

SCIENCE FOUNDATION IRELAND

Public Service Fellowship Programme 2019

Host Organisation Project Outline Supplement

All of the Host Organisations for the Public Service Fellowship programme have provided project outlines for this programme. Due to the collaborative nature of this partnership, the project scope will be further developed with successful candidates.



**An Roinn Gnó,
Fiontar agus Nuálaíochta**
Department of Business,
Enterprise and Innovation



**Seirbhís Thithe
an Oireachtais**
Houses of the
Oireachtas Service



**An Roinn Dlí agus Cirt
agus Comhionannais**
Department of Justice
and Equality



**An Roinn Caiteachais
Phoiblí agus Athchóirithe**
Department of Public
Expenditure and Reform



Food Safety
AUTHORITY OF IRELAND

Table of Contents

1. The Oireachtas Library & Research Service	
Responding to climate change and sustainability.....	1
The economic, social and ethical implications of technological innovation.....	4
2. Department of Business, Enterprise and Innovation.....	
Assessment of Industry emissions and carbon abatement measures for Climate Action Plan 2020.....	7
Development of a standardised classification scheme for public investment.....	10
3. Department of Public Expenditure and Reform.....	
Distributed Ledger Technology Identifying and Solving Public Service Problems Using the Blockchain.....	13
GovTech Solution Matching challenges to solutions using AI and Machine Learning.....	16
Research on measuring the benefits and impact of Ireland's Open Data Initiative	19
4. Department of Justice and Equality.....	
The Economic Cost of Discrimination and the Benefits of Diversity in the Workplace.....	23
5. Food Safety Authority of Ireland.....	
Establish the basis for a Food Hygiene Rating Scheme (FHRS) in Ireland in order to inform policy in relation to the Regulation of the Food Sector.....	26
Assessment of the Safety of Probiotic Foods on Sale targeted at vulnerable groups in Ireland... ..	29
Risk Ranking of Microbiological Hazards.....	28
Data analytics for signals of emerging food safety risks.....	33
Assessment of the food safety data holdings of the FSAI to inform a suitable data model for the FSAI and the wider food safety enforcement community in Ireland	35
6. Local Government Management Agency.....	
Innovation in the Local Government Sector.....	37
7. Office of the Revenue Commissioners.....	
Tax & Customs Technology options.....	39

1. Name of Governmental Department or Agency, Houses of Oireachtas Service unit
Oireachtas Library & Research Service, Houses of the Oireachtas Service
2. Title of the Project
Responding to climate change and sustainability.
3. Description of the Project
<p>The Oireachtas Library & Research Service (L&RS) provides impartial information and research services to support the work of the Houses of the Oireachtas Commission, the Houses of the Oireachtas (Dáil and Seanad), individual Members and Committees in respect of their parliamentary duties.</p> <p>One of the key services provided by the Library & Research Service is to provide topical research briefings on emerging policy issues across a number of thematic areas. The purpose of this research project is to identify and analyse key issues relevant to policy and legislative agenda items under the theme “Responding to climate change and sustainability”.</p> <p>Importantly, the outputs of this research will be used to directly inform Members of issues and emerging research relevant to the Oireachtas. The outputs will also assist the L&RS to deliver on its Topical Research Programme, horizon scanning activities and their engagement programme to connect academic research and expertise to the information needs of Oireachtas Members.</p>
4. Project Scope
<p>The project consists of the following tasks:</p> <p>Task 1: Conduct an in-depth scientific analysis of the policy topic submitted as per application process. Publish this to all Members under the L&RS Spotlight series. Depending on the topic chosen, the Spotlight may include any or all of the following approaches- data analysis, data visualisation, statistical analysis, horizon scanning, a review of existing literature or best practice; an assessment of policy issues and options.</p> <p>Task 2: Management and co-ordination of dissemination activities related to the research findings to Oireachtas Members. The researcher will be required to present his/her Spotlight to Members at a briefing/seminar in Leinster House. The presentation may involve the researcher sourcing an expert academic panel and/or a Chair to facilitate the session and to participate in a QA session.</p> <p>Task 3: The researcher will also contribute to shorter guest articles on the Spotlight topic or associated topics for publication to Members in various L&RS publications (e.g. Research Matters Quarterly and/or blog posts).</p>

Task 4: Knowledge sharing/knowledge transfer to Oireachtas Library & Research staff. The researcher will be expected to facilitate knowledge transfer to L&RS research staff through an organised knowledge sharing session and/or working with individual members of L&RS research staff. Knowledge transfer may relate to identifying emerging policy issues around the theme of 'Responding to Climate Change and Sustainability' and their subject expertise and skills (e.g. research methodologies, research resources, research tools and technologies such as qualitative or quantitative applications).

Task 5: The Fellow will be expected to write up a short 'self-reflective assessment' document at the end of the Fellowship documenting their work; indicating how they intend to track and measure the impact of their work and reflections on how engagement with the Oireachtas has impacted on their approach to research.

Other related tasks:

The L&RS will actively seek opportunities and facilitate the researcher's direct engagement with other Houses of the Oireachtas Units and other L&RS services including its legislative analysis work and work for individual Members and Oireachtas Committees. Any additional outputs arising (to the deliverables listed above) will be discussed and agreed with the researcher.

5. Skills/Expertise Required

On or before the closing date for applications have obtained their PhD degree or equivalent but can be at any stage of experience thereafter;

Be able to demonstrate:

- Climate science expertise
- Strong research and analytical skills with excellent attention to detail;
- Strong editorial skills and the ability to write and present research in a concise, accessible and plain English style;
- Excellent communication, interpersonal and team working skills;
- Strong information technology skills particularly using relevant research databases and online resources.

Desirable interest and experience include:

- Knowledge of current affairs
- Data visualisation skills (e.g. infographics, GIS)

6. Expected Outputs of Project

The researcher will be required and expected to deliver the following:

- a) A Spotlight briefing paper for Members on the policy topic as per the researcher's application. The Spotlight must be accessible for a parliamentary audience and must be of an acceptable standard to the L&RS and SFI.
- b) Contribution to shorter articles on the associated policy topics for publication to Members in various L&RS publications.
- c) Dissemination activities to inform and disseminate their work to internal audiences and externally.
- d) Knowledge transfer to L&RS research staff through knowledge sharing sessions to L&RS staff.
- e) Completion of a short 'self-reflective assessment' document at the end of the Fellowship documenting their work.

7. Working Arrangements

The researcher must be able to take a period of 3 months (continuous) away from their current research activities or other position within the Research Body. The placement is full-time and will run during a parliamentary session (September-July). The Researcher will be based in the L&RS offices in 91-93 Merrion Square, Dublin 2. Remote working can be facilitated; however, researchers are expected to be onsite in the Oireachtas on sitting days (Tuesday-Thursday inclusive). Any flexible arrangements will be agreed in advance of the placement between the L&RS and the researcher.

8. Expected Timeline

The duration of the placement is 3 months full-time. Exact start dates will be agreed in advance with the L&RS. Sufficient time should be allowed to ensure that necessary Garda vetting checks and required agreements between the researcher and the Houses of the Oireachtas Service have been completed.

<p>1. Name of Governmental Department or Agency, Houses of Oireachtas Service unit</p> <p>Oireachtas Library & Research Service, Houses of the Oireachtas Service</p>
<p>2. Title of the Project</p> <p>The economic, social and ethical implications of technological innovation.</p>
<p>3. Description of the Project</p> <p>The Oireachtas Library & Research Service (L&RS) provides impartial information and research services to support the work of the Houses of the Oireachtas Commission, the Houses of the Oireachtas (Dáil and Seanad), individual Members and Committees in respect of their parliamentary duties.</p> <p>One of the key services provided by the Library & Research Service is to provide topical research briefings on emerging policy issues across a number of thematic areas. The purpose of this research project is to identify and analyse key issues relevant to policy and legislative agenda items under the theme “<i>The economic, social and ethical implications of technological innovation</i>”.</p> <p>Importantly, the outputs of this research will be used to directly inform Members of issues and emerging research relevant to the Oireachtas. The outputs will also assist the L&RS to deliver on its Topical Research Programme, horizon scanning activities and their engagement programme to connect academic research and expertise to the information needs of Oireachtas Members.</p>
<p>4. Project Scope</p> <p>The project consists of the following tasks:</p> <p>Task 1: Conduct an in-depth scientific analysis of the policy topic submitted as per application process. Publish this to all Members under the L&RS Spotlight series. Depending on the topic chosen, the Spotlight may include any or all of the following approaches- data analysis, data visualisation, statistical analysis, horizon scanning, a review of existing literature or best practice; an assessment of policy issues and options.</p> <p>Task 2: Management and co-ordination of dissemination activities related to the research findings to Oireachtas Members. The researcher will be required to present his/her Spotlight to Members at a briefing/seminar in Leinster House. The presentation may involve the researcher sourcing an expert academic panel and/or a Chair to facilitate the session and to participate in a QA session.</p> <p>Task 3: The researcher will also contribute to shorter guest articles on the Spotlight topic or associated topics for publication to Members in various L&RS publications (e.g. Research Matters Quarterly and/or blog posts).</p>

Task 4: Knowledge sharing/knowledge transfer to Oireachtas Library & Research staff. The researcher will be expected to facilitate knowledge transfer to L&RS research staff through an organised knowledge sharing session and/or working with individual members of L&RS research staff. Knowledge transfer may relate to identifying emerging policy issues around the theme of *'The economic, social and ethical implications of technological innovation'* and their subject expertise and skills (e.g. research methodologies, research resources, research tools and technologies such as qualitative or quantitative applications).

Task 5: The Fellow will be expected to write up a short 'self-reflective assessment' document at the end of the Fellowship documenting their work; indicating how they intend to track and measure the impact of their work and reflections on how engagement with the Oireachtas has impacted on their approach to research.

Other related tasks:

The L&RS will actively seek opportunities and facilitate the researcher's direct engagement with other Houses of the Oireachtas Units and other L&RS services including its legislative analysis work and work for individual Members and Oireachtas Committees. Any additional outputs arising (to the deliverables listed above) will be discussed and agreed with the researcher.

5. Skills/Expertise Required

On or before the closing date for applications have obtained their PhD degree or equivalent but can be at any stage of experience thereafter;

Be able to demonstrate:

- Expertise in a Science, Technology, Engineering or Maths discipline;
- Strong research and analytical skills with excellent attention to detail;
- Strong editorial skills and the ability to write and present research in a concise, accessible and plain English style;
- Excellent communication, interpersonal and team working skills;
- Strong information technology skills particularly using relevant research databases and online resources.

Desirable interest and experience include:

- Knowledge of current affairs
- Data visualisation skills (e.g. infographics, GIS)

6. Expected Outputs of Project

The researcher will be required and expected to deliver the following:

- a) A Spotlight briefing paper for Members on the policy topic as per the researcher's application. The Spotlight must be accessible for a parliamentary audience and must be of an acceptable standard to the L&RS and SFI.

- b) Contribution to shorter articles on the associated policy topics for publication to Members in various L&RS publications.
- c) Dissemination activities to inform and disseminate their work to internal audiences and externally.
- d) Knowledge transfer to L&RS research staff through knowledge sharing sessions to L&RS staff.
- e) Completion of a short 'self-reflective assessment' document at the end of the Fellowship documenting their work.

7. Working Arrangements

The researcher must be able to take a period of 3 months (continuous) away from their current research activities or other position within the Research Body. The placement is full-time and will run during a parliamentary session (September-July). The Researcher will be based in the L&RS offices in 91-93 Merrion Square, Dublin 2. Remote working can be facilitated; however, researchers are expected to be onsite in the Oireachtas on sitting days (Tuesday-Thursday inclusive). Any flexible arrangements will be agreed in advance of the placement between the L&RS and the researcher.

8. Expected Timeline

The duration of the placement is 3 months full-time. Exact start dates will be agreed in advance with the L&RS. Sufficient time should be allowed to ensure that necessary Garda vetting checks and required agreements between the researcher and the Houses of the Oireachtas Service have been completed.



1. Name of Governmental Department or Agency
Department of Business, Enterprise and Innovation
2. Title of the Project
Assessment of Industry emissions and carbon abatement measures for Climate Action Plan 2020
3. Description of the Project
<p>The purpose of the research project is to provide the Department and its stakeholders with a full analysis of industry sector carbon emissions data, an analysis of the data available to establish a sectoral breakdown of emissions, and to provide insight into what carbon abatement levels can be achieved through different measures or interventions. The project would aim to provide detailed analysis of the data sources available to better inform the department in the assessment of key carbon abatement targets; national, sectoral and enterprise-level reporting of carbon abatement and inform the future development of Government sectoral carbon budgets.</p>
4. Project Scope
<ul style="list-style-type: none">• The project would firstly seek to identify key data sources and resources in assessing carbon emissions in the industry sector, including, but not limited to, data from the EPA, DCCAE, the cross-departmental Technical Research and Modelling Group (TRAM), the ETS system and the SEAI.• Secondly, the research would establish how key sectoral data emissions data is compiled, analysed, aggregated and reported, for the purpose of better informing the department in the assessment of key targets, national and enterprise-level reporting and provide an evidence base for the future development of sectoral carbon budgets. <p>It is envisioned that the project may include the identification, collection, cleaning and aggregation at sectoral level of raw data from DBEI sources, such as, the ABSEI dataset, and data available within the Department's agencies as well as collating data from other sources. The research might also assess company level data within industry where available, to facilitate greater understanding of carbon abatement potential and reporting.</p> <p>During the drafting of the Climate Action Plan McKinsey & Company consultants developed a Marginal Abatement Cost Curve (MACC) to demonstrate the cost efficiency of measures that could be taken to by Enterprise, Electricity, Transport, Built Environment and Agricultural sectors. The Climate Action Plan further identified that a 10-15% drop in Enterprise CO2 emissions was achievable through two abatement measures implemented in the Food & Drink Sector and the Cement Sector, these were:</p> <ul style="list-style-type: none">○ Increase use of alternative fuels (e.g., waste) for cement production; and○ Switch from oil to biomass and electricity in food industry.



The research should provide some insights to the Department as to how the targets and abatement measures were calculated, underlying assumptions made and a detailed assessment of what specific interventions were considered in the assessment of these measures. This will require input from DCCA and analysis of any supporting materials available.

- Thirdly the research would aim to develop a MACC specific to Industry sectors, and to assess the cost efficiency of abatement measures in both the ETS and non-ETS sectors. The industry MACC analysis would seek to inform the identification of measures that could be implemented at an agency/sectoral/firm level to further abate CO2 emissions. In all cases, the research should identify how carbon abated under each intervention can be measured/calculated and reliably reported.
- The research would finally seek to identify and profile key firms, or groups of firms, outside the ETS sector, with significant carbon emissions profiles where direct engagement or specific interventions may be useful be included in programmes such as LIEN, SEAI grant schemes or other identified interventions.

The researcher will develop an easily usable **database** that can be updated on an ongoing basis for industry sectors and potential abatement measures. It is envisioned that the researcher will develop the database and present the findings and updating instructions of the database in a written and oral report.

It is expected that the researcher will discuss their work and findings to team members on an ongoing basis and be available to provide **briefing and analysis** on key issues to team members on a regular basis. At the end of the project the researcher would provide a report to key stakeholders both written and orally, including to DBEI, Enterprise Ireland, IDA Ireland & Science Foundation Ireland.

The research should also provide concise briefing materials on the available emissions data, methods of establishing reliable sectoral carbon abatement measurement data and interventions identified in the **industry-specific MACC**.

It is expected that this analysis would be used in the development of a detailed industry sector marginal abatement measures and to **inform the actions and targets of future iterations of the Climate Action Plan**.

5. Skills/Expertise Required

The project would require the researcher to have some background knowledge of Environmental Economics and awareness of methods used to establish a Marginal Abatement Cost Curve (MACC).

The research project will require an extensive review of various data sources in the area of environmental emissions and carbon abatement technology / interventions. It would require the



researcher to be able to research issues in a number of different enterprise sectors and effectively report the potential abatement measures.

The researcher would be familiar with environmental data and would be required to have the necessary skills to develop and maintain a database of sectoral emissions and potential abatement measures.

Data analyses skills would be required to effectively assess data and formulate evidence-based findings.

The researcher should have strong written and oral communication skills in order to liaise effectively with stakeholders in the research project.

6. Expected Outputs of Project

- A detailed briefing on aggregation and measurement of industry sectoral emissions (ETS and non-ETS separately) from available data sources, to inform future discussions on carbon budgets.
- A Marginal Abatement Cost Curve for the Industry sector that would be developed following an analysis of sector level data, complemented by firm-level analysis where possible, that could be used to shape future targets and actions for the Climate Action Plan.
- The development of a database that outlines the large industry energy users (outside ETS), potential abatement measures and reliable abatement reporting methodology.
- A final written report and presentation outlining abatement measures for industrial sectors identified in the analysis.
- Input into briefing materials to inform establishment of carbon budgets, and update of the Climate Action Plan 2020.

7. Working Arrangements

The placement would be in the Department of Business, Enterprise & Innovation offices, 23 Kildare Street. Flexible and remote working arrangements will be accommodated.

8. Expected Timeline

It is expected that the research would take no longer than 9 full-time months and would feed into the development of the Climate Action Plan 2020. It is preferable that this project start as soon as possible.



1. Name of Governmental Department or Agency
Department of Business, Enterprise and Innovation Innovation, Research and Development Policy Unit
2. Title of the Project
Development of a standardised classification scheme for public investment in research.
3. Description of the Project
<p>Currently, each research funding body records their investment in research using a classification scheme that reflects their mandate and domain of operation. The absence of a standardised, system-wide, classification scheme for recording public investment in research is a major impediment to system-level monitoring, management and impact assessment. The need for such a scheme was identified in Action 7.6 of Innovation 2020, Ireland's whole of Government strategy for science and technology, research and development. This research project would provide a detailed review of existing, internationally recognised classification systems and an assessment of their suitability for application to the Irish landscape, which would include an assessment of the schemes currently in place in each research funding organisation in the Irish system. Using these findings, a suitable scheme with an implementation plan would be created, including tools to monitor investment and to identify a set of national key performance indicators to measure the impact of RDI investment. The research should also yield recommendations for associated targets to stretch the performance of the system.</p>
4. Project Scope
<p>The project will seek to assess a number of internationally recognised public research classification schemes from nations with comparable research systems to Ireland (for example the system used in Australia and New Zealand). The researcher may draw on initial work previously carried out by the Classification of Investment in Research Group and a bibliometric analysis performed by the Department as part of the refresh of research prioritisation exercise.</p> <p>The researcher should identify and engage with stakeholders from across the Irish public research landscape to establish how public investment in RDI is currently being recorded, categorised and classified. The researcher could also engage with research performing organisations, for example HEIs or enterprises receiving EI or IDA grants, to see how public money is classified and reported to the funding organisation.</p> <p>Once a suitable standardised scheme of classification is identified the researcher will begin work on adapting it to fit the Irish research system. The scheme should be:</p> <ul style="list-style-type: none">• Robust• Inclusive• Transparent• Objective



- Unambiguous
- Mutually exclusive categories
- Internationally comparable
- Balancing stability and adaptability
- Light-weight

The project should aim to identify a set of national key performance indicators to measure the impact of RDI investment and provide recommendations for associated targets to stretch the performance of the system. The researcher may also develop analytical tools to assist in system-level monitoring, management and impact assessment of public investment in RDI, including a dashboard to visualise the overall public spending on RDI. (for example the H2020 tool <https://webgate.ec.europa.eu/dashboard/sense/app/e8a41234-20b4-4e7e-80ef-335dd9e6ae36/sheet/941d3afe-da24-4c2e-99eb-b7fcbd8529ee/state/analysis> or <https://h2020viz.vinnova.se/>)

The Innovation 2020 Implementation Group should be informed and consulted on progress throughout the project, and the researcher will be required to provide both a written and oral report to the group once the project is completed. The report will include a proposed implementation plan.

Challenges to be overcome may include:

- Diversity in mandates and research domains
- Levels of funding and number of awards
- Multi-annual awards
- Multi-disciplinary
- Confidentiality
- HEI Block Grant

Please note that it is not anticipated that the researcher would create a bespoke classification scheme for the Irish system – although that is not precluded. Rather it is anticipated that an existing system would be chosen / adapted for Irish circumstances and requirements.

5. Skills/Expertise Required

- Expertise in Science, Technology, Engineering or Mathematics discipline;
- Knowledge of the public research system in Ireland and its actors;
- Knowledge of grant processing / reporting systems in use e.g. SESAME;
- Strong interpersonal, oral communication and written skills in order to liaise with stakeholders.

6. Expected Outputs of Project

- An assessment of internationally recognised standardised classification schemes.



- An assessment of how Irish public research organisations are currently categorising their research expenditure.
- Recommendations as to whether an existing classification scheme can be fully adopted, or if it would need to be adapted to the Irish system first.
- A completed classification scheme in the form of a dataset.

7. Working Arrangements

The placement would be in the Department of Business, Enterprise & Innovation offices, 23 Kildare Street. Flexible and remote working arrangements will be accommodated. However, the researcher will be required to engage significantly with stakeholders, many of whom would be in Dublin, therefore being Dublin based would be an advantage.

8. Expected Timeline

- This project should take 6 -12 months of full-time work. Part-time working is also possibility.



1. Name of Governmental Department or Agency
Reform Division, Department of Public Expenditure and Reform
2. Title of the Project
Distributed Ledger Technology – Identifying and Solving Public Service Problems Using the Blockchain.
3. Description of the Project
<p>The Department of Public Expenditure and Reform (“DPER”) is responsible for the implementation of Our Public Service 2020, the framework for the modernisation of the Irish Public Service. A core commitment in this framework is to pilot new approaches, apply managed risk-taking and employ different delivery models (see Action 6, www.ops2020.gov.ie).</p> <p>Distributed Ledger Technology (“DLT”) would appear to have excellent potential to solve public service problems, especially in areas where trust and verification of data or transactions is required. However, understanding why this technological solution surpasses other technology solutions remains a source of debate.</p> <p>The Department of Public Expenditure and Reform is eager to advance emerging technologies to solve problems faced by our citizens and to modernise public service organisations. The Department is especially keen to explore using the most suitable technology solution to solve a particular problem.</p> <p>Having regard to the foregoing, the Department would like to engage an expert technologist in the area of distributed ledger technology to undertake a review of current and potential problems facing the Irish Public Service Bodies. The Department is particularly interested in understanding how it could target and solve (or significantly alleviate) problems using DLT. This would include examining how some current processes are managed and/or understanding how they could potentially be executed better using distributed ledger technology as a solution to generate efficiencies or remove burdens from public service bodies (and consequently allow staff to focus on other work).</p>
4. Project Scope
<p>It is proposed that the expert technologist would be expected to:</p> <ul style="list-style-type: none">• Work closely with officials from the Department of Public Expenditure and Reform to source proposals from Irish Public Service Bodies concerning potential DLT pilots using an expression of interest methodology. The proposals that are sourced will seek to solve an existing or future problem for a Public Service Body.• Conduct information sessions that explains DLT, as a technology, into an accessible and comprehensible solution and clearly delineates its benefits and drawbacks as a solution. The technologist may also be required to enhance the current <i>‘Guide to Blockchain for</i>



Public Servants' that has been prepared by the Department of Public Expenditure and Reform.

- Working from literature and established research, and having examined proven examples of implementation around the world, identify work areas of the Irish Public Service where DLT could be used to improve the current offering or prevent or alleviate a future problem.
- Work with members of DPER's team to identify policy and process owners around the public service and to brief identified appropriate officials on this technology with the end-goal being to encourage participation in the process of long-listing and short-listing potential pilots for DLT execution in the Irish Public Service.
- Review propositions from Public Service Bodies for DLT to be used a solution to a particular problem. This would include examining and understanding a current process that is being delivered in a substandard fashion or examining a situation that has given rise to a problem that exists and in both cases determining whether DLT can improve the situation.
- Conduct analysis on the current data sources, structure, fields and the process (or proposed sources, fields, processes) around the challenge or potential challenge.
- Identify initiatives or projects that would be deemed unsuitable for piloting on the grounds of current data or process readiness but also issues around GDPR or data sensitivity for individual members of the public.
- Compile a long list of processes that would be considered suitable for piloting on the basis of the expertise of the technologist. Clearly explain why these are suitable initiatives. Clearly explain dependencies and critical success factors for each suitable initiative.
- Recommend and rank a shortlist of projects to move to piloting in the Irish Public Service
- Conduct a proof of concept of *one or more* of the recommended and ranked challenge areas using an appropriate DLT tool.
- Produce case studies in relation to proofs of concept that are accessible and understandable for public servants.
- Identify key enablers and barriers that exist in relation to rollout of DLT as a solution in the Irish Public Service (potentially using a standard PESTEL analysis).
- Produce a report on the work outlined above with recommendations for the Government to further pursue, or not to pursue, DLT as a suitable solution in solving public service challenges.

5. Skills/Expertise Required

The candidate should have relevant qualifications in the area of Computer Engineering, Computer Science or a related field, with a track record of research in DLT.

The candidate must be an independent researcher willing to take a leadership role in the group and be able to influence and work with key decision-makers and policy architects.

The ideal candidate will have a background in the DLT and/or computer science and cryptography. The candidate should be well-organised and self-motivated with the ability to manage the day-to-day running of a research project, to identify research objectives and to carry out appropriate research activities within a given timescale.



Knowledge & Experience (Essential & Desirable)

2+ years' research experience

Excellent oral and communication skills, including the proven ability to write in English at a suitable standard for the preparation of written reports, publications and presentations of the work at generalist and specialist levels, including discussions with policy specialists and experts in different fields.

Desirable:

An established track record of publication in leading journals/conference, on relevant topics.

6. Expected Outputs of Project

The expected output of this project is:

- A long list of challenge areas where the Irish Public Service can use DLT to solve current or emerging problems
- A ranked and reasoned shortlist of projects for the Irish Public Service to pursue outlining considerations and the rationale for ranking/prioritisation
- A proof of concept or a small number of proofs of concept showing DLT as an appropriate solution
- Case study(ies) relating to POCs conducted
- A report to the Minister for Public Expenditure and Reform on the outcome of the research and analysis conducted and associated recommendations. This report may be used as a basis for a business case to pilot DLT for Irish Public Services.

7. Working Arrangements

The researcher would be based in the offices of the Department of Public Expenditure and Reform at St. Stephen's Green House, Dublin 2. Flexible and remote working arrangements will be accommodated.

8. Expected Timeline

- It is expected that this project could be completed within 6-12 months working on a full-time basis or 12-24 months on a part-time basis.



1. Name of Governmental Department or Agency
Reform Division, Department of Public Expenditure and Reform
2. Title of the Project
GovTech Solution – Matching challenges to solutions using AI and Machine Learning.
3. Description of the Project
<p>The Department of Public Expenditure and Reform (“DPER”) is responsible for the implementation of Our Public Service 2020, the framework for the modernisation of the Irish Public Service. Core commitments in this framework include accelerating the digital delivery of services to the public, improving services for our customer, making services more accessible, improving engagement and communication channels to our customers, driving efficiencies and promoting innovation (see Actions 1,2,3,4,5,6 www.ops2020.gov.ie). Furthermore, as part of Future Jobs Ireland, the Department is leading on the development of a GovTech strategy in Ireland.</p> <p>GovTech promotes greater interaction between Government, academia, industry and investment firms to accelerate the use of digital technology within Government so that the public and enterprises can conduct their business with the public service faster and at a reduced cost, while the public service can provide improved and expanded services to all customers in a cost-effective way for the Exchequer. GovTech spend globally is estimated at \$400bn.</p> <p>The Department of Public Expenditure and Reform is eager to advance emerging technologies to solve problems faced by our customers and to modernise public service organisations. The Department is especially keen to explore using the most suitable technology solution to solve a particular problem.</p> <p>Having regard to the foregoing, the Department would like to engage an expert technologist in the area of artificial intelligence and machine learning to undertake a feasibility study for the development of a solution that will use AI and machine learning to match challenges faced by the customer (members of the public and businesses) to the technological solutions that are available in Ireland and beyond.</p>
4. Project Scope
<p>It is proposed that the expert technologist would be expected to:</p> <ul style="list-style-type: none">• Work closely with officials from the Department of Public Expenditure and Reform to understand the Government’s aims in delivering GovTech.• Conduct a brief analysis of emerging and recently established technologies that are present in the market or at design stage, particularly in Ireland, but may not yet be pervasive in public service delivery.• Devise a matrix potential thematic areas where GovTech solutions could be transformative for the citizen, e.g.:<ul style="list-style-type: none">○ Agriculture, Fisheries and Food



- Energy and Utilities
 - Tax and Financial Regulation ('RegTech')
 - Citizen Engagement, Communication and Engagement
 - Financial Inclusion and Welfare
 - Employment Affairs
 - Smart Cities and Infrastructure
 - Culture, Heritage and Tourism
 - Health and Social Care
 - Sports and wellbeing
 - Children and Youth Affairs
 - Cybersecurity
 - International Development and Diplomacy
 - Transport and Mobility
 - Education and Training
 - Justice, Court Access and the Legal Process
 - Trade and Logistics (Customs, Borders and Brexit)
 - Policing and National Security
- To develop a proposal, using knowledge of the most appropriate intelligent technology, for a hub or platform that would be able to suggest 'matches' (or degrees of similarity in terms of need-v-offering) from propositions concerning:
 - Available technology solutions
 - Potential technology solutions that are in development/testing
 - Thematic areas
 - Providers
 - Public Service Challenges (from public servants)
 - Citizen Challenges (from Members of the Public)
 - Business Challenges (from members of the business community in Ireland)
 - Conduct a proof of concept of the recommended solution.
 - Identify key enablers and barriers that exist in relation to rollout of such a solution in the Irish Public Service (potentially using a standard PESTEL analysis).
 - Produce a report on the work outlined above with recommendations for the Government to further pursue, or not to pursue, as part of the GovTech agenda to solve public service challenges and create an ecosystem for furtherance of the GovTech community.

5. Skills/Expertise Required

The researcher should have relevant qualifications in the area of Computer Engineering, Computer Science or intelligent automation.

The researcher must be an independent researcher willing to take a leadership role in the group and be able to influence and work with key decision-makers and policy architects.



The researcher should be well-organised and self-motivated with the ability to manage the day-to-day running of a research project, to identify research objectives and to carry out appropriate research activities within a given timescale.

Knowledge & Experience (Essential & Desirable)

2+ years' research experience

Excellent oral and communication skills, including the proven ability to write in English at a suitable standard for the preparation of written reports, publications and presentations of the work at generalist and specialist levels, including discussions with policy specialists and experts in different fields.

Desirable:

An established track record of publication in leading journals/conference, on relevant topics.

6. Expected Outputs of Project

The expected output of this project is:

- A matrix of GovTech areas for Government to categorise products
- A proposal for the development of a GovTech platform, using an appropriately intelligent technology, that would help match challenges facing Government/Public Service Organisations to new tech products or ones in development
- A proof of concept relating to an appropriate solution
- A report to the Minister of State for eGovernment and Public Procurement on the outcome of the research and analysis conducted and associated recommendations.

7. Working Arrangements

The researcher would be based in the offices of the Department of Public Expenditure and Reform at St. Stephen's Green House, Dublin 2. Flexible and remote working arrangements will be accommodated.

8. Expected Timeline

It is expected that this project could be completed within 6-12 months working on a full-time basis or 12-24 months on a part-time basis.



<p>1. Name of Governmental Department or Agency</p>
<p>Department of Public Expenditure and Reform</p>
<p>2. Title of the Project</p>
<p>Research on measuring the benefits and impact of Ireland’s Open Data Initiative</p>
<p>3. Description of the Project</p>
<p>The Open Data Unit would like to engage a researcher to assess the economic benefit of Open Data in Ireland under a number of areas and to assess the impact of open data in Ireland.</p> <p>The Department of Public Expenditure and Reform has policy responsibility for Ireland’s national Open Data initiative. The initiative is aligned with key Government priorities such as the Public Service Reform Programme, eGovernment Strategy, Civil Service Renewal Programme, Open Government Partnership Action Plan and the National Data Infrastructure. Open Data can lead to more transparency and accountability of public bodies, better data discipline in public bodies providing for greater efficiency and effectiveness of service delivery, more citizen participation as well as job creation. In terms of economic gains, these are expected to be generated in the areas of business innovation by creating opportunities for Open Data inspired products and services.</p> <p>The Open Data Strategy for 2017-2022 sets out the strategic objective, critical success factors and a plan for the implementation of Open Data policy in Ireland.</p> <p>Increased emphasis is now being put on measuring the impact of open data in the context of open data surveys at EU and international level. This topic is also important for the Open Data unit in the context of measuring the impact of the initiative in Ireland. Outputs from this project will be used to inform the implementation and continued development of Open Data policy in Ireland and as input to OECD and EC surveys and reports.</p>
<p>4. Project Scope</p>
<p>A key output from the Open Data initiative to-date is the national Open Data portal which links to some 9,000 government datasets in open format. Ireland’s open data portal is connected to the European Data Portal to further extend the data flow channel.</p> <p>Significant progress has been made in progressing Ireland’s open data initiative to date and in 2018 Ireland was ranked first in the EU for the second year for Open Data Maturity.</p> <p>Beyond the work being undertaken directly by DPER, there have been a number of other developments in this area that support the wider Initiative. In particular, a number of organisations have led the way in terms of releasing data. These include a number of the local authorities, the CSO, OSi, Met Eireann, Dept. of Housing Planning and Local Government. A wider Irish Open Data community, consisting of civil-society groups, citizens, SMEs, developers,</p>



universities and public-bodies, has also been very active since 2010, regularly organising meet-ups, talks, workshops, competitions and hackathons, as well as publicising the Open Data agenda nationally.

The number of data downloads from the national portal Data.Gov.ie continues to grow and a voluntary survey is in place when data is downloaded. However, only a small portion of users complete this survey.

The task for the researcher is to carry out research into how open data is being utilised by businesses, civil society and within the public service to assess and determine the economic, political and social benefits, if any.

One of the key actions in the national Open Data Strategy 2017-2022 is the evaluation of the impacts, benefits and risks of the Open Data Initiative.

Action 6.1: Encourage the development of metrics that allow benefits capture, for example, what contribution Open Data makes to improve efficiency and effectiveness of public service delivery. Carry out and publish an evaluation of the impact, benefits and risks of the Open Data Initiative. Consider evaluation frameworks in use in other jurisdictions which address benefits and return on investment.

In order to evaluate the impact of Ireland's Open Data Initiative, we envisage both a macro and micro approach. A macro impact evaluation will examine the broad outcomes of the initiative from a social, political and economic perspective. At a micro level particular case-studies can be explored to get a clear understanding of the impact of Open Data in specific sectors and under a certain set of conditions. The development of the case studies and the research itself may necessitate the researcher surveying businesses, open data users and other relevant parties. It will also include the drafting, publishing and assessment of surveys and the organising of interviews with data re-users.

The scope of the proposed research would include some or all of the following:

Assess the benefit of Open Data in an Irish context

An assessment of the **economic benefits** of open data at macro and or micro economic levels in the Irish context: This should comprise:

- Development of specific Irish use cases on the benefits that have arisen from data that has been released as Open Data;
- An assessment of the economic benefits of open data for the public sector.
- An assessment of the economic benefits of open data for SME's.
- An assessment of government data that has not been released as open data and assessing the potential benefits and costs of its release.

Assess the Impact of Open Data in Ireland

Carry out research to assess the impact of open data in Ireland. This would comprise an assessment of the environmental impact, the social impact, the political impact and the economic impact of open data.

Environmental Impact



Carry out an assessment of applications, activities or studies which used of open data in the environmental field or a sub-dimension of this field. These can include but are not limited to:

- Mobile or web-based applications that use available open data to tackle an aspect relevant to the environmental field (water, air quality, noise level in cities, waste management etc.)
- Applications that raise awareness on the noise level in cities.
- Applications that deal with waste management aspects.
 - *Applications can refer to mobile or web-based applications that are based on available open data and encourage the recycling of materials, show waste collection points for paper/cardboard, plastics, glass, raise awareness and educate the public on recycling, waste sorting and disposal etc.*
- Applications that enable more environmental-friendly transport systems in cities.
 - *Applications can refer to mobile or web-based applications that are based on available open data and encourage cycling, the use of electrical cars or car-sharing systems, show car sharing points, bicycle rental spots, electrical car/bike charging stations etc.*
- Civil society initiatives that are open data driven and aim to tackle a problem identified in the environmental field.

Carry out an assessment of applications, activities or studies which used of open data in the social field or a sub-dimension of this field. These can include but are not limited to:

- Use of open data to increase the inclusion of marginalised groups in society?
 - *Inclusion of marginalised groups describes the process by which individuals or entire communities of people (e.g. migrants, refugees, socially deprived groups or individuals, physically or mentally impaired) that are prevented from fully interacting with the rest of society, can interact with and integrate in their communities.*
- Use open data to raise awareness concerning housing in the city?
 - *Data that provides information on the housing market, rental market, property valuations, sales, planning, zoning, census data on socio-economic variables for cities and/or neighbourhoods, other housing issues such as homelessness, empty dwellings, gentrification.*
- Civil society initiatives that are open data driven and aim to tackle a problem identified in the social field.

In carrying out this research, it is envisaged that the researcher would:

- review existing reports/literature on measuring open data impact (EU, OECD, etc.)
- research how open data impact is measured in other jurisdictions
- work closely with the open data team in the Department of Public Expenditure and Reform to develop the research
- In doing so, consideration might be given to the development of a number of national performance measures that could be used to track (monitor and assess) the future progress of the Open Data Initiative in Ireland
- Consideration might be given to developing a number of use cases, for example looking at business who use open data

5. Skills/Expertise Required



- The candidate must be an independent researcher willing to take a leadership role on the project;
- The candidate should have excellent communication skills both oral and written including proven ability to write in English at a suitable standard for the preparation of written publications;
- The candidate must have previous experience in working on research projects, examples and references should be provided;
- The candidate should ideally have a knowledge of data and data analytics;
- It would be of benefit to the researcher to have an understanding of open data and be up to date on open data developments in Ireland and other jurisdictions; and
- Ideally, an established track record of publication in leading journals.

6. Expected Outputs of Project

The final outcome will entail the production of a report to present the findings of the research setting out the benefits and the impacts determined, if any, of open data re-use in Ireland.

- An analysis of the benefits accrued from open data to date in Ireland
- An analysis of the social, political and economic impact of open data in an Irish context
- the development of a number of national performance measures that could be used to track the future progress of the Open Data Initiative in Ireland
- The development of a number of use cases, for example looking at businesses who use open data, increases in business creation/business efficiency from the use of open data, new products or services developed through the use of open data etc.

7. Working Arrangements

The researcher would be based in the offices of the Department of Public Expenditure and Reform at St. Stephen's Green House, Dublin 2. Significant flexibility and remote working arrangements will be accommodated. The research may be required to attend Open Data events and meetings.

8. Expected Timeline

It is expected that this project could be completed within 6-12 months working on a full-time basis or 12-24 months on a part-time basis. It is envisaged that this project will commence as soon as possible.



1. Name of Governmental Department or Agency
Department of Justice and Equality (DJE)
2. Title of the Project
The Economic Cost of Discrimination and the Benefits of Diversity in the Workplace
3. Description of the Project
<p>The overall aim of this project is to assist in measuring (a) the cost of discrimination and (b) the benefit of diversity in the workplace.</p> <p>The National Strategy for Women and Girls, the Better Balance for Better Business initiative, the Migrant Integration Strategy and the Comprehensive Employment Strategy for People with Disabilities are amongst numerous government initiatives all working towards understanding the needs and potential of a more diverse workforce in Ireland. This research would assist in understanding how the current profile of the workforce relates to economic output. It would, in this context, seek to assess the potential cost to the economy of failing to manage workplace diversity effectively. This would include examining the impact of the barriers preventing access to the workplace for specific groups, particularly persons with disabilities and certain migrant groups, and limiting access to senior managerial and skilled opportunities for migrants and some groups of women. The research would also assess how the benefits of workplace diversity can be measured and the factors that maximise those benefits both for the economy and for individual organisations.</p> <p>For the purposes of the research the definition of diversity would be limited by available data sources, we envisage gender, nationality, ethnicity and disability being the core indicators. However, this would be further explored during the initial phase of the project and clearly defined throughout.</p> <p>The outputs from the research would help to inform workplace diversity policy development and assist in measuring the outcomes from the existing government strategies outlined above.</p>
4. Project Scope
<p>The project would require four different stages:</p> <ol style="list-style-type: none"> 1. An initial scoping exercise to identify suitable data sources for analysis and exploring existing research in this area to date. 2. Quantitative analysis of data sources to estimate loss to the economy of discrimination. 3. Qualitative analysis of data sources and existing literature to explore the impact of discrimination and the factors that could mitigate such loss. 4. Primary data collection from a representative sample of Irish businesses to explore the benefits of Diversity and Equality Management systems (including written policies, training, monitoring recruitment, pay and promotions). N.B any resource required for data collection would be funded by the Department of Justice and Equality. <p><u>Stage 1 – Scoping</u></p>



We envisage the CSO Labour Force Survey, the Earnings and Labour Costs survey, the Census and the Equality and Discrimination survey being key data sources for analysis as well as existing research undertaken by the ESRI and NESC. Part of the initial project scoping exercise would be to identify and explore other quantitative and qualitative data sources that could be utilised to inform the analysis, for example previous research conducted by academic institutions. All potential data sources would need to be acquired in a useable format for analysis at stages 2 and 3. The researcher would be supported by the Research and Data Analytics unit in identifying and acquiring data suitable sources.

Please note the initial scoping phase would inform the approach taken to the analysis to be conducted at stage 2 and stage 3.

Stage 2 – Data Analysis

This stage would involve the analysis of existing data sets to calculate the loss of output and the increase in public expenditure (e.g. on income transfers) due to discrimination. Similar studies have focused on measurable differences in salaries between minorities and a reference group, equating productivity with salary. Part of the project would involve identifying the most suitable approach based on the Irish context and the available data sets. Support would be provided by the Irish Government Economic and Evaluation Service (IGEES) Economist in the Research and Data Analysis unit on how to tackle the analysis.

Stage 3 – Qualitative Analysis (can be undertaken by researchers in the Department)

In addition to the data analysis a qualitative approach would need to be taken where quantitative data on certain groups is unavailable. This would utilise existing literature to identify and explore the impact of discrimination in the workplace. At this stage, if required and depending on the skillset of the researcher, the Research and Data Analytics unit could be utilised to undertake qualitative analysis.

Stage 4 – Business Survey

Due to the limitations presented by data availability we also propose conducting a survey amongst a representative sample of businesses in Ireland. This survey would ask businesses to provide information on the profile of their employees, their company performance and their workplace diversity policies and practices (e.g. training programmes). The researcher would be involved in the design and analysis of the survey. The researcher would not be expected to conduct the data collection for this stage of the research, a third party provider would be commissioned (funded by DJE) and the researcher would work with the provider to design a suitable data collection methodology and questionnaire.

Data collected from the survey would be provided to the researcher for analysis. Analysis of the data would involve conducting:

- Statistical analysis to explore the relationship between key variables (company profile, performance and policies/practices).
- Modelling to measure the benefits of different workplace profiles, initiatives and policies (building on work previously done in this area).
- Devising an index upon which to measure the approach to diversity of each organisation against.

Summary



The results of the research would be compiled, by the researcher, into a written report for dissemination. In addition, a detailed technical report would be provided to ensure the analysis could be repeated to measure the impact of changes to the workforce profile.

5. Skills/Expertise Required

Expertise in the area of data analysis or statistics would be required, with an awareness and understanding of some economic analysis methods desirable. They would need to be comfortable with identifying suitable secondary data sets, extracting relevant information and calculating estimates whilst controlling for extraneous variables. Their work would be supported by the IGEES Economist in the Department.

In addition, ideally the researcher would have some understanding of the design and analysis of primary data sets, including the ability to use an analysis package.

The researcher would be involved in the reporting and presentation of results to key stakeholders, they would therefore require strong report writing skills. To ensure digestible outputs short research summaries and/or infographics may also be produced. However, support could be provided in this area if required.

6. Expected Outputs of Project

The outputs will support policy development in the area of workplace diversity which is a priority for the Department.

Outputs:

1. Data set of compiled secondary data sources
2. Adaptable and updateable model and index that can be re-used in the future to measure progress
3. Primary data set collected via a third party
4. A detailed written report including findings from all 4 stages of the project
5. Infographic summary for wider dissemination
6. A presentation of findings, including recommendations for policy action as appropriate
7. Workshop with key stakeholders to agree potential actions

Outcomes:

1. Demonstrate the tangible benefits of diversity and the negative impact of not addressing the issue of workplace diversity.
2. Aid discussions regarding next steps for driving diversity in the workplace.

7. Working Arrangements

The researcher would ideally be based in the offices of the Department of Justice and Equality in Dublin (St Stephen's Green/Hanover Street East/Bishops Square). Flexible and remote working arrangements will be accommodated.

8. Expected Timeline

We envisage this project taking 6-12 months.



An Roinn Dlí agus Cirt
agus Comhionannais
Department of Justice
and Equality



<p>1. Name of Governmental Department or Agency</p> <p>Food Safety Authority of Ireland (FSAI)</p>
<p>2. Title of the Project</p> <p>Establish the basis for a Food Hygiene Rating Scheme (FHRS) in Ireland in order to inform policy in relation to the Regulation of the Food Sector.</p>
<p>3. Description of the Project</p> <p>This work will use a combination of research of successful international FHRs to inform policy in relation to the Regulation of the Food Sector in Ireland and offering promising potential in the Irish Context where supporting evidence is gleaned.</p> <p>FHRs exist in many guises across an increasing number of countries, both within and without the EU with many positive claims about their ability to increase industry levels of compliance, their contribution and support to supervisory effectiveness and ultimately to deliver positive outcomes for consumers. To date these options have not been actively progressed or explored from a policy or regulatory viewpoint and how they could be applied in the Irish context.</p> <p>Application of Behavioural Economic (BE) science and principles could also offer additional useful insights and benefits in the application of FHRs and <u>may</u> likely be worthy of consideration as a component of this project.</p> <p><u>Aside:</u> BE Science is being increasingly used by policy makers and regulators to increase regulatory effectiveness, business compliance and achieve better outcomes for consumers and deliver greater public value and appears to offer significant potential to achieve desired regulatory outcomes for food safety and compliance.</p> <p>FSAI is keen to exploit the benefits from FHRs in this research study, offering promising potential in the Irish Context, where evidence is provided, and contributing to positive changes in behaviour for businesses and consumers of food, leading to better food safety and regulatory outcomes and delivering key elements of the FSAI's Vision, Mission and Strategy 2019-2023.</p>
<p>4. Project Scope</p> <p>The project consists of the following tasks.</p> <p>Task 1: A literature Review of International FHRs exploring how they could be exploited and/or adapted using BE principles, in order to inform policy in relation to the Regulation of the Food Sector (initially in the Retail, Catering and Hospitality Sectors) and with the potential to deliver tangible impacts such as increased business compliance, supporting supervisory effectiveness, and leading to better outcomes for consumers.</p> <p>Task 2: Where the review provides evidence of promising potential in the Irish Context, a roadmap should be provided, with possible next steps to be considered (e.g. policy recommendations, a process for further developing concepts and trialling of different options, and the required engagement and involvement of relevant stakeholders).</p>

5. Skills/Expertise Required

The skills required are as follows:

- Recognised Qualification in Food Science.
- Knowledge of Behavioural Economics Science would be useful.
- The ability to review and collate the peer reviewed and grey literature.
- Application of research to a food safety enforcement environment.
- Science communication (written and oral).

6. Expected Outputs of Project

There are 4 outputs from the project:

1. A comprehensive literature review (research briefing paper)
2. A roadmap of next steps with recommendations
3. Possible delivery of the study findings and recommendations to key stakeholders.
4. Possibilities to publish a peer reviewed paper can be explored.

7. Working Arrangements

The placement would be based at the FSAI offices in Dublin's IFSC area. However, flexibility to work remotely or other working arrangements would be accommodated. Any arrangement would require researchers to have access to the FSAI IT systems and to attend FSAI's offices as required.

8. Expected Timeline

The project is expected to take 12 months. The researcher could opt for a placement lasting either 12 months full-time or 24 months part time.

Further involvement in projects with FSAI could arise based on the knowledge gained and outputs delivered from this research.

1. Name of Governmental Department or Agency
Food Safety Authority of Ireland (FSAI)
2. Title of the Project
Assessment of the Safety of Probiotic Foods on Sale targeted at vulnerable groups in Ireland
3. Description of the Project
<p>This project will assess the risks of bacteria and their products used in foods and will underpin the development of guidance to the food industry on safe practice, thereby protecting public health. Probiotic foods are those that contain live bacteria at the point of consumption. In addition, probiotic cultures can be used to make biproducts which are used as ingredients without the live culture being present in the food product (e.g. acidified infant formula). The European Food Safety Authority (EFSA) has not approved any health claims for probiotic containing foods. They are widely believed by the public however, as being beneficial and hence there remain many examples on the market both as whole foods and marketed as food supplements, often not meeting the legal definition of a food supplement. Some of these foods come under the category of foods for special medical purposes (FSMP) and some are considered novel foods.</p> <p>It is essential that food business operators who use probiotic cultures do so in a way that ensures the safety of the food as required in food law. This is especially important for products that are marketed to so called vulnerable groups (i.e. groups that tend to be more susceptible to food-borne infections and generally suffer more severe illness, because their immune systems are either underdeveloped as they are very young or impaired due to age or illness).</p> <p>Currently, in Ireland there is no guidance for this activity including, importantly, safety evaluation of the strains of bacteria or their by-products being used or hygiene aspects of their growth and incorporation into foods.</p> <p>This project aims to review the literature on probiotics, identify and evaluate the safety assessments of strains carried out by global authorities and use this information to assess the safety of probiotic foods on the market in Ireland and develop clear and comprehensive guidance for food businesses on how to evaluate the safety of their products.</p>
4. Project Scope
<p>The project consists of the following tasks.</p> <p>Task 1: A review of products available on the Irish market and to whom they are being marketed. This would involve examining the FSAI notifications database and conducting a retail level survey to identify products and cultures on the market that may not have been notified to FSAI.</p> <p>Task 2: A review of the literature including a review of the European Food Safety Authority (EFSA) Opinions on Qualified Presumption of Safety (QPS).</p> <p>Task 3: Production of guidance for food business on how to evaluate the safety of their products</p>

The researcher would work closely with members of the Biological Safety team on this project. They would also liaise with members of the Public Health Nutrition Safety team in relation to food supplements, foods for special medical purposes and infant formula or follow-on formula and members of the Food Technology team in relation to novel foods.

5. Skills/Expertise Required

The skills required are as follows:

- Food Microbiology
- Gut health/microbiome
- Ability to review and collate the peer reviewed and grey literature
- Science communication (written and oral)

6. Expected Outputs of Project

There are three outcomes of the project.

1. A report on the evidence base regarding the safety of probiotic strains of bacteria for vulnerable groups
2. Safety assessments of certain probiotic foods on the market in Ireland
3. FSAI guidance note for businesses on the assessment of safety of probiotic foods plus associated communication aids

7. Working Arrangements

The placement would ideally be based at the FSAI offices in Dublin's IFSC area. However, flexibility to work remotely or other working arrangements could be considered. Any arrangement would require researchers to have access to the FSAI IT systems and to attend FSAI's offices as required. They will report to the Chief Specialist Biological Safety who will be responsible for directing the work.

8. Expected Timeline

The project is expected to take 12 months. The researcher could opt for a placement lasting either 12 months full-time or 24 months part time.

1. Name of Governmental Department or Agency
Food Safety Authority of Ireland (FSAI)
2. Title of the Project
Risk Ranking of Microbiological Hazards
3. Description of the Project
<p>This project aims to improve the efficiency of the FSAI in protecting public health by enabling the Authority to prioritise its work where there is the greatest health impact. The FSAI Scientific Committee has already been requested to conduct a risk ranking exercise for microbiological foodborne hazards in Ireland and to identify the data gaps, if filled, that would enable a risk ranking with reduced uncertainty in the future. From the initial scoping exercise, the working group has identified that the European Centre for Disease Prevention and Control's (ECDC) 'Burden of Communicable Diseases in Europe' (BCoDE) toolkit can be used to establish the burden of illness with selected microbiological hazards. This burden of illness data will be combined with data on food attribution (i.e. to determine the proportion of cases of illness that can be attributed to a food source rather than to other sources such as direct contact with animals, environmental exposure or person to person spread) in order to rank the risks.</p> <p>This project falls under the scientific support function enabling the Scientific Committee to meet this request from FSAI.</p>
4. Project Scope
<p>The project working group includes expertise in food science, veterinary, virology, parasitologist, surveillance science and modelling. The researcher will assist the working group with the following tasks.</p> <p>Task 1: Selection of the microbiological hazards/pathogens to be included. A preliminary selection has been conducted based on an initial review of available Irish data and of microbiological hazards included in published risk ranking studies. In order to make the project manageable, the list of hazards to be included must be further reduced. The outcome from this work is list of hazards to be included and a list of those excluded and a record of the selection criteria used (e.g. relevance to Ireland, number of cases, severity of illness, data available etc.)</p> <p>Task 2: Estimation of the burden of illness at population and individual level. ECDC's BCoDE tool will be used to establish the burden of illness for the microorganisms it includes. BCoDE allows the calculation of disability-adjusted life years (DALYs) by inputting age- gender- and population-specific incidence data and adjustment values for underestimation. It consists of disease models (with outcome trees) for a range of pathogens which reflect the symptoms and sequelae. However, it does not include some pathogens of interest identified by the project working group. In such cases it is planned to see if we can identify a pathogen included in the BCoDE, with a very similar disease outcome and to make minor adjustments to custom the model.</p>

Task 3: Attribution of illness to food. Exposure to foodborne pathogens can happen in a number of ways in addition to consumption of contaminated food. These include for example person to person transmission, contact with animals, exposure to animal faeces in the environment and drinking contaminated water. From the FSAI's perspective, it is important to estimate the proportion of illness that can be attributed to foodborne transmission before ranking the risks. This can be achieved by reviewing data from outbreaks and case control studies and by consulting expert opinion.

Task 4: Risk ranking. The data from tasks 2 and 3 will be combined and modelled using Monte Carlo simulation using 'R' software.

5. Skills/Expertise Required

The skills required are as follows:

- Food Microbiology
- Microbial modelling/engineering
- Ability to review and collate the peer reviewed and grey literature
- Science communication (written and oral)

6. Expected Outputs of Project

The outcome of the project will be a draft report to be presented to the Scientific Committee on risk ranking of microbiological hazards in Ireland and a risk ranking model that can be further populated and developed.

7. Working Arrangements

The placement would ideally be based at the FSAI offices in Dublin's IFSC area. However, flexibility to work remotely or other working arrangements could be considered. Any arrangement would require researchers to have access to the FSAI IT systems and to attend FSAI's offices as required. They will report to the Chief Specialist Biological Safety who will be responsible for directing the work.

8. Expected Timeline

The project is currently ongoing and has a deadline of end of September 2020 for submission to the Scientific Committee. It would be ideal if the researcher could start as soon as possible and work for 9 - 12 months.

1. Name of Governmental Department or Agency
Food Safety Authority of Ireland (FSAI)
2. Title of the Project
Data analytics for signals of emerging food safety risks
3. Description of the Project
<p>The FSAI routinely reacts to food safety risks from known (and sometimes unknown) hazards like chemical and biological contaminants. However, there is a desire in Europe, led by the European Food Safety Authority, to be more proactive by anticipating risks to the food system before they actually materialise. To this end many countries and EFSA have developed emerging risk systems which seek to use horizon scanning for early identification of situations that could lead to the emergence of a food safety risk. In Ireland we are at the very early stages of developing an emerging risk system and we would like to explore opportunities to identify and mine big data sets to allow prediction of future food safety events. As a start, we would like to examine the possibility that existing data (Irish, EU and global) for areas not related to food and food safety could contain signals for the subsequent emergence of food safety risks in past. For example, we could look at climate change patterns, agrifood policy and production changes, geological data, societal changes etc that could be linked to the emergence in Ireland (or the EU) of a food safety risk? Where a possible link (no matter how tentative) is established, more contemporary data could be then used to see if it can be used to predict the future emergence of a similar food safety risk.</p> <p>This project would seek to identify publicly available data sets that could be mined for signals of emerging risks when coupled with predictive models for contamination events. This would be a capability building exercise and a blue sky study aimed at demonstrating the value of data analytics in emerging risk systems.</p>
4. Project Scope
<p>Task 1: Examination of state of the art: The fellow will look at the published literature (Irish, EU and global) regarding data analytic work and emerging food safety risks from around the world and provide a short report on the state of the art. This will facilitate ideas generation and validate this approach.</p> <p>Task 2: Identification of publicly available data sets: Following ideas generation the Fellow will identify publicly available data sets (not necessarily related to food or food safety) that could be useful. The person will work with the FSAI IT and Data Analytics sections to develop a data capture system for FSAI where these data can be stored, updated and interrogated.</p> <p>Task 3: Deriving associations between historical data and subsequent food safety risks: By examining and analysing historical data sets, determine whether any signals could have been derived as early warnings of known food safety events.</p> <p>Task 4: Predictive modelling: The Fellow will identify publicly available models for hazards in the food chain and work to study hazards in the Irish food supply in the future using scenario analysis.</p> <p>Task 5: Reporting and Evaluation: The Fellow will publish peer reviewed publications on their work and lead an evaluation of the findings of the study to decide on future direction and continuation of the work.</p>

5. Skills/Expertise Required
<p>The skills required are as follows:</p> <ul style="list-style-type: none"> • Big data analytics • Predictive modelling • Ability to review and collate the peer reviewed and grey literature • Science communication (written and oral)
6. Expected Outputs of Project
<p>The outcome of the project will be a pilot emerging risk system based on scenario analysis that could be used for anticipation of future risks. An evaluation report and peer reviewed papers would provide the FSAI with an understanding of the utility of this type of work.</p>
7. Working Arrangements
<p>The placement would ideally be based at the FSAI offices in Dublin's IFSC area. However, flexibility to work remotely or other working arrangements could be considered. Any arrangement would require researchers to have access to the FSAI IT systems and to attend FSAI's offices as required. They will report to the Chief Specialist Food Science and Technology who will be responsible for directing the work.</p>
8. Expected Timeline
<p>The project is expected to take 9-12 months.</p>

1. Name of Governmental Department or Agency
Food Safety Authority of Ireland (FSAI)
2. Title of the Project
Assessment of the food safety data holdings of the FSAI to inform a suitable data model for the FSAI and the wider food safety enforcement community in Ireland.
3. Description of the Project
<p>The FSAI gathers a significant amount of data on an annual basis to monitor food safety in Ireland. Historically separate systems were developed to store different datasets resulting in unconnected data. In an effort to build data analytical capacity to inform future policies in data collection and analysis, the FSAI is currently undertaking a project to house all of its key data holdings in a central repository (Data Warehouse).</p> <p>Fundamental to maximising the success of the development of the FSAI Data Warehouse is the underlining data model. The model will clearly organise how all the data elements relate to each other.</p> <p>The output of this project will inform how best to bring together the separate datasets into one system and form the necessary connections between datasets to deliver improved data analysis to support decision-making in the FSAI, enhance stakeholder engagement and underpin future approaches to regulating the food industry.</p>
4. Project Scope
<p>The project consists of the following tasks:</p> <p>Task 1: Review the FSAI data holdings and the reporting needs of the organisation and determine the required connections between datasets and data elements to allow for delivery of essential reports.</p> <p>Task 2: Produce a suitable data model for the FSAI based on the outcome of Task 1</p> <p>Task 3: Provide an outline of the legislative and policy changes that would embed the resulting data model across the official food safety community, particularly at the point of data capture.</p> <p>The project would involve working closely with members of the Data Collection and Analysis team and with members of other teams across the FSAI who manage and interact with different food safety datasets.</p>
5. Skills/Expertise Required
<p>The skills required are as follows:</p> <ul style="list-style-type: none"> • Data Modelling

- Data Analysis
- Relational Databases (SQL)

6. Expected Outputs of Project

There are three outcomes of the project.

1. A report on the review of the FSAI data holdings, reporting needs and the required data connections.
2. A data model in graphically form with relevant accompanying documentation.
3. An outline of the key changes to be made to policies or legislation to embed a national food safety data model.

7. Working Arrangements

The placement would ideally be based at the FSAI offices in Dublin's IFSC area. However, flexibility to work remotely or other working arrangements could be considered. Any arrangement would require researchers to have access to the FSAI IT systems and to attend FSAI's offices as required. They will report to the Data Manager who will be responsible for directing the work.

8. Expected Timeline

The project is expected to take 12 months.

1. Name of Governmental Department or Agency
Local Government Management Agency
2. Title of the Project
Innovation in the Local Government Sector
3. Description of the Project
<p>Following a Strategic & Operational Review of the LGMA in 2018, the Chief Executives of the local authorities across Ireland indicated that they wanted to develop and support more innovation in the local government sector.</p> <p>The LGMA, together with the County and City Management Association (CCMA), is aware of a substantial level of innovation and business process improvement in the local government sector that has been completed, individually by the 31 local authorities in the sector, or sometimes on a collaborative or regional basis. These projects have led to quality improvements, service enhancements, cost reductions and productivity increases of a business activity or process within the sector. A list of some key examples of these innovations through technology are listed below:</p> <ul style="list-style-type: none"> • Projects funded under the Digital Innovation programme 2019- Dept of Rural and Community Development • Digital Transformation of Services – Cork County Council Service Republic • Smart bins Project, Dun Laoghaire Rathdown County Council/Dublin City council • Housing reletting system – Monaghan County Council • Wayfinding with Route4U – Fingal County Council/Dublin City Council • Smarter Travel – DTTAS Initiative – 3 Pilot sites- Dungarvan, Westport and Limerick <p>The local government sector recognises that the key to effective and efficient delivery of services, monitoring and evaluation and programme and policy development is having access to relevant, accurate and high-quality data.</p> <p>The LGMA would like to formally survey each local authority to gather data relating to existing and proposed innovative improvements to the provision both of front-end services within the local government sector to the citizens and businesses, and also to examine existing and proposed improvements to back-end services of the local authorities.</p>
4. Project Scope
<p>The project will involve gathering and analysis regarding existing innovative improvements relating to the full range of front-end services provided by local authorities, to the citizens and businesses and to examine improvements to back-end services of the local authorities.</p> <p>The research data gathered may identify areas of duplication of effort relating to the improvement of processes and it is hoped that the outputs from the data gathering will lead to recommendations to reduce duplication in the future.</p>

Policy informed by evidence is deemed to be more effective, but the evidence cannot be generated without reliable and accurate data. The evidence-based research will assist in developing a sectoral policy regarding innovation and identify specific supports from the LGMA that are required to support the sharing of best practice and improved business process and productivity across the local government sector.

In addition, it is hoped that the research will identify obstacles to adopting existing best practice service enhancements, i.e. resources, costs, procurement and identify the best means for the LGMA and the CCMA to support ongoing development of services and improvement to processes across the sector.

It is also anticipated that the conclusions of this research project will support the work of Our Public Service2020 by providing strong evidence-based data relating to the delivery of improved services for our customers, improved engagement with our citizens, driving efficiency and effectiveness, and embedding a culture of evidence and evaluation.

This is a unique opportunity to gain experience working across local government, engaging with all 31 local authorities, various government departments and key stakeholders.

5. Skills/Expertise Required

- Expertise in a Science, Technology, Engineering or Maths discipline (ICT expertise desirable).
- Strong skills in data gathering, analysis and manipulation; competence with Microsoft Office Suite and data analysis technologies, i.e. Asana, SPSS;
- strong communication, report writing and presentation skills.

The ideal candidate will have some knowledge of public service organisations in Ireland and the public service reform programme. The researcher will have the ability to work effectively on his/her own initiative, the ability to manage projects and work activities successfully.

6. Expected Outputs of Project

It is anticipated that the outputs from this project will be the creation of a dataset of existing and proposed innovative service improvements, the completion of a briefing paper that will ultimately be absorbed into a sectoral policy document and development of recommendations relating to the supports that can be provided having regard to an analysis of the obstacles preventing the utilisation of existing best practice examples from other local authorities.

7. Working Arrangements

The researcher would ideally be based in the LGMA's Programme Management Office, which is based in Phoenix House, Conyngham Road. Flexible and remote working arrangements will be accommodated.

8. Expected Timeline

It is anticipated that the project will last 6 months. It is preferred that the researcher work full-time on the project.

<p>1. Name of Governmental Department or Agency</p>
<p>Office of the Revenue Commissioners</p>
<p>2. Title of the Project</p>
<p>Tax & Customs Technology options</p>
<p>3. Description of the Project</p>
<p>This project will analyse and research one or all of the subject areas below in the context of implementation in a Tax & Customs administration. Revenue has a lot of existing technology solutions in place including legacy systems and as a public body is somewhat constrained by procurement, budgets and IT skills availability, while at the same time requiring very secure, highly available, reliable and performant 24x7 systems.</p>
<p>4. Project Scope</p>
<p>The following technical products/areas are of interest to Revenue. At a general level, we would like to understand the implications of adopting these technologies from a number of perspectives including – best practice, implementation issues, pros & cons, availability of skills, training implications, operation models, security & availability.</p> <ul style="list-style-type: none"> • Revenue have started to adopt a microservices approach to how we design and build some of our systems over the last number of years. We are keen to understand if the approaches we have taken to date are appropriate and how they can be improved as we increase adoption. What is industry best practice in this area and how do we measure up? If we start to move our own services to the cloud or consume cloud services provided by others, what concerns or challenges will need to be addressed and what options do we have? • The Apache Hadoop software library forms part of our IT landscape for certain use cases. As we look to modernise various elements of our technology architecture, we are keen to understand whether Hadoop and its extended ecosystem should be adopted for other use cases, potentially replacing some or all of our existing relational database technologies for critical systems. If we are to increase adoption, the technology and other implications on our IT organisation need to be fully understood including a potential move to cloud. • Revenue have implemented technologies in support of DevOps. We are keen to understand the technology, people and process elements of how we might build upon the work to date and increase its adoption across the ICT organisation. • Revenue have already launched some pilot services that leverage AI. As we look at how we interact with our customers we believe that AI has an increasing role to play and we need to research the technology, people, process and policy implications around its adoption into the organisation.

5. Skills/Expertise Required
<ul style="list-style-type: none"> • Information and Communication Technology expertise • Very good and a realistic understanding of the potential of key, modern technologies. • An appreciation of the operational environment of a public body including things like procurement, budgets, staff recruitment/retention and skills acquisition. • Strong research skills and ability to critically analyse options and approaches. • Good oral and written communication skills. • Some basic Tax knowledge and/or background in legislation would be of benefit.
6. Expected Outputs of Project
Briefing paper(s) addressing the key areas identified as part of the project scope
7. Working Arrangements
The researcher will be based in Revenue IT Offices in either Dublin City Centre and /or St John's Road. Flexible and remote working arrangements would be accommodated.
8. Expected Timeline
Revenue are looking to make progress in the aforementioned areas in the next 12 -18 months. It would be proposed that this project should initiate as soon as possible. The likely duration of the placement is 6 months full-time or 12 months part-time.