The Alan Turing Institute

# Safe, ethical, and open research in the age of AI

Kirstie Whitaker
Pronouns: she/her

@TuringWay @kirstie_j
https://doi.org/10.5281/zenodo.10080932

# Research Programme Director for Tools, Practices & Systems

## The Alan Turing Institute

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*The Turing Way* is an **open source book project** that involves and supports a **diverse research community** in ensuring that reproducible and ethical **data science** is accessible and comprehensible **for everyone**.

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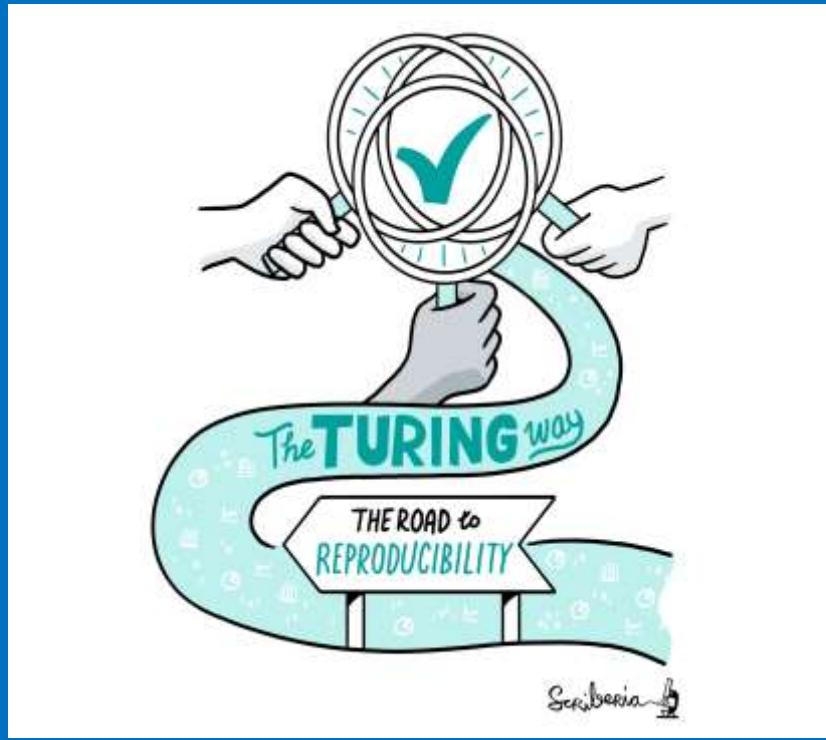
https://doi.org/10.5281/zenodo.10080932

The Turing Way is:

- a book
- a community
- a global collaboration
- a whole tonne of work

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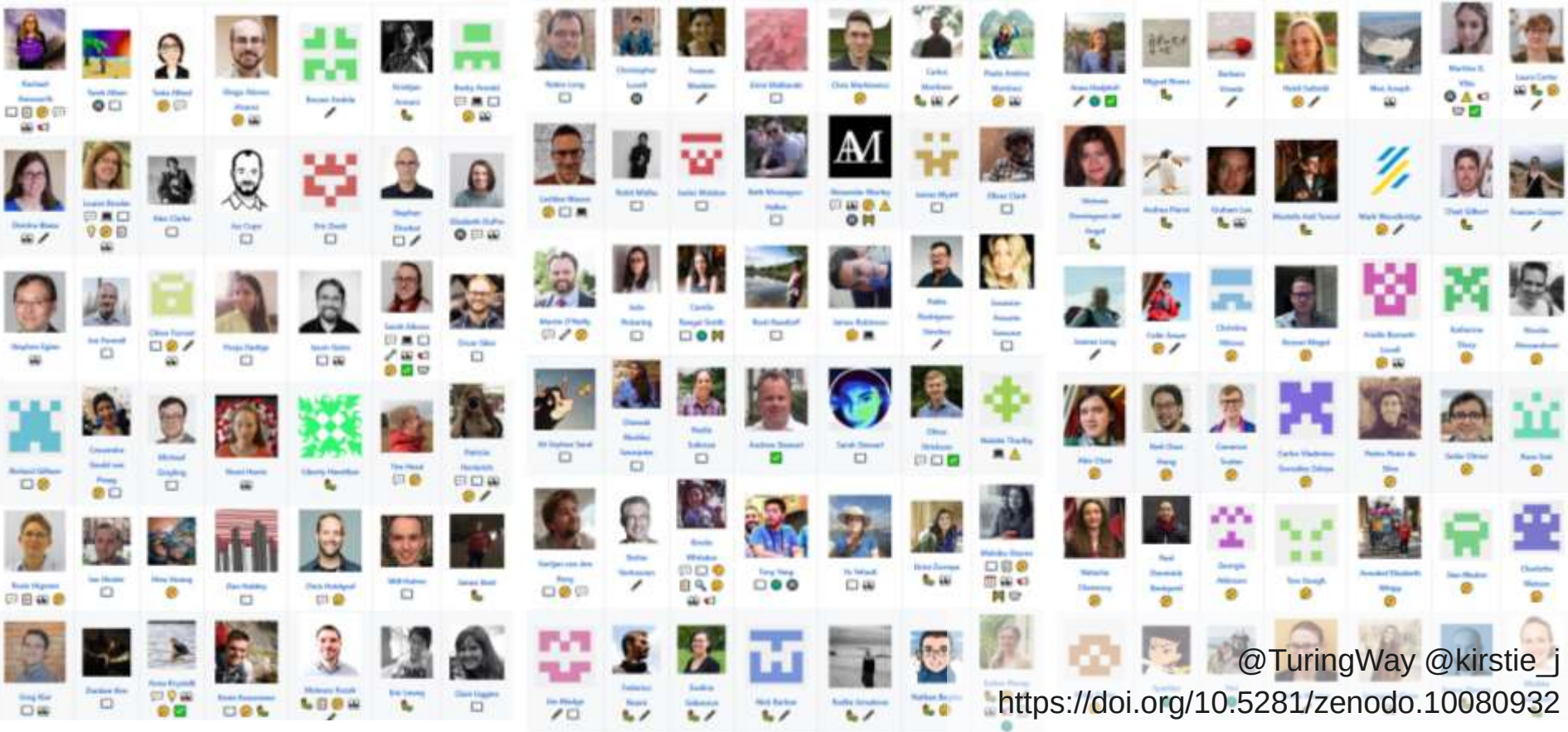
# Thank you to our 400+ contributors



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## Malvika Sharan

“No one can change research culture on their own. Scaling our community by empowering YOU to participate is how we will change the world.”

https://doi.org/10.5281/zenodo.10069243
https://doi.org/10.15131/shef.data.24162249.v1

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https://the-turing-way.netlify.app/index.html
https://github.com/the-turing-way/the-turing-way

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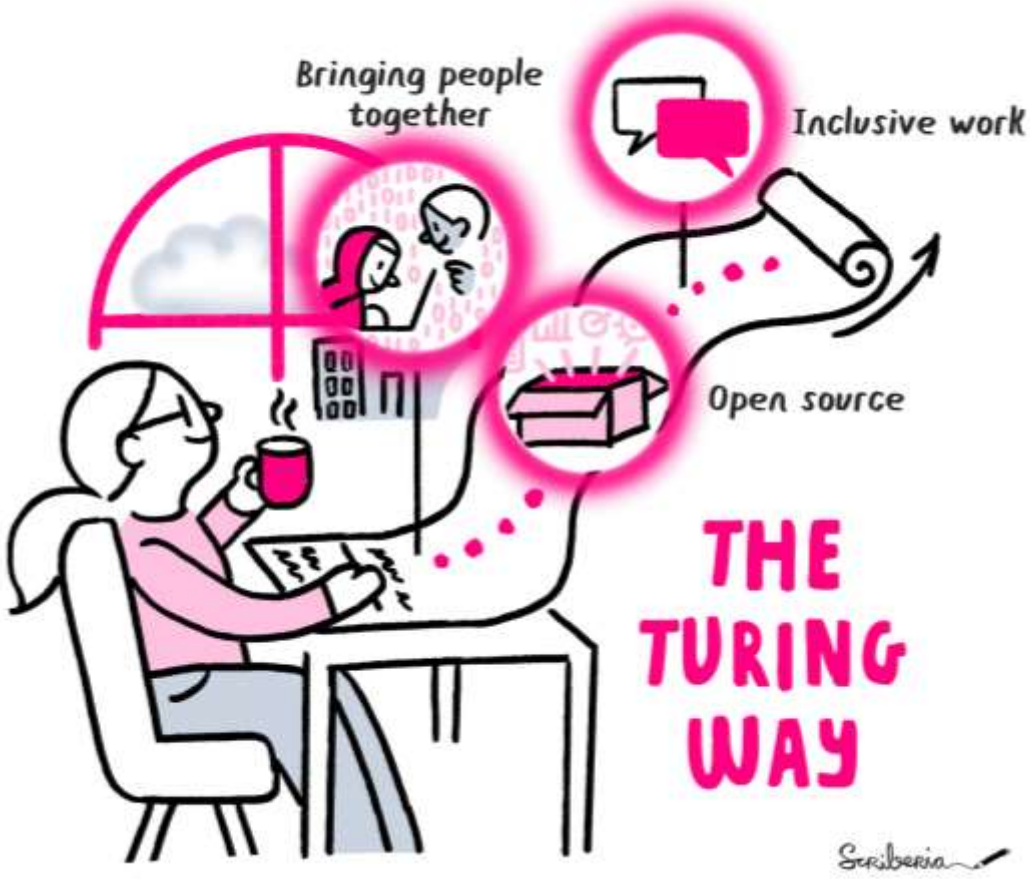


Personal experience of:

- File drawer effect
- Lack of reproducibility
- Imposter syndrome around coding
- Lonely
- Wasted time
- Hypocrisy of academia



https://www.turing.ac.uk/about-us/impact/asg

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- File drawer effect
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https://the-turing-way.netlify.app/reproducible-research/vcs
https://swcarpentry.github.io/git-novice

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# #bropenscience is broken science

All elements of open scholarship should be in service of equity, diversity and inclusion.

Faster, more accessible
→ Better quality insights
→ A more just world

Whitaker & Guest, 2020.
https://www.bps.org.uk/psychologist/bropenscience-broken-science
https://hdl.handle.net/2066/226397

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# Newspeak

“propagandistic language marked by euphemism, circumlocution, and the inversion of customary meanings”

**Free software**: “users have the freedom to run, copy, distribute, study, change and improve the software”

https://www.merriam-webster.com/dictionary/newspeak
https://www.gnu.org/philosophy/free-sw.en.html
https://opensource.org/osd

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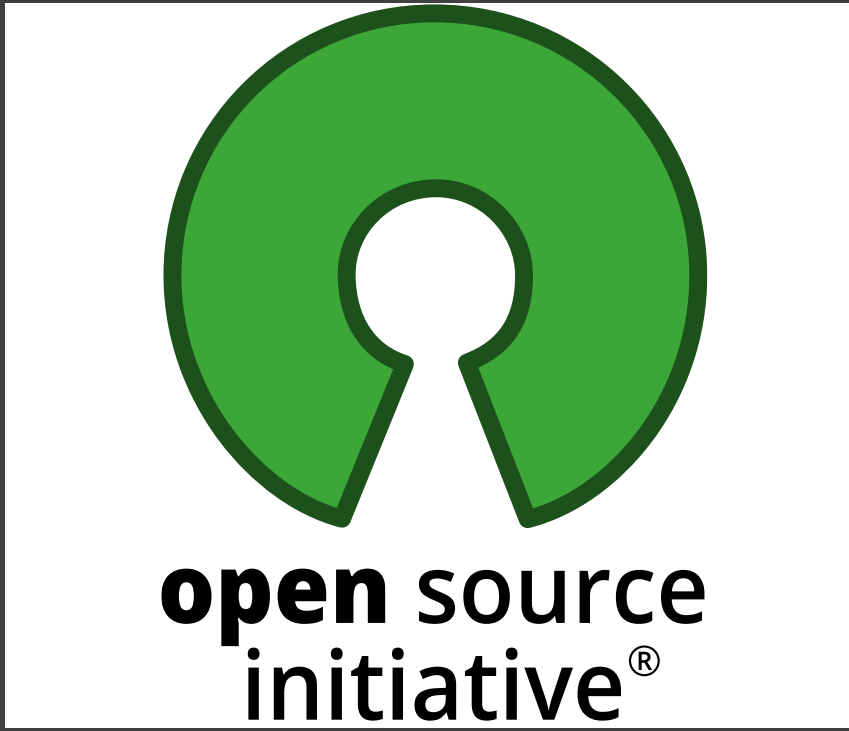
# Newspeak

“propagandistic language marked by euphemism, circumlocution, and the inversion of customary meanings”

**Open source**: “Open source doesn’t just mean access to the source code”




https://www.merriam-webster.com/dictionary/newspeak
https://www.gnu.org/philosophy/free-sw.en.html
https://opensource.org/osd

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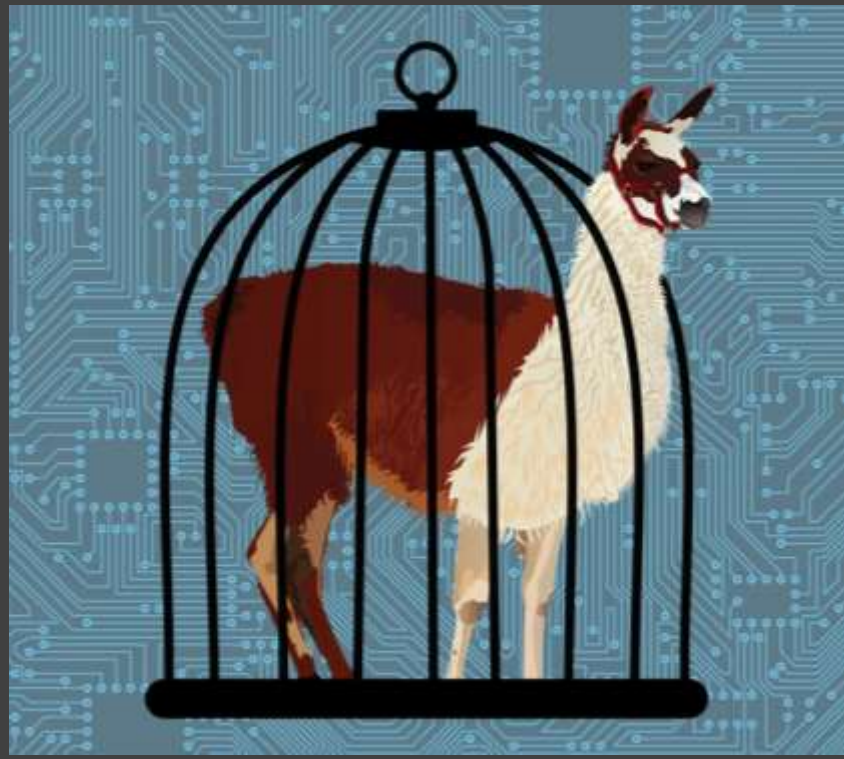
# LLaMA2 is not open

“Meta using the term ‘open source’ for this is positively misleading: There is no source to be seen, the training data is entirely undocumented, and beyond the glossy charts the technical documentation is really rather poor.” – Mark Dingemanse



https://spectrum.ieee.org/open-source-llm-not-open
Liesenfeld, Lopez & Dingemanse, 2023;
https://doi.org/10.1145/3571884.3604316

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https://doi.org/10.5281/zenodo.10080932

There is a growing amount of instruction-tuned text generators billing themselves as 'open source'. How open are they really? ACM paper PDF repo

| Project | Availability | | | | | | Documentation | | | | | | Access | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (maker, bases, URL) | Open code | LLM data | LLM weights | RL data | RL weights | License | Code | Architecture | Preprint | Paper | Modelcard | Datasheet | Package | API |
| BLOOMZ | ✓ | ✓ | ✓ | ✓ | ~ | ~ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ |
| bigscience-workshop | LLM base: BLOOMZ, mT0 | | | RL base: xP3 | | | | | | | | | | § |
| Open Assistant | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | ~ | ✗ | ✗ | ✗ | ✓ | ✓ |
| LAION-AI | LLM base: Pythia 12B | | | RL base: OpenAssistant Conversations | | | | | | | | | | § |
| Pythia-Chat-Base-7… | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | ~ | ✗ | ~ | ~ | ✓ | ✗ |
| togethercomputer | LLM base: EleutherAI pythia | | | RL base: OIG | | | | | | | | | | § |
| RedPajama-INCITE… | ~ | ✓ | ✓ | ✓ | ✓ | ~ | ~ | ~ | ✗ | ✗ | ✓ | ✓ | ✗ | ~ |
| TogetherComputer | LLM base: RedPajama-INCITE-7B-Base | | | RL base: various (GPT-JT recipe) | | | | | | | | | | § |
| LLaMA2 Chat | ✗ | ✗ | ~ | ✗ | ~ | ✗ | ✗ | ~ | ~ | ✗ | ~ | ✗ | ✗ | ~ |
| Facebook Research | LLM base: LLaMA2 | | | RL base: Meta, StackExchange, Anthro… | | | | | | | | | | § |
| Solar 70B | ✗ | ✗ | ~ | ✗ | ~ | ✗ | ✗ | ✗ | ✗ | ✗ | ~ | ✗ | ✗ | ~ |
| Upstage AI | LLM base: LLaMA2 | | | RL base: Orca-style, Alpaca-style | | | | | | | | | | § |
| ChatGPT | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ~ | ✗ | ~ | ✗ | ✗ | ✗ |
| OpenAI | LLM base: GPT 3.5 | | | RL base: Instruct-GPT | | | | | | | | | | § |
| Xwin-LM | ✗ | ✗ | ~ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ~ |
| Xwin-LM | LLM base: LLaMA2 | | | RL base: unknown | | | | | | | | | | § |

*How to use this table.* Every cell records a three-level openness judgement (✓ open, ~ partial or ✗ closed) with a direct link to the available evidence; on hover, the cell will display the notes we have on file for that judgement. At the end of a row, the § is a direct link to source data. The table is sorted by cumulative openness, where ✓ is 1, ~ is 0.5 and ✗ is 0 points. Note that RL may refer to RLHF or other forms of fine-tuning aimed at fostering instruction-following behaviour.

https://huggingface.co/papers/2306.02707

https://opening-up-chatgpt.github.io
Liesenfeld, Lopez & Dingemanse, 2023

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# “Publicly” available data is not open

Creators are being harmed through this technology:

- Authors Guild are suing OpenAI.
- Double strike over fair compensation: SAG-AFTRA and Writers Guild of America.

https://authorsguild.org/news/ag-and-authors-file-class-action-suit-against-openai
https://www.vox.com/culture/2023/7/13/23793828/sag-aftra-strike-wga-hollywood

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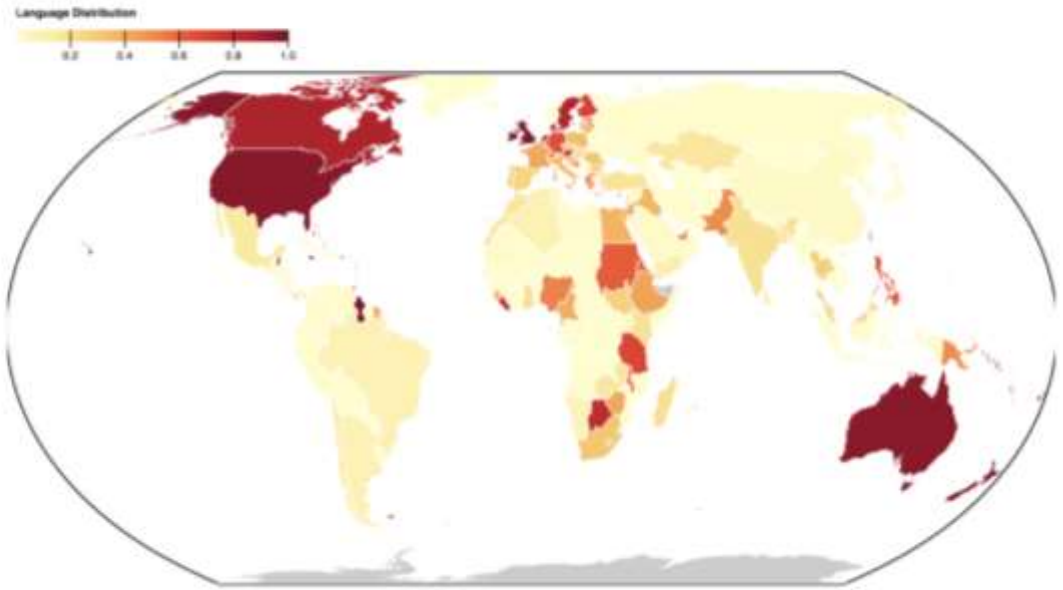
https://doi.org/10.5281/zenodo.10080932

## Data Provenance for AI

### A massive audit of 1800+ AI text datasets, tracing their provenance and composition from origin to creation.

The race to train language models on vast, diverse, and inconsistently documented datasets has raised pressing concerns about the legal and ethical risks for practitioners, and the models they train. To remedy these dubious practices in data transparency and understanding, we convene a multi-disciplinary effort between legal and machine learning experts to systematically audit and trace




"Frequent miscategorization of licenses on widely used dataset hosting sites, with license omission of 68%+ and error rates of 50%+."

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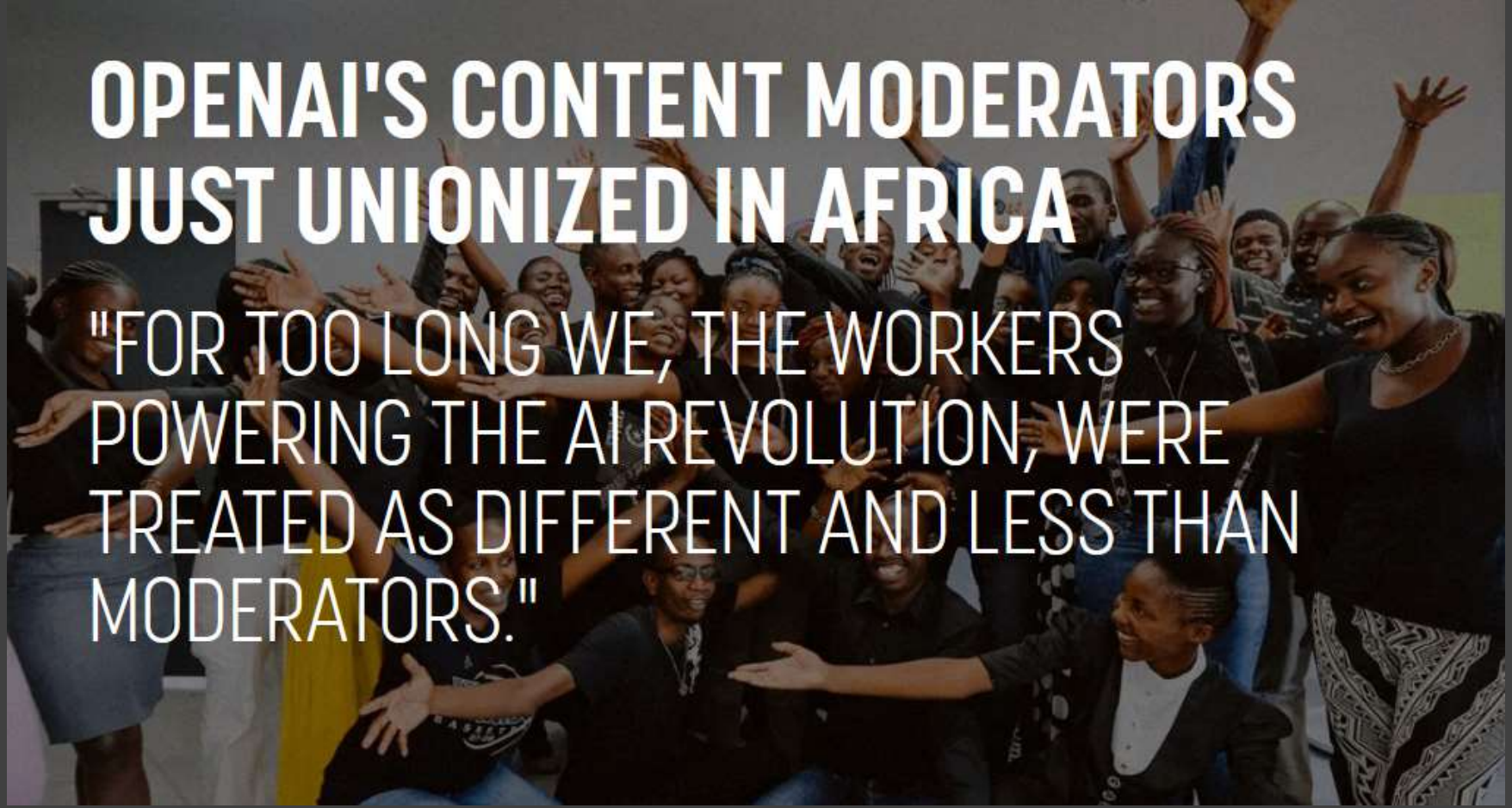
https://www.ccc.mit.edu/project/data-provenance-for-ai

https://doi.org/10.5281/zenodo.10080932

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https://futurism.com/the-byte/ai-content-moderators-unionized-africa

https://doi.org/10.5281/zenodo.10080932

# Who is building open source AI?

**21 September, 14:00 - 15:30 UTC+1**

***Register on Eventbrite***

**Arielle Bennett**
Programme Manager
The Alan Turing Institute

**Mophat Okinyi**
Union Representative
African Content Moderators Union

**Marzieh Fadaee**
Senior Research Scientist
Cohere for AI

**Abinaya Mahendiran**
CTO
Nunnari Labs

**David Gray Widder**
Postdoctoral Fellow
Cornell Tech

**Jennifer Ding**
Senior Researcher
The Alan Turing Institute

https://www.youtube.com/watch?v=e8EBI1ocxt4
https://opensource.org/events/deep-dive-ai-webinar-series-2023

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# Open Source Initiative Deep Dive: Defining Open Source AI

The Alan Turing Institute

open source initiative®

Prof David Leslie
Director of Ethics and Responsible Research and Innovation

Victoria Kwan
Corporate Governance Research Ethics Manager

Dr Kirstie Whitaker
Director of Tools, Practices and Systems Research Programme

**Operationalising the SAFE-D principles for Open Source AI**

https://opensource.org/deepdive/webinars/operationalising-the-safe-d-principles-for-open-source-ai

Munin
Conference
on Scholarly Publishing
• Open Science and society
• Research integrity and publishing ethics
• AI and scholarly communication
• Open repositories
• New horizons in metrics and research assessment
The good news: we're already thinking about these topics!
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Munin
Conference
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• Open Science and society
• Research integrity and publishing ethics
• AI and scholarly communication
• Open repositories
• New horizons in metrics and research assessment
But: are we connecting with the right people?
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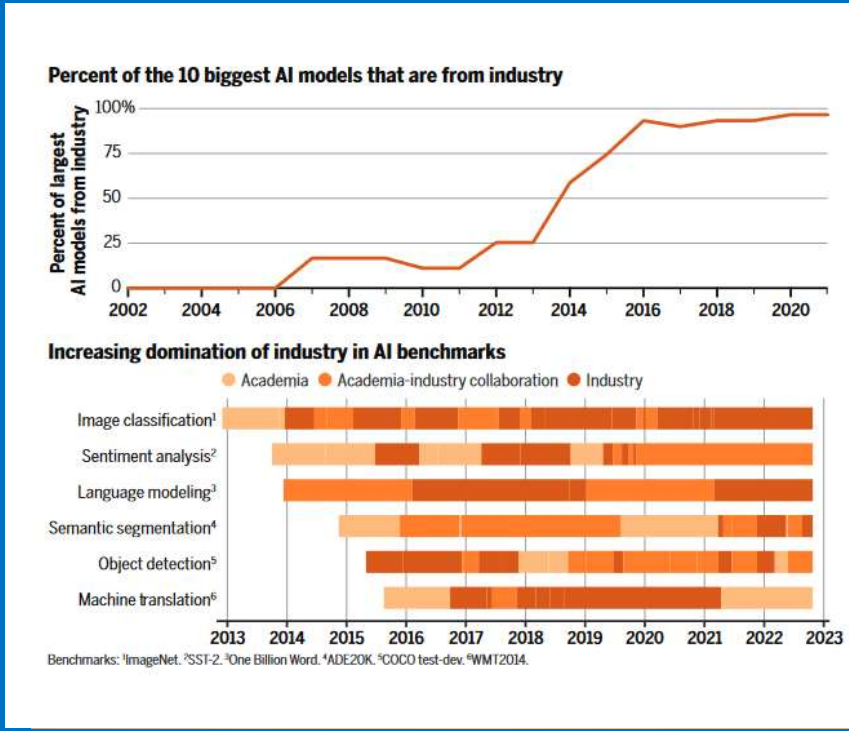
https://doi.org/10.5281/zenodo.10080932

# Industry is dominating the AI conversation

- 70% of people with a PhD in AI are employed in industry
- Costs prohibitively high for academic researchers
- Very little incentive to work on safe & equitable AI for the public good




Ahmed, Wahed & Thompson, 2023
https://doi.org/10.1126/science.ade2420

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https://news.sky.com/story/new-alan-turing-50-note-revealed-12255979 https://doi.org/10.5281/zenodo.10080932

https://bletchleypark.org.uk

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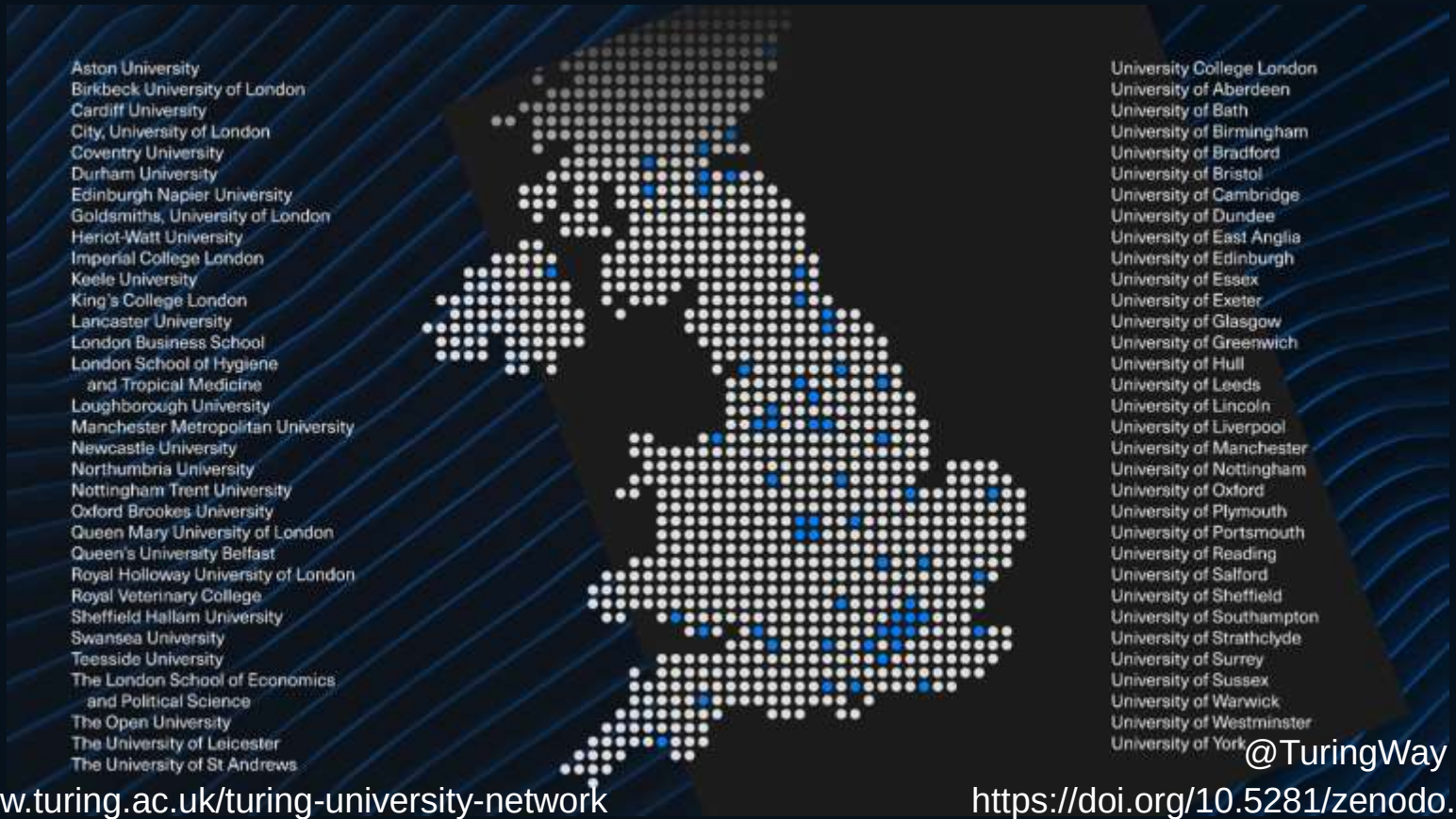
# Our UK university network

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https://www.turing.ac.uk/turing-university-network

https://doi.org/10.5281/zenodo.10080932

# Our international network

https://www.turing.ac.uk/partnering-turing/current-partnerships-and-collaborations

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https://doi.org/10.5281/zenodo.10080932

# Our partners and collaborators

https://www.turing.ac.uk/partnering-turing/current-partnerships-and-collaborations

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https://www.turing.ac.uk/research/research-projects/tric-dt @TuringWay @kirstie_j
https://www.bas.ac.uk/blogpost/seeing-double-digital-twins-and-net-zero https://doi.org/10.5281/zenodo.10080932

Department for Science, Innovation & Technology

Foreign, Commonwealth & Development Office

Prime Minister's Office, 10 Downing Street

Policy paper

# The Bletchley Declaration by Countries Attending the AI Safety Summit, 1-2 November 2023

Published 1 November 2023

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Department for Science, Innovation & Technology

Foreign, Commonwealth & Development Office

Prime Minister's Office, 10 Downing Street

Policy paper

# The Bletchley Declaration by Countries Attending the AI Safety Summit, 1-2 November 2023

Published 1 November 2023

Artificial Intelligence (AI) presents enormous global opportunities: it has the potential to transform and enhance human wellbeing, peace and prosperity. To realise this, we affirm that, for the good of all, AI should be designed, developed, deployed, and used, in a manner that is safe, in such a way as to be human-centric, trustworthy and responsible. We welcome the international community's efforts so far to cooperate on AI to promote inclusive economic growth, sustainable development and innovation, to protect human rights and fundamental freedoms, and to foster public trust and confidence in AI systems to fully realise their potential.

https://www.gov.uk/government/publications/ai-safety-summit-2023-the-bletchley-declaration

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https://doi.org/10.5281/zenodo.10080932

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Depart
Scienc
& Tech

In the context of our cooperation, and to inform action at the national and international levels, our agenda for addressing frontier AI risk will focus on:

- identifying AI safety risks of shared concern, building a shared scientific and evidence-based understanding of these risks, and sustaining that understanding as capabilities continue to increase, in the context of a wider global approach to understanding the impact of AI in our societies.

Policy paper

The Bletchley Declaration by Countries Attending the AI Safety Summit, 1-2 November 2023

Published 1 November 2023

https://www.gov.uk/government/publications/ai-safety-summit-2023-the-bletchley-declaration

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“AI system” means any computational system (or a combination of such systems) that uses methods derived from statistics or other mathematical techniques to carry out tasks that are commonly associated with, or would otherwise require, human intelligence and that either assists or replaces the judgment of human decision-makers in carrying out those tasks.

https://www.turing.ac.uk/research/research-projects/ai-ethics-and-governance-practice

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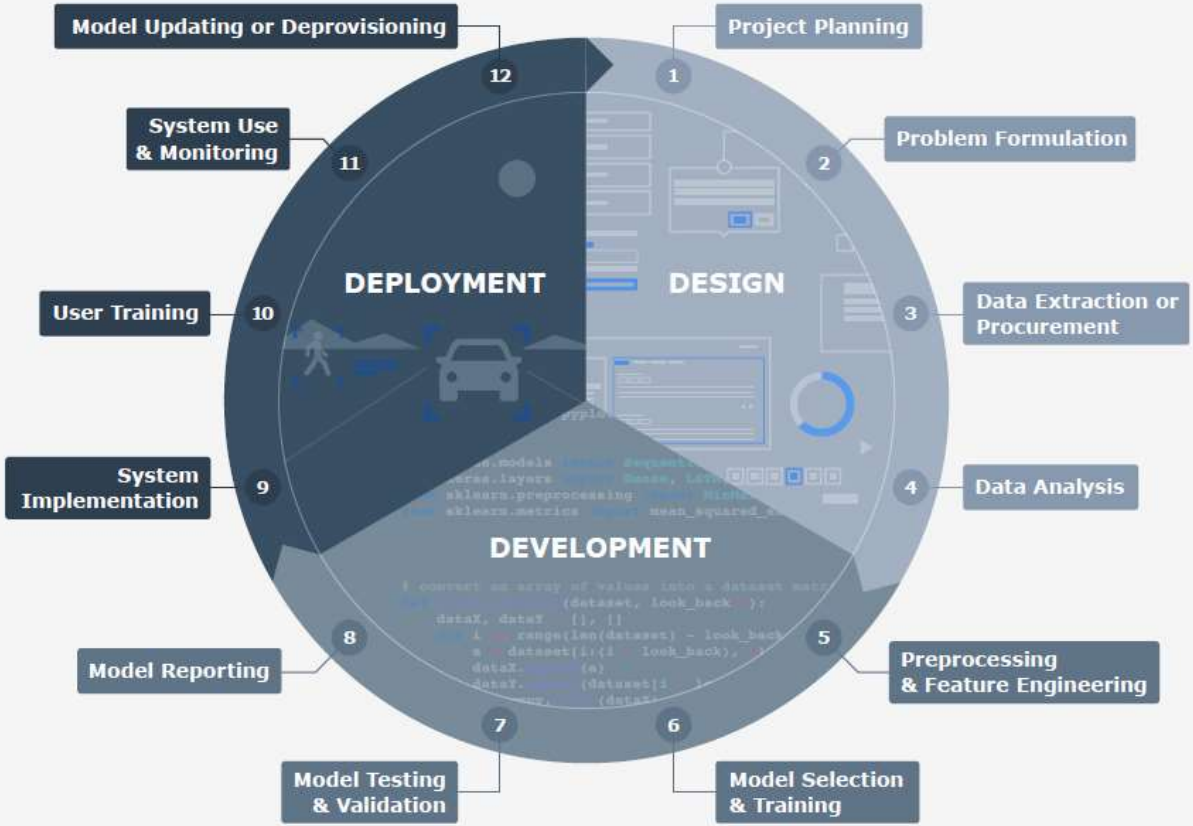


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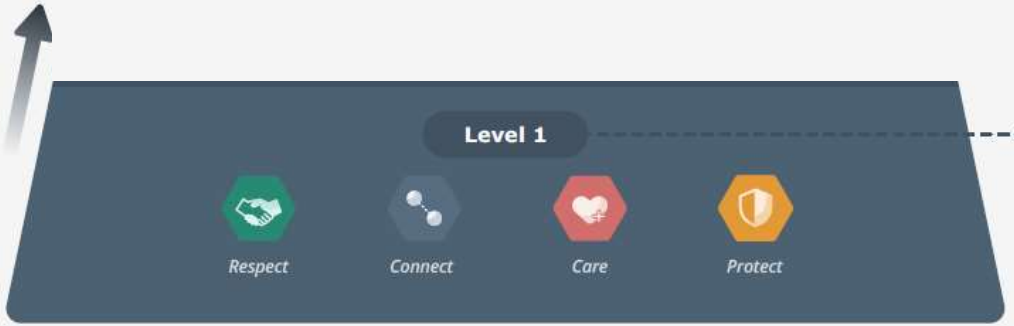


**The Sum Values**

These values support, underwrite, and motivate responsible AI projects and provide criteria for assessing their potential social and ethical impacts.

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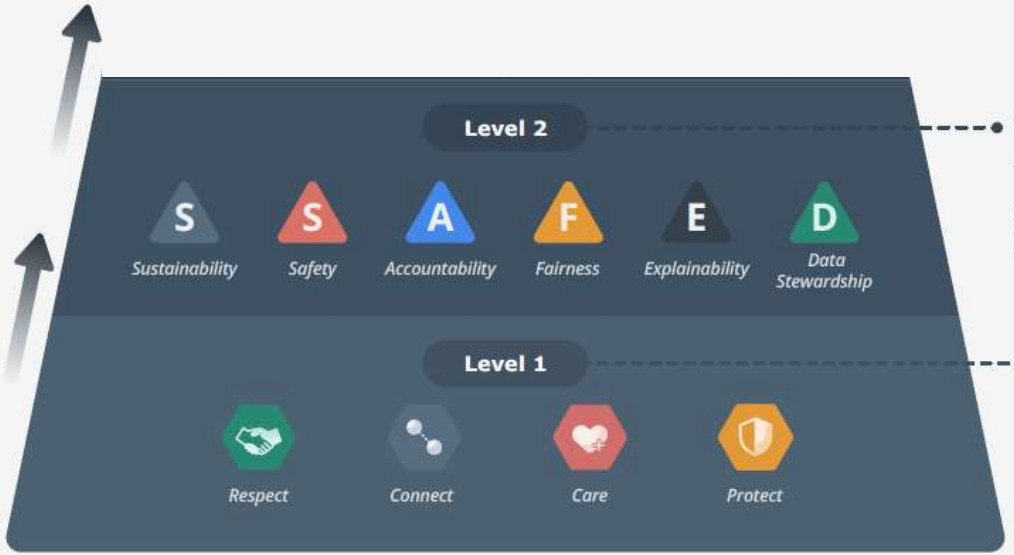


**The SSAFE-D Principles**

These principles provide actionable goals that can be operationalised across the AI project lifecycle.

**The Sum Values**

These values support, underwrite, and motivate responsible AI projects and provide criteria for assessing their potential social and ethical impacts.

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**The Process-Based Governance (PBG) Framework**

This framework ensures end-to-end accountability and provides a template for documenting necessary governance actions.

**The SSAFE-D Principles**

These principles provide actionable goals that can be operationalised across the AI project lifecycle.

**The Sum Values**

These values support, underwrite, and motivate responsible AI projects and provide criteria for assessing their potential social and ethical impacts.

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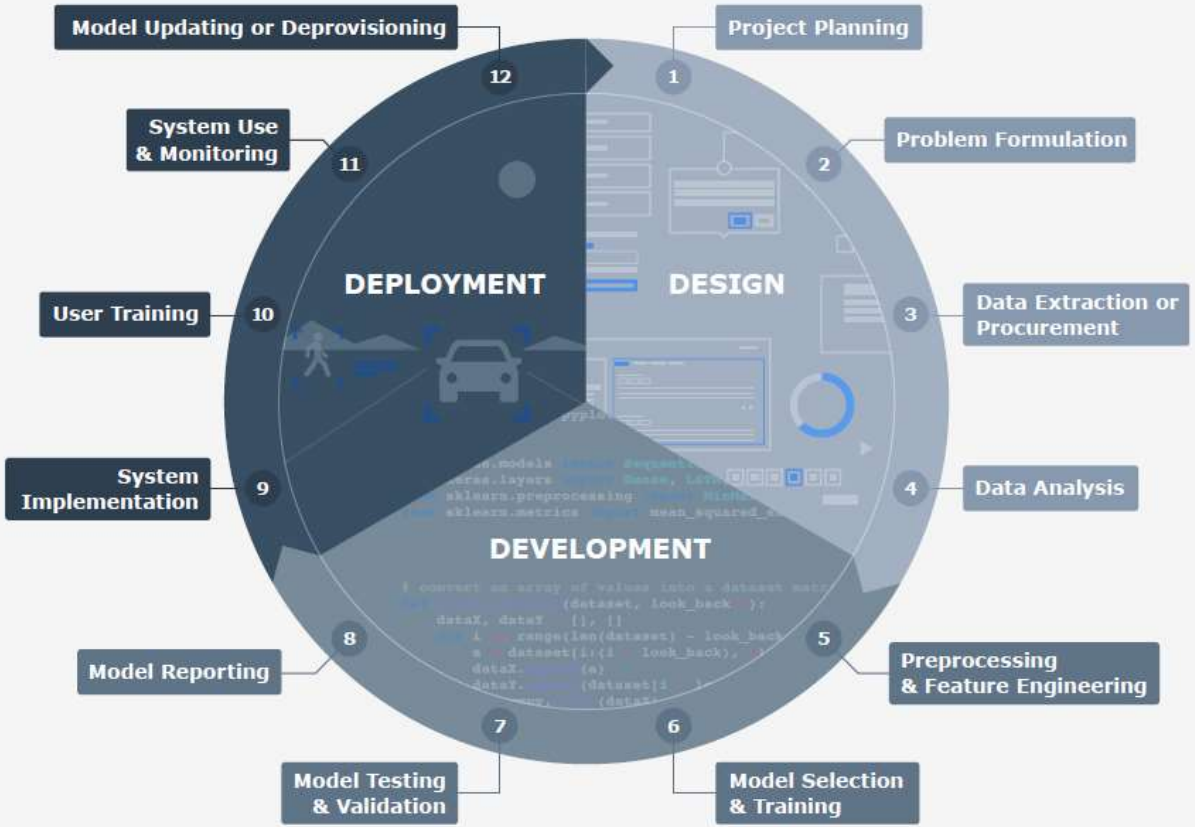


- Open Science and society
- Research integrity and publishing ethics
- AI and scholarly communication
- Open repositories
- New horizons in metrics and research assessment

https://www.turing.ac.uk/research/research-projects/ai-ethics-and-governance-practice

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https://doi.org/10.5281/zenodo.10080932

Louis Brandeis
https://en.wiktionary.org/wiki/sunlight_is_the_best_disinfectant

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# Open scholarship practices are ready to deliver safe and ethical AI

– Safety and sustainability
– Accountability
– Fairness
– Explainability
– Data stewardship

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# Open scholarship practices are ready to deliver safe and ethical AI*

(*We just have a little more work to do to promote and normalise them!)

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Eric Steven Raymond, The Cathedral and the Bazaar

Linus’ Law: https://en.wikipedia.org/wiki/Linus%27s_law

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# Open scholarship practices are ready to deliver safe and ethical AI

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Having a broad and engaged community involved throughout an AI development workflow keeps infrastructure more secure and keeps the purpose of the work aligned with the needs of the impacted stakeholders.

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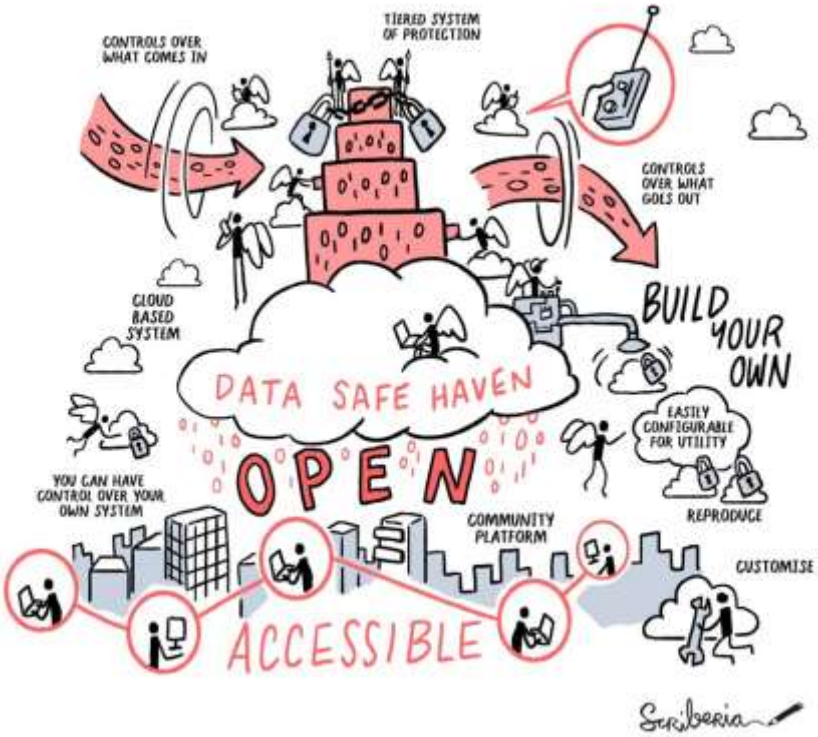
# Our 'North Star'

To remove barriers to working **safely** and **effectively** with sensitive data,

by promoting and demonstrating **a culture of open, community-led development**

of interoperable foundational **infrastructure** and **governance**.




https://github.com/alan-turing-institute/data-safe-haven
https://data-safe-haven.readthedocs.io/en/latest

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https://doi.org/10.5281/zenodo.10080932

# Project pillars

## Infrastructure as code

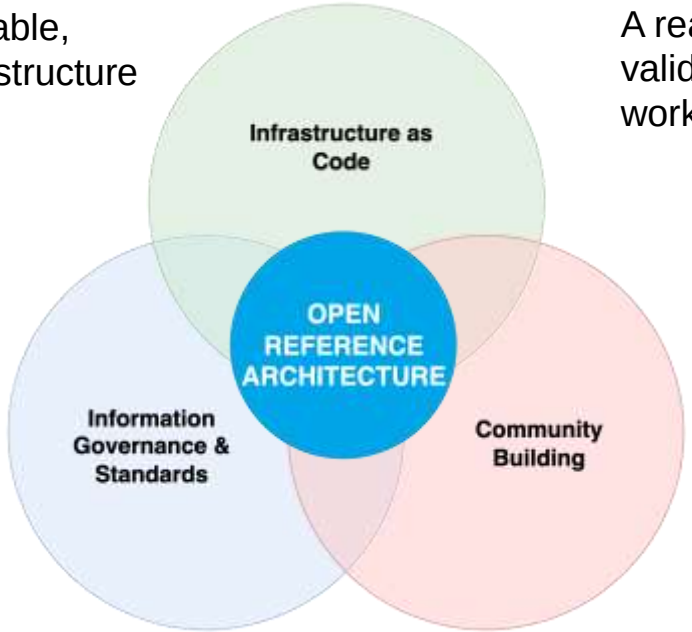
Building a deployable, reproducible infrastructure

## A Turing production deployment

A real-world application and validation of the research workstreams

## Information governance & standards

An accompanying IG framework that is standardised, auditable, accessible and practical



## Community building

An open-first community that empowers contributions from all stakeholders

https://github.com/alan-turing-institute/data-safe-haven
https://data-safe-haven.readthedocs.io/en/latest

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Stephen Crocker, Request For Comments (RFC's) History
https://www.livinginternet.com/i/ia_rfc_invent.htm

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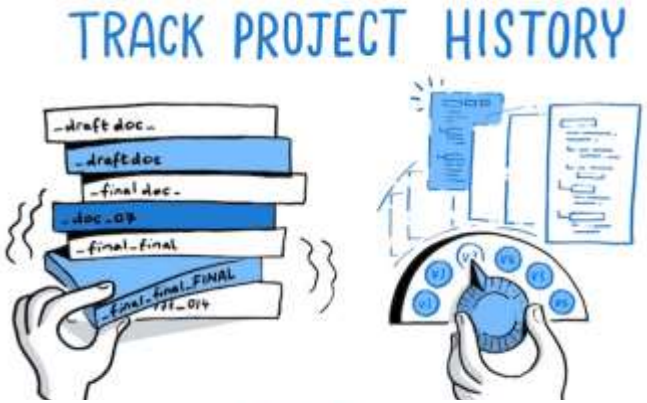
Providing documentation covering how decisions are made, how changes can be suggested through requests for comment, and how concerns can be raised – for example through codes of conduct – facilitates accountability through the AI development workflow.

@TuringWay @kirstie_j
https://doi.org/10.5281/zenodo.10080932



https://the-turing-way.netlify.app/project-design/data-governance/data-gov-ml
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# Open scholarship practices are ready to deliver safe and ethical AI

– Safety and sustainability
– Accountability
– Fairness
– Explainability
– Data stewardship

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https://doi.org/10.5281/zenodo.10080932

Teon Brooks, https://teonbrooks.com

@TuringWay @kirstie_j

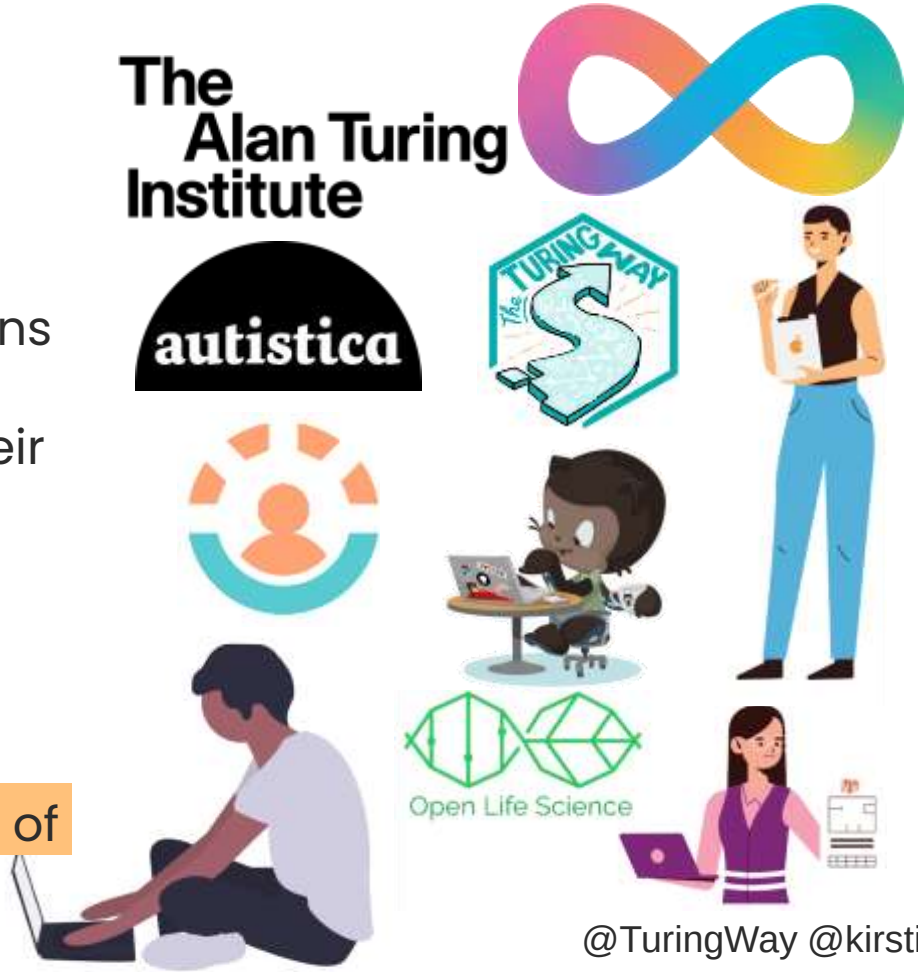
https://doi.org/10.5281/zenodo.10080932

# About AutSPACEs

A **research collaboration** between The Turing, Autistica, & Open Humans

A **community** of autistic people, their supporters, researchers and open source developers

A **citizen science** platform where people can share their experiences of sensory processing.

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https://doi.org/10.5281/zenodo.8164375

https://doi.org/10.5281/zenodo.10080932

# AutSPACEs

**Collect** qualitative data to improve our understanding of sensory processing in people's daily lives

Share people's stories and adaptive techniques with others who have similar experiences

Educate neurotypical people to better support their friends, family and colleagues

Advise organisations on how they can design and adapt spaces to improve people's lives

https://doi.org/10.5281/zenodo.8164375

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https://doi.org/10.5281/zenodo.10080932

# Moderation Goals

James Scott

Susanna Fantoni

A welcoming, inclusive, and safe online space for autistic people

A space where autistic people can share challenging experiences

Decisions which balance the complex needs of the community

Aitkenhead et al, 2023, SocArXiv
https://doi.org/10.31235/osf.io/c2xe7

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Open source AI should clearly communicate how the AI model and workflow are considering equity and justice. Scholarly communications experts can connect existing tools for bias reporting into an interoperable open source AI ecosystem.

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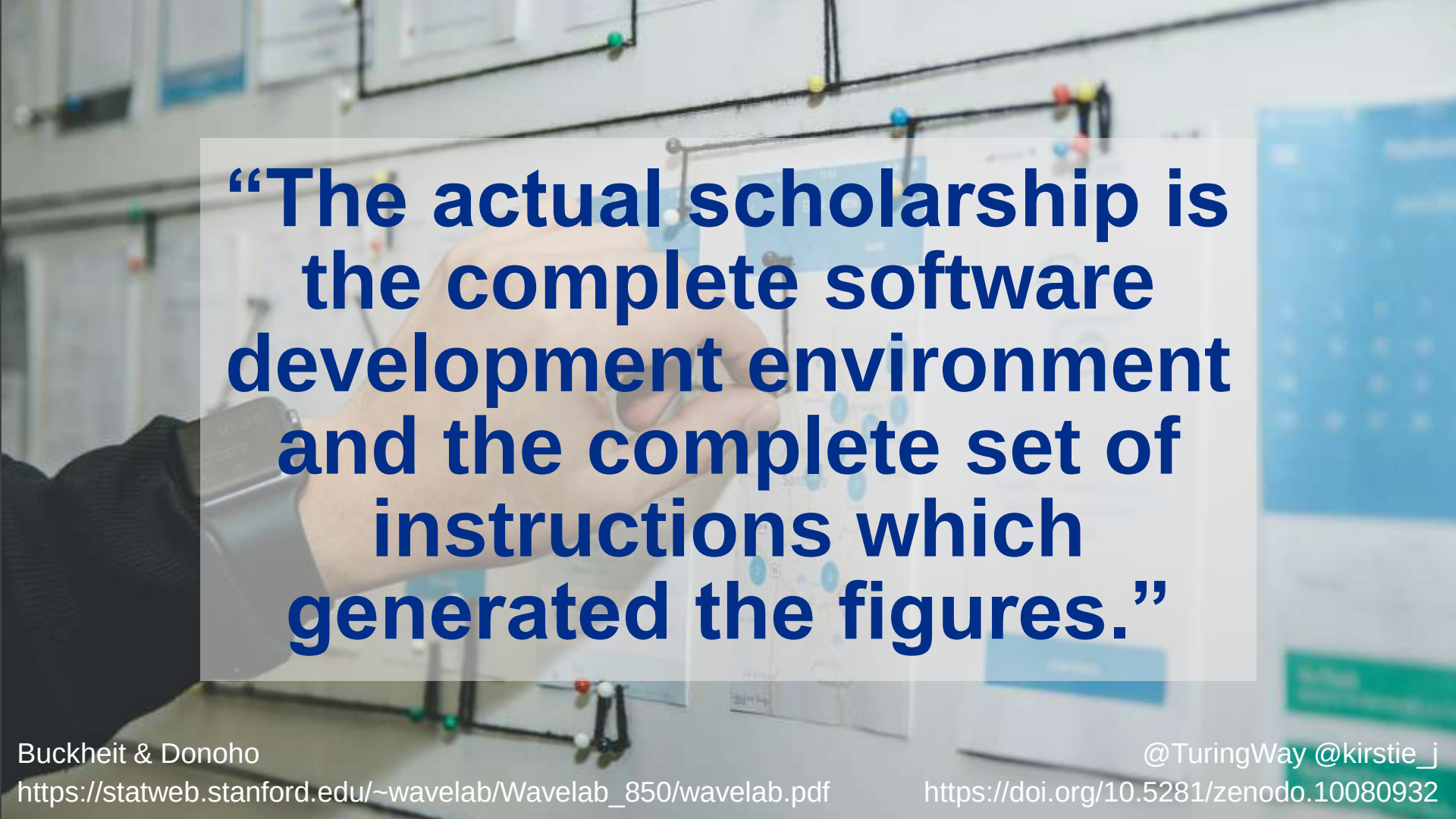


Buckheit & Donoho
https://statweb.stanford.edu/~wavelab/Wavelab_850/wavelab.pdf

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The ability to interrogate all aspects of a workflow is the foundation of the definition of open source: access to the source code, data, and documentation. Current open scholarship ways of working will enhance transparency and explainability across the AI ecosystem.

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NIHR | National Institute for Health and Care Research

AI for Multiple Long-term Conditions Research Support Facility

27 Universities

12 NHS Trusts

& charities, city councils, and public involvement organisations.

https://www.turing.ac.uk/research/research-projects/ai-multiple-long-term-conditions-research-support-facility

Slide by Sophia Batchelor: https://doi.org/10.5281/zenodo.8082165

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Open | 3 of 14 tasks

**[NEW CHAPTER] - Planning Inclusive and Accessible Events** #3307

BrainonSilicon opened this issue on Oct 2 · 11 comments

**This chapter is separated into different subsections:**

- **Chapter Landing page**: has been reviewed and merged into the chapter's WIP branch.
  - Next review will be when the full chapter PR is made.
- **The core chapter content:** currently WIP is separated into different subsections
  - Planning and Logistics: Added Inclusive Planning and Logistics subsection #3315
  - Location: Added Inclusive Events Location subsection #3318
  - Communication: Added Inclusive Events Communications Subsection #3327
  - Schedule and Agenda Planning: Added Inclusive Events Schedule and Agenda Subsection #3337
  - Networking and Social Events
  - Technology and Hybrid Considerations
  - Content Accessibility Guidance
  - Facilitation and Moderation
- **A checklist summarizing the content:**
  - link to branch, link to file
- **A page of resources:**
  - link to branch, link to file

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https://doi.org/10.5281/zenodo.10080932

Wilkinson, et al; The FAIR Guiding Principles for scientific data management and stewardship. https://doi.org/10.1038/sdata.2016.18

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Metadata standards allow for interoperability even where data can not be made openly available. Documentation, accountability, and transparency around how data is gathered and used are the building blocks of open source AI.

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https://doi.org/10.5281/zenodo.10080932

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https://doi.org/10.5281/zenodo.10080932

# Stop

- Focussing too narrowly on research outputs.
- Reinventing the wheel for each individual institution or domain.
- Avoiding the wicked problem of deployment challenges.

# Start

- Promoting our solutions for accountability in an AI development workflow.
- Explicitly connecting data processing responsibilities with bias mitigation reporting frameworks in a socio-technical framework.

# Continue

- Working transparently.
- Acknowledging diverse communities.
- Documenting data governance decisions.
- Supporting maintenance and infrastructure work.
- Scaling access to knowledge worldwide.

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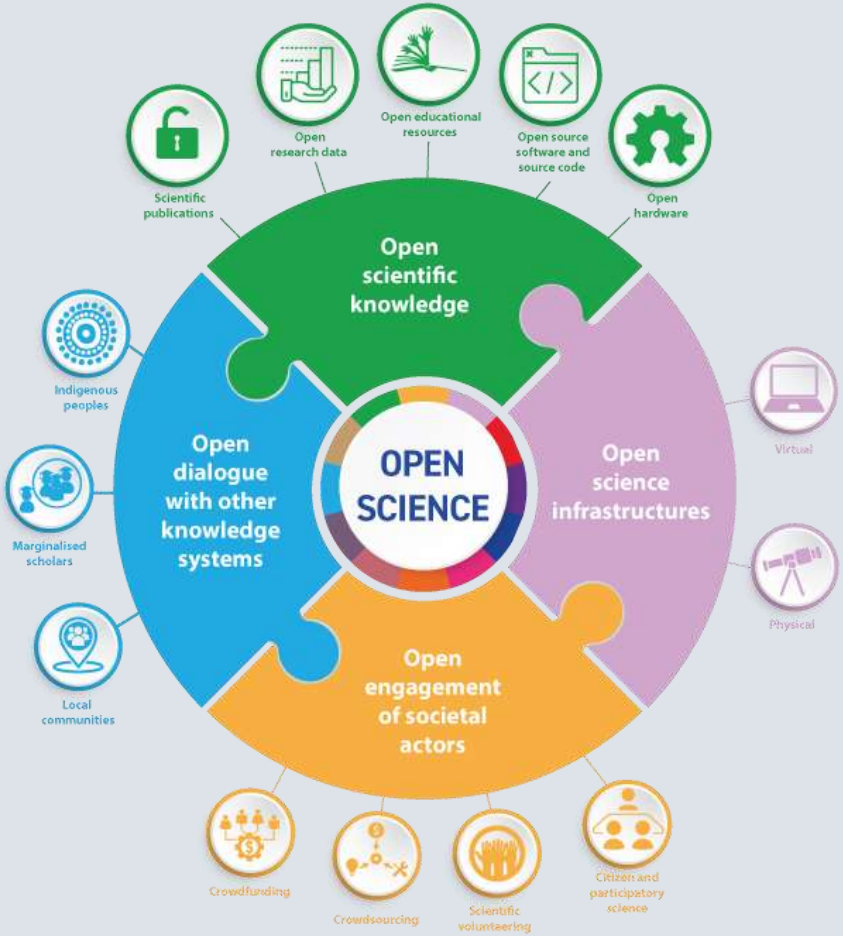
https://doi.org/10.5281/zenodo.10080932

“Opening science involves opening up the processes of creating, evaluating, sharing, exploring and storing scientific knowledge, practices and perspectives.”

“All scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences and the humanities, are included.”




UNESCO, Understanding open science, 2022.
https://doi.org/10.54677/UTCD9302

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https://doi.org/10.5281/zenodo.10080932

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- **GC Research Ethics Manager**: Victoria Kwan
- **Research Application Managers**: Hari Sood, Shakir Laher, Kalle Westerling, Sophie Arana & Francisco Gomez Medina
- **Programme management**: Arielle Bennett, Dave Chapman, Davide Sarmiento Perez, Batool Almarzouq, Alexandra Araujo Alvarez, Sydney Ambrose
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- Book: https://the-turing-way.netlify.com
- Newsletter: https://tinyletter.com/TuringWay
- GitHub: https://github.com/alan-turing-institute/the-turing-way
- Slack: https://tinyurl.com/jointuringwayslack
- Book dash community share outs on Friday 17 November

  https://www.eventbrite.co.uk/e/the-turing-way-book-dash-community-share-outs-and-celebrations-nov-2023-tickets-735393400457
- Original artwork by Scriberia: https://doi.org/10.5281/zenodo.3332807
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WALKING PEOPLE THROUGH THE BASICS
TOOLS
NETWORKING
SHARING BEST PRACTICE
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HELPING PEOPLE GROW
OUR COMMUNITY
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