

Appendix to:

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

The SRA ELS Questionnaire: Introduction and Rationale

Version: 1

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

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1. Introduction and Rationale

A Questionnaire on ELS (Ethical, Legal, and Societal Issues) Issues in Robotics has been completed by School of Robotics - with the supervision of a Public Opinion analyst – in the frame of CARE/SRA Project.

The questionnaire's design is the following.

School of Robotics has selected – with the assistance of the analyst - an experts panel of 35 experts to be interviewed. The expert panel has been selected on the basis of:

- Their experience in robotics engineering and, in this case, also their expressed interest in ethical and societal issues in their field; or
- Their experience in science&technology studies; or
- Their experience in ethics&tecnoscience field; and
- The international distribution.

Panel:

- 13 experts come from Humanities, mainly from Science&Technology Studies.
- 20 are scientists in hard sciences (non partner of the project) of which
 - 5 are scientists with recognized knowledge in Science&Technology Studies
- 2 Medical Doctor who have adopted are advanced technologies in their practice.

In our case, the Delphi techniques allowed to select an international and articulated panel.

2. About Delphi

The Questionnaire's design is based on the Delphi method. This technique allows and supports the exploration of creative, innovative, and suitable ideas along with the processing of useful information about complex issues and of decision-making processes.

The Delphi Method is based on a structured process for collecting and distilling knowledge from a group of experts by means of a series of questionnaires interspersed with controlled opinion feedback. Delphi represents a useful communication device *among a group of experts* and thus facilitates the formation of a group judgment.

The Delphi method has been widely used to generate forecasts in *technology*, education, and other fields.

The Delphi method is an exercise in group communication among a panel of *geographically dispersed experts*. This technique allows experts to deal systematically with a *complex* problem or task. It comprises a series of questionnaires sent either by mail or via computerized systems, to a pre-selected group of experts. These questionnaires are designed to elicit and develop individual responses to the problems posed and to enable the experts to refine their views as the group's work progresses in accordance with the assigned task. The main point behind the Delphi method is to overcome the *disadvantages* of *conventional committee* action. *Anonymity*, *controlled feedback*, and *statistical response* characterize Delphi. The group interaction in Delphi is anonymous, in the sense that comments, forecasts, and the like are not identified as to their originator but are presented to the group in such a way as to suppress any identification.

3. About this Questionnaire

In this specific case, the main survey's aim is to assess the perception and attitude of the selected Experts Panel about several values and dimensions underlying the concept of robotics in our society, whose elements are represented here below. Due to the wide extension of the subject – robotics&society - the Delphy option is viewed as the most suitable, for the following reasons:

- The need to acquire information about a very complex subject;
- The need to obtain information about future scenarios as perceived by experts, taking into account the fast development of new technologies and the associate condition to acquire almost real-time data in order to thoroughly following the implementing processes;
- The importance of monitoring the surveyed subject also from the regulatory level (this special element is often underestimated in other instances);
- The need to assess the impact of robotics and its products (pro's and con's) not only by interest subjects (scientist, manufacturers) but also by stakeholders, citizenship and end users.

The organizers have sent to the Experts Panel a semi-structured Questionnaire, subdivided per topical areas. The design/grid followed the CARE/SRA roadmapping and results. The underlying grid of this survey has identified as ELS issues only those related to the SRA Application Scenarios and Product visions.

The main aim of this survey is to obtain underlying data related to attitudes and perception on:

- Robotics and society
- Robotics in society
- Ethical, legal and regulatory issues per users (manufacturers, scientists, end users)
- Regulatory requirements (perception and assessment)

- Ethical, legal and societal issues per SRA Application Scenarios
- Recommendations
- Visions
- Robotics and the quality of life (perception of)
- Whiter robotics?

The respect of anonymity is guaranteed.

4. Next steps:

- Development of the first round Delphi questionnaire
- Testing the questionnaire for proper wording (e.g., ambiguities, vagueness)
- Transmission of the first questionnaires to the panelists
- Analysis of the first round responses
- Preparation of the second round questionnaires (and possible testing)
- Transmission of the second round questionnaires to the panelists
- Analysis of the second round responses
- Preparation of a report by the analysis team to present the conclusions.