



Deliverable No. 4.2

VOICE Conceptualisation Framework: Developing mapping approaches for a Digital Resource



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Glossary and Abbreviations

Conceptualisation framework	The VOICE Conceptualisation Framework aims to offer a generative system which operates beyond temporalities and geographies, connecting Communities of Practices, historic projects, sibling programmes, and includes findings and methods from the on-going ATSI. This report offers an early framework (as defined in the Grant Agreement) presenting current concepts and prototypes towards the ultimate aim of creating a Digital Resource (D4.1).
ATSI	ATSI refers to Art-Technology-Society Interactions (ATSI). Within the VOICE project, ATSI is a small-sized artistic intervention or social engagement project designed to sensitise and/or activate a group of stakeholders around a particular environmental/ecological issue that is of concern for a particular community. Here, an ATSI scheme comprises community, a method and a technology.
pCr	PermaCultural Resilience Praxis is a ‘whole system’ approach (including theoretical framework and practical toolkit) designed to support artists working in complex environments by helping them respond to cultural and environmental contexts and develop eco-social and situated artistic practices. It provides tools to navigate local ecosystems, integrate eco-social practices, and capture the value of their work and practice through emphasising a holistic, community-centred approach that integrates social, ecological, and cultural dimensions for sustainable and impactful artistic interventions.
CoP	Communities of Practice are communities that are formed (officially or as volunteer civic entities) around specific topics of concern in diverse regions. This term is highly nuanced and contested - and is key to this project. More detail on its definition and its application within the Conceptualisation Framework is in Section 2 of this report.
Stakeholder	This refers to different organisations, individuals, communities or more-than-human actors who have relevance to this project as users, contributors, beneficiaries or subjects of interest.
SDGs	Sustainable Development Goals , adopted by all United Nations Member States in 2015, which aims to provide a shared blueprint for peace and prosperity for people and the planet. There are a total of 17 SDGs. VOICE focuses on: SDG11: Sustainable Cities and Communities SDG12: Responsible Consumption and Production SDG13: Climate Action SDG17: Partnerships for the Goals

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Summary

This report outlines the process of creating a conceptualisation framework for the VOICE project. This framework supports the development of a map, which will be used to navigate the Digital Resource (D4.1). The Digital Resource will visualise the overall VOICE network (including ATSI and consortium organisations) and help direct users to knowledge gathered within VOICE (including a methods repository and key findings from practice). It will be a live, interactive resource for artists, research community and educators, policymakers, communities and other interest groups which maps current networks of knowledge and will contain insights, methodologies and data gathered from the VOICE project. Establishing what information will be included, its categorisation and aesthetic design is an ongoing project. This report captures where we are right now, 12 months into the VOICE project.

This report will introduce the conceptualisation framework, articulating how these fits alongside other deliverables within the project (internal), and offering more detail on its purpose in relation to D4.1 (external). It will offer our current working definitions of Communities of Practice (CoP), as this is foundational to this framework in terms of its future functionality. This includes evidence and reflections from the permaCultural resilience (pCr) praxis design sprint workshops. As part of the capacity building and knowledge valourisation agenda of the VOICE project, the Digital Resource (D4.1) aims to be a 'live' system, which also supports the development of a new Communities of Practice around the themes of VOICE.

For this process, the Brunel team have evaluated a range of data visualisation tools (some recommended by the consortium partners), focusing on their suitability and feasibility for the deliverable. Based on this, early concepts for digital mapping visualisations were shared with the VOICE project partners to solicit initial feedback. This collaborative input helped refine the approach and ensure alignment with project needs. Three interactive digital map prototypes, Prototype A, B and C, were created using data collected at the design sprint. These prototypes (and the process of creating them) is explored in Section 5 of this report. A key functional aspect of D4.1 will be the 'liveness' of this resource – e.g., how we may allow users to submit new data (to be validated by the VOICE team or even into the future) to support the dynamic growth of the knowledge network. This is in discussion and is addressed in the Prototypes below.

The report concludes with next steps in the development of the Digital Resource, including internal workshops to decide on key definitions, data and categorisations within the map, finalising a wireframe to refine and experiment with these prototypes (led by UCD), and stakeholder workshops to explore the functionality of this resource.

1. Introduction

As defined in the ‘Grant Agreement’ document, Deliverable D4.2 – VOICE Conceptualisation Framework is an “accessible digital map for locating, connecting Communities of Practices, accessing project knowledge network and adding on-going ATSI” (see Figure 1 below). This deliverable is connected to Work Package 4 (WP4), Task 4.1: Project knowledge mapping (Leader: BUL, Contributors: RCA, UCD, WAAG, INOVA+) based on the WP3’s wireframe design for the living-platform. This is a starting point and as the project develops and we continue to evolve and refine definitions of key terms and functionality of deliverables (based on user feedback and knowledge gathered).

Deliverable D4.2 – VOICE Conceptualisation Framework

Deliverable Number	D4.2	Lead Beneficiary	7. BUL
Deliverable Name	VOICE Conceptualisation Framework		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP4
Description			
accessible digital map for locating, connecting Communities of Practices, accessing project knowledge network and adding on-going ATSI			

Figure 1. Definition of Conceptualisation Framework in original grant proposal

The conversations, research and prototyping undertaken for the creation of this report has been of significant use to the consortium - strengthening shared understandings, revealing differences in key definitions between partners, as well as enabling the consortium to reach consensus around different processes and deliverables. This report builds on deliverable **D2.3: Brief datasheet on regions, technologies, concerns**, which offers initial ‘mapping of concerns seeking to support the rich interconnections and also the culturally specific aspects of any artist-led intervention’.

This report also makes use of data collected for the pCr Communities of Practice (see definition in Glossary and in Section 2) design sprint in February 2024, which will be referred to throughout this report as this data was used for prototyping. It is important to note that this data was not gathered with the sole intention of being used within D4.1, but rather as part of the pCr methodology to build an internal microecology of the VOICE partners’ network and help kick off the VOICE project within the consortium. This data has been used in the prototyping for this report to support visualisation of future mapping activities.

This deliverable will contribute to the **D4.1: Digital Resource**. This resource will be designed for a variety of stakeholders, who will be both users and contributors. These stakeholders are:

1. The wider VOICE Consortium: including partner organisations, ATSI artist projects and sibling programmes.
2. Artists: artists working with communities, technology and environmental practices (particularly in relation to SDG11, 12, 13 and 17), as well as those interested in developing their work in this direction.
3. Community organisations and local government: those with an interest in working with artists in their communities.
4. EU/Polymakers/Researchers: offering a body of evidence for future policymaking around the role of arts in environmental governance and its contribution to action towards SDGs.

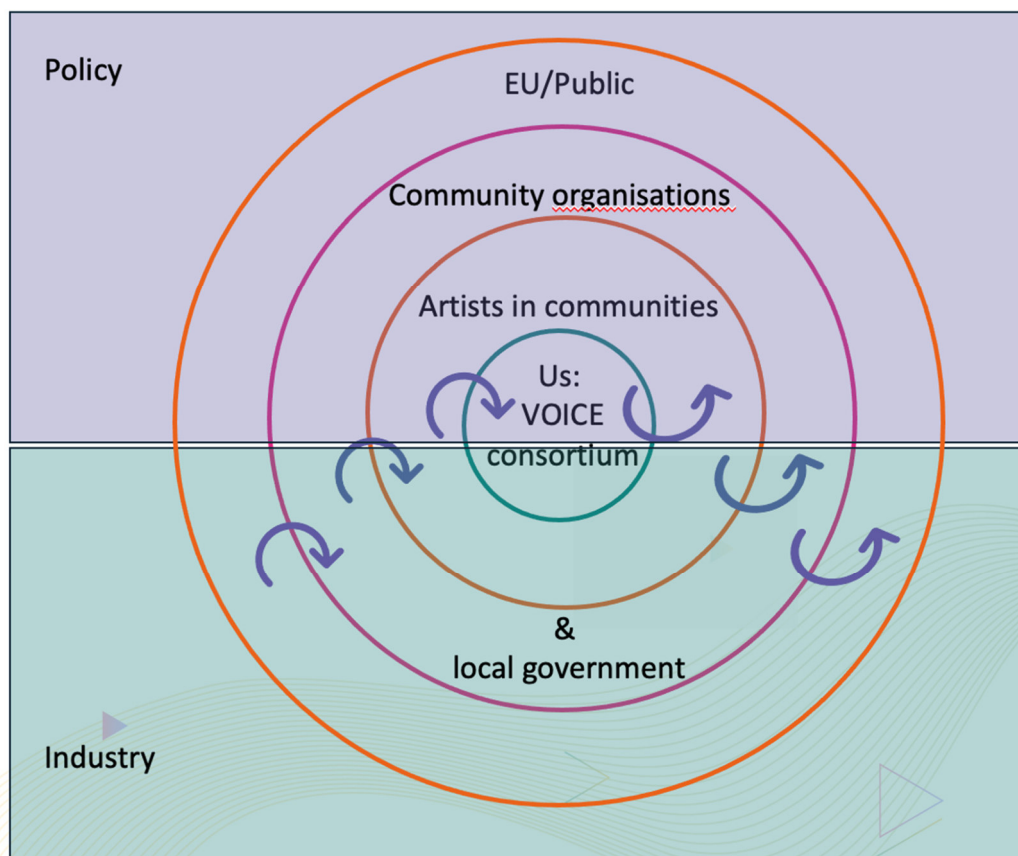


Figure 2. A schematic representation of the long-term users for the VOICE conceptualisation framework

Through discussion, the consortium partners felt that the conceptualisation framework should address short-medium-long term perspectives within VOICE, rather than just being confined within Work Package 4. The key principles of developing this conceptualisation framework are that it be: adaptive, agile, iterative, and designed for long-term use, for active engagement, guided by environmentally and socially engaged practice.

With this in mind, the Digital Resource (D4.1) will include information generated from ATSI Projects (both from the pilot **D5.5** and main ATSI projects **D6.4 / D6.5**); as well as the Capacity Building Repository (working title) (**D4.3**) which aims to capture methodologies used within socially and environmentally engaged artistic practices. It may also be beneficial to link to interviews and insights gathered from Voices of Voice (**D3.3**) and the closely related EU sibling projects. This resource will be mapped using a networked approach: users will be able to visualise connections between stakeholders, as well as deep dive into one stakeholder in terms of their methodologies, projects and insights, using ‘tags’ to explore connections and information according to different categories.

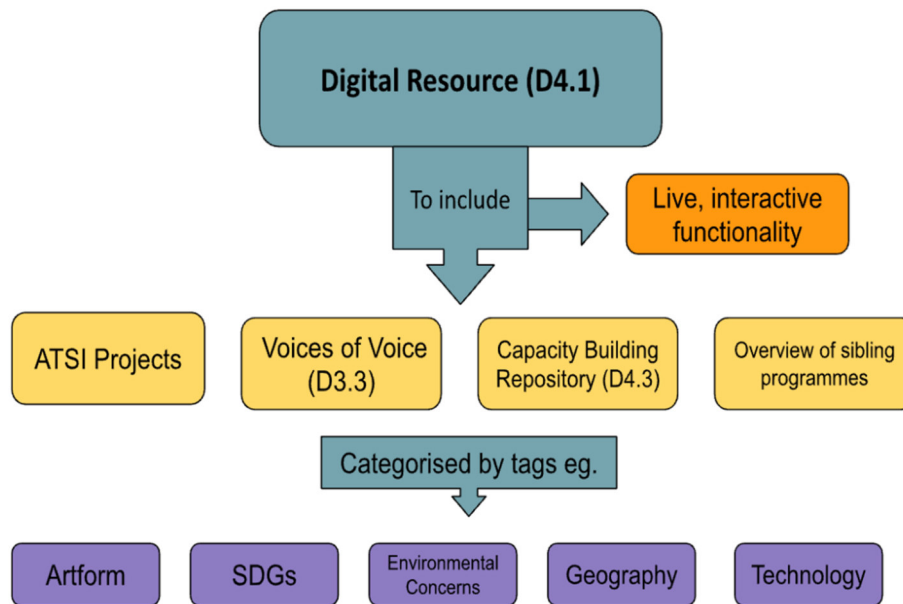


Figure 3. A chart demonstrating potential content for the Digital Resource (in yellow) and potential categorisations / tags (in purple)

This report focuses on different approaches to mapping the Digital Resource. As outlined above, we conducted this investigation using a five-step process emphasising discussion and feedback with consortium partners:

- Step 1: Data gathering (in this case, pCr design sprints and the ATSI pilot projects)
- Step 2: Categorisation of data (outlined below)
- Step 3: Exploring visualisation methods for mapping
- Step 4: Building digital prototypes
- Step 5: Discussion and feedback with VOICE Consortium

This report brings us to this point through desk research into visualisation methods, exploration of prototypes, and a number of meetings with the VOICE Consortium. Next steps for the realisation of the Digital Resource (including a timeline) will be explored in greater detail in Section Five and will include:

- Step 6: Discussion and refinement of definitions and categories (i.e. data to be included in D4.1)
- Step 7: Building wireframe for testing (led by UCD)
- Step 8: Inclusive Design workshops with stakeholders / users
- Step 9: Discussion and feedback with VOICE Consortium
- Step 10: Iterating, developing and building for D4.1 (published in Month 28)

2. Networked Knowledge and Communities of Practice

A foundational methodology within VOICE is PermaCultural Resilience Praxis (pCr) (D2.1 and D5.3) which is a theoretical framework and suite of tools developed to support artists working in complex situations (McKeown, 2015). This framework is used within the ATSI projects, but it is also part of the overall approach of the VOICE project. Therefore, as a starting point for VOICE, the consortium was invited to a design sprint to map their existing Communities of Practice (CoP). Relevant existing stakeholders and networks were collectively identified by the VOICE consortium partners, through the two-day pCr mapping exercises at the Sprint (February 2024). The mapping included stakeholders, artists, technologies and regional concerns pertaining to the SDGs. This dataset offers a ‘moment-in-time’ representation of the VOICE consortium’s own broad CoP. It has been used within this report as part of prototyping, however, will not be included in its current form in the D4.1 resource - as this was not its intended use, but has been a useful secondary application for the purpose of developing a conceptualisation framework. It is a longer-term ambition of the VOICE project to build its own CoP(s) around this practice and D4.1 will have a role to play within this.

Before outlining the design, processes and prototypes explored for the conceptualisation framework, it is important to articulate current understandings of Communities of Practice and their uses within the VOICE project. As outlined below, in the Next Steps section, these definitions are not final but are understood as being in an ongoing process of refinement and development within the project.

Communities of Practice is a conceptually contested term and a key theory within the VOICE project. It was defined in the original VOICE proposal, as “communities that are formed (officially or as volunteer civic entities) around specific topics of concern in diverse regions.” We aimed to build the CoP base through snowballing, as well as through consortium partners’ networks of sibling initiatives and projects. Each CoP will be profiled based on (i) region (ii) structure (iii) year of operation (iv) topics - of concern and challenge (v) projects - if any - (vi) methods, technologies and infrastructures of competence and (vii) methods, technologies and infrastructures of perceived need (Catana et al. 2021). This definition is based on the definition from the Communities of Practice Playbook (ibid.).

Since commencing the project, we have been drawing upon Wegner-Tayner’s definition (2015) which offers the following broad criteria for CoPs: (i) common interest / profession, (ii) engaging in collective learning to enhance knowledge, (iii) regular interactions / collaborations / support, (iv) shared repertoire of resources / tools / shared problems, (v) informal learning, and (vi) motivated by the value gained from the above.

These two definitions overlap but are distinct. As it is the ambition of VOICE to map existing CoPs linked to environmentally and socially engaged arts practice with relevance to the SDGs, as well as support the development of new CoPs, it is crucial to have clarity on how we are defining the term. The definition and criteria above offer useful starting points and, as demonstrated in the Next Steps below, more work needs to be done with the whole consortium to agree on an appropriate definition and set of criteria.

This report and the Digital Resource (D4.1) will support the project’s aims in mapping CoPs as well as supporting the creation of new CoPs. As shown in the prototypes below (particularly C), this map will allow us to show clusters of stakeholders which can be CoPs.

This is not the only ambition of the Digital Resource. It also aims to map the **networked knowledge** within this field of work. Many stakeholders may relate to one another but not amount to a CoP. For example,

3. Mapping the VOICE Consortium

[illegible]

Figure 4. Hand-drawn map from 2-day pCr Sprint – raw data (sample)

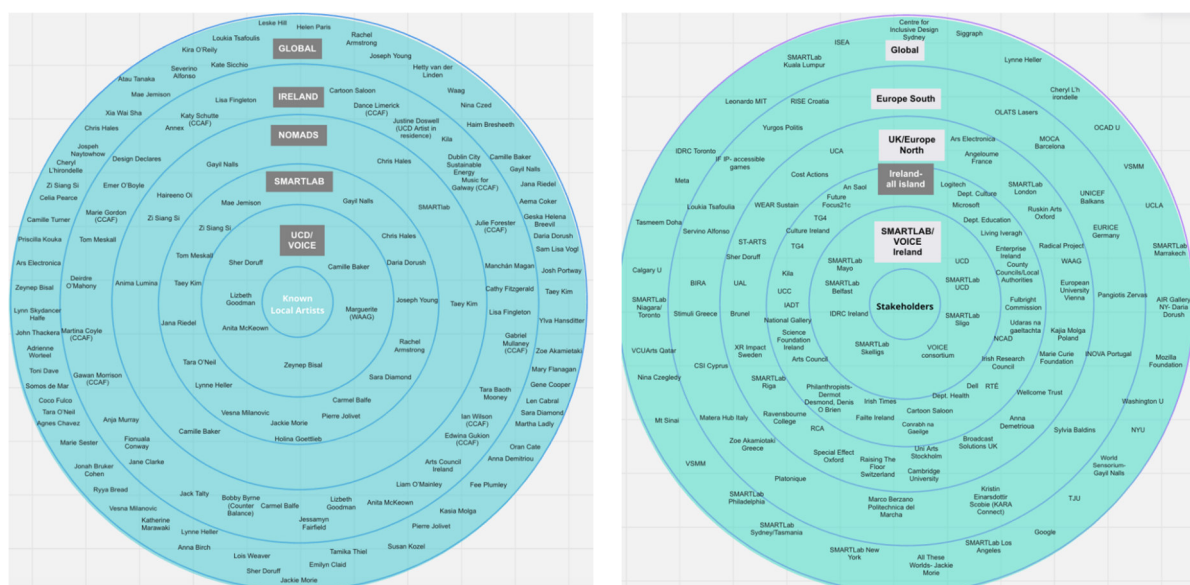


Figure 5. Digitised map (samples)

Country	Geo Category	Stakeholder	Category	Partner connection	Contact	Note
Ireland		Julie Forester				
		Music for Galway				
		Justine Foswell				
		Cartoon Saloon				
		Liam O'Mainley				
		Bobby Byrne				
		Jessamyn Fairfield				
		Katy Schutte				
		Dance Limerick				
		OLAS				
		MOCABarcelona				
		Unicef Balkans				
		Yurgos Politis				
		IFIP- accessible games				
		Pangiotis Zervas				
		Sylvia Baldins				
		Krisin Einarsdottir				
		Marco Berzano-Politecnica del Marce				
		Zoe Akamiotaki				
		Loukia Tsafoulia				
Europe		Sevirino Alfonso				
		BIRA				
		Rachel Armstrong				
		Joseph Young				
		Hetty Van der Linden				
		Haim Bresheeth				
		Jana Riedel				
		Iva Hansditter				

Figure 6. Digitised data transferred to the Excel Spreadsheets (sample)

More detailed information on the data gathered in the pCr design sprint is in report D2.3. We re-state an overview of this information here as this data was used as sample data to explore potential visual methods and prototypes. It is important to reiterate that this data was not generated for this function, rather as part of the pCr methodology to build a microecology internally, within the VOICE network. However, it is a useful dataset to help us to begin to visualise and explore how the Digital Resource (D4.1) may function.

This data was organised into Excel Spreadsheets, which captured more than 800 items. First, data accuracy was checked (e.g., correcting typos, removing repetitions), and wherever possible, web links were found and added to each item (Figure 7). Each item was assigned a category from the drop-down list (e.g., Arts Organisations and Institutions, Artistic Community) wherever possible (Figure 7).

Country	Geo Category	Stakeholder	Category	Partner Contact	Note
		AIR Gallery	Arts Organisations and Institutions		https://www.airgallery.space/
		Ars electronica	Artistic Community		https://ars.electronica.art/news/en/
		Arts Council England	Arts Organisations and Institutions		https://www.artscouncil.org.uk/
		Brunel University of London	Academic Community		https://www.brunel.ac.uk/
		RIBA	Arts Organisations and Institutions		https://www.architecture.com/
		Broadcast Solutions UK	Community-Based Organisations		https://broadcast-solutions.de/uk/
		Cost Actions -pan Europe	Community-Based Organisations		https://www.cost.eu/cost-actions/what-are-cost-actions/
		Culture Ireland	Arts Organisations and Institutions		https://www.cultureireland.ie/
		Dance Limerick	Artistic Community		https://dancelimerick.ie/
		Design Declares UK	NGOs and Advocacy Groups		https://designdeclares.com/
		Dublin City Sustainable Energy Communities	Community-Based Organisations		https://www.youtube.com/watch?v=EE_kj6itDc
		Enterprise Ireland	Industry Professionals		https://www.enterprise-ireland.com/en/
		Faillte Ireland	Government and Policy Stakeholders		https://www.failteireland.ie/
		Future Focus 21C	NGOs and Advocacy Groups		https://www.facebook.com/FutureFocus21c/
		Fulbright Commission UK-US	Community-Based Organisations		https://www.fulbright.org.uk/
		IADT, Ireland	Academic Community		https://iadt.ie/
		IDRC, Ireland	Community-Based Organisations		https://www.idrcireland.com/
		IFIP- accessible games	Arts Organisations and Institutions		https://ifip.org/
		Toroto	Community-Based Organisations		https://idrc.ocadu.ca/

Figure 7. Sample Excel spreadsheets populated with web links and categorisation information

This initial information was developed further to include brief explanations e.g., “European hub for digital innovation and sustainability” was added to explain “Amsterdam Science Park”, along with short overviews taken from websites when available. This information was gathered from online research into different organisations listed. 26 items (A to Z) were initially selected to cover different EU regions in the digital maps for prototyping. They were assigned sample tags which were selected by the Brunel team for illustrative purposes only and were taken from keywords found in descriptions of the organisation. These are not suggested tags for future categorisation. As discussed in Next Steps, discussion and refinement on categorisation and tags for mapping is the next step of this process.

Table 1. Sample Items from A to Z

Organisation/ Network	Location	Description and web link/reference	Tags
Ars electronica	Linz, Austria	https://ars.electronica.art/news/en/ More than 40 years after its founding, Ars Electronica is a stage and competition for media art, festival for digital music, showcase for creativity and innovation, laboratory for research and development.	Art Technology Digital revolution
Biobased creations	Amsterdam	https://biobasedcreations.com/ a creative studio that specialises in installations, projects and storytelling about the transition towards a regenerative and circular world.	Biobased Circular System
Cost actions	Brussels	https://www.cost.eu/cost-actions/what-are-cost-actions/ A COST Action is an interdisciplinary research network that brings researchers and innovators together to investigate a topic of their choice for 4 years. COST Actions are typically made up of researchers from academia, SMEs, public institutions and other relevant organisations or interested parties.	Interdisciplinary Research Network
Deveron Projects	Huntly, Scotland	https://www.deveron-projects.com/home/	Deveron Community

		Over 29 years, Deveron Projects has become a socially-engaged arts organisation that embraces internationalism. They work collaboratively with artists and local communities in Huntly to develop a creative programme that's responsive to socio-political issues.	Collaboration
Embassy of the North Sea	Hague	https://www.embassyofthenorthsea.com/ The Embassy of the North Sea was founded on the principle that the North Sea owns itself. Here, the 'voices' of plants, animals, microbes, and people in and around the North Sea are listened to and involved.	North Sea Microbes Political space
Furtherfield (art and technology for eco-social change)	London	https://www.furtherfield.org/ Furtherfield is an arts community which connects people to new ideas, critical thinking and imaginative possibilities for art, technology and the world around us. Through artworks, labs and debate, people from all walks of life explore today's important questions.	Critical thinking Art Technology
Glastonbury Festival	Somerset, England	https://www.glastonburyfestivals.co.uk/ The Glastonbury Festival is a five-day festival of contemporary performing arts held near Pilton, Somerset, England, in most summers.	Performing art Festival countryside
Hervisions	London, England	https://www.hervisions.world/ A femme-focused curatorial agency facilitating online and offline experiences and collaborations with partners to research and produce innovative commissions, exhibitions and events with a strong focus on the intersection of art, technology and culture.	Femme Art, technology and culture Curation
Invisible dust	Scarborough, York	https://invisibledust.com/ A UK-based charity which brings together leading artists and scientists to create exciting works of art and help people connect emotionally with climate change.	Artists Scientist Climate change
Julie's bicycle	London	https://juliesbicycle.com/ A registered charity in England and Wales. A pioneering non-profit, mobilising the arts and culture to act on the climate, nature and justice crisis.	Art Climate Justice
KiKK festival	Belgium	https://www.kikk.be/ International festival of digital and creative cultures, exploring the crossovers between art, science and technology: creative coding, art, web and UX design AI, data viz, storytelling, research, interactive experience, graphic and motion design, VR, XR.	Festival Digital Art, science and technology
LottoZero Laboratories	Prato, Italy	https://www.lottozero.org/ Centre for textile design, art and culture; based in Prato, Italy.	Textile Fashion Italy

More than Planet -EU	Europe	https://www.more-than-planet.eu/ The European project More-than-Planet (2022 – 2025) finds an urgency to re-examine the way people understand and picture the environment on the level of the planet as a conceptual whole, together with partners Waag (NL), Ars Electronica, Northern Photographic Centre, ART2M/Makery, Leonardo/Olats and Zavod Projekt Atol. In collaboration with artists, critical thinkers, and various experts from cultural, environmental, and outer space institutions, the project will address this crisis of planetary imaginary.	Outer space Planetary imaginary artists
NL Space Campus	The Netherlands	https://www.nlspac campus.eu/ The NL Space Campus is an organisation looking at space innovations. It provides an ecosystem, network, facilities, capital, and knowledge to facilitate societal impact through space data innovations and initiatives.	Ecosystem Space Data innovation
Ocean Cleanup	The Netherlands, Malaysia and USA	https://theoceancleanup.com/ The Ocean Cleanup, a non-profit organization, is developing and scaling technologies to rid the world's oceans of plastic.	Technology Ocean clean Plastics
Paint a Future	The Netherlands	https://www.paintafuture.org/ Paint a Future was founded in 2000 by artist Hetty van der Linden. All over the world she paints with children in disadvantaged situations. Renowned artists from dozens of countries are inspired by the children's drawings and literally incorporate such drawings into their own paintings. The paintings are sold, and the proceeds go towards children in disadvantaged situations.	Painting Children Artists
Q Contemporary	Budapest Hungary	https://qcontemporary.com/ Q Contemporary is an organisation which contributes to the understanding and appreciation of contemporary art in Budapest, especially among younger generations.	Contemporary Budapest Younger generations
Roskilde Festival	Denmark	https://www.roskilde-festival.dk/en The Roskilde Festival is a Danish Music Festival held annually south of Roskilde. It is one of the largest music festivals in Europe and the largest in the Nordic countries.	Music festival Nordic Danish
S+T+ARTS	Europe	https://starts.eu/ S+T+ARTS is an initiative of the European Commission, launched under the Horizon 2020 research and innovation programme to support collaborations between artists, scientists, engineers and researchers.	Artist, Scientist, Technology
Transmediale festival	Berlin, Germany	https://transmediale.de/en An annual festival and a platform for critical reflection on cultural transformation from a post-digital perspective.	Festival Digital art Culture

		For over thirty years, one of the leading international events in the field of digital art and culture.	
Ugly Duck	London, UK	https://uglyduck.org.uk/ Ugly Duck is a London-based arts organisation that supports under-represented voices and emerging artists. Established in August 2012, their programme enables makers, community groups, professionals and the public to come together around unique cultural experiences and curated events.	Emerging artists Culture Under-represented voices
VOICE	Europe	https://voice-community.eu/ VOICE is an EU-funded consortium project involving eight partner institutions, operating across academia, industry and arts organisations. VOICE supports artists in developing projects which are artist-led - bringing together a community, forms of technology and through artistic interventions contributing to reducing environmental problems, around target SDGs 11, 12 13 and 17.	Artists SDG Community of Practice
WORTH partnership Projects (EU)	Europe	https://worth-partnership.ec.europa.eu/index_en WORTH Partnership Project is funded by the European Commission, focusing on the competitiveness of Small and Medium-sized Enterprises. WORTH is a European project focusing on bringing designers, SMEs, manufacturers, and technology providers to work together to develop innovative, design-oriented business ideas. The project focuses on lifestyle industries.	SME Business ideas Lifestyle
XR Impact (SDGs)	Europe	https://xrimpact.com/ XR Impact is a non-profit organization that leverages the power of Extended Reality (XR) technologies like Virtual Reality (VR) and Augmented Reality (AR) to enhance human sensory and cognitive capabilities. This is to inspire global action towards the UN Sustainable Development Goals.	Extended reality SDGs
York Mediale (Art, meet the future)	York, UK	https://mediale.org.uk/ Mediale creates transformative arts experiences with a range of cultural partners and technologically innovative artists. They produce work around storytelling and future modelling.	Art Future Culture
ZMAG	Dubranec, Croatia	https://www.zmag.hr/en/ Green Network of Activist Groups (ZMAG) is an organization that brings together organic gardeners, practitioners of applicable technologies and eco-building, permaculture designers, researchers of equitable social models of organization and equal interpersonal relationships, and environmental activists.	Nature Activists Green

A key aspect of D4.1 will be mapping communities linked to the ATSI projects, methodologies used, evaluations and emerging learnings from this work. The pilot projects are underway (WP5) and mapping the communities and organisations connected to these pilots has been included in the prototyping process.

 Project title: RiverSynch spreeberlin.de jakobkukula.com jkukula symbioticlab spree.berlin Jakob Kukula Summary + Target SDG: 6,11,13,17 ATSI Elements Community(ies) - > TU Berlin - BOL & Technical Department > The Embassy of the North Sea > TBA21 Venice - Ocean Space > Community Spore initiative > Motion Lab	 Project title: Greening the Lab - Decarbonising Biomedical Science annadumitriu.co.uk annadumitriuart annadumitriu annadumitriu Anna Dumitriu Summary + Target SDG: 12,13 ATSI Elements Community(ies) - > Brighton and Sussex Medical School (BSMS) and University Hospitals Sussex NHS Foundation Trust > University of Leeds Healthcare Associated Infection Research Group > University of Oxford: Modernising Medical Microbiology	 Project title: Empowering Youth Stewards of Finsbury Park Biodiversity furtherfield.org decal.furtherfield.org furtherfield Furtherfield furtherfield Ruth Catlow Summary + Target SDG: 11,12 ATSI Elements Community(ies) - Finsbury Park community
 Project title: Designing E-textile practice samplers to increase participation in clothes repair touchcraft.org.uk touchcrafttextiles Lucie Hernandez Summary + Target SDG: 12 ATSI Elements Community(ies) - Ealing Repair Cafe	 Project title: Synocene — beyond the Anthropocene marinaestelawainer.com marina-wainer marina_wainer Marina Wainer Summary + Target SDG: 11,13 ATSI Elements Community(ies) - Ulvenhout forest residents	 Project title: World Sensorium: Ireland and Connecting Europe worldsensorium.com gayilnails.net worldsensorium worldsensorium World Sensorium Conservancy Gayil Nails Summary + Target SDG: 11,12,17 ATSI Elements Community(ies) - Community leaders in a forum set in County Kerry

Figure 8. Overview of artists and projects involved in the ATSI pilot scheme

Artist	Communities brought by	Categories	Weblinks						
ATSI	Jakob	TU Berlin - BOL & Technical Department	Academic Community	https://www.tu.berlin/en/					
		Embassy of the North Sea	NGOs and Advocacy Groups	https://www.embassyofthenorthsea.com/					
		TBA21 Venice - Ocean Space	Community-Based Organisations	https://www.ocean-space.org/about/tba21-academy					
		Spore Initiative	NGOs and Advocacy Groups	https://spore-initiative.org/en/					
		Motion Lab	Technology Expert	https://motionlab.net/					
	Anna	Brighton and Sussex Medical School (BSMS)	Academic Community	https://www.bsms.ac.uk/index.aspx					
		University Hospitals Sussex NHS Foundation Trust	Academic Community	https://www.uhsussex.nhs.uk/					
		University of Leeds Healthcare Associated Infection Research Group	Academic Community	https://medicinehealth.leeds.ac.uk/dir-record/research-groups/905/healthcare-associated-infection-research-group					
		University of Oxford: Modernising Medical Microbiology	Academic Community	https://www.expmedndm.ox.ac.uk/modernising-medical-microbiology#:~:text=About,article%20with%20IMPACT%20Journal%20here.					
	Ruth	Felixstone	Community-Based Organisations	https://www.suffolk-park.uk/about-us/felixstone/					
	Lucie	Finsbury Park Community	Community-Based Organisations	https://www.facebook.com/groups/FinsburyPark/?locale=en_GB					
	Marina	Ealing Repaire café	Community-Based Organisations	https://ealingrepaircafe.org/					
		Ulvenhout Forest residents	Community-Based Organisations	https://en.wikipedia.org/wiki/Ulvenhout					
	Gayil	local residents/professionals with an interest in County Kerry	Government and Policy Stakeholders	https://en.wikipedia.org/wiki/County_Kerry					

Figure 9. ATSI pilot projects added to the Excel spreadsheet

4. Visualisation Methods

Different visualisation methods were recommended by the consortium members (within the D2.3 report and through project meetings) for consideration by the Brunel team whilst preparing for the prototyping stage.

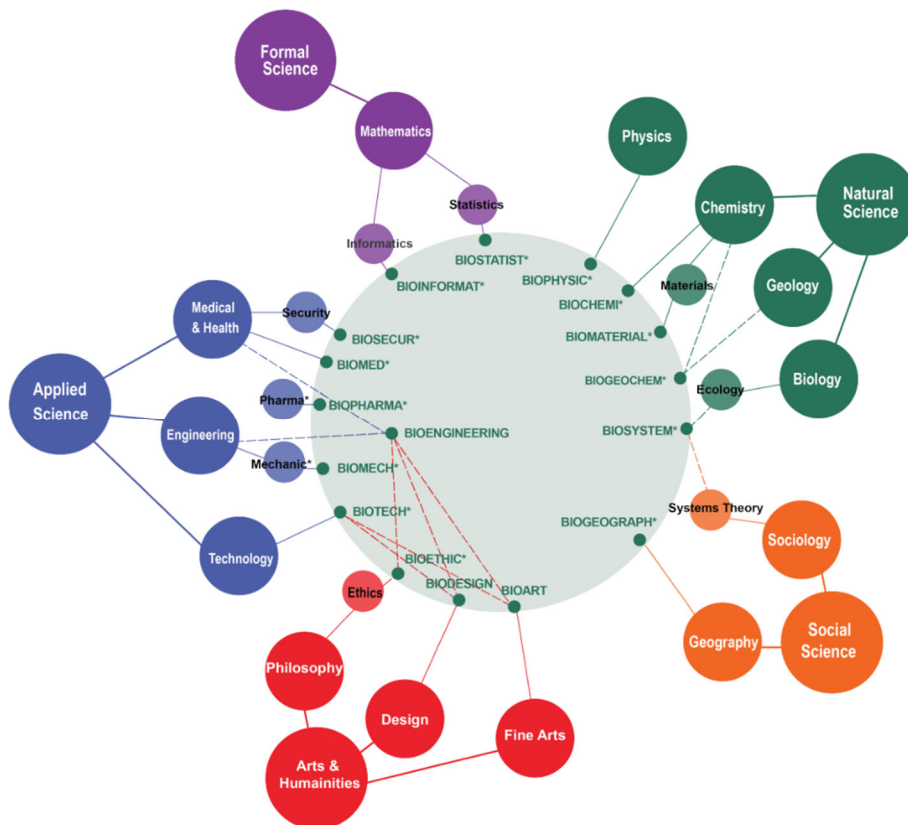


Figure 10. An example of showing networks and connections (Kapsali, 2022)

This map (Figure 10) was designed to offer a framework to show overlaps and connections between interdisciplinary approaches at the intersection of biology and design (Kapsali, 2022). It shows the disciplinary underpinnings of different terms used within these research practices. In this way, it aims to show connections between methods and knowledge - which is part of the aim of VOICE (SO1: Mapping a concern-driven community of practice for strengthening peer-to-peer knowledge co-creation practices).

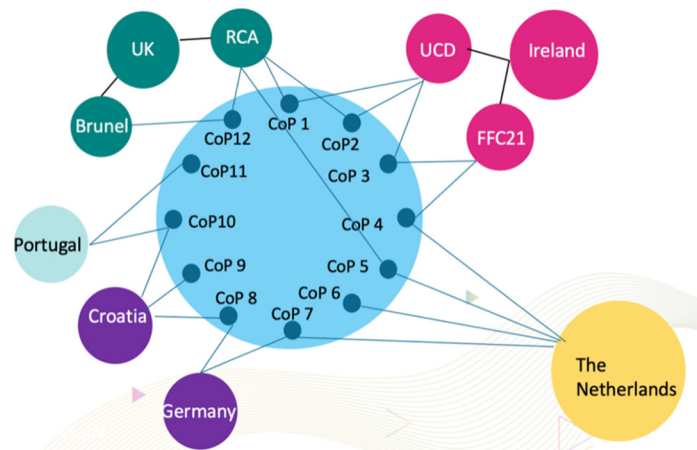


Figure 11. A mock-up map designed by Brunel team

Taking the aesthetic of Kapsali's (2022) map as inspiration, the Brunel team mocked up a version (Figure 11), using data from the pCr data sprint and imagining it as a digital map. In this visualisation the connections among VOICE consortium partners are illustrated by lines. When each partner (shown as circles on the map) is clicked, their digital zone mapping (shown in Figure 5) will appear, showing each partners' network maps produced during an early pCr sprint.

However, in discussions within the consortium it was felt that this approach did not reflect the functionality needed from our own mapping aims. For example, CoPs are not necessarily best represented in nodes, but rather within whole collections of connections.

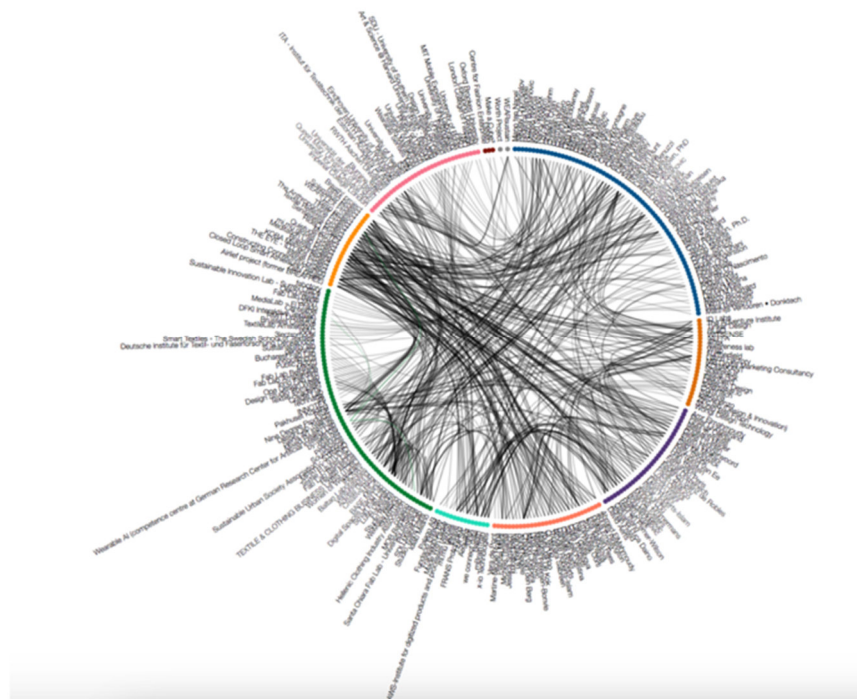


Figure 12. WEAR Sustain edge hierarchy map

This map (Figure 12) was designed by WEAR Sustain project (funded by the European Commission Horizon 2020). This hierarchical edge bundling map was developed to show connections between stakeholders involved in the project. It gained a significant amount of important data and mapped it over a long period of time. As this is likely to be a key part of the functionality of D4.1, this was offered as potential visual inspiration for the VOICE mapping.

This approach visualises and emphasises connections between stakeholders, however the mapping aims for VOICE also require detail and information regarding items within the map - for example, functionality which easily offers insights and knowledge gathered from ATSI projects.

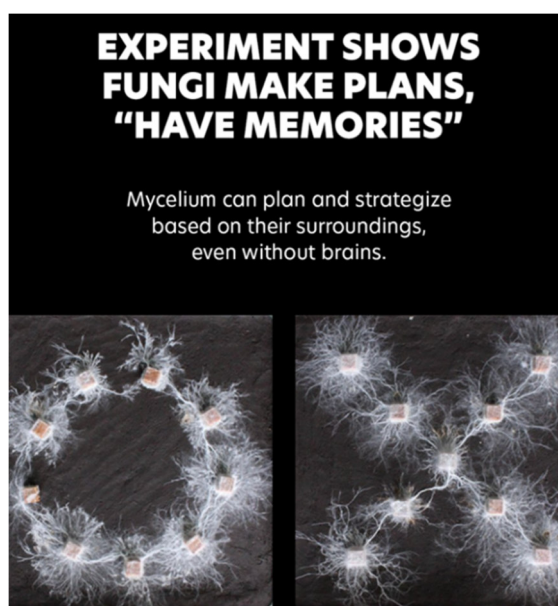


Figure 13. Visualisation inspired by Mycelium (Popular Science Instagram post)

Mycelium networks were referred to within discussions as modelling a useful approach to mapping. Figure 13 shows how mycelium (although rather anthropomorphic) can ‘plan and strategise’ to maximise the network energy around food sources. The full post also explains that “instead of developing randomly, the mycelium grew in deliberate, clearly defined pathways that stretched far from the centre. Researchers theorised that the network determined it was in its best interest to expand most of its energy on places it wasn't already occupying.” This echoes the VOICE project’s aim to expand communities of practice.

Whilst there are various types of mycelium growth, those pictured here represent a rhizomatic approach. This has been a recurring suggestion within the consortium and was also mentioned as a potential mapping strategy within Report D2.3. The metaphorical imagery of this approach also feels well suited to the aims of the project in that mycelium and rhizomatic networks feature many roots and connections which lead to visible signs of the ecosystem both ‘below and above ground’. Our mapping activity likewise aims to show how histories of practice and theory and networks of exchange can support meaningful practice within communities.

With Figures 12 and 13 in mind, the Brunel team explored these potential visualisation methods on the D3 JavaScript library. We concluded that D3-force may be an interesting template to represent a mycelium network approach, whilst D3-chord would be better suited to a hierarchical edge bundling map:

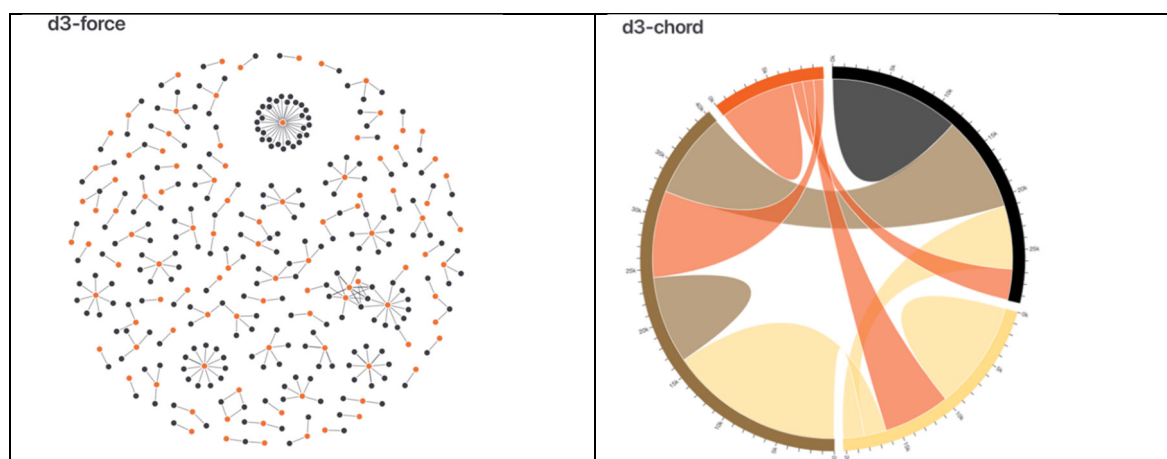


Figure 14. Visualisation using D3 software

The VOICE Consortium also developed a more geographical approach to mapping data. Concept 2 (below) shows the connections among VOICE consortium partners, and when each partner location (shown as circles on the map) is clicked, the digital zone mapping (sample shown in Figure 5) will appear, showing partners' network maps produced during an early pCr sprint.

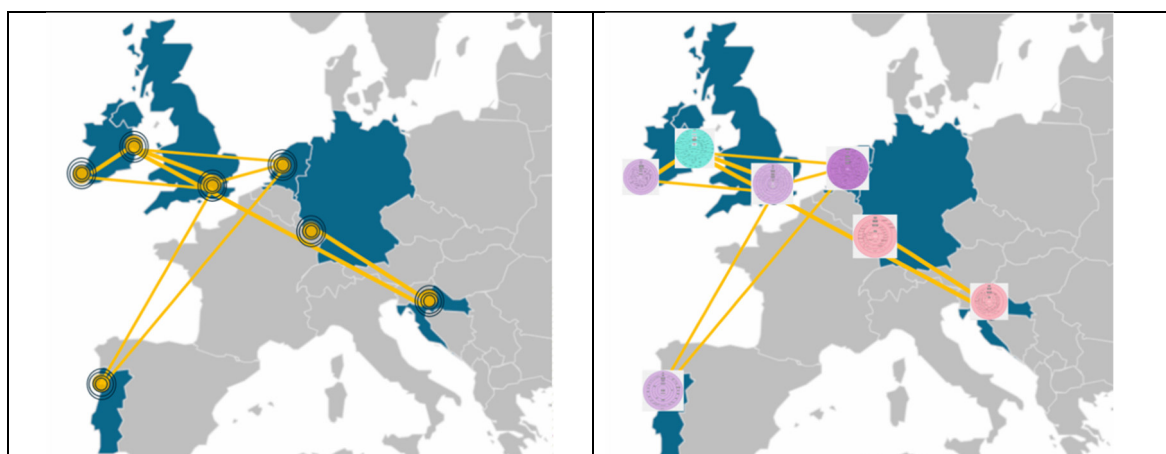


Figure 15. Digital mapping concept 2

Concept 2 (alongside concept 1, shown in Figure 11 above) was shown to the consortium partners. It was not regarded as very useful to the target users (e.g., artists, public) as it failed to offer meaningful detail of networks of interest, so this concept was not developed further.

5. Prototyping

Following on from visualisation methods and discussion with the consortium partners the next step was building digital mapping prototypes. As explained above, we used data gathered from the pCr design sprint. With the data categorised (as explained above), three interactive map prototypes were built.

Interactive map Prototype A

Prototype A shows a geographic map portraying organisations, projects and networks. It was developed using HTML and JavaScript.¹

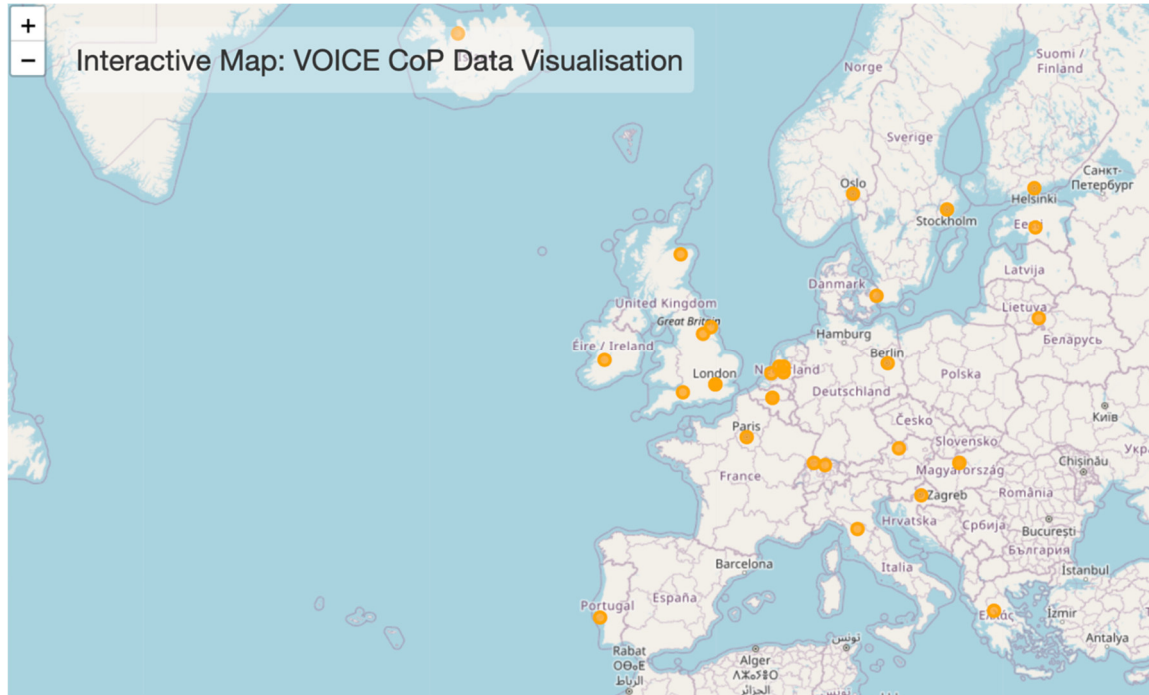


Figure 16. Interactive map Prototype A: Selected data mapped out (as indicated by the orange dots)

The interaction function is achieved through filters (e.g., by country) and pop-up windows upon clicking on each orange node. See Figure 17.

¹ This prototype was developed by Chongbo Ning, a Research Assistant at Brunel University of London.

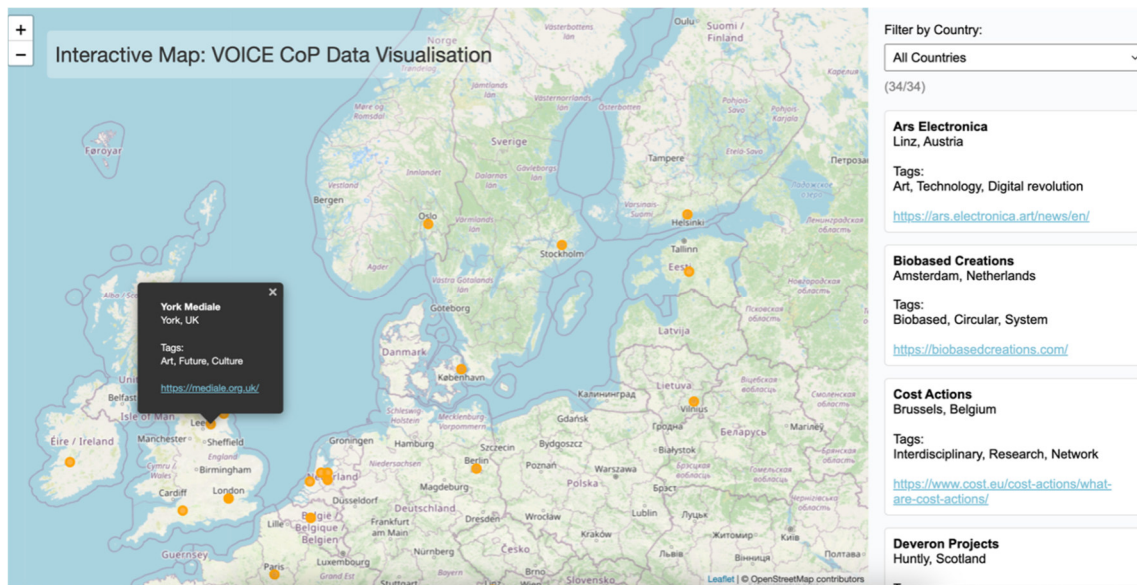


Figure 17. Interaction through searching CoPs by country

When a node point is clicked, a pop-up window will appear (as shown in Figure 17), displaying key information including:

- 1 Name
- 2 Location
- 3 Tags
- 4 Web Link/Reference - a clickable link to access the external resources for further details.

A vector graphic version was explored to improve the visual representation of the map (Figure 18)

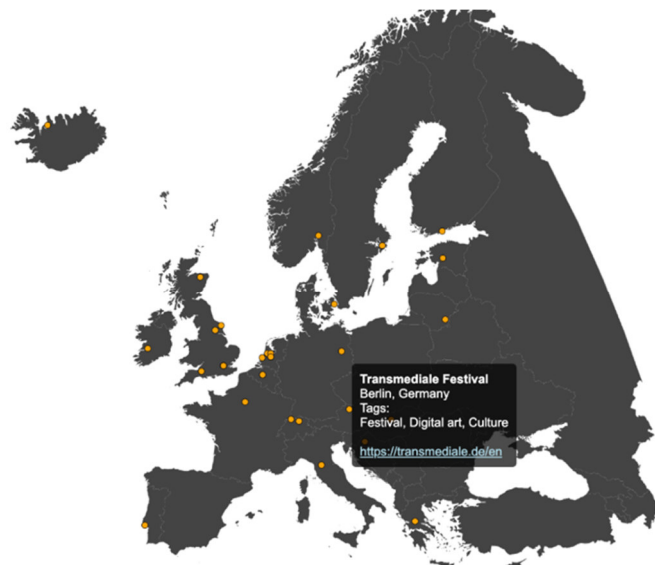


Figure 18. A vector graphic version of the interactive map

Interactive map Prototype B

Prototype B used Figma and also offered an alternative geographic map approach, which filters data according to countries, and tags, and hosts a graphical interface.²

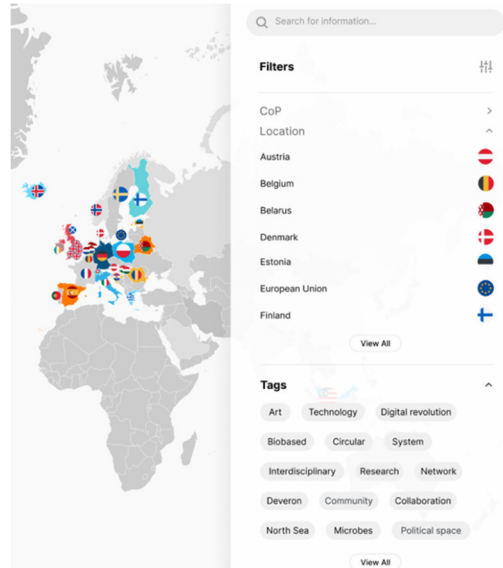


Figure 19. Interactive map Prototype B: Selected items mapped out and filtered by country and tags



Figure 20. Prototype B: CoP pop-up window when clicked

Figure 20 shows the pop-up window triggered by clicking each node. Similarly to Prototype A, information linked to the organisation and tags are displayed.

² Developed by Qing Ni, a PhD researcher and Research Assistant at Brunel University of London.

Limitation of geographic visualisation

The use of geographic information in Prototypes A and B effectively highlights the physical locations of stakeholders, making it intuitive for users to locate regionally relevant resources or networks. However, this spatial focus can inadvertently narrow the scope of interactions and connections, particularly when cross-regional or thematic linkages are critical. Furthermore, many stakeholders or methodologies will not be limited to one geography, and this poses issues on how to include such items on the map. This approach over-emphasises location, whilst the more salient and useful information we wish to highlight – e.g., methodologies, connections between stakeholders or examples of practice, would be largely invisible.

Prototype B's introduction of 'tags' as an additional filtering mechanism represents a step towards addressing this limitation, enabling users to identify those with shared interests or concerns regardless of their geographic location.

Overall, in discussions with the VOICE consortium, it was agreed that a geographic approach to mapping is not appropriate for this project. Instead, we returned to ideas highlighted in the visualisation process (Step 1, above), namely the rhizomatic approach to mapping.

Interactive map Prototype C

Prototype C³ was developed using Obsidian and Figma, inspired by a rhizomatic approach to organising data.

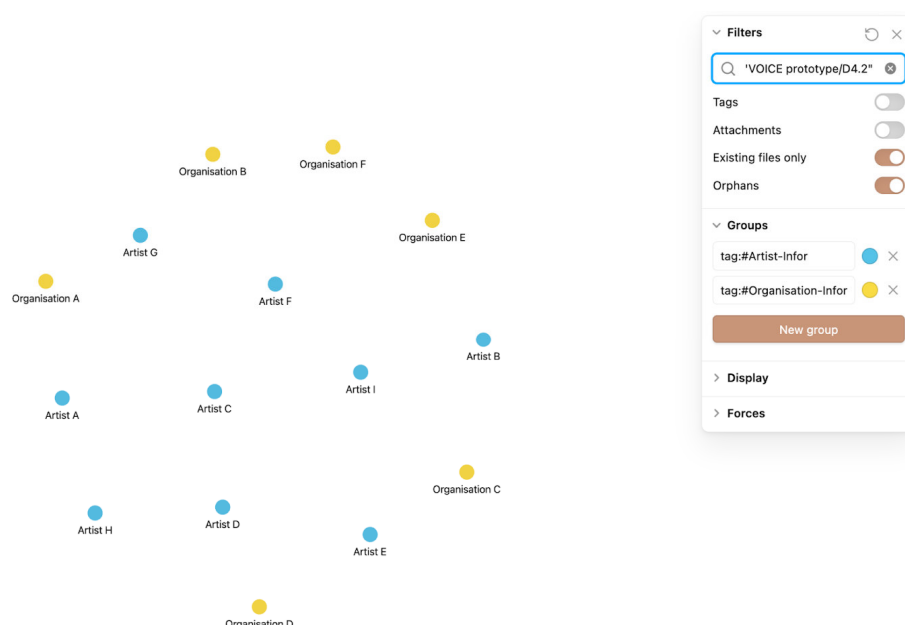


Figure 21. Interactive map Prototype C: Different stakeholders

Each node represents a stakeholder—such as an artist, an organisation, a community, or a more-than-human actor—and they are distinguished by different colours on the force-directed graph according to

³ Developed by Chongbo Ning, Research Assistant at Brunel University of London.

these categories. Stakeholders with shared attributes (e.g., the same location or tags) can naturally form clusters, which may represent a Community of Practice (CoPs).

Clicking on a node redirects to its corresponding page, displaying detailed information. For example: Artist information includes:

- Artist brief
- Location
- Tags

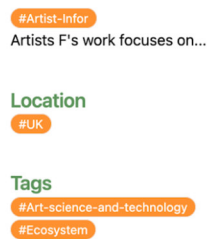


Figure 22. Interactive map Prototype C: Detailed information example of artists

Organisation information includes:

- Organisation brief
- Location
- Tags

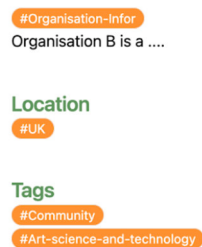


Figure 23. Interactive map Prototype C: Detailed information example of organisations

Enabling the “Tags” display option simplifies the identification of relationships between different nodes on the force map. Clicking on a tag reveals the CoP formed around that tag.



Figure 24. Interactive map Prototype C: Displaying tags and connections between stakeholders

For example, selecting the tag “Art-Science-and-Technology” highlights all stakeholders associated with it, organically forming CoP X.

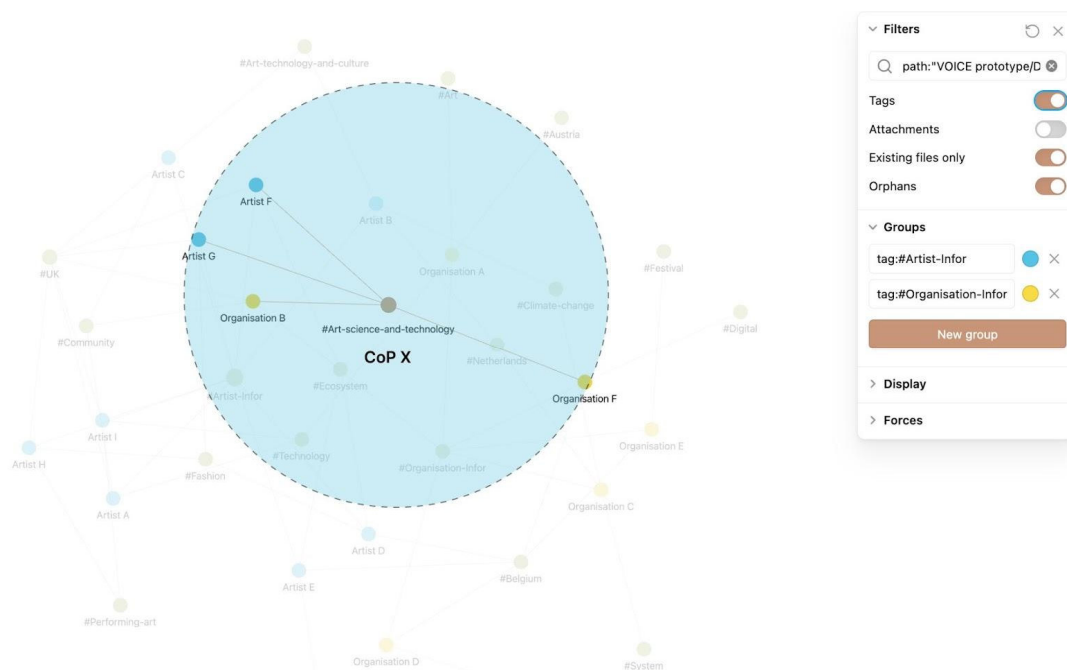


Figure 25. Interactive map Prototype C: An example of CoP X

Limitations of Prototype C

1. Dependence on an existing product: Prototype C is built upon the features of an existing product, Obsidian (a markdown-based note-taking software). While it effectively demonstrates functionalities with the help of the current product, implementing these features from scratch to final results may pose certain challenges. Initial research shows that a similar force-directed graph visualisation can be achieved using HTML, JavaScript, and D3.js. The preliminary idea is to use nodes to represent stakeholders, and use the convex hulls formed by the nodes to represent CoPs. However, further development and testing are required to assess its feasibility and to achieve desired full functions.
2. Manual data import: The test data for the prototype C is manually imported, aligning with Obsidian's typical usage. For future iterations that require automatic data updates, the preliminary idea is to integrate the prototype with a data collection tool and a data management platform. For example, the data we need, like the information of the artists, could be collected through Google Forms, automatically saved to Google Sheets, and then converted into the JSON format. Then, D3.js could fetch this data and visualise an up-to-date interactive graph.

6. Discussion

The development of the conceptualisation framework has highlighted several critical areas for further reflection and action.

A key finding within this process has been understanding how the consortium's understanding of CoPs might be best represented within the digital mapping. In our initial prototypes (A & B) we explored the possibilities of including CoPs as distinct nodes within a geographical context. This approach was largely based on the datasets we were working with (i.e. there was no information about the connections between organisations). However, following conversations within the consortium we reflected that CoPs may be better represented in a rhizomatic map - each node is not a CoP in itself, but sits within a networked system. This is also echoed in the D2.3 report. We recognise that this system of visualisation is better suited to the aims of VOICE and D4.1, however, special attention must be paid to the 'live' nature of the map going forward.

D4.2 provides significant utility for the three other connected deliverables D2.3 (which this report builds from), offering a foundation and resources that can enhance the development and implementation of D4.1 and D4.3. However, a deviation from the original plan is noted: the digital map was not built on a predefined wireframe design – expected from Work Package 3. Such a wireframe would provide a clearer structure and guide the development of the digital map. It is therefore essential to prioritise the creation of a wireframe in the next phase to align with the project's overarching goals and facilitate further progress (outlined in Next Steps below).

Usefully, this development process has uncovered several critical issues that warrant further investigation. Most urgently, refining the representation and categorisation of data included within the map. Questions about user needs and the compatibility of the consortium's CoP definition also require further study. Enhanced coordination between WP3 and WP4 and the development of a wireframe for the living platform are essential next steps to ensure the project's continued progress.

7. Next Steps

Building from the first five steps taken, we propose the following five steps of further work.

Step 6: Discussion and refinement of definitions and categories (i.e. data to be included in D4.1)

The VOICE consortium's definition of Communities of Practice (as outlined in the original proposal) emphasises certain aspects, such as (i) region (ii) structure (iii) year of operation (iv) topics - of concern and challenge (v) projects -if any- (vi) methods, technologies and infrastructures of competence and (vii) methods, technologies and infrastructures of perceived need. How these aspects directly contribute to the structure and utility of the digital map, and how well they align with existing CoP information, remains an open question. This is an evolving project and as we gain insights from ATSI Pilot projects, we need to revisit this definition.

Exactly what information from the project is to be included in the Digital Resource also remains a question. A sample of what this might look like is offered earlier in this document (Figure 3), however this needs to be further clarified, discussed, and agreed with the full consortium.

Finally, current categorisations and tags for the map need to be established with all consortium partners. Categorisations and tags offered here are only illustrative.

The Brunel team will be organising a workshop (or perhaps short series of workshops) to finalise these questions in early 2025.

Step 7: Building a wireframe for testing

This was initially planned to take place before the conceptualisation framework, however more input from the ATSI pilots was required and these two deliverables were swapped around. Initial planning for the wireframe suggests that 'the wireframe take the form of a rhizomatic web design', with many 'roots' supporting the growth of many different living forms which intersect and inform each other over time: this seems most informative and representative of the VOICE network. Each new artist-led intervention would then be visualised in relation to the others, highlighting influences that came before and showing the impact on others as well as how the image/network grows over time. The data from VOICE needs more than a static map on the web, more than a standard database. It needs a living system visualised as such. Therefore, we propose developing a sustainable digital map on Raspberry PI's, connected and held externally to any individual partner's cloud server, with sustainable levels of energy consumption in mind (to align with our ecosystem approach and concern for the environment) as well as endurance of our work beyond the VOICE project itself. With such a dynamic map we would seek to ensure the longevity of our findings and thus to best support future EU projects, so that colleagues in the future will not need to 'reinvent' the wheel.' (from D2.3 report).

The wireframe will be developed by UCD with input from Brunel and the rest of the consortium with a new deadline of February 2025. It will be crucial in supporting the user workshops (Step 8).

Step 8: Inclusive Design workshops with stakeholders / users

Understanding user needs and expectations is crucial for determining the ultimate functionality and interactivity of the digital map. A user-focused study should be conducted to gather insights on desired features, usability, and potential use. This is a key aspect of the inclusive design approach taken within the VOICE project.

In the VOICE project, six artists have been selected to participate in the art-technology-society pilots, and more are soon to be selected for the main ATSI projects. Their needs for, and perspectives of, the interactive mapping, and the medium and longer-term conceptualisation framework will be captured through interviews, which will also be key to the development of D4.1.

These inputs will inform the design of the interactive resource (D4.1) and the digital repository (D4.3) to ensure that they are both functional, accessible, and responsive to user demands now and into the future.

These workshops will take place following the completion of the wireframe, between March - May 2025.

Step 9: Discussion and feedback with VOICE Consortium

Following user workshops, we will report back to the VOICE Consortium on findings and gather feedback. This feedback will allow us to begin building the Digital Resource. This session is due to take place in June 2025. Further data to be collected and included in the map will also be gathered at this phase.

Step 10: Iterating, developing and building for D4.1 (published in Month 28)

Building and developing D4.1 will likely require multiple drafts and tests ahead of its final publication in April 2026 (Month 28). This will be carefully managed by the Brunel team, with support from the broader VOICE consortium.

Conclusion

Overall, this report outlined the short-medium-long term aims of the VOICE conceptualisation framework and detailed the step-by-step development of a set of digital mappings for the VOICE project. The report describes the creation of three interactive digital map prototypes (A, B and C) which demonstrate the potential to visualise networks of knowledge.

The next phase of the project will focus on planning the subsequent deliverables (e.g., D4.1), and ensuring close coordination with Work Package 3 (WP3) to maintain alignment across related efforts. A key priority will be engaging with stakeholders to gather their insights and feedback on the digital map and the envisioned future Digital Resources. This interaction will help refine functionalities and ensure that the final outputs meet both the VOICE consortium's aspirations and diverse user needs effectively. Regular meetings with all consortium partners will also be established to clarify tasks and responsibilities, promote collaboration, and address any challenges arising. These meetings will allow for adjustments to the project plan as needed, ensuring the successful completion of all deliverables and the long-term sustainability of the project's outcomes.

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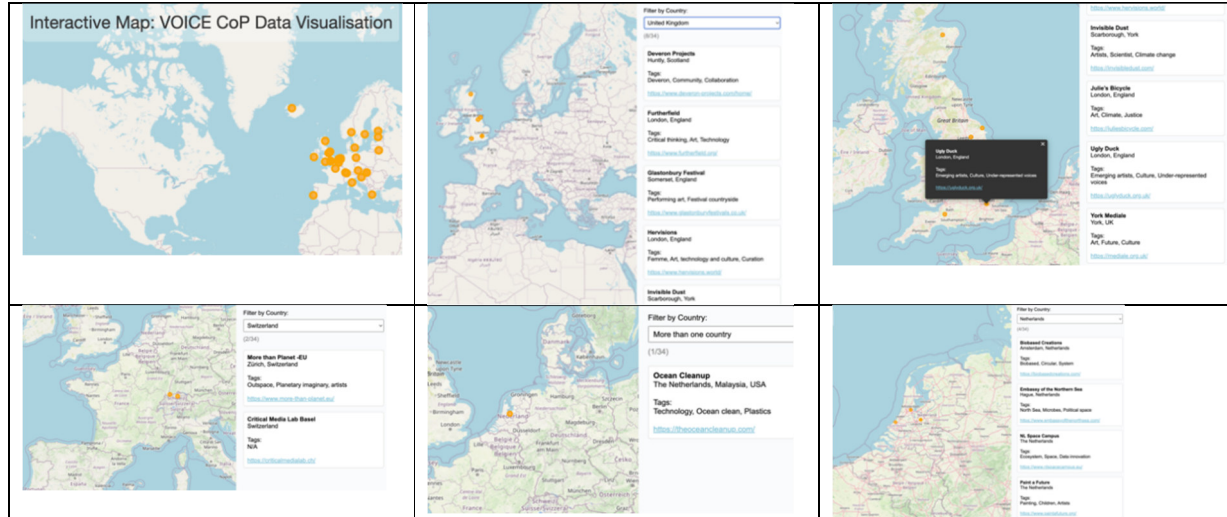
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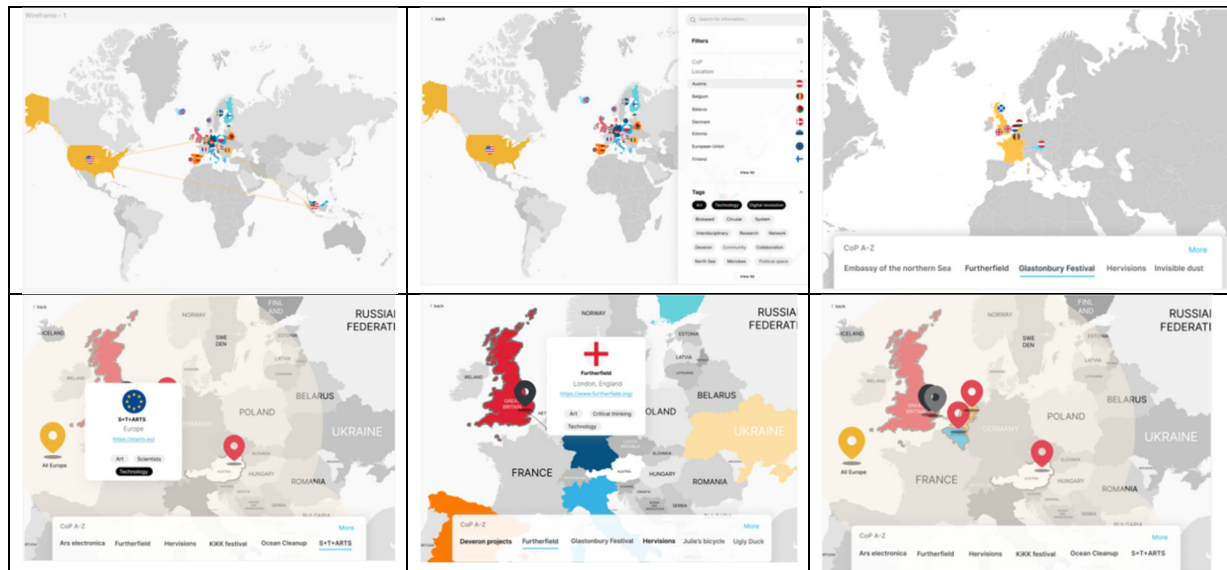
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Annexes

Screenshots of Prototype A



Screenshots of Prototype B



Screenshots of Prototype C

