories:

- Category 0 Nuclear materials, facilities and equipment
- Category 1 Special materials and related equipment
- Category 2 Materials Processing
- Category 3 Electronics
- Category 4 Computers
- Category 5 Telecommunications and "information security"
- Category 6 Sensors and lasers
- Category 7 Navigation and avionics
- Category 8 Marine
- Category 9 Aerospace and Propulsion

### Obligations at European level

These items must be controlled when being transferred and/or sold from one country to another, either within the European Union or outside, as the nature of their technology allows an appropriation for both civil and military purposes.

Thus, these items could also to some extent be subjected to legislation framing the circulation and trade of weapons, such as:

- [The Action Plan on Non-Proliferation of Weapons of Mass Destruction \(Thessaloniki Action Plan\)](#) and
- [The EU Strategy against proliferation of Weapons of Mass Destruction adopted by the European Council on 12 December 2003 \(EU WMD Strategy\)](#)
- [The Council Decision \(CFSP\) 2017/809 of 11 May 2017 in support of the implementation of United Nations Security Council Resolution 1540 \(2004\) on the non-proliferation of weapons of mass destruction and their means of delivery](#)
- [The United Nations Security Council Resolution 1540.](#)

or have their transit being strictly controlled or restricted to specific countries, for which a geopolitical threat could arise – as of 2017, dual-use items export can be sanctioned, when destined to DPRK, Iran, or Syria.

On the one hand, dual-use items can be traded freely among countries participating to the European Single Market, though their circulation is to be monitored. The Council regulation pushed towards a union and harmonisation of national policies towards smoother exchanges and checks.

Control and monitoring is, on the other hand, definitely stricter for items leaving the EU territory.

The European Union monitors two aspects related to the circulation of dual-use: the export and the purchase/sale of these goods. In both cases, in the context of a deal or temporary exports towards outside EU territory, the export and the brokering must be subjected to formal approvals delivered by the European (Community General Export Authorisation - EUGEAs) or national institutions (National general export authorisations - NGEAs).

While EUGEAs regulate exports towards countries, which have long-time settled agreements with the EU, such as Australia, Canada, Japan, New Zealand, Norway, Switzerland and the United States, NGEAs regulate additional dual-use items, in accordance with national laws of the EU member states (these items not being listed in the Annex 1 of the Council Regulation 428/2009).

Information of the specific types of authorisations delivered by the European Union for dual-use items is detailed in the following document: [DG Trade - Fact sheet on new EU General Export Authorisations.](#)

## Resources

- [Council Regulation \(EC\) No 428/2009](#)
- [Information on measures adopted by Member States in conformity with Articles 5, 6, 8, 9, 10, 17](#)
- [Guidance note — Research involving dual-use items](#)
- [The EU Dual Use Export Control Regime](#)
- [2017 Update of the EU Control List of Dual-Use Items](#)
- [COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT The Review of export control policy: ensuring security and competitiveness in a changing world](#)

# ULPEC and dual-use items

Several aspects of the technology we develop in the context of ULPEC is indeed listed in this Annex, namely in Category 3 and Category 6.

Indeed, the materials and components for our circuits, their functions as neural networks integrated circuits (Category 3, 3A001), our work on CMOS-related technologies (Category 6, 6A002) are part of the technology developed for an Ultra-Low Power Event-Based Camera.

The camera itself as a whole could fall into the category 6 for dual-use, if it is connected to non-civil vehicles heavier than 3 tonnes.

## How do we ensure exclusive civil application?

The aim of ULPEC is to design a camera, which can allow automated driving. The consortium has clearly stated in its Description of Action that its purpose is to develop technologies and a lab prototype as a project output, which exploitation and brokering is primarily oriented towards car manufacturers and, which shall – to a larger extent – provide on the market solutions to tackle societal challenges and needs:

*“Memristive neural networks and novel vision systems targeting perception tasks in computer vision, as those planned in ULPEC, have the potential for innovative market-relevant solutions in various fields with high societal impact. The ULPEC target application of traffic event recognition is highly relevant in the area of autonomous and computer-assisted driving and will significantly contribute to safety aspects in this field. Further applications can be expected in the areas of health and bio-medicals, security and environmental monitoring as well as robotics. Most promising fields will be assessed in WP6, under strong consideration of their societal impact.”*

– Excerpt from ULPEC’s Description of Action, read p.18, section “2.1.1 Expected impacts as set out in the work programme”.

ULPEC is therefore complying with the obligation of developing civil-only technology. Indeed, we refer throughout the project to the following guidelines and regulations:

- [Regulation \(EU\) No 1291/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation \(2014-2020\) and repealing Decision No 1982/2006/EC](#) – Article 19 “Ethical Principles”, paragraph 2: “Research and innovation activities carried out under Horizon 2020 shall have an exclusive focus on civil applications” and
- [Guidance note — Research with an exclusive focus on civil applications](#)

However, the technology could be used for military purposes, namely for any type of unmanned vehicle, transportation mode or device. In this case, the most likely field of application in relation to the military is in relation to the design of drones’ swarms or robots.

The consortium is fully aware of the dual-use character of the technology we develop and abide to keep the engagements taken towards society, also complying with our objectives of a Responsible Research and Innovation.

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 strive to develop

responsible research and innovation. He is to be fully informed by each consortium member of the whereabouts of the technologies we design and of their running-up exploitation. He has also expertise on helping the consortium assess the related risks and advise 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.

### How do we avoid negative implications?

In line with the exploitation strategy as defined in the context of ULPEC, and in due respect of the agreement reached over exploitation and intellectual property right in ULPEC's Consortium Agreement, any exploitation beyond ULPEC's life by one of ULPEC's participants, where joint ownership of results are declared over the course of the project, requires the involved partners to be noticed in due time and to settle compensation. In such case, partners contributing to ULPEC may have a possibility to prevent unethical use of the technology they designed over the course of the project.

More generally, should the project output be sold within the European Union's territory, the end-user or partner, who was granted full use of the technology would contact its national authorities for trade and customs to simply notice of the transfer, within a 30-day notice.

Likewise, should the camera – as specifically designed in the context of ULPEC – be sold as such to a country outside the European Union after the end of the project, the consortium and end-user would proceed to obtain the necessary authorizations by declaring the brokering or transfer to their respective national authorities.

According to the destination, the parties involved will either provide information in order to be granted a EUGEA or a NGEA from the national competent authorities, in accordance with the principles of the Council Regulation 428/2009 detailed above in the first section of this deliverable.