



**The Journal of Robotics,
Artificial Intelligence & Law**

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What Is a Robot (Under EU Law)?

Cándido García Molyneux and Rosa Oyarzabal*

The European Commission recently published a paper announcing a series of regulatory and policy initiatives in response to the European Parliament's resolution on European civil law rules on robotics. The authors of this article explain robotics regulation in the European Union and upcoming legal and policy initiatives.

EU institutions are increasingly focusing on the legal challenges posed by the robotics and artificial intelligence sector. The European Commission recently published a paper announcing a series of regulatory and policy initiatives¹ in response to the European Parliament's resolution on European civil law rules on robotics² of February 2017. These initiatives may shape the development of the sector in Europe as they will affect the EU's rules on product liability and product safety, develop certification and insurance schemes for autonomous cars, and provide significant funding for research innovation.

THE ROBOLAW PROJECT

The European Parliament's resolution on European Civil Law Rules on Robotics is based on a series of reports³ prepared by the Robolaw project.⁴ The latter was a two-year project funded under the European Commission's 7th Framework Programme for Research and Technological Development ("FP7") intended to review the regulatory challenges posed by the emerging robotics technology.

The main objective of the Robolaw project was to assess whether existing EU regulations are sufficient to address the various legal problems posed by robotics technology, and ensuring that they provide sufficient conditions to incentivize European innovation in the robotics sector. Over the years, the Robolaw project has published numerous studies, and has markedly advanced the conversation on robotics globally.

ROBOTICS REGULATION IN THE EUROPEAN UNION

The European Union does not yet have specific legislation on robotics. Nevertheless, as products, robotics are regulated by a variety of legislative frameworks, including horizontal legislation, such as the Directive on Liability for Defective Products⁵ and the Product Safety Directive.⁶ Industrial robots are regulated by the Machinery Directive; whereas professional service robots and consumer robots may be regulated by the Medical Devices Regulation⁷ (e.g., for surgical robots) or the Low Voltage Directive⁸ (e.g., for vacuum cleaners), respectively.

Additionally, the Electromagnetic Compatibility⁹ and Radio Equipment Directives¹⁰ may also apply to robots, for example, in the case of autonomous cars that incorporate a GPS.

Manufacturers may also follow existing International Organization for Standardization (“ISO”) and European Committee for Standardization (“CEN”) standards on robotic devices. In particular, the European Commission has published several harmonized standards to show compliance with the Machinery Directive.¹¹

However, the reality is that existing legislation and standards are not sufficient to address the challenges posed by upcoming innovation in robotics.

AN EMERGING EU DEFINITION OF ROBOT?

The EU’s current and future regulation of robotics is complicated by the fact that there is no common understanding on what a robot is. The Robolaw project acknowledged this. Rather than trying to agree on a definition, it reviewed four categories where the application of existing EU legislation will most likely become problematic. Those are:

- driverless vehicles;
- robotic prostheses (and exoskeletons);
- surgical robots; and
- robot companions.

It then compared the divergences and similarities of these four applications, finally proposing five main features to categorize robots—namely:

- autonomy;
- human-robot interaction;
- nature;
- environment; and
- task.

On the basis of these five features, the European Parliament agreed on the following characteristics of a “smart robot”:

- the acquisition of autonomy through sensors or by exchanging data with its environment (inter-connectivity) and the trading and analyzing of that data;
- self-learning from experience and by interaction (an optional criterion);
- at least a minor physical support (as opposed to virtual robots, *e.g.*, software);
- the adaptation of its behavior and actions to the environment; and
- the absence of life in the biological sense.

In its resolution, the Parliament also asked the Commission to propose several common definitions for new categories of robotics based on the five agreed characteristics of a “smart robot.” The Commission now intends to further analyze the question. In light of existing robotics technologies and assessment of their potential development, the Commission will decide whether elaborating new definitions is truly necessary for regulatory purposes. In particular, the Commission will consider the need to create definitions for three different “smart robot” types: cyber physical systems, autonomous systems, and smart autonomous robots (as well as their subcategories). A preliminary clarification would also help identify technologies for which a comprehensive Union system of registration could be relevant.

UPCOMING LEGAL AND POLICY INITIATIVES

The European Commission is also expected to implement the following regulatory and policy initiatives:

- *Civil Law Liability*: The European Parliament asked the Commission to consider legal questions related to the

development and use of robotics and artificial intelligence foreseeable in the next 10 to 15 years. The Commission has already launched an evaluation of the Directive on Liability for Defective Products. This will assess the extent to which the Directive can apply to new technological developments, including advanced robots and autonomous systems. Besides this Directive, the Commission will also assess the potential to devise risk-based liability regimes, based on a risk-opening or a risk-management approach.

- *Product Safety*: The Commission is currently evaluating the Machinery Directive in line with better regulation principles. This may lead to a revision that would adapt the Directive's health and safety requirements to autonomous robots.
- *Autonomous cars and testing*: The Commission has also launched several initiatives on autonomous cars, including a Strategy towards cooperative, connected and automated mobility¹² (C-ITS). To facilitate the development of adequate safety standards for connected and automated driving, the Commission intends to establish cross-border testing corridors for these systems.¹³
- *Harmonization of technical standards*: The Commission has several ongoing research activities aimed at developing testing protocols for cooperative and collaborative systems (e.g., industrial robots that share the workspace with humans). The research will also lead to the creation of safety certification standards specific to these robots.
- *Safety standards on the health sector*: The development of medical and assistive technologies is a priority for the Commission, which is increasingly funding research on devices that, for example, promote healthy ageing or help to personalize medicines. Both the Parliament and the Commission agree that future medical robots will have to face stringent safety standards. Whilst surgical robots and robotic prostheses are regulated under EU law, care robots (e.g., a robot that takes care of the elderly) may not always be considered a medical device. For example, care robots whose task is to fetch items around the house would be excluded from the medical device regulation. This uncertainty may in some cases pose a problem.¹⁴ As robots become more common, the Commission plans to address these issues and increase

regulatory monitoring for medical and care robots, in the line of the new Medical Devices Regulation.¹⁵

- *An Advisory Body for Robotics and Artificial Intelligence:* Although the Parliament explicitly called for the designation of such an Agency in order to provide the technical, ethical and regulatory expertise needed to support the relevant public actors in this space, the Commission does not consider this necessary. Instead, the Commission proposes to create a high-level advisory body on robotics to advise the Commission.
- *Research and innovation:* The Commission has announced its intent to increase the financial support for the “SPARC” program, a public-private partnership research program in robotics that already receives 700 million euros from the European Union.

NEXT STEPS

The European Commission is currently deliberating its next move in this field. During the course of the discussions, it is likely that the Commission will plan additional stakeholder consultations, such as sector specific workshops and bilateral meetings.

Although much remains to be decided, future steps from the Commission will significantly affect the development of robotics and artificial intelligence research and development in the EU. In the mid to long term, the Commission’s plans will likely also have a significant impact on the wider global robotics industry, as the EU is a leader of regulatory advances in this sector.

NOTES

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1. <http://www.europarl.europa.eu/oeil/spdoc.do?i=28110&j=0&l=en>.

2. <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2017-0051+0+DOC+PDF+V0//EN>.

3. http://cordis.europa.eu/result/rcn/161246_en.html.

4. <http://www.robolaw.eu/news.htm>.
5. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31985L0374&from=EN>.
6. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0095&from=EN>.
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8. http://ec.europa.eu/growth/sectors/electrical-engineering/lvd-directive_es.
9. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0030&from=EN>.
10. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0053&from=EN>.
11. These standards are EN ISO 12100, Safety of machinery—General principles for design—Risk assessment and risk reduction; EN ISO 10218-1:2011 Robots and robotic devices—Safety requirements for industrial robots—Part 1: Robots; EN ISO 10218-2:2011 Robots and robotic devices—Safety requirements for industrial robots—Part 2: Safety of Robot integration; EN ISO 13482:2014 Robots and robotic devices—Safety requirements for personal care robots.
12. https://ec.europa.eu/transport/sites/transport/files/com20160766_en.pdf.
13. In August, the UK announced they are planning a trial of self-driven lorries in 2018 (see http://www.roboticslawjournal.com/news/self-driving-lorries-to-be-tested-on-uk-roads-21552124?utm_source=Social%20Media&utm_medium=LinkedIn&utm_campaign=Own_LinkedIn_17074).
14. Where a clear classification or specific legislation does not exist, the ISO standards currently represent the main normative point of reference. ISO 13482 defines personal care robots as a “service robot that performs actions contributing directly towards improvement in the quality of life of humans, excluding medical applications.”
15. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2017:117:FULL&from=EN>.