

Appendix to:

“Robotic Visions to 2020 and beyond – The Strategic Research Agenda for robotics in Europe, 07/2009”

Introduction to the Ethical, Legal and Societal Issues of Robotics

Version: 1

Date: 07th July 2009

“Robotic Visions to 2020 and beyond – The Strategic Research Agenda for robotics in Europe, 07/2009” can be obtained from:

EUROP Secretariat
c/o EUnited Robotics
Diamant Building, Bd. A. Reyers 80
1030 Brussels, Belgium

Phone: +32 2706-8222
Fax: +32 2706-8223
Email: info@robotics-platform.eu
Internet: www.robotics-platform.eu

*Supported by the “Coordination Action for
Robotics in Europe”, FP6-IST-045058*

ELS Issues in robotics (2010-2020 and beyond)

European society is currently facing a number of challenges. The age profile is changing rapidly, and to meet international competition, we need to lower our production costs in spite of relatively high labour costs; we need to overcome skill shortages; we face phase challenges with regards to security; and our health care systems are too expensive. While some or all of these challenges can be met, at least partially, through automation and robotics, our society will face new ethical, legal and societal (ELS) implications as larger numbers of robots will be present in our workplaces, at home, and in our everyday environments.

Industrial robotics has already come across the ethical and societal issues caused by work displacement whereby robots have substitute human work-force. It is expected that robot will increasingly replace humans in manufacturer processes. But, not only robotics is going to persistently change the production processes; also, through a more efficient and reliable control and administration of human activities, robotics is going to deeply modify the job market.

The European community, in light of the need to promote human dignity and to preserve and promote human skills, has to carefully temperate the introduction of new robotics technology in the production processes with the care for upgrading human capabilities and functionalities.

The expected dramatic shift from robotics workers to robotic co-workers is thoroughly engaging robotics researcher and producers. In the short term robots and humans will work beside each other and, depending on the application, with still a kind of “segregation” policy concerning robots. In the mid term robots and humans will interact and share space with each other, at work and at home. Robots will perform more complex tasks without constant supervision. In the long term will robots and humans will cooperate without barriers. *Social cognitive* companions, in the fields of industrial robotics and as well as in the professional and domestic service robotics can attain a very high level of social pervasiveness in the work and in the domestic environment. Endowed with human characteristics (emotional simulation, capacity to develop dialogue, personality and social competencies), these robots will serve elderly and kids, surgeons and nurses, workers and operative in many fields.

At the same time, due to their complex characteristics, first of all their learning capabilities, these robots will have the ability to collect information about and profiles of the users, they will be companions of our daily life, to them we will often rely for our, and of our nearest, health, safety, security.

One task of the CARE/SRA Project is devoted to the analysis and discussion about the Ethical, Legal and Societal issues in robotics. (It should be noted that ELS issues refers both to the promotion of human rights as to those right's violations).

For this purpose, we have adopted a triaging methodology which considers the *urgency*, *novelty* and the *social pervasiveness* (or ubiquitousness) of the robotics device in relation to the rate at which robotics systems are being introduced in our daily lives. Although this method does not exhaust all the individual and societal issues connected with the presence of robot in our lives, it has the benefit of selecting specific case studies analyzing which, in lack of shared and institutional ethical regulations, common guidelines can be issued out for further studies.

Accordingly, the period of time under consideration by CARE/SRA researches does not lead us to take into consideration the sophisticated ethical issues which could be suggested by a longer term vision concerning the development of personal service robots.

Hopefully, ethical regulations and tecno-scientific developments in robotics will be unfolding at the same rate.

Application Scenarios

Manipulation Robots (MR)

In Europe - facing labour shortage due to the aging societies - MR are needful. Social problems can arise from labour displacement. However, replacement of human labour by robots may constitute an enabling factor for promoting other human capabilities.

Issues: cost/benefit analysis; product liability; transparency of the robot's learning processes.

Robotics Co-workers (RC)

Issues: human-robot interaction; transparency in robot's learning processes; extension of human possibilities; simulation of human traits; multi agent decision making process (mixed teams); liability in learning robots; identification of autonomously acting robots; position of human in control hierarchy; assistant in human care; human data and privacy protection in biometric data collection and processing by autonomous robots.

Logistic robots (LR)

Issues: labour displacement; cost/benefit analysis; product liability; transparency of the robot's learning processes; multi agent decision making process (mixed teams); liability in learning robots; liability in case of networked robots; excessive exploitation of the planet; lack of legislation's rules.

Security Robots

Issues: the inadequacy of managing unstructured complexity of a hostile scenario; unpredictability of machine behaviour; assignment of liability for

misbehaviours or crimes; psychological problems for humans in mixed teams; liability in case of networked robots; potential reconversion from civilian use to devices for warfare and misuses (terrorism, pollution).

Exploration or Inspection

Issues: unpredictability of machine behaviour; assignment of liability for misbehaviours or crimes; liability in case of networked robots; excessive exploitation of the planet.

Edutainment Robots

Issues: potential misconception and ambiguities between organism and non-organism; lost touch with the real world; confusion between natural and artificial; technology addiction.

Framework provided by international principles and charters

Key for ELS in robotics analyses and recommendations are the following documents:

The EU Charter of fundamental Rights, and especially sections on the notions of liberty, dignity, personal identity, and responsibility:

Art. 1 states that human dignity is to be respected and protected.

Art. 3 asserts the right to the physical and mental integrity of the person.

Art. 6 asserts the right to liberty and security.

Art. 8 asserts the right to the protection of personal data.

Art. 25 concerns rights of a particular group of people, that is, the right of the elderly to lead a life of dignity and independence and to participate in social and cultural life.

Art. 26 is similarly concerned with the rights of a particular group of persons, insofar as it claims the right to integration of persons with disabilities;

The European Union Treaty and in particular Article 6 of the common provisions concerning the respect for fundamental rights;

Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communication sector;

The Principles of Good Governance stated in the European Governance White Paper issued by the EC on 25 July 2001 and in particular the principles of openness, participation, effectiveness, and coherence;

The Opinion “Ethical aspects of ICT implants in the human body” adopted by the European Group on Ethics in Science and Technology (EGE) on 16 March 2005; The Declaration of Principles of the World Summit on the Information Society of 12 December 2003, in particular of Article 58 on the use of ICTs and Article 59 on the abusive uses of ICTs;

The Council of Europe Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine, signed on 4 April 1997 in Oviedo;

The United Nations Convention on the Rights of the Child. Adopted and opened for signature, ratification and accession by General Assembly resolution 44/25 of 20 November 1989 entry into force 2 September 1990, in accordance with article 49;

The United Nations Convention on the Rights of Persons with Disabilities. Adopted on 13 December 2006 during the sixty-first session of the General Assembly by resolution A/RES/61/106;

We have also consulted and in many instances adopted the procedure usually shared by the European Group on Ethics in Science and New Technologies (EGE) at the European Commission.