



TECHETHOS

FUTURE ○ TECHNOLOGY ○ ETHICS



Dissemination and Communication report



D7.4



D7.4 Dissemination and Communication report

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Lead Partner	Ecsite		
Author(s)	Greta Alliaj (Ecsite), Clara Boissenin (Ecsite)		
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Definitions and abbreviations

Table 1: List of Definitions

Term	Explanation
Target Audience	Group for which TechEthos communication or dissemination is targeted.
Dissemination ¹	The public disclosure of project results tailored to stakeholders that may exploit/reuse project results, i.e. sharing research results with potential users - peers in the research field, industry, other commercial players and policymakers. ²
Communication	Reaching out to society and communicating about the project and its results to many audiences, including the media and the public. ³
Key messages	The main points TechEthos wants target audiences to hear, remember and act upon.
Stakeholder	A relevant actor (persons, groups or organisations) who: (1) might be affected by the project; (2) have the potential to implement the project's results and findings; (3) has a stated interest in the project fields.
Visual identity	Graphical identity and other visual components (such as logo, colour scheme, fonts) used in TechEthos communication/dissemination tools (i.e. web, printed materials, report and presentation templates).
End-user	A person, group or organisation who has the potential to use or exploit the project's results and findings. Each stakeholder is thus also an end-user, but not vice-versa.

Table 2: List of Abbreviations

Term	Explanation
ADIM	The Advisory and Impact Board
CSO	Civil Society Organisations
DG JUST	Directorate-General for Justice and Consumers
DoA	Description of Action
DX.Y	Deliverable X.Y
EC	European Commission
GA	Grant Agreement
GDPR	General Data Protection Regulation
KPIs	Key Performance Indicators

LTP	Linked Third Party
NGO	Non-Governmental Organisation
PC	Project Coordinator
RE + RI	Research Ethics and Research Integrity
RRI	Responsible Research and Innovation
TX.Y	Task X.Y
QA	Quality Assurance
WP	Work Package

The TechEthos Project

Short project summary

TechEthos is an EU-funded project that deals with the ethics of the new and emerging technologies anticipated to have a high socio-economic impact. The project involves ten scientific partners and six science engagement organisations and runs from January 2021 to the end of 2023.

TechEthos aims to facilitate “ethics by design”, namely, to bring ethical and societal values into the design and development of new and emerging technologies from the beginning of the process. The project will produce operational ethics guidelines for three to four technologies for users such as researchers, research ethics committees and policymakers. To reconcile the needs of research and innovation and the concerns of society, the project will explore the awareness, acceptance and aspirations of academia, industry and the general public alike and reflect them in the guidelines.

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Executive Summary

In this deliverable, the TechEthos project reflects on the outcomes and results of its dissemination, and communication strategy, as set out in deliverable D7.2 *Dissemination & Communication Plan* at the start of the project (M6). It compares the results to the objectives agreed upon for the Key Performance Indicators in the Grant Agreement, interpreting the data based on project activities. The analyses span across activities in WP7, but also in relation to other WPs, such as WP6 and the impact of the cooperation with other relevant projects on the dissemination and communication activities of TechEthos.



1. Introduction

1.1 Purpose of this report

This report aims to outline the dissemination and communication efforts undertaken throughout the project's lifespan. It showcases the tools leveraged for the project's dissemination and communication activities, their implementation, and their effectiveness in achieving the Key Performance Indicators (KPIs) and objectives outlined in D7.2 Dissemination and Communication Plan. These objectives encompassed:

- Efficient dissemination and communication of the project and its information through several channels in order to reach all the relevant stakeholder communities.
- Monitoring the dissemination and communication results to effectively assess the progress and implementation of our strategy.
- Raising awareness and promoting TechEthos' actions and results to the wider community, including the general public.

This segment of the project, situated within Work Package 7 (WP7), was led by Trilateral Research. Nevertheless, all consortium members actively contributed to the dissemination and communication efforts of the project.

1.2 Dissemination and Communication Key Performance Indicators

At the start of the project, some key performance indicators (KPIs) were set to measure the success of the project's communication and dissemination. The table below illustrates a list of KPIs for the different channels used in the dissemination and communication activities.

KPIs and achievements were monitored on an ongoing basis by recording them in the TechEthos monitoring spreadsheet (a shared document for project partners). Moreover, KPIs were frequently discussed in the TechEthos consortium meetings and calls.

Channel/ activity	Indicator of success at M36	The number reached as of 27/11/23
Scientific publications (book chapters, articles, or commentaries)	Number of publications: Minimum 5 in peer-reviewed journals	8 publications, 3 in peer-reviewed journals
Project events	7 events successfully organised and attended by 10-15 external participants (per event)	30 events organised, 1055 participants
Presentations at third-party events	15+ presentations	48 presentations at third-party events



Policy messages	6 policy briefs dissemination to at least 300 EU national policymakers	8 policy briefs
Clustering and liaison with other projects	Number of projects collaborated with (10+); 6+ webinars (minimum attendance 25)	5 webinars
Mailing list and e-newsletter	Mailing list contacts: 400+ 9 newsletters (quarterly, starting at M4), 25% open rate, newsletter shared via partner networks to over 5000+ contacts internationally (especially to widely publicise the ethical framework and guidelines)	Mailing list contacts: 484, including 179 media contacts 9 Newsletters, 35,9% average open rate 4000+ contacts Project stakeholder network
Project website	Online at M3. Number of visitors: 5,000+ Number of content items (article, news, events): 40+	Set up in M4 Number of visitors: 29,077 Number of content items: 80+
Social media (Twitter, LinkedIn)	Accounts opened by M3, number of Twitter and LinkedIn connections/followers (across both platforms): Less than <100: Poor 100 < Followers > 250: Good More than 250>: Excellent	Accounts opened in M2 Total number of followers across Twitter and LinkedIn: 808
4 Videos	Publication of videos on YouTube	11 videos
Infographics, flyers, poster/fact sheets	Release and distribution of infographics online. Flyer printed by M12. Poster printed by M18.	Infographics and factsheets were made available online on the website, whereas posters and flyers were shared with project partners in digital format.
A series of events for citizens	2 science cafes per LTP country with good participation (minimum 30 participants and 3 experts each) including 30% of participants from vulnerable communities e.g. youth not in education, employment or training and homelessness, physically isolated communities, minority groups etc.	15 science cafés involving 449 participants, with all 6 LTPs holding at least 2 science cafes. LTPs managed to involve five of the seven categories of vulnerable people identified at the project level, namely people with a socio-economic disadvantage, people living in rural areas, isolated elderly aged 65+, people belonging to the LGBTQ+ community, migrants, and people with physical disabilities.



<p>Exhibitions and installations</p>	<p>6 exhibits were displayed for a total of 2 months each. Number of visitors 100,000+ (including visits to the digitised exhibits).</p> <p>Exhibits are digitised and available on the project website, each in English and one other EU language.</p>	<p>6 installations were displayed for at least two months each. Not all of them will be displayed for 2 months before the end of the project.</p> <p>The installation has been digitalized and is available in English. Digital elements included in the physical installations have been added to the digital one to provide a local perspective.</p> <p>Estimated number of visitors in 2023: 70,000+</p> <p>With the installation remaining in use in some LTP venues, 100,000+ visitors are expected in 2024.</p>
<p>Press releases</p>	<p>6 press releases were distributed to international and national media with 5+ media coverage throughout the project.</p>	<p>13 press releases (of which 2 TechEthos press releases and 11 issued by individual partners)</p> <p>9 articles in the media</p>

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2. Dissemination and Communication channels and tools

2.1 Project website

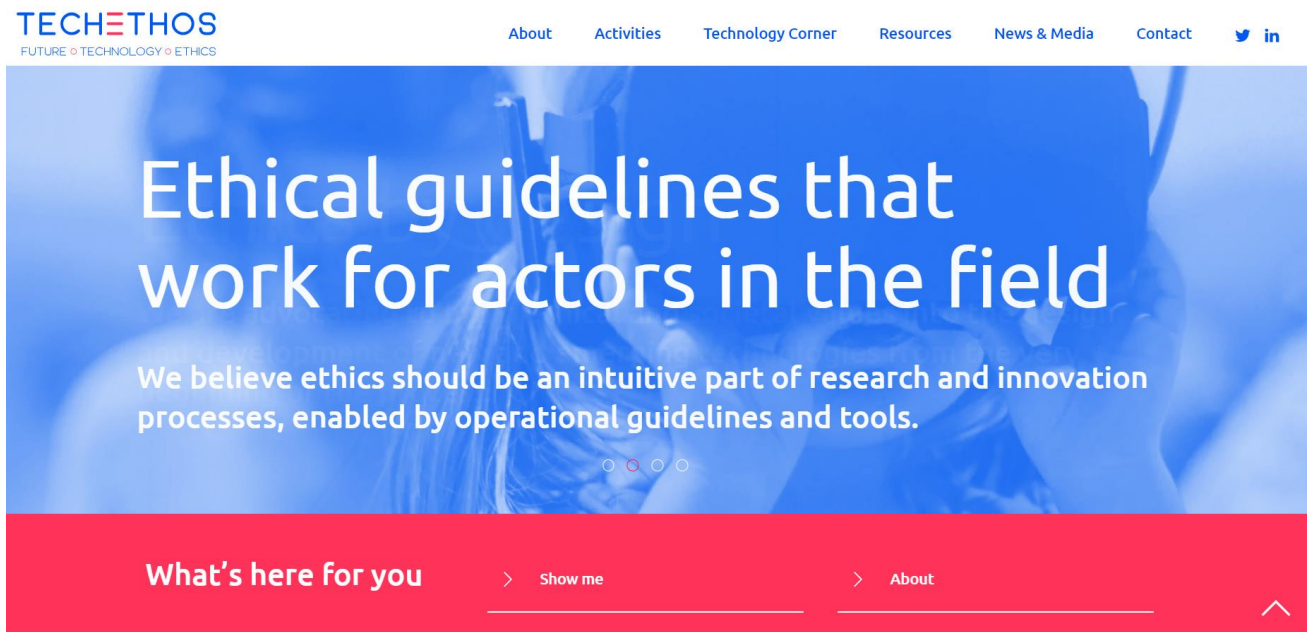


Figure 1 TechEthos project website

The project website (<https://techethos.eu>) was set up in M4 (April 2021) and serves as the main point of contact for the project as well as the main online tool for public dissemination. Its structure has allowed the consortium to tailor communications for different target audiences as the project progresses.

The website was updated regularly throughout the project’s lifecycle and will be maintained 5 years after the project’s completion ensuring access to the projects’ tools and resources.

Other communication tools, such as social media accounts, were vectors of information showcased on the website and have regularly invited the audience to visit the website. Similarly, the website also provides links to the project’s social media accounts and prompts visitors to sign up for the newsletter, thereby aiding in our goal of obtaining new followers and/or growing our network.

The core components of the website are:

- **Homepage:** The homepage was created in a way that displayed a strong brand image of the project, making sure the page was not text-heavy. The homepage was updated regularly to prominently feature the latest news, upcoming events and insightful publications. Moreover, it gives visitors the possibility to easily access project resources.
- **About:** Contains four sub-sections of the website. It first outlines the project’s vision and approach, then provides partners’ descriptions with a direct link to their website and contact details. The third subsection features the Advisory and Impact Board members, giving information on their expertise, lastly, it provides an overview of the 18 sister projects involved in the cluster with a direct link to their website.



- **Activities:** This area allows visitors to explore the main areas of work of TechEthos and how far along in this process the project is. Additionally, it redirects them to results and relevant web pages.
- **Technology Corner:** Contains three sub-sections, each dedicated to one of the three technology families the project focuses on. Each sub-section features an overview of the technology family as well as key insights stemming from the ethical, legal and societal analysis carried out throughout the project.
- **Resources:** This section acts as the project catalogue of the publications and outcomes of the project. It allows visitors to easily access deliverables, tools, newsletters, factsheets and articles. Different resources can be selected by category providing a more tailored view of the website for the user. All files are available for download.
- **News & Media:** Contains two sub-sections. The first is dedicated to the publication of news pieces and blogs and the promotion of upcoming events. This area is essential to raise awareness about the project's results. The second sub-section was specifically designed for contributors and journalists allowing them to access useful resources like press kits, press releases and image galleries.
- **Contact:** A place for users of the website to contact the project directly.

Performance

At the time of writing this report, the website has 29,077 registered visitors, well beyond the initial target of 5,000+. The site has also recorded 1,833 downloads, indicating a positive response from users. Among the pages, the top three most visited pages, apart from the homepage, are the TechEthos Resources page with 2,557 views, followed by the TechEthos Climate Engineering page with 2,316 views and the Articles about Ethical Issues section with 2,282 views. Users are spending an average of 32 seconds per action, contributing to an engagement rate of 35.45%.

2.2 Social Media

TechEthos has two social media accounts, which were set up in M2 (February 2021) and are managed by Ecsite:

- X, formerly known as Twitter: <https://twitter.com/TechEthosEU>
- LinkedIn: <https://www.linkedin.com/company/techethoseu/>

The social media accounts were leveraged throughout the project lifetime to raise awareness, publicise the project outcomes and outputs and engage with stakeholders. Social media were particularly powerful in helping to create "communities of support" for the project.

X Performance

X was mainly used to address academics, industry, European projects, researchers, influencers, and other stakeholders (including the public and the media). At the time of writing this report, the X account has reached a total of 404 followers.





Figure 2 TechEthos Twitter account. 22/11/2023

In total, the Twitter/X account has reached over 63,100+ impressions. The graphs below, extracted from Twitter/analytics page, allow us to observe evolutions over the past year of the project: impressions were generally steady except a peak in October 2023, due to the [final policy event](#).

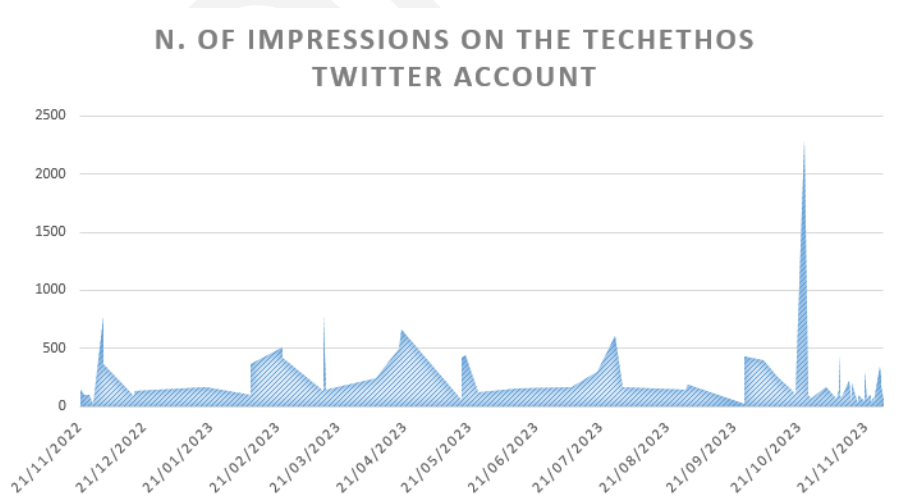


Figure 3 TechEthos Twitter/X account impressions

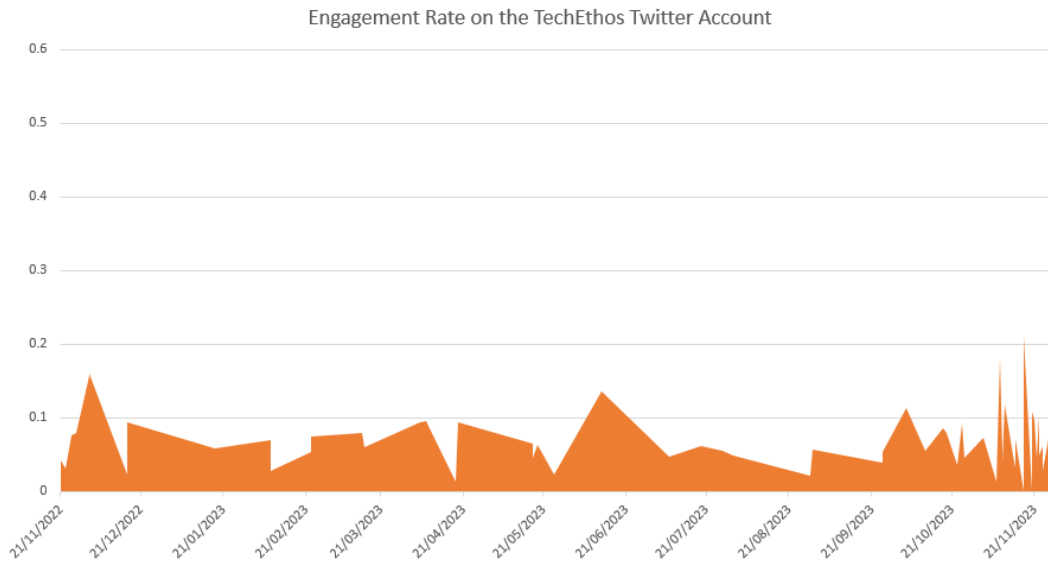


Figure 4 TechEthos Twitter/X account engagement rate

LinkedIn Performance

LinkedIn was used to post the same content as on X, but it served also as a means for growing the TechEthos network and connecting with stakeholders from academia, the industry or the public sector that have a legitimate interest in the project and are interested in future collaborations. In total, the account gathered 406 followers. Impressions over the duration of the project reached 26,250+ with a final peak corresponding to the final months of the project with the promotion of the final policy event, and the acceleration of the release speed of project outputs, leading to more posts. Demographics of the LinkedIn follower base are available in Annex I.



Figure 5 TechEthos LinkedIn account. 22/11/2023

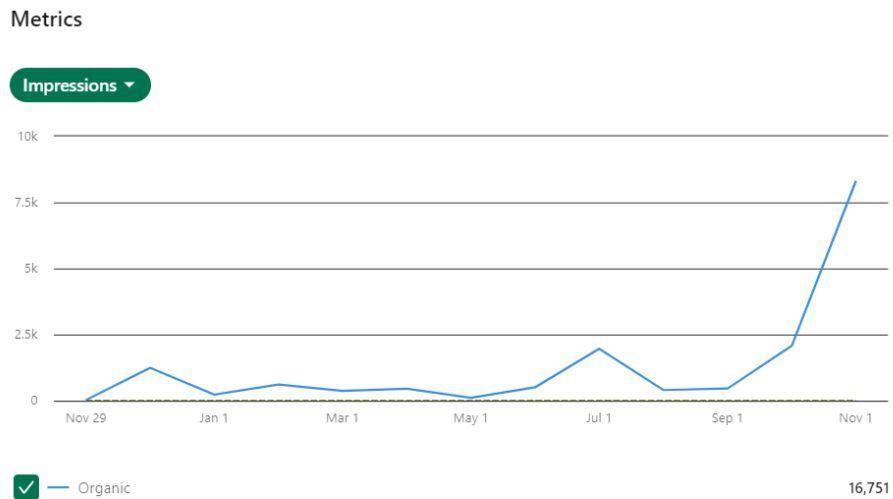


Figure 6 TechEthos LinkedIn account impressions for last 12 months

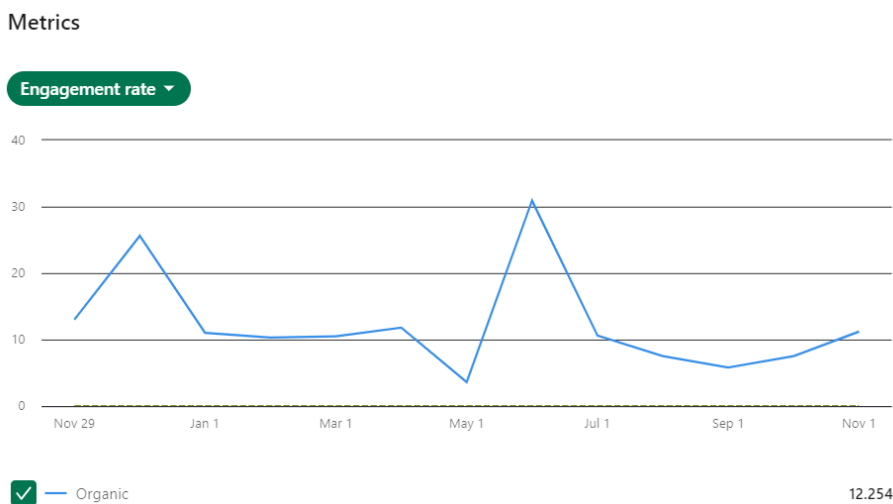


Figure 7 TechEthos LinkedIn account engagement rate for last 12 months

2.3 Newsletters

TechEthos produced a total of 8 newsletters, with a ninth one ready for publication in December 2023 after submission of this deliverable and reaching the initially set KPI. The issues registered an average open rate of 35.9%, exceeding the initial target of 25%. Each issue of the newsletter contained 2-3 blogs/news items about the project, information about upcoming events (e.g., meetings, workshops, training, final event etc.) and some articles or interesting read on ethics, new and emerging technologies, research ethics and research integrity etc. arising from external sources, and/or project publications as they become available.

The newsletters were tailored to fit with TechEthos' visual identity making them easily recognisable by their recipients, thereby strengthening the project brand and the impact of our dissemination activities.

The newsletters were also published on the project website and social media for wider dissemination.

Below is an overview of subscribers, open rates, and click rates for each issue:



No.	# of subscribers	Open rate (%)	Click rate (%)
#1	216	31,48%	N/A
#2	241	39,83%	N/A
#3	247	32,2%	12,3%
#4	247	41,8%	13,9%
#5	251	29,3%	8,4%
#6	252	45,1%	12,7%
#7	253	34,5%	11,3%
#8	255	32,7%	7,8%
#9	N/A	N/A	N/A

2.4 Scientific dissemination

Throughout the project, all partners and Linked Third Parties engaged in the scientific dissemination of project results through presentations, open-access scientific articles, articles for professionals engaging the public with science and technology issues and participation in third-party events such as academic conferences, industry fairs and networking events. In total, project partners and LTPs contributed to 6 scientific publications and attended 48 third-party events. Below is an overview of the scientific publications and some of the third-party events project partners and LTPs took part in.

2.4.1 Scientific publications

Partner	Title	Type of publication
TRI	Thinking AI with a hammer. Kate Crawford's Atlas of AI (2021)	Book review
DMU	Ethics of Climate Engineering: Don't forget technology has an ethical aspect too	Journal paper
CEA	Moral Equivalence in the Metaverse	Journal paper
TRI	Power and Inequalities. Lifting the veil of ignorance in AI ethics	Book chapter
TUD	From speculation to reality: enhancing anticipatory ethics for emerging technologies (ATE) in practice	Journal paper

ALLEA	2023 revised edition of "The European Code of Conduct for Research Integrity"	Brochure
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2.4.2 Participation in third-party events

No.	Event	Date	Attendees
#1	SIENNA final conference	10-12 March 2021	General public: 282
#2	Society for Philosophy and Technology Conference - Technological Imaginaries	28-30 June 2021	Scientific community: 450
#3	IAMRRI Future Talk 2021	8-9 September 2021	Scientific community: 15; Industry: 5; Policymakers: 5
#4	NEC 28th Meeting of the National Ethics Councils (NEC) Forum	18-19 November 2021	n/a
#5	EASST 2022	6-9 July 2022	Scientific community: 30
#6	NanoInnovation 2022	19-23 September 2022	Scientific community: 200
#7	Autonomy through Cyberjustice technologies: ethics of NLP	4-7 October 2022	n/a
#8	ESDiT2022 International Conference	6-7 October 2022	n/a
#9	Workshop: Ethical and legal aspects of AI for Law Enforcement	25-26 January 2023	Scientific community: 50; General public: 10
#10	PCST conference	April 2023	Scientific community: 50
#11	DATE23 - Design, Automation and Test in Europe Conference	17-19 April 2023	n/a
#12	UNESCO Conference: Sharing Desired Futures	10-14 May 2023	Scientific community: 50; Industry: 50; General public: 50; Policy makers: 50; Media: 50
#13	CEPE 2023 International Conference on Computer Ethics: Philosophical Enquiry	16-18 May 2023	n/a



#14	Society for Philosophy and Technology Conference	7-10 June 2023	Scientific community: 20
#15	ENRIO Conference	September 2023	n/a
#16	STS Austria Conference	27-29 November 2023	Scientific community: 100

2.5 Collaboration with other EU projects

TechEthos has established a cluster of [18 EU-funded projects](#) (TechEthos excluded), creating a platform to exchange, collaborate and create synergies together. Some of the projects represented address ethical and societal challenges related to new and emerging technologies – such as TechEthos. Others are purely technical projects but also address ethical and societal challenges.

Starting from March 2022, the cluster convened for three major cluster meetings, two online and one in person. Additionally, considering the variety of objectives and topics, members of the TechEthos consortium actively engaged in collaboration, both bilaterally and with smaller representatives from other EU-funded projects. On the one hand, TechEthos partners were actively involved in many clustering activities. On the other hand, the representatives of the cluster projects were invited to the TechEthos activities. A detailed description of the cluster’s meetings and joint events can be found in D6.3, *Advisory and impact board members’ activities, cooperation and clustering activities*. Below is an overview of the projects that joined the cluster since its inception in March 2022.

No.	Project	Focus
#1	Assistance (2019-2022)	The main purpose of the ASSISTANCE project is twofold: to help and protect different kinds of first responders’ (FR) organizations that work together during the mitigation of large disasters (natural or man-made) and to enhance their capabilities and skills for facing complex situations related to different types of incidents.
#2	Co-Change (2020-2023)	Co-Change will apply an innovative systemic approach to boost the transformative capacity and leadership for RRI.
#3	CO2FOKUS (2019-2023)	CO ₂ FOKUS aims to make a significant contribution to the fight against climate change by reducing CO ₂ emissions; the CO ₂ will be used as a feedstock for DME production in the chemical industry.
#4	Conbots (2020-2023)	Designing a new class of robots to physically couple people to facilitate learning and improve efficiency during the training of handwriting and music skills.
#5	B-Cratos (2021-2025)	B-Cratos aims to create a breakthrough communication platform for brain-machine and intra-body signalling while advancing prosthetics and sensor technologies to overcome several challenges facing next-generation neural interfaces and implantables.



#6	DARLENE (2020-2023)	DARLENE investigates how cutting-edge augmented reality (AR) technology can be deployed to help law enforcement agencies (LEAs) and first responders make more informed and rapid decisions, especially in situations where time is of the essence.
#7	ETAPAS (2020-2023)	ETAPAS aims to improve public service delivery for citizens by facilitating the ethical adoption of Disruptive Technologies in compliance with European and national strategies and guidelines.
#8	FLEXIGROBOTS (2021-2023)	FlexiGrobots is an Innovation Action aiming to build a platform for flexible heterogeneous multi-robot systems for intelligent automation of precision agriculture operations, providing multiple benefits to farmers around the world.
#9	GENIE (2021-2027)	GENIE aims to investigate the environmental, technical, social, legal, and policy dimensions of greenhouse gas removal and solar radiation management.
#10	irecs (2022-2025)	irecs is a new Horizon Europe project tackling the ethical challenges of new technology used in research.
#11	HR-RECYCLER (2018-2022)	HR-RECYCLER will target the development of a 'hybrid human-robot recycling plant for electrical and electronic equipment' operating in an indoor environment. The fundamental aim of the system will be to replace manual, expensive, hazardous and time-consuming tasks of Waste Electrical and Electronic Equipment materials pre-processing with correspondingly automatic robotic-based procedures.
#12	Hybrida (2021-2024)	Hybrida aims to embed a comprehensive ethical dimension to organoid-based research and resulting technologies, dealing with the uncertainties that result from the challenge organoids pose to the categorisation, since Roman law, of all entities as either persons or things.
#13	NIMA (2020-2023)	The NIMA project is advancing a novel concept to use the redundancy of the motor system on different levels to control additional artificial limbs, devices or computers independently of the movements of the natural limbs.
#14	Pop AI (2021-2023)	The use of artificial intelligence is increasing in a wide range of applications, making it the focus of law enforcement agencies concerned with safeguarding privacy and fundamental rights. The EU-funded Pop AI project will work to boost trust in AI by increasing awareness and current social engagement, consolidating distinct spheres of knowledge by academics and non-academics, and delivering a unified European view and recommendations.



#15	Robotics4EU (2021-2024)	Robotics4EU aims to ensure more widespread adoption of (AI-based) robots in healthcare, inspection and maintenance of infrastructure, agri-food, and agile production.
#16	STARLIGHT (2021-2025)	STARLIGHT aims to create a community that brings together LEAs, researchers, industry and practitioners in the security ecosystem under a coordinated and strategic effort to bring AI into operational practices.
#17	SYNCH (2019-2023)	SYNCH will create a hybrid system where a neural network in the brain of a living animal and a silicon neural network of spiking neurons on a chip are interconnected by neuromorphic synapses, thus enabling co-evolution of connectivity and co-processing of information of the two networks.
#18	XR4Human (2022-2025)	XR4Human mission is to co-create living guidance documents on ethical and related policy, regulatory, governance, and interoperability issues of XR technologies whilst building public trust and acceptance and a strong and competitive European XR ecosystem.

2.6 Project events

Throughout the project, partners have held a series of key appointments, including workshops and other events to inform about the project process and present the project's results to various stakeholders, such as ethics committees, sister projects, academia, technology developers, citizens and policymakers.

All public events were promoted on the TechEthos website and social media to engage potential attendees and encouraging participation.

As part of T3.5, "Capture public awareness and attitudes through TechEthos scenarios" and to highlight citizens' perspectives, the six science engagement centres, involved in the project as LTPs of beneficiary Ecsite, held 20 game scenario workshops across multiple countries and sites. To encourage participation and facilitate conversation, the workshops leveraged the *TechEthos game: Ages of Technology Impacts* (D3.2). The goal of this exercise was to understand citizens' awareness and attitudes towards climate engineering, digital extended reality, neurotechnologies, and natural language processing, and to provide insight into what values the general public finds important.

The workshops engaged 331 participants from varied backgrounds, with an average of 16 participants per workshop with a duration of four hours. To capture a broader and richer perspective, the six science engagement centres collaborated with associations supporting groups whose access to such activities is often hindered by economic, health or social factors. As a result, 30% of the participants in the workshop belonged to the vulnerable groups categories identified at the beginning of the project.

The methodology and the outcomes of the game scenario workshops are detailed in D3.1, *The evolution of advanced TechEthos scenarios*, D3.2, *Tools to develop and advance scenarios dealing with the ethics of*



new technologies, and [D3.4](#), Societal awareness and acceptance and stakeholder attitudes resulting from the scenario developments.

Final event

To provide interested parties with an opportunity to engage with TechEthos, a final event was organised by Ecsite and TRI in collaboration with AIT and EUREC. The event took the shape of a policy event, with the title “Ethics for the Green and Digital Transition”. The event was co-hosted by MEP and STOA Panel Member Barbara Thaler, who unfortunately had to drop out the day before the event due to a new political appointment. She nonetheless brought her support to the organisation of the event. The event was moderated by BBC broadcaster & journalist Vivienne Parry.

The event took place simultaneously in person (in Brussels) and online (Zoom Webinar) on 14 November 2023, with free of charge access. The [agenda](#) was available on the project website and comprised the following main sections:

- Ethics for the digital transformation
- Ethics for the green transition
- Highlights and outlook for the ethical governance of emerging technologies

In total 141 registrations were received. 60 people joined in person and 32 attended the live streaming. Even though the event was dedicated to policy aspects, it attracted different groups of stakeholders, in particular researchers and other EU-funded projects. 10 representatives from EU institutions joined the event, including two speakers.

The event was recorded and made available on the TechEthos YouTube playlist ([Part 1](#) and [Part 2](#)) hosted by Ecsite to help increase the reach and legacy of the project.

2.7 Printed materials

In partnership with consortium members and communication experts, Ecsite produced a variety of digital materials designed to serve as printable outreach tools for distribution at TechEthos and third-party events, effectively promoting the project. In promoting sustainability, partners were encouraged to print only essential materials and reuse previously printed posters and factsheets. In instances where printed resources were required, efforts were made to minimise duplication by redistributing already printed materials among partners, thereby avoiding the need for additional printing.

2.7.1 Project factsheets

Ecsite has produced a comprehensive set of four easily downloadable factsheets accessible on the [website](#), intended for distribution to project partners and LTPs at external conferences, workshops, and events, thereby enhancing the project's visibility and outreach.

The [first factsheet](#) outlines the challenges that TechEthos addresses, presenting our vision, solutions, and focus. The subsequent three factsheets are each dedicated to the project's three technology families: [climate engineering](#), [digital extended reality](#), and [neurotechnology](#). They delve into the key



functions and capabilities of each technology, providing clear examples of current and future applications.

TECHETHOS
FUTURE • TECHNOLOGY • ETHICS

The challenge
New and emerging technologies are expected to generate new opportunities and offer a wealth of socio-economic benefits. However, due to their transformative potential, these technologies are also likely to pose a number of ethical challenges and societal consequences. We have a chance, now in the early stages of their development, to ensure that ethics and societal values are prioritised.

Our vision
Ethics by design, or in other words, bringing ethical and societal values into the design, development and deployment of technology from the very beginning of the process.

Our solution
TechEthos addresses the growing ethical challenges and expectations regarding new and emerging technologies by:

Scanning
the technology horizon to identify 3 new and emerging technology families, carefully selected by our team for their relevance in terms of potential socio-economic impact on our societies and challenging ethical issues.

Analysing
each of these technologies in terms of ethics, policy and legal implications, and societal awareness and acceptance, by engaging with academia, industry and the general public alike.

Enhancing
ethical and legal frameworks and operational guidelines to support the research and innovation community in integrating ethics concerns and societal values into their research protocols and technology design.

Our focus

Interaction with the digital world
Digital Extended Reality
These technologies use AI-powered hardware and software that can perceive and process human sensory outputs and communications. They could change how people connect with each other and their surroundings through interaction with virtual environments.

Interaction with the planet
Climate Engineering
From carbon capture, use and storage to solar geoengineering, these technologies act on the Earth's climate system. They could mitigate and respond to threats from climate change on both a local and global scale.

Interaction with the human body
Neurotechnologies
These technologies directly involve the human brain in monitoring, assessing, emulating, and manipulating its structure, functions and capabilities. They have the potential to change personhood and disrupt healthcare practices.

At a glance
TechEthos (Ethics for Technologies with High Socio-Economic Impact)

- Funding**: Horizon 2020 Research and Innovation Programme's Science and For Society (SwafS)
- Duration**: 2021 – 2023 (3 years)
- EU grant**: €3.99 million
- Coordinator**: AIT - Austrian Institute of Technology
- Consortium**: 16 organisations from 13 countries
- Website**: www.techethos.eu

Become part of our community

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[@TechEthosEU](https://twitter.com/TechEthosEU) [in TechEthosEU](https://www.linkedin.com/company/techethos/)

Subscribe to our newsletter! <https://zcmp.eu/BRI/>

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Figure 8 Factsheet #1: TechEthos in a nutshell

2.7.2 Infographics

Ecsite designed infographics throughout the project, presenting essential information on various aspects such as ethical considerations, scenarios, and legal issues. These infographics were tailored for researchers, academics, industry professionals, and other stakeholders, as well as the wider public and media. Many of these visual representations have been incorporated into project deliverables to enhance the accessibility of key insights and findings, adding a visually appealing dimension. Additionally, they were integrated into articles and blog pieces featured on the website and the project's social media.



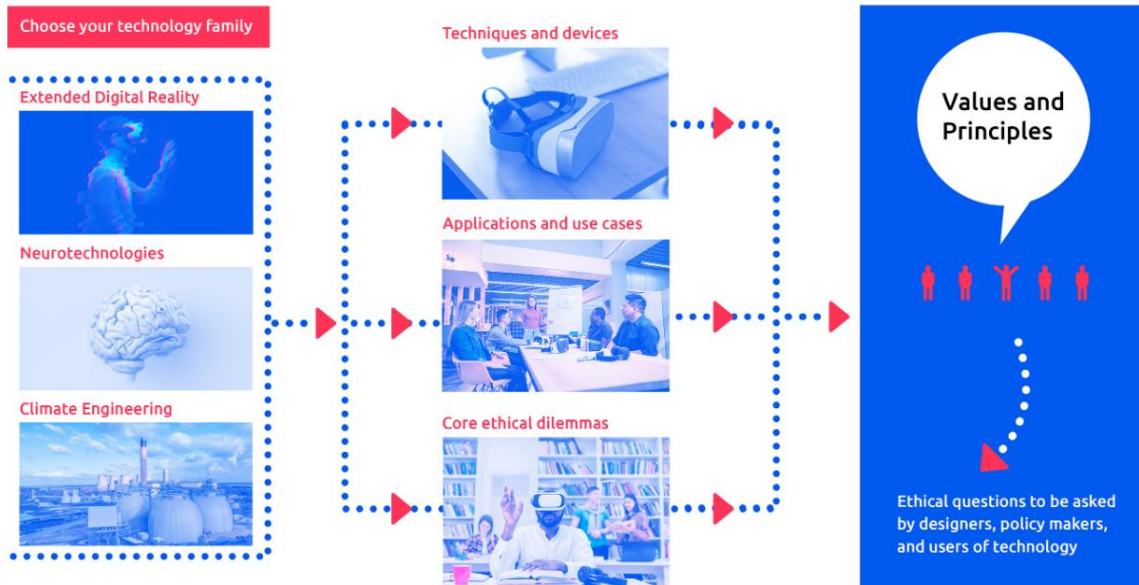


Figure 9 Three roads to arrive at values and principles. Infographic from the report 'Analysis of Ethical Issues'.

2.7.3 Postcards

In collaboration with a designer, Ecsite created three digital postcards that were also printable for interested partners and LTPs as needed. Originally designed for distribution at a dedicated stand of the Ecsite conference 2023, which primarily attracts science engagement professionals, these postcards covered three distinct tools tailored to different stakeholders. The first focused on the TechEthos game, with a QR code that redirected users to the website where they could download the four decks, board, and rulebook. The second highlighted the main outcomes of TechEthos public engagement activities, while the third addressed how science centres and museums can engage citizens in influencing the development of new technologies, accompanied by a QR code linking to science cafes held across Europe during the summer and autumn of 2022.

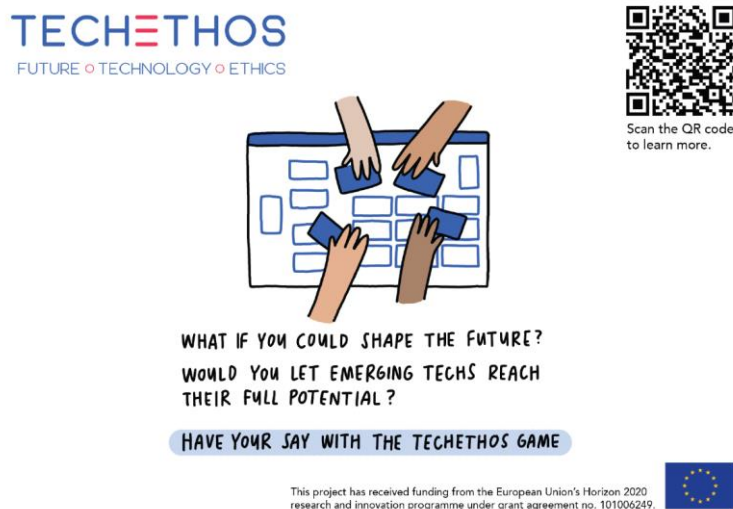


Figure 10 Postcard #1: the TechEthos game: Ages of Technology Impacts.



2.7.4 Poster

Ecsite created a poster that was distributed to all project partners and LTPs. This poster served as a distinctive brand identity tool, enhancing visibility at various third-party events where TechEthos representatives presented the project. Throughout the project, the original version of the poster underwent updates and customisation to align with different events and accommodate partners' specific requests.

TECHETHOS
FUTURE ○ TECHNOLOGY ○ ETHICS

The challenge
New and emerging technologies are expected to generate new opportunities and offer a wealth of socio-economic benefits. However, in the early stages of their development, these technologies also pose a number of potential ethical challenges and societal consequences.

Our vision
Ethics by design, or in other words, bringing ethical and societal values into the design and development of technology from the very beginning of the process.

Our solution
TechEthos addresses the growing ethical challenges and expectations regarding new technologies by:

Scanning
the technology horizon to identify 3 emerging technologies with high socio-economic impact. Our selection fell on: Climate Engineering, Digital Extended Reality and Neurotechnologies.

Analysing
each of these technologies in terms of ethics, policy and legal implications and societal awareness and acceptance with academis, industry and the general public alike.

Enhancing
ethical and legal frameworks and operational guidelines to support the research community in integrating ethics concerns and societal values into research protocols and technology design.

At a glance
TechEthos (Ethics for Technologies with High Socio-Economic Impact)

Funding	Horizon 2020 Research and Innovation Programme's Science and For Society (SWaFS)
Duration	2021 – 2023 (3 years)
Budget	€3.99 million
Coordinator	AIT - Austrian Institute of Technology
Consortium	16 organisations from 13 countries
Website	www.techethos.eu

Our focus
Our operational guidelines will be published soon.

Become part of our community

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Figure 9 TechEthos poster



2.8 Videos

TRI, in collaboration with project partners, produced a total of 8 short videos: seven interviews and a project presentation video. All videos were published on a [YouTube playlist](#) and promoted on the TechEthos website and social media channels to raise awareness across the relevant stakeholders' communities and the general public. Below is an overview of each video's content:

- 1) general information on the project and its approach, as well as the 3-4 selected technologies, with an emphasis on our ethics by design methodology, and how it will help to enhance RE+RI
- 2) focus on co-design and the importance of working with various stakeholders, namely experts and citizens (including vulnerable groups) to identify ethical and societal risks regarding new and emerging technologies
- 3) outlining the ethical challenges of Digital Extended Reality
- 4) outlining the ethical challenges of Climate Engineering
- 5) outlining the ethical challenges of Neurotechnologies
- 6) emphasis on industry's perspective
- 7) focus on regulatory challenges of the governance of new and emerging technologies
- 8) neurotechnologies and ethical issues

An additional teaser video was produced by Ecsite to present the "Y/our Ethics Decide" installation and its overarching narrative.

The recordings of the final Policy Event are also available.

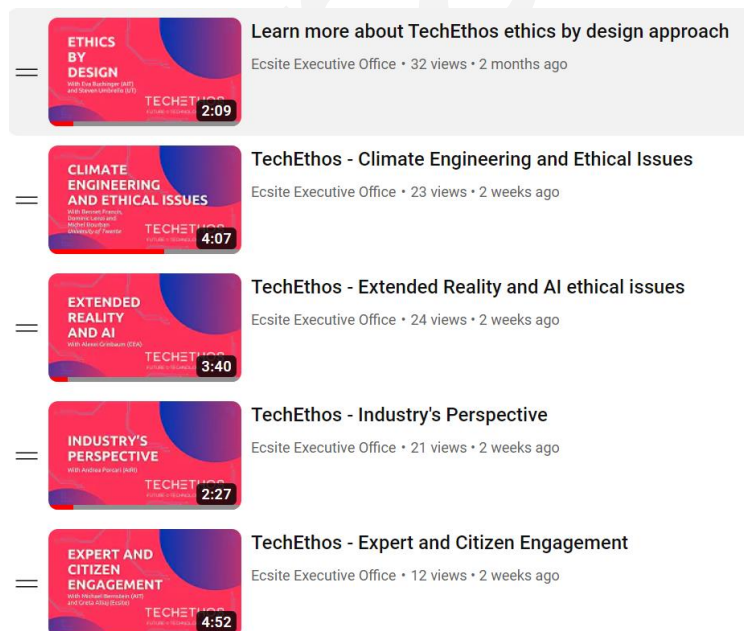


Figure 11 TechEthos playlist on YouTube

2.9 Press releases

Throughout the project, thirteen press releases were issued – two at the project level and eleven by project partners. Press releases served as the primary format for communicating with the media,

facilitating broad dissemination and effective communication of results, particularly to the public. The overarching goal was to enhance interest in TechEthos and its covered topics, both at the local and European levels.

Project partners and LTPs were encouraged to disseminate the press releases to their contact list, as well as forward them to local media and their institution’s press offices (when available) to encourage their uptake.

EUREC and TRI worked with partners in different countries and compiled a list of 197 contacts in specialist and popular press/media.

2.10 Blogs/news items

At the time of writing this deliverable, a total of 17 blogs and news items were uploaded to the website, under the “News & Media” tab or classified as “News” or “Opinion piece” under the “Resources” tab. These items were produced in collaboration with consortium partners as well as ADIM Board members and featured in the newsletter and on social media. We do not count deliverables, publications and reports featured in the “Resources” as blogs or news items. In total, blogs/news items were viewed 6,238 times on the website.

Date	Views	Topic
28/06/2021	392	A foundation for effective ethics governance
10/09/2021	589	Adopting Ethics by Design: Lessons from the SIENNA project
21/10/2021	408	Spotlight on Research Ethics and Research Integrity for sustainable innovation
25/10/2021	276	Book review: Thinking AI with a hammer. Kate Crawford’s Atlas of AI (2021)
21/12/2021	382	Introducing the TechEthos technology families
14/02/2022	184	Reviewing the Horizon Scan: Selecting the TechEthos Technology Portfolio
6/04/2022	528	Joining forces with like-minded projects to address ethical and societal issues of new technologies
7/07/2022	408	A Science & Technology chat over coffee
22/07/2022	495	Key Findings highlight implications of new and emerging technologies
5/09/2022	447	Exploring emerging technologies through the lens of human rights law
30/01/2023	321	TechEthos game workshops: exploring public awareness & attitudes



7/04/2023	70	Opinion Piece - Can you change the world with 12.5 euros a day?
12/09/2023	1230	TechEthos Policy Event: Ethics for the Green and Digital Transition
12/09/2023	141	Citizen awareness and attitudes towards emerging technologies: key takeaways from engagement workshops
12/09/2023	154	Highlighting key ethical issues determined from scenario creation, expert engagement and citizen engagement via game-based methodology and workshops
13/09/2023	106	ALLEA publishes 2023 revised edition of The Code of Conduct for Research Integrity
26/10/2023	107	Y/our ethics decide! Discover TechEthos installation

2.10 TechEthos installation

Ecsite designed a TechEthos installation to be displayed by its 6 Linked Third Parties in their science centres and museums. The installation, titled “Y/our ethics decide”, builds on the findings of TechEthos, and targets civil society and youth, providing elements of reflection on promises, opportunities concerns and boundaries of new and emerging technologies. For this exercise, each LTP chose a TechEthos technology family based on their audience and ongoing interests. This resulted in two versions of the installation: one about Climate Engineering and Natural Language Processing. Each LTP already has or will display the installation for a duration of minimum 2 months, sometimes longer. In total, we estimate that 70,000+ visitors will have seen the installation in 2023, and due to some venues planning to display the installation longer, an additional 100,000+ visitors are expected in 2024.

Linked Third Party	Estimated number of visitors	Technology Family	Date and location of display
IQlandia	Expected 75,000 per year (250 per day)	NLP	From 19/12/2023 – part of permanent collections (no end date) Displayed in IQlandia, Liberec, Czechia
Bucharest Science Festival	38,000	NLP	Promenada Shopping Centre, Bucharest (27.09 – 01.10.2023) National Museum of Geology, Bucharest (02.10 – 31.10.2023) ASUR, Bucharest (01.11 – 31.12.2023, possibly longer)
Center for the Promotion of Science CPN	15,000	NLP	17/10 to 17/12/2023 – University of Belgrade, Faculty of Philosophy



ScienceCenter Network Vienna	3,400	CE	29/09 to 22/12/2023 – SCN’s Knowledge Room, Vienna
Parque de las Ciencias	Expected 96,000 (1,000 per day)	CE	19th Dec. 2023 to 30th Ap. 2024 – Parque de las Ciencias, Granada
Vetenskap & Allmänhet	Expected 20,000	CE	December 2023-July 2024 (potentially longer) – Curiosum, Umea

A digital version of the installation was launched by Ecsite on 23 November 2023 under the domain <https://www.techethos-yourethics.eu/>. At the moment of writing this deliverable, no data is available concerning the number of online visitors.

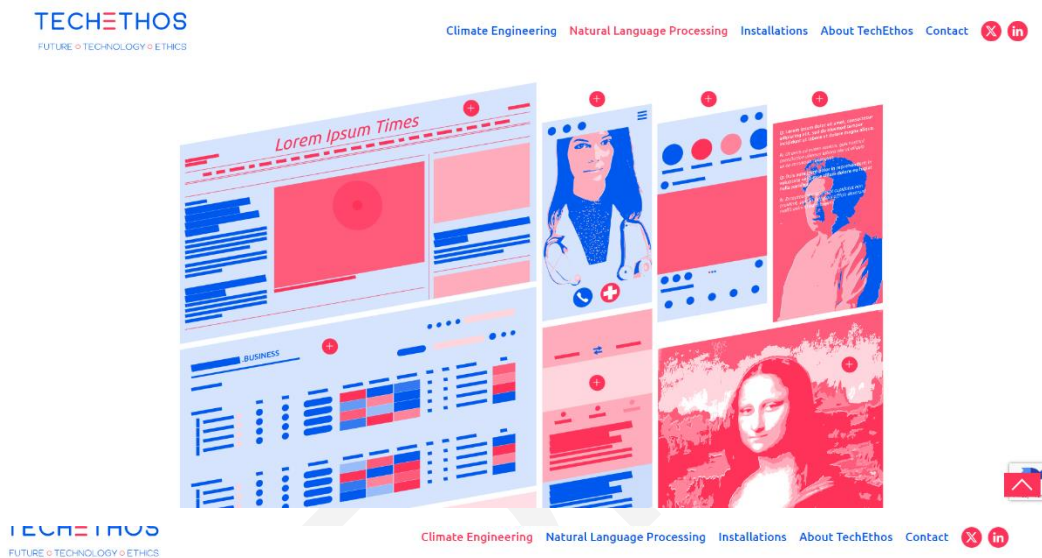


Figure 10
TechEthos
Digital
Installation -
Natural
Language
Processing



Figure 11
TechEthos Digital
Installation -
Climate
Engineering

Figure 12 TechEthos installation in Belgrade, Serbia



For this installation, one objective was to combine ethical reflections on technology with art. Some of the LTPs collaborated with local artists and Ecsite organised a call for artist, launched in July 2023. After consideration, the chosen topic for the call was Climate Engineering. In total, 8 entries were received. The selected artist was Adam Sébire, for his video art piece, AnthroScene III: Hellisheiði. This video is inspired by the Climeworks/CarbFix2 project at Hellisheiði, Iceland, the world’s first industrial-scale “carbon scrubbing” experiment to capture carbon dioxide (CO₂) directly from Earth’s atmosphere. In the video triptych, one of the three screens investigates the experiments at Hellisheiði (the injection wells of CarbFix plus Climeworks’ white cube “carbon scrubber” DAC module, a prototype for what’s expected to be many thousands spread across the planet). In another, a core sample of the sequestered CO₂ — now mineralised as calcite within the basalt host rock — appears as a quasi-mystical object in a vitrine (in an exhibition this screen can be replaced by a real core sample). The third screen is more ambiguous: set in a future geological era where complex lifeforms seem to have disappeared, and where the planet is correcting an atmospheric imbalance. Now, geological processes reverse. After only a few hundred thousand years, homeostasis — equilibrium — will have returned.

The video is displayed by ScienceCenter Network Vienna and Vetenskap & Allmänhet in their installation. It is also available in the digital installation on this [page](#).



Figure 13 Preview of AnthroScene III: Hellsheiði by Adam Sébire

3. Conclusion

In conclusion, it can be observed that the majority of KPIs have been reached, and most were even surpassed. This is in great part due to the shared effort of the consortium, with all project partners and LTPs contributing to communication & dissemination activities, at their own level and with their own expertise. By sharing the burden of producing content, the project was able to provide a well-furnished website, with ample resources catering to the needs of different stakeholder groups. The synergy with other EU-funded projects has also proved a winning strategy, allowing for a larger number of events for TechEthos to present outputs and for a wider reach of the newsletter and social media posts. Based on this approach and on a thorough recording and sharing of project material, it is fair to believe that the dissemination & communication activities of TechEthos will have a long-lasting impact.

4. Annexes

Annex I – LinkedIn Followers Demographics

TechEthos LinkedIn – Job Functions of followers

Research 77 (19%)
Education 50 (12.3%)
Media and Communication 26 (6.4%)
Business Development 24 (5.9%)
Community and Social Services 23 (5.7%)
Operations 23 (5.7%)
Information Technology 21 (5.2%)
Program and Project Management 20 (4.9%)
Engineering 12 (3%)
Consulting 11 (2.7%)
Product Management 11 (2.7%)
Arts and Design 10 (2.5%)
Marketing 9 (2.2%)
Healthcare Services 7 (1.7%)
Legal 7 (1.7%)
Administrative 5 (1.2%)
Sales 4 (< 1%)
Military and Protective Services 3 (< 1%)
Customer Success and Support 3 (< 1%)
Finance 2 (< 1%)
Entrepreneurship 1 (< 1%)
Human Resources 1 (< 1%)
Others 55 (13.6%)

TechEthos LinkedIn – Location Distributions of followers

Brussels Metropolitan Area, Belgium 24 (5.9%)
The Randstad, Netherlands, Netherlands 20 (4.9%)
Greater Paris Metropolitan Region, France 19 (4.7%)
Berlin Metropolitan Area, Germany 19 (4.7%)
London Area, United Kingdom, United Kingdom 11 (2.7%)
Vienna, Austria 9 (2.2%)
Greater Stockholm Metropolitan Area, Sweden 8 (2%)
Athens Metropolitan Area, Greece 8 (2%)
Greater Enschede Area, Netherlands 8 (2%)
Greater Rome Metropolitan Area, Italy 7 (1.7%)
Belgrade Metropolitan Area, Serbia 7 (1.7%)
Greater Dublin, Ireland 7 (1.7%)
Greater Munich Metropolitan Area, Germany 7 (1.7%)
Greater Turin Metropolitan Area, Italy 6 (1.5%)



Greater Edinburgh Area, United Kingdom 5 (1.2%)
Vienna, Austria 5 (1.2%)
Greater Milan Metropolitan Area, Italy 5 (1.2%)
Greater Madrid Metropolitan Area, Spain 4 (< 1%)
Greater Oslo Region, Norway 4 (< 1%)
Greater Barcelona Metropolitan Area, Spain 4 (< 1%)
Stuttgart Region, Germany 4 (< 1%)
Tallinn Metropolitan Area, Estonia 3 (< 1%)
Copenhagen Metropolitan Area, Denmark 3 (< 1%)
Lisbon Metropolitan Area, Portugal 3 (< 1%)
Rhein-Neckar Metropolitan Region, Germany 3 (< 1%)
Greater Campinas, Brazil 3 (< 1%)
Budapest Metropolitan Area, Hungary 3 (< 1%)
Greater Montpellier Metropolitan Area, France 3 (< 1%)
Greater Valencia Metropolitan Area, Spain 3 (< 1%)
Greater Leicester Area, United Kingdom 3 (< 1%)
Ghent Metropolitan Area, Belgium 3 (< 1%)
Cologne Bonn Region, Germany 3 (< 1%)
Luxembourg, Luxembourg 3 (< 1%)
Birmingham, United Kingdom 2 (< 1%)
Helsinki Metropolitan Area, Finland 2 (< 1%)
Greater Istanbul, Turkey 2 (< 1%)
Santiago Metropolitan Area, Chile 2 (< 1%)
Warsaw Metropolitan Area, Poland 2 (< 1%)
Geneva Metropolitan Area, Switzerland 2 (< 1%)
Washington DC-Baltimore Area 2 (< 1%)
Nicosia, Cyprus 2 (< 1%)
Cork Metropolitan Area, Ireland 2 (< 1%)
Greater Zurich Area, Switzerland 2 (< 1%)
Greater Exeter Area, United Kingdom 2 (< 1%)
Greater Kiel Area, Germany 2 (< 1%)
Greater Sheffield Area, United Kingdom 2 (< 1%)
Greater Venice Metropolitan Area, Italy 2 (< 1%)
Zagreb Metropolitan Area, Croatia 2 (< 1%)
Greater Bengaluru Area, India 2 (< 1%)
Greater Trieste Metropolitan Area, Italy 2 (< 1%)
Brabantine City Row, Netherlands 2 (< 1%)
Greater Cosenza Metropolitan Area, Italy 1 (< 1%)
Greater Bordeaux Metropolitan Area, France 1 (< 1%)
Lucerne Metropolitan Area, Switzerland 1 (< 1%)
Greater Genoa Metropolitan Area, Italy 1 (< 1%)
Greater Buenos Aires, Argentina 1 (< 1%)
Greater Kuopio Area, Finland 1 (< 1%)
Greater Livorno(Leghorn) Metropolitan Area, Italy 1 (< 1%)
Greater Tartu Area, Estonia 1 (< 1%)
Bruges Metropolitan Area, Belgium 1 (< 1%)
Greater Västerås Metropolitan Area, Sweden 1 (< 1%)
Greater Avellino Metropolitan Area, Italy 1 (< 1%)
Sutton Coldfield, United Kingdom 1 (< 1%)
Rafina, Greece 1 (< 1%)
Greater Aarhus Area, Denmark 1 (< 1%)
Frankfurt Rhine-Main Metropolitan Area, Germany 1 (< 1%)
Turku Metropolitan Area, Finland 1 (< 1%)
Greater Uppsala Metropolitan Area, Sweden 1 (< 1%)
Greater Karlsruhe Area, Germany 1 (< 1%)



Egham, United Kingdom 1 (< 1%)
Greater Graz, Austria 1 (< 1%)
Greater Delhi Area, India 1 (< 1%)
Wülfrath, Germany 1 (< 1%)
Greater Ottawa Metropolitan Area, Canada 1 (< 1%)
Greater Rennes Metropolitan Area, France 1 (< 1%)
Wageningen, Netherlands 1 (< 1%)
Greater Kuala Lumpur, Malaysia 1 (< 1%)
Basel Metropolitan Area, Switzerland 1 (< 1%)
Greater Naples Metropolitan Area, Italy 1 (< 1%)
Muscat, Oman 1 (< 1%)
Maastricht, Netherlands 1 (< 1%)
Honiton, United Kingdom 1 (< 1%)
Waterford Metropolitan Area, Ireland 1 (< 1%)
Enkhuizen, Netherlands 1 (< 1%)
Penteli, Greece 1 (< 1%)
Campo Grande, Brazil 1 (< 1%)
Metro Cebu, Philippines 1 (< 1%)
Greater São Paulo Area, Brazil 1 (< 1%)
Agia Paraskevi, Greece 1 (< 1%)
Tbilisi, Georgia 1 (< 1%)
Greater Philadelphia 1 (< 1%)
Rasht, Iran 1 (< 1%)
Greater Toronto Area, Canada, Canada 1 (< 1%)
Juiz de Fora, Brazil 1 (< 1%)
Maia, Portugal 1 (< 1%)
Greater Montreal Metropolitan Area, Canada 1 (< 1%)
Greater Hamburg Area, Germany 1 (< 1%)
Greater Metz Area, France 1 (< 1%)
Greater Blackburn with Darwen Area, United Kingdom 1 (< 1%)
Bucharest Metropolitan Area, Romania 1 (< 1%)
Others 93 (23%)



TECHETHOS

FUTURE ○ TECHNOLOGY ○ ETHICS

Coordinated by



Partners



Linked Third Parties



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