The Alan Turing Institute

Stop breeding unicorns

Kirstie Whitaker Pronouns: she/her



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What does a quantitative researcher do?

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What does a quantitative researcher do?

Design experiments

What does a quantitative researcher do?

Design experiments

What does a conquantitative researcher do?

Collect / access data

Design experiments

What does a Collect / access data quantitative researcher do?
Run statistical analyses

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Run statistical analyses

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What does a quantitative

researcher do? Run statistical analyses

decision makers

Promote work to

Interpret results

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Collect / access data

Read literature Design experiments

Write papers

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Interpret results

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Report on

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Design experiments Testing & quality control Mentor colleagues

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Generalise code to software Interpret results

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But they don't exist



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But they don't exist

We can't expect individuals to be able to do all of these tasks to the highest standard

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population of the state of the

Research Programme **Director for** Tools, **Practices & Systems** The Alan **Turing Institute**



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https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles.html

https://scienceeurope.org/our-priorities/research-infrastructures

https://www.nihr.ac.uk/explore-nihr/support/research-infrastructure.htm



UKRI Strategy 2022-2027

Transforming tomorrow together

@TuringWay @kirstie_j https://www.ukri.org/publications/ukri-strategy-2022-to-2027 https://doi.org/10.5281/zenodo.7749650



Making the UK the top destination for talented people and teams.

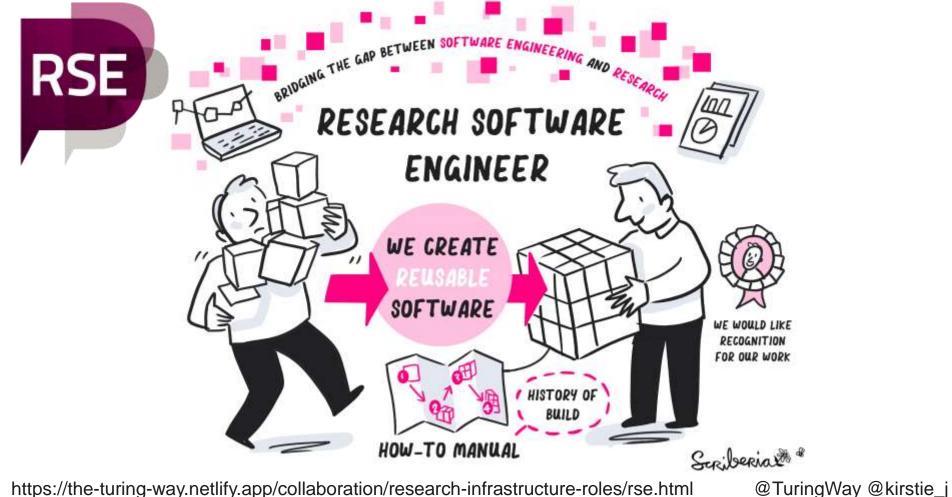




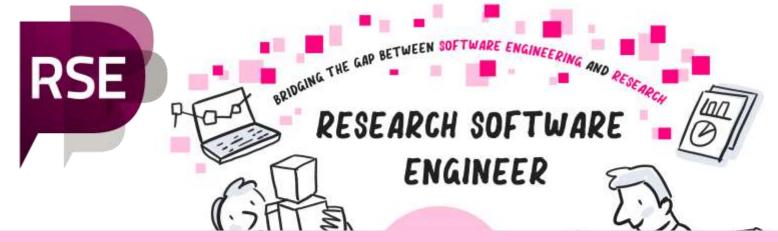
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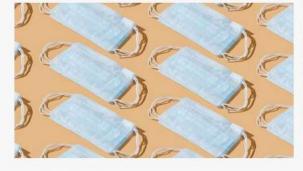
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Our mission is to establish a research environment that recognises the vital role of software in research. We work to increase software skills across everyone in research, to promote collaboration between researchers and software experts, and to support the creation of an academic career path for Research Software Engineers.

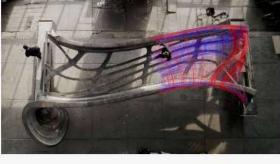
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Providing COVID-19 expertise to the UK government

The Turing-RSS Health Data Lab delivered invaluable insights to the UK Health Security Agency throughout the pandemic



Bridging the gap between physical and digital

The Turing's data-centric engineering programme and its collaborators are unlocking insights into the world-first 3D printed steel bridge, using innovative data science techniques and 'digital twin' technology



Supporting innovation in the fintech sector

The Turing evaluated the synthetic data used in the Financial Conduct Authority's Digital Sandbox Pilot



Helping London to navigate lockdown safely

Project Odysseus monitors activity on the streets of London, allowing authorities to make interventions to keep people socially distanced



Predicting conflict - a year in advance

Ground-breaking technology developed at The Alan Turing Institute could revolutionise the prediction of global conflict, boosting peacekeeping efforts and saving lives



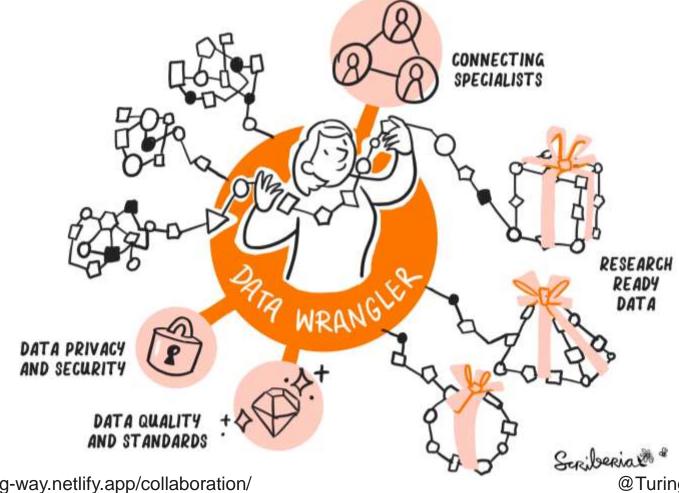
Putting the Al in air traffic control

The UK's leading air traffic control provider, NATS, has teamed up with the Turing to explore how the industry can evolve with machine learning

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https://doi.org/10.5281/zenodo.7749650

https://www.turing.ac.uk/research/
research-engineering/reg-impact-stories



https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles/data-wrangler.html

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Clinical Practice Research Datalink

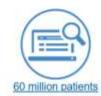
Clinical Practice Research Datalink (CPRD) is a real-world research service supporting retrospective and prospective public health and clinical studies. CPRD research data services are delivered by the Medicines and Healthcare products Regulatory Agency with support from the Mational Institute for Health and Care Research (NIHR), as part of the Department of Health and Social Care.

CPRD collects anonymised patient data from a network of GP practices across the UK. Primary care data are linked to a range of other health related data to provide a longitudinal, representative UK population health dataset. The data encompass 60 million patients, including 18 million currently registered patients.

For more than 30 years, research using CPRD data and services has informed clinical guidance and best practice, resulting in over 3,000 peer-reviewed publications investigating drug safety, use of medicines, effectiveness of health policy, health care delivery and disease risk factors.











GP practices - Join today



Researcher log in



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To access synthetic data a data wrangler needs to:

- Read and understand lengthy data specifications with domain specific and technical terms
- Understand or create metadata data dictionaries
- Articulate specific research motivation

and Social Care.

Negotiate and understand data license agreements

Community management



https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles/community-manager.html



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.



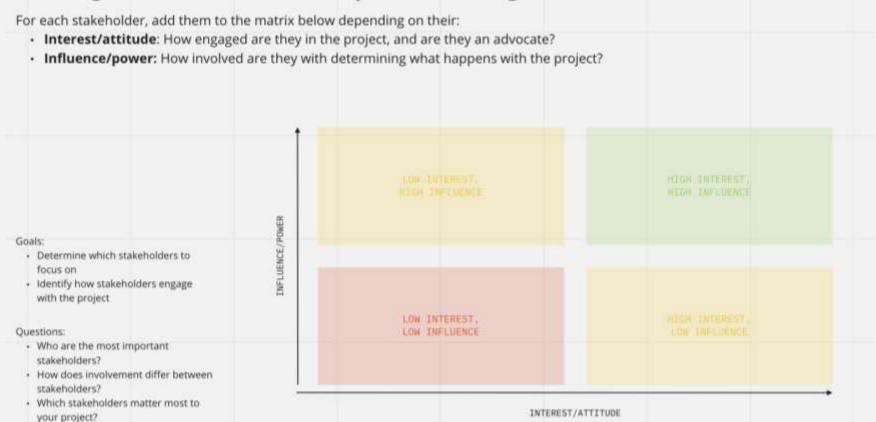


Research application management



https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles/ram.html

Defining Stakeholder Relationships & Prioritising Stakeholder Collaborations



https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles/ram.html



https://the-turing-way.netlify.app/collaboration/oss-sustainability/oss-sustainability-challenges.html



One of the most common beliefs about Open Source is that it simply means "free" and therefore an open source project never generate revenue or profit.

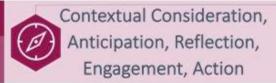
The definition used by The Turing Way states that OSS should be <u>publicly available</u>.



Four tiers of a responsible project delivery ecosystem

CARE & Act Framework

that helps establish habits of responsible research and innovation.



Objectives: to foster critical self-reflection about the role values play in discovery and design processes and in considerations of the real-world effects of the insights and tools that these processes yield.

SUM Values

that support, underwrite and motivate a responsible innovation ecosystem



Respect, Connect, Care, Protect Objectives: to provide an accessible framework for assessing the moral scope of the social and ethical impacts of your project and to establish well-defined criteria to evaluate its ethical permissibility.

FAST Track Principles

that facilitate an actionable orientation to the ethical design and use of AI systems



Fairness, Accountability, Sustainability, Transparency

Objectives: to make sure that your project is biasmitigating, non-discriminatory, and fair, and to safeguard public trust in your project's capacity to deliver safe and reliable Al innovation.

PBG Framework

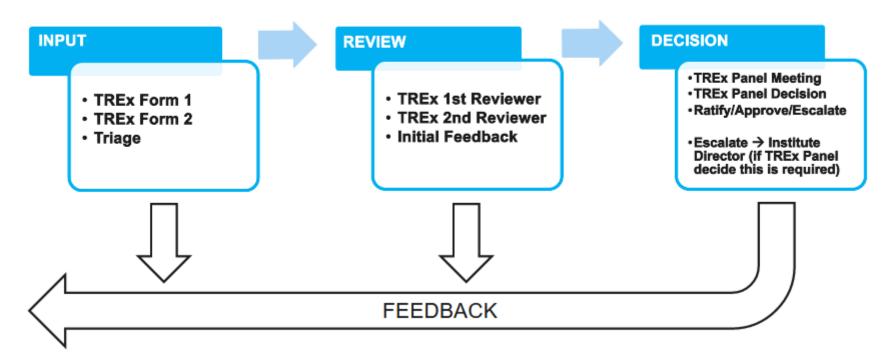
that operationalises the values and principles in an end-to-end workflow governance model



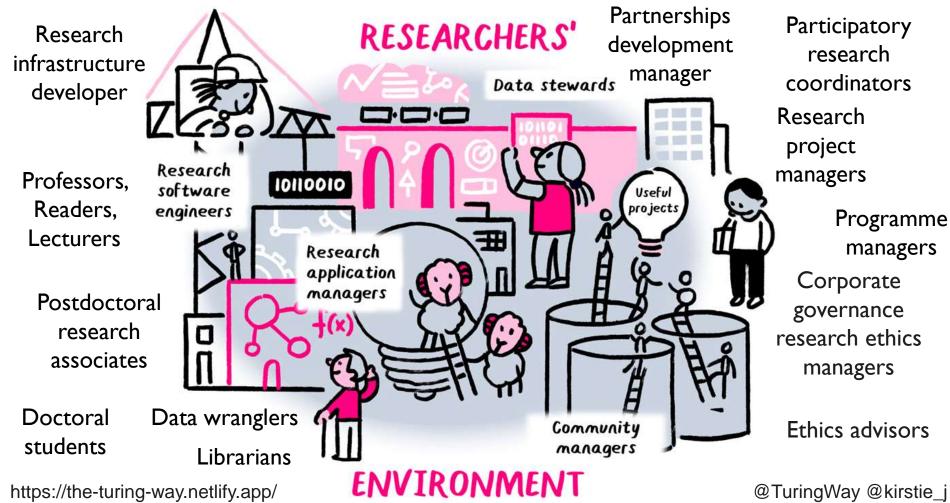
Process-Based Governance Framework Objective: to set up transparent and accountable processes of design and use that enable the justifiability, reproducibility, and transparent reporting of both your AI project and its results.

Understanding artificial intelligence ethics and safety, Leslie, 2019 10.5281/zenodo.3240529

TREx process overview:



Understanding artificial intelligence ethics and safety, Leslie, 2019 10.5281/zenodo.3240529



collaboration/research-infrastructure-roles.html





It does not matter how the roles differ. We all have overlapping skills and motivations.

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It does not matter how the roles differ. We all have overlapping skills and motivations.

We must build career pathways that are appropriately incentivised so tasks can be allocated equitably across a project team.

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Thank you 🦊

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Thank you



ch/asg) and the Engineering and Physical Sciences

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