



D2.1 Mixed-Media Research Corpus

*A short-list of cultural sources for horizon scanning
on human-waters relations*



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1. Introduction

In contribution to the European Union Mission Restore our Oceans and Waters by 2030¹, FLOW studies young generations' relations and engagement with oceans and waters². Through the FLOW project, our research hopes to gain better insights into how European youth **shape and hold their expectations** about the futures of oceans and waters, and the **relations, values and emotions** they exhibit when considering the present and future states of our waters.

FLOW aims to achieve this by providing strategic foresight research on the human-water relationships of young generations. One central task of this foresight study is to conduct horizon scanning research.

Within the FLOW project's work package 2 (WP2), horizon scanning research activities focus on changing human-water relations by examining a variety of cultural sources for novel signals, drivers of change, popular and peripheral expectations, and hopes and fears of younger generations. As a central part of the horizon scanning, signals are collected through various modes of research. Signals are understood as small pieces of information, data, representations, and other knowledge artifacts that introduce or discuss a little known topic that is indicative for change. In an iterative process, researchers of the consortium and members of FLOW's Youth Advisory Board (from July onward) identify signals from cultural sources (books, music, movies/series, artworks, social media channels as well as educational, religious/spiritual, leisure and occupational activities), which portray or enact human-water relations.

This deliverable outlines how and why signals are identified and provides a list of those streams for relevant cultural sources that will be followed throughout the horizon scanning composing the project's Mixed-Media Research Corpus (D2.1). The subsequent analysis of signals and discussion of findings will be described in a later report (D2.3).

2. Horizon Scanning

Horizon Scanning is an approach to detect, identify, gather and organize signals that provide insights into possible developments and change processes³. As a foresight method, it supports widening our perception towards a richer spectrum of possibly emerging changes. It involves searching for signals, evaluating, and making sense of them. Signals are data or indications that may be weak or strong, hidden or already known. If signals for developments stabilize over time, they can establish a medium- to long-term trend or megatrend⁴. In particular, **Horizon Scanning systematically opens our view for "weak signals", i.e., changes from the fringes of current attention, which is often dominated by attitudes and perspectives of today's or even yesterday's generations or hidden by the mind-sets, attitudes and biases of those engaged in searching.**⁵ Key aspects of Horizon Scanning are challenging biases

¹ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/restore-our-ocean-and-waters_en retrieved: 07.06.2023

² www.flowhorizon.eu

³ Cuhls, K. E. (2020). Horizon Scanning in Foresight—Why Horizon Scanning is only a part of the game. *Futures & Foresight Science*, 2(1), e23.

⁴ Amanatidou, E., Butter, M., Carabias, V., Könnölä, T., Leis, M., Saritas, O., & van Rij, V. (2012). On concepts and methods in horizon scanning: Lessons from initiating policy dialogues on emerging issues. *Science and Public Policy*, 39(2), 208-221.

⁵ Rossel, P. (2012). Early detection, warnings, weak signals and seeds of change: A turbulent domain of future studies. *Futures*, 44(3), 229-239.



that structure perception. Assessing signals in regards to their “anticipatory assumptions” about the future⁶.

Signals can be collected in different ways, as outlined by Hines et al. (2019)⁷, but there are some general procedures that apply in any Horizon Scanning activity. The first step is the formation of a scan team under competence and diversity aspects. This scan team develops a search strategy taking into account (partially) automated approaches, conceptual systems, interviews with thought leaders, suitable sources and addressing biases. The search strategy is operationally prepared by setting up the scanning infrastructure (especially IT tools) and defining scanning processes (including web scraping tests). Optionally, a connection to existing knowledge management systems can be made. Depending on the phenomena under investigation, methods to compose a collection of signals may consist of interviews, literature reviews or fringe source analyses. In general, we can differentiate between two modes: **conditioned viewing with sensitized areas of concern** and **searching with detailed search goals**.⁸ The former may entail a crowdsourcing-like, open and collaborative approach, i.e. a group of people with different perspectives who together collect signals on a specific topic based on their personal judgement. The latter can consist of applying an operationalized search strategy to structure the signal collection.

Another increasingly important approach to collect signals is to screen large amounts of sources both structured (e.g. patent databases or scientific papers) and unstructured (e.g. social networks or news sites) with automatized algorithms that use Natural Language Processing (NLP) to find patterns of change (topic modelling)⁹.

In the actual scanning process, signals are captured and assessed by the scan team. Some signals are selected to be "candidates" for follow up research, given their applicability to the knowledge interests of the project. These signals are often organized according to pre-defined criteria, though new criteria may also emerge during the scanning and signal assessment processes.

Whatever method is used to collect signals, the identification of potentially emerging changes will always have to involve a sense-making process where diverse actors co-construct what the signals mean¹⁰. Participatory sense-making is essential to formulate emerging issues from the multitude of signals, and its strengths are founded on the identification of diverse and inclusive stakeholders that lend a multiplicity of perspectives to the sense-making process. Signals are related to each other and bundled into topic clusters. Emerging issues are anticipated and their implications are assessed with regard to the research interest, their opportunities and risks. Optionally, in-depth studies can be conducted on individual topics relevant in terms of future developments.

3. Horizon Scanning in FLOW

Through a Horizon Scanning FLOW aims to collect, organize and analyze signals on human-water relations. This allows us to develop a forward-looking perspective. The Horizon Scanning's scope is

⁶ Könnölä, T., Salo, A., Cagnin, C., Carabias, V., & Vilkkumaa, E. (2012). Facing the future: Scanning, synthesizing and sense-making in horizon scanning. *Science and public policy*, 39(2), 222-231.

⁷ Hines, P., Yu, L. H., Guy, R. H., Brand, A., & Papaluca-Amati, M. (2019). Scanning the horizon: a systematic literature review of methodologies. *BMJ open*, 9(5), e026764.

⁸ Choo, C. (2001), Environmental scanning as information seeking and organisational learning. *Information Research*, 7(1).

⁹ Tsakalidis, A., Boelman, E., Marmier, A., Gkoumas, K., & Pekar, F. (2021). Horizon scanning for transport research and innovation governance: A European perspective. *Transportation Research Interdisciplinary Perspectives*, 11, 100424.

¹⁰ Aaltonen, M. (Ed.). (2007). *The third lens: Multi-ontology sense-making and strategic decision-making*. Ashgate Publishing, Ltd..



clearly focused on relational aspects. This is a rather untypical scope for Horizon Scanning, which often focuses on clearly defined domains such as technology. To cope with this challenge, the horizon scanning in FLOW merges multiple different data sources and search strategies for collecting signals.

3.1 Guiding hypothesis and approaches

The most important set of data to scan for signals on human-waters relations is constituted by cultural sources. **This search strategy builds on the hypothesis that human-waters relations, especially within the young generations, are both portrayed and enacted by cultural expressions, practices and products.**¹¹ Thus, our hypothesis consists of two assumptions:

- (1) Cultural sources, such as literature (e.g. books, magazines), games or movies, present a particular alertness for change. They depict signals that are potentially (trans-)formative for human-water relations (culture as description).
- (2) Cultural sources inspire and support the shaping of human-water relations. They enact relationship types, values, emotions, expectations, hopes and fears (culture as inscription).

The scanning of cultural sources is implemented along different streams. Streams help to search for signals along two criteria: media type (e.g. books) and indicator-based category (e.g. popular). The combination of these two criteria makes up a stream (e.g. popular books).

3.2 Search strategy for cultural sources

The search strategy and categorization evolve iteratively with the collection of potential sources for signals. **The starting point is a collaborative, open scanning process.** In this phase, the scan team composed of researchers and assistants of the FLOW consortium starts to gather signals that are deemed relevant from a personal point of view (cf. conditioned viewing with sensitized areas of concern on p. 4) and record them in a collaborative database. Relevance is assigned based on the following three questions:

- Can this be considered (part of) a cultural expression, practice or product?
- Is this about humans' relations to oceans, rivers, lakes, water?
- Is it plausibly reaching the young generations or is it even shaped by young voices?

When capturing a signal, researchers provide the following information:

- Title for signal
- Description
- Media type
- Reason to include
- Relationship type categorization
- Additional information in regard to authors, links, specific age-groups and more

In parallel to the open scanning, results from the work in WP1 are used, especially from the Open Access transdisciplinary dataset, namely the FLOW Encyclopædia (D1.1)¹² and the inFLOW lens (D1.2). These provide **key literature, concepts, theories and data, which are integrated into the pool of potential sources to screen for signals.**

¹¹ A theoretical grounding of this hypothesis will be developed in a later working paper (D2.3).

¹² Mashiur, Z., Borit, M., van den Born, R. J. G., van Heel, B. F., Jónás, K., Priebe, M., Rosa, A., Warnke, P., (2023). FLOW D1.1. Open Access Transdisciplinary dataset: FLOW Encyclopædia. Zenodo 10.5281/zenodo.8068069

As the database grows, categories are developed inductively and assigned to each signal. Among other categories that were developed, an important differentiation that can be made is between **popular vs. fringe signals**, which provides a more structured way of scanning. While the former accounts for signals taken from cultural sources that are relevant because they have a large reach, the latter are important since they stem from avant-gardist lead-user¹³ or expert sources¹⁴, or because they address a bioregional niche topic. Table 1 depicts this categorization.

Table 1 Categories and indicators used to structure the emerging signal collection. These categories were used to develop the streams included in the Mixed-Media Research Corpus (p. 7).

Category	Indicators
Popular Signal	<ul style="list-style-type: none"> – Bestseller list – High number of views – Rankings – Award and prizes
Fringe Signal	<ul style="list-style-type: none"> – Observation by lead user – Observation by field expert – Credible curation – Bioregional content

The created categories are combined with each other to develop streams that guide the search for specific cultural sources. Streams help to focus attention of the scanning activity on specific sources (cf. searching with a detailed search goal, on p. 4).

4. Mixed-Media Research Corpus

In parallel to the scanning and fine-tuning of the search strategy, the Mixed-Media Research Corpus takes shape (figure 1). **The Mixed-Media Research Corpus is a comprehensive and dynamic list detailing the streams of cultural production that we scan for signals.** It assures that signals are collected in a structured and issue-related manner of signal collection, while providing the flexibility to adapt and appropriate criteria throughout the Horizon Scanning in WP2. As a dynamic list of streams of cultural production, the corpus will also be shaped by the Youth Advisory Board (from July 2023 onward). Its members will rank the streams under observation based on how well they know the streams (e.g. not known, heard of it, well known), eventually add streams and contribute signals through observing streams.

¹³ Here understood as people that are indicative due to their early adoption of, or consistent engagement with, emerging phenomena in a certain field.

¹⁴ Here understood as field experts that may present a credible source on emerging changes due to their professional perspective and activities surrounding the topic.

Developing the Mixed-Media Research Corpus

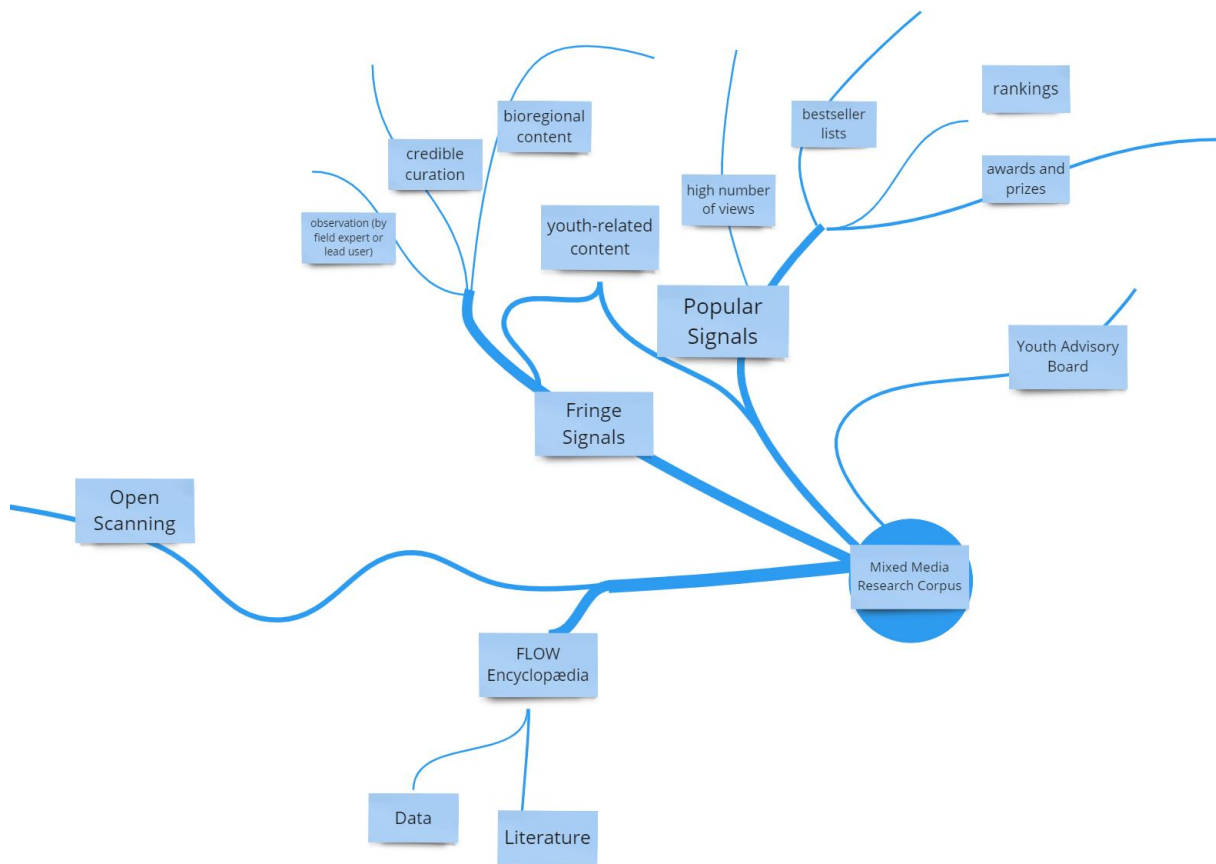


Figure 1 The Mixed-Media Research Corpus is first constructed inductively on the basis of categories emerging from the open scanning. These categories are then combined to define streams which are to be scanned. The list of streams constitutes the corpus. In the corpus, all signals are categorized and connected a stream.

4.1 Streams in the Mixed-Media Research Corpus

The current version of the Mixed-Media Research Corpus comprises of the following 33 streams, as listed in Table 2.

Table 2. Mixed-Media Research Corpus

#	Stream	Media	Popular	Fringe
1	Literature on human-waters relations from bestseller-list	Books	x	
2.	Literature and or news articles with bioregional content on human-waters relations	Books/ News articles		x
2.1	Black Sea			x
2.2	Mediterranean Sea			x

2.3	Bay of Biscay, Iberian Coast, Macaronesia			x
2.4	North Sea			x
2.5	Baltic Sea			x
2.6	Arctic			x
2.7	Inland			x
3	Literature by field experts on human-waters relations	Books		x
4	Avant-gardist, niche books on human-waters relations	Books		x
5	Video games with a high ranking on gaming platforms (steam, ps)	Video games	x	
6	Niche video games on human-waters relations	Video games		x
7	Popular TikTok influencers on human-water relations	Social media	x	
8	News articles on legal status of seas and waters	News articles	x	
9	Movies on human-waters relations with prizes and awards	Movies	x	
10	Institutional art projects on human-waters relations	Art projects	x	
11	Movies on human-waters relations in production in 2023 (imdb)	Movies		x
12	Most downloaded songs on human- waters relations (spotify)	Music	x	
13	Episodic Children's Programming (Series)	Serial Program		
14	Episodic Young Adult Programming (Series)	Serial Program		
15	Single exhibition pieces in museums, galleries, fares or alike on human-waters relations	Exhibition		x
16	Large exhibitions in museums, galleries, faires or alike on human-waters relations	Exhibition	x	
17	Popular sea-food trends in 2023	News articles	x	
18	Research on future food from waters	Research articles		x
19	Popular sports and leisure activities on, in and by the water in 2023	News articles	x	
20	Social movements engaged with human-waters relations	News articles		x
21	Fashion that portrays or mimics under water life	Fashion catalogues		



22	Toys that show human-waters relations	Toy catalogues		
23	Exhibits in zoos, aquaria, or a like on human-water relations	Exhibition	x	
24	Documentaries on (aquatic) nature, ranging from wonders of nature to environmental issues	Documentaries	x	
25	Human-water relations used in marketing	Commercials	x	
26	Board games on human-waters relations	Board games		x
27	Analog games with high ranking on games platform (Boardgamesgeek.com)	Games	x	
28	Live Action Role-Playing Games (LARPs) including human-water relations	Games		x
29	Most-played mobile phone games by player count on human-waters relations	Games	x	
30	News from religious/spiritual entities (e.g., The European Christian Environmental Network of the Conference of European Churches; The Islamic Foundation for Ecology and Environmental Sciences; LM International)	News articles	x	
31	News from education entities (e.g., European Marine Science Educators Association) on aquatic ecosystems	News articles	x	
32	Educational curriculum content on aquatic ecosystems	Curriculum on selected countries	x	
33	Socio-technical imaginaries and visions in blue economy	Advertising	x	

Continuous scanning of these structured streams allows for gathering relevant signals for the collection and limits the influence of personal biases in the selection process. The signal collection that arises from the scanning based on the corpus can be complemented by additional streams.

4.2 Additional streams

To ensure that the cultural sources identified are meaningful to the young generations, feedback is provided by the Youth Advisory Board (from July 2023 onwards). This board consists of 14 young people from 18 to 29 years from seven different regions in Europe. The board is diversified regarding gender as well as cultural, geographical and social positionality. **Members of the Youth Advisory Board provide feedback on, contribute to and rank the cultural sources scanned.** Thereby they support (de-)prioritizing cultural sources and identifying signals.

While this focus on culture provides the fundamental base for FLOW's horizon scanning, it is not a rigid structure. The search strategy is flexible towards adapting and appropriating other sources. **Continuous topic modeling performed on an international news database (News API) provides additional sources for identifying signals.** This approach allows for scanning large sets of news articles and semi-



automatically develops topics that align with human-waters relations. This does not necessarily widen the scope of horizon scanning in FLOW but broadens the pool of data from which to identify signals. It allows integration of signals that are not merely based on cultural sources, but also consider other fields such as economics (e.g. blue economy).

Horizon Scanning Collecting Signals of Youth-Water Relations from Cultural Sources

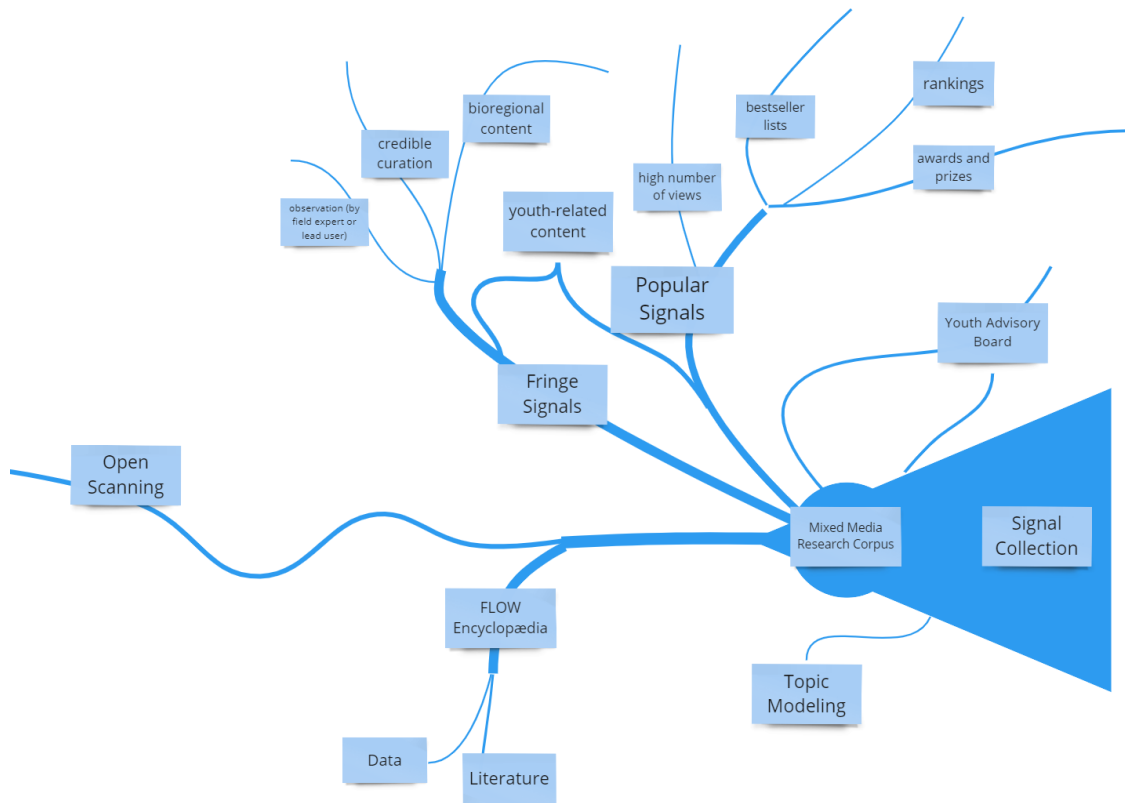


Figure 2 Cultural sources are scanned along the streams provided in the Mixed-Media Research Corpus. If deemed relevant (see p. 5) it qualifies as a signal and is added to the database (signal collection).

5. Insights into the preliminary signal collection

At the time of developing the Mixed-Media Research Corpus, the preliminary collection lists 116 signals. A snapshot of the list (figure 3) provides insights into the ongoing work of collecting and organizing the signals in a collaboratively shared database. Figure 4 depicts the current distribution of media types in our signal collection.

#	Title	Description	Selection reasons (quality)	Category type of relationship portrayed	Media type	Region	
10	Marine geoengineering	Marine geoengineering is defined as 'a deliberate intervention in the marine environment to manipulate natural processes, including t...	observed by lead users	stewardship, pollution	Video series, Exhibition	Global	
11	SAFE: A collection of works exploring safer futures	These 10 projects, created in response to 10 LRF-supported research projects, are rooted in real-world test cases and near-future trend...	observed by lead users	climate change, multi-species, more than human	Video series, Exhibition	Global	
12	The Legal Rights Of Rivers	Rivers in New Zealand, Australia, India and Colombia have all been granted legal rights recently. Environmental law expert Dr Erin O'Do...	observed by lead experts	more than human	Podcast/Interview	Global	
13	Mar Menor gets legal rights as a 'person'	Mar Menor Bay in Spain. Polluted. Ecological Problems. Now thanks to civil society action and pressure Parliament grants new status...	observed by lead users	stewardship, more than human	Law / Legal text	Spain, Medi	
14	Publishing House and Art installation 'The Consol...	Reading group: Environment conceived by David Bergel and guests for reading and writing in the proximity of others, inspired by bytka	observed by lead users	stewardship, diversity culture	Podcast, Publishing etc.	Greece, Ital	
15	Fishing with Khazane 'Khaby' Lama TikTok Influencer	apparently most followed person on TikTok. Born 2000 Sengalese-Italian	number of downloads, text, video	influence	Content creator	Global, 80N	
16	Sustainability Influencer Agency 'The earth issue'	Ocean Resources Films, young creative activists.	number of downloads, text, video	influence, content, interaction/activ	Podcast/Interview, Website	Global	
17	Seawalkers	Children-book. Popular novel series in which protagonists can shift shapes from human to animal	number of downloads, text, video	stewardship, multi-species, more than human	Book	German-sp	
18	Abzoi (and potentially other games)	Abzoi is an adventure video game developed by Giant Squid Studios and published by 505 Games for PlayStation 4, Windows, Xbox On...	number of downloads, text, video	multi-species, ocean threat	Video game	Global	
19	The swarm (der Schwarm)	The Swarm (German: Der Schwarm, translated in 10 other languages) is a science fiction novel by German author Frank Schätzing. It...	number of downloads, text, video	more than human, nature bites back	Book, Book review	Global	
20	Extrapolations	Human non-human conversations with a translating device in a underwater lab. "Extrapolations" is a braiding drama from writer, direc...	number of downloads, text, video	more than human	Movie/series	Global	
21	Terra Nil	"Terra Nil is an intricate environmental strategy game about transforming a barren wasteland into a thriving, balanced ecosystem. Bini...	number of downloads, text, video	stewardship, restoration, pollution, conservation, technology	Video game	Global	
22	How to make an Ocean	Installation art	observed by lead users	memory culture, content	Exhibition	Global	
23	Monstrous ED-Moby Dick as an AI Model	Monstrous is a contingent, improvised performance, lecture and creative experience which will incorporate music, poetry and discussi...	observed by lead users	collaboration, technology	Performance	Europe	
24	'Historic moment' for nature as Europe's first wild r...	Guardian Article	number of downloads, text, video	collaboration	Article	Albania	
25	Futures Images of humans from 12 to 17 and 18-2...	Humanism Way Of Future if one thinks it over, then the year 2000 is farther from us than 2040. The time flies extremely fast. Minute...	youth-centred con...	stewardship, future image	Website	Focus on G	
26	Talk to me about Water- Activist Group	Talk to Me About Water is a playful practice to expand conversations about global water issues.	observed by lead users	activist	Group	Mainly US	
27	The Optician of Lampedusa: A Novella Based on a T...	Novella based on a true account of an optician who encountered migrants on a capsizing boat near Lampedusa, and how he rescued s...	observed by lead users	inquiries, activist	Book	Italy, Medi	
28	Water as a topic in "Sendung mit der Maus"	Recently, one of the most popular children series in Germany "die Sendung mit der Maus" has opened a dedicated section on water or...	number of downloads, text, video	stewardship, pollution, ocean threat, conservation	Movie/series, Website	Germany, A	
29	Avatar 2 Ways of water.	Bloodbutter, especially popular with youngsters. Interesting, the sea people depicted in the movie were inspired by ethnographic work...	number of downloads, text, video	collaboration, more than human	Movie/series	Global	
30	Radical Ocean Futures	This project is founded on the belief that sometimes science fiction might succeed where scientific papers fall short. It blends art and sc...	observed by lead users	stewardship, multi-species, more than human, ocean threat	Podcast, Web, etc.	Sweden, Sc	
31	3 Tage am Meer	the sea as a place of longing ("for finding yourself")	number of downloads, text, video	sea as a place of longing	Book	German-sp	
32	In der Natur	humans do not fit into nature	number of downloads, text, video	nature bites back, nature-culture divide	Book	German-sp	
33	Youth literature section in Berliner library	I found book series like Rick Nautilus and Ocean City for the younger and books for teens and older like Im Meer schwimmen Krokodil...	number of downloads, text, video	inquiries, content, activist	Book	Global	
34	New Eels for the Spree river	more than 2 mio Eels were set free in the Spree river around Berlin after they were caught around a French estuary flowing into the At...	interregional content	conservation, eco-system management	Article	Rivers arou	
35	Rewilding Europe	is a European network. "Rewilding is a progressive approach to conservation. It's about letting nature take care of itself, enabling natur...	interregional content	observed by lead users	stewardship, more than human, restoration, eco-system manage...	Documentary	Danube arc
36	Revival of Guinguette (French River Beach Bars)	Today guinguettes are objects of nostalgia. The guinguettes were marvelous places to return to lighter times during the Années folles	subjective observation	eco-calm and beauty of waters	Podcast/Interview	France	
37	Our Planet	Documentary series created in collaboration with WWF and Netflix. "Our Planet shows the wonders of nature as we are all a part of the...	number of downloads, text, video	climate change, conservation, eco-system management	Documentary	Global	
38	Underwater protest by Shaama Sandooyeva	The Climate advocate and scientist Shaama Sandooyeva holds a placard reading "Youth Strike For Climate" during an underwater protest in t...	observed by lead users	climate change, activist	Podcast	Mauritius	
39	Ich im Wasser, das Wasser in mir	20 young people from Berlin and from the local area in San Luis Potosi, Mexico are dealing artistically with the topic of water through a...	observed by lead users	experimental	Art project	Germany / I	
40	Dip in the waters of the river Main - Diversion Exhibi...	The river is a key protagonist in the planetary water cycle—channeling earth's circulation of water from mountain to brook, from ocean...	subjective observation	observed by lead users	stewardship, experimental	Art project	Frankfurt ar
41	A short message from AHWE KEHATNE (The Water)	This artist newspaper, edited by Asad Raza and Mathew Hale, accompanies a new work by Raza of the same name, which redirects the	observed by lead users	interregional cont...	Art project	Global	
42	Vases – een avontuur op Salina (fishes - an adventi...	Book by Joost Oomen, about an artist residency at Salina. Where Joost Oomen writes a poem for fishes	observed by lead users	more than human	Book	Mediterran	
43	Jonke waterwisker ("youth waterwisker")	'Youngsters' vision on water, written by a (young) climate organisation in NL.	observed by lead users	climate change, activist	Article	Netherlands	

Figure 3 Snapshot of collaboratively edited list of signals, their description, selection reason, category of relationship, media type and region. For more details, see appendix 1.

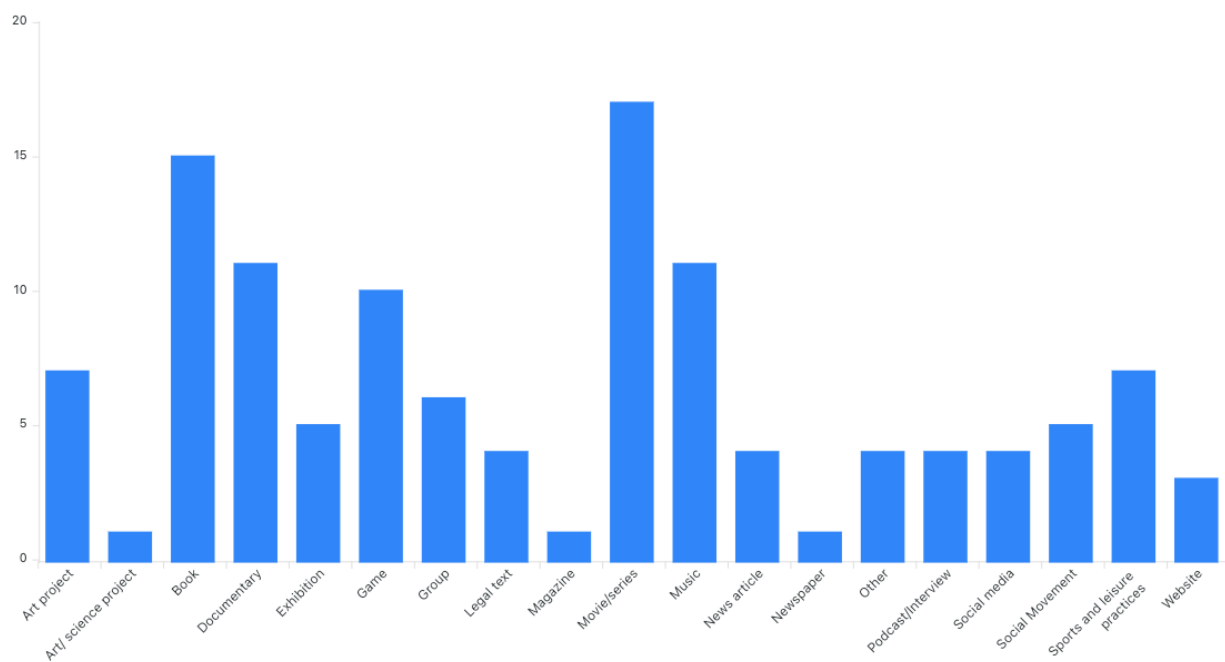


Figure 4 Distribution of media types represented in the current signal collection



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