

ESDIT GENERAL RESEARCH STRATEGY

1. Introduction

ESDIT is an ambitious research programme in the ethics of technology. Its aim is not, as for many other projects in this field, to ethically assess a particular technology, application or technologically mediated practice. Its ambitions are much wider. It aims to reassess, revise, and invent approaches in ethics and related philosophical subfields to deal with social and ethical challenges brought about by socially disruptive technologies (SDTs), like robots, artificial intelligence, synthetic biology and climate technology. SDTs will change society, culture and everyday life, and also reveal the inadequacy of some of our most basic concepts and values.

In ESDIT, we aim to innovate the ethics of technology so that we can critically evaluate and guide the development, introduction and use of current and future socially disruptive technologies

This aim involves two critical moves. The first one is to “innovate the ethics of technology”: to reassess, revise, and invent theories, methods and approaches in this still relatively new field that allow us to arrive at more successful and powerful ethical analyses and ethical guidance for emerging technologies, especially SDTs. The second move is to ethically assess the emerging 21st century SDTs, and the relations between them, using the newly developed approaches. We do these two things in parallel: developing new approaches and assessing emerging technologies. Studies of specific technologies and their ethical challenges support the development of new approaches, while our new approaches support better ethical assessments of these same technologies. In this way, we expect to get progressively better at ethical analysis over the ten-year timespan of the programme. In both of these aims, there is a central role for the topic of *conceptual disruption*: we study how SDTs disrupt our basic philosophical and ethical concepts and propose new revised concepts that are then used to improve approaches in our field. Even more so, we want to use these revisions to improve the field of practical philosophy as a whole.

ESDIT fosters a community of outstanding philosophers, but also social scientists and STEM researchers working together to ethically assess and guide the defining technologies of our century and the society they usher in. ESDIT supports an exchange of ideas by which researchers enthusiastically and respectfully debate their theories, approaches and research findings, and work closely together towards shared ends while promoting a plurality of approaches.

This strategic document focuses on the shared aims and shared strategy for the ESDIT programme. In doing so, it only provides a general account of its four research lines and their role in the programme. For a more detailed account, see the original ESDIT programme proposal, and the *Updated research plan ESDIT 2021-2022*. Also, this document does not contain detailed implementation plans for the strategy given here. These will be developed separately, in collaboration with the researchers involved.

2. General objectives of the ESDiT programme

We have formulated five objectives for ESDiT, the first four of which correspond to the aim to innovate the ethics of technology.¹ These four are to investigate and revise key philosophical concepts that are being challenged by SDTs (objective 1), to develop new theories and methods for the ethics of technology (objective 2), to develop new models for inter- and transdisciplinarity at the intersection of ethics & philosophy, STEM fields, social sciences, and nonacademic spheres (objective 3), and the wider objective of innovating practical philosophy (objective 4), which in its turn will also help innovate ethics of technology. Fulfilling these three objectives will help us to engage in advanced ethical studies of 21st century SDTs and their implications for society and humankind (objective 5).

Our five objectives are expressed in the following five research questions:

1. *Understanding the disruptive effects of 21st century SDTs.* What are the philosophical and ethical implications of the new generation of SDTs in the 21st century, and what are the socially disruptive impacts that they have on humans, nature, and society (particularly from new digital, bio and brain and environmental and sustainable technologies)?
2. *SDTs and conceptual disruption.* What are the key philosophical and ethical concepts that are challenged by SDTs, and what reassessments, revisions, and innovations are needed in response, taking into account philosophical insights from non-Western traditions?
3. *New approaches for ethical assessment and guidance of SDTs.* How can we develop new, comprehensive, and inclusive approaches in ethics and philosophy for analyzing, morally evaluating, guiding and intervening in the development and implementation of socially disruptive technologies, specifically the newest generation?
4. *Technology ethics and multi- and transdisciplinarity.* How can we innovate the ethics and philosophy of technology by developing new collaborative models between philosophers, engineers, social scientists, policy makers, designers, and artists, aimed at improved philosophical and ethical analysis and responsible innovation?
5. *Innovating practical philosophy.* How can our studies of conceptual disruption and our proposals for revisions of philosophical concepts serve to innovate the field of practical philosophy (and, by implication, the ethics of technology)?

The primary means for realizing these objectives are the four ESDiT research lines, together with synergy activities above and between the research lines. The synergy activities include plenary activities that focus on one or more of the overall objectives, and crosscutting working groups and tracks with a smaller membership that have a more specialized focus, such as the *STEM track*, which explores new models at the intersection of ethics of technology and STEM fields, and the *intercultural track*, which explores nonwestern and intercultural approaches to ethics and philosophy.

¹ In our original proposal, we formulated four objectives, but we have since split one of them in two.

3. Translation towards research line objectives

To harmonize the research questions that we are investigating in the various research lines, and to relate them more strongly to the programme's overall objectives, we hereby relate the research line objectives more strongly to the programme's overall objectives.

OBJECTIVE 1: UNDERSTANDING THE SOCIALLY DISRUPTIVE IMPACTS OF 21st century SDTs

- a. Main question:
 - What is the social impact of socially disruptive technologies, and how to analyze and investigate this impact?
- b. Common questions for all research lines:
 - How to *understand* the impacts and implications of (21st century) SDTs for nature, society, and the human being?
 - How to understand the *relations* between impacts and implications for nature, society and the human being?
- c. Research-line specific questions:
 - How do SDTs change our conception of nature and our relationship with it? (N)
 - How should we understand the social and political effects of SDTs? (S)
 - How and to what extent are the SDTs disrupting the human condition and our self-understanding as human beings? (H)
 - How can we understand the notion of "socially disruptive technologies" and the dynamics between technology and society involved in them? (F&S)

OBJECTIVE 2: SDTs AND CONCEPTUAL DISRUPTION

- a. Main question:
 - What are the key philosophical and ethical concepts that are challenged by SDTs, and how can they be revised, taking into account philosophical insights from non-Western traditions?
- b. Common questions for all research lines:
 - How do SDTs affect fundamental (ontological) concepts regarding nature, society, the human being, and the relations between them, and how can they be revised?
 - How do SDTs affect ethical concepts regarding nature, society, the human being, and the relations between them, and how can they be revised?
 - How can ethical and philosophical reflection contribute to a new model of the relationships between humans, nature, and society?
 - How do nonwestern, intercultural and alternative, non-individualistic approaches in ethics and philosophy challenge the concepts of Western ethics and philosophy, and what revisions do these approaches enable? (Also the central theme of the intercultural track)

c. Research-line specific questions:

- How do specific technologies challenge ontological notions regarding nature, society, and the human being, respectively, and how can they be revised? (N, S, H)
- How do specific technologies challenge and change moral concepts regarding nature, society, and the human being, respectively, and how can they be revised? (N, S, H)
- How can conceptual disruptions be investigated, and how can disrupted concepts be revised? (F&S)

OBJECTIVE 3: REASSESSING, REVISING, AND INVENTING APPROACHES FOR ETHICAL ASSESSMENT AND GUIDANCE OF SDTs

a. Main question:

- How can we reassess, revise, and invent comprehensive and inclusive approaches in ethics and philosophy for analyzing, morally evaluating, guiding and intervening in the development and implementation of socially disruptive technologies, specifically the newest generation?

b. Common questions for all research lines:

- What new and improved approaches, methods and theories can we develop to better study and understand SDTs and their impacts, as well as emerging technologies in general?
- Where do current approaches fall short, specifically in diagnosing and responding to the socially disruptive effects of technologies?
- What new and improved approaches can we develop to ethically evaluate SDTs, and emerging technologies in general, and to ethically guide their design, implementation, and use?
- How can we, in developing these new approaches, take into account the fact that SDTs disrupt the very concepts with which we can understand and evaluate them?

c. Research-line specific questions:

- How can we compare and evaluate current approaches for analyzing, assessing and guiding SDTs, and what are their strength and limitations? (F&S)
- Which new approaches, theories and methods are particularly suited for investigating, ethically assessing and responding to disruptions of nature (N), society (S) and the human condition (H)?

OBJECTIVE 4: DEVELOPING NEW MODELS OF MULTI- AND TRANSDISCIPLINARITY

a. Main question:

- How can we innovate the ethics and philosophy of technology by developing new collaborative models between philosophers, engineers, social scientists, policy makers, designers, and artists, aim at improved philosophical and ethical analysis and responsible innovation?

b. Common questions for all research lines:

- How can we innovate the ethics and philosophy of technology by developing collaborative models and approaches at the intersection of ethics/philosophy and STEM? (for all lines; comes together in STEM track)
- How can we develop new transdisciplinary approaches between ethics/philosophy and

nonacademic actors, aimed at joint research and valorization? With special attention to collaborations with (i) policy makers, (ii) industry, and (iii) museums and artists (with industry being covered also in the STEM track).

c. Research-line specific questions:

- How can we *regulate* SDTs and how to empower social and political institutions to enable democratic decision-making and responsible innovation regarding SDTs? (S)

OBJECTIVE 5: TRANSFORMATIVE ENGAGEMENT WITH PRACTICAL PHILOSOPHY

a. Main question:

- How can our studies of conceptual disruption and our proposals for revisions of philosophical concepts serve to engage in (mutually) transformative ways with innovate the fields of practical philosophy (and, by implication, the ethics of technology)?

b. Common questions for all research lines:

- How can the philosophy and ethics of disruptive technologies both learn from and contribute to innovation of established fields of practical philosophy, including applied ethics, political philosophy, philosophical anthropology, environmental philosophy, normative ethics and meta-ethics?
- How can we develop new modes of interaction and integration between the philosophy and ethics of technology and relevant subfields of practical philosophy (applied ethics, political philosophy, philosophical anthropology, environmental philosophy, and meta-ethics)?

Figure 1 illustrates the resulting strategy of the programme.

esdit Why we need a new **ethics of socially disruptive technologies**

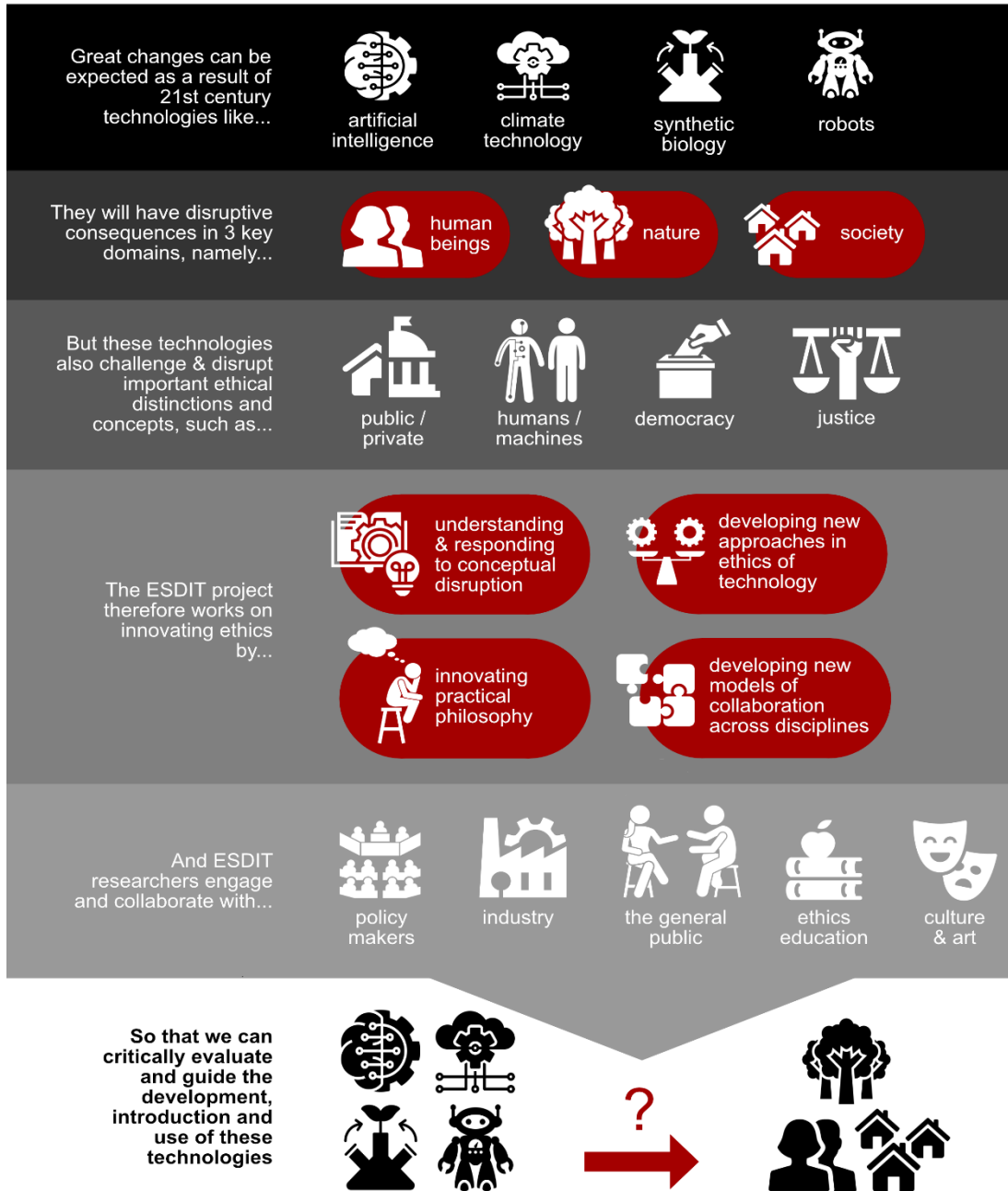


Fig. 1 Strategy of the programme.

4. What are socially disruptive technologies?

A key concept in our studies is that of socially disruptive technologies. In what follows, we define this concept and explain how we operationalize it for the selection of SDTs that are studied in the programme.

Social disruption, in its most general sense, involves the change of a phenomenon, process, or system in the social domain. Within the ESDiT-programme, the qualification “social” is used inclusively: ESDiT-research on social disruption includes, for instance, the disruption of human experience, or of the natural realm. What matters is that the object of disruption is regarded as significant in human societies (*social significance*). Objects of social disruption include concepts, norms, values, social practices, human capabilities, human (self-)understanding, natural systems, the Earth’s climate, *etc.* Social disruptions may have different impacts on different groups (*differential disruption*).² Their evaluation may be positive or negative (or both): social disruption *simpliciter* is not an evaluative, but a descriptive term. Social disruption can be triggered and sustained by various causes; ESDiT-research focuses on social disruptions in which technologies play a substantial role.

Socially Disruptive Technologies (SDTs) are technologies that either play a substantial causal role in inducing social disruption, or that have a substantial potential for doing so. In virtue of having this potential one might say that they “challenge” a socially significant phenomenon, process, or system. For instance, social media technologies play a substantial role in changing and challenging democratic practices; negative emissions technologies have substantial potential to alter the atmospheric CO₂-cycle. Both technologies qualify as SDTs, as they challenge or change socially significant phenomena, processes, or systems.³

Minimal definition of SDTs: x is an SDT in domain D if and only if x is a technology that substantially contributes to socially significant challenges or changes.

Social Disruptiveness comes in different kinds and degrees. Hopster (2021a) outlines seven criteria that modulate the disruptiveness of an SDT:⁴

- *Depth of impacts*, as indicated by the extent to which an SDT destabilizes strongly held values and beliefs, stably entrenched concepts, theories, norms and institutions, deeply-rooted social structures and human capabilities, *etc.* The most disruptive SDTs do not only transform society, but also human (self-) understanding and evaluation.
- *Range of impacts*, as indicated by the variety of domains the SDT affects. While some social disruptions are domain-specific, the most disruptive SDTs have second-order effects that ripple through society.

² P.J. Nickel, O. Kudina, I. van de Poel. (2022). ‘Moral Uncertainty in Technomoral Change: Bridging the Explanatory Gap’. *Perspectives on Science* (forthcoming).

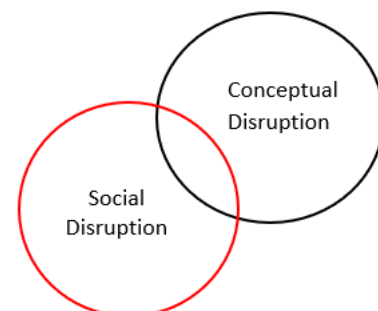
³ The notion of disruptive technologies also figures prominently in scholarly discourse on disruptive innovation. This discourse should not be conflated with the understanding of SDTs in the ESDiT-programme, however. For discussion, see: J.K.G. Hopster (2021a). ‘What are Socially Disruptive Technologies?’ *Technology in Society* 67, 101750: 1–8. <https://doi.org/10.1016/j.techsoc.2021.101750>

⁴ *Ibid.*

- *Irreversibility of impacts*, as suggested by the difficulty of making changes provoked by an SDT undone. The most disruptive SDTs are highly resilient against reversibility.⁵
- *Extent of uncertainty*, as suggested by the difficulty to anticipate the implications of SDTs, the interpretive flexibility of the technology, as well as the social and moral uncertainty experienced during periods of disruption.
- *Valence of impacts*, as indicated by the level of social and emotional arousal that accompanies SDTs.
- *Ethical salience of impacts*, as indicated by the need for moral deliberation that SDTs provoke, as well as the need for conceptual and theoretical revisions.
- *Pace of change*, as indicated by the relative rapidity of the transformation in which SDTs are involved.

Note that these criteria are not jointly necessary to qualify as SDT: different SDTs can be disruptive in different ways and to different extents. The criteria, however, do bestow a general profile on SDTs as a class of technologies (just like, for instance, ‘emerging technologies’), which may lend itself for a tailored ethical approach.⁶

Conceptual disruption can be understood as a type of social disruption, which has concepts and categories of thought as its object.⁷ A technology is conceptually disruptive if it challenges, or changes, entrenched conceptual or classificatory norms and practices. Conceptual disruptions which pertain to basic philosophical and ethical concepts – *deep disruptions* – are also socially disruptive, given the social significance of these concepts. Not all conceptual disruptions have significant social implications, however.



Conversely, not all social disruptions are conceptually disruptive: a social phenomenon, process, or system might be challenged, without posing a distinct challenge to associated concepts. For instance, negative emissions technologies are socially disruptive in virtue of their potential to alter the atmospheric CO₂-cycle, but they do not challenge the concept ATMOSPHERIC CO₂-CYCLE.

As an example of conceptual disruption by SDTs, consider climate change and new technologies like geo-engineering. These technologies raise questions about (the concepts of) control and responsibility. Traditionally control is seen as a precondition for responsibility; without control no responsibility. However individually as well at the level of individual states, we lack (full) control over climate change. Does that imply that nobody is responsible or should we aim to extent control and form a world

⁵ Terminology owes to B. Lundgren: ‘Defining Disruptive Technologies.’ Unpublished manuscript.

⁶ J.K.G. Hopster. (2021b). ‘The Ethics of Disruptive Technologies: Towards a General Framework.’ In: de Paz Santana J.F et al. (eds.). *New Trends in Disruptive Technologies, Tech Ethics and Artificial Intelligence*. Springer, Cham. https://doi.org/10.1007/978-3-030-87687-6_14

⁷ For a more expansive account, see: G. Löhr, ‘Socially Disruptive Technologies, Conceptual Disruption, and Conceptual Change.’ Unpublished manuscript.

government and aim to try to control the climate through geo-engineering? But perhaps, the situation requires us to think notions of control and responsibility and their relation, so that we can start to think what it means to meaningfully take responsibility for things that escape (human) control.

The same technologies also urge us to rethink democracy. Such technologies can be extremely risky, not only for human beings but also for other living beings, and for entire ecosystems. How can we represent them in democratic decision-making? Do they have moral rights, just like humans do? And how to represent beings who are not alive yet, but who might experience the impact of climate engineering technology in the future? Democratic decision-making requires us to expand our notion of the 'demos' that should be given power, and our notion of the democratic rights and duties that belong to this. Intercultural ethics can play an important role in this rethinking of the notion of representation. Ubuntu ethics, for instance, makes it possible to include ancestors and future generations in the moral community, while indigenous Maori ethics offers a basis to conceptualize the rights of ecosystems.

Humanoid artificial agents like social robots and voice assistants provide another case of conceptual disruption. These machines can evoke strong moral reactions. People can feel upset when a robot is kicked, or when a voice assistant is abused. At the same time, people have called for a responsible design and 'education' of voice assistants: the fact that they often have female voices and keep responding patiently and friendly to harassment and insults could result in misogyny. How to explain this empathy with robots, and this urge to design them as responsible and assertive agents? In order to account for these new roles of artificial agents we need to recalibrate our concepts of moral patienthood and moral agency. Rather than just attributing patienthood and agency to technologies, we need to rethink what these concepts really mean and what their conditions are, given the specific characteristics of new digital technologies.

We have used the above operational definition of SDTs to do a study of 21st century emerging technologies, together with projected impacts. This study is based on existing technology assessment, foresight and impact studies. Based on these criteria, we have identified fifty 21st century emerging technologies that qualify as SDTs. Based on our assessment of the degree of social and conceptual disruption associated with these technologies, we make further selections of them for our case studies.

5. The Conceptual disruption objective

In the following five sections, we define our approach for meeting the five objectives of the programme. We start with the conceptual disruption objective, which concerns identification and analysis of the key philosophical and ethical concepts that are challenged by SDTs, and revising these concepts. Our aim is to study ethical and ontological concepts that are central to practical philosophy, and to study the key ways in which they are disrupted by SDTs, exploring different SDTs, application domains and types of disruption. We also want to make sure that we use the best available approaches to study these conceptual disruptions. We then want to propose revised and new concepts, also taking into account critiques of Western ethics.

To achieve this, we envision the following research actions:

1. *Initial studies of conceptual disruption*, 9-2020 to 12-2022. During this period, we start up a number of initial case studies of particular concepts in relation to particular SDTs (in the Nature, Society and Human Condition lines), and we develop approaches for studying and revising

concepts (in the F&S line). We organize training events, workshops / conference tracks, research meetings and joint publication projects to support collaboration and mutual learning. In 2022, we do a conceptual mapping of current efforts, using Obsidian, and a gap analysis, to guide our efforts. We do a preliminary synthesis at the end of 2022.

2. *Advanced studies of conceptual disruption*, 1-2023 to 12-2025. During this phase, we work towards a new framework of philosophical and ethical concepts. We work more centrally with a focus on a limited set of concepts or conceptual clusters that we study in different research lines. We do further case studies where gaps still exist, also using newly developed methodologies for studying conceptual disruption, we further improve our methods for conceptual engineering, and we apply them, also with input from our intercultural research on concepts. We start research in which the new concepts are incorporated into new approaches in the ethics of technology.
3. *Synthesis phase*, 1-2026 to 12-2026. During this phase, we finalize our revised conceptual framework.

6. The *New approaches* objective

Members of our consortium have initiated and contributed to some of the leading approaches, methods and theories in the field of ethics and philosophy of technology, including experimentalist approaches to emerging technologies, technological mediation theory, ontological approaches, values-in-design approaches, anticipatory technology ethics, ethical impact assessment, risk ethics, and others. This has resulted in a canon that we want to use to build on in the ESDiT programme. However, we also want to challenge the canon. First, do these approaches hold up for technologies that are socially and conceptually disruptive, or are new approaches needed to assess and guide these technologies? More generally, what improvements can still be made to existing approaches, and where are there weaknesses and gaps in the canon that require us to develop new approaches? We want to use the ESDiT programme to develop a series of new and improved approaches, methods and theories for our field, with special attention to their application towards SDTs.

In the 2020-2022 period, we will start up research into new approaches and start a discussion on methods and approaches within the consortium. This will include the following actions: (1) starting research on the nature of SDTs and the special challenges they raise for ethics (has initiated 9-2020); starting research into approaches in ethics of technology and mapping the existing and new approaches in the consortium (has started 1-2022); (3) carry out an initial analysis of the particular theoretical and methodological challenges to ethics offered by SDTs, and an initial determination of new approaches that are needed in order to improve the field (by end of 2022). Possible challenges are: to develop better methods in ethics of technology to deal with conceptual disruption; incorporating of better theories of technology-society dynamics in ethical analysis; finding better ways of dealing with uncertainty in ethics of emerging technologies; developing better methods and tools to support technology actors in ethical practice and ethical policies.

Starting from 2023, these actions will be followed by specific research efforts into new theories and methods, recognizing both innovative approaches that have already been taken in ESDiT, as well as working towards additional ones. By the end of the programme, our aim is to have developed a number of signature theories and approaches that are recognized by the academic community as ones that advance the field and provide for better ethical analysis and guidance of emerging technologies, particularly those that are socially and conceptually disruptive. These new approaches will also integrate the proposed conceptual revisions discussed under the Conceptual disruptions objective.

7. The Multidisciplinary objective

We will initially focus our efforts on developing new interdisciplinary approaches and collaborative models at the intersection of ethics & philosophy and the STEM fields and new transdisciplinary approaches involving ethicists/philosophers and nonacademic actors (policy makers, industry, CSOs, artists, museums, etc.) In addition, we will also pay attention to the relation between philosophy and empirical sciences, further expanding and articulating the empirical turn, which happens also in relation to the New approaches objective (see above).

Our initial actions are directed at the period 2021-2022. During this period, we aim to:

1. Do explorative interdisciplinary research at the intersection of ethics and STEM, resulting in an agenda for future research, as well as initial ideas for promising approaches. We will be exploring the further development of existing methods (e.g., co-creation, value sensitive design, design for values, guidance ethics) as well as new approaches at the intersection of ethics and STEM. These investigations will be coordinated within a STEM track in the ESDiT programme, which will be anchored to all four research lines. They will involve collaboration with the Gravitation programmes Hybrid Intelligence, Exosome and BaSyc. During this phase, we also set up Living Labs;
2. Do exploratory research into transdisciplinarity, and develop a research agenda. Special attention will be paid to collaborations with (i) policy makers, (ii) industry, and (iii) museums and artists (with industry being covered together with the STEM track). This research will also be anchored to all four lines.

Both agendas will then give rise to new appointments and research efforts that will be started in 2023-2025. At the end of the programme, our research efforts will result in tested and proven new multi- and transdisciplinary approaches at the intersection of ethics and other fields and actors and possibly also to new collaborative platforms.

8. The 21st century SDTs objective

Our aim in this objective is to understand and evaluate, from an ethical point of view, the disruptive effects of 21st century disruptive technologies, covering new digital, bio and brain, and environmental

and sustainable technologies. We want research towards this objective to continually build on the progress we make in towards the other three objectives.

In the initial phase (9-2020 to 12-2022), we start initial case studies (in the Nature, Society and Human Condition lines), while we simultaneously investigate the general nature of SDTs and their disruptive effects in the F&S line. By the end of 2022, we expect to be able to do a first inventory of disruptive effects of 21st century SDTs.

In 2023 and beyond, we aim to continue with studies of particular SDTs. We may then choose to engage, sooner or later, in macro-level, synthesizing studies of 21st century disruptive technologies. This may involve comparing them with previous SDTs in terms of their similarities and differences, and analyzing macro-trends regarding their disruptive effects. We plan an initial workshop on this theme in 2023. As we progress towards the end of the project, we aim to arrive at an increasingly sophisticated understanding of the philosophical and ethical implications of 21st century disruptive technologies, and ways in which we can guide them and mitigate undesirable effects.

Starting from 2022, we plan to put a programme-wide emphasis on *climate change* as a particular disruptive effect of SDTs (that can also be partially mitigated by SDTs). A small taskforce will be formed to drive attention to this cross-cutting topic in many of the ESDiT projects and activities.

9. The mutually transformative engagement with practical philosophy objective

This objective involves the use of our proposed revised philosophical concepts to engage with established fields of practical philosophy in mutually transformative ways. Most of the work for this objective is realized later on in the programme, when we have advanced significantly with the conceptual disruption objective. However, we will also do pilot studies earlier on in the programme.

In a first phase, 2022-2025, we do pilot studies alongside the Advanced studies of conceptual disruption phase of the Conceptual disruption objective. These pilot studies are of two kinds. First, they are studies in which we take revision proposals for particular philosophical concepts and translate them towards practical philosophy, drawing out their implications for the field. This will happen in all lines. Second, we develop new approaches for successful conceptual engineering within scientific disciplines, for later application to the field of practical philosophy. These investigations will mainly happen in the F&S line.

In a second phase, 2026-2029, when we have developed more integrated conceptual frameworks, we carry out a more focused and sustained strategy for innovating practical philosophy, in which we propose not only single concepts but larger conceptual schemes and approaches that we argue to be needed to innovate the field. We also demonstrate the benefits of these new approaches.

10. Other strategic plans

- *Implementation:* We aim to discuss this strategy with the consortium and find support for it, after which we hope that everyone plays their part in making it happen. The MB, DB and

research line coordinators then have a special responsibility in its implementation. The DB, in particular, will support the MB, coordinators, and researchers in carrying out this strategy. The research line leaders and coordinators have a responsibility for implementation within their research lines. The MB will periodically monitor progress based on progress reports from the DB and the research line leaders. This will also be a point of attention in the coordinator meetings.

- We propose that the above strategy as far as it applies to 2022 is coupled to preparations for the *midterm*, and that the strategy is implemented in such a way that it also prepares us well for the midterm.
- We aim to develop *publication plans* for key research outputs of the programme (books, edited volumes, and key papers). These will be planned at various stages in the research process, and will be planned within research lines as well as for the programme as a whole.
- We aim to develop *living documents* (whitepapers) for each of the research lines and each of the central objectives, for the purposes of compiling key information and research results for the whole consortium, and to help synthesize findings for the midterm and for later stages of the programme.
- We would like there to be a funded *visiting researcher programme* for both senior and junior researchers, with special attention to non-Western scholars. The aim is to foster collaboration and mutual learning between the consortium and key researchers outside it.

11. Our strategy for intellectual growth

Attainment of the objectives of the programme cannot succeed without intellectual growth of the ESDiT research community. Researchers in ESDiT will have to learn new concepts, theories, approaches, methods and skills, or they will not be able to do the advanced research needed later on in the programme. In particular, ESDiT researchers will have to learn new approaches developed early on in the programme so that later stages of the programme can succeed. This requires, first of all, a willingness to learn and change within the consortium. It also requires a strategy for ensuring that such intellectual growth is facilitated. We believe our willingness is there. We hereby present our strategy, and give some examples of intellectual growth processes that have already taken place, and how we facilitated them.

Intellectual growth happens when we learn new approaches and ideas and become convinced that they are better than the ones we have been using so far. These approaches and ideas can be ones we have developed ourselves, or they can be developed by others.

Our strategy involves the following actions:

1. *Stimulating innovation*. Intellectual growth requires the development of new ideas and approaches. In particular, we want to develop new ideas and approaches prescribed by our five programmes objectives. In the programme, we stimulate innovation, first of all, by emphasizing it in our programme objectives, project descriptions, and strategy texts. Secondly, we emphasize it in our meetings and events, reminding researchers constantly of what we are

trying to achieve, and centering our activities around it. And third, we emphasize it in supervision and mentoring.

2. *Identifying innovation.* When innovation occurs, it has to be recognized, not only within individual projects, but also at the level of research lines and the programme as a whole. We have several means by which we make innovative results visible within the consortium. Review meetings within the research lines and the programme as a whole, data collection by task forces within the consortium, workshops and conferences, and annual review reports are primary means by which we create inventories of important innovations within the programme. We also use the *Obsidian* platform as a powerful knowledge tool to communicate innovative results within the consortium.
3. *Learning innovations from others.* Signaling and identifying innovations is a step towards a subsequent learning process in which members of the consortium learn the ins and outs of new innovative approaches and ideas. We use our research line and plenary meetings, workshops and conferences for such mutual learning. Also, we organize trainings within the consortium to teach new approaches. For each objective, we identify key learning moments, as stated in the section 5 – 9 of this document. For example, for the Conceptual disruption objective, we expect members of the Consortium to have internalized the results of the first period by the beginning of the second one, and the results of the second period by the beginning of the third one.
4. *Application.* One learns by doing, so it is not sufficient to learn a new theory or approach without also applying it. For this reason, we will stimulate that new ideas and approaches that have been accepted, to some degree, within the consortium are used and applied in subsequent research. We stimulate this in the same way in which we stimulate innovation in the project.

Significant intellectual growth has already taken place since we started research in the programme, in September 2022. Through various workshops, meetings and events, we have collectively learned new ways of conceiving of and analyzing socially disruptive technologies, approaches for analyzing social and conceptual disruption, and new approaches for our field.

An example is our reorientation from individualistic towards relational and communitarian conceptions of ethics. In the course of 2021, we learned from our initial research in intercultural ethics that our Western ethics is perhaps too narrowly individualistic, and that there are good reasons to include, or move towards, relational and communitarian approaches. We also observed that most of our research still had this individualistic focus. We found out because in the Fall of 2021, we collected data on active projects and analyzed conceptual clusters concerning main concepts investigated by these researchers and other colleagues in the ESDiT consortium, by using the program 'Obsidian'. We realized that a lot of emphasis is on individualistic concepts such as autonomy, what it means to be a human being etc, while more relational concepts such as solidarity are still underexplored in the consortium. Such relational concepts are much more central in non-Western philosophical approaches and in feminist philosophical approaches. Based on this observation we identified several concepts, among which solidarity, as central concepts to be investigated in the projects for the third round of hires that are currently being advertised. We also stimulate their use by current researchers.

In 2021, we also created a cross-cutting intercultural ethics track in the programme to further study non-Western and intercultural philosophical approaches. Their inclusion in the canon is something that is increasingly happening in Western philosophy, but which has still not happened enough. It turned out

that a lot of our consortium members were interested in non-Western approaches. We have since hired several researchers who already have such expertise. Furthermore, reading groups have been organized related to eg Chinese philosophy, Buddhism and the attention economy, African philosophy and indigenous philosophy. Through these reading groups, also those ESDiT members who are not yet trained in non-Western approaches can develop this expertise and learn from those who do have such training. In January 2022 ESDiT organized a conference on 'intercultural ethics of technology' which attracted numerous speakers and a large audience, and helped to put this topic on the agenda of ethics of technology. The ESDiT consortium is hence building a community on this much more diverse and inclusive way of doing ethics of technology and it is also contributing to this in the wider field.

Another innovation within ESDiT has been to include art in research on ethics of technology. More and more artists are working with and on technological developments, such as bioart, art and robotics, climate art etc. While media scholars and scholars from, e.g., cultural studies are studying such works, there is hardly any attention for this in philosophy. However, within the ESDiT consortium, several researchers are working on this. Julia Hermann and Lily Frank have collaborated with an artist on a project on 'The artificial womb'. Sabine Roeser has previously done interdisciplinary research on art and BNCI technologies within an EU project that she has co-lead, and she has published several articles on how technology-engaged art can contribute to ethical reflection, by appealing to our imaginative capacities and by making abstract problems more concrete. Peter-Paul Verbeek and Wijnand IJsselstein are also interested in working with artists and designers in the context of living labs and exhibits to reach out to the public. Based on these shared interests, a working group within ESDiT has been established to develop these ideas systematically further. Engaging with art can on the one hand contribute to public outreach, but it can also be a research method that can innovate approaches to ethics of technology, by introducing new venues of ethical deliberation, which can also help to include a broader range of stakeholders.

We are confident that with the four classes of actions proposed earlier, we can continue to foster an academic community in which intellectual growth takes place naturally and consistently, allowing us to grow as researchers and meet the objectives of the programme.