DCU
Ollscoil Chathair
Bhaile Átha Cliath
Dublin City University

School of Computing
RESEARCH ETHICS COMMITTEE

APPLICATION FORM FOR ETHICAL REVIEW OF A RESEARCH PROJECT INVOLVING HUMAN PARTICIPANTS WHICH IS IN THE CATEGORY OF NOTIFICATION ONLY

There are 3 generally accepted levels of ethical review for projects carried out in a University or similar setting. These are notification only, expediated and full committee.

This notification only level of review is to approve relatively low-risk research involving human participants, primarily using social science methodologies in which any personal information collected is not of a sensitive nature. The School of Computing Research Ethics Committee has been delegated responsibility by the University to approve ethics submissions from undergraduate and taught Masters projects only, which are in the category of notification only.

Examples of projects in this category include:

- Anonymous surveys in which the topic itself is not likely to elicit significant difficulties for the participants, such as: anonymous internet surveys (e.g. Survey Monkey), street questioning.
- Observation (without audio or visual recording) of public settings where privacy would not normally be expected, such as observing people on streets or at sports events.
- Research carrying no risks beyond those of everyday life (as experienced by the intended participant population), such as asking people's opinions about products or services; asking students about educational experiences; monitoring the impact of daily activities.
- Interviews with public figures, professionals or others in their professional capacity regarding their professional activities.
- Analysis of data (e.g. health records) which have had all identifying information removed by the data holder and been provided to the researcher in accordance with data protection legislation.
- Collection of biological samples which are anonymised and do not require invasive techniques (e.g. hair, nails).

If your project is using data from a public repository like Kaggle or is not generating or using any form of personal data then you do not need research ethics approval, you do not need to complete and to submit this form and your project supervisor should indicate this on the project dashboard.

If your project involves collecting or processing [personal data which is of a personal nature](#), you must first complete the DCU online Data Protection training course and review the ["Data Protection – Key Points for DCU Researchers"](#) guidance from the Data Protection Unit to assist you in meeting your legal obligations under GDPR and associated Irish law.

Once you have completed this form (if you need to) you should save it as a PDF file, not WORD, and upload it to the your project dashboard before you start gathering data. It will then be read and assessed by two members of the committee and once two members of the committee approve your submission you will be automatically notified by email and your project can start data gathering.

There are strict deadlines for submitting this form for each class group, undergraduate and taught Masters by which your submission must be made and you will be informed of these deadlines by your course board chair or project co-ordinator. If you do not submit by these deadlines then the research ethics committee is not obliged to approve your submission and when that happens and your project is assessed and graded at the end of the year, you will be awarded 0 for that component of your project.

SECTION 1 – GENERAL DETAILS

1.1 Project Title

Enhancing Bus Tracking Accuracy Through Crowdsourced User Reports

1.2 Applicant Details

Name	Student or Supervisor	E-mail
Michael Cojocaru	Student	michael.cojocaru2@mail.dcu.ie
James O'Meara	Student	james.omeara6@mail.dcu.ie
Hyowon Lee	Supervisor	hyowon.lee@dcu.ie

Other Investigators: *Including any external to DCU*

Name	School/Unit/External Institution	E-mail

1.3 Key Project Dates

Proposed start date for data collection	Proposed end date for data collection	Proposed project completion date
17/2/25	18/2/25	21/02/25

1.4 Please indicate which academic award

Undergraduate X	Taught Masters ☐

1.5 Please confirm the location(s) where the research will be carried out

If research will be carried out abroad, you will need to address the ethical challenges raised by this in Section 3 of your application - consult the Conducting Research Abroad document in the Ethics Resources and Guidelines section of the DCU Research Ethics webpage).

Whitehall DCU Helix and Whitehall Larkhill Road Bus Stops

1.6 Please state what additional permissions may be required to access participants.

Specify from whom the permission is required (e.g. a school Board of Management), and when their written approval will be obtained

N/A

SECTION 2 – PROJECT DESIGN AND METHODOLOGY

Research Overview - Please respect the indicated word counts in the following sections and explain all acronyms in full text the first time they appear.

2.1 Provide a brief description of the research (max 250 words):
Please use lay language, include the scientific/theoretical background of study and a justification as to why this research project should proceed in that context

We explored how apps like Waze use gamification and participatory design to encourage user contributions. Research shows that simple, low-effort reporting interfaces increase engagement, so we designed an intuitive popup system that asks users to confirm bus arrivals. Instead of relying solely on GPS, which can be delayed or inaccurate, we integrate crowdsourced data to fill the gaps and improve predictions.

By researching how to make crowdsourcing effortless and engaging, we hope to make bus tracking more reliable and community-driven. We are developing a web-based app that implements this idea by allowing crowd-sourced information on the bus arrivals/status much more accurately than current GPS-based trackings employed in today's apps do. Our project will contribute to better smart city systems, helping transport services become more responsive to real commuter experiences.

In order to assess the usability of the web app, we plan to conduct a simple usability testing with 8 -10 participants who will interact with the app, report bus arrivals, and provide feedback on its ease of use and accuracy. Participants will be asked to navigate the interface, test the reporting feature, and complete a short questionnaire about their experience. Testing will take place at Whitehall DCU Helix and Whitehall Larkhill Road bus stops , and the total duration for each participant will be less than 15 minutes. This evaluation will help us refine the app's user interface, engagement mechanisms, and data accuracy, ensuring that the system is both intuitive and effective in real-world commuting scenarios.

2.2 Please state the aims and objectives of the project (max 200 words)

This project aims to make bus tracking more accurate and reliable by combining user reports with GPS data. Right now, most tracking systems rely only on GPS, which can be delayed or inaccurate, leaving commuters unsure when their bus will actually arrive. Our solution gives users a quick and easy way to confirm bus arrivals, improving real-time updates with direct input from the people who are actually waiting. By keeping the process simple and intuitive, we encourage more people to take part, helping to fill the gaps where GPS alone falls short. This research also looks at how good design and user engagement can make public transport tracking more effective, ensuring that the system is easy to use and encourages regular participation. Ultimately, the goal is to build a community-driven tool that makes bus tracking more responsive, trustworthy, and useful for everyday commuters.

2.3 Please confirm your methods of data collection:
Tick all relevant check boxes and provide details for each one, including any devices used to collect data, and whether the data will be anonymous, potentially identifiable or identifiable at point of collection

Method	Describe briefly
☐ Interviews or focus groups	

X Surveys/questionnaires	Test Users would be asked to fill in a questionnaire about how they found using the webapp and what they think of the service it provides
☐ Audio/video recordings	
X Public observations	Users will input details about which bus stops and routes they are waiting at and report any issues (e.g., delays).
☐ Persons in public office	
☐ Using existing data (incl. secondary data)	
☐ Using human derived material (biological samples)	
☐ Standard tests (educational/personality etc.)	
☐ Standard educational practices	
☐ Other (please specify)	

2.4 Please confirm who the participants on this study will be, including group size and composition:
Include associated demographic characteristics, and state how your proposed sample size was determined (e.g. power analysis)

The primary focus participants will be the Dublin City University (DCU) students who are active public transport users. We seek to gather between 8 to 10 participants. This cohort represents a significant segment of the user base for the application, in terms of its developing and testing use cases.

2.5 Please outline your recruitment process, including where you are sourcing participants from and your criteria for inclusion/exclusion:
Where gatekeepers are involved, outline the procedures relating to their involvement

Participants will be chosen from those who regularly use public transport and are willing to provide feedback. This ensures a representative sample that reflects different commuting patterns, strengthening the reliability of our findings. Recruitment will be conducted by reaching out to colleagues and fellow students via email, inviting them to take part in the study. The email will include a brief overview of the research, participation details, and a consent form. This approach allows us to gather a diverse pool of participants while ensuring they are fully informed before agreeing to take part.

2.6 Addressing participant vulnerability – if your participants fall into any of the following categories, please check the relevant tick box/boxes and state below what special arrangements will be made to protect them:
If your participants are not in any of these categories, tick N/A

X N/A
☐ Children under 18 years of age
☐ Persons in unequal relationships with the researcher *(e.g. lecturer-student, therapist-client, employer-employee)*
☐ People with a recognised or diagnosed intellectual, physical or mental impairment
☐ People confined to institutions *(e.g. prisoners, residents in 24 hr nursing facilities)*
☐ People who have undergone traumatic or adverse emotional events
☐ People with diminished cognitive ability
☐ Marginalised sections of society
☐ Other (please specify)
Special arrangements:

2.7 Involvement of children under 18 years of age – if your participants are in this category, please confirm compliance with the following:
If your participants are not in this category, tick N/A

X N/A
☐ We confirm that we have read and agree to act in accordance with the DCU Child Protection policy and procedures *(as per the <u>DCU Child Protection Unit webpage</u>)*
☐ We confirm that we have put in place safeguards for the children participating in the research
☐ We confirm that we have supports in place for children who may disclose current or historical abuse (whether or not this is the focus of the research)
☐ We confirm that all requirements will be met prior to commencing the research *(e.g. TUSLA Children First Training completed, Garda Vetting in place)*

2.8 Please confirm how the results of the research will be disseminated:
Include a statement on whether the participants will be provided with any information as to the findings or outcomes of the project

The results of this research will be shared through the reports made for this project to Dublin City University (DCU).

SECTION 3 – ETHICAL ISSUES AND RISK MANAGEMENT

3.1 Please identify all issues including ethical issues which may arise in the course of this research. What are the potential risks to participants, and how will those risks be addressed or minimised?
Potential risks can be physical, psychological, social, legal, etc. Please include details of any additional support being provided for participants during/after the study

Participants will provide real-time reports on bus arrivals, which could involve location-based data. In order to address this, no exact location data will be stored and any data collected will be General Data Protection Regulation (GDPR) compliant; no personal data that will identify the participant's identity will be required to be entered on the system. The health and safety risks involved in this study are no greater than those of a person using their phone while waiting at a bus stop. Additionally, to ensure participant safety, a researcher will be present at all times during the study, standing with the participant while they interact with the app.

3.2 Please identify the potential benefits (direct and/or indirect) to those participating in this research:
Potential benefits should outweigh the potential risks to participants

Participants in this study will benefit from an improved commuting experience, as their contributions will help create a more accurate and reliable bus tracking system. By reporting bus arrivals, participants play an active role in enhancing real-time tracking and reducing uncertainty around wait times. Additionally, they will have early access to the app, allowing them to influence its development based on their own commuting needs.

3.3 Please describe what measures/protocols you have put in place in the event that there are any unexpected outcomes or adverse effects to participants arising from involvement in the research:

- Participants will be informed that they can withdraw at any time, and their usage data will be deleted upon request.
- If participants report stress or frustration from using the system, we will adjust UI elements or engagement mechanics to ensure a smoother user experience.
- For any other unexpected outcomes or adverse effects, we will contact our supervisor immediately to seek his advice.

3.4 Do you intend to provide payment or incentives to participants?

Yes ☐	No X

If Yes, please consult the REC Guidelines on the Use of Compensation and Incentives (in the Ethics Resources and Guidelines section of the [DCU Research Ethics webpage)](#) before providing additional details below

3.5 Does this research raise any potential risks for the researchers themselves?

Please consider the location/environment where the research is being conducted, exposure to distressing data content etc.

Yes ☐	No X

If Yes, please describe further and explain what risk management procedures will be put in place to minimise these risks to researchers:

3.6 Does this research raise any potential conflict of interest?

Please consider any potential real <u>or</u> perceived conflicts of interest that might influence the integrity of the research, or give rise to bias in conducting and reporting the research, or affecting publication (consult the [DCU Conflict of Interest Policy](#) for assistance)

Yes ☐	No X

If Yes, please identify and explain the steps being taken to address that conflict:

3.7 Please describe how the conduct of the research will be monitored:

Regular oversight by the PI is required to ensure the project conforms to the procedures set out in this application (especially where several people are involved in carrying out the research procedures)

Project team has been having a regular meeting with their supervisor since the start of the project. During the user testing period, our progress and the conduct of research will be monitored by our supervisor by regular communication.

SECTION 4 – CONFIDENTIALITY AND DATA MANAGEMENT

4.1 Considering your previous response in section 2.3 of the form on data collection, please confirm whether you are collecting or processing personal data in this research project:
Personal data is any information about a living person, where that person is either identified, or could be identified from the data itself, or when it is combined with other data. This includes paper based, electronic and biological samples data. If your data is fully and completely anonymous, it is not personal data.

Yes X	No ☐

If Yes, please confirm your compliance with the following by ticking the checkboxes:

X We confirm that we have completed the DCU Data Protection training module on Loop.
X We confirm that we have read the <u>"Data Protection – Key Points for DCU Researchers"</u> guidance on the DCU Data Protection Unit (DPU) website and agree to protect and manage our data in accordance with same.
X We have assessed the degree of risk inherent in the personal data being used in the research project, and confirm that all DPU GDPR requirements have been met prior to submitting this application *(e.g. completion of Data Protection questionnaire, confirmation that any survey tool being used is GDPR compliant, that required Data Processing or Sharing Agreements will be in place, etc.)*

4.2 Data access – please confirm whether access to participant data is confined to the investigators named on this application:

Yes X	No ☐

If No, please name who the other individuals are and why they need access. Any proposed transfer of data (including outside of the EU) should be detailed here.

4.3 Data storage – please confirm compliance with the following:

X Data collected on mobile devices will be protected with a strong password/passphrase at a minimum, and/or encrypted if the device supports it
X Data will be removed from mobile devices as soon as is practicable and stored in a secured location in DCU (on server or institutional Google Drive)
X Paper based data will be held securely in locked cabinets in DCU, with access restricted to the named researchers
Specific arrangements in relation to biological samples should be stated here:
Any exemptions to the above compliance statements should be justified here:

4.4 Please confirm who will be responsible for the secure storage of data generated by the research:
Name the relevant DCU investigator/s

James O'Meara Michael Cojocaru

4.5 Please confirm how long the data will be held for:
For personal data, consult section 15: Retention of Personal Data in the "Data Protection – Key Points for DCU Researchers" guidance on the DCU Data Protection Unit (DPU) website

The data collected in this study will be held for a period of two weeks after the study concludes on the 21/2/25, allowing sufficient time for analysis and reporting.On the 7/3/25, the data will be destroyed Since all collected data is anonymous and does not include personal identifiers, there is no requirement for long-term retention under DCU's Data Protection Policy.

4.6 Please confirm what will happen to the data collected at the end of the study:
Please tick the relevant checkbox and complete the associated follow-up section for that category

Archived ☐	Destroyed X	Other ☐

4.6.1 Archived data
Please provide the following details:

Name the DCU staff member responsible for archival and future use of data	
Confirm whether the data will be made available to other researchers, and if so, how?	
Confirm how the data will be prepared for archive (e.g. will datasets be anonymised)	
Confirm where the data will be archived and who will be allowed to access it	

4.6.2 Destroyed data
Please provide the following details – Note: for student projects, the supervisor must take responsibility for data destruction if there is no guarantee the student will have access to the data at the time of destruction

Please justify why the data will be destroyed	Since the study involves anonymous user reports and survey responses, there is no long-term need to retain the data beyond the research analysis phase. Destroying the data ensures compliance with ethical guidelines and data protection regulations (GDPR), maintaining participant privacy.
Name the DCU researcher responsible for destruction of data	The DCU researcher responsible for data destruction will be James O'Meara, ensuring proper handling and compliance with university policies.

Confirm when the data will be destroyed (specify date)	1/3/25
Confirm compliance with the following destruction methods (tick relevant boxes)	X Electronic data will be overwritten/securely deleted X Paper based data will be confidentially shredded ☐ Medical samples will be disposed in accordance with the relevant DCU approved SOP

4.6.2 Other - Please explain what will happen to the data if not being archived or destroyed:

SECTION 5 – PARTICIPANT INFORMATION AND INFORMED CONSENT PROCEDURES

In addition to completing this form you are required to attach, within the single PDF that you submit, a copy of (1) the Participation Information Sheet which you share with your participants and (2) a copy of the Informed Consent Form which your participants sign.

5.1 Please confirm that the following items have been addressed in your Participant Information Sheet which should be shared with all participants whether it involves online or in-person data gathering:

The items below should be used as headings in yourinformation sheet. Note the language used under each item must reflect the participant age group and corresponding comprehension level– if your participants have different comprehension levels (e.g. both adult and child participants) then separate sheets must be prepared for each set. Templates are available via the REC Forms - Applications, Templates and Amendments section of the Research Ethics website.

Checklist – tick the relevant check box for each item	Yes	No
Introductory Statement (Researcher names and titles, school, title of the research study)	X	☐
What is this research about?	X	☐
Why is this research being conducted?	X	☐
Why have you been invited to take part?	X	☐
What will happen if you decide to take part in this research study?	X	☐
How will your data be used?	X	☐
How will your privacy be protected (including any legal limits to confidentiality)?	X	☐
What are the benefits of taking part in this research study?	X	☐
What are the risks of taking part in this research study?	X	☐
Can you change your mind at any stage and withdraw from this study?	X	☐
How will you find out what happens with this project?	X	☐
Contact details for further information	X	☐

If you marked any item as No, please explain and justify why:

5.2 Informed Consent Procedures – please confirm whether written consent is to be obtained:
Please tick the relevant checkbox

Yes X	No ☐

If Yes, describe the procedures by which written consent will be obtained. If you are involving child participants, you will also need to obtain their written assent. Templates are available via the REC Forms - Applications, Templates and Amendments section of the Research Ethics website.

We will give each potential candidate an Infomred Constent Form, explain what they will have to do in the course of the testing. After they read this, we will ask if they have any questions and if they want to continue. If they answer yes to both questions we will ask them to sign the Form

If No, describe the procedures regarding how consent/assent will be obtained:

If you are gathering data from an online process such as Google Form or SurveyMonkey then you should use a page such as the one below, to capture participants' informed consent and your data gathering should not proceed until participants have completed this form with the appropriate answers.

Participant – please complete the following (by clicking Yes/No for each question)

I have read the Plain Language Statement (or had it read to me) *

- ● Yes
- ○ No

I understand the information provided *

- ○ Yes
- ○ No

I have had an opportunity to ask questions and discuss this study *

- ○ Yes
- ○ No

I understand the information provided in relation to data protection *

- ○ Yes
- ○ No

I have received satisfactory answers to all my questions *

- ○ Yes
- ○ No

I understand I may withdraw from the Research Study at any point *

- ○ Yes
- ○ No

I have read and understand the arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations *

- ○ Yes
- ○ No

I have read and understand confirmations relating to any other relevant information as indicated in the PLS *

- ○ Yes
- ○ No

I consent to participate in this research study *

- ○ Yes
- ○ No

SECTION 6 – SUBMISSION CHECKLIST AND RESEARCHER DECLARATION

6.1 Please confirm all required supplementary documentation to be included in this application within Section 7:

Checklist – tick the relevant check box for each item	Yes	N/A
Participant Information Sheet/s	X	
Informed Consent Form/s	X	☐
Informed Assent Form/s	☐	X
Recruitment Advertisement	☐	X
Questionnaire/Survey	X	☐
Interview/Focus Group Questions	☐	X
Debriefing Material	☐	X
Bibliography	☐	X
Approval from another Research Ethics Committee	☐	X
Evidence of other external approvals (e.g. Board of Management letter)	☐	X
Evidence of internal approvals (e.g. BSC approval review letter)	☐	X
Other – provide details here:	☐	☐

6.2 Signed Declaration
By submitting this form, the applicant (and supervisor) agree to the following:

The information contained herein is, to the best of my knowledge and belief, accurate. I have read the University's current research ethics guidelines, and accept responsibility for the conduct of the procedures set out in the attached application in accordance with the form guidelines, the REC guidance and resources, the University's Conflict of Interest Policy, its Code of Good Research Practice and any other condition laid down by the Dublin City University Research Ethics Committee. I have attempted to identify all risks related to the research that may arise in conducting this research and acknowledge my obligations and the rights of the participants.

I also acknowledge my requirement to be informed as to other duties and legal obligations applying to my research, and to comply with these duties and obligations – this includes being informed about DCU Data Protection guidelines for researchers, DCU Child Protection policy and procedures (where relevant) and DCU Insurance requirements.

I and my co-investigators and/or supporting staff have the appropriate qualifications, experience and facilities to conduct the research set out in the attached application and to deal with any emergencies and contingencies related to the research that may arise. Research will not commence until required consents and approvals are in place.

Electronic Signature(s):

Supervisor: _____

Print Name here:_Hyowon Lee_____

Date: 11/02/2025_____

Student(s)

signature(s):_____

Print Name(s)
here:_____James O'Meara_____

Date: ___11/02/25_____

Student(s) signature(s):   Michael Cojocaru   _____

Print Name(s) here:_____Michael Cojocaru_____

Date: ___11/02/25_____

_____

SECTION 7 – SUPPLEMENTARY DOCUMENTATION

Please attach all required documentation as confirmed by you in the previous section. The application should then be saved as one file in <u>PDF format</u> before submission via the project dashboard.

Participant Information Sheet

Study Title:
Enhancing Bus Tracking Accuracy Through Crowdsourced User Reports

Research Team:
James O' Meara, Dublin City University, james.omeara6@mail.dcu.ie
Michael Cojocaru, Dublin City University, michael.cojocaru2@mail.dcu.ie

What is this research about?
This study aims to improve real-time bus tracking by integrating user-reported arrival confirmations with existing GPS data from the National Transport Authority (NTA). Inspired by crowdsourcing models used in navigation apps like Waze, this research explores how commuters can contribute to improving public transport reliability through a simple reporting system within our web application.

Why is this research being conducted?
Many public transport tracking systems rely solely on GPS, which can be delayed or inaccurate, leading to frustration for commuters. By allowing passengers to report real-time bus arrivals, we aim to create a more accurate and user-driven tracking system. This study will evaluate the effectiveness of user engagement strategies in transport apps and explore how UI/UX design can encourage participation.

Why have you been invited to take part?
You have been invited to participate because you regularly use public transport and can provide valuable feedback on the tracking app's usability and effectiveness. We are seeking individuals who take public buses and are willing to test the web app, provide feedback, and optionally report bus arrivals.

What will happen if you decide to take part?
If you choose to participate, you will:

Use the bus tracking web app at either Whitehall DCU Helix or Whitehall Larkhill Road Bus Stops to check arrival times.
Complete a short questionnaire about your experience using the app.
Optionally report bus arrivals by clicking a simple confirmation button.
Participation is entirely voluntary, and you may opt out at any time without providing a reason.

How will your data be used?
Your responses and reports will be used solely for research purposes to improve the app's usability and accuracy. Data collected will be anonymous, meaning no personally identifiable information will be linked to your responses.

How will your privacy be protected?
No personal details (name, email, phone number) will be collected.
All reports are stored without GPS tracking, ensuring privacy.
Data will be stored securely and analyzed only for research purposes.
The study is GDPR-compliant, ensuring all ethical guidelines for data protection are followed.

What are the benefits of taking part in this research study?
You will help improve the accuracy of real-time bus tracking for yourself and other commuters.
You will influence the design and development of a user-driven transport solution.
Your feedback will contribute to future smart mobility innovations.

What are the risks of taking part in this research study?
This study carries minimal risk, as it involves simple interactions with a web application. The only potential inconvenience is the time required to use the app and complete the questionnaire, estimated to take no more than 10 minutes.

Can you change your mind at any stage and withdraw from this study?
Participation is entirely voluntary, and you can withdraw at any time without giving a reason. If you choose to withdraw, any data you have provided will be deleted upon request.

How will you find out what happens with this project?
At the end of the study, participants can request a summary of the findings, which will be presented in an accessible, lay-friendly format.

Contact details for further information
If you have any questions about the study, please contact:

James O' Meara, james.omeara6@mail.dcu.ie
Michael Cojocaru,michael.cojocaru2@mail.dcu.ie

If participants have concerns about this study and wish to contact an independent person, please contact: The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel 01-7008000, e-mail rec@dcu.ie

Informed Consent Form

Research Study Title: Enhancing Bus Tracking Accuracy Through Crowdsourced User Reports

Research Team:
James O' Meara, Dublin City University, james.omeara6@mail.dcu.ie
Michael Cojocaru, Dublin City University, michael.cojocaru2@mail.dcu.ie

Purpose of the Research:

This study aims to explore how user-reported bus arrivals can improve the accuracy of real-time bus tracking systems. By participating, you will help researchers analyze usability, engagement, and data accuracy in crowdsourced public transport tracking.

Participant Consent

Please circle Yes or No for each statement:

I have read the Participant Information Sheet (or had it read to me). **Yes / No**

I understand the purpose of this research and what is expected of me. **Yes / No**

I have had an opportunity to ask questions and discuss this study. **Yes / No**

I have received satisfactory answers to all my questions. **Yes / No**

I understand that I will be asked to use a web application, provide feedback via a questionnaire, and optionally report bus arrivals. **Yes / No**

I understand that my participation is completely voluntary, and I may withdraw from the study at any time without penalty. **Yes / No**

I understand that all data collected will be anonymous and will not contain personal identifiers. **Yes / No**

I understand that all data will be securely stored and destroyed three months after the study concludes. **Yes / No**

I consent to my anonymized data being used for this research study. **Yes / No**

Signature & Agreement

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have been given a copy of this consent form. Therefore, I voluntarily consent to take part in this research study.

Participant's Signature: _____

Name in Block Capitals: _____

Witness Signature: _____

Date: _____

Bus Tracking App User Feedback Questionnaire

All responses are anonymous

1. How often do you use public transport?
   - ○ ☐ Daily
   - ○ ☐ A few times a week
   - ○ ☐ A few times a month
   - ○ ☐ Rarely
2. Before using this app, how did you usually check bus arrival times?
   - ○ ☐ Official transport apps (e.g., NTA, Dublin Bus app)
   - ○ ☐ Google Maps
   - ○ ☐ At the bus stop (physical timetable)
   - ○ ☐ I didn't check arrival times before taking a bus
3. How easy was it to use the app?
   - ○ ☐ Very easy
   - ○ ☐ Somewhat easy
   - ○ ☐ Neutral
   - ○ ☐ Somewhat difficult
   - ○ ☐ Very difficult
4. Did you find the bus arrival reporting feature intuitive?
   - ○ ☐ Yes, it was clear how to report a bus
   - ○ ☐ Somewhat, but it could be improved
   - ○ ☐ No, I was confused about how to report a bus
5. How satisfied were you with the accuracy of bus arrival times?
   - ○ ☐ Very satisfied
   - ○ ☐ Somewhat satisfied
   - ○ ☐ Neutral
   - ○ ☐ Somewhat dissatisfied
   - ○ ☐ Very dissatisfied
6. Did you experience any issues while using the app? *(Check all that apply)*
   - ○ ☐ App was slow or unresponsive
   - ○ ☐ Bus tracking information was inaccurate
   - ○ ☐ It was unclear how to use the app
   - ○ ☐ I didn't experience any issues
7. Did you report a bus arrival using the app?
   - ○ ☐ Yes
   - ○ ☐ No
8. If **No**, what prevented you from reporting? *(Check all that apply)*
   - ○ ☐ I didn't see the option
   - ○ ☐ I didn't feel it was necessary
   - ○ ☐ I forgot
   - ○ ☐ Other (please specify) _____
9. What would encourage you to report bus arrivals more frequently? *(Check all that apply)*
   - ○ ☐ A clearer, more visible reporting button
   - ○ ☐ A reward system (e.g., points, gamification)
   - ○ ☐ More accurate updates based on reports
   - ○ ☐ Other (please specify) _____
10. What features did you **like most** about the app?

___

11. What **improvements** would you suggest?

___

12. Would you use this app in the future?
   - ● ☐ Yes, definitely

- ☐ Maybe, if it improves
- ☐ No, I wouldn't use it