

# Open Research for Responsible Adoption of Open Source

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Malvika Sharan

Pronouns: she/her



Slides shared on Zenodo: <https://zenodo.org/record/14831656>  
@malvikasharan, DOI: 10.5281/zenodo.14831656





London, UK

**Co-Founder OLS (Open Life Science)**

Senior Researcher - The Alan Turing Institute

**Lead of The Turing Way**

Lead of Community Management Team

Germany

**M.Sc, PhD, Community Building experience**

Worked in European Molecular Biology Laboratory,  
connected with Open Science projects

Bangalore,  
Karnataka

**Bachelor's degree  
and worked briefly**

Ranchi,  
Jharkhand

**Hometown**

@malvikasharan



# Open Source are Socio-Technical

Human agency is intertwined with technology and collaboration.

Open tools, practices and platforms enable building, deployment and monitoring of the socio-technical systems such as in AI applications.



# Open Source Inspired the Open Science Movement

Everyone can **freely access, reuse, reproduce, build upon** and distribute research objects.

Community framework for **collaboration, peer production** and sustainability.





## Open Science for global research

Combines many forms of practices to make scientific knowledge ‘open’ (by design).

## Accessible for everyone

No price barriers, no technical barriers!

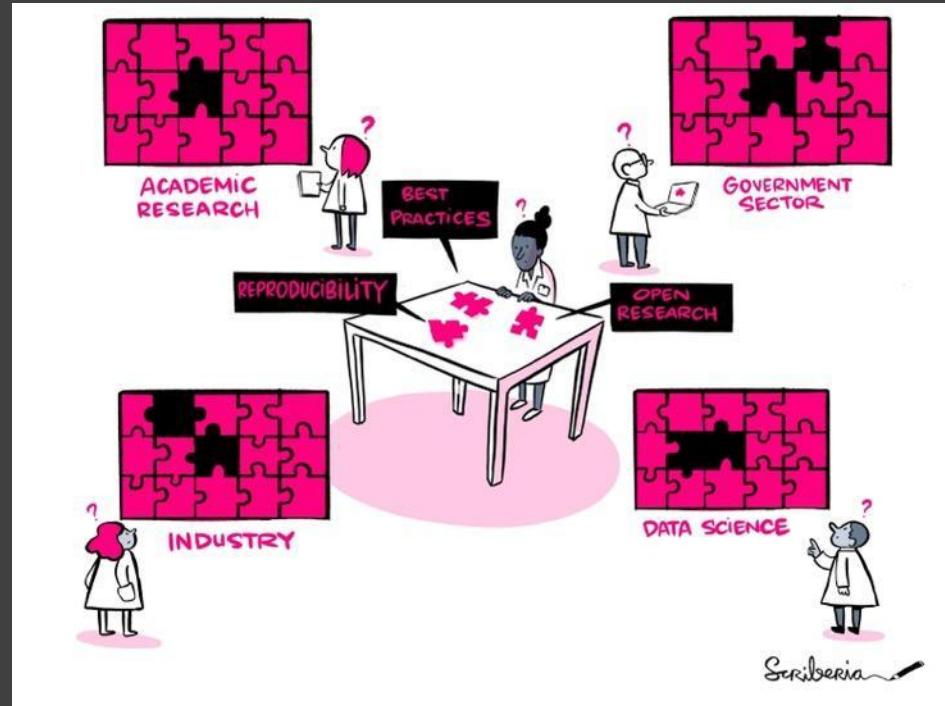
## Inclusive for everyone

Enables everyone to participate and benefit from scientific advancements.

# Open Research == Open Science == Open Scholarship

Open means different things in different contexts, and hence, there is no single or fixed “open practice”.

We don't know what we don't know.



Ten arguments against Open Science that you can win.

<https://www.software.ac.uk/blog/2020-12-17-ten-arguments-against-open-science-you-can-win>.

CC-BY 4.0 image by *The Turing Way* and Scriberia, Zenodo:<https://zenodo.org/record/14831656>

# *The Turing Way*

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*A community-led project on data science.*

We are an open source, open collaboration and globally distributed community working together to make data science accessible, reproducible and beneficial.

# *The Turing Way*



A *community-led project on data science*.

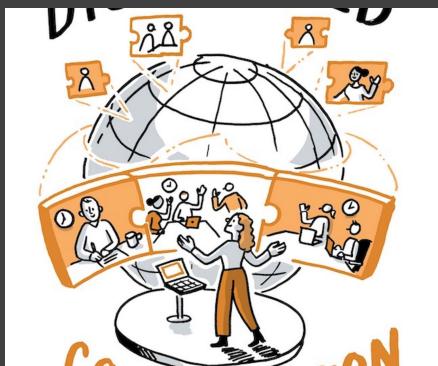
We are an open source, open collaboration and globally distributed community working together to make data science accessible, reproducible and beneficial.



**Open Source**  
Book



**Collaborative**  
Community



**Good Practices**  
Globally Distributed



**Movement**  
Always in Progress



≡



# Guide for Reproducible Research

pathway Early Career Researchers pathway Early Career Researchers pathway Project Leaders  
pathway Research Software Engineers pathway Software Citation

This guide covers topics related to skills, tools and best practices for research reproducibility.

The *Turing Way* defines reproducibility in data research as data and code being available to fully rerun the analysis.

There are several definitions of reproducibility in use, and we discuss these in more detail in the [Definitions](#) section of this chapter. While it is absolutely fine for us each to use different words, it will be useful for you to know how *The Turing Way* defines *reproducibility* to avoid misunderstandings when reading the rest of the handbook.

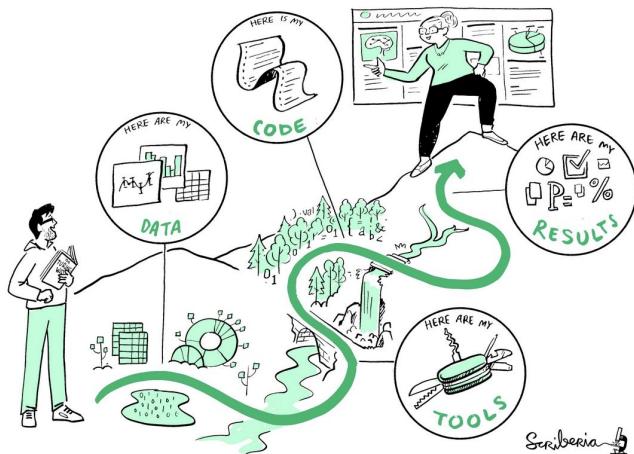


Fig. 7 The Turing Way project illustration by Scriberia. Used under a CC-BY 4.0 licence. DOI: [10.5281/zenodo.3332807](https://doi.org/10.5281/zenodo.3332807).

Search  
✖ + K

Welcome  
Foreword  
**Guide for Reproducible Research**

Overview  
Open Research  
Version Control  
Licensing  
Research Data Management  
Reproducible Environments  
BinderHub  
Code Documentation  
Code Quality  
Code Testing  
Code Reviewing Process  
Reusable Code  
Continuous Integration (CI)  
Reproducible Research with Make

		Data	
		Same	Different
Analysis	Same	Reproducible	Replicable
	Different	Robust	Generalisable

# Responsible Tech takes more than open and reproducible practices

[the-turing-way.org](http://the-turing-way.org)

The screenshot shows the left sidebar of the Turing Way website. At the top is a search bar with a magnifying glass icon and keyboard shortcuts (% + K). Below it is a 'Welcome' section. The main menu includes 'Foreword', 'Guide for Reproducible Research' (which is highlighted with a red border), 'Guide for Project Design', 'Guide for Communication', 'Guide for Collaboration', 'Guide for Ethical Research', 'Community Handbook', and 'Afterword'. To the right of the sidebar is a large, colorful illustration titled 'the TURING WAY'. The illustration features a central path with a person pushing a shopping cart filled with documents. Along the path are several buildings representing different research practices: 'COLLABORATION' (with two people talking), 'PROJECT DESIGN' (with a blueprint), 'REPRODUCIBILITY' (with a factory-like building), 'COMMUNICATION & OUT REACH' (with a person at a podium), and 'ETHICS' (with a scale). The path ends with the text 'TOO EASY NOT TO DO' in a stylized font. The artist's signature 'Scriberia' is in the bottom right corner of the illustration.

Fig. 1 The Turing Way project illustration by Scriberia. Zenodo. <http://doi.org/10.5281/zenodo.3332807>



<a href="#">.github</a>	Remove prettier configuration	
<a href="#">book</a>	minor update	
<a href="#">communications</a>	Fix typos	
<a href="#">conferences</a>	Add KW formatting pedantry	
<a href="#">project_management</a>	Update online-collaboration-cafe.md	
<a href="#">templates</a>	Updating Github templates	
<a href="#">tests</a>	Add "et cetera" as a deprecated Latinism	
<a href="#">workshops</a>	Remove mis-pasted text	
<a href="#">.all-contributorsrc</a>	Merge pull request #991 from alan-turing-institute/all-contributors/a...	5 days ago
<a href="#">.gitignore</a>	ignore pptx in workshop folder	9 months ago
<a href="#">.travis.yml</a>	add html-proof file again	last month
<a href="#">CODE_OF_CONDUCT.md</a>	her -> their	6 months ago
<a href="#">CONTRIBUTING.md</a>	Update CONTRIBUTING.md	2 months ago
<a href="#">GOVERNANCE.md</a>	Read through months later	5 months ago
<a href="#">LICENSE.md</a>	Fix typo in licence	2 months ago
<a href="#">README.md</a>	Merge pull request #991 from alan-turing-institute/all-contributors/a...	5 days ago
<a href="#">book_skeleton.md</a>	Update book_skeleton.md	13 months ago
<a href="#">contributors.md</a>	Add myself to contributors.md	11 months ago
<a href="#">tips_and_tricks_survey.md</a>	Update tips_and_tricks_survey.md	14 months ago
<a href="#">ways_of_working.md</a>	Adjust team contact section	5 months ago



**GitHub:**  
[github.com/  
alan-turing-institute/  
the-turing-way](https://github.com/alan-turing-institute/the-turing-way)

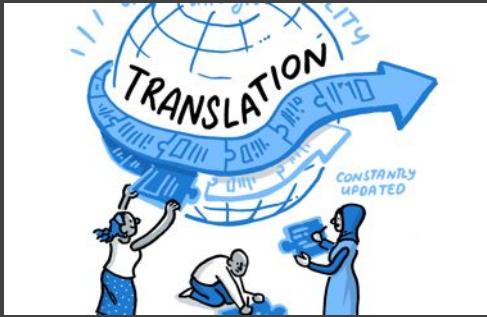
# Pathways for collaboration



*Diverse Perspectives*



*Combined Efforts*



*Equitable Participation*



*Open Recognition*

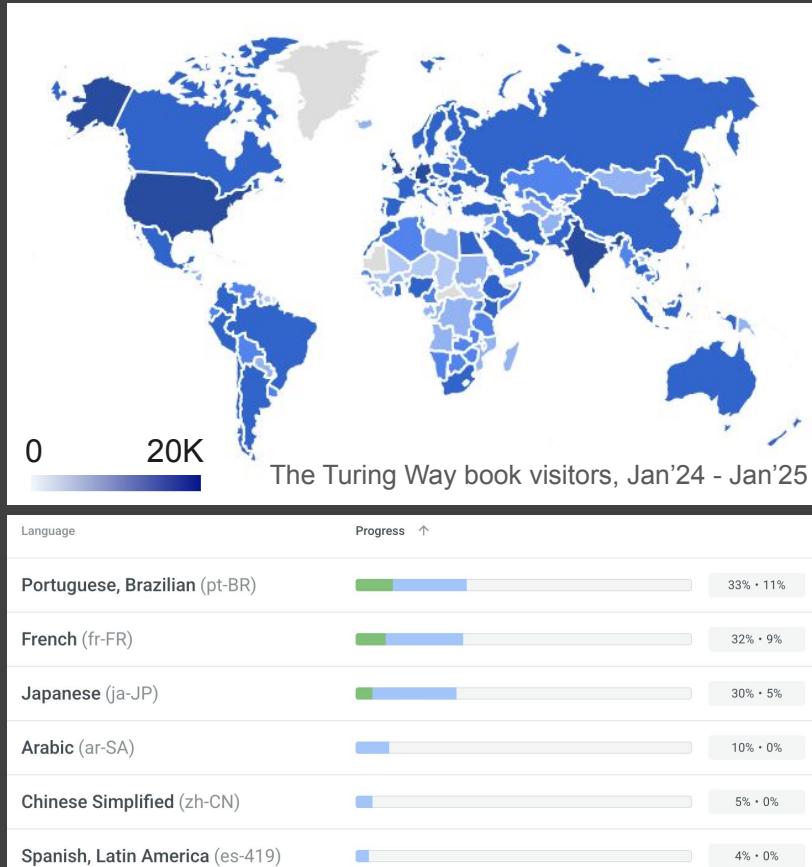


*Co-Creation*

# The project belongs to the community

[the-turing-way.org](https://the-turing-way.org)

- Open by Design, 87,000 unique users
- 1000+ community members, 6000+ monthly users - community-led/informed governance
- Translation in 5+ languages, referenced by 100+ articles, reports and policies
- Collaboration with 50+ organisations. Replication/extension by 20+ projects
- Project and sector-specific use cases



# *The Turing Way:* the-turing-way.org



**Malvika Sharan**

Senior Researcher: Open Research, Lead of The Turing Way



**Arielle Bennett**

Senior Researcher: Open Source, The Turing Way Practitioners Hub



**Anne Lee Steele**

Research Community Manager



**Léllé Demertzí**

Research Project Manager

5 years

>400 Chapters

500+ Contributors

Numerous community-maintained resources.



**Kirstie Whitaker**

The Turing Way Founder



Search  
⌘ + K

## Welcome

- Foreword
- Guide for Reproducible Research
- Guide for Project Design
- Guide for Communication
- Guide for Collaboration
- Guide for Ethical Research
- Community Handbook
- Afterword

## **Leadership & governance**

Project leads, community reps,  
Working group chairs

## **Chapter writing, training, outreach, maintenance**

Regular volunteer and experts  
from the community

## **Accessibility & Onboarding**

Liz Hare, Precious Onyewuchi,  
Anne Lee Steele + WG

## **Infrastructure Maintainers**

Sarah Gibson, Jim Madge,  
Danny Garside, Brigitta Sipőcz  
+ WG

## **Community Events**

Anne Lee Steele, project teams  
and collaboration-led



Different PathWAYS  
in *The Turing Way*

## **Organisational advocacy**

Carlos Martinez, Zoe Turner,  
Chris Erdmann, Lena K., ...

## **Book Dash**

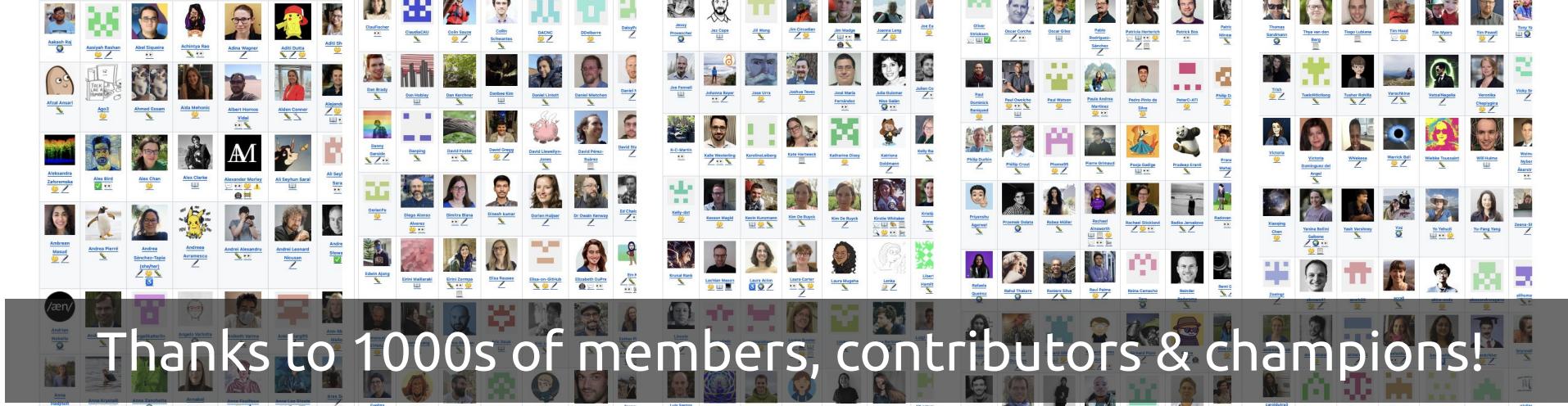
Arielle Bennett, Esther Plomp,  
Emma Karoune, Alexandra A. A +  
WG

## **Localisation & Translation**

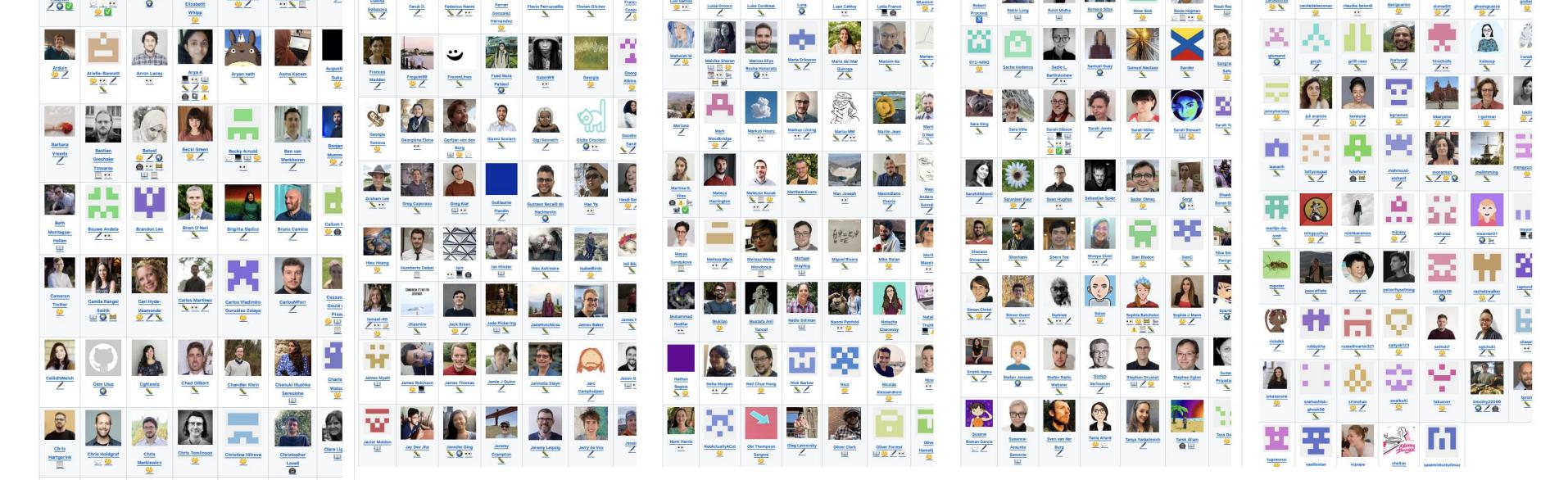
Batool Almarzouq, Andrea  
Tapia Sanchez + WG

## **Environmental Data Science**

Alejandro Coca, Anne Fouilloux



Thanks to 1000s of members, contributors & champions!



# The Turing Way Practitioners Hub



Cohort-based approach to enhance expertise, strategies, and readiness among industry actors to **adopt AI and best practices** as shared in *The Turing Way*.

*Our goal is to enable organisations to lead innovative, community/user-centric, and ethical data science and AI business.*



BridgeAI



Innovate  
UK

# BridgeAI

Empowering UK businesses to harness the power of AI

*With the potential to increase UK GDP by up to 22%, AI technologies are key. Innovate UK BridgeAI, a £100 million investment, stimulates the adoption of AI in priority sectors, creating new opportunities for businesses, jobs and economic growth while driving increased productivity.*



The  
Alan Turing  
Institute

bsi.

BridgeAI



Innovate  
UK

**BridgeAI**

## Funding and Support for Innovators to adopt AI



**Connect** businesses with AI experts and build an innovation community



**Bridge expertise** to co-create trusted AI services and technologies



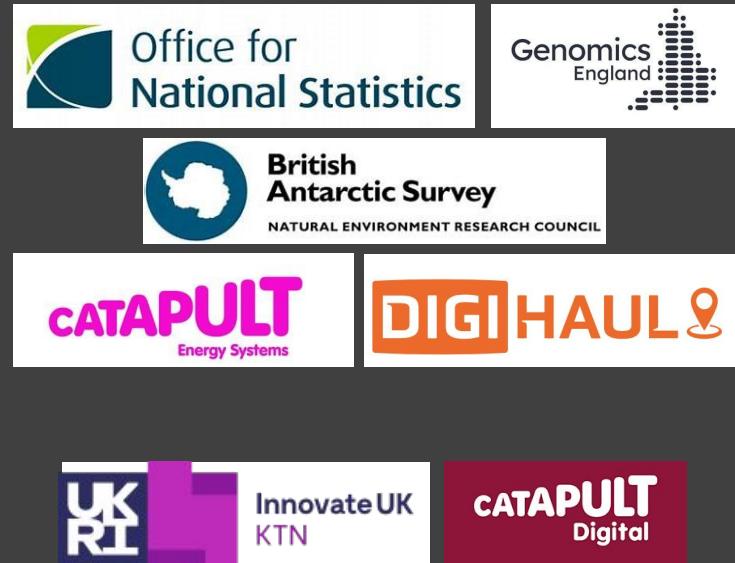
**Upskill** high-growth potential sectors in AI to develop new capabilities

# Cohort-Based Programme for Organisations

The  
Alan Turing  
Institute

Pilot cohort in 2023 with five organisations:

- engaged in the Hub around **open, reproducible and collaborative practices**
- co-created case studies **capturing the state of these practices** in their organisations
- exchanged and adopt approaches from across different sectors to **improve their business**
- Utilised ***The Turing Way*** to engage in **bidirectional flow** of their knowledge & visibility



First Cohort Partners

# Case Study Series 2023

Exploring the intersection of data science and open practices  
at British Antarctic Survey

Stuart Gillespie  James Byrne  Melody Clark   
Matthew Gascoyne  Lucy Stephenson  Alexandra Araujo Alvarez 

Meet the ONS open sourcers: promoting practices for working  
in the open



AI in transportation: DigiHaul's vision for decarbonising the  
UK's road network

Stuart Gillespie  Fernan  
Rowan Hemsi  Kir  
Wenjia Tang  Alexandra Ar  
Malv  
11 Dec  
Report Open

Genomics England and *The Turing Way*: a path to open  
science in a sensitive data landscape

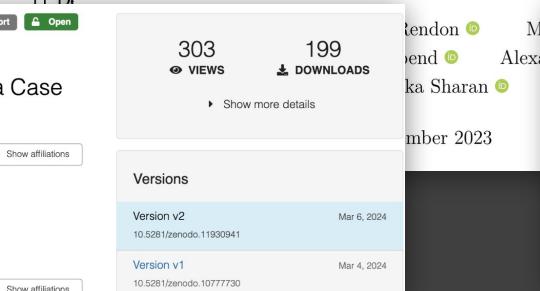
Published March 6, 2024 | Version v2

Organisational Adoption of Open and Responsible AI: Meta Case  
Study from The Turing Way Practitioners Hub Cohort 1

Sharan, Malvika ; Gillespie, Stuart 

Others:

Smynakis, Michalis<sup>1</sup> ; Morris, Claire<sup>2</sup>; Guernion, Nicolas<sup>3</sup>; Matser, Vera ; Whitaker, Kirstie<sup>3</sup> ;  
Araujo Alvarez, Alexandra<sup>3</sup> ; Bennett, Anelia<sup>3</sup> ; Laher, Shakir<sup>3</sup> ; Jarvis, Jimmy<sup>4</sup>;  
Haben, Stephen<sup>5</sup> ; Roberts, Damon<sup>5</sup>; Young, Samuel<sup>5</sup>; Tang, Wenjie<sup>6</sup>; Banner, Natalie<sup>7</sup> ;  
Hemsi, Rowan<sup>8</sup>; Bowen, Ross<sup>8</sup>; S. Dan<sup>8</sup>; Stephenson, Lucy<sup>9</sup> 



The power of collaboration: creating maximum value from  
open source energy projects

Stuart Gillespie  Alison Halford Catherine Jones Damon Roberts  
Robbie Morrison Samuel Young Selina So Stephen Haben   
Alexandra Araujo Alvarez  Kirstie Whitaker  Lucy Killoran   
Malvika Sharan 

11 December 2023

# Experts in Residence

- Experts from various sectors engage with and explore the use of open, ethical and collaborative AI approaches
- Exchange and adopt knowledge from across different domains to improve their business
- Utilise *The Turing Way* resources and share their knowledge back with the community
- Case studies serve as reference for others

The  
Alan Turing  
Institute



# 2024 Practitioners Hub Cohort with 40 Experts in Residence



The Turing Way Practitioners Hub: [www.turing.ac.uk/turing-way-practitioners-hub](http://www.turing.ac.uk/turing-way-practitioners-hub), Logos taken from the respective organisations

# Practitioners Hub Cohort 2024-25 Journey



# How we help

We work across all technology sectors and whether you are a sole entrepreneur, pre-seed, early stage, growth stage, or established innovator scaling up your business, Innovate UK Business Connect expertise is uniquely placed to help you identify the right support and services for your innovation journey.



## Support for Start-ups

We help turn your ideas into reality across every sector and in every part of the UK, through funding, business network and growth advice, world class facilities and centres, and access to talent and skills.

[Connect →](#)

## Scale up support

Innovate UK Business Growth empowers innovation-driven businesses like yours to grow at pace, achieve their industry ambitions and transform society.

[Read more →](#)

## Invest in innovation

Innovate UK Investor Connect is a secure, regulated digital marketplace for innovative businesses to connect with investors and secure capital to grow.

[Read more →](#)

## Collaboration

Our Innovation Networks bring together industry leaders, innovators, government officials, policymakers, and academics to tackle the world's most pressing challenges.

[Get involved →](#)

## Expert advice

Our people have expertise across a whole range of skill sets and disciplines. They are experienced collaborators who are set up to understand your innovation project and connect you to our network.

[Our experts →](#)

## Sort By:

 Recently Added Closing Soon

## Type of Opportunity:

- Business growth
- Collaboration
- Commercial challenges
- Commercial opportunity
- Contracts & procurement
- Funding
- Other
- Training and resources

## Who are you:

- Academia
- Company
- Individual
- Public sector
- RTO
- SME

## Help build a strong case for funding The Turing Way's maintenance and sustainability #4032

 Open

[the-turing-way/the-turing-way/issues/4032](https://the-turing-way/the-turing-way/issues/4032)

"Improved our **understanding of the public sector market** and an unexpected academic market for our OntoKai knowledge infrastructure product. [...] directly responsible for us **formally including ethical risks in our AI risk management** ..." - Liam McGee, CSO, KAIASM

"We can leverage the **potential for open data to optimise whole [transportation] networks** not just individual business operations. If we can be better at sharing data and working together, we are making the cake bigger – and everyone can have a bigger slice." - Wenjia Tang, Head of Data Science, Digihaul

"I think the idea that stood out to me most from my time with the project is that true reproducibility is about more than just opening the door, it means **actively going out to others beyond the immediate environment.**" - Expert in Residence from Office of National Statistics, Cohort 2023-24

"I continue to apply lessons of **decentralised leadership, knowledge sharing, and inclusive participation** in the communities I lead." Maxine Mackintosh, One HealthTech & DS for Health Equity

# We Need to Re-Examine Open Source Ecosystem

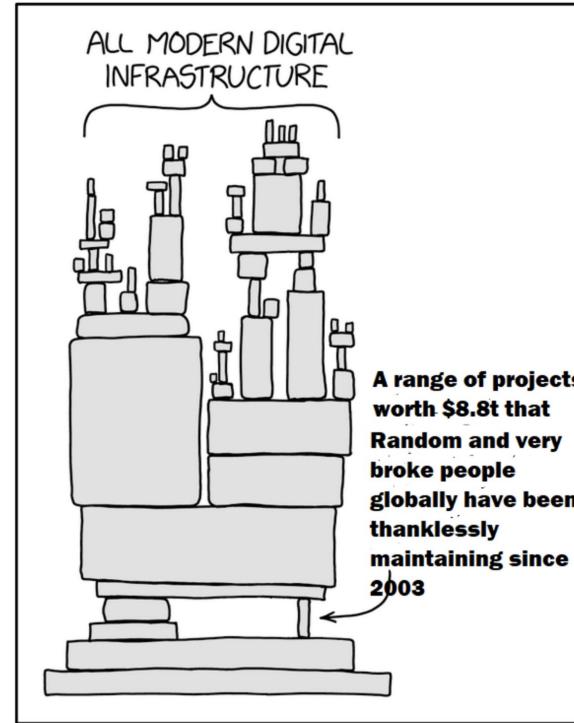


# Total value of Open Source Software

*Total value of widely-used Open Source Software (OSS) \$8.8 trillion.*

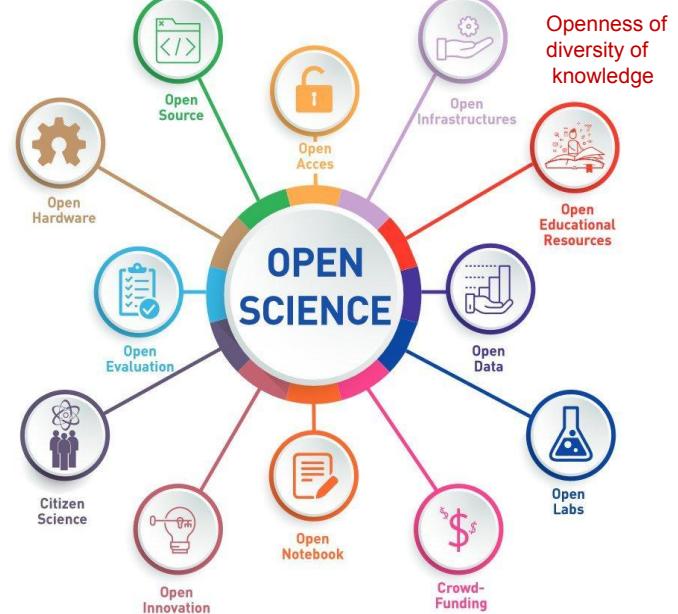
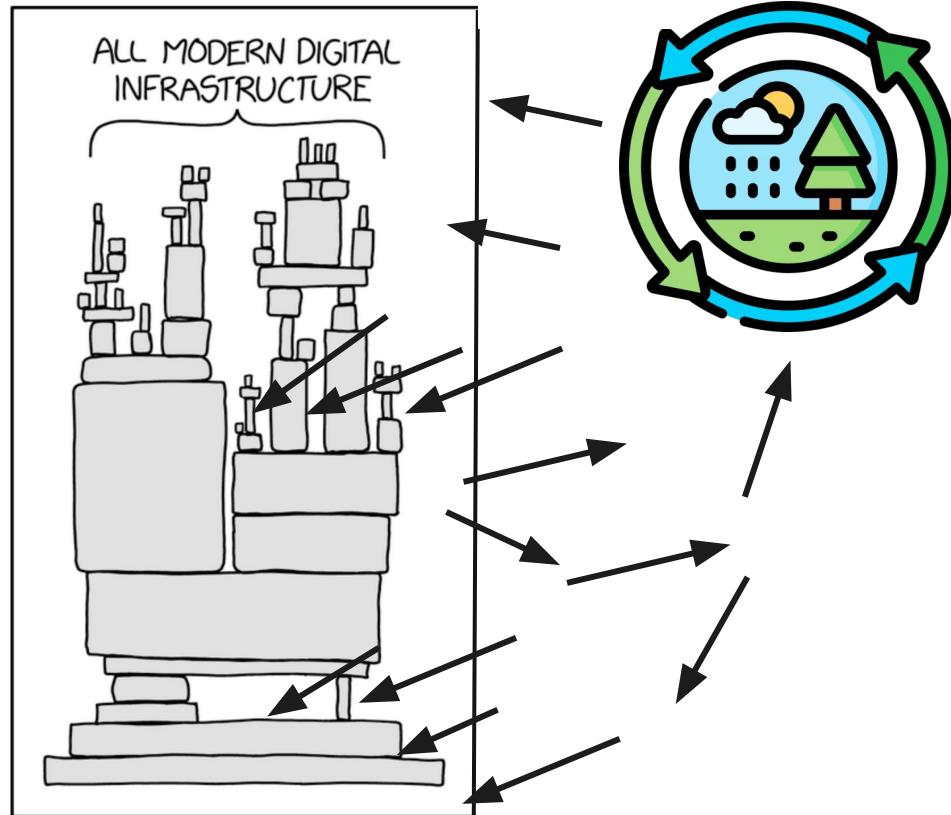
*Open source appears in 96% of codebases and some commercial software consists of up to 99.9% freely available OSS.*

*Firms would need to spend 3.5 times more on software than they currently do if OSS did not exist.*



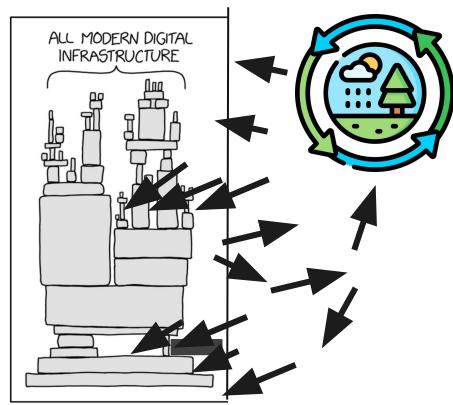
With apologies to XKCD

# What is the “true” cost of OSS ecosystem?

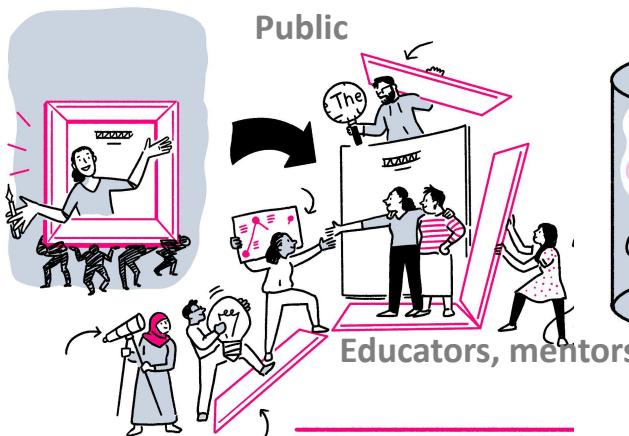


With apologies to XKCD

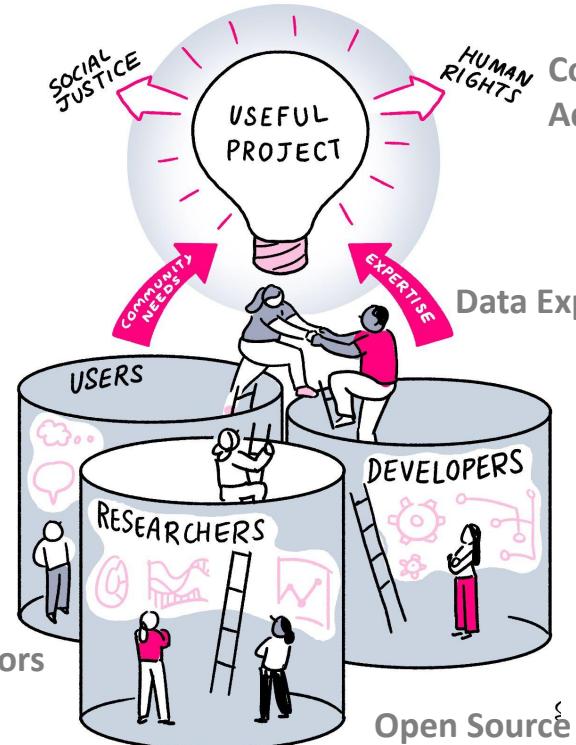
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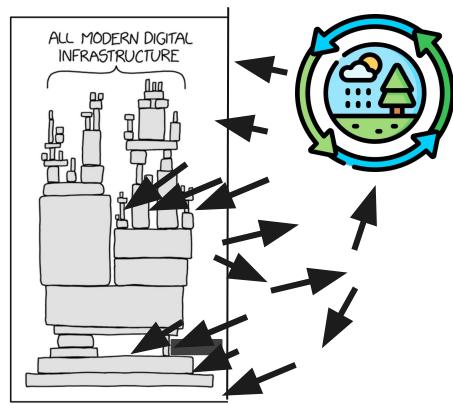


With apologies to XKCD



Users, developers,  
researchers





With apologies to XKCD

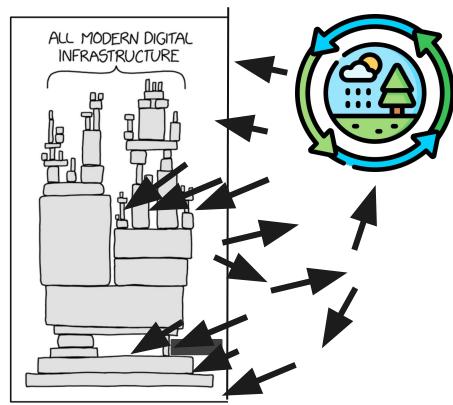
# What is the “true” cost of OSS ecosystem?

Research impact



True cost is more than the total value of OSS.  
In fact, expertise outside OSS are currently  
underappreciated, underfunded, and underutilised.

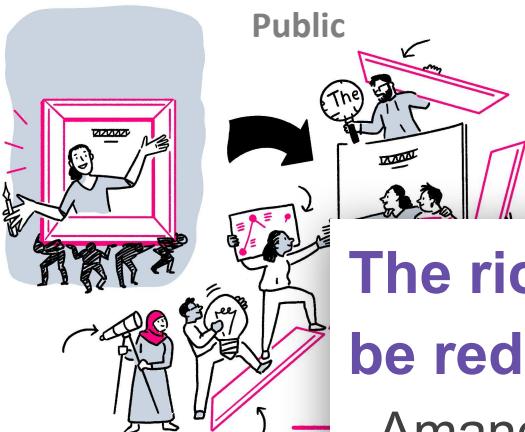
Users, developers,  
researchers



With apologies to XKCD

# What is the “true” cost of OSS ecosystem?

Research impact



Users, developers,  
researchers

**The richness of open source ecosystems cannot be reduced to a single monetary value.**

- Amanda Casari

# Help build a strong case for funding The Turing Way's maintenance and sustainability #4032

 Open

[the-turing-way/the-turing-way/issues/4032](https://the-turing-way.the-turing-way/issues/4032)

"[The Turing Way] resources allowed me to save hours of preparation, enabling **more time to build meaningful relationships with stakeholders**" - Alexandra Araujo Alvarez J., Senior Community Manager, BridgeAI

"[The Turing Way] book has become the **main reference in the field**. We tend to refer to the book as other fields refer to **Wikipedia**." - Julien Colomb, OpenMake for open and FAIR hardware, Technical University of Berlin

"I could point to the guide as an **example** of how collaborative and open projects can produce important resources for the community." - Collins Schwantes, Eco Health Alliance. Verena Institute, Open Science in disease

"Our rule of thumb is: **Content which is interesting to a general audience** should be in *The Turing Way*." - Carlos Martinez, eScience NL

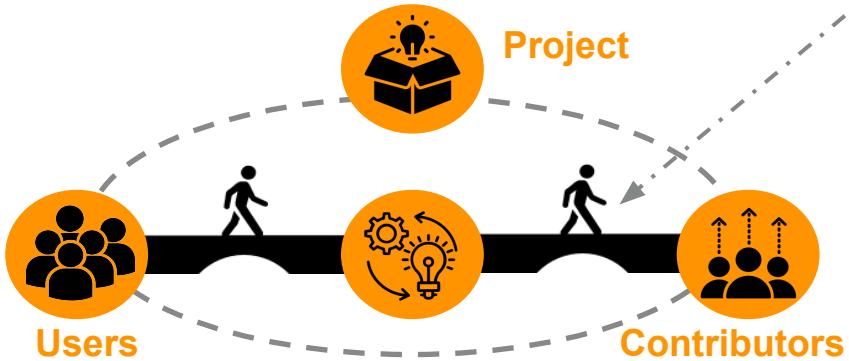
"Apart from being an important reference, The Turing Way is also an **inspiration for us in community management**- especially for being so **welcoming and inclusive**." - Radovan Bast, CodeRefinary

**"It's nice to be seen, you know."** - Harry Lloyd, Research Software Engineer at The British Library, Digital Preservation Coalition's Python Study Groups.

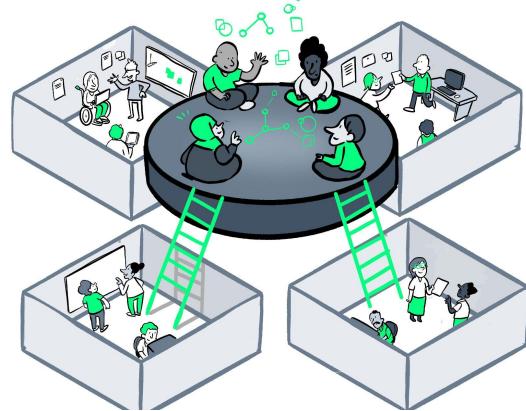
# Professionalising Community Management Roles in Interdisciplinary Research

arXiv > physics > arXiv:2409.00108

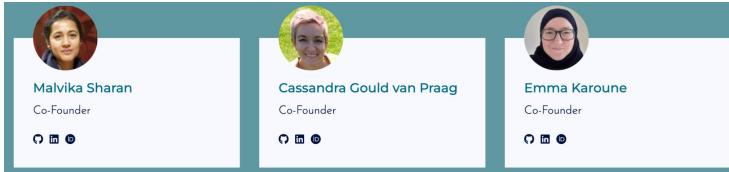
Sharan, M., Karoune, E., Hellon, V., Van Praag, C.G., et al. 2024. preprint  
arXiv:2409.00108.



## Research Community Management Team



Coming soon!



Strategic and technical support for Community Engagement and Participation

OLS (Open Life Science) is dedicated to capacity building and diversifying leadership in OS ecosystem.



[we-are-ols.org](http://we-are-ols.org)

**11**  
Cohorts

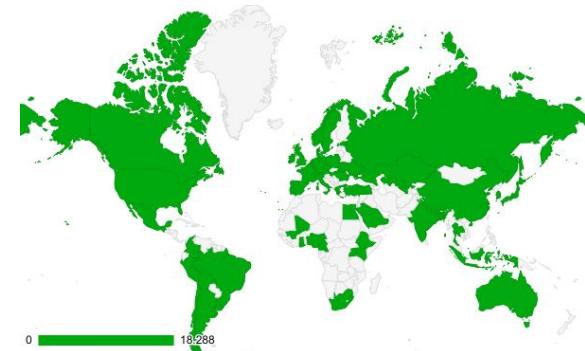
**700+**  
Participants

**300+**  
Projects

**65+**  
Countries

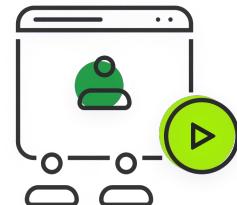
Open Seeds &  
Nebula cohorts

**Open Seeds**  
Mentoring & Training Program



A worldwide community

Our three pillars: *Open for Collaboration*



Open Science  
Training



Research  
on Open



Open  
Incubator  
35

# Collaborate with me

- [malvika@we-are-ols.org](mailto:malvika@we-are-ols.org) & [msharan@turing.ac.uk](mailto:msharan@turing.ac.uk)
- Home page: <https://malvikasharan.github.io>



# Acknowledgement

- *The Turing Way* Team, Arielle Bennett, Alexandra Araujo Alvarez, Anne Lee Steele, Léllé Demertzi and our Community, Collaborators & Contributors
- OLS team, Yo Yehudi, Bérénice Batut, Patricia Herterich, and our staff, fellows, Community, Collaborators & Contributors

**Thank you!**

