The Alan Turing Institute

Open science for enabling reproducible, ethical and collaborative research:

Insights from The Turing Way

Malvika Sharan

Pronouns: she/her

@malvikasharan, @turingway, CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933, DOI: 10.5281/zenodo.7716933

Shared spaces create shared experiences

Where You Are Is Who You Are? The Geographical Account of Psychological Phenomena. Frontiers in Psychology, doi: 10.3389/fpsyg.2020.00536, Image: FES | Foundation for Ecological Security. Annual Report 2019-2020, Picture by Dilip Kumar Champi

Shared spaces create shared experiences

Commons (*noun*)

Where You Are Is Who You Are? The Geographical Account of Psychological Phenomena. Frontiers in Psychology, doi: 10.3389/fpsyg.2020.00536, Image: FES | Foundation for Ecological Security. Annual Report 2019-2020, Picture by Dilip Kumar Champi

Shared spaces create shared experiences

Commons (*noun*)

Land or resources belonging to or affecting the whole of a community.

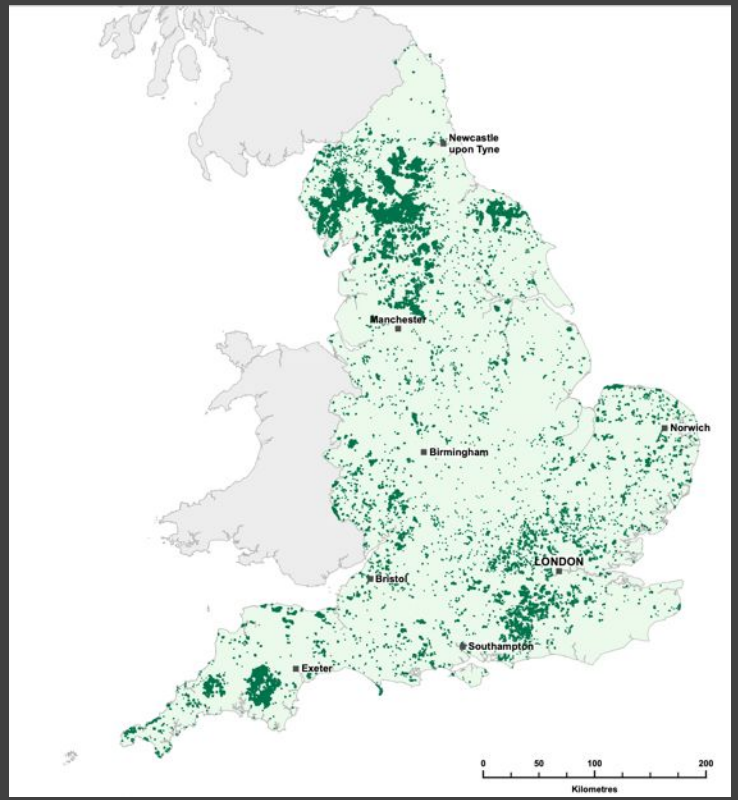
Basu, S., Jongerden, J., & Ruivenkamp, G. (2017). Development of the drought tolerant variety Sahbhagi Dhan: exploring the concepts commons and community building. International Journal of the Commons, 11(1). doi: 10.18352/ijc.673, FES | Foundation for Ecological Security. Annual Report 2019-2020, Picture by Dilip Kumar Champi, https://fes.org.in

Commons in the UK

Commons Registration Act 1965

Registration of rights to common land, town greens, and village greens in England and Wales.

Open Spaces Society (earlier Commons Preservation Society, 1899) worked to register common lands & rights.

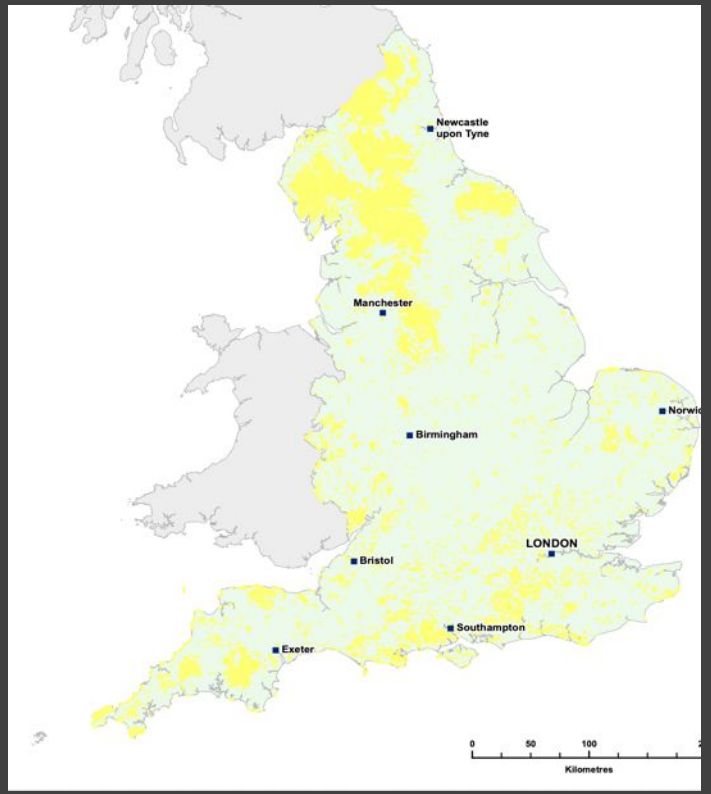


Crown Copyright and database rights 2017. Ordnance Survey 100022861. 09/08/2017, magic.defra.gov.uk/, Registered Common Land England.
https://www.legislation.gov.uk/ukpga/1965/64, https://www.peakdistrict.gov.uk/looking-after/how-we-look-after-access/crow-timeline

Participatory processes to manage the Commons

Historical Ramblers group, 1935 (CC BY 4.0 License)
www.ramblers.org.uk/, *Represented Walker's Right*

1949 National Parks and Access to the Countryside Act, Countryside and Rights of Way Act 2000, Marine and Coastal Access Act 2009



Crown Copyright and database rights 2020. Ordnance Survey 100022861. 25/02/2020, magic.defra.gov.uk/, Countryside and Rights of Way Act 2000 - Access Layer (England). A history of open access land: Peak District National Park. https://www.peakdistrict.gov.uk/

Participatory processes to manage the Commons

The Commons Movement - Schumacher Center for New Economics. https://centerforneweconomics.org/apply/the-commons-program/movement

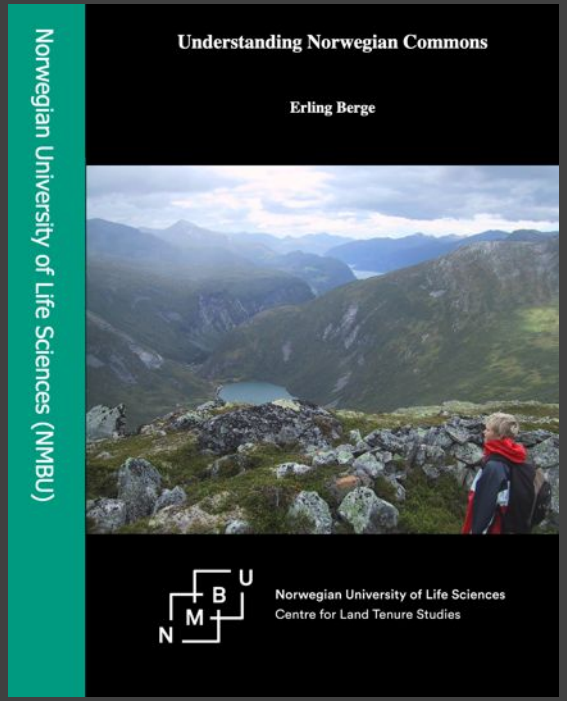
Verdun’s Ethel Parking Lot – rooftop for local culture, Montréal's participatory budget. https://www.makingmtl.ca/participatorybudget

Participatory processes to manage the Commons

The Commons Movement - Schumacher Center for New Economics. https://centerforneweconomics.org/apply/the-commons-program/movement

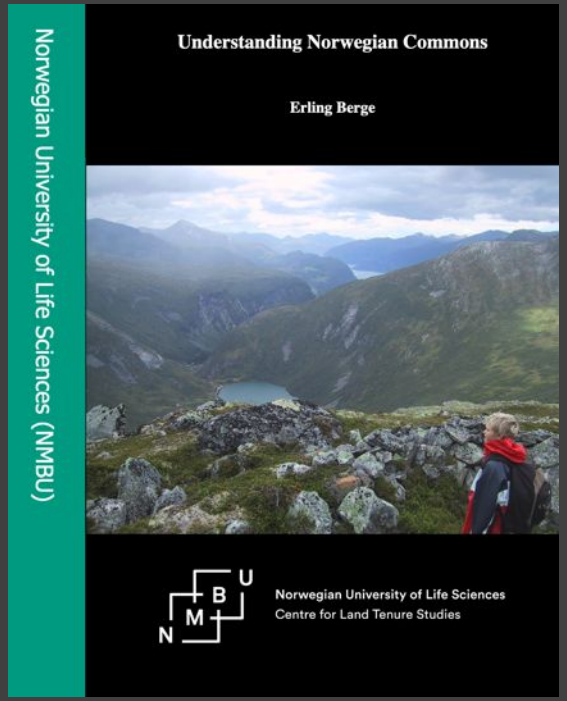
Verdun’s Ethel Parking Lot – rooftop for local culture, Montréal's participatory budget. https://www.makingmtl.ca/participatorybudget

Emergence of commons in industrialised countries



https://operaen.no/om-oss/om-operahuset/, Berge, E. (2018). Understanding Norwegian commons. Norwegian University of Life Sciences, Ås.
Berge, E., & Mckean, M. (2015). On the commons of developed industrialized countries. International Journal of the Commons, 9(2). doi: 10.18352/ijc.650

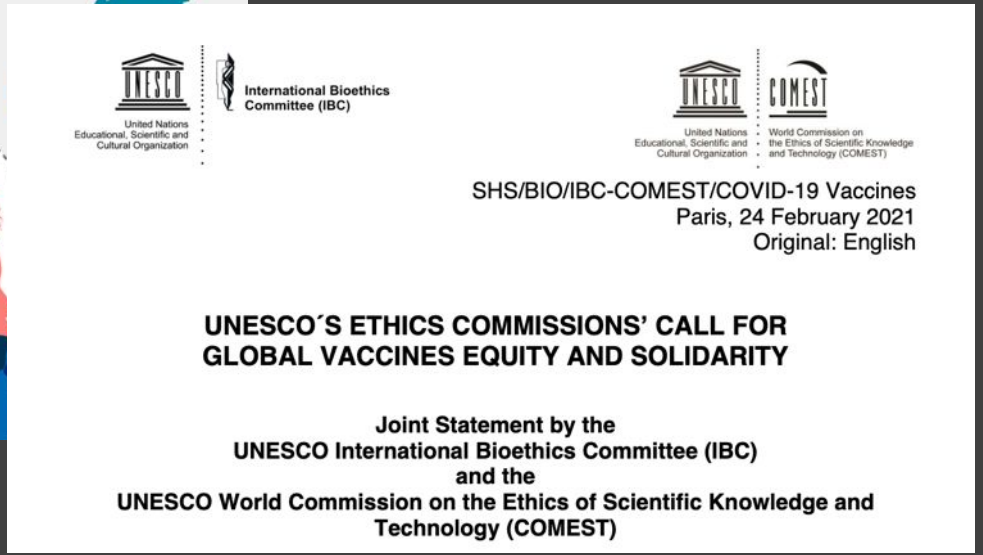
Emergence of commons in industrialised countries



Et operahus for alle: *visjon om operahuset som en **allmenning***

https://operaen.no/om-oss/om-operahuset/, Berge, E. (2018). Understanding Norwegian commons. Norwegian University of Life Sciences, Ås.
Berge, E., & Mckean, M. (2015). On the commons of developed industrialized countries. International Journal of the Commons, 9(2). doi: 10.18352/ijc.650

UNESCO calls for COVID-19 vaccines -- global public good



1) www.unesco.org/en/articles/unesco-calls-covid-19-vaccines-be-considered-global-public-good, 2) International Bioethics Committee, (2021). COVID-19 vaccines as global public goods. (2021). 3) Global vaccines equity and solidarity: for a fair, equitable and timely allocation of COVID-19 vaccines in Africa. 4) UNESCO mobilizes 122 countries to promote open science and reinforced cooperation in the face of COVID-19.

Governing the Commons: Elinor Ostrom

Extensively researched communities and provided principles for how commons can be governed equitably and sustainably – debunking “Tragedy of the Commons”.

2009 Nobel Laureate

(1933-2012)

Ostrom, E. (1990). Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge University Press. doi: 10.1017/CBO9780511807763, | Kenneth, J. A., Robert, O. K., & Simon, A. L. (2012). Elinor Ostrom: An uncommon woman for the commons. PNAS, 109(33), 13135–13136. doi: 10.1073/pnas.1210827109

Knowledge Commons

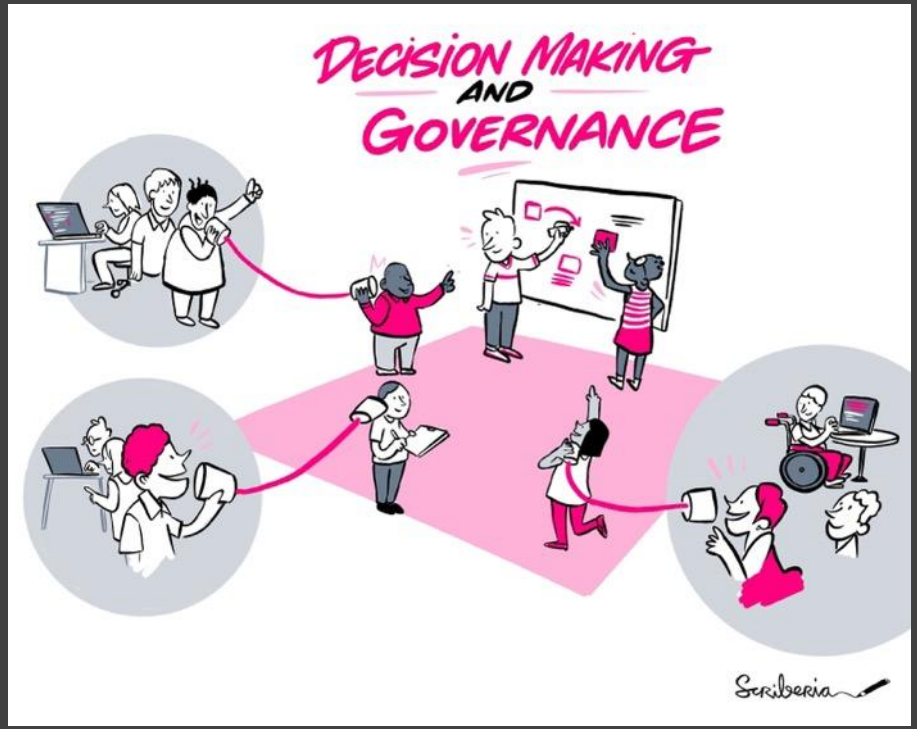
Information, data, and content that is collectively owned and managed by a community of users - without depleting their quantity or quality.

- To whom does knowledge/privilege belong?
- Who benefits from the production and circulation of knowledge?
- Who gets to participate in the knowledge production processes?
- In what ways can systems be used to increase the agency of more people over knowledge production, circulation and benefits?

Hess, C., Ostrom, E., Hess, C., Ostrom, E., Bollier, D., Ostrom, E., ...Swarthout, J. T. (2007). Understanding Knowledge as a Commons: From Theory to Practice. The MIT Press. *Contextualising Openness, 2020, edited by Leslie Chan. A. Okune, R. Hillyar, D. Albornoz, A. Posada*

Collective benefits

Digital Commons include free and open source software, open access journals, community-led projects and platforms – part of Open Science.



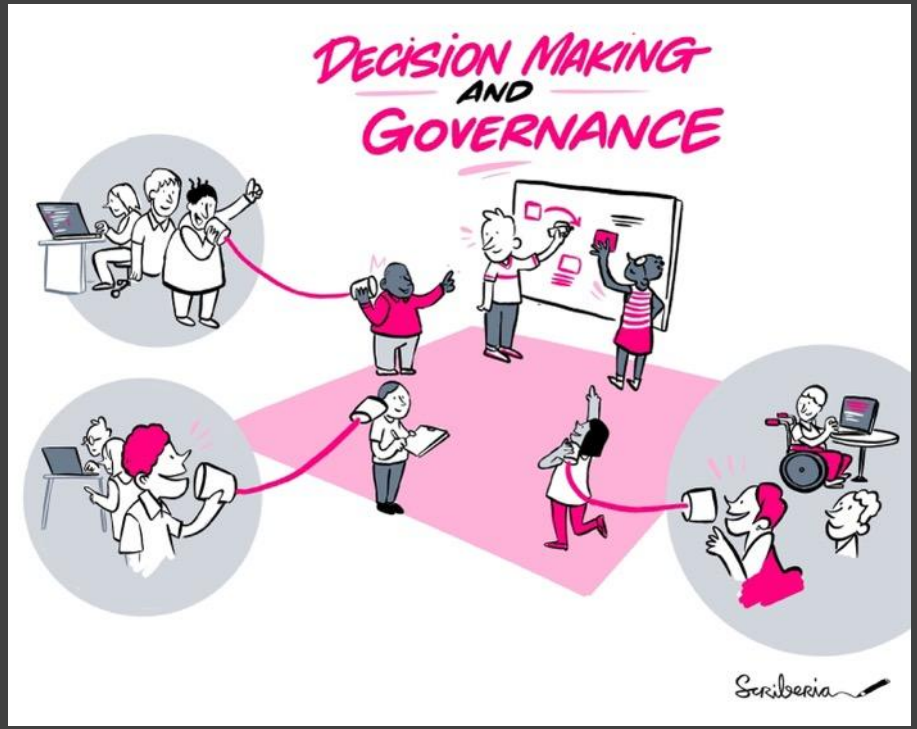
Digital commons | David Bollier. Retrieved from http://www.bollier.org/category/tags/digital-commons

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Collective benefits

You already know and practice openness.

Open Science as a common language merely validates what others may consider marginal or inconsequential.



@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Open Science

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

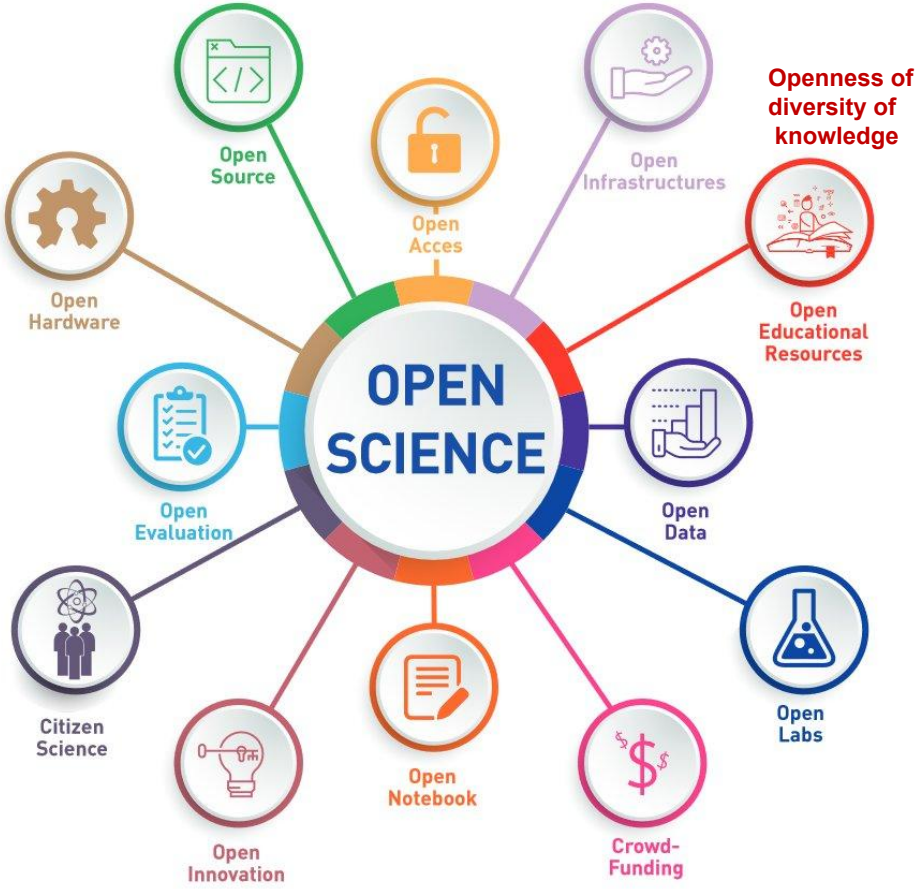
Kelly, Anthony, "With Head, Heart and Hand: Dimensions of Community Building" (Boolarong Press) ISBN 978-0-86439-076-9,
Wenger, McDermott, Snyder, A Guide to Managing Knowledge: Cultivating Communities of Practice. HBS (2002)
@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Open Science

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

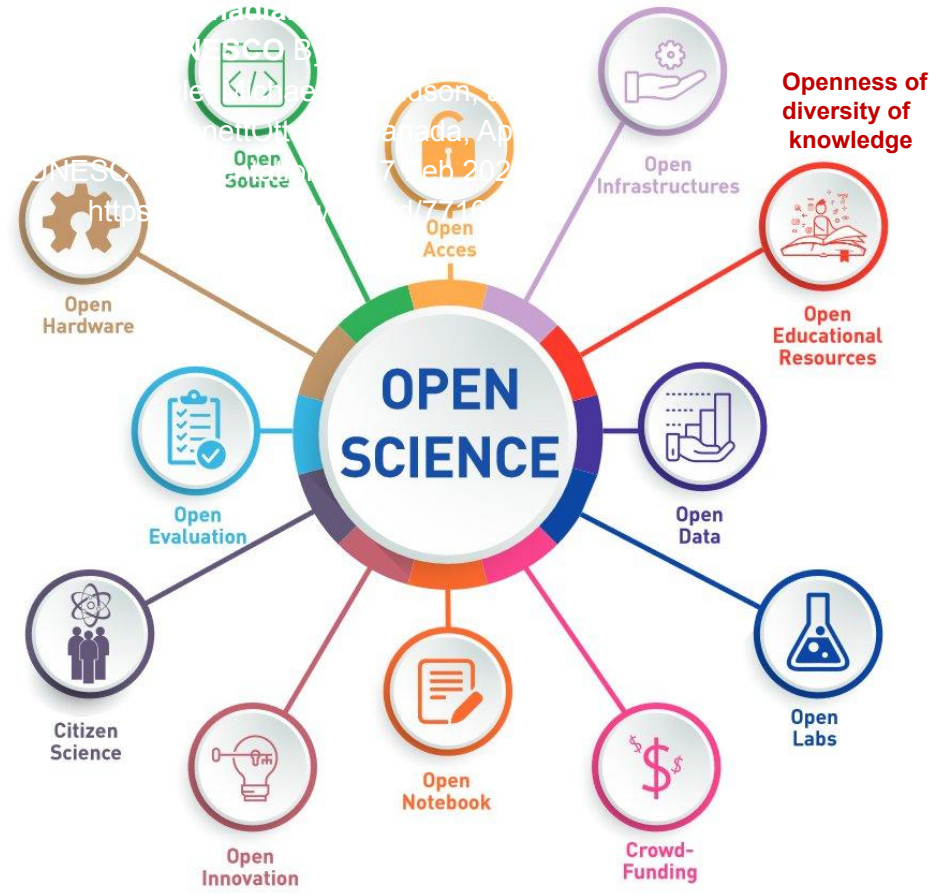
Community framework for collaboration, peer production and sustainability.

Anthony Kelly & Sandra Sewell, "With Head, Heart and Hand: Dimensions of Community Building" (Boolarong Press) ISBN 978-0-86439-076-9. Wenger, McDermott, Snyder, A Guide to Managing Knowledge: Cultivating Communities of Practice. HBS (2002)
@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933



UNESCO regards science as a human right -- the greatest collective endeavour -- that has significant value as a common good.

Toward a UNESCO Recommendation on Open Science: **Canadian Commission for UNESCO** By Ella Chan, Dick Bourgeois-Doyle, Michael Donaldson, and Eleanor Haine-BennettOttawa, Canada, April 2020, UNESCO presentation of 17 Feb 2021, https://zenodo.org/record/7716933



UNESCO regards science as a human right -- the greatest collective endeavour -- that has significant value as a common good.

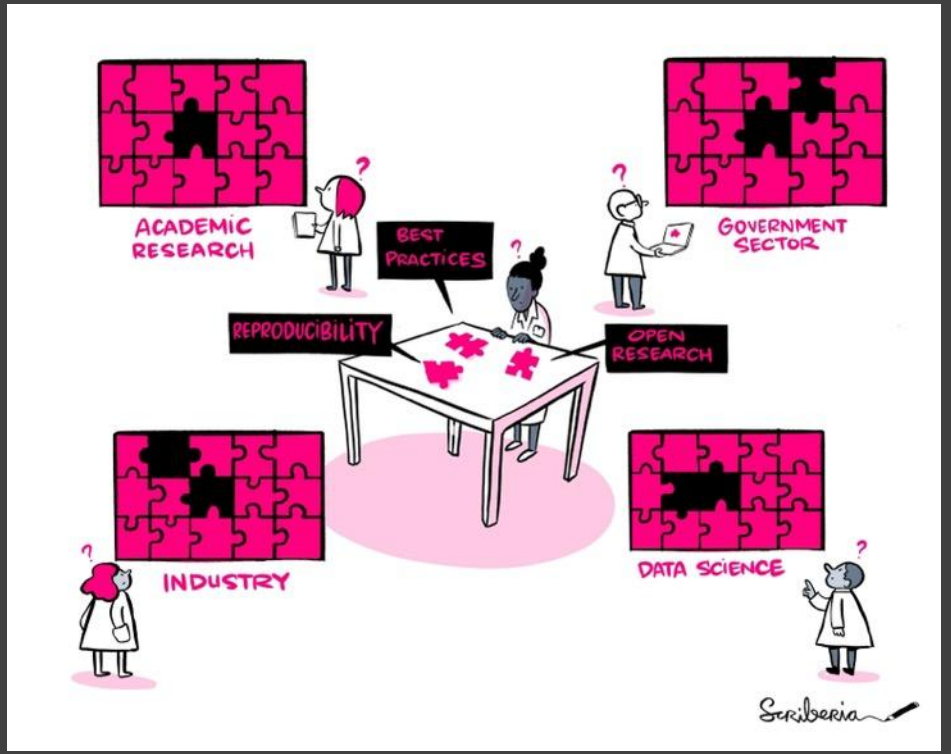
… aims to turn right to Open Science into duty to be exercised by researchers, institutions, educators, publishers, employers, libraries, and policymakers, facilitated by Member States.

Toward a UNESCO Recommendation on Open Science: **Canadian Commission for UNESCO** By Ella Chan, Dick Bourgeois-Doyle, Michael Donaldson, and Eleanor Haine-BennettOttawa, Canada, April 2020, UNESCO presentation of 17 Feb 2021, https://zenodo.org/record/7716933

Integrating open science

Open Science means different things in different contexts, and hence, there is no fixed “best practice”.

Many barriers to openness.



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, @malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

The Turing Way

An Open Science and community lead guide on Data Science.

*We involve and support a **diverse community** to make research **reproducible, ethical, and collaborative** for everyone.*

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

The Alan Turing Institute

The national institute for data science and artificial intelligence

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Challenges

Advance data science and artificial intelligence to…

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Tools, Practices and Systems

- Trustworthy systems
- Transparent reporting
- Inclusive interoperable design
- Ethical integrity
- Respectful co-creation
- Leadership in open research

The Turing Way: Book on Reproducibility

Kirstie Whitaker

Director: Tools, Practices & Systems Programme (TPS)

"We need to share the responsibility for open and reproducible science. That along with good collaboration, communication and ethics should be seen as fundamental scientific methods."

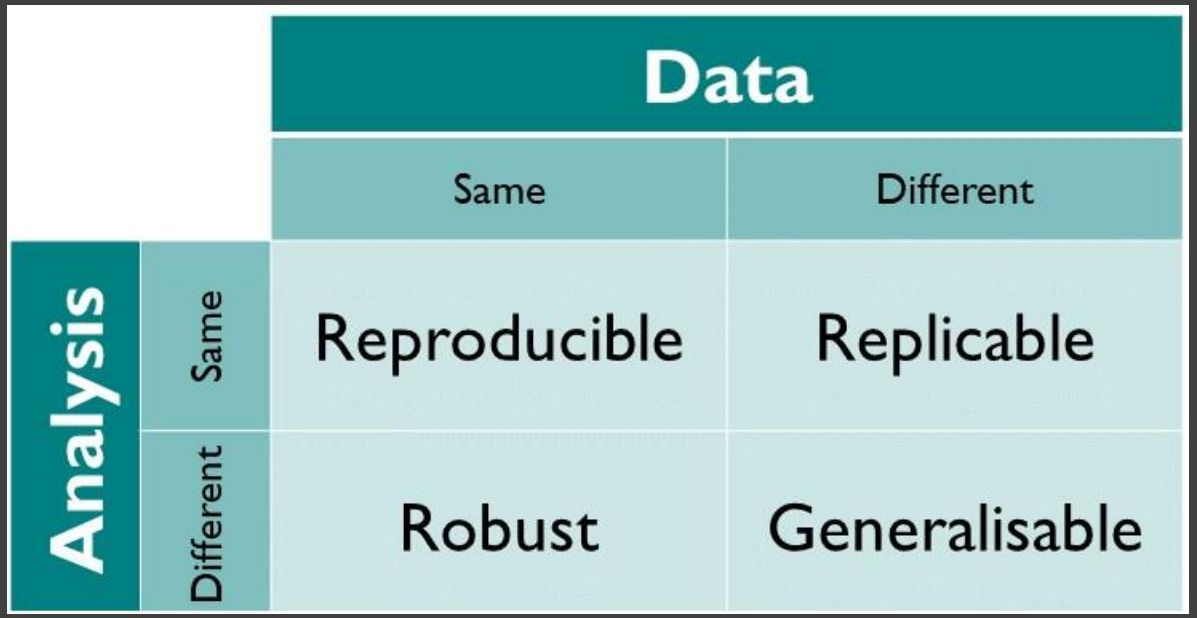
The Turing Way is a lightly opinionated guide to reproducible data science.

Our goal is to provide all the information that researchers need at the start of their projects to ensure that they are easy to reproduce at the end.

This also means making sure PhD students, postdocs, PIs, and funding teams know which parts of the "responsibility of reproducibility" they can affect, and what they should do to nudge data science to being more efficient, effective, and understandable.

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

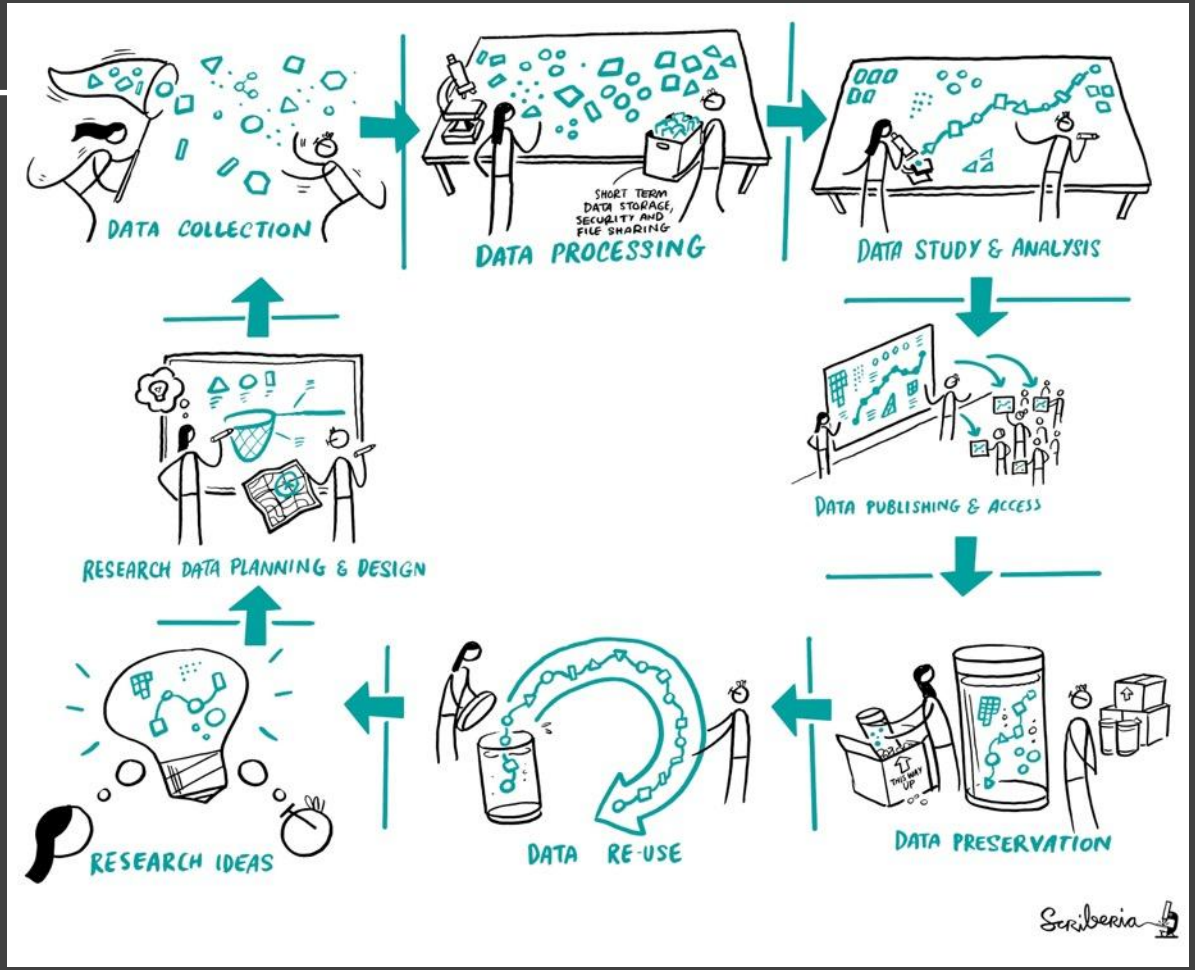
Reproducibility



@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Reproducibility

		Data	
		Same	Different
Analysis	Same	Reproducible	Replicable
	Different	Robust	Generalisable



@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Guide for Reproducible Research

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

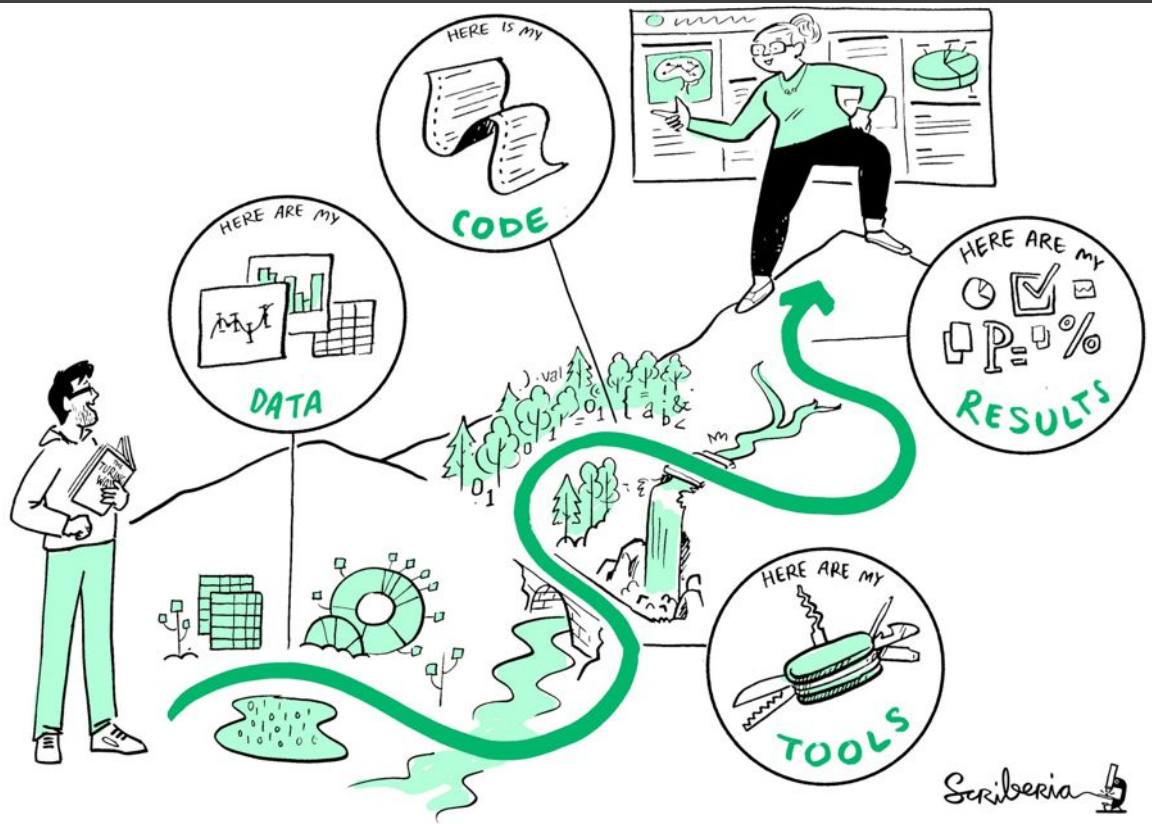


Fig. 3 *The Turing Way* project illustration by Scriberia. Used under a CC-BY 4.0 licence. DOI: 10.5281/zenodo.3332807.

The Turing Way: Guides on Data Science

Kirstie Whitaker

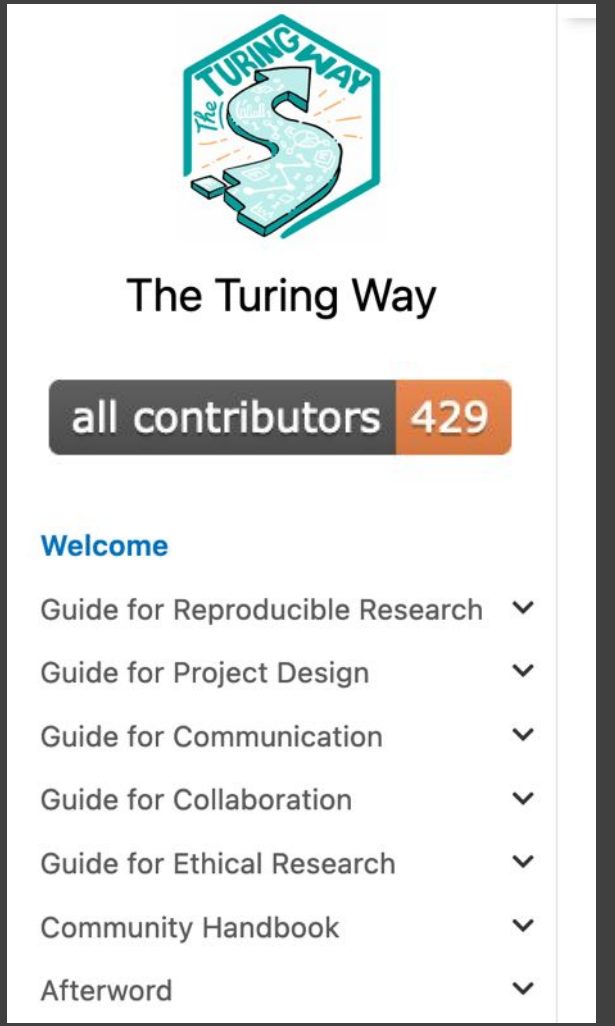
Director: Tools, Practices & Systems Programme (TPS)

Malvika Sharan

TPS Senior Researcher: Open Research & Community

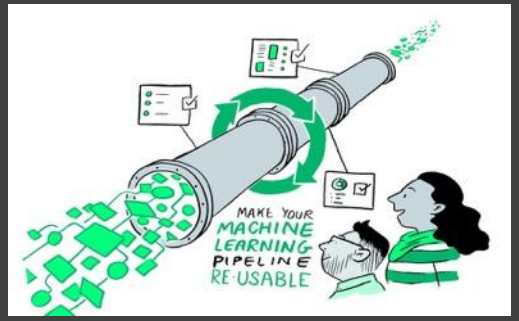
Anne Lee Steele

Community Manager, The Turing Way



@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

The Turing Way Guides

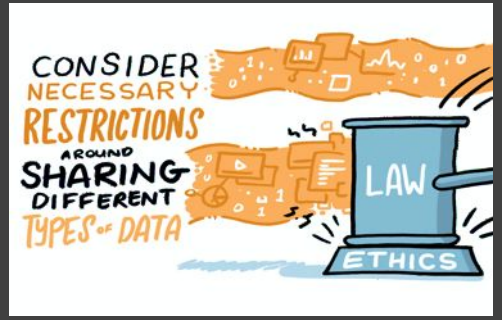


Reproducibility

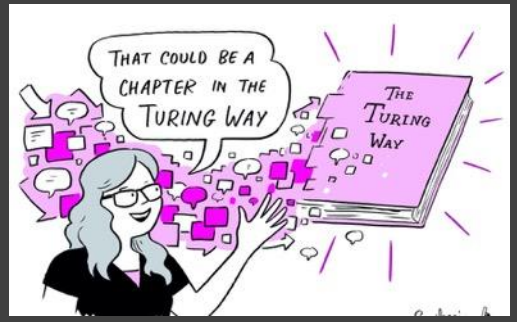
Project Design

Communication

Collaboration



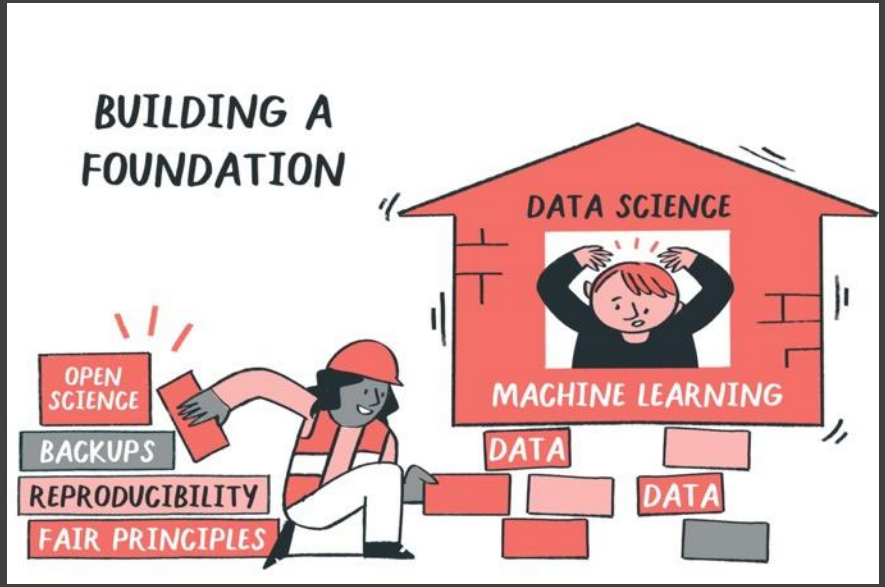
Ethical Research



Community Handbook

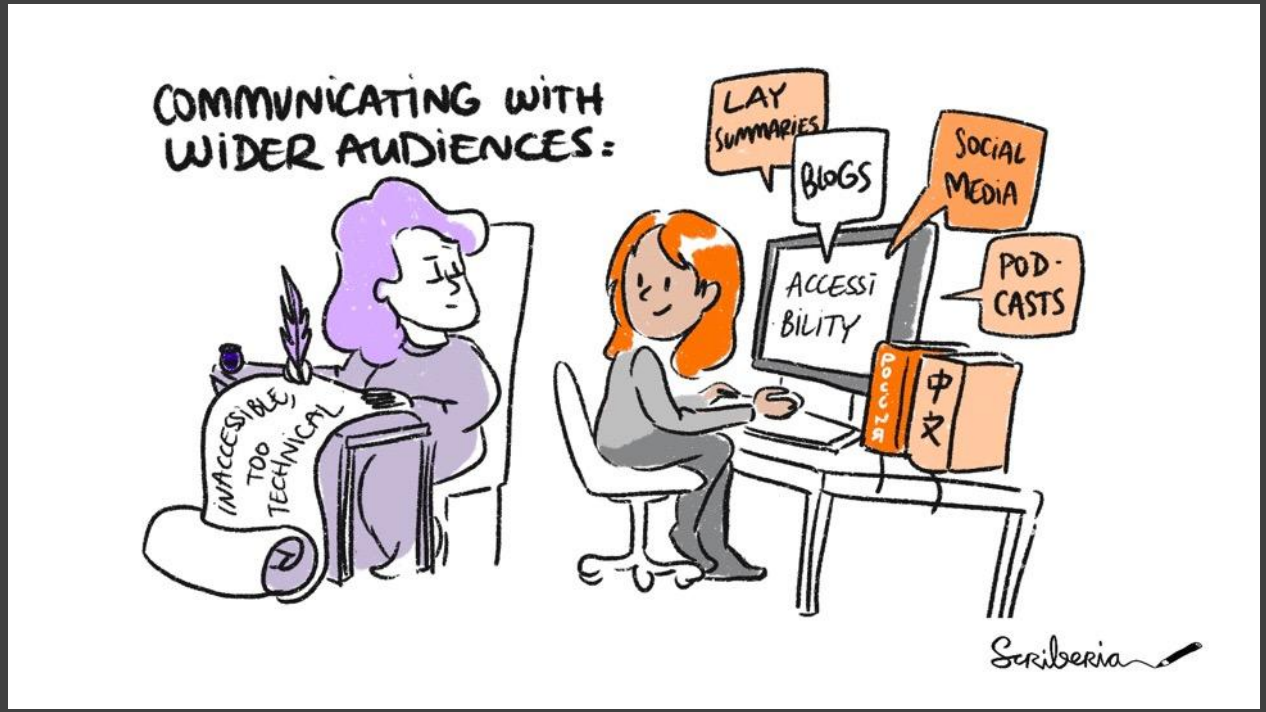
Foundational skill-set

Purpose of openness is to ensure scientific integrity and quality outcomes, achieved by applying reproducible, ethical, collaborative and inclusive research practices.



@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Guide for Communication



Overview of Guide for Communication

Open Scholarship

Blogs for Research Communication

Social Media for Research Communications

Making Research Objects Citable

Publishing Different Article Types

Communications in Open Source Projects

Authorship and Contributions on Academic Articles

Peer Review

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Guide for Collaboration

- Getting Started With GitHub
- Maintainers and Reviewers on GitHub
- Managing a New Community and Team
- Leadership in Data Science
- Research Infrastructure Roles
- Remote Collaboration
- Shared Ownership in Open Source Projects

@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Guide for Ethical Research

Introduction to Research Ethics

Research Ethics Committees Workflows

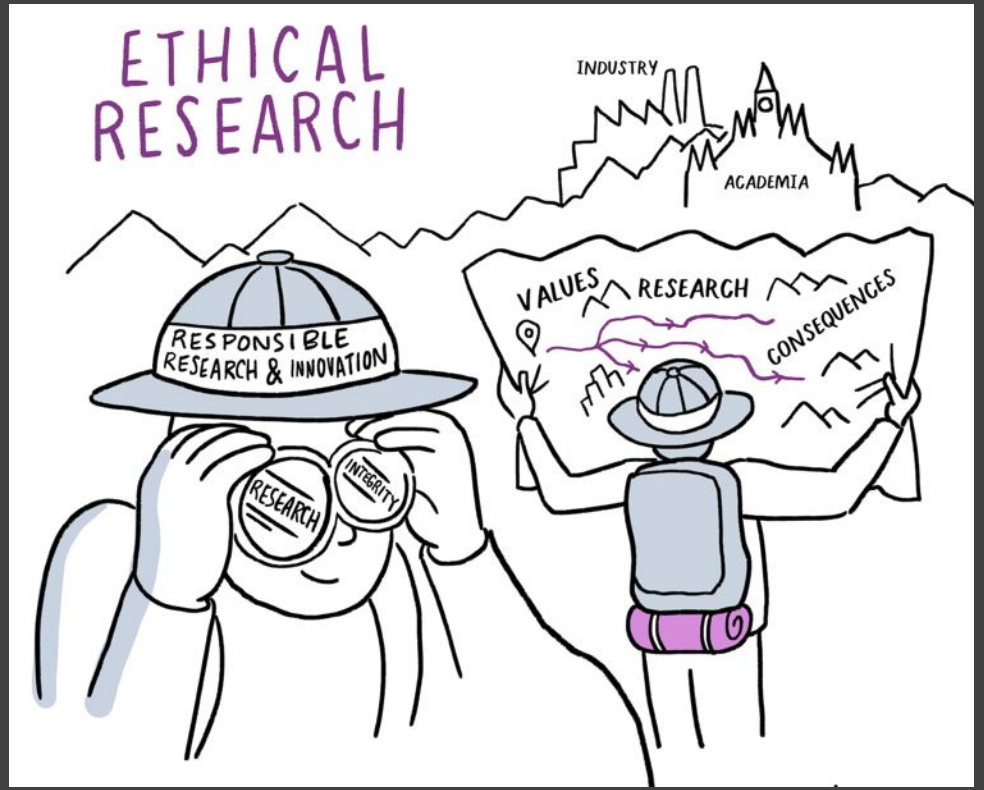
Ethical Decisions in Preclinical Research

Law, Policy and Human Rights in Ethics

Activism for Researchers

Internal Policy Advocacy

Self-Reflection



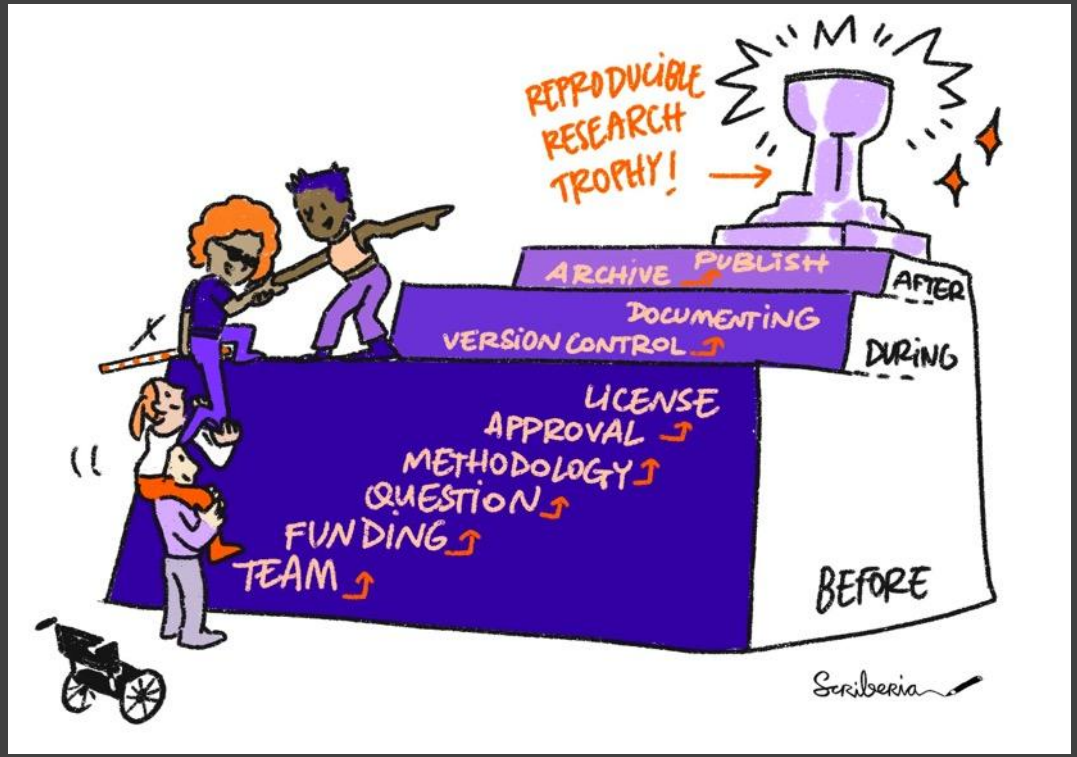
@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Guide for Project Design

Overview of Project Design

- Planning for Project Design
- Communication and Collaboration
- Reproducibility Methods
- Version Control and Documentation
- Sharing Your Research Work

Creating Project Repositories



@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Book:
the- turing-way.netlify.app/

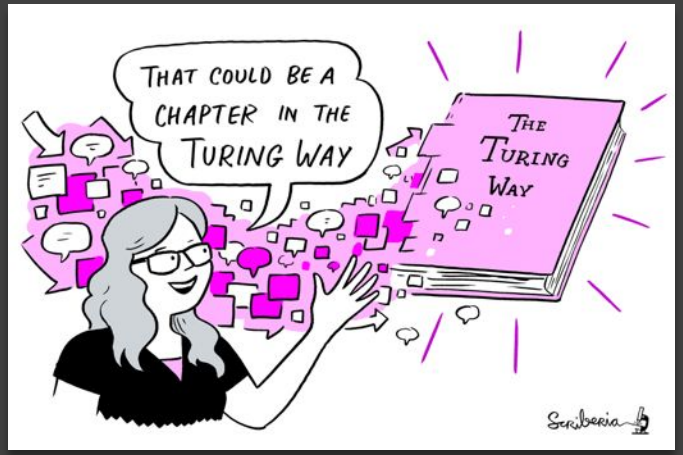
GitHub:
github.com/alan-turing-institute/the- turing-way

Twitter:
twitter.com/turingway

Email:
theturingway@gmail.com

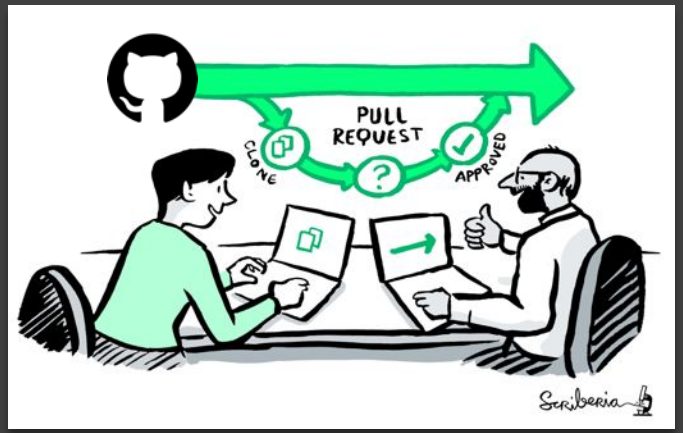
CC-BY 4.0, *The Turing Way*

A Book



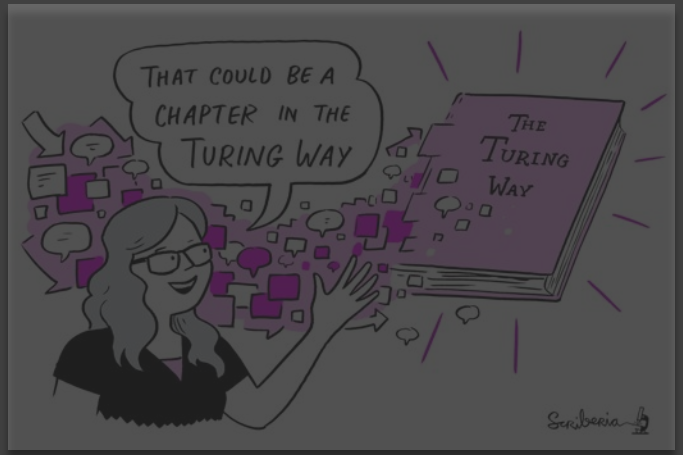
A Community

An Open Source Project



A Culture of Collaboration

A Book



A Community

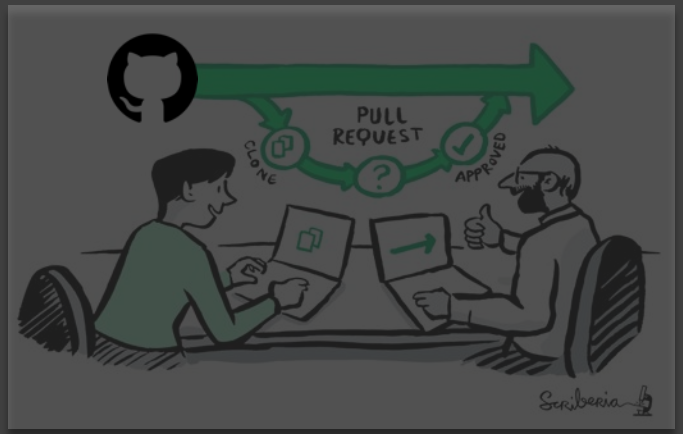
Book:
the- turing-way.netlify.app/

GitHub:
github.com/alan-turing-institute/the- turing-way

Twitter:
twitter.com/turingway

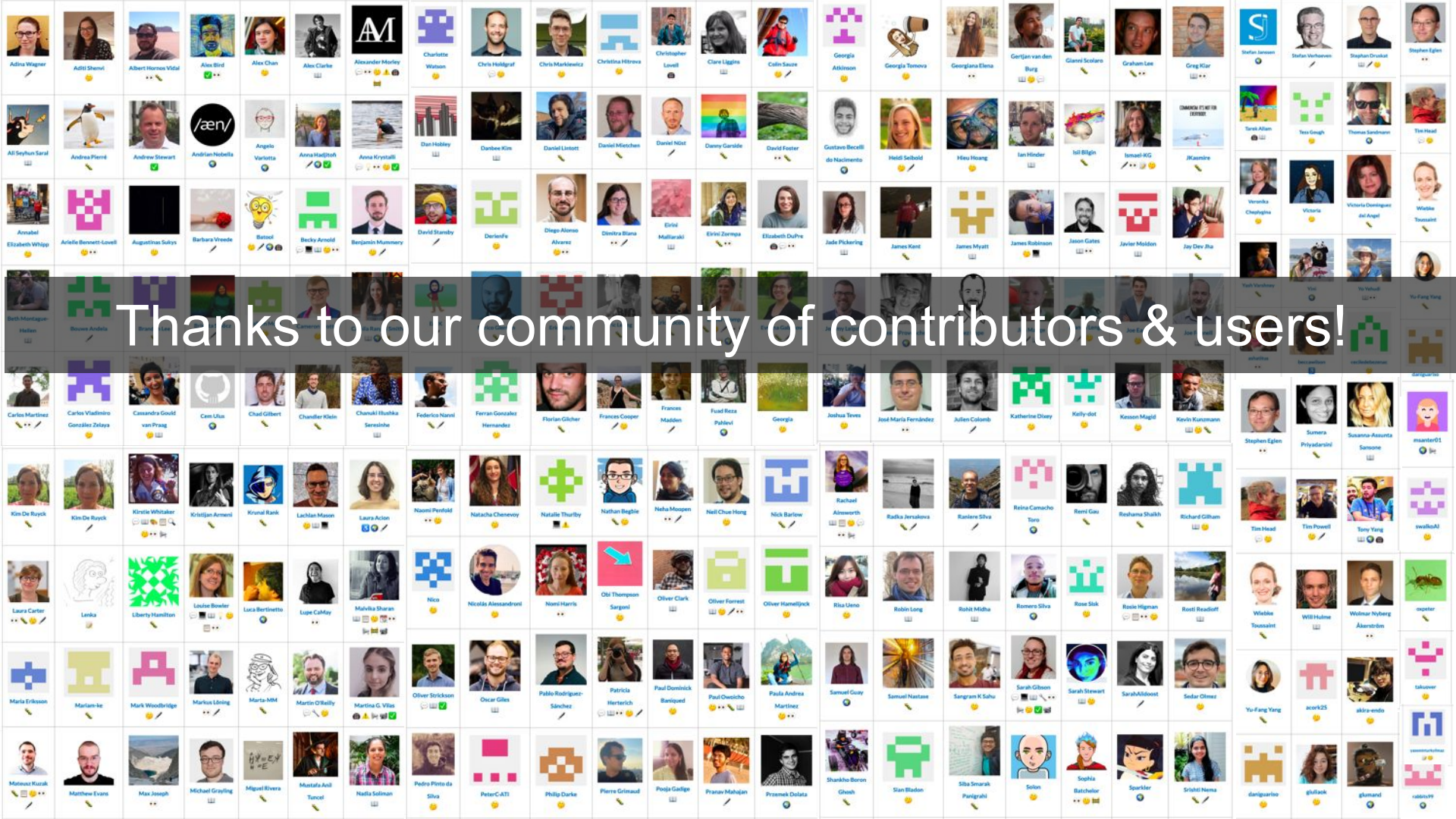
Email:
theturingway@gmail.com

An Open Source Project



A Culture of Collaboration

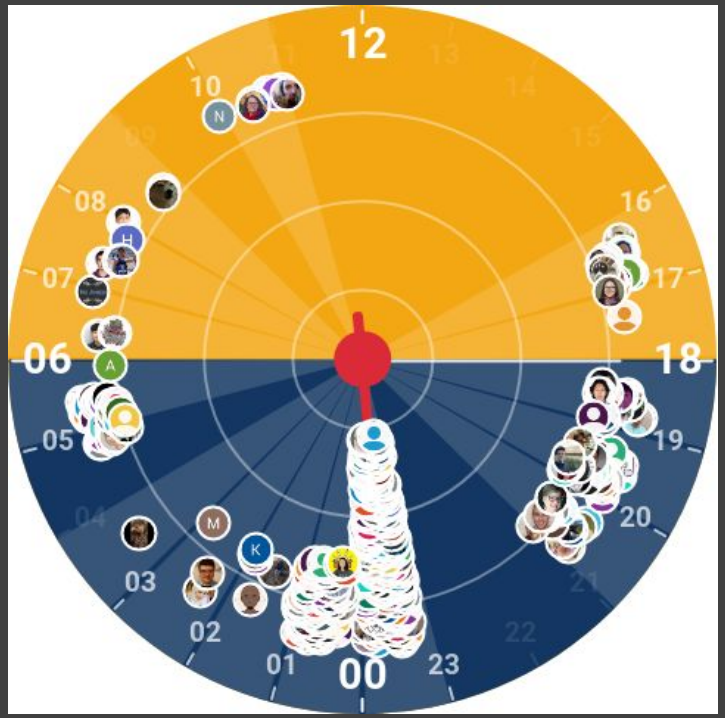
CC-BY 4.0, *The Turing Way*


Thanks to our community of contributors & users!

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

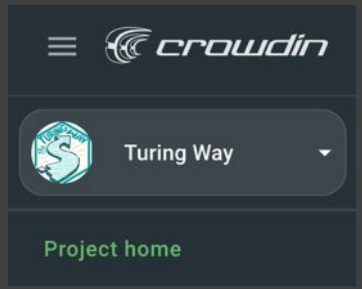
GitHub:
https://github.com/alan-turing-institute/the-turing-way

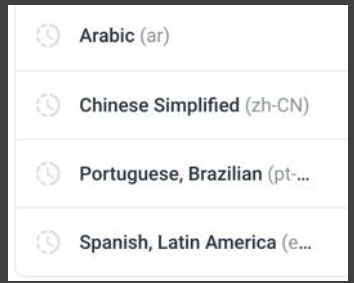
Global community: translation & contextualisation



all contributors 429

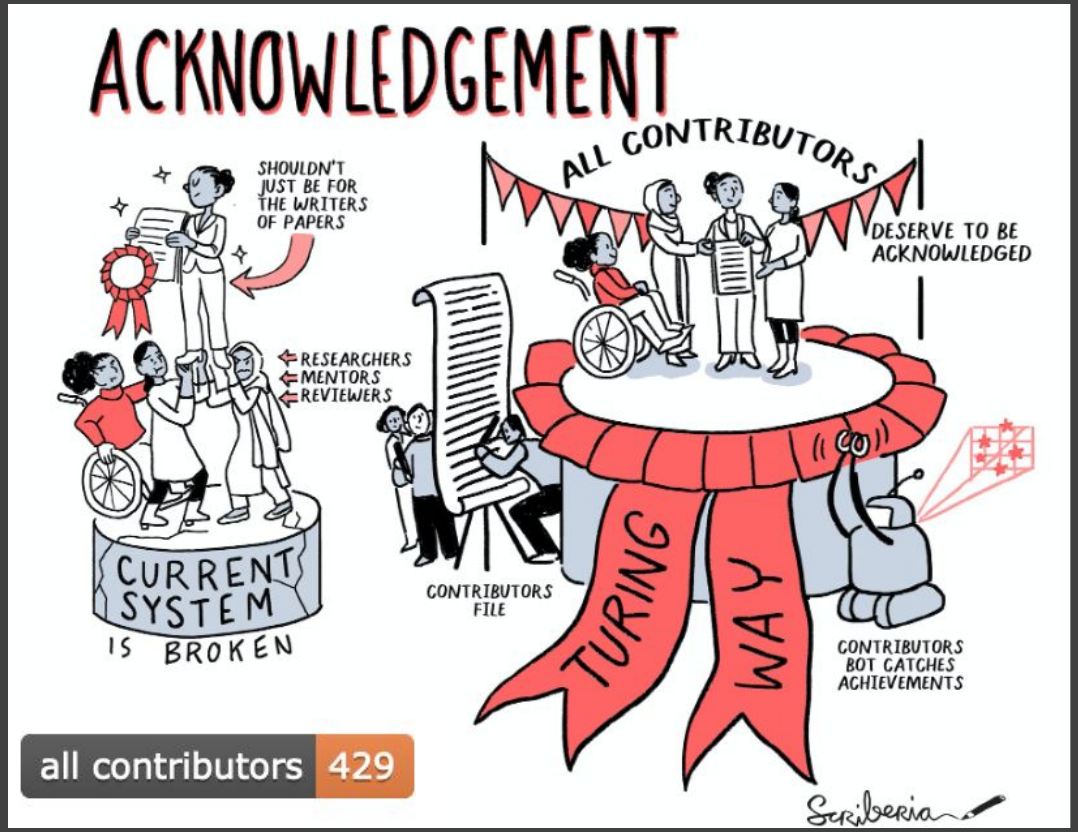
Camila Rangel-Smith (crangelsmith)	Senior Research Data Scientist, The Alan Turing Institute	The Turing Way Translation and Localisation Co-Lead
Batool Almarzouq (BatoolMM)	Postdoctoral Researcher, KAIMRC and Honorary Research Fellow, The University of Liverpool	The Turing Way Translation and Localisation Co-Lead
Alejandro Coca Castro (acocac)	Postdoctoral Research Associate, The Alan Turing Institute	The Turing Way Translation and Localisation Co-Lead
Andrea Sánchez-Tapia (AndreaSanchezTapia)	Independent researcher	The Turing Way Translation and Localisation Co-Lead





@malvikasharan, @turingway, Image by Scriberia for The Turing Way , CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Recognition for all Contributors



Afterword

Glossary

Bibliography

Contributors Record

All Contributors

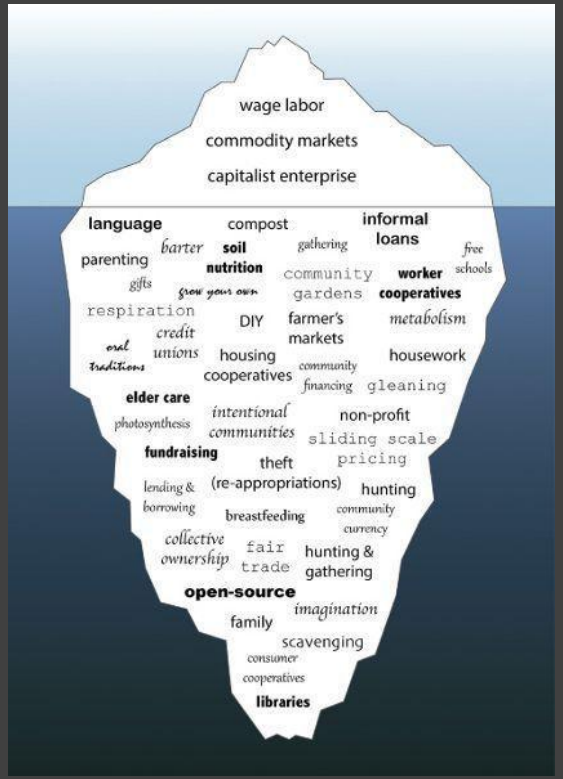
Recognize All Contributors

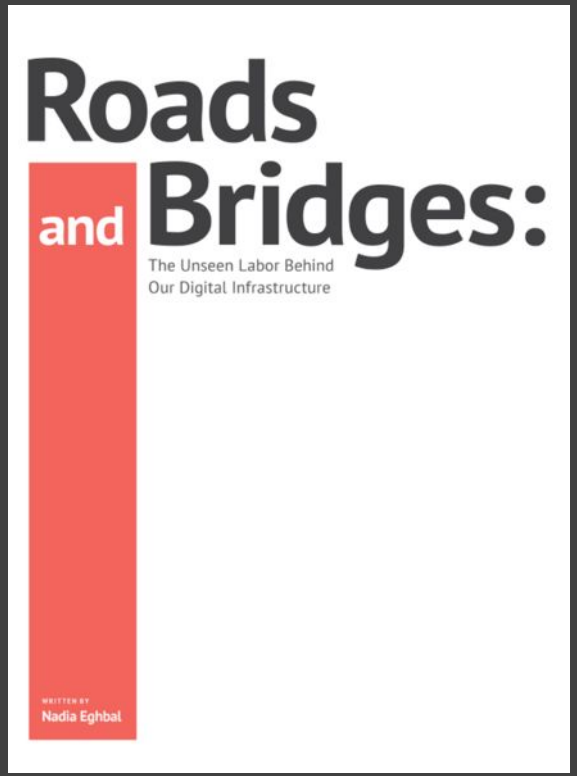
Including those that don't push code

Cite as: *The Turing Way Community. (2021). The Turing Way: A handbook for reproducible, ethical and collaborative research (1.0.1). Zenodo. https://doi.org/10.5281/zenodo.5671094*

@turingway, Image by Scriberia and The Turing Way Community, CC-BY 4.0, Zenodo: https://zenodo.org/record/7716933

Inclusion & recognition





Practices Panel

Highly commended:
The Turing Way, The Alan Turing Institute

hidden REF

Diverse Economy Iceberg - 2017, D'Ignazio, C., & Klein, L. (2020). 7. Show Your Work. PubPub. https://data-feminism.mitpress.mit.edu/pub/0vgzaln4/release/3, Roads and Bridges: The Unseen Labor Behind Our Digital Infrastructure. https://hidden-ref.org/hidden-ref-award-ceremony/,

Book:
the- turing-way.netlify.app/

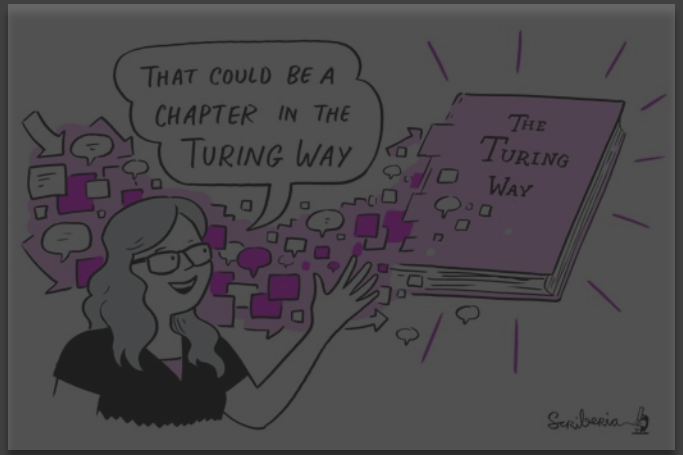
GitHub:
github.com/alan-turing-institute/the- turing-way

Twitter:
twitter.com/turingway

Email:
theturingway@gmail.com

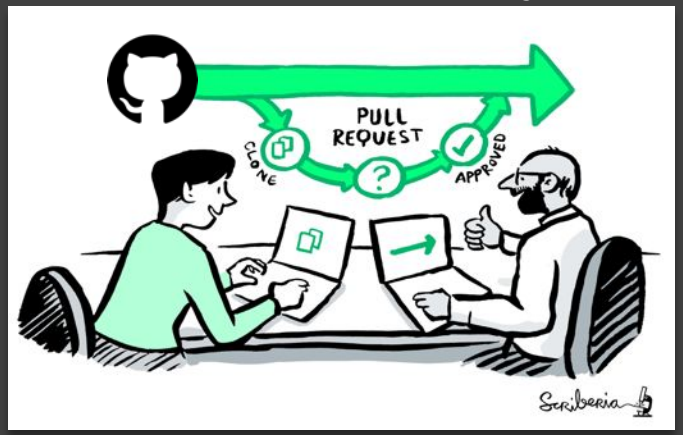
CC-BY 4.0, *The Turing Way*

A Book



A Community

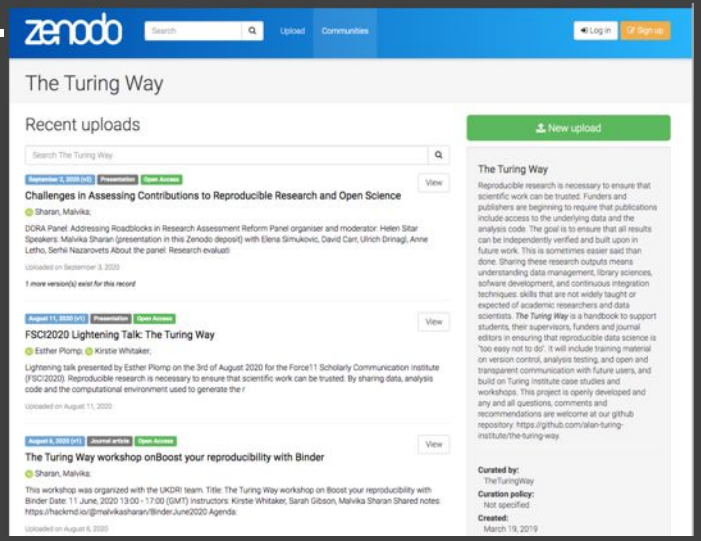
An Open Source Project

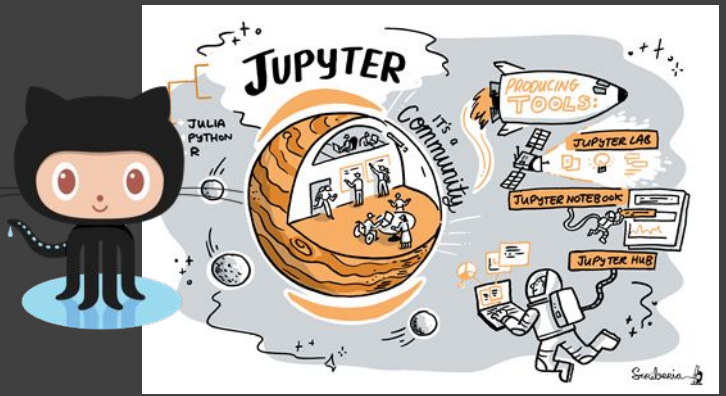


A Culture of Collaboration

An open source project

- Everyone can freely read, reuse, distribute, modify and help develop.
- The project belongs to *The Turing Way* community.
- Built on open source infrastructure:
  - Git, Jupyter Book, Binder, project bots etc.
  - Nelify: the-turing-way.netlify.app/welcome





Project Growth & Recognitions

- **4+ years, >260 Chapters**, community resources
- **425+ contributors, 3500+ monthly users** - supported by 20+ core members (governance)
- **Replication/extension** by 3 Turing & 6+ external projects (e.g. ONS, UCL, Uni Oxford, LIBER: Association of European Research Libraries)

hidden REF

Open:UK Awards

TOPS

NASA SCIENCE SHARE THE SCIENCE

Jisc Community champions

Open Life Science

Software Sustainability Institute

2i2c the international interactive computing collaboration

UK RN

RN UK UK Reproducibility Network

THE CARPENTRIES

jupyterhub

TU Delft

netherlands eScience center

AutSPACEs

Open Phytoliths Community

FRICTIONLESS DATA

Saudi Arabia

talarify

VU VRIJE UNIVERSITEIT AMSTERDAM

MetaDocencia

The Environmental Data Science book

UNIVERSITY OF OXFORD

Open Hardware Makers

CS&S Code for Science & Society

Open Post Academics

FAIRCOOKBOOK

zenodo 19,098 views 16,710 downloads

Qualitative/notable impacts

Resources are being used by learners, educators, community builders, policy makers and researchers globally

- NASA - Transform to Open Science - 5 years Mission for capacity building
- Recommended in Goldacre Review for modern open working into health data
- NASA OpenCore, CodeRefinary, Library Carpentries training materials
- Reproducibility of scientific results in the EU 2020 report
- An Emerging Technology Charter by Mayor of London (2021 policy)
- Innovation Scholars: UKRI grant 2020 (funding call)
- Cited by 40+ peer-reviewed articles & 100+ online publications

@turingway, Image by Scriberia and The Turing Way Community, CC-BY 4.0, https://zenodo.org/record/7716933

Book:
the- turing-way.netlify.app/

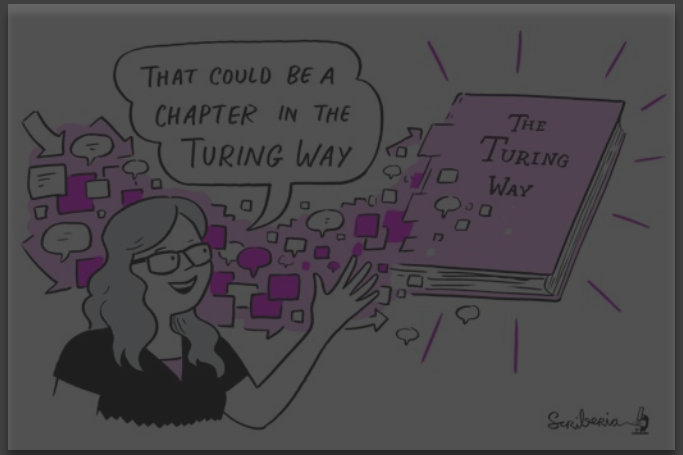
GitHub:
github.com/alan-turing-institute/the- turing-way

Twitter:
twitter.com/turingway

Email:
theturingway@gmail.com

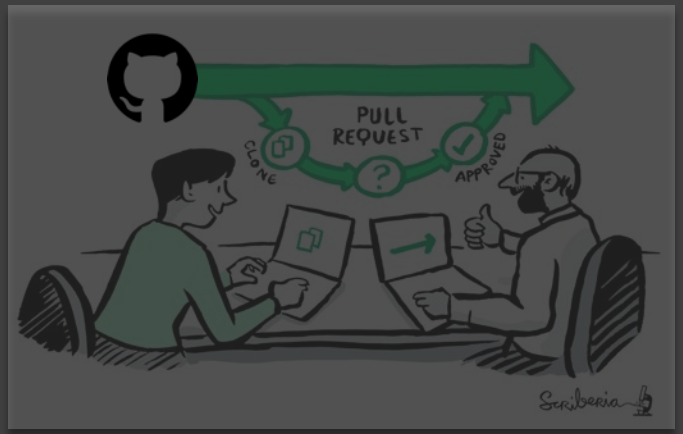
CC-BY 4.0, *The Turing Way*

A Book



A Community

An Open Source Project

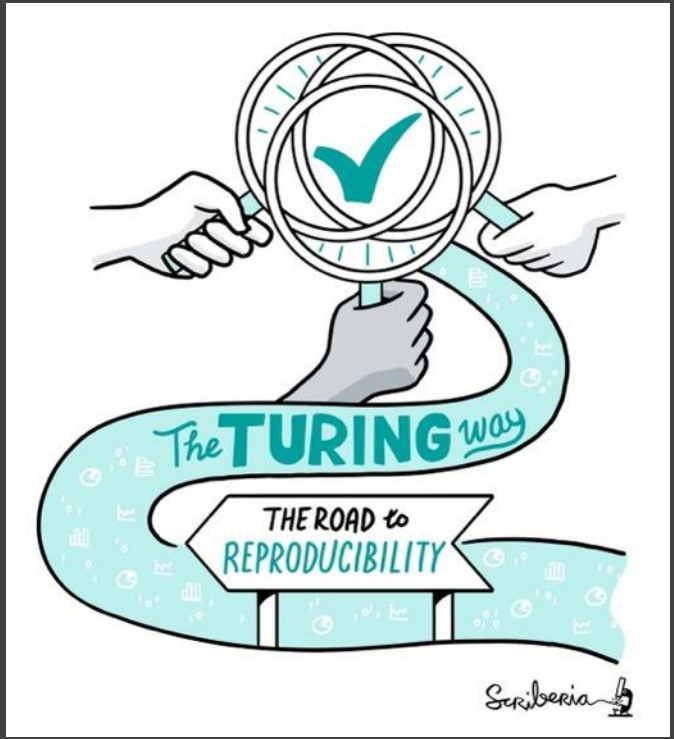


A Culture of Collaboration

A note on the name

- This is not a Turing project (although it has great support from the Institute)

- We are creating guidance together, the way is a journey not a set of rules



https://www.turing.ac.uk/research/impact-stories/changing-culture-data-science

@turingway, CC-BY 4.0, The Turing Way, @turingway, CC-BY 4.0, The Turing Way, https://zenodo.org/record/7716933

Community Building

Open is by default not:

- Inclusive
- Accessible
- Community-led

Intentional designing

@malvikasharan, @ekaroune, @turingway, CC-BY image by *The Turing Way* and Scriberia, DOI: 10.5281/zenodo.7716933

Pathways for collaboration

Diverse Perspectives

Combined Efforts

Engagements

Equitable Participation

Open Recognition

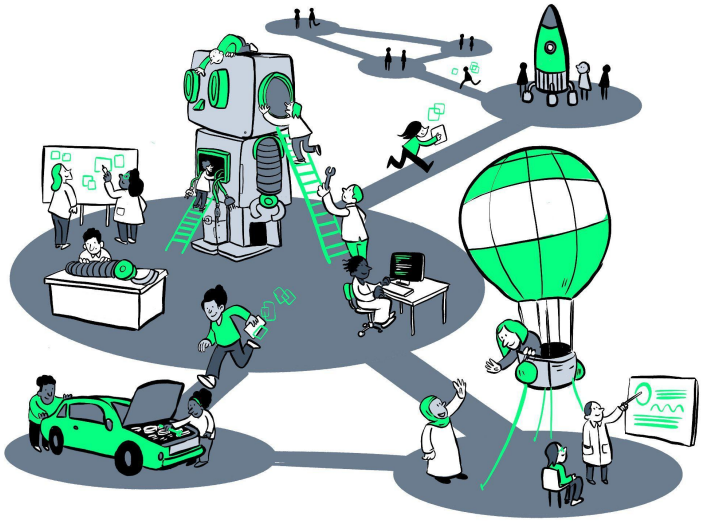
Co-Creation

- Research Infrastructure Roles
  - Community Managers Overview
  - Data Stewards Overview
  - Data Steward Personal Story
  - Data Wrangler Overview
  - Research Software Engineers Overview
  - Research Software Engineering Personal Story
  - Research Application Manager Overview
  - Research Infrastructure Developer Overview
- Remote Collaboration
- Shared Ownership in Open Source Projects
- Guide for Ethical Research
- Community Handbook

Examples of Research Infrastructure Roles

This initial list of examples of Research Infrastructure Roles that has been expanded as part of *The Turing Way* Hackathon Workshop at the Big Team Science conference 2022.

- Community manager
- Project manager
- Research software engineer
- Research application manager
- Programme manager
- Data steward
- Data wrangler
- Research infrastructure developer
- Partnerships development manager
- Grant application manager
- Community engagement lead
- Librarian
- Communications manager
- Events manager
- Participatory research manager



@malvikasharan, @turingway, https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles.html, CC-BY image by *The Turing Way* and Scriberia, Zenodo: https://doi.org/10.5281/zenodo.3332807. Presentation DOI: 10.5281/zenodo.7716933

Opportunities for connections

Co-working Calls & Collaboration Cafés

Biannual Book Dash Events

Screenshots from The Turing Way Book Dashes, @malvikasharan @ekaroune @turingway, https://zenodo.org/record/7716933

bit.ly/turingway

Book Dash Applications are open!

22 - 26 May 2023

London, UK

(and worldwide!)

Apply to

- Participate in a week-long event with *The Turing Way* community
- Meet other community members from around the world
- Join an ongoing project or team
- Host a local hub within your university, city or region

Have any questions about the application process?

- Email *The Turing Way* team: theturingway@gmail.com
- Contact the Community Manager: Anne Lee Steele, asteele@turing.ac.uk

CC-BY image by The Turing Way & Scriberia, @turingway, @malvikasharan, CC-BY 4.0, https://zenodo.org/record/7689259

bit.ly/turingway

Reflect, Unlearn, Reframe: Community Care in times of digital burnout

31 March, 14:00 - 15:30 UTC – *Register on Eventbrite*

Agnes Kiragga
Technical Lead
African Population Health Research Council

Chris Hartgerink
CEO & Founder
Liberate Science

Mayya Sundukova
Resident Fellow
Open Life Science

Patricia Herterich
Resident Fellow
Open Life Science

Eirini Zormpa
Community Manager
AIM-RSF & The Turing Way

CC-BY image by The Turing Way & Scriberia, @turingway, @malvikasharan, CC-BY 4.0, https://zenodo.org/record/7716933

The Turing Way Community Handbook

Community Handbook

- Code of Conduct
- Ways to Enter the Project
- Style Guide
- Maintaining Consistency
- Chapter Templates and Contribution Workflow
- Acknowledging Contributors
- Monthly Newsletters
- Book Dash Events
- Community Coworking Calls
- Template Collection

Online book: https://the-turing-way.netlify.app/community-handbook, @malvikasharan @turingway, https://zenodo.org/record/7716933

Environmental Data Science book or EDS

Environmental Data Science Book

Search this book...

- Welcome
- **PREAMBLE**
- About EDS book
- Audience
- Usage
- Citation and reuse
- Contribute
- **GALLERY**
- Exploration
- Preprocessing
- Modelling

Welcome

Environmental Data Science book or EDS book is a **living**, **open** and **community-driven** online resource to showcase and support the publication of data, research and open-source tools for collaborative, reproducible and transparent Environmental Data Science.

Fig. 1 Illustration by Scriberia as part of *The Turing Way* book dash in November 2021. Zenodo. http://doi.org/10.5281/zenodo.5706310

Alejandro Coca

Anne Fouilloux

Jamila Mifdal, and Raquel Carmo. "Detecting floating objects using deep learning and Sentinel-2 imagery (Jupyter Notebook) published in the Environmental Data Science book." ROHub. Jan, 2022.

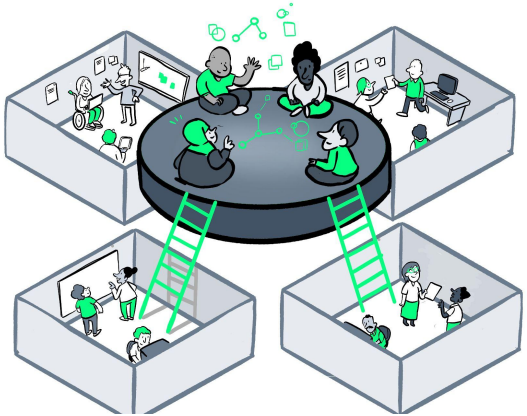
https://w3id.org/ro-id/b34facfa-cea8-48f5-89f6-f11ce00812a9.

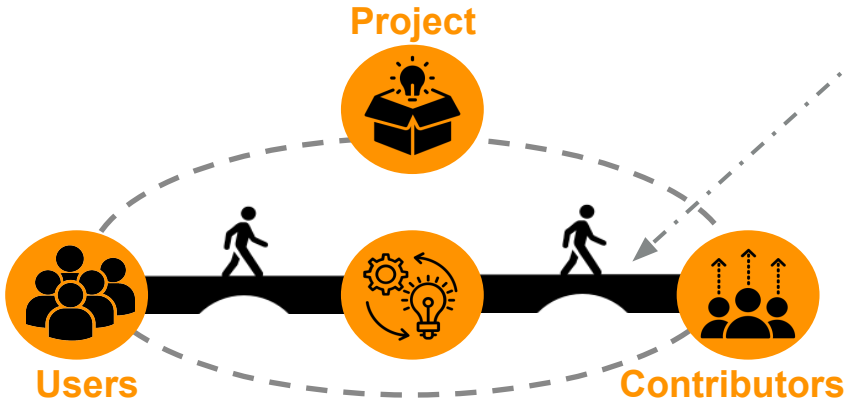
Home + Research + Research programmes

Tools, practices and systems

Building open source infrastructure to empower a global, decentralised network of people who connect data with domain experts

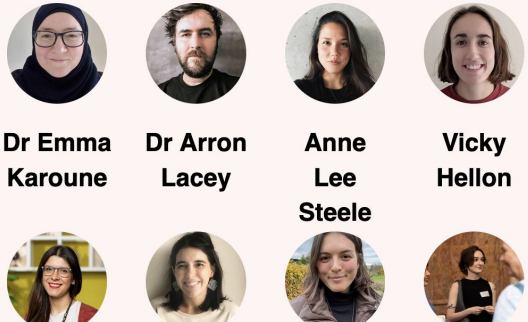
Community Management





Strategic and technical support for Stakeholder Engagement and Participation

Researchers and collaborators



https://www.turing.ac.uk/research/research-programmes/tools-practices-and-systems/community-management-and-open-research

Broader Recognition for Research Infrastructure Roles

- **The Turing Way Practitioners Hub** in close collaboration with orgs (government, industry, public sector)
- **The Turing's Skill Policy Award** for engaging with policy ecosystem - led by **Dr. Emma Karoune**

The Alan Turing Institute AIUK™

21-22 March
QEII, London

The Alan Turing Institute

CATAPULT Digital

CC-BY image by *The Turing Way* and Scriberia, Zenodo: https://doi.org/10.5281/zenodo.3332807. Presentation DOI: 10.5281/zenodo.7716933

Join my team! - Senior Research Associate

Conduct community-based research *with Practitioners Hub stakeholders leading to high-quality interdisciplinary cross-sector collaboration, and their communications openly*.

Deadline: 12 March

Salary: £51,025-£52,500 + benefits, Visa sponsorship is possible.

The Turing Way Events

- *Collaboration Cafes*
  - 1st & 3rd Wednesdays (14:00 UTC)
- *Coworking Calls*
  - Mondays (10:00 UTC)
- *Slack + more ways to connect!*

bit.ly/turingway

CC-BY image by The Turing Way & Scriberia, @turingway, @malvikasharan, CC-BY 4.0, https://zenodo.org/record/7716933

Reproducibility

- Is my "work" **correct**?
- Can others **read/test** it?
- Is my **workflow robust**?
- Have I provided **manual**?
- Is my work **citable**?

Open Science

- Is my "work" **freely available**?
- Can others **modify/share**?
- Is my **workflow reusable**?
- Have I given **permission**?
- Is my work **open for collab**?

@malvikasharan @ekaroune @turingway, CC-BY 4.0, https://zenodo.org/record/7689259

Reproducibility

- Is my "work" **correct**?
- Can others **read/test** it?
- Is my **workflow robust**?
- Have I provided **manual**?
- Is my work **citable**?

Reproducibility should ensure higher scientific standards allowing others to read, test and reuse your work.

Open Science

- Is my "work" **freely available**?
- Can others **modify/share**?
- Is my **workflow reusable**?
- Have I given **permission**?
- Is my work **open for collab**?

Open Science should additionally allow reporting errors, fixing issues, build on, collaborate and sustain your work.

@malvikasharan @ekaroune @turingway, CC-BY 4.0, DOI: 10.5281/zenodo.6737966

Take possible steps towards openness

“Openness is not a binary condition, but highly situational, contingent and dependent on the privilege and context of knowledge makers and gatekeepers.”

Leslie Chan
Associate Professor, Dept. of Arts, Culture and Media & the Centre for Critical Development Studies, University of Toronto Scarborough

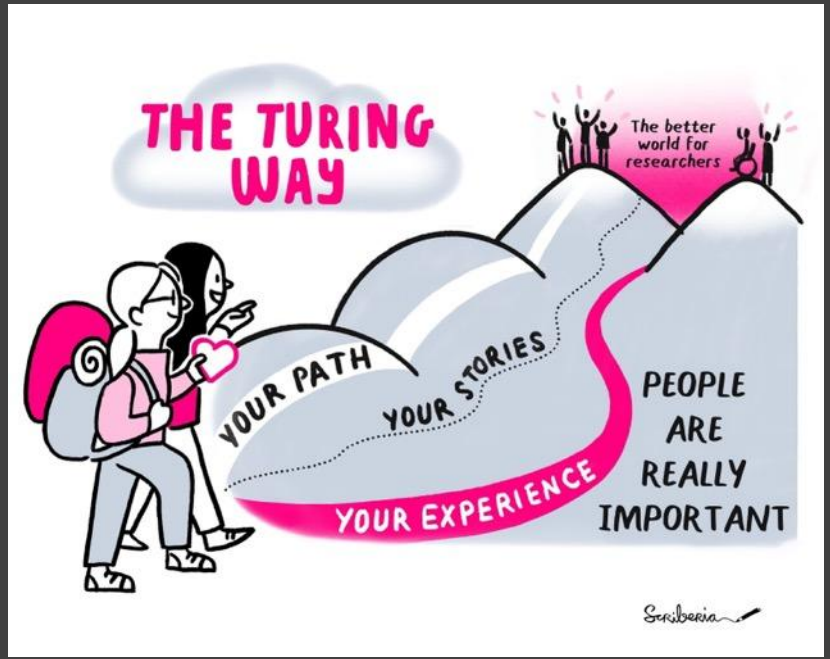
Knowledge Equity Lab

Contextualising Openness, 2020, edited by Leslie Chan. A. Okune, R. Hillyar, D. Albornoz, A. Posada
@malvikasharan, @ekaroune, @turingway, CC-BY image by *The Turing Way* and Scriberia, DOI: 10.5281/zenodo.6737966

Meeting you where you are!

i. Join the community
ii. Learn a new skill
iii. Share your skills
iv. Collaborate with others
v. Mentor others' contributions
vi. Represent this community

We value your participation!



CC-BY image by The Turing Way & Scriberia, @malvikasharan @turingway, DOI: 10.5281/zenodo.7716933

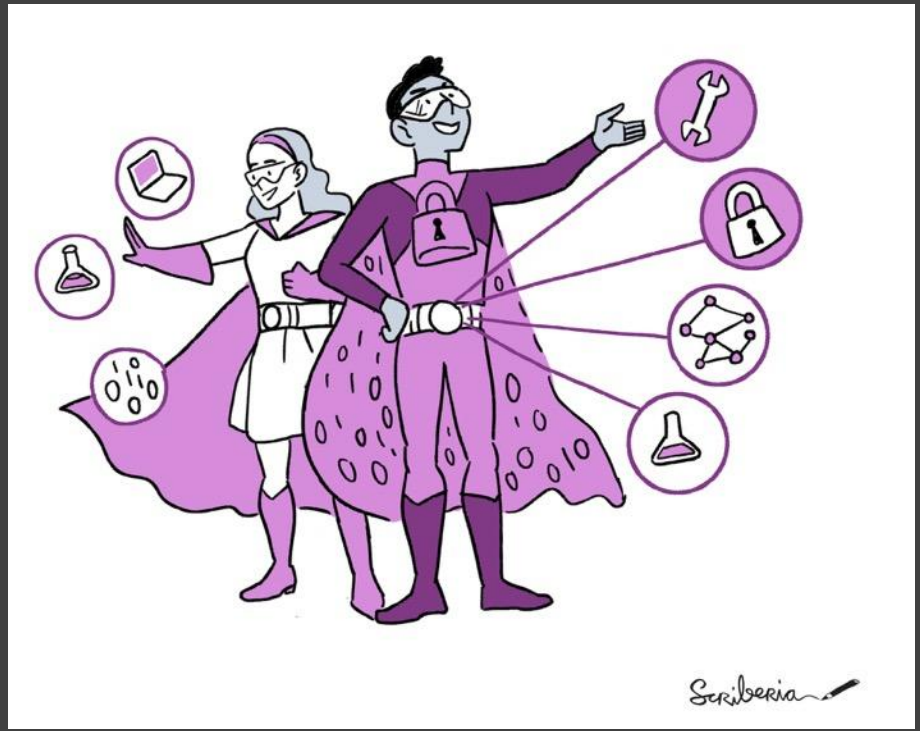
What does open mean to You?

- Learning from the ‘Commons’
- Purpose is to ensure scientific integrity and quality outcomes: The Turing Way
- Hidden labour, collaborative process, community practices
- Building open science skills with a global community

@malvikasharan @ekaroune @turingway, CC-BY 4.0, Book: https://the-turing-way.netlify.app/welcome, https://zenodo.org/record/7716933

Reimagining Openness

Open Science is not a radical approach, but a tool to learn, unlearn, challenge, dismantle and reimagine research infrastructure that prioritises equitable participation, co-creation and culture change.



@malvikasharan @ekaroune @turingway, CC-BY 4.0, Book: https://the-turing-way.netlify.app/welcome, DOI: 10.5281/zenodo.7716933

Acknowledgements & Links

The Alan Turing Institute

***The Turing Way* Community**

- Kirstie Whitaker, Anne Lee Steele, Alexandra Araujo Alvarez + many Turing Way Core Team and Turing's TPS team members
- Book: the-turing-way.netlify.com, Twitter: twitter.com/turingway
- GitHub: github.com/alan-turing-institute/the-turing-way
- Useful links & opportunities are listed here: https://bit.ly/turingway

Cite the original talk as: *Sharan, Malvika. (2022, May 27). Open science for enabling reproducible, ethical and collaborative research: Insights from The Turing Way. Zenodo. https://doi.org/10.5281/zenodo.6589624*

Images used in this talk have been co-developed by Scriberia and The Turing Way community, shared under CC-BY 4.0. https://zenodo.org/record/7587336

National Aeronautics and Space Administration

TOPS NASA

Dr. Chelle Gentemann, Science Lead
Yvonne Ivey, Equity Lead
Cyndi Hall, Community Coordinator
Isabella Martinez, Content Coordinator
Dr. Yaitza Luna-Cruz, CSDO Program Scientist
Dr. Paige Martin, TOPS Program Scientist
Dr. Sam Gabre, ARS, Science Advisor
Dr. Ryan McGranaghan, GSFC, Science Advisor

Kevin Murphy, Chief Science Data Officer SMD
Katie Baynes, Deputy Chief Science Data Officer SMD
Dr. Steve Crawford, Science Data Officer SMD
Amy (Uyen) Truong, Chief Science Data Office Coordinator

THE WHITE HOUSE
WASHINGTON

YEAR OF
OPEN SCIENCE

✦ NASA ✦ NSF ✦ NOAA ✦
✦ DOE ✦ GSA ✦ NEH ✦ NIH ✦
✦ NIST ✦ USDA ✦ USGS ✦

https://doi.org/10.5281/zenodo.7554804