

**The
Alan Turing
Institute**

**Revolutionising Team
Science with Research
Infrastructure Roles**

Kirstie Whitaker

Pronouns: she/her

@TuringWay @kirstie_j

<https://doi.org/10.5281/zenodo.7647783>



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What does a quantitative researcher do?

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**What does a
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Picture credit: Chris Gorgolewski
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intelligence if it's able to increase
some ability of humans or machines.
The right include reasoning,
learning how to learn, making
decisions, communicating, solving
problems and/or moving about the
physical world.

has a major role these changes in
how a match is a computer under
regular time periods. His research
was Deep Blue - a computer
developed by IBM that could square
200 million moves per second.

A field of AI involving learning
algorithms that can "teach" itself
patterns in games, such as Go.



-in-the-loop
empowering a human and a
robot to work together
in a way that is better
than either could do alone.
This is a key part of creating
robust systems that can
keep up the pace of
today's world.

is for Julia
A modern programming language
described in 2012 that is popular
among the data science and AI
community because of its high-level
syntax and flexibility. It is used in
applications including climate
modeling, robotics and software testing.

is for
...

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**Research
Programme
Director for
Tools,
Practices &
Systems
The Alan
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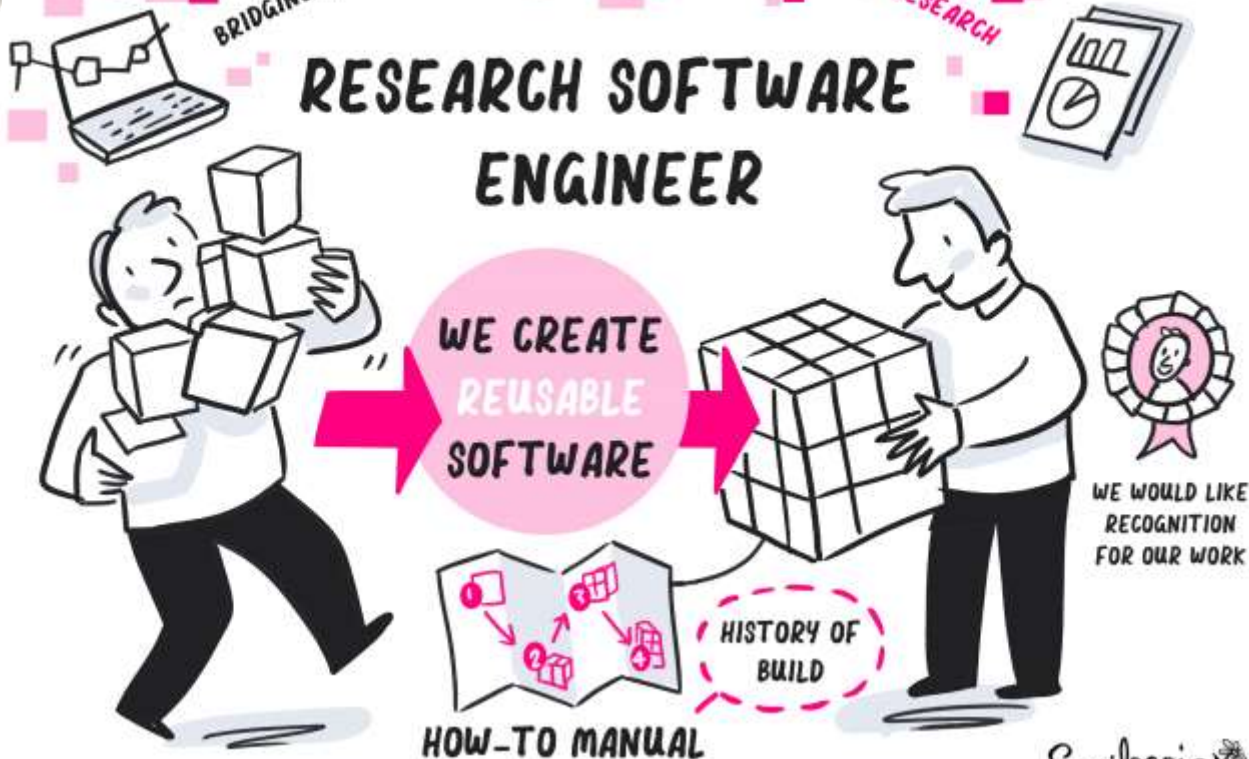
What does a programme director do?

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RSE

BRIDGING THE GAP BETWEEN SOFTWARE ENGINEERING AND RESEARCH

RESEARCH SOFTWARE ENGINEER



Scriberia



RSE



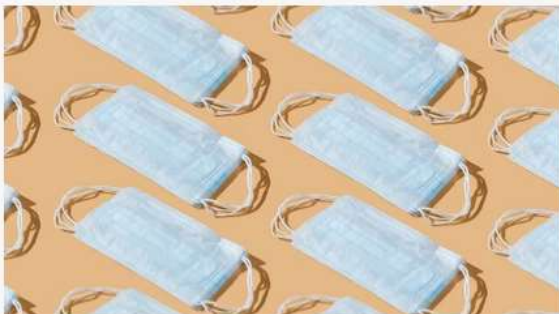
Our mission is to establish a research environment that recognises the vital role of software in research. We work to increase software skills across everyone in research, to promote collaboration between researchers and software experts, and to support the creation of an academic career path for Research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

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

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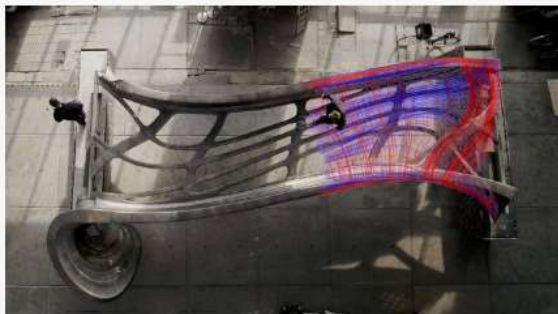
<https://society-rse.org/about>

<https://doi.org/10.5281/zenodo.7647783>



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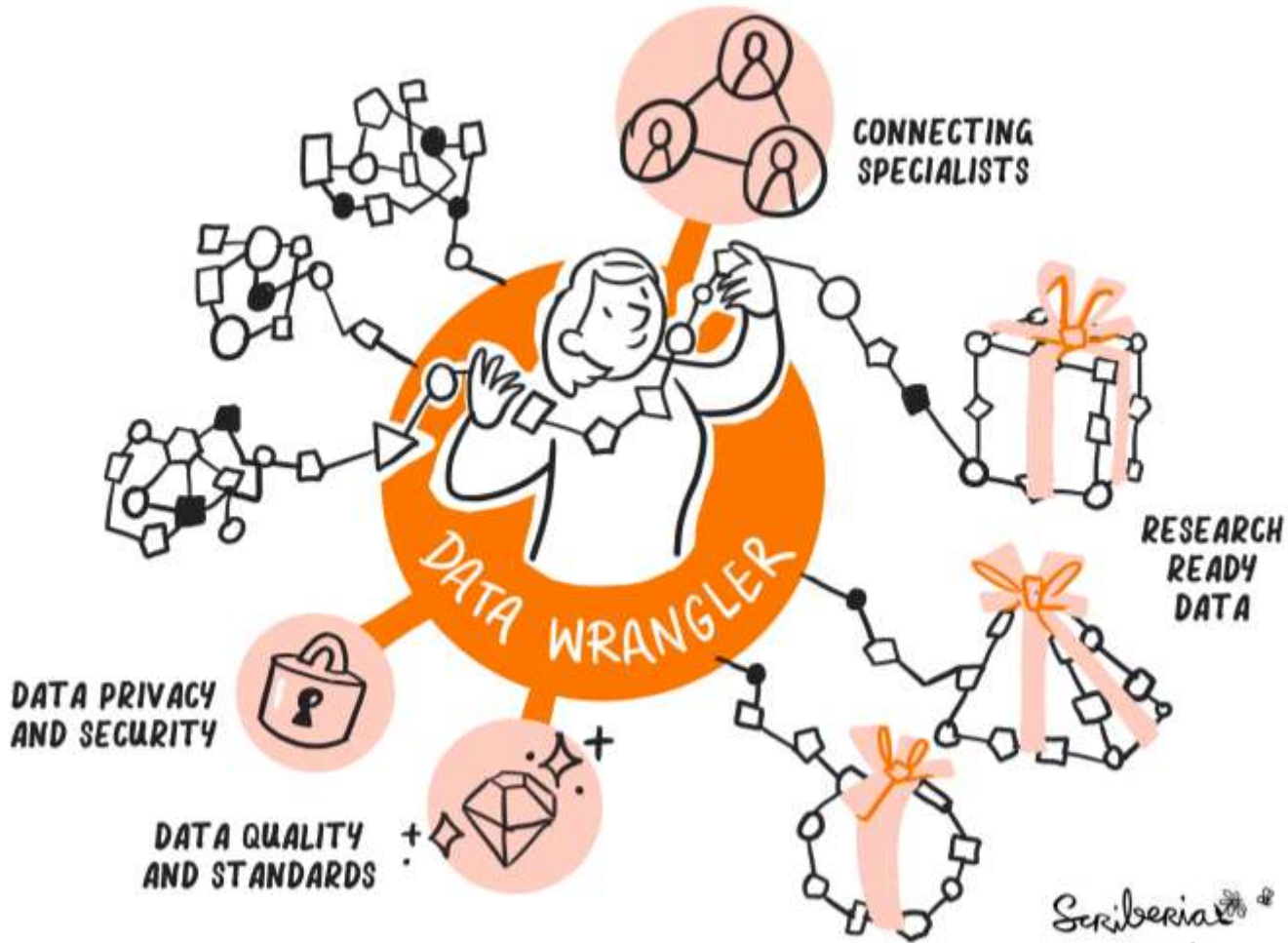
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<https://the-turing-way.netlify.app/collaboration/research-infrastructure-roles/data-wrangler.html>

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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 [National 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.



[Longitudinal primary care records](#)



[Linkage to health datasets](#)



[60 million patients](#)

Search

Search



[GP practices - Join today](#)



[Researcher log in](#)



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<https://cprd.com>

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Search

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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
- Negotiate and understand data license agreements



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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://the-turing-way.netlify.app/community-handbook/coworking/coworking-collabcafe.html>

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The Turing Way online Collaboration Cafe | 1 March 2023

If you are new to HackMD, please see this document for a short guide (right click, open in a new window): <https://hackmd.io/@turingway/hackmd-guide>.

Thank you for joining the Turing Way's online Collaboration Cafe!
We're delighted to have you here. No sign-ups needed! ☕ ✨ 🍰

(We do recommend bringing your actual tea, coffee, water, etc. to this cafe! 😊)

When? 1 March 2023, 15:00 - 17:00 Europe/London (see in your time zone)

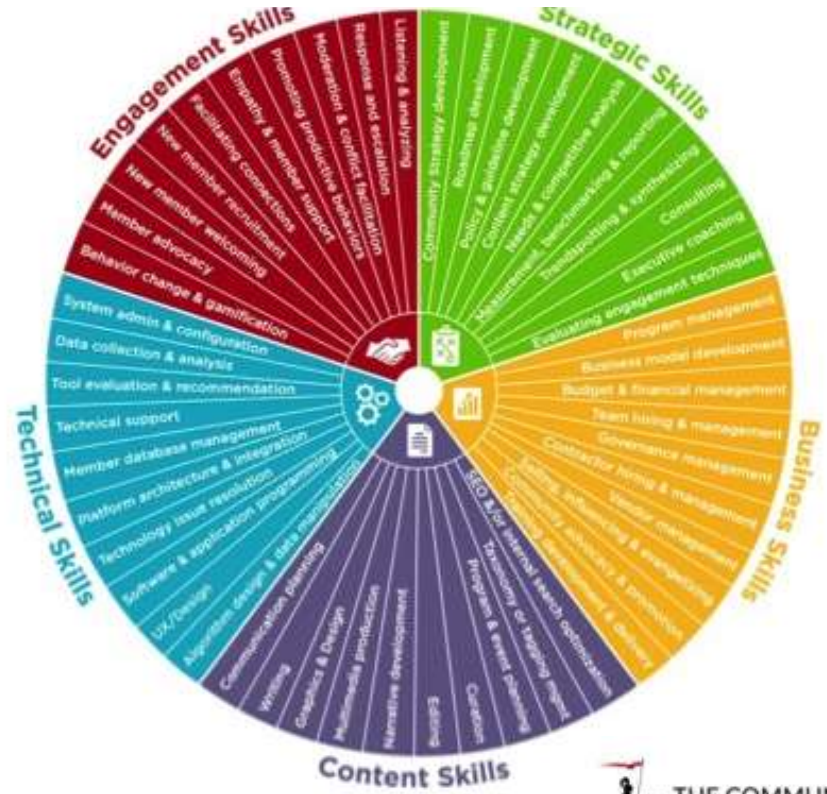
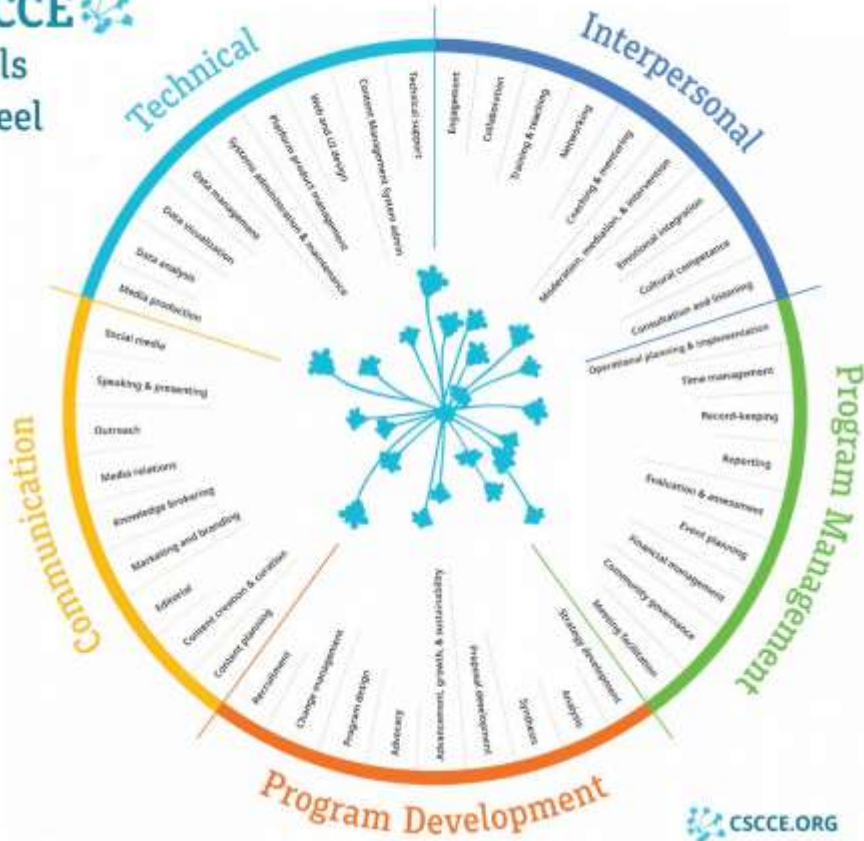
Join Zoom Meeting: <https://turing-uk.zoom.us/j/94049181248?>

Time	Activity
10 mins	Introductions and personal goal setting
25 mins	🍅 1st Pomodoro session
5 mins	☕ Break
20 mins	🍅 2nd Pomodoro session:
5 mins	☕ Break
20 mins	🍅 3rd Pomodoro session
5 mins	☕ Break
30 mins	Open discussion: celebrations, reflections and future directions
5 mins	👋 Close

<https://the-turing-way.netlify.app/community-handbook/coworking/coworking-collabcafe.html>

Also found in the AIM RSF, Scivision, Data Hazards, Environmental Data Science Book and JupyterHub communities

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CSCCE Skills Wheel, Woodley et al, 2021, 10.5281/zenodo.4437294
<https://communityroundtable.com/what-we-do/models-and-frameworks/community-skills-framework/>

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What does a community manager do?

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Defining Stakeholder Relationships & Prioritising Stakeholder Collaborations

For each stakeholder, add them to the matrix below depending on their:

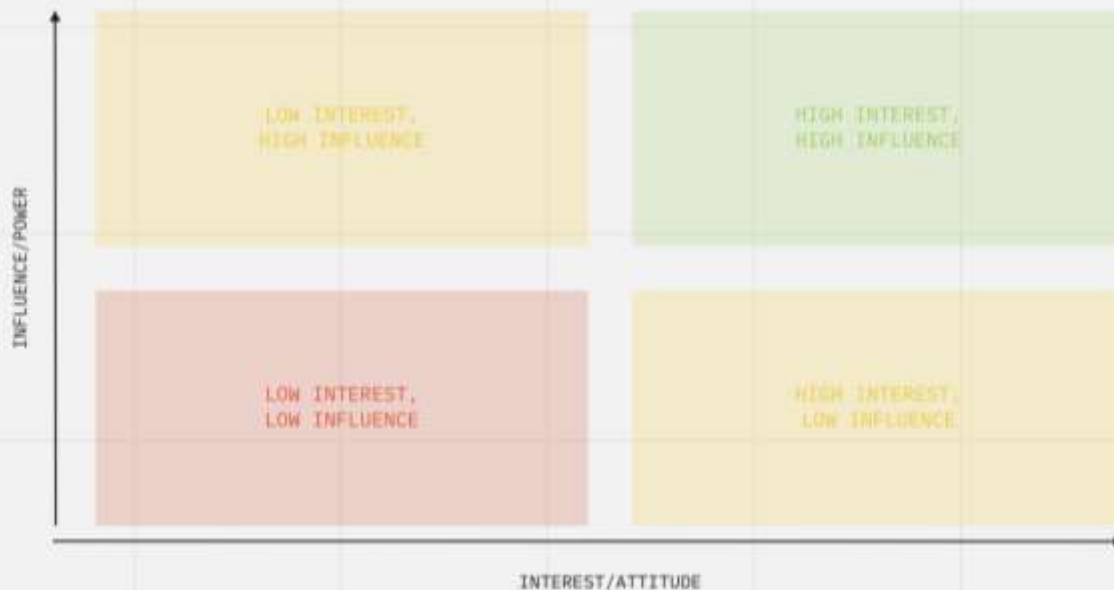
- **Interest/attitude:** How engaged are they in the project, and are they an advocate?
- **Influence/power:** How involved are they with determining what happens with the project?

Goals:

- Determine which stakeholders to focus on
- Identify how stakeholders engage with the project

Questions:

- Who are the most important stakeholders?
- How does involvement differ between stakeholders?
- Which stakeholders matter most to your project?







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 publicly available.

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What does a RAM do?

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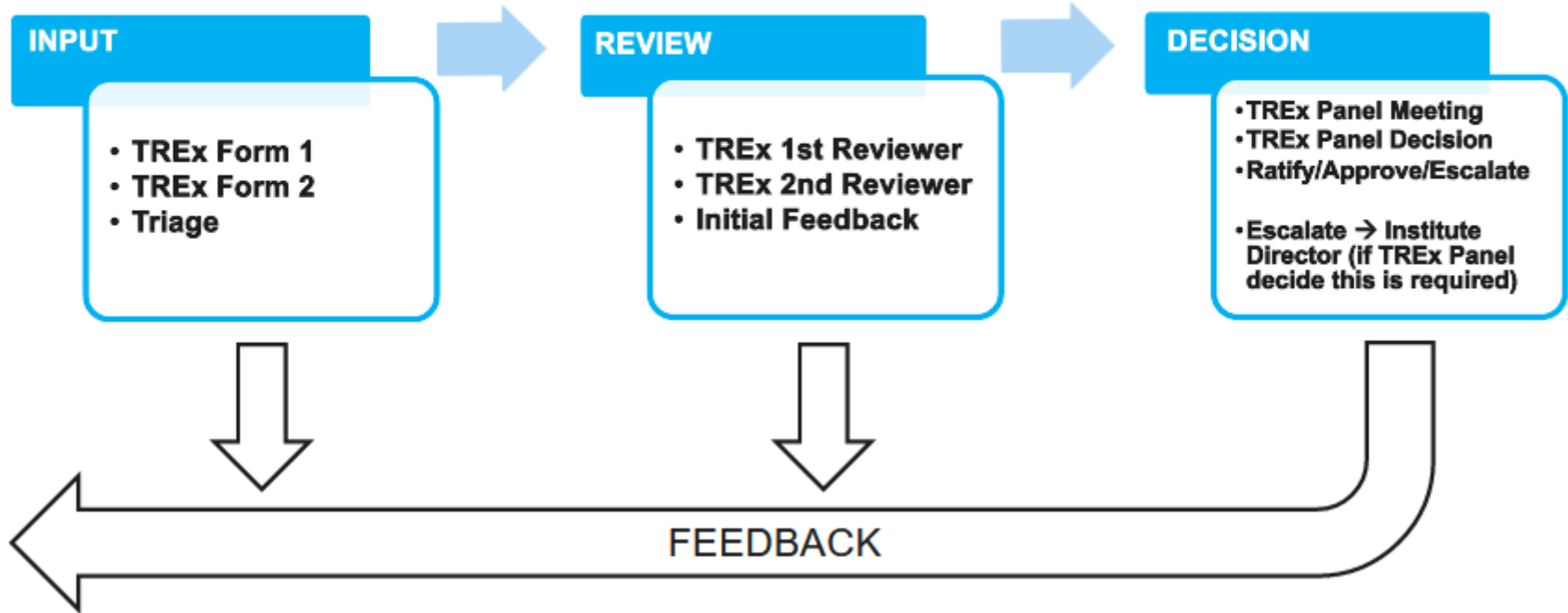


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Four tiers of a responsible project delivery ecosystem



TREx process overview:



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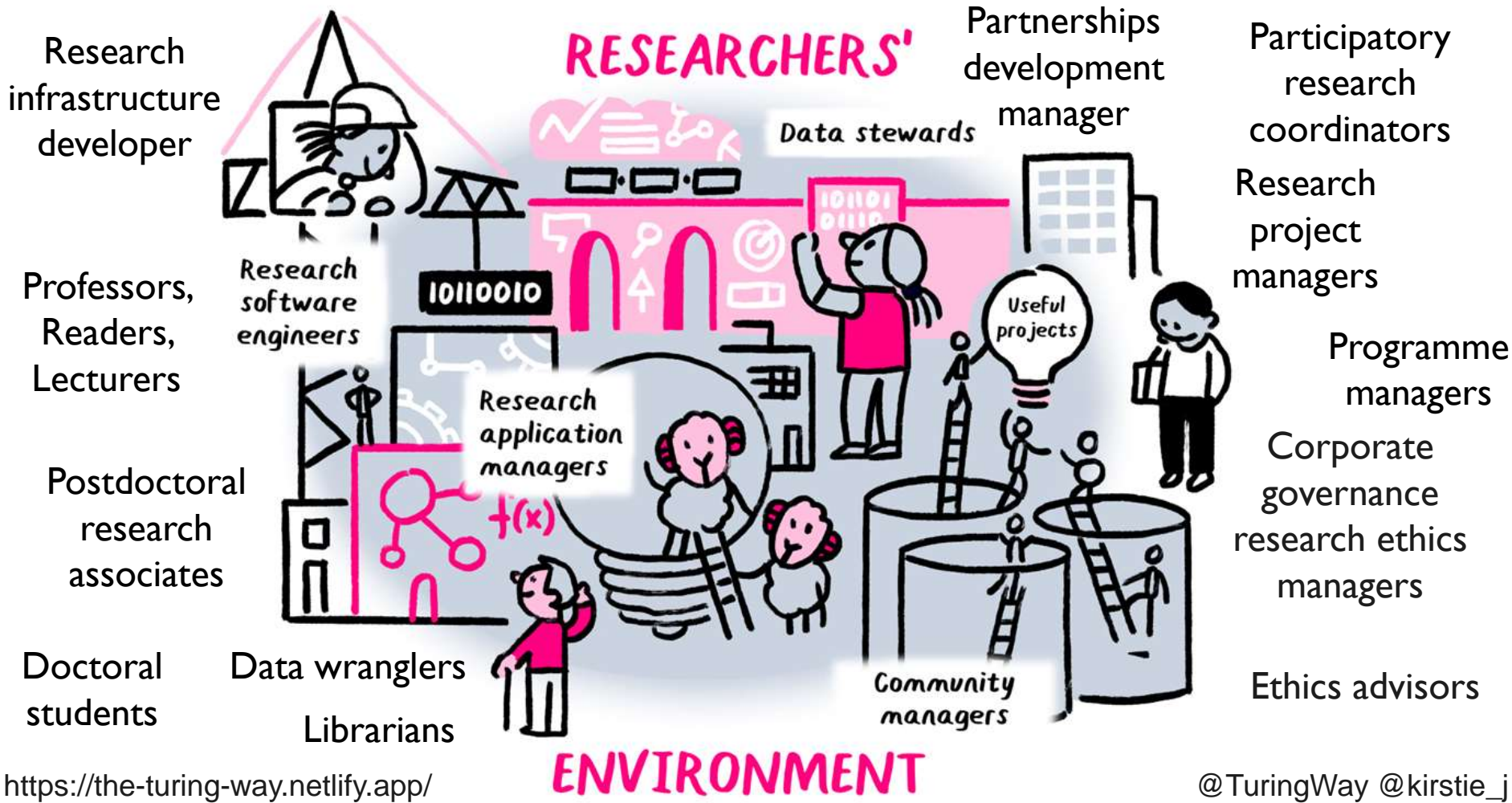
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What does a CGREM do?

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Physical or digital facilities, resources, expert workforces and specialised services available towards research and for the use of research communities are called Research Infrastructure.

ENVIRONMENT

UKRI Strategy 2022–2027

Transforming tomorrow together



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<https://www.ukri.org/publications/ukri-strategy-2022-to-2027>

<https://doi.org/10.5281/zenodo.7647783>

Objective 1: World-class people and careers

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



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<https://doi.org/10.5281/zenodo.7647783>

<https://www.ukri.org/publications/ukri-strategy-2022-to-2027>

Priority 1.1: Make the UK the most attractive destination for talented people and teams from the UK and around the world

The UK's success in research and innovation has been underpinned by its ability to attract, develop and retain international talent. As competition for global talent increases, we must ensure that the UK has an ambitious and attractive talent offer, with sector-permeable career paths and world-leading fellowship schemes, including to support creative disruptive thinkers who may not fit the typical researcher profile. This depends critically not only on support for researchers and innovators (priority 1.1), but on creating the right research and innovation careers and culture (priorities 1.2 and 1.3).

We will:

- design and implement world-leading postgraduate research and fellowship programmes to attract, develop and retain the world's best researchers, positioning the UK as a destination of choice for the full range of top talent.
- work with government to signpost opportunities in the UK for international researchers and innovators at all career stages, supporting talent through appropriate visa mechanisms.

Priority 1.2: Develop the breadth of skilled people and teams essential for the future R&D workforce

The government's R&D People and Culture Strategy is clear that if we are to boost the UK's R&D intensity to 2.4% of GDP by 2027⁹, we need to grow and diversify the R&D workforce by an estimated 150,000 people by 2030. We are also seeking a shift away from traditional, siloed academic and non-academic careers, towards careers that are mobile between sectors, and an increased focus on diverse technical and vocational pathways in research and innovation. We must create a research and innovation culture that supports the wellbeing and creativity of all those working in the sector, valuing all roles that make research and innovation a success, recognising the power of collaboration, and reflecting the breadth of skills needed for the wide range of careers options available.

We will:

- incentivise diverse, flexible careers, so that people can pursue great ideas without barriers, moving easily between disciplines, sectors, business and academia.
- improve support for the wide range of people, skills and roles necessary for research and innovation to thrive, working with the sector to ensure visibility, recognition and career development pathways for everyone involved



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- pivot our skills and training provision to ensure researchers and innovators are equipped with the breadth of professional, entrepreneurial, and technical skills needed for a wide range of career options, including through collaborative training in partnership with business.
- inspire interest and participation in research and innovation through innovative public dialogue, youth and educational engagement, and community participation.
- champion open research and innovation through bold and ambitious policy, practice and technological innovations to achieve transparent, collaborative and diverse research that operates globally.
- reduce bureaucracy in the system and create a research and innovation environment that enables people and teams to focus on delivering exciting, and ambitious research and innovation goals (See *Objective 6*).

Priority 1.3: Shift research culture to support, rather than hinder, talented people and teams to pursue their ideas

We support the ambition set out in the government's R&D People and Culture Strategy to ensure the UK has an outstanding research and innovation culture that fully enables discovery and innovation. We are uniquely positioned to catalyse efforts to deliver this, working with our many partners nationally and globally, to gather evidence on what works.

We will:

- create opportunities to develop, test and evaluate ideas to improve research and innovation culture sourced from the community.
- establish the UK Committee on Research Integrity (UK CORI) to promote and support high

Championing open research

Open research improves research efficiency, quality and integrity through collaborative, transparent and reproducible research practices. UKRI's priorities include open access to research publications and making research data as open as possible but as secure as necessary.

UKRI is building on the UK's longstanding global leadership in open research with our new open access policy, which was developed through extensive consultation with the sector. The policy delivers on the ambition in the government's R&D Roadmap, for publicly funded research to be accessible to all, and will boost the global impact of UK research by increasing opportunities for findings to be shared and used across all disciplines and sectors.

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STRIKE
SOLIDARITY

THEIR WORKING
CONDITIONS
ARE OUR LEARNING
CONDITIONS

Attend / chair meetings
Read literature
Design experiments
Testing & quality control
Mentor colleagues
Generalise code to software
Interpret results

Manage (cloud) compute resources
Deliver trainings
Share work with the public
Track impact
Report on progress

Write papers
Give talks
Manage budgets
Promote work to decision makers
Report on progress

Commercialise a product
Archive data & code
Give talks
Run statistical analyses
Visualisation
Manage a team

Peer review
Promote EDI and work-life balance
Apply for funding
Collect / access data
Set strategy
Host events
Scope user requirements

Maintain ethical & legal principles

What does a programme director do?

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What does an RSE do?

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What does a data wrangler do?

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What does a community manager do?

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What does a RAM do?

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Maintain ethical & legal principles
Scope user requirements

What does a CGREM do?

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



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

**What matters is that career pathways are
appropriately incentivised to support a diverse
ecosystem.**



REMEMBER
WHY YOU
STARTED.

Oregon
099
KZG
8

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**Do not cede the researcher in
you or your role.**



**Lean in. Demonstrate what
team science can be.**

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Maintain ethical & legal principles
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Host events
Visualisation requirements
Manage a team

All the tasks covered by a team

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Thank you

- **TPS Senior Researchers:**

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research ethics manager:

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- **Open Infrastructure lead:**

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- **TREx team:** Vanessa Forster & Tony Sanderson

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We're HIRING!

The
Alan Turing
Institute

- **TPS Senior Research Associate** to lead collaborative and interdisciplinary research for The Turing Way Practitioners Hub.

<https://cezanneondemand.interviewweb.it/turing/en/career#vacancies>

- Deadline: 23:59 on 12 March 2023
- Salary: £51,025 pa + excellent benefits and flexible working
- We can sponsor a visa for the right candidate, moving expenses covered to a pre-agreed limit
- 2 days/month in the office, can work from anywhere in the UK
- Contact: msharan@turing.ac.uk or kwhitaker@turing.ac.uk

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Thank you

- 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>
- Next Collaboration Café: 1 March at 3pm UK, 4pm CET, 10am EST
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