Introducing the Turing Ethics Advisory Group

Kirstie Whitaker and Josh Cowls

First draft released on 28 November 2018

Contact: eag@turing.ac.uk (preferred) or kwhitaker@turing.ac.uk

Table of Contents

Our guiding principles 3
1. A dev-ops approach to ethics review 3
2. Open educational resources 3
3. Better science for all 3
Who are the Turing EAG? 4
EAG assessment framework 5
Project description 5
Consent 5
Privacy and security 6
Additional harm 7
Why do we need more paperwork? 9
What is the process? 10
Who should apply? 10
Inclusion criteria: Turing as lead institution 10
Inclusion criteria: Ethical approval from specific bodies as requirement of funding 10
Inclusion criteria: Specific health research related requirements 10
Inclusion criteria: No intent to publish results 10
Submitting your application 12
Top tips for completing the form 15
Review outcomes 16
Accept 16
Accept with clarifications 16
Revise and resubmit 16
Reject 16
Frequently Asked Questions 17
But I'm not collecting data, why do I need to get ethics approval? 17
Can you just give me a checklist? 17
ANNEX – Overview of the Ethics Approval Form 18

Our guiding principles

1. A dev-ops approach to ethics review

As active researchers ourselves, we understand that the boundless paperwork that accompanies asking an interesting scientific question can be frustrating. We are committed to working with researchers to produce a streamlined process with clear guidelines and timelines that delivers what is often taken for granted: assurance that the potential harms of the research are justified and considered in advance.

2. Open educational resources

All guidance developed by the Alan Turing Institute is openly available for reuse by any organisation that wishes to apply the framework to their own ethics review process. Additionally, approved proposals are available to all Turing members to make future applications easier to create.

3. Better science for all

Our goal is to empower researchers, not to limit them. Applying for approval through the EAG offers the opportunity to consider research ethics questions that have not been traditionally assessed, and the reviews that researchers receive should be constructive and useful. By ensuring that the ethics of a project proposal - including the data security requirements and considerations around the validity of the proposed analysis - are considered at the start, your research will be smoother, faster and clearer to communicate when published.

Who are the Turing EAG?

Chair: Kirstie Whitaker

Convenor: Josh Cowls

Reviewing members: Jonathan Cave, Emma Uprichard, Richard Ashcroft, Niccolo Tempini

Student liaison: Sanna Ojenperä

Partnerships liaison: Anastasia Shteyn

EAG administrator: Christina Hitrova

EAG assessment framework

Project description

This needs to be few sentences here about the project and why you're doing it. It's really important to focus on the data you're going to source and how you'll disseminate the outcomes.

Consent

The form on the intranet gives the following prompt:

> *Please comment on any issues around securing consent raised by your research.*
>
> *Questions to consider:*
>
> - *If your study involves collecting data about, with, or from human participants, will they receive all relevant information about what their participation will involve, prior to providing consent?*
> - *If your study involves using existing data about people, was their consent given for the original data collection? Did they consent to this data being reused?*

Many fields of research have longstanding codes requiring study participants to give informed consent. This includes fields which involve physically invasive research, such as biomedicine, following horrendous experiments such as the Tuskegee syphilis experiment and the inhumane experiments conducted under the auspices of Nazi Germany.

In data science, the re-use of publicly available data has typically meant that the ethical considerations around consent do not need to be applied. If someone uploads their data to a for-profit website (such as Facebook, Twitter or Instagram) and signs the respective terms and conditions of these sites, they will have legally given their consent for researchers to reuse the data for academic research. But have they ethically given their consent?

This is a more difficult question to answer. For one thing, very few people actually read the terms and conditions, so it is hard to argue that informed consent has been given. What's more, something can be technically public – such as Instagram posts, which are public by default – yet intended and assumed to only be seen by a far narrower audience of close friends.

In many cases, the answer to the question of whether informed consent was provided will be yes – especially in the context of reusing publicly available datasets that were originally collected for the specific purposes of academic research! In this case, the EAG assessment framework requires that the research team applying for approval can provide a reference for this consent. In the case of using data that was created or uploaded for a different purpose, the applicants should clarify the trade-offs involved in using this data for their project, and justify their decision to use this data for their project.

Of course, many data science research projects involve no data about, with or from human participants. If your data does not relate to people in this way, you can respond to this section with, for example:

> *Our project will not use any data which relates to human participants. The dataset relates to measurements of rainfall, provided by the Met Office at https://www.metoffice.gov.uk/services/industry/data.*

Privacy and security

The form on the intranet gives the following prompt:

> *Please comment on any issues of privacy and security raised by your research.*
>
> *Questions to consider:*
>
> - *If you use data about people in your study, is this data anonymous, or anonymised? Could it be associated with identifiable individuals, including by triangulating with other publicly available datasets?*
> - *How do you plan to keep sensitive data safe and secure? What will you do with sensitive data after the study is completed?*

It is the responsibility of researchers to ensure that all data used for their project is stored and processed at the appropriate level of security. Where data contains personal information about the participants, or is commercially sensitive, the risk this poses to individual or organisational privacy and secrecy must be considered extremely carefully.

But getting data security right is not the only challenge. As data science has progressed as a field, we have come to better understand the limits of anonymisation, particularly at a time when more and more personal data is created every day, much of which is publicly shareable. Consider Netflix's decision to release a training data set of 100 million ratings given by anonymised users as part of a competition to improve its algorithm. Researchers found that by using publicly available IMDb data as ground truth, the Netflix users in the dataset could be identified, revealing their political preferences amongst other sensitive information.

We assume, therefore, that no system for anonymisation is infallible, and that this potentially enables abuse by adversarial actors. But we also keenly appreciate the benefits that sensitive datasets provide for doing groundbreaking science. Striking a balance between the expectations of the people to whom a dataset relates and the requirements of the researchers is the EAG's core consideration in this section of the application.

If data is publicly available, the security requirements are likely to be very low. It doesn't matter if someone steals your laptop and has access to the values: they could have downloaded the whole dataset themselves! However, there are cases where even publicly available data may need to be securely stored.

For example, consider the additional information that is created by labelling a particular set of tweets as containing hate speech. Labelling (or otherwise curating) an existing, public dataset may change the privacy considerations for a project, by exposing the data subjects to additional scrutiny or notoriety. In other words, the needle in the haystack may suffer unexpected consequences from being found!

A strong ethics application will describe reasonable boundaries on the worst case scenarios for the project, and explain any security vulnerabilities that this introduces. Financial and medical datasets, for example, are very likely to require strong security arrangements as a result. In other cases, a commitment to only share data with named parties, and trust that they will not share it more widely, may be sufficient. In almost all projects, using data from human participants the following commitment would be appropriate:

> *Researchers involved in the project will not attempt to link participants in the dataset(s) to any resources not mentioned in this proposal, nor to make any attempt to identify or deanonymise individuals through any means. Furthermore, researchers will carefully consider the publication of any dataset, method or technique which would increase the chances that a third party could identify or deanonymise individuals involved in this study.*

Additional harm

The form on the intranet gives the following prompt:

> *Please comment on the potential for individual, societal or ecological harms to arise from your research, beyond what is described above.*
>
> *Questions to consider:*
>
> - *Could any harms arise to the people involved in conducting this research?*
> - *Could conducting or promoting this research create unintended negative outcomes, such as environmental damage, new power imbalances, or the misuse of technology?*

Traditional ethics review has focused on the informed consent and privacy of human participants in academic research. However, as data science expands, so too does the potential for harm that could be caused by new insights, methods and tools that data science inadvertently enables.

In a paper published in 2017, Stanford researchers Yilun Wang and Michal Kosinski claimed to have built a deep learning algorithm that could predict whether someone was straight or gay in 81% of cases for men and 74% of cases for women by analysing just one photo. In a world in which facial recognition processing is regularly used by law enforcement and, in many of those same countries, being gay is illegal, it seems unlikely that the claimed benefits that arise from conducting the study outweigh the potential harms to stigmatised members of the LGBTQ+ community introduced by the methods it introduces.

This controversial study is just one data point in a much wider conversation about what sort of society we want, and the role we want technology to play in it. It's not a question that will be settled overnight; but as members of the national institute for data science and AI, it is a debate that we should keep in the front of our minds.

Nor do additional harms have to be large scale to be unethical. The welfare of researchers themselves is also something that is considered as part of the EAG review process. For instance, consider a junior researcher tasked with hand-coding images of a warzone or humanitarian crisis for use as ground truth in an image classification system. Such a task carries a high risk of causing emotional distress.

Another example that could be detrimental to the researchers working on the project is a proposal that cannot provide a meaningful result, or that cannot credit the work done by researchers publicly. In many cases the viability of the project will already have been assessed by the organisations funding the project, considering for example the logical scientific rational, appropriate statistical power and understanding of the related literature. However, the EAG reviewers will also consider the wellbeing of the researchers in their consideration of additional harms.

As with privacy, there are no guarantees when it comes to the potential for a particular study to cause harm. And it may be that the most important analyses to conduct are those that have the greatest potential to impact — positively or negatively — on the real world. A strong proposal is one that demonstrates that the lead investigator has considered the potential for harm, and has either put in place safeguards to minimise their likelihood, has justified the risks by stating the potential value of the work, or ideally both.

Why do we need more paperwork?

The relatively small investment of time and brain power in advance of a project is likely to save time and headaches down the line – both for the research team and the Institute. Everyone benefits from having an independent reviewer consider the ethical implications of their work. **A prevention is always preferable to a cure.** It is in everyone's best interests to avoid research being weaponised for unintended uses, data being leaked, or participants to be deanonymised.

Related to this most cynical point is the most aspirational: the EAG's goal is to **improve the quality of the science** for everyone involved. Ethics approval bodies have a reputation — rightly or wrongly — as one of the gatekeepers of research. Applications can take a long time to be reviewed, and an overly cautious culture within the review committee can lead to particularly ambitious studies being slowed (or stopped) because the answers they seek are not yet known.

A goal of interdisciplinary research is to bring together skills and knowledge from across the academy to answer questions that no single researcher or research community would be able to do themselves. By design, no single person at the Alan Turing Institute will have all the answers to the questions we ask on the EAG application form. The review process should be an opportunity to harness the expertise of researchers in different areas, and to get feedback regarding the potential pitfalls. We all have biases and blindspots, so getting a second pair of eyes on the work **before it has started** will allow the project to run as smoothly as possible from beginning to end.

Finally, the Ethics Advisory Group hopes to **move the needle towards more ethical data science** in society at large. There's no denying the risk that recent revelations about unauthorised data sharing and manipulation pose to good-faith data science everywhere. The rules are changing, both legally, with the introduction of the GDPR, and culturally. As we work with Turing researchers to refine and streamline our process we will build clear guidelines that will be shared openly for any institution to adopt and remix for their use.

What is the process?

Who should apply?

Inclusion criteria: Turing as lead institution

> *Is the Alan Turing Institute the lead institution for this research?*

If funding is being administered through one of the joint venture universities, the answer to this question is "no". The lead investigator at that institution should consult that university for ethical approval. Do not apply to the EAG for approval in this case.

If funding for the project is being administered through the Alan Turing Institute, (even if the Turing does not provide the salary of the lead investigator), the answer is "yes". Examples of this are projects brought by industry partners to Data Study Groups and Turing summer internships, along with projects led by Turing-employed members of the research team.

If in doubt, send an email to eag@turing.ac.uk with details of your particular project and the EAG administrator will be able to advise you.

Inclusion criteria: Ethical approval from specific bodies as requirement of funding

> *Has your study received funding from the Department of Health (for Social Care Research) or the Ministry of Defence?*

Both the Department of Health and the Ministry of Defence have their own ethical review processes that must be completed in order to comply with the requirements of the project funding. To avoid the duplication of effort, the EAG will accept evidence of their approval in lieu of their own process. Please send a copy to eag@turing.ac.uk when you have received it.

Inclusion criteria: Specific health research related requirements

> *Does your study involve NHS staff, patients, facilities, premises or data? Is your project research involving prisoners or adults lacking capacity, a clinical trial of a medicinal product or does it relate to human tissue (even if outside the NHS)?*

If the answer to this question is "yes", please liaise directly with the Ethics Advisory Group (eag@turing.ac.uk) as you may need Health Research Authority approval for this project.

Inclusion criteria: No intent to publish results

> *Does your study meet all of the following conditions?*
>
> - *The research is on behalf of or at the request of an institution or company.*
> - *The research aims primarily to monitor or improve the performance of that institution.*
> - *Conclusions of the research will be wholly or primarily applicable to that institution*

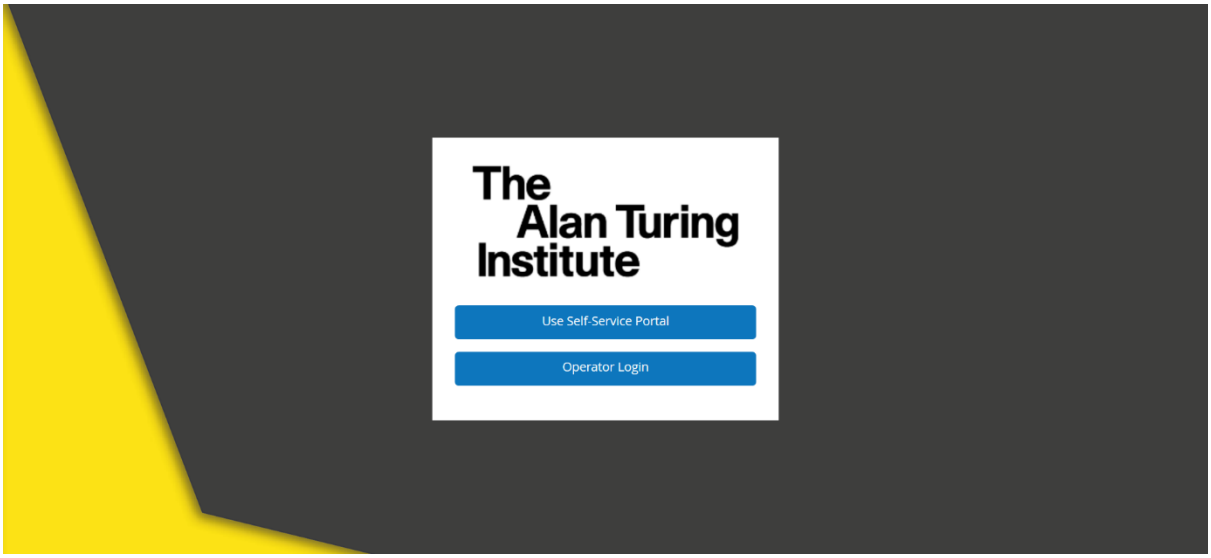
Data science consulting work that will be delivered to an industry partner for their internal use does not fall under the category of research ethics and is therefore outside the remit of the Ethics Advisory Group. Similarly, conducting a survey to monitor - for internal purposes - the attendance and satisfaction of an event hosted at the Alan Turing Institute would not need ethical approval from the EAG.

The litmus test for this question is whether there is any intention or possibility of an academic publication arising from the work. If the answer is “yes”, or even “maybe”, then it is necessary to obtain approval from the EAG. Importantly, the application must be approved before any research is undertaken. It is not acceptable to obtain post-hoc ethics approval just before a manuscript or software package is submitted for publication.

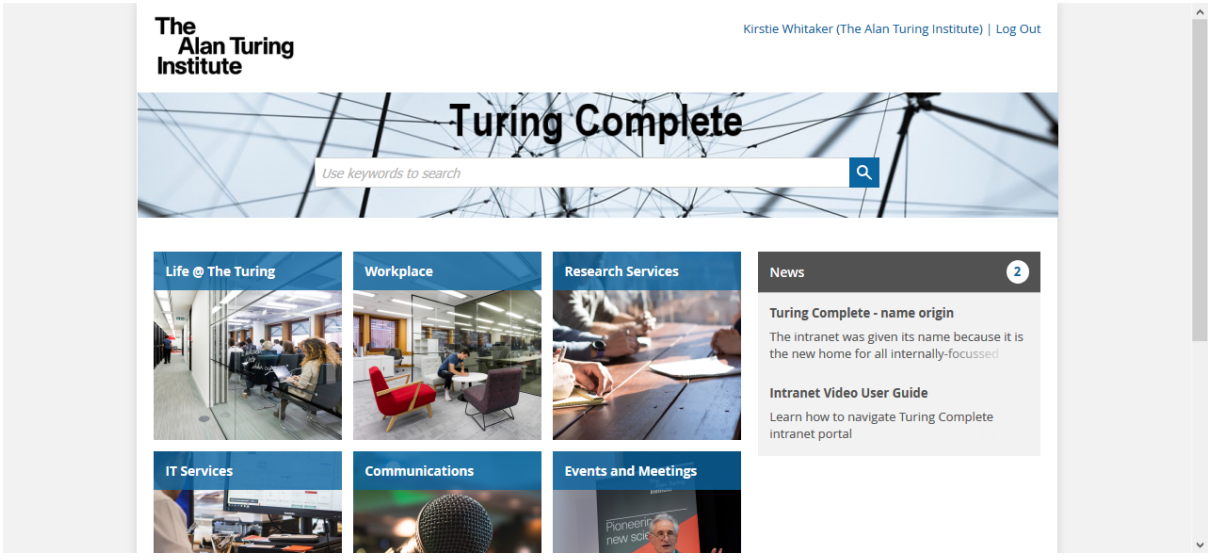
If in doubt, submit your application, or contact eag@turing.ac.uk.

Submitting your application

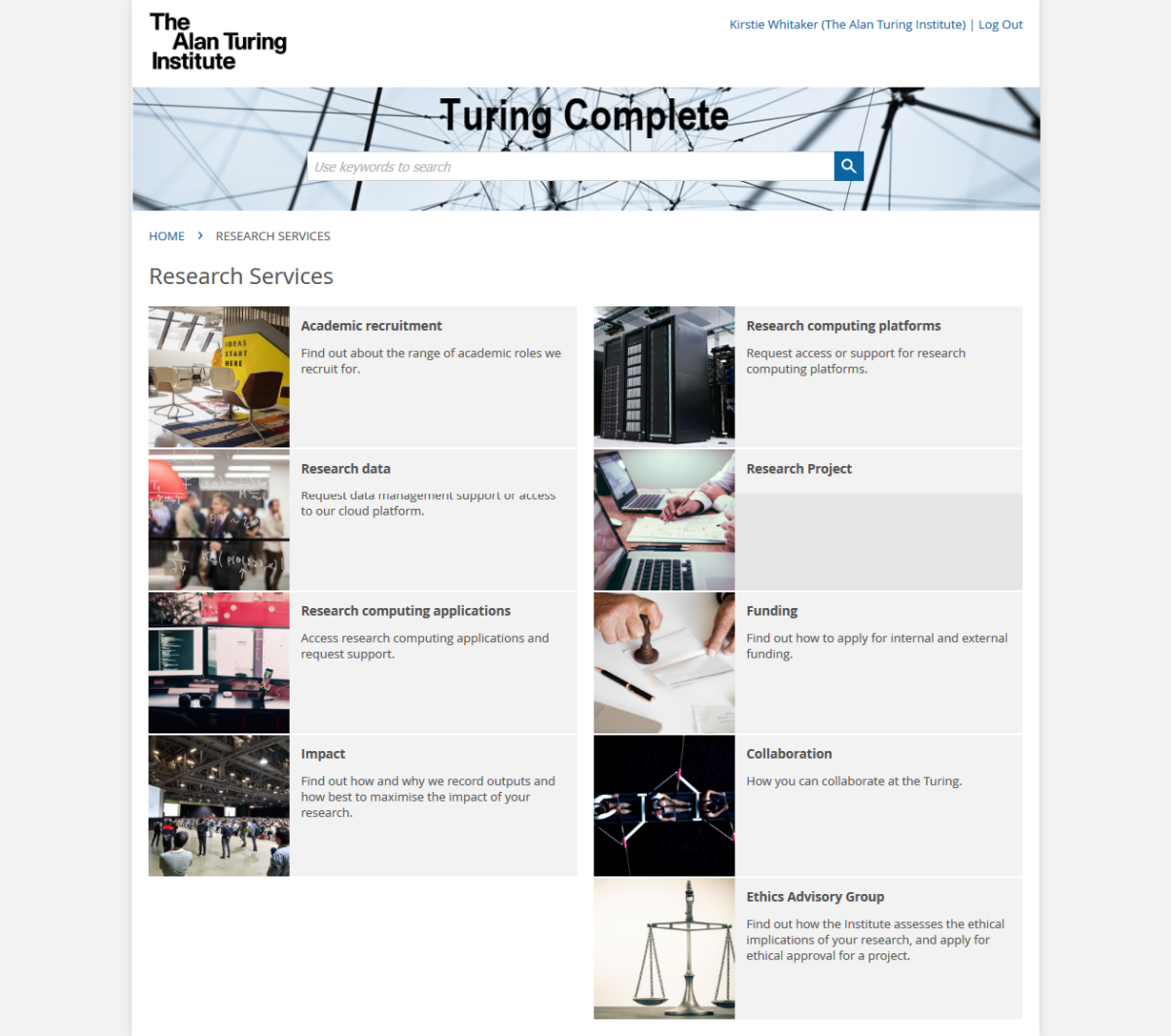
All Turing members will have access to Turing Complete, the Alan Turing Institute's intranet (https://turingcomplete.topdesk.net).



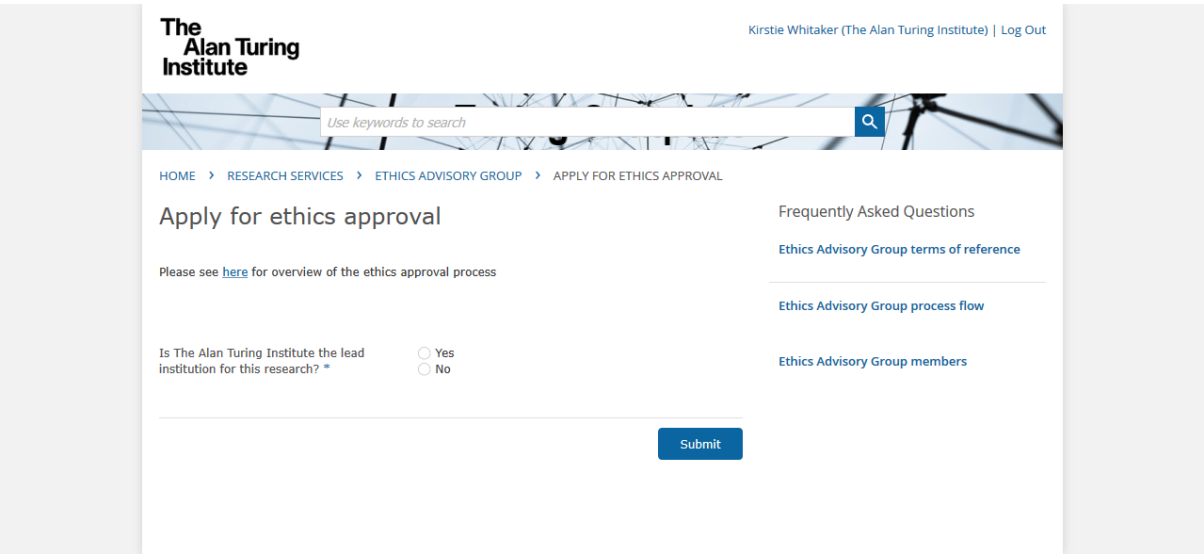
Click on "Use Self-Service Portal" and log in with your @turing.ac.uk credentials. You will be taken to the home page.



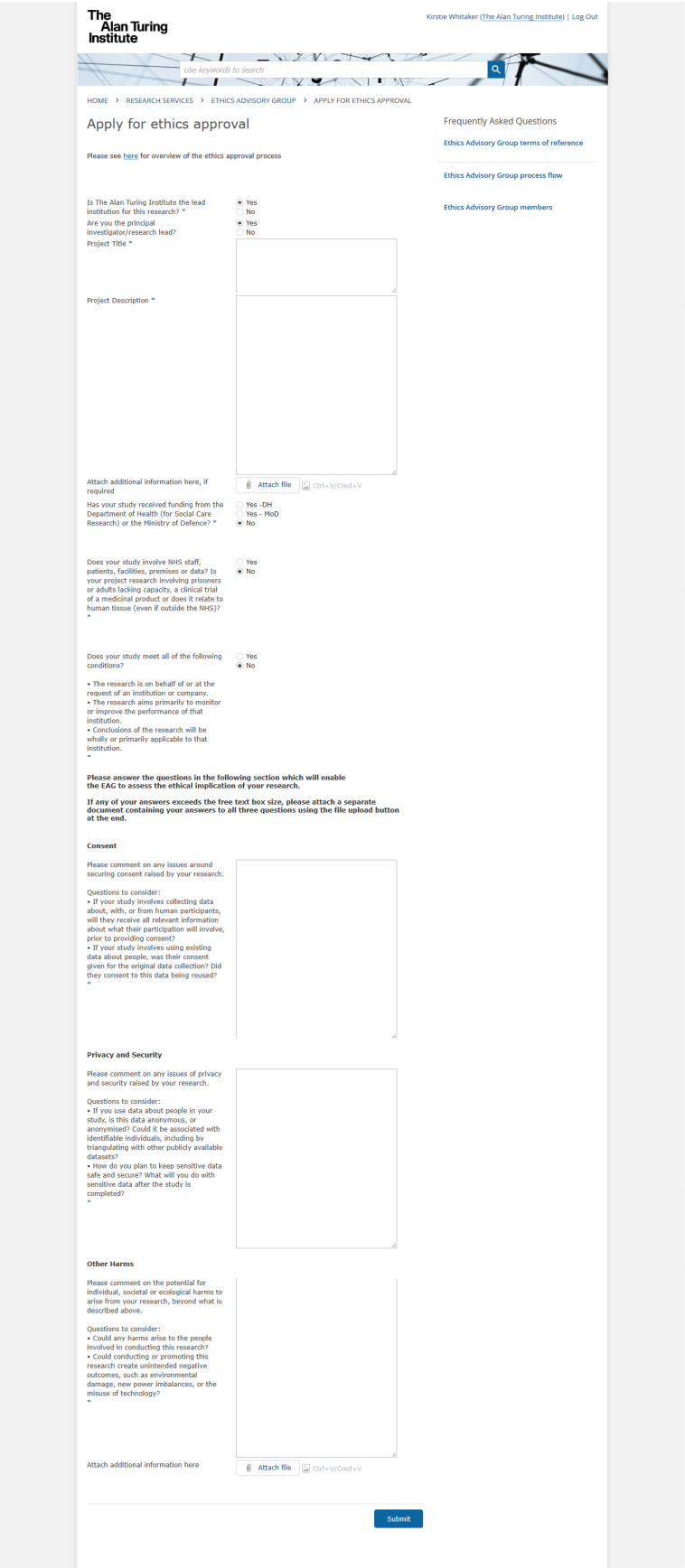
Click on "Research Services" and then scroll to "Ethics Advisory Group".



Click on the “Apply for ethics approval”



This form will ask you the inclusion questions outlined above. As you answer each question the next will appear.



Please complete the form with as much detail as you can. It is possible to upload a file for the project proposal which may be easier than re-writing it, and a separate file for any additional information that you might like to provide. Once you have completed all the options, click “Submit” and - as the button suggests - your submission is complete.

Top tips for completing the form

Our recommendation for a smooth approval process is to put yourself in the reviewer’s shoes. A 2-3 paragraph project proposal, and several clear sentences in each of the three ethical considerations text boxes (Consent, Privacy and Security and Additional Harms) will often be sufficient for the EAG reviewer to assess the ethical considerations of the research. There is no need to write a huge amount, but applications with very little information cannot be approved if this is all that is provided.

(Of course, the only definitive answer to “How long should my application be?” is “How long is a piece of string?”. There are no hard and fast guidelines. But taking mathematician Blaise Pascal’s endorsement of succinct writing, “If I had more time I would have written a shorter letter,” will always be appreciated by the reviewers, and ultimately lead to a faster approval for the application itself.)

Review outcomes

Your application will be sent to one of the EAG reviewers who will be asked to submit their suggestions and concerns within three weeks. Once these have been submitted, the EAG administrator will update your application with their comments. These comments will be added to the intranet ticket directly, and you will receive an email notification that the ball is back in your court.

There are four potential decisions from the EAG reviewer:

- Accept
- Accept with clarifications
- Revise and resubmit
- Reject

Accept

No action is required from you if the reviewer **accepts** your application. You will receive notification that the proposal is approved, and a record of the acceptance will be retained.

Accept with clarifications

If the proposal is **accepted with clarifications** you will be notified by the EAG administrator of the questions for which the reviewer was asking for additional information. Please submit these clarifications directly via Turing Complete by responding to the EAG administrator's request. Whether the response adequately addresses the request for clarification will be assessed by the EAG administrator and the EAG chair. If they accept the answers, the proposal will be accepted with notification if this sent. Assuming that all requests for clarifications are adequately addressed, it is unlikely that the proposal will be sent back out for review.

Revise and resubmit

A **revise and resubmit** decision will require the applicant to submit a new application. There are two likely reasons for a reviewer to request a revision. One is that the EAG reviewer could not assess the ethical concerns appropriately because there was insufficient detail in the project plan. Alternatively, the application may not have detailed the ethical considerations of the project, including the steps the research team will take to mitigate or minimise the risks.

If you have any difficulty adjusting your application in response to the review, please contact eag@turing.ac.uk and we will be happy to provide assistance and advice.

Reject

One of the guiding principles of the Ethics Advisory Group is that we aim to enable data science research rather than prevent it from taking place. The decision to **reject** a proposal will be used rarely, and with clear justification.

Frequently Asked Questions

But I'm not collecting data, why do I need to get ethics approval?

There are many examples of unethical research that was conducted on data that already existed. Collecting data and getting informed consent from human participants is just one aspect of the application process. Data not relating to individual persons may still need to be kept private and secure (consider codebases with known security vulnerabilities, or proprietary financial records from a partner organisation). The additional harms that can come from misuse of modelling techniques applied to openly available datasets, or the exploitation of vulnerable members of the research team are independent of both consent and privacy considerations.

Can you just give me a checklist?

We appreciate that life would be much easier if you could just follow a simple rubric to ensure your work is ethical. Unfortunately, life isn't that easy! There are no clear-cut answers, and it is the act of considering the implications and clearly articulating any safeguards that need to be in place that the EAG is assessing. This is both good news (there are no "wrong answers", as long as they are honest and thoughtful) and bad news (being thoughtful is more time-consuming than being thoughtless).

That said, we want to ensure that our own efforts, as well as those of researchers, are not duplicated – so we are building an database of approved proposals to make it easier for Turing members preparing an application.

ANNEX – Overview of the Ethics Approval Form

Please note: This document is intended to provide you with an overview of the Ethics Approval Form available online on Turing Complete here. It is the responsibility of researchers that all research projects, whose principal investigator receives funding by or through The Alan Turing Institute, are submitted for an ethical review through the form available on the Turing Complete platform. Please see Section 2 below to determine whether your research has to undergo ethical approval by the Ethics Advisory Group.

The time needed for an ethics review of a project typically takes 2-3 weeks, however, this will be longer if further information or clarification is required from you. In exceptional cases, you may be asked to resubmit your application entirely.

Please retain a copy of the text of your application for your records and to help you in the event a clarification or resubmission is required. We will only be able to provide you with a PDF version of your application.

Section 1: Basic information

Name of principal investigator/research lead: Minh Le Kieu

Contact email: m.l.kieu@leeds.ac.uk

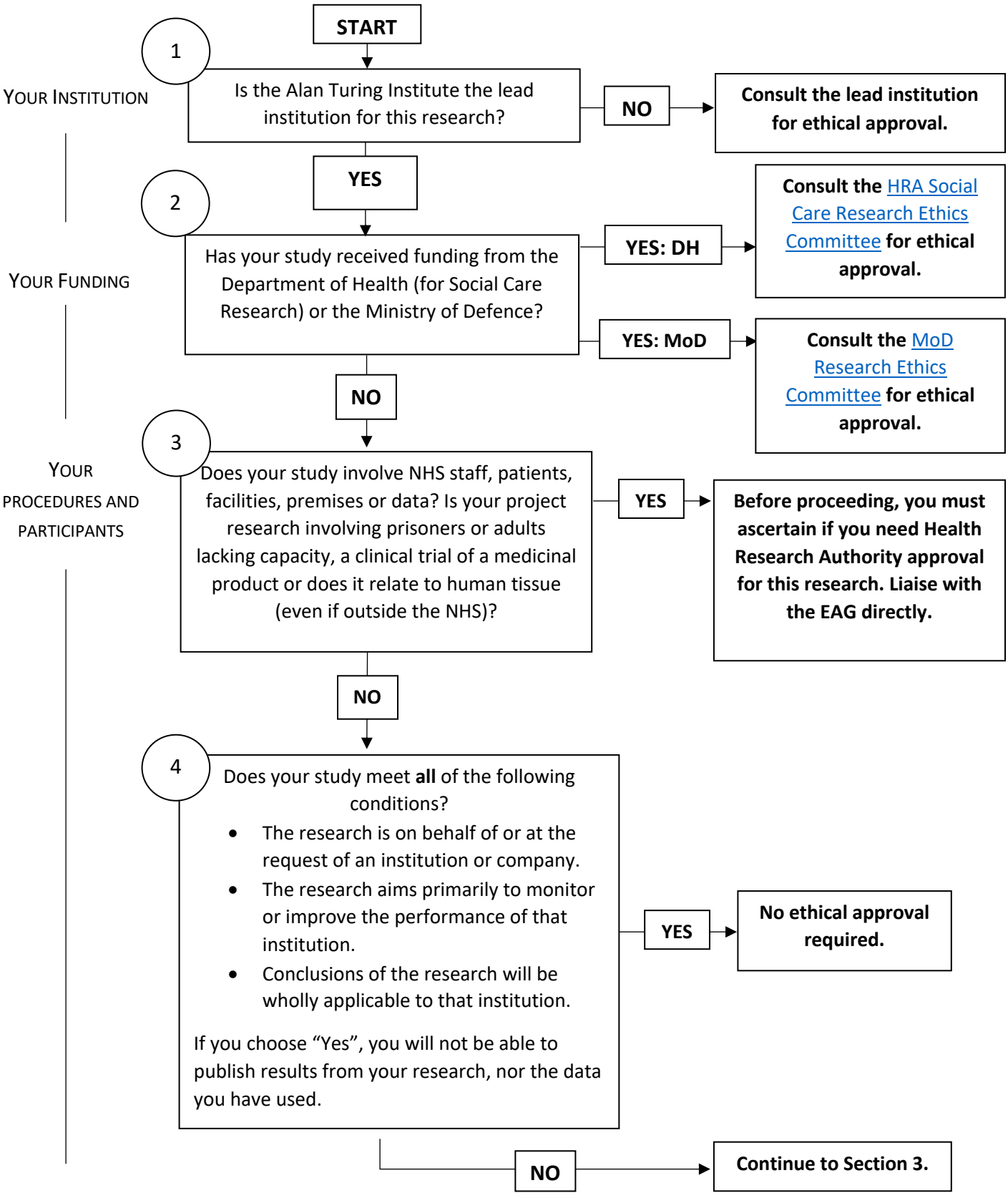
Title of project:

Green Radio: Dynamic power saving configuration for mobile networks

Project description (includes ability to upload file):

Mobile networks waste energy by keeping too many radio-cells turned on when demand is low during off-peak. This challenge is about automating next-day power saving schemes for each individual cell tower in a country, based on current load and expected demand profile in the area. The solution should optimise power saved while avoiding negative impact on the user's network experience.

Section 2: Is my project in scope of the EAG?



Section 3: What are the ethical implications of my research?

1

Consent

Please comment on any issues around securing consent raised by your research.

Questions to consider:

- If your study involves collecting data about, with, or from human participants, will they receive all relevant information about what their participation will involve, prior to providing consent?
- If your study involves using existing data about people, was their consent given for the original data collection? Did they consent to this data being reused?

In general, data from Telenor is about the mobile sector (mobile cell), e.g. load and capacity, rather than data about people. The load may say something about people but it is very aggregated, so I think there should be little issues regarding consent

2

Privacy and security

Please comment on any issues of privacy and security raised by your research.

Questions to consider:

- If you use data about people in your study, is this data anonymous, or anonymised? Could it be associated with identifiable individuals, including by triangulating with other publicly available datasets?
- How do you plan to keep sensitive data safe and secure? What will you do with sensitive data after the study is completed?

The data is generally not about people but about mobile sectors. There is no way individuals can be identified. The data is stored securely in Microsoft sharepoint servers.

3

Other harms

Please comment on the potential for individual, societal or ecological harms to arise from your research, beyond what is described above.

Questions to consider:

- Could any harms arise to the people involved in conducting this research?
- Could conducting or promoting this research create unintended negative outcomes, such as environmental damage, new power imbalances, or the misuse of technology?
- What benefits could your research contribute that would balance or outweigh any potentially negative impacts that could arise?

There is no possible harm arise to the people involved in conducting this research, since only data analytics are implemented. There may be negative outcomes from this research, if Telenor implements a bad prediction model in practice, such that the capacity is not enough for the mobile demand. However, the whole idea of this challenge is to provide a good algorithm for Telenor to make this prediction, so the proposed algorithm is likely to be more efficient than their current algorithm.