
Setting future ethical standards for ICT, Big Data, AI and robotics

The contribution of three European projects

Fernow, Josepine

Uppsala University, Centre for Research Ethics & Bioethics (CRB)

de Miguel Beriain, Inigo

Universidad del País Vasco, Department of Public Law

Brey, Philip

University of Twente, Department of Philosophy

Stahl, Bernd

De Montfort University, Centre for Computing and Social Responsibility (CCSR)

Corresponding Author: Josepine Fernow, josepine.fernnow@crb.uu.se

Abstract: Policymakers struggle to assess the ethical, legal and human rights impacts of IT systems in research, industry, and at home. At the same time, research needs to be useful for industry, academia, and society to have impact on policy. Right now, three European projects: PANELFIT, SHERPA and SIENNA, are working together with stakeholders to improve ethical, human rights and legal frameworks for information and communication technologies (ICT), big data analytics, artificial intelligence (AI) and robotics. Stakeholder involvement is key, and the outputs will support the European Union's vision of Responsible Research and Innovation (RRI), as a means to foster the design of inclusive research and innovation. Here, we provide a short introduction to the projects and outline plans for collaboration with the aim to maximise our joint policy impact.

Keywords: Artificial Intelligence, Big Data, Information and Communication Technologies, Data Sharing, Ethics, Law, Human Rights

Citation: The full citation information will be inserted here once the paper is accepted.

Introduction

It is difficult to predict the consequences of developing and using new technology. Policymakers all over the world struggle to assess the ethical, legal and human rights impacts of IT systems in research, industry, and at home. Right now, three European projects are working together with stakeholders to improve ethical, human rights and legal frameworks for information and communication technologies (ICT), big data analytics, artificial intelligence (AI) and robotics.

PANELFIT, SHERPA and SIENNA

PANELFIT (Participatory Approaches to a New Ethical and Legal Framework for ICT) SHERPA (Shaping the ethical dimensions of Smart Information Systems (SIS) – A European Perspective), and SIENNA (Stakeholder-informed ethics for new technologies with high socio- economic and human rights impact) all aim to improve existing ethical and legal frameworks in a structured way, and will deliver specific, and complementary guidance for software developers, industry, policy-makers, researchers and citizens. Funded by the European Union’s Horizon 2020 programme (Science With and For Society), the projects have a combined budget of € 10 million.

In this short paper, the authors (who are all members of the three projects), provide a short introduction to the projects and outline plans for collaboration with the aim to maximise the impact of all three projects. We believe that it is important that PANELFIT, SHERPA and SIENNA are visible in the highly dynamic public discussion of ethics, human rights and possible regulation of emerging digital technologies. The European Union aims to lead the approach to ethical technologies. Among its efforts to promote such an approach, the projects have a key role to play. This paper addresses researchers and policymakers with a specific interest in emerging ICTs, and a broader audience that would like to better understand the nature of ethical and human rights issues and solutions to address these.

Different scopes, complementary outputs

Stakeholders, policy-makers and end-users are expected to quickly adapt to changes in ICT regulation. With limited guidance on how to comply, this is not an easy task, and especially poses many challenges for small and medium-sized companies (SMEs). PA-

NELFIT, SHERPA and SIENNA will co-create outputs with policy-makers, stakeholders and end-users. This process will ensure that the different kinds of guidance produced will be relevant and useful, and help the projects achieve impact. Proactive collaboration between the projects will also help prevent overlap, and ensure that the scope of each project, and guidance produced, is clear for its intended users and stakeholders engaging in the projects.

PANELFIT, SHERPA and SIENNA offer unique and complementary outputs. The projects address somewhat overlapping technological domains. PANELFIT has a broader focus on ICT, which to some extent covers the domains of both SHERPA and SIENNA. The SHERPA project is centered on smart information systems, and has a clear overlap with SIENNA’s focus on artificial intelligence. Finally, the SIENNA project offers synergies for AI and robotics, and extends its scope to applications of different ICT technologies for the purpose of enhancing humans.

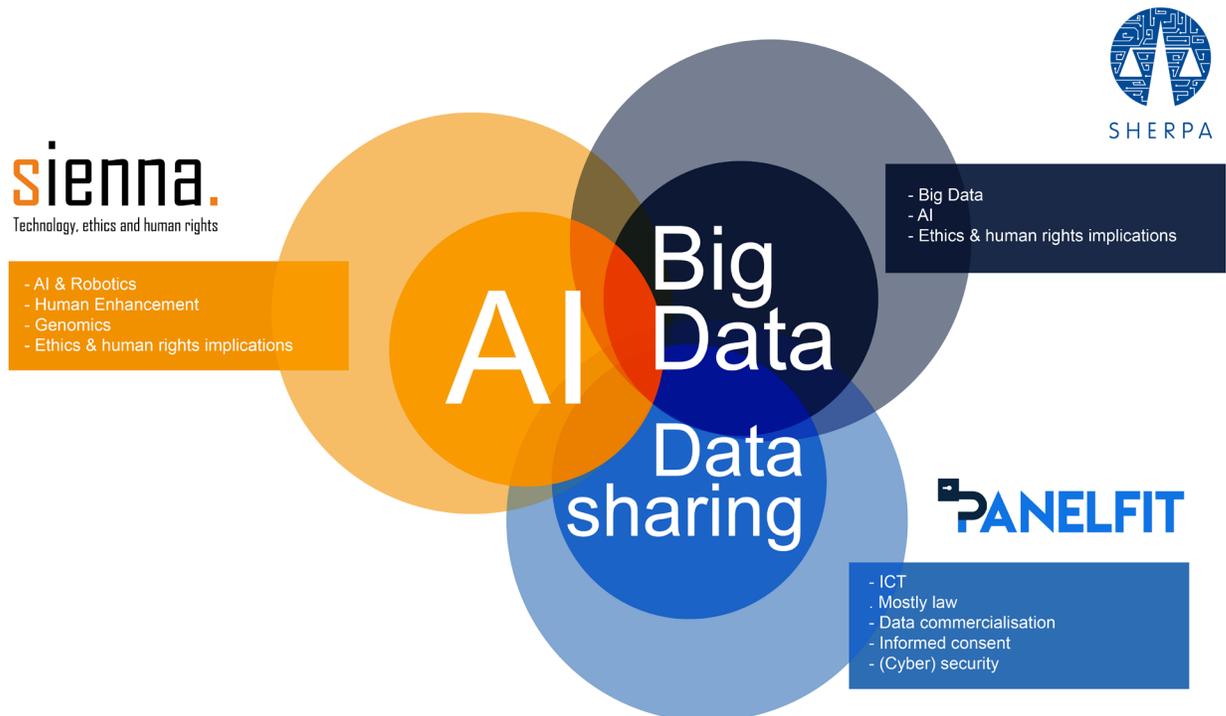


Figure 1: Subject areas of the three projects

To help different actors adhere to new regulation, PANELFIT will produce a set of **open access ICT guidelines** that can be used as operational standards research and innovation activities by both big companies and smaller actors, such as SME’s. SHERPA addresses the ethical dimensions, human rights and security issues of smart information systems (SIS), understood as the combination of artificial intelligence (AI) and big data analytics. It has developed case studies, scenarios and will carry out a survey and a Delphi study. It

explores regulatory options, possible guidelines for researchers and developers, the possibility of standardization and technical solutions, all of which will feed into an **open access workbook on responsible development of SIS, guidelines for research and innovation**. The SIENNA project has a broader scope, covering three very different technology domains: Artificial Intelligence and Robotics (which is where collaboration with PANELFIT and SHERPA is key), but also Human Enhancement and Human Genomics.. SIENNA will identify and assess ethical and socio-economic issues, carry out a large public opinion survey in 11 countries and citizen panels in five EU countries, assess the legal regulation and human rights implications of AI & robotics and produce a framework (for each of the domains covered by the project), forming the basis for developing **research ethics protocols, professional ethical codes**, and better **ethical and legal frameworks**., SIENNA will also create added value by generalising outputs from the project to make them useful for studying other new and emerging technological domains.

Moving forward: Science with and for society

In order for research to have a policy impact, it needs to be useful for industry, academia, and society. All three projects are developing outputs that can inform and advance European research ethics policy in this field. They will support the European Union's vision of Responsible Research and Innovation (RRI) as a means to foster the design of inclusive research and innovation. In order to support this vision, we believe that stakeholder involvement in the research process is key. All three projects work to actively engage stakeholders in a variety of ways, using a number of (different) strategies, including workshops, interviews, surveys, citizen panels and the Delphi technique.

The overlaps in scope and aim to co-create outputs with stakeholders makes it essential for the three projects to collaborate. The coordinators and communication leaders meet regularly to discuss how to ensure that we are clear about the differences and overlaps when communicating with our stakeholders. We strongly believe that working together will help all three projects achieve their objectives when co-creating outputs with experts and stakeholders. This means collaborating to ensure that expertise and experiences can be used in a mutually beneficial manner, to improve existing policy and the policy-making process for ICT, SIS, AI and Robotics. In addition, the three projects are building synergies to develop and optimise communication and dissemination strategies, which is essential to maximizing both conditions for research, and the societal impact.

Bringing the three projects together, we are certain that the results of PANELFIT, SHERPA and SIENNA will be complementary, relevant and useful. All three projects deliver their final results in 2021: SIENNA in April, followed by PANELFIT and SHERPA in October. However, all three projects will publish outputs in scientific journals and reports as the work progresses.

Having outlined the synergies and planned collaboration between the three projects, we now provide some more detail on them individually:

Project	PANELFIT – Participatory Approaches to a New Ethical and Legal Framework for ICT
Duration	1 November 2018 – 31 October 2021 (36 months)
Logo	
Description	<p>PANELFIT aims to promote innovation and market growth while still ensuring an adequate level of privacy and security/cybersecurity for private individuals. The main outcome will be guidelines on the Ethical and Legal Issues of ICT Research and Innovation. These Guidelines will serve as a complete handbook on ethics and law regarding research and innovation activities in the ICT field.</p> <p>Complementary to the Guidelines, PANELFIT will:</p> <ul style="list-style-type: none"> - Suggest possible, concrete, improvements to current regulatory and governance structures, at the EU and national levels. - Create mutual learning and support tools and promote networking among stakeholders and policy makers. - Increase the quantity and quality of the information available to policy makers, professionals, researchers, journalists and the public.
More	https://www.panelfit.eu/ and https://twitter.com/panelfit

Table 1: PANELFIT: timeline, project description and more information

Project	SHERPA – Shaping the ethical dimensions of Smart Information Systems (SIS) – A European Perspective
Duration	1 May 2018 – 31 October 2021 (42 months)

<p>Logo</p>	
<p>Description</p>	<p>The SHERPA project will identify and address the ethical dimensions of information and communication technologies by working with a broad range of stakeholders to clarify and represent ethical, human rights and security issues of smart information systems (SIS), i.e. the combination of artificial intelligence (AI) and big data analytics.</p> <p>The project develops tools to better understand these issues, collects existing, and develops novel ways of responsibly addressing, evaluating and prioritising these issues and communicating and advocating those solutions that are most socially acceptable, desirable and sustainable.</p> <p>Among other outputs, SHERPA will develop and publish an open access workbook on responsible development of SIS. A living document, containing current suggestions and approaches, and proposing novel and additional approaches. A set of notably guidelines for research and innovation in this field.</p> <p>Research carried out in SHERPA is expected to have a number of societal impacts, including:</p> <ul style="list-style-type: none"> - Improving the public knowledge base and understanding of Smart Information Systems ethical and human rights challenges. - Positively informing and influencing Smart Information Systems debates and practices through the development of guidelines and standardisation activities. - Supporting high ethics standards and promotion of RRI as a fundamental principle of Research and & Innovation in the EU. - Reconciling the SIS needs and values of society with the needs of scientists and innovators by considering them in the design of outputs and fostering dialogue with them. - Supporting the innovative nature of research and maximising the positive socio-economic potential of Smart Information Systems by presenting stakeholder-informed solutions.

More	https://www.project-sherpa.eu/ and https://twitter.com/project_sherpa
-------------	---

Table 2: SHERPA: timeline, project description and more information

Project	SIENNA – Stakeholder-informed ethics for new technologies with high socio-economic and human rights impact
Duration	1 October 2017 – 30 April 2021 (42 months)
Logo	
Description	<p>In collaboration with a variety of stakeholders, SIENNA will identify and assess the ethical and socio-economic issues, public opinions, legal regulation and human rights implications of AI & robotics, human enhancement and human genomics. SIENNA will produce a framework for each technology that will form the basis for development of research ethics protocols, professional ethical codes, and better ethical and legal frameworks. Before developing their recommendations, partners will gather ethical views of experts and citizens towards the three technologies in four ways:</p> <ul style="list-style-type: none"> - A major survey of citizens in 11 countries within and outside the EU - Panels of citizens in 5 countries - Interviews with experts and stakeholders - Workshops with stakeholders including scientists, ethicists, research ethics committees, professional organisations, civil society organisations, industry and policy makers. <p>SIENNA will boost the EU’s leadership in developing ethical standards and support its vision of Responsible Research and Innovation (RRI) as a means to foster the design of inclusive research and innovation. The project will improve knowledge of the ethical, human rights and socio-economic impacts of the three technology areas, while supporting ethical and responsible deci-</p>

	sion making by research ethics committees, scientific researchers and policy makers in all three domains. SIENNA will also create added value by generalising its methods for use in other emerging technological domains.
More	http://www.sienna-project.eu/ and https://twitter.com/SiennaEthics/

Table 3: SIENNA: timeline,project description and more information

Conclusion

This paper has outlined the efforts planned and undertaken by three major investments into ethics and human rights of emerging digital technologies by the European Union. The EU is serious about developing its understanding and its policies on the basis of sound and rigorous empirical data and wide stakeholder consultation. PANELFIT, SHERPA and SIENNA are designed to operationalise this vision. These efforts can only be successful if supported by the relevant stakeholders and publics. We therefore hope that readers will feel inspired to engage with us and contribute to our work, to ensure that the outputs of all three projects are relevant and useful.

Funding: These projects/research received funding from the European Union’s Horizon 2020 Framework Programme for Research and Innovation under Grant Agreement No. 786641 (SHERPA), Agreement No.788039 (PANELFIT) and Agreement No. 741716 (SIENNA).

The opinions expressed in this document are of the authors and do not necessarily represent the position of the European Commission.

Acknowledgements: This text is the results of efforts by several members of the PANELFIT, SHERPA and SIENNA projects. The authors would like to thank Anna Holm, Uppsala University and Rowena Rodrigues, Trilateral Research (SIENNA), Corinna Pannofino, Trilateral Research, Anya Gregory, EBS (SHERPA) and Nicklas Bang Bådum, Danish Board of Technology (PANELFIT) for their valuable contributions.

Copyright: Copyright remains with the authors. This is an openaccess article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.