

The Alan Turing Institute

Open science for enabling reproducible,
ethical and collaborative research

Anne Lee Steele

The Alan Turing Institute

Pronouns: she/her/hers



The Turing Way

An open science project and
community-driven handbook on data
science and research practices.



The Turing Way

An open science project and **community-driven handbook** on data science and research practices.

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



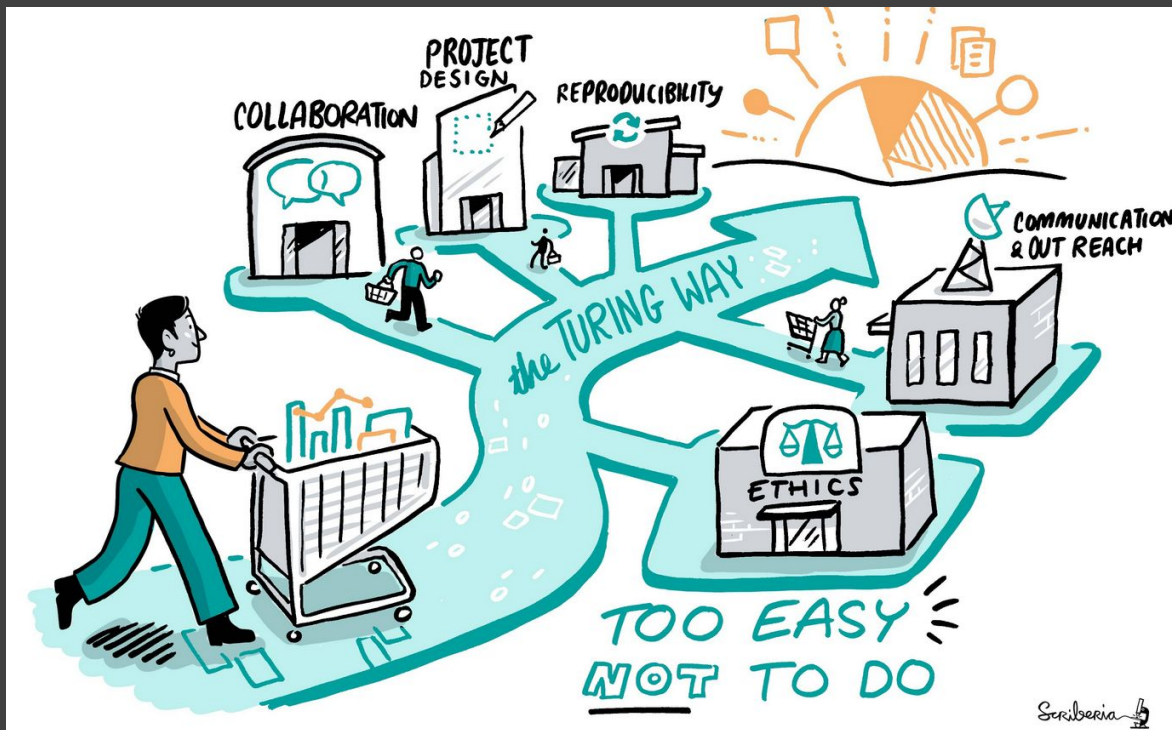
The Turing Way: Guide on Reproducibility



Kirstie Whitaker

Director: Tools, Practices & Systems Programme (TPS)

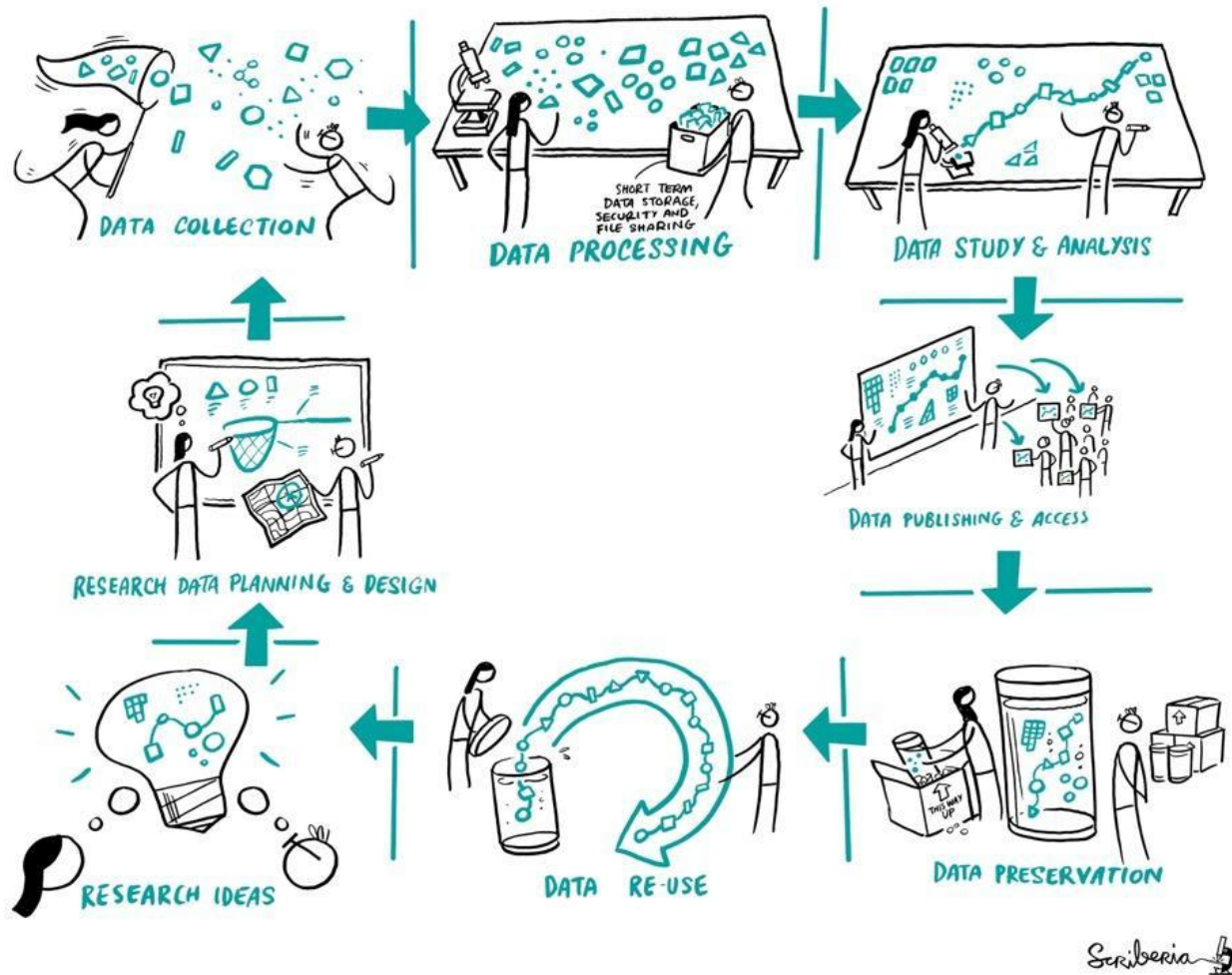
“We need to share the responsibility for open and reproducible science.”



Reproducibility

		Data	
		Same	Different
Analysis	Same	Reproducible	Replicable
	Different	Robust	Generalisable

Fig. 5 How the Turing Way defines reproducible research



The Turing Way Guides



Reproducibility



Project Design



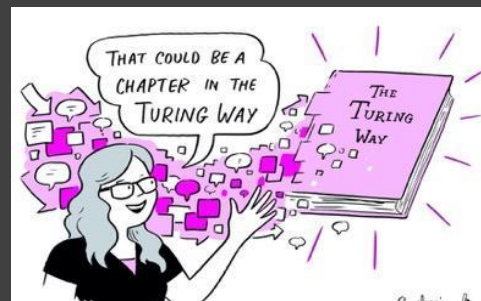
Communication



Collaboration



Ethical Research



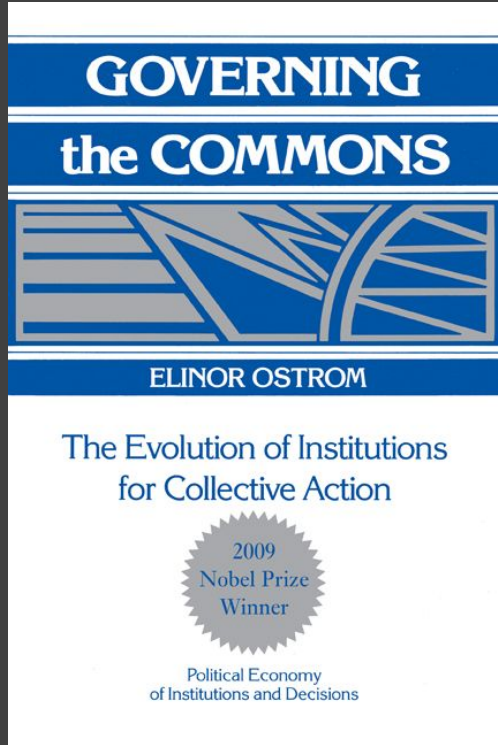
Community Handbook

What are we trying to address as a community?

The goal of open science is **NOT** openness itself, it's about achieving **knowledge equity** for diverse actors who can **access, produce and set the direction** of knowledge.

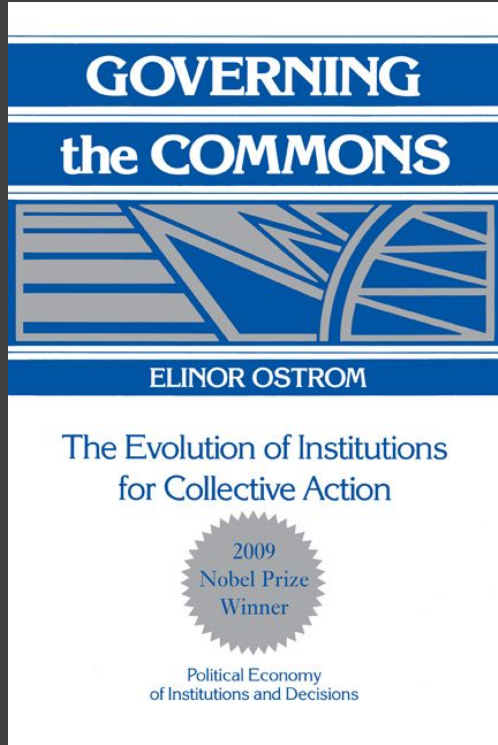


Aligned with Knowledge Commons



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

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

Digital commons: Global digital resources produced and maintained **collectively and in a decentralized manner**.

Promotes licensing, authorship, peer production, governance and **participatory ways to fostering equitable access** to resources. (Open Science)

No Commons without Commoning!

A resource



A community

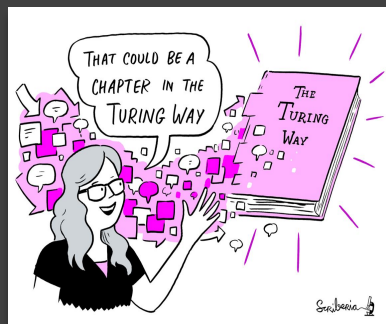
Governance: rules to care for resources & community

The Turing Way: A Global Digital Common



An open and community-driven guide on Data Science.

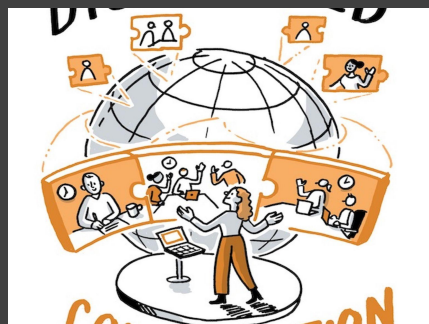
We involve and support a diverse community to make data science and research reproducible, ethical, and collaborative for everyone.



Open Access
Resource



Open Source
Community



Practices to promote
knowledge diversity



A culture of
collaboration

Started as a book on reproducible research

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

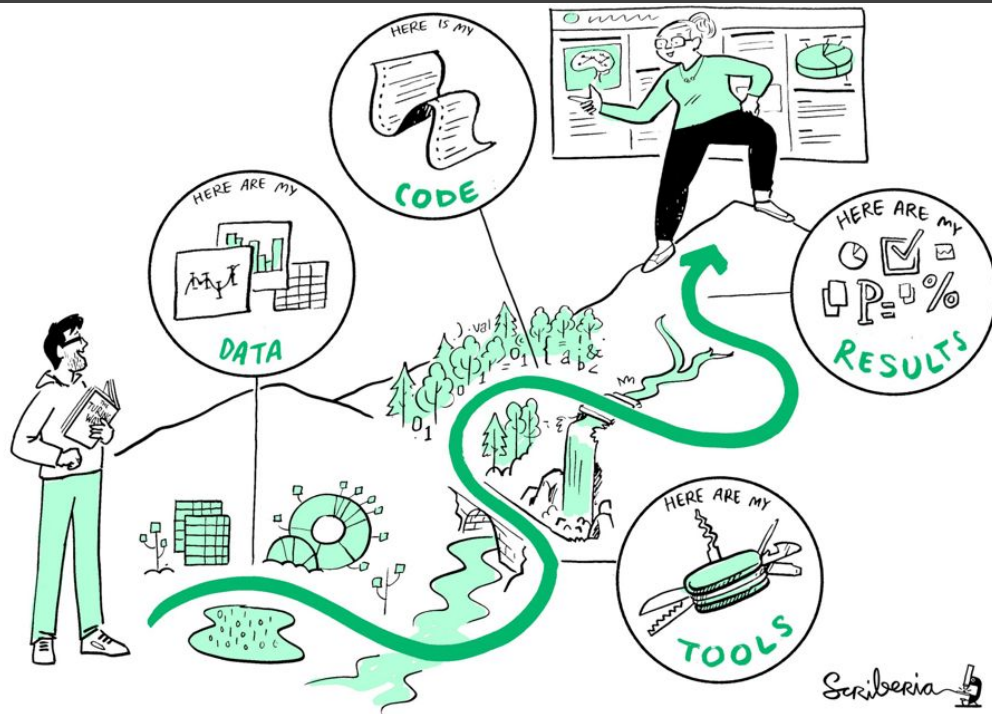


Fig. 3 The Turing Way project illustration by Scriberia. Used under a CC-BY 4.0

licence. DOI: [10.5281/zenodo.3332807](https://zenodo.org/communities/the-turing-way).

The Alan Turing Institute

The national institute for
data science and artificial
intelligence



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



Alexandra
Araujo Alvarez
Project Manager

4+ years

>300 Chapters

Numerous training
and community
resources.

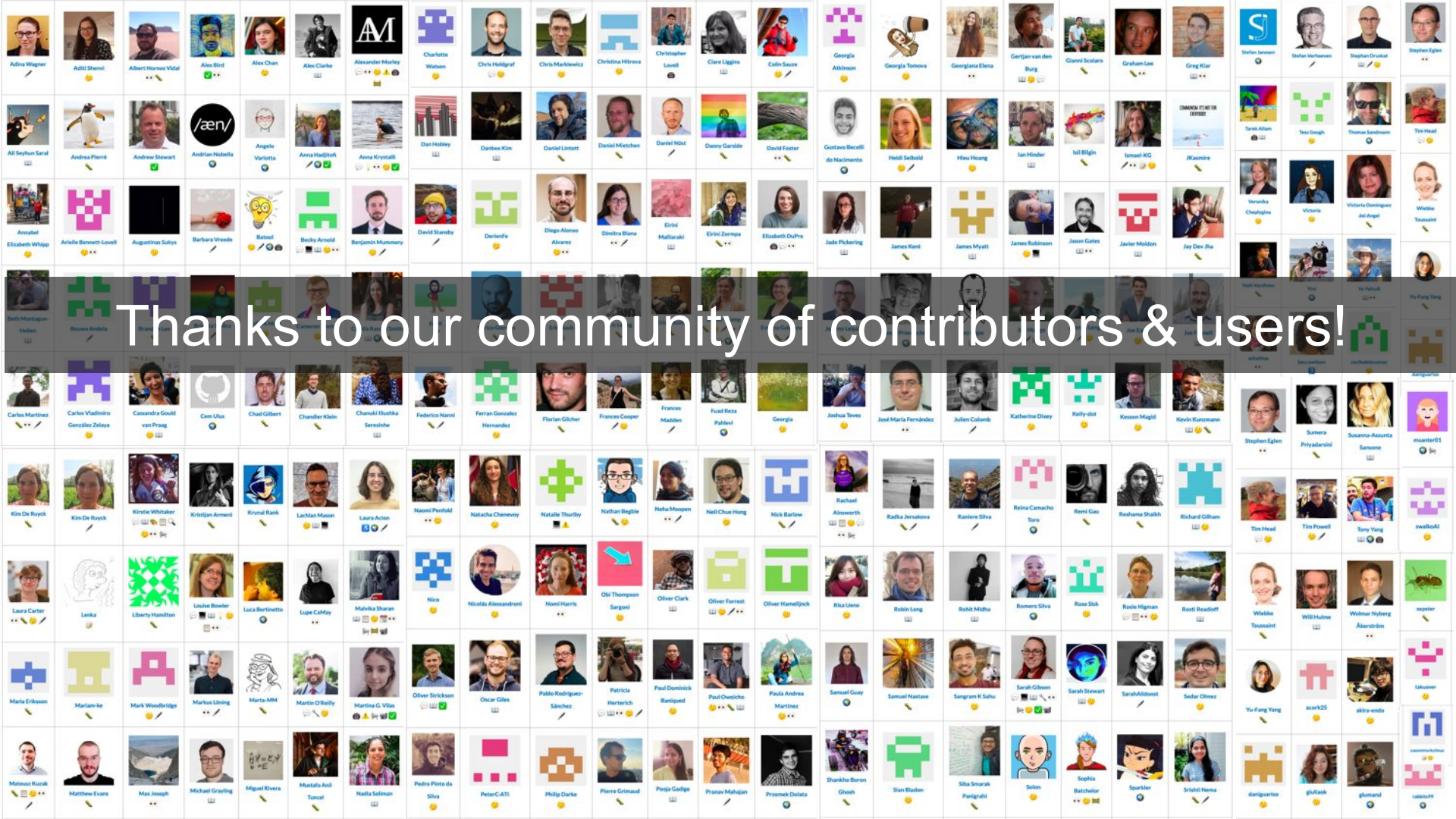


The Turing Way

🔍 Search this book...

Welcome

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



Thanks to our community of contributors & users!

Open science progresses open science

Open science enables the development, maintenance and sustainability of digital commons, while sharing benefits with all involved.

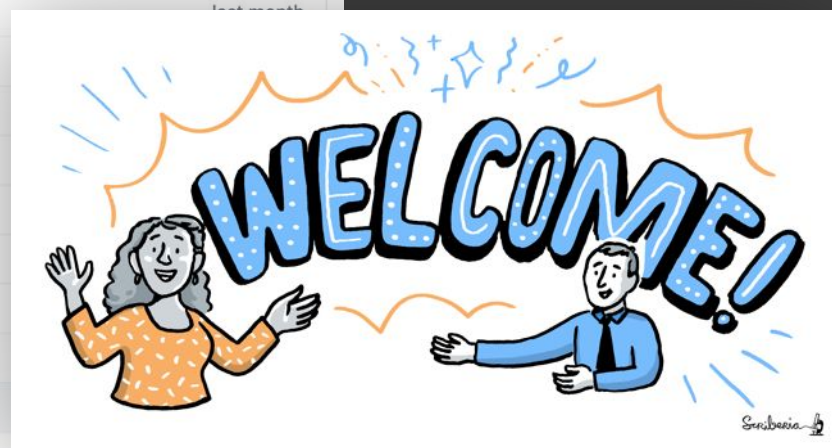


Project growth & recognitions

- 450+ contributors, 5000+ monthly users - supported by 25+ core members (governance)
- 2 awards and engagement with 45+ orgs
- References in 40+ peer reviewed articles and 100s of publications, reports, policy documents
- Replication/extension by 3 Turing & 7+ external projects



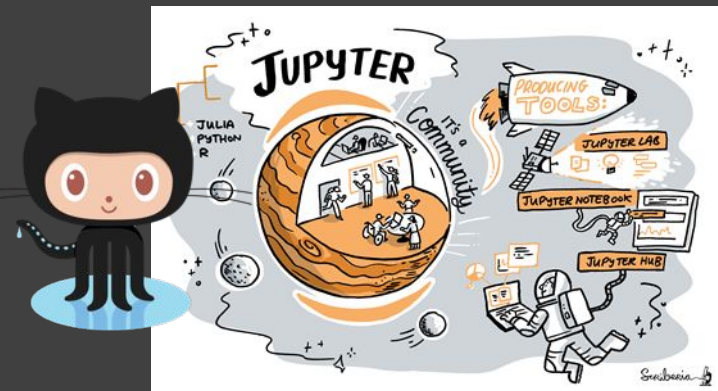
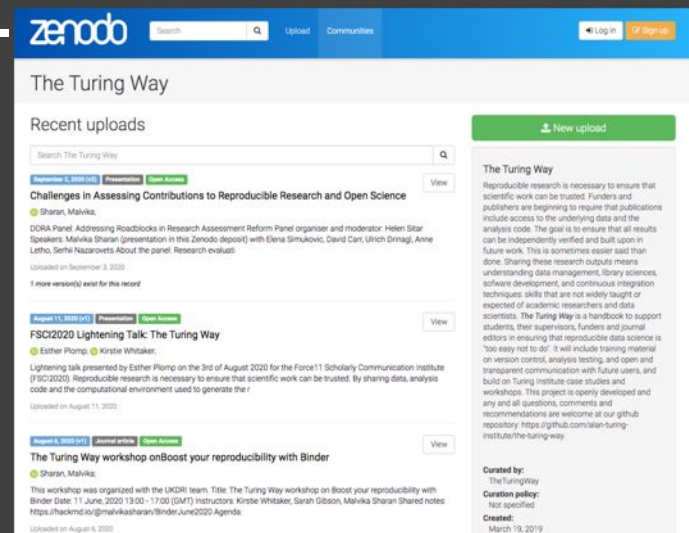
.github	Remove prettier configuration	
book	minor update	
communications	Fix typos	
conferences	Add KW formatting pedantry	
project_management	Update online-collaboration-cafe.md	
templates	Updating Github templates	
tests	Add "et cetera" as a deprecated Latinism	
workshops	Remove mis-pasted text	
.all-contributorsrc	Merge pull request #991 from alan-turing-institute/all-contributors/a...	
.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/the-turing-way/the-turing-way>

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.
 - Netlify: the-turing-way.[netlify](https://the-turing-way.netlify.app/welcome).app/welcome



The Turing Way Guides



💡 Top Tip

The Turing Way is not meant to be read from start to finish. Start with a concept, tool or method that you need now, in your current work. Browse the different guides that make up the book, or use the search box to search for whatever you would like to learn about first.



Collaboration



Ethical Research



Community Handbook

Belongs to the community

Hosted by the Turing, but collaborators are all around the world!

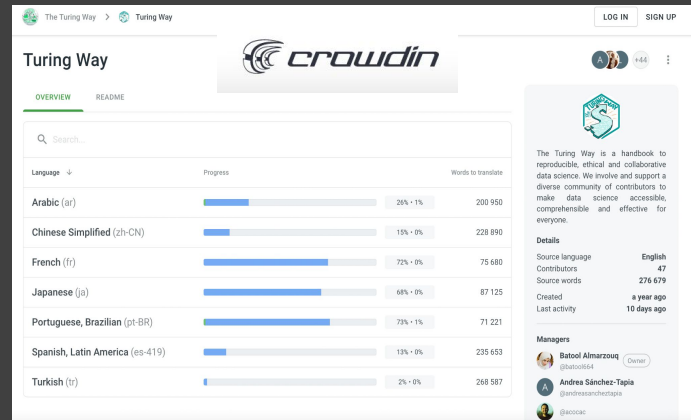
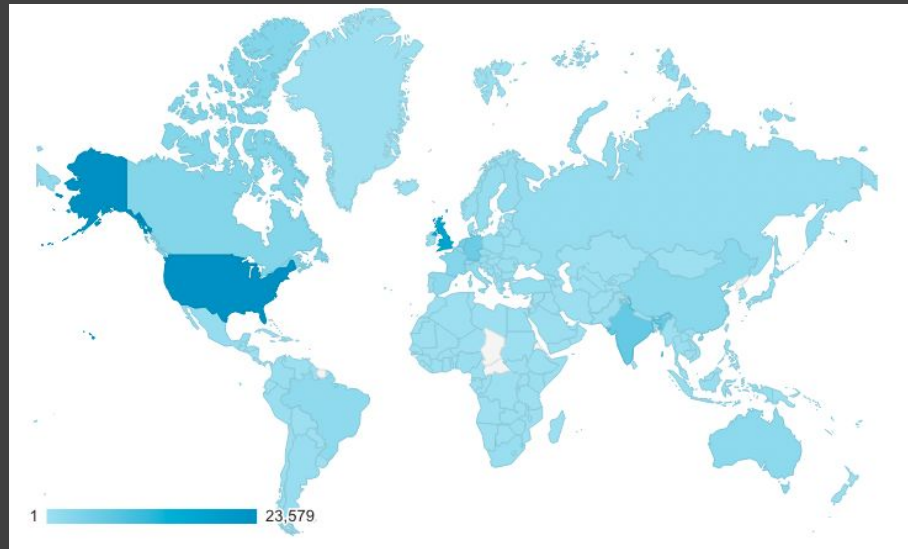
This is **always a work in progress** - evolving with the needs in the community.

We are creating community resources together -- **it's about the way, the journey, not a set of rules.**

Resources:

Image 1: The Turing Way book visitors as of Dec' 22,

Image 2: Localisation and translation of resources in multiple languages



Many pathways for contributions



Develop



Maintain & improve



Share resources



Review and update



Make it global



Share best practices

Localisation & Translation

Batool Almarzouq, Andrea
Tapia Sanchez, Melissa Black

Research Infrastructure Roles

Arielle Bennett, Esther Plomp,
Emma Karoune (Skills Policy Award)

Training and outreach

Regular volunteer and experts
from the community



Infrastructure Maintainers

Sarah Gibson, Jim Madge,
Danny Garside, Brigitta Sipőcz

Accessibility

Liz Hare, Laurel Ascenzi,
Alexandra Araujo Alvarez

Different PathWAYS
in *The Turing Way*

Practitioners Hub

Cross-sector engagement

Environmental Data Science

Alejandro Coca, Anne Fouilloux

Book Dash and Community Events

Team and term-based roles.



Recognition for all contributors

Afterword

Glossary

Bibliography

Contributors Record

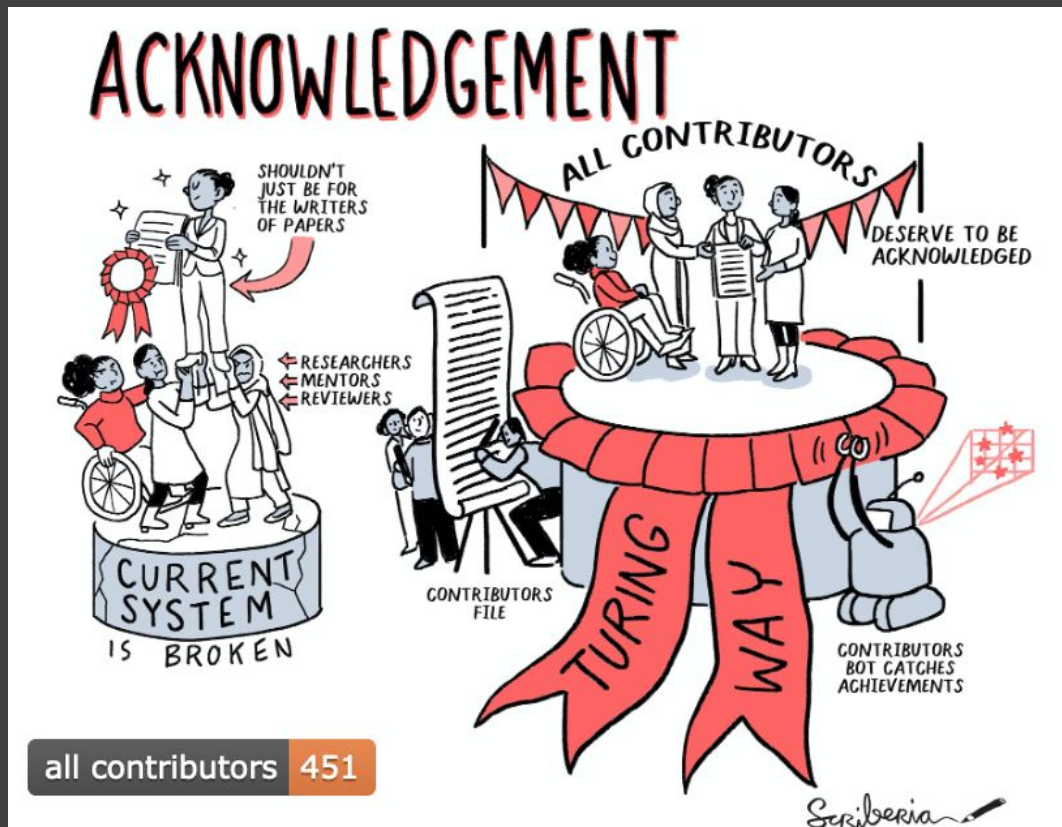


All Contributors

Recognize All Contributors

Including those that don't push code

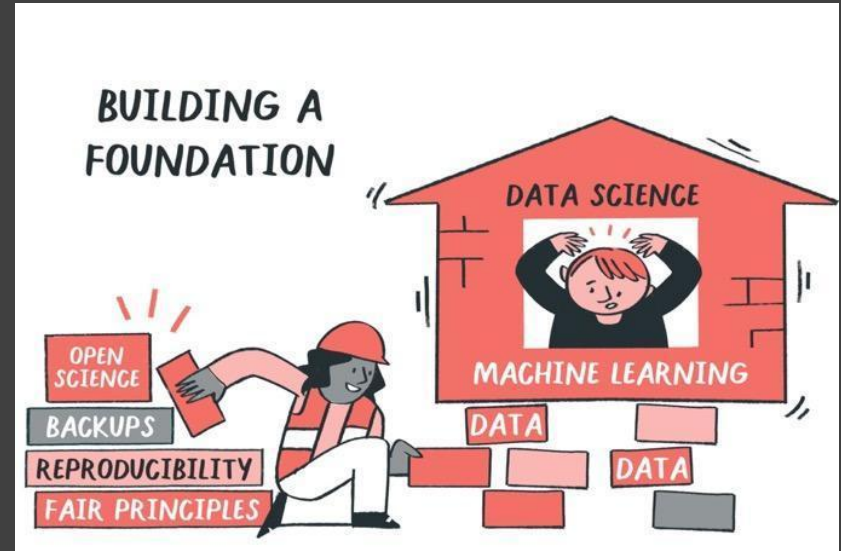
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<https://doi.org/10.5281/zenodo.7625728>



all contributors 451

Foundational skill-set

Open science is a foundation for ensuring scientific integrity and quality outcomes, achieved by applying **reproducible, ethical, collaborative and inclusive** research practices.



As a community, we should constantly reimagine openness



Acknowledgements & Links

The
Alan Turing
Institute

The Turing Way Community

- Jupyter Book Team, Infrastructure Maintenance Working Group
- Arya A. Johanna Bayer, Ian Stenson, Lydia France, May Yong
- Malvika Sharan, Kirstie Whitaker, Anne Lee Steele, Alexandra Araujo Alvarez + many Turing Way Core Team and Turing's TPS team members

Links and resources

- **Book:** the-turing-way.netlify.com, **Start Page:** the-turing-way.start.page
- **GitHub:** github.com/the-turing-way/the-turing-way
- **Useful links & opportunities are listed here:** <https://bit.ly/turingway>



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