Preface

New discoveries in science and new applications of technologies offer significant potential benefits for individuals and society. But, at the same time, the deep innovation, the rapid acceleration and the unprecedented transformation in techno-science bring potential risks, both for individuals and for society, for present and future generations.

The progress in techno-science, nowadays, has the potential to be transformative, or disruptive, producing profound changes, but benefits and risks cannot always be anticipated. Faced with this complexity and incertitude, traditional moral theories, arguments and categories cannot solve the challenges. It is important, starting from the general features of the development of these new discoveries and technologies, to identify, discuss and raise awareness on the opportunities and the challenges that they will present in terms of human rights.

In the context of a pluralistic ethical discussion, there are different schools of thought 'for' and 'against' the use of these technologies, at different levels and with different arguments. The libertarian/utilitarian theories recognise an existing right and a duty to use these technologies 'beyond' therapy and towards 'perfectionism' in order to improve human nature and humanity, in the present and the future. The anti-perfectionist theories consider the search for 'perfect health' as a threat to human dignity (safety and security), freedom and social justice and equity. Other positions try to balance the necessity of innovation in techno-science and the need for the protection of human dignity and fundamental rights. Challenges to ethics and law outline the need of a new approach to governance.

It is important to analyse innovation with reference both to scientific research and emerging technologies considering the ethical and legal challenges. Scientific research will be analysed with reference to experimentation on human beings, with particular consideration of the ethical issues arising with particularly vulnerable populations, such as minors, women, people in developing countries or immigrants. Many delicate issues, such as compassionate care, biobanks and incidental findings will be considered, in the context of the reflection and evaluation of ethical committees.

Emerging technologies include the analysis of ethical and legal aspects related to the most recent developments in neuroscience, genomics, gene-editing, ICT, big data, biometrics, converging technologies, enhancement and robotics, with a focus on the future of work in the new technological era. The possible shift from humanism to posthumanism and transhumanism will be critically analysed.