DO Impact

1st Transnational Capacity Building event

Boosting digitalisation and data strategies in the social economy

7-8 April 2025 - Turin

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Meaning-Making with Data, Ethics, and Digital Competences in the Post-Normal World

Co-funded by the European Union

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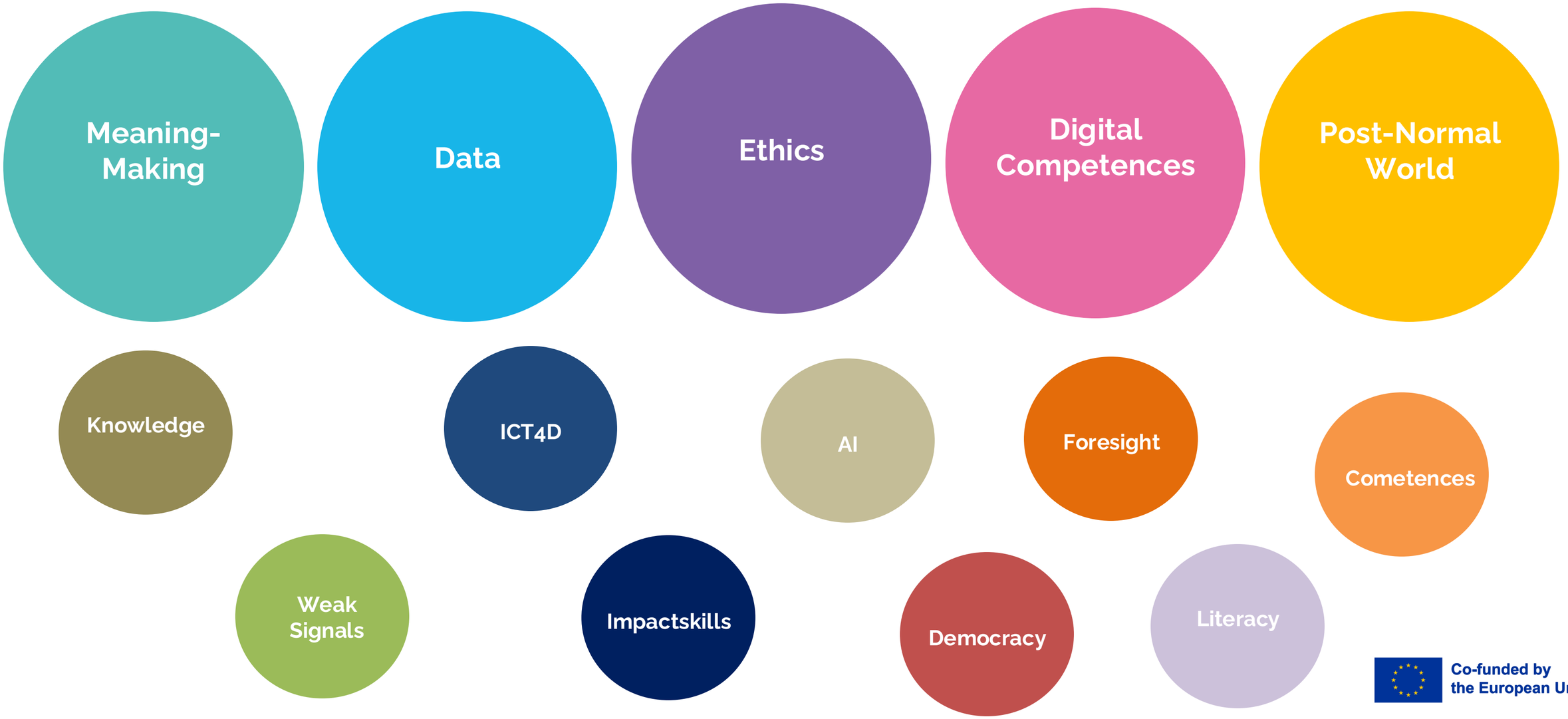
Keywords



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We live in Post-Normal Times.

- Chaos
- Complexity
- Contradiction

We live in Polycrisis.

- Climate crisis
- Wars and conflicts
- Decline and distrust in democracy & science
- Economic uncertainty (inflation, inequality, tariffs, etc.)
- Unknown impact of the new frontier technologies (AI, blockchain, quantum computing, etc.)

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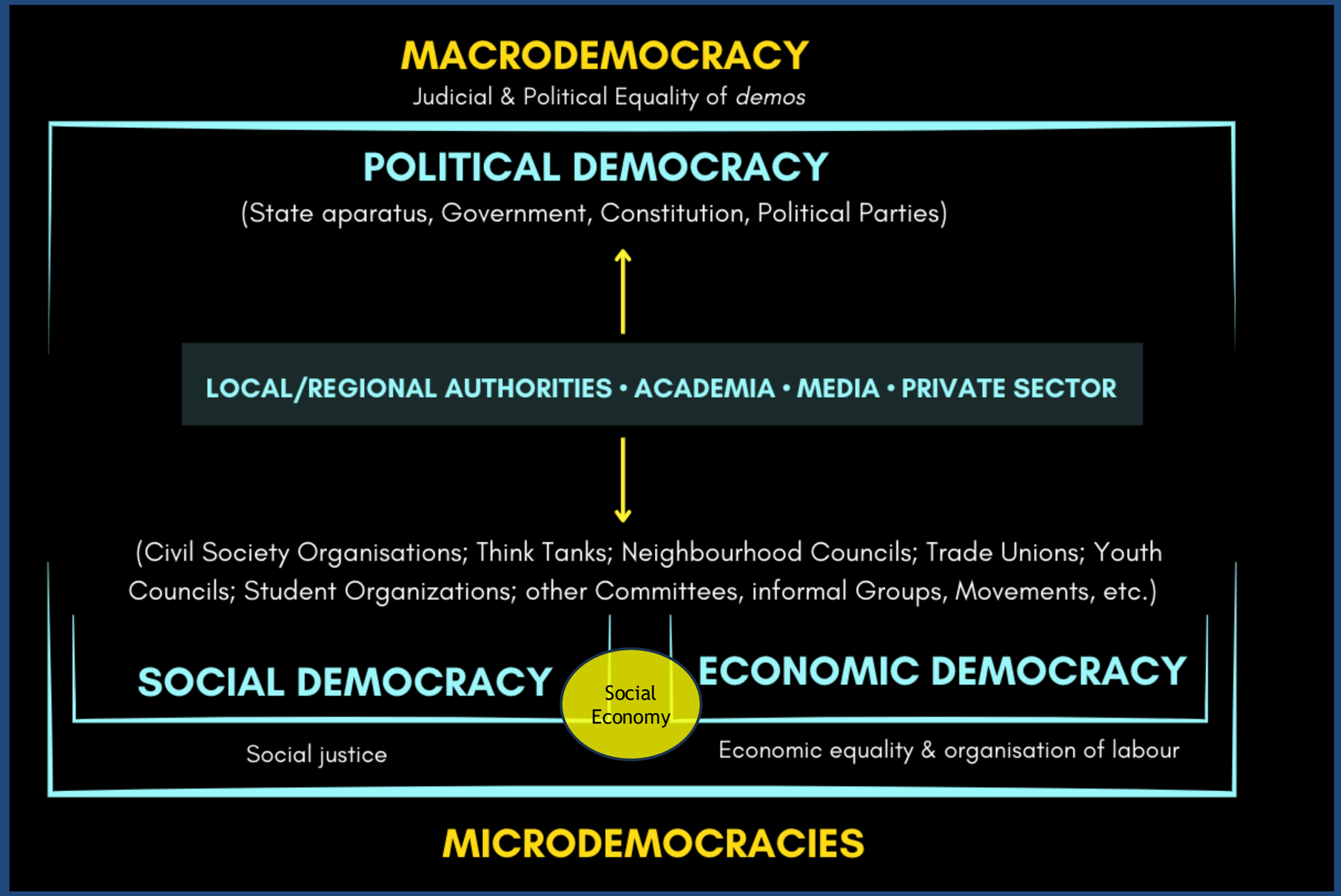
Social economy and democracy



Sartori, G. (2023). Democrazia

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Creating meaning in the midst of Polycrisis and Post-Normal Times is difficult.

Several conceptual models of interaction between science, expertise and policy:

1. Modern Model

"scientific facts seen as unproblematic, determine correct policy. An example of such model is the idea that 'truth speaks to power'."

2. Precautionary Model:

"scientific uncertainty involves the need to consider other elements and types of knowledge, for instance, whether the possibility of irreversibility of health, ecological, or other processes needs to be dealt with by means of precautionary measures while better knowledge is achieved, or in case uncertainties persist."

3. Demarcation Model:

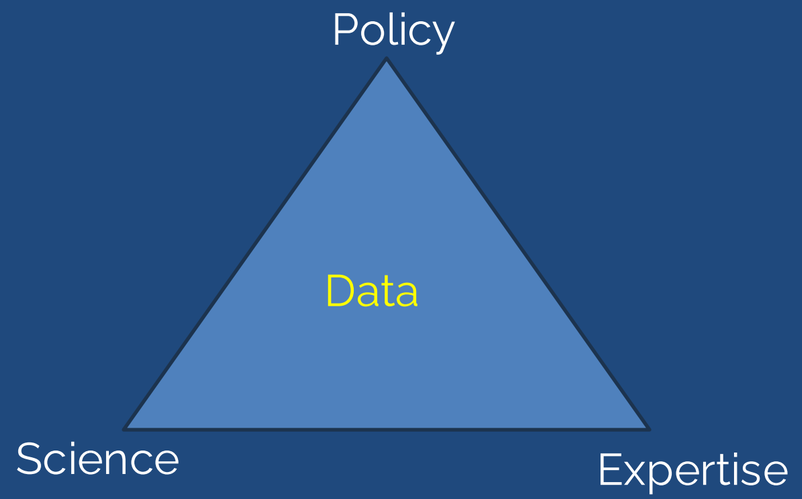
"policy-making is the responsibility of democratic institutions, and science and expertise provide the facts to underpin decisions."

4. Framing Model:

"in policy debates, problems for scientific investigation and for expert advice are set by stakeholders, thus the evidence produced by science and expertise is shaped by policy commitments."

5. The Extended Participation Model:

"science is a crucial but not exclusive form of relevant knowledge. citizens are at the same time (while to different degrees) users, critics and producers of knowledge."



Liberatore A., Funtowicz, S. (2003). *'Democratising' expertise, 'expertising' democracy: what does this mean and why bother?*

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Data

“Things given or granted”

Epistemic interpretation:

“data are collections of facts.“

Informational interpretation:

“data are information.“

Computational interpretation:

“data are collections (sets, strings, classes, clusters etc.) of binary elements (digits, symbols, electrical signals, magnetic patterns, etc.) processed and transmitted electronically by technologies such as computers and cellular phones.”

Floridi, L. (2008). *Data*

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”It is estimated that humanity accumulated 180 EB of data between invention of writing and 2006.”

“Between 2006 and 2011, the total grew ten times and reached 1,600 EB.”

“This figure is now expected to grow fourfold approximately every 3 years.”

Floridi, L. (2021). *Big Data and Their Epistemological Challenge*

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Data > Information > Knowledge

"Data has commonly been seen as simple facts that can be structured to become information."

"Information, in turn, becomes knowledge when it is interpreted, put into context, or when meaning is added to it. "

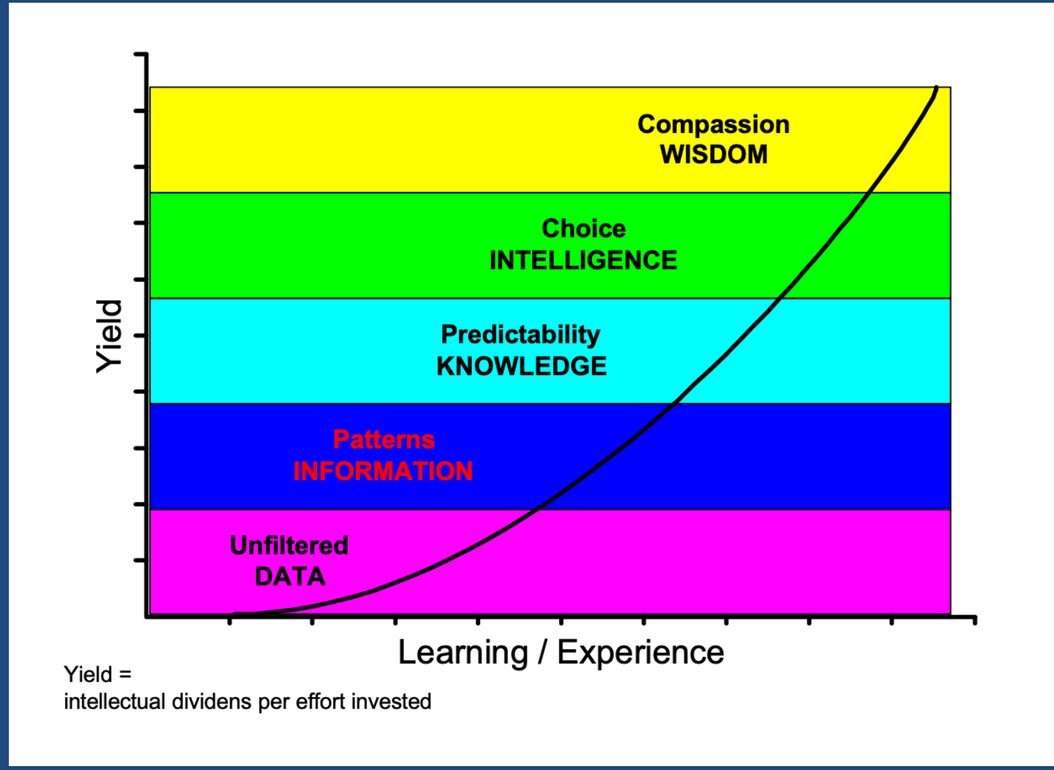
*"Data are assumed to be simple **isolated facts**."*

*"When such facts are put into a context, and combined within a structure, **information emerges**."*

*"When information is given meaning by interpreting it, information becomes **knowledge**."*

*"As the human mind uses this knowledge to choose between alternatives, behavior becomes **intelligent**. "*

*"Finally, when values and commitment guide intelligent behavior, behavior may be said to be based on **wisdom**."*



Hierarchy of knowledge

Tuomi, I. (1999). *Data is more than knowledge: Implications of the reversed knowledge hierarchy for knowledge management and organizational memory*

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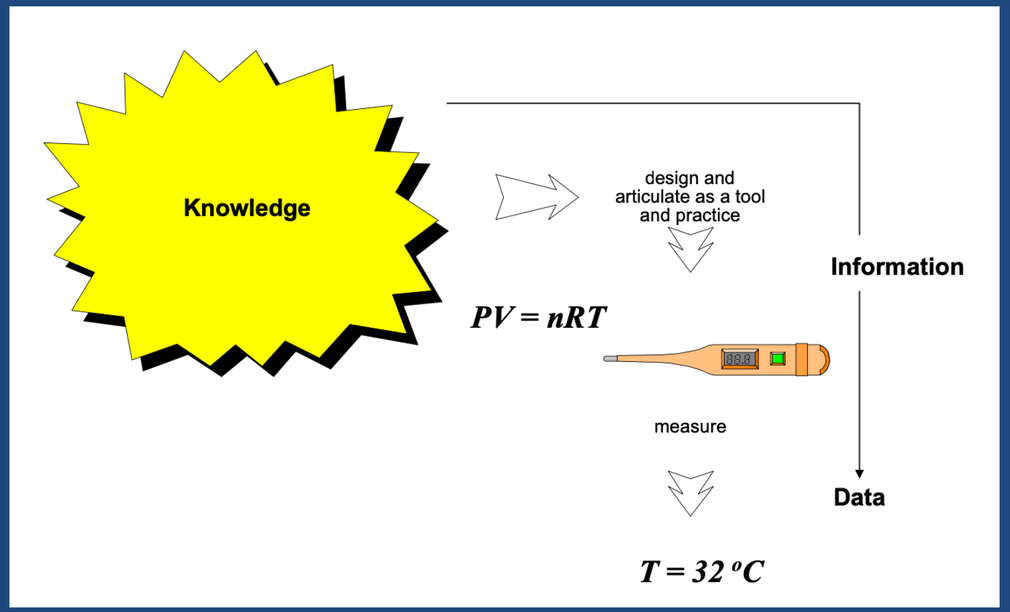
The hierarchy of data > information > knowledge should be turned the other way around.

*"Data **emerges last**—only after there is knowledge and information available. "*

*"There are no "isolated pieces of simple facts" unless **someone has created** them using his or her knowledge. "*

*"Data, therefore, does not become information after meaning is added to it. On the contrary, **data is created from information** by putting information into a pre-defined data structure that completely defines its meaning. Instead of being raw material for information, data emerges as a result of adding value to information by putting it into a form that can be automatically processed. "*



Contextual requirements for measurement of empirical data.

Tuomi, I. (1999). *Data is more than knowledge: Implications of the reversed knowledge hierarchy for knowledge management and organizational memory*

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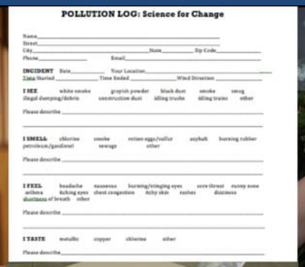











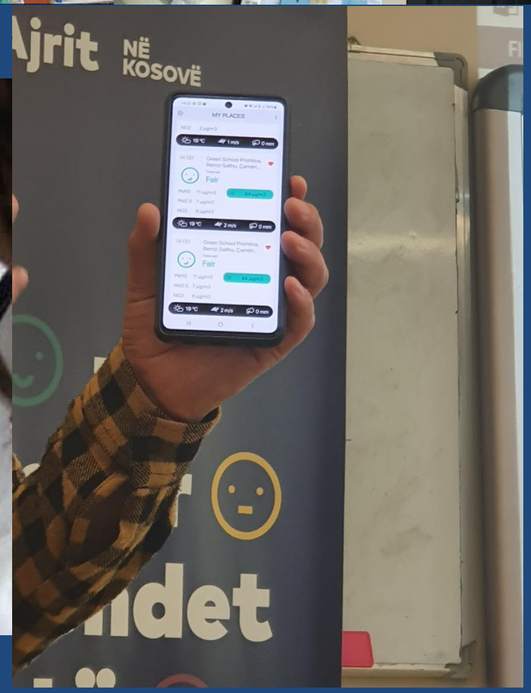

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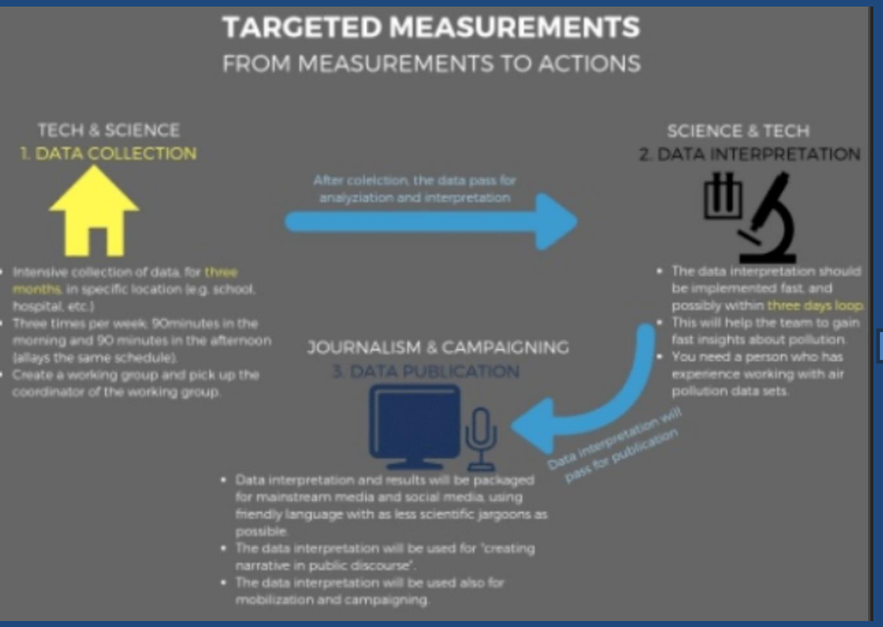

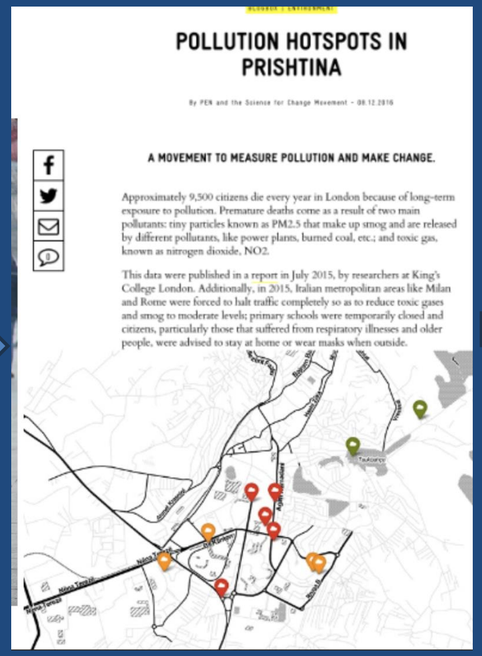

POLLUTION HOTSPOTS IN PRISHTINA

By PEN and the Science for Change Movement - 08.12.2016

A MOVEMENT TO MEASURE POLLUTION AND MAKE CHANGE.

Approximately 9,500 citizens die every year in London because of long-term exposure to pollution. Premature deaths come as a result of two main pollutants: tiny particles known as PM2.5 that make up smog and are released by different pollutants, like power plants, burned coal, etc.; and toxic gas, known as nitrogen dioxide, NO2.

This data were published in a report in July 2015, by researchers at King's College London. Additionally, in 2015, Italian metropolitan areas like Milan and Rome were forced to halt traffic completely so as to reduce toxic gases and smog to moderate levels; primary schools were temporarily closed and citizens, particularly those that suffered from respiratory illnesses and older people, were advised to stay at home or wear masks when outside.

Kosovo Assembly approves resolution on air pollution after prolonged debate

Two days of discussions at the extraordinary Kosovo Assembly session on air pollution concluded with a 19-point resolution.

Erjonë Popova
02/02/2018 - 17:23

Kadri Veseli, Assembly Speaker and initiator of the session, said that citizen interest should be put in front of party interest.

"This session should unite us," he said. And so it did: the resolution was proposed by all parliamentary groups except Srpska Lista.

But although they all seemed to agree on the urgency of the matter, Kosovo MPs took their time in sermoning one after another. Indeed, it took them two days to discuss the uncontroversial resolution.

Speaking on behalf of Vetevendosje's parliamentary group, Dardan Sejdiu proposed five policies to counter this problem, and they were integrated in the document. One of them was the purchasing of intelligent artificial trees that clean the air.

On behalf of her party, LDK MP Besa Gaxherri proposed that the central heating grid should be expanded, which was also added to the resolution.

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Literacy

Digital Literacy

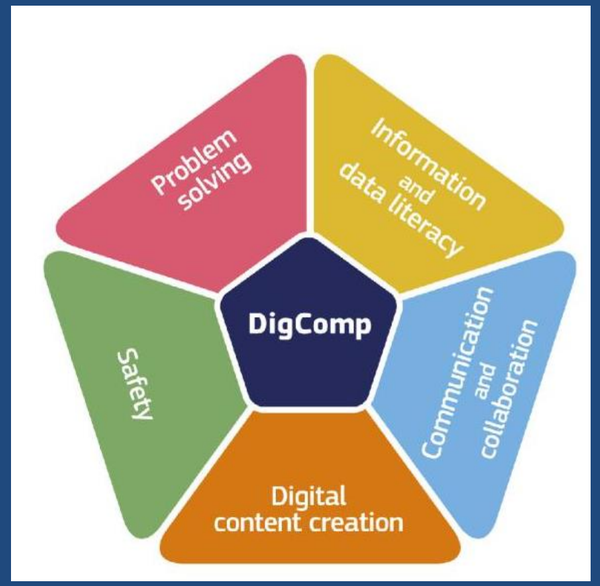
Data Literacy

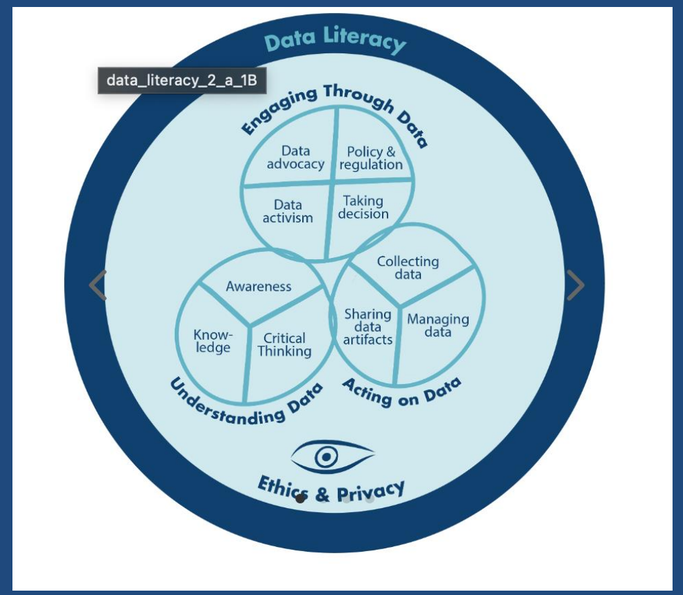
Digital Media Literacy

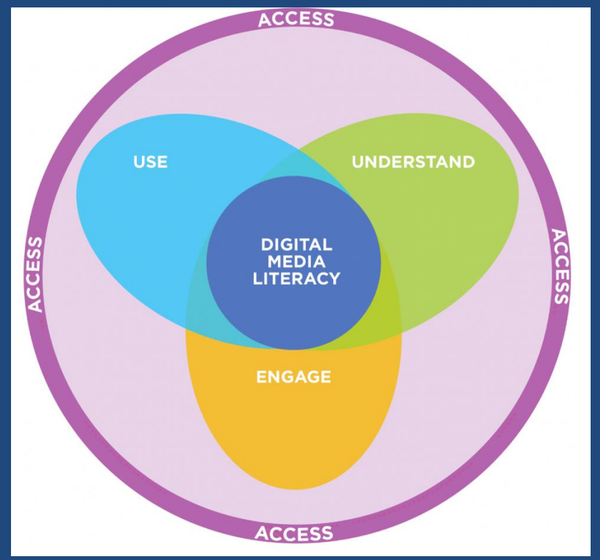
AI Literacy

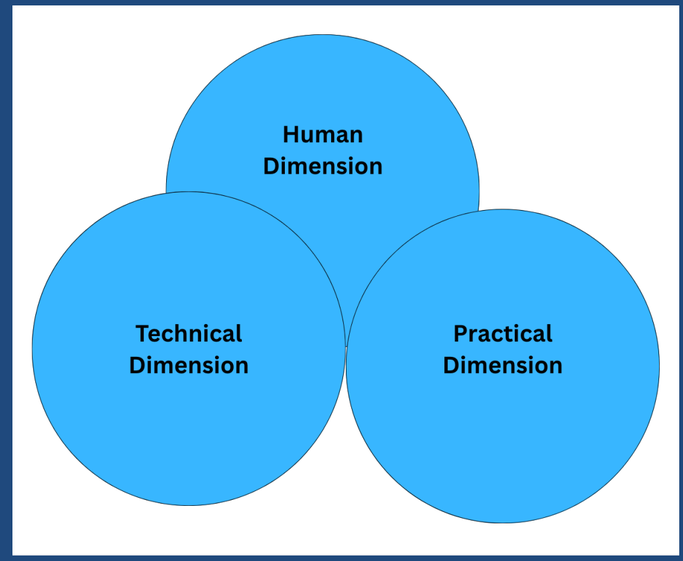
"Reading the world always precedes reading the word, and reading the word implies continually reading the world"

Freire, P. (1983). *The importance of the act of reading*









Literacy > Competences

To harness data for social good, we must first build our functional capability.

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impactskills

1) Education & Training
2) Project (co)design & Technological support
3) Digital Transformation Ethics & Research

Some activities:

- In 10 years, we have delivered over 120 education and training programs;
- Involving over 7,500 people from 54 countries around the world;
- And co-implemented over 22 ICT-related projects in 9 countries.
- Since 2018, in partnership with the University of Turin, we have launched the first Master programme on "ICT for Development and Social Good"
- In 2021 we have launched our own education and training platform: www.impactskills.it
- Currently there are over 1000+ members in our internal community.
- Between 2021-2022 we launched the education programme "Low Code Academy"
- Two flagship research projects, commissioned by the Ministry of Foreign Affairs and International Cooperation, were delivered in partnership with University of Turin: *"The Role of of ICTs for the Achievement of SDGs in Countries with Low Digital Infrastructure"* (2023); *"Artificial Intelligence in Development and Humanitarian Work: Promises, Paradoxes, and Perils"* (2025)
- Co-designing and developing the first digital platform for the National Observatory on Food Policies (ONFOOD project, 2025)

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Meaning-making at Impactskills

Education & Training

Qualification | **Socialization** | **Subjectification**

COMPETENCE FRAMEWORK

Epistemic Competencies

Knowledge & Critical Thinking
Skills

Non-Epistemic Competencies

Values
Attitudes

Aim & Objectives → **Competences** → **Curriculum** → **Method** → **Deliver** → **Evaluate**

Research

- Landscape mapping (political, economical, educational, technological, etc.)
- Weak signals for anticipation (e.g. TinyML)
- Literature review
- Quantitative & Qualitative research

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Data-in practice crash course (example)

Day 1: Defining and validating a data-driven project idea

April 15, 2024 (Monday) | 13:00-18:00 CEST (Turin time)

Day 1 of the course focuses on laying the foundation for developing a proposal for a data-driven project in response to a RFP. Students will begin by understanding the scope and objectives of the project, followed by brainstorming sessions to define key questions, hypotheses, and the structure of their desired dataset(s).

Objectives of Day 1:

- RFP analysis: learning to read an RFP to decide on the best way to design and structure a proposal where data is central
- Define step of the data pipeline: Practice the process of defining the main research questions and hypotheses of the proposal, including the development of a horizon table
- Proposal design validation: plan a simple data project to test the feasibility of your proposal idea.

By the end of the day, students will have a clear understanding of the process through which they can define a project's objectives, questions and hypotheses, as well as how to build a structured plan for the data they need to collect and analyze.

Day 2: Data Collection & Initial Assessment via Command Line Tools

April 16, 2024 (Tuesday) | 13:00-18:00 CEST (Turin time)

Day 2 delves into the practical aspects of collecting and assessing data essential for the project proposal. Students will explore the use of command line interfaces to interact with various APIs such as healthsites.io, Nominatim, and potentially Overpass Turbo. The focus will be on acquiring real-world data to validate the feasibility of the proposed horizon table outlined on Day 1.

Objectives of Day 2

- Github account: Learn about the use of Github for sharing code and datasets, and Github codespaces for working on small data projects from the browser.
- Command Line Basics: Gain a foundational understanding of command line operations and how they can be used to interact with APIs for data collection.
- API Interaction: Learn to use command line tools to collect data from APIs relevant to international development such as healthsites.io, Nominatim, Overpass Turbo
- Data Assessment: Practice assessing the collected data against the horizon table requirements to determine the feasibility and adjustments needed for the proposed project.

By the end of the day, students will have hands-on experience with using the command line to collect data from specific APIs, assess its relevance and adequacy in relation to their project's needs, and understand the practical steps required to refine their data-driven project proposal.

Day 3: Data Cleaning and Consolidation with GUI Tools

April 17, 2024 (Wednesday) | 13:00-18:00 CEST (Turin time)

On Day 3, the course shifts focus towards the critical process of data cleaning and consolidation, preparing students to handle the diversity and complexity of combining datasets of varying quality and formats. Leveraging GUI tools such as Google Spreadsheets, OpenRefine, and Tabula, students will refine their collected data, merging it into a coherent dataset ready for analysis. This step is vital for finalizing the validation process of the project's horizon table and ensuring the data is analysis-ready.

Objectives of Day 3:

- Introduction to Data Cleaning Tools: Learn the functionalities and applications of Google Spreadsheets, OpenRefine, and Tabula for data cleaning and preparation tasks.
- Practical Data Cleaning: Apply these tools to clean the data collected on Day 2, focusing on removing duplicates, correcting errors, and standardizing formats.
- Data Consolidation: Practice combining data from various sources, including academic databases and APIs, to create a unified dataset that aligns with the project's objectives and horizon table requirements.

By the end of Day 3, students will have acquired the skills to effectively clean and consolidate datasets using popular GUI tools. This will ensure their data is not only validated against the project's initial hypotheses but also primed for in-depth analysis, moving them closer to a comprehensive and feasible project proposal.

Day 4: Enhancing Proposals with Data Analysis and Visualization

April 18, 2024 (Thursday) | 13:00-18:00 CEST (Turin time)

Day 4 is dedicated to transforming the cleaned and consolidated data into compelling, data-informed arguments that will enrich the project proposal. Through the use of tools like Google Spreadsheets for analysis and Datawrapper and Flourish for visualization, students will extract meaningful insights and present them in an engaging manner. This stage is crucial for substantiating the proposal with facts and figures that highlight the project's importance and feasibility.

Objectives of Day 4:

- Data Analysis Techniques: Learn the principles of data analysis and basic statistical best practices using Google Spreadsheets.
- Data Visualization: Learn about data visualization best practices, and explore useful online tools for refining your visuals such as Datawrapper and Flourish.
- Data communication strategy: define a strategy to produce and include data-informed arguments and visuals in a proposal for improving the clarity, storytelling and legitimacy of your idea.

Day 5: Planning and Coordinating the Delivery of Data-Driven Projects

April 19, 2024 (Friday) | 13:00-18:00 CEST (Turin time)

Day 5 rounds off the course by addressing the crucial aspects of project planning and coordination essential for the successful delivery of data-driven projects. This day is designed to ensure that students can not only conceptualize and validate a data-driven project but also effectively plan its execution. Discussions will cover identifying necessary skills, setting realistic milestones and timelines, budgeting, and utilizing GitHub for team coordination.

Objectives of Day 5:

- Resourcing: Identify the skill sets required to fulfill the project's objectives, and learn to estimate the time spent on each main task
- Project Planning: Learn how to establish clear milestones and a realistic timeline that considers the project's scope, data analysis phases, and potential challenges.
- Budgeting for Data Projects: Understand the basics of budgeting for a data project, including resource allocation for tools, team members, and unforeseen needs.
- Team Coordination Best Practices: Discuss broader best practices for team coordination, communication, and project management in the context of remote and distributed teams, with the help of tools like Github

Datawrapper

OpenRefine

Flourish

GitHub

Tabula

OVERPASS TURBO

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Towards Techno-Realism

A critical, open, people-centered, democratic, evidenced-based, and ethical approach to leveraging technology for the betterment of society.

Acknowledging that:

- Technological artifacts—whether material or immaterial—***are not neutral***.
- Technological artifacts ***embed politics.***

Five principles of Techno-realism:

1. Critical & Contextual
2. People-Centred
3. Democratic
4. Ethical and Evidence-Based
5. Open, adaptive and Pragmatic

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Thank you!

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