



REPHRAIN

REPHRAIN Showcase Event
16 March 2022

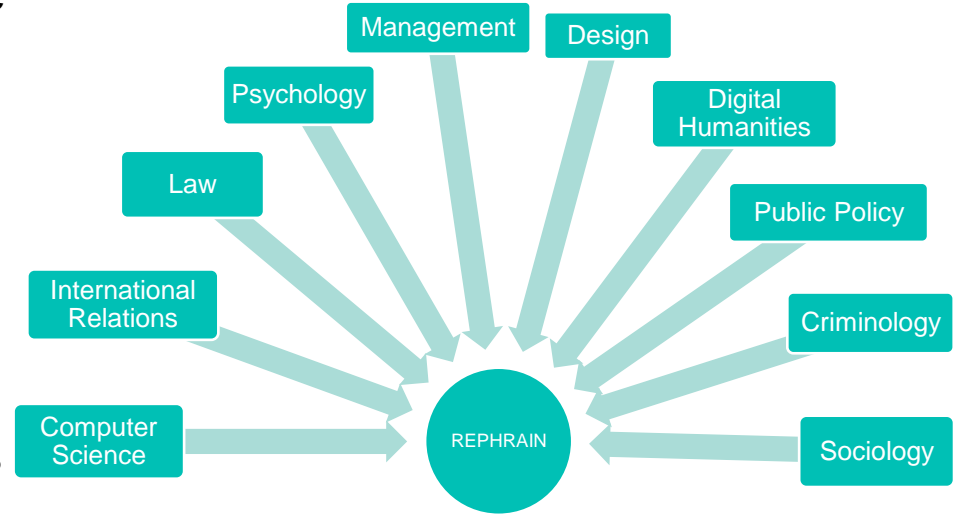
Professor Awais Rashid – REPHRAIN Centre
Director

bristol.ac.uk

REPHRAIN overview



- £8.6 million, 3 year Research Centre of Excellence focussed on the protection of citizens online
- Funded by UKRI (via EPSRC) Strategic Priority Fund
- Interdisciplinary
- Five founding UK academic partners





Center for the
Cultivation of
Technology



GENIES



THE
HEALTH DATA
EXCHANGE
Share your data for faster cures



REPHRAIN overview



REPHRAIN aims to address fundamental tensions and imbalances pertaining to protecting citizens online through 3 over-arching missions:



REPHRAIN Inaugural projects



Mission 1: Deliver privacy at scale while mitigating its misuse to inflict harms

- Reconcile tension between data privacy and lawful expectations of transparency.
- Use advances in privacy-enhancing technologies and full range of socio-technologies to rethink how the best address the trade-offs.

LAWREG

PETs and Data
Privacy

MITIGATE

Understanding impact
of mitigation
strategies on harm

AUTAPP

Automated
detection of online
harms

META

Scope for and risk to
integrating meta-data privacy
into networked apps

INTERACT

Mapping & measuring
tech interactions assoc
with harm

SURVEY

Global survey of
policy approaches to
PCO

PROACTIVE

Proactive
monitoring of online
harms at scale

ACCEPT

Exploring consumer views of
unacceptable use of PETS
related data

Mission 2: Minimise harms while maximising benefits from a sharing-driven digital economy

- Redress citizens' rights in transactions in the data-driven economic model to include agency, control, transparency, ethical and social values.
- Enable more sophisticated assessment of data use and lead to new types of PETS.

PAYMENT

Payment system
security

CLARITI

Social networks and the
danger of pseudoscience,
fake news to public health

CONTEXT

Understanding the role
of contexts in
managing privacy
online

FAIRCROWD

Fair, private and distributed
evaluation of crowdsourced
data

EXPLAIN

Explainable privacy in
AI-systems

ANALYSIS

High-assurance, secure
and private data analytics
– techniques and
implications

PRESERVE

Privacy-preserving
communication for
lightweight apps

QUERY

Efficiently querying user
sequences while preventing
their reconstruction

PRAISE

Privacy norms in AI-
based systems

Mission 3: Balance individual agency vs. social good

- Develop understanding of what privacy represents for different groups in society, the different online harms they may be exposed to and the cultural and societal nuances that impact effectiveness of harm-reduction approaches.
- Lead to novel solutions to empower individuals to protect their privacy but within a culture of shared responsibility for online safety.

PROM

Data driven approach to understand promotion of violence online

HARM

Defining and measuring 'harm'

COMLAW

Commercialisation of data and consumer law

MANIPU

Social media and online manipulation

EXTENT

Exploring extremism and its effects online

EMBODY

Avatars, VR and embodied selves

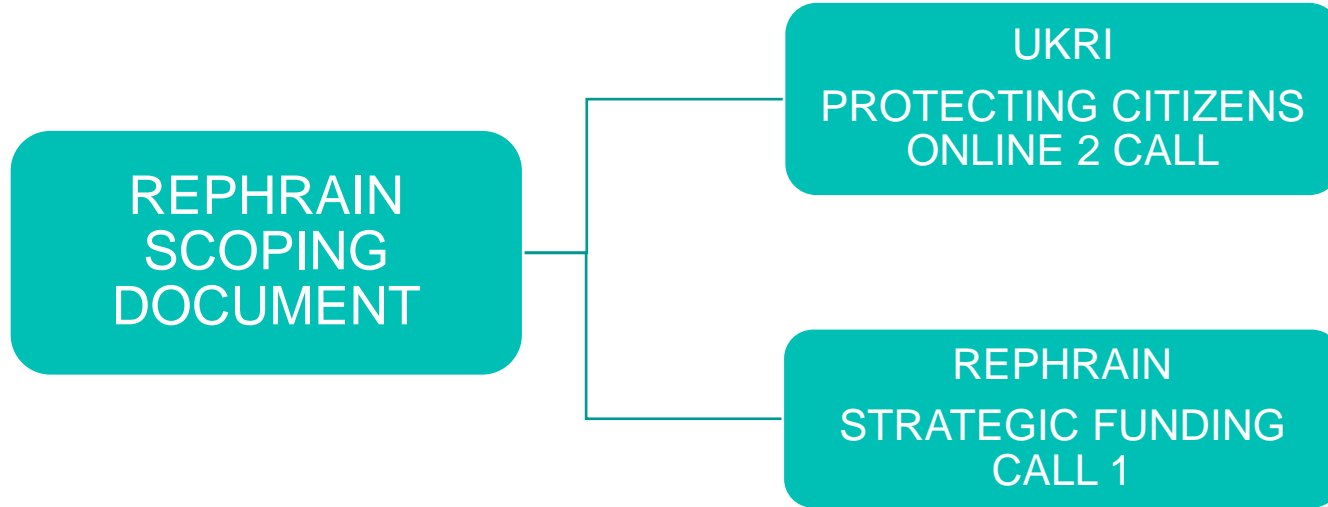
BUREAU

Citizen Data Advice Bureau

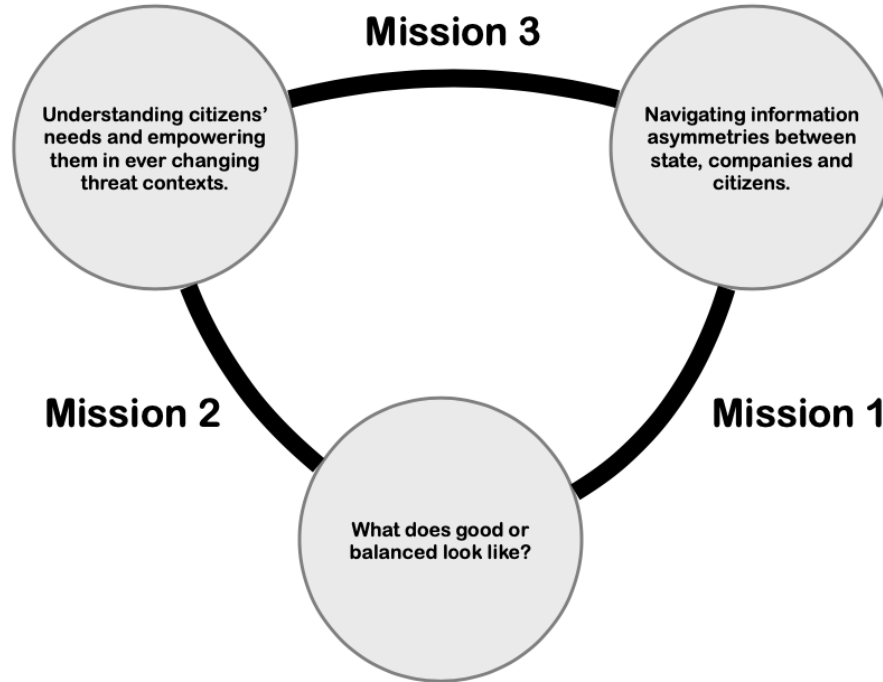
NEWS

Predicting personality from news consumption

UKRI Protecting Citizens Online Complementary call (£11M)



Scoping Study



Themes from the Scoping Study



Overarching research theme	Research Challenges
Understanding citizens' needs and empowering them in ever changing threat contexts.	<ul style="list-style-type: none">• Usable harm mitigation tools.• Novel tools and methods for alerting users about imminent and potential harm.• User-oriented tools to prevent harm through impersonation.
Navigating information asymmetries between state, companies and citizens.	<ul style="list-style-type: none">• Methods, tools and techniques for responsible data usage and dissemination.• Maximising users' agency through effective mechanisms for data transparency, traceability, assurance and portability.• Innovative methods for informed consent in seamless human-technological interactions in shared spaces
What does good or balanced look like?	<ul style="list-style-type: none">• Balancing privilege management and anonymous credentials.• Forensic readiness without violating data privacy rights.• Designing and validating metrics for assessing the effectiveness of harm mitigation mechanisms.

REPHRAIN Strategic Funding Call 1



Testbeds for
detecting, disrupting
and investigating
online harms

Novel awareness
mechanisms

Negotiation and
conflict resolution
management

Establishing scalable
trust

Data minimisation
and deletion in online
platforms

REPHRAIN Strategic Funding Call 1



- Eighteen proposals received with **eight** successfully awarded.

Project title	Institution	Project PI
PORTAS: Prevention of Online Recruitment into Human Trafficking using Automated Solutions	University of Ulster	Professor Bryan Scotney
Unlicensed COVID-19 vaccines and test certificates on the net: Identifying and preventing online harms	University of Hertfordshire	Dr Ornella Corazza
The applicability of the UK Computer Misuse Act 1990 for cases of technology enabled domestic violence and abuse (Tech Abuse)	University College London	Dr Leonie Tanczer
Privacy-at-Ransom Testbed (PART): Do ransomware defences hold privacy to ransom?	University of Strathclyde	Dr Shishir Nagaraja

REPHRAIN Strategic Funding Call 1



Project title	Institution	Project PI
Social Explainability (SOXAI) for trustworthy AI: What types of explanations can help user develop appropriate trust	Coventry University	Dr Frens Kroeger
Key2Kindness: An adaptive cross-platform “in the moment” hate speech detection and awareness mechanism	University of Northumbria at Newcastle	Dr Mark Warner
PriXR: Protecting Extended Reality (XR) User and Bystander Privacy by Supporting Legibility of XR Sensing and Processing	University of Glasgow	Dr Mark McGill
PhishEd: Automated phishing feedback for end-users	University of Edinburgh	Dr Kami Vaniea

REPHRAIN overview



- Starting critical mass of 31 internationally-leading experts.
- Now grown to over 80 members of REPHRAIN.



Mission and Priorities Coverage



	Mission 1			Mission 2			Mission 3		
	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3
Accelerate R&D of PETS	LAWREG PAYMENT PRAISE <i>PART</i> <i>PriXR</i>	META <i>PART</i>	META <i>PART</i>	EXPLAIN PRAISE NEWS	ANALYSIS CONTEXT PRESERVE	ANALYSIS LAWREG CONTEXT PAYMENT FAIRCROWD PRESERVE	PROM EXTENT	FAIRCROWD EXPLAIN BUREAU	<i>PART</i>
Promote development of an innovation ecosystem		AUTAPP	AUTAPP	PRAISE EXPLAIN <i>Key2Kindness</i> <i>PhishEd</i> <i>SOXAI</i>	ANALYSIS CONTEXT	ANALYSIS CONTEXT FAIRCROWD	EMBODY	FAIRCROWD <i>PhishEd</i>	<i>PORTAS</i>
Drive the development and adoption of PETS	PROACTIVE QUERY BUREAU PAYMENT <i>PriXR</i>	AUTAPP META ACCEPT <i>PART</i>	AUTAPP META ACCEPT	CLARITI NEWS	CONTEXT PRESERVE	QUERY PAYMENT CONTEXT PRESERVE FAIRCROWD	CLARITI	FAIRCROWD NEWS BUREAU ACCEPT	AUTAPP PROACTIVE <i>PART</i> <i>PORTAS</i>
Support orgs to become intelligent users of PETS	PROACTIVE BUREAU <i>PriXR</i>	META ACCEPT	META ACCEPT		ANALYSIS PRESERVE		HARM MITIGATE <i>Covid-19</i>	BUREAU <i>PhishEd</i> <i>SOXAI</i> <i>Covid-19</i>	PROM AUTAPP PROACTIVE <i>Covid-19</i>
Give public sector orgs expertise & assurance they need	PROACTIVE SURVEY BUREAU HARM INTERACT MITIGATE	AUTAPP PROACTIVE	AUTAPP	<i>Key2Kindness</i>		INTERACT MITIGATE	MANIPU COMLAW SURVEY INTERACT <i>CMA 1990</i>	COMLAW BUREAU <i>CMA 1990</i> <i>PhishEd</i> <i>SOXAI</i> <i>Covid-19</i>	MANIPU PROACTIVE <i>Covid-19</i>
Promote innovative data governance through PETS use	LAWREG QUERY BUREAU <i>PART</i>	AUTAPP META ACCEPT PROACTIVE		EXPLAIN NEWS <i>PhishEd</i>	ANALYSIS CONTEXT EMBODY	ANALYSIS QUERY CONTEXT FAIRCROWD	COMLAW MANIPU <i>CMA 1990</i>	LAWREG COMLAW EXTENT FAIRCROWD NEWS EXPLAIN BUREAU <i>CMA 1990</i>	EXTENT MANIPU NEWS PROACTIVE

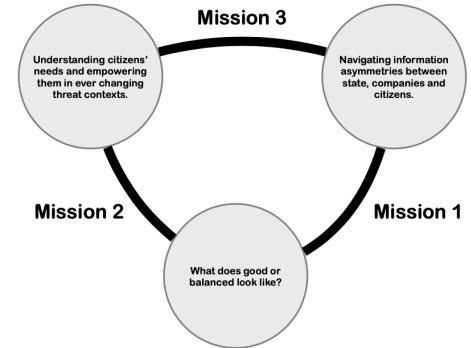
- Good spread of the new SFC 1 projects (in red) against the three REPHRAIN missions with the majority falling in Mission 3.
- More targeted coverage seen against SFC 1 priority areas

SFC 1 focus areas				
Testbeds	Novel awareness	Conflict resolution	Scalable Trust	Data minimisation /deletion
<i>Covid-19</i>	<i>CMA</i>		<i>SOXIA</i>	
<i>PART</i>	<i>Key2Kindness</i>			
<i>PORTAS</i>	<i>Covid-19</i>			
	<i>PriXR</i>			
	<i>PhishEd</i>			

Complementary Node Projects



Project title	Institution	Project PI
AP4L: Adaptive PETs to Protect and empower People during Life Transitions	University of Surrey	Prof Nishanth Sastry
Protecting public-facing professionals and their dependents online (3PO)	Sheffield Hallam University	Prof Saskia Bayerl
Protecting Minority Ethic Communities Online (PRIME)	Heriot-Watt University	Dr Gina Netto
AGENCY: Assuring Citizen Agency in a World with Complex Online Harms	Newcastle University	Prof Aad van Moorsel



Engagement & Impact Strands



Design & Engagement



**Responsible,
Inclusive & Ethical
Innovation**



Adoption & Adoptability



Policy & Regulation

Engagement & Impact Strands



Design & Engagement



Adoption & Adoptability



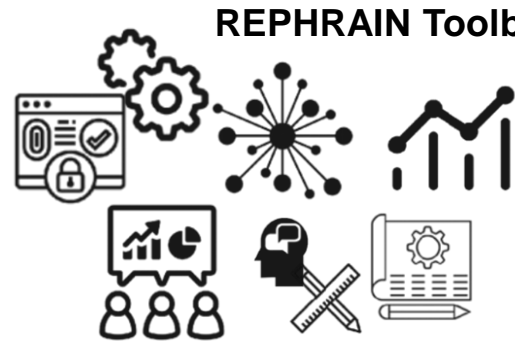
**Responsible, Inclusive
& Ethical Innovation**



Policy & Regulation



REPHRAIN Map



REPHRAIN Toolbox

REPHRAIN Toolbox



- A one-stop shared set of resources for researchers, practitioners, policy-makers, regulators and citizens.
 - **PETs testbed:** world first testbed on which PETs will be rolled out and evaluated.
 - **Datasets:** public datasets from REPHRAIN's research and its partners as well as secure centralised data repository for datasets that cannot be made public.
 - **Benchmarks:** suite of benchmarks based on testbed and datasets to allow researchers to rigorously evaluate their methodology against standard metrics.
 - **Reference Scenarios:** curated datasets will be connected to analytic challenges related to online harms and privacy preservation with automatic evaluations of solutions.
 - **Methods, Tools & Protocols:** from REPHRAIN and wider research community that have been validated by the above.

Capability Fund



Strategic Funding Calls (*current and new researchers*)



Impact Booster Awards (*for funded projects*)



Researcher/Practitioner in-residence



Data Access and Curation Initiatives

REPHRAIN Strategic Funding Call 2



Scoping workshop to highlight topic areas to be covered in second funding call.

The call focussed on filling research gaps within the three REPHRAIN missions not currently being addressed by current REPHRAIN projects.

Giving public sector organisation expertise and assurance

Promoting innovative data governance through use of PETs

Supporting organisations to become intelligent users of PETS

Building privacy into infrastructures

REPHRAIN Strategic Funding Call 2



ACTIVITY	WHEN
CALL LAUNCH	01 DECEMBER 2021
SUBMISSION DEADLINE*	28 JANUARY 2022
PEER REVIEW	31 JANUARY – 18 FEBRUARY 2022
DECISION PANEL	14 MARCH 2022
SUCCESSFUL SUBMISSIONS NOTIFIED	21 MARCH 2022
START DATE OF PROJECTS	01 MAY 2022

* 20 PROPOSALS SUBMITTED

Researcher/Practitioner-in-Residence Programme



- Gives opportunity for both researchers and practitioners to spend time working within the REPHRAIN research centre.
- Offers opportunity to collaborate with other Centre academic staff, researchers and external partners and to input into the Centre's outputs.
- Allows access to the Centre's resources, facilities and expertise and inclusion in Centre level events and activities.
- Creates environment for mutual engagement and learning.
- Open to UK and international researchers and practitioners.
- Rolling application process by Expression of Interest (Practitioner) or funding proposal (Researcher).
- Call for Expression of Interest was launched in May 2021.

Dataset curation initiatives



- Plan for dataset curation has started to be developed.
- Considering how datasets can be hosted and shared in privacy-preserving way with stakeholders.
- Exploratory discussions regarding hosting have been undertaken with various relevant parties:
 - University of Bristol MRC Integrative Epidemiology Unit
 - ALSPAC (Avon Longitudinal Study of Parents and Children)
 - SoBigData EU project (research infrastructure for ethic-sensitive scientific discoveries and “big data”)
 - Swansea SeRP (Secure eResearch Platform)

Impact Booster Awards



- Strategic awards provided to REPHRAIN projects to support knowledge exchange and impact from REPHRAIN funded research, working with external industry partners.
- The awards are intended to add value to existing funding and take advantage of new or unforeseen opportunities in a co-funding format.
- Call for applications for Impact Booster Awards will open in **early Spring 2022** and published on REPHRAIN website and social media channels.
- Applications should include a project summary with objectives and project plan, requested budget with justification and will also include specific details on the benefits to the research team and to the external partner.
- Applications will require confirmation of commitment from industry partner in form of a short business plan.
- Decisions on funding will be made by the REPHRAIN Executive Team and Strategic Board.

REPHRAIN Masterclasses



- Series of REPHRAIN **masterclasses** to wider community on various relevant subjects as follows:
 - Challenges of dealing with online harms data (35 attendees) – **02 September 2021**
 - Using Data Science to Study Jerks on the Web (over 70 attendees) – **23 September 2021**
 - Law and Regulation: What we are doing and why – how global regulation impacts implementation and should be considered in development and research (30 attendees) – **03 March 2022**
 - Using legal databases to study tech-enabled harms (22 attendees) – **09 March 2022**
 - ***More to follow!***

To learn more about REPHRAIN, our future plans and how to get involved:



www.rephrain.ac.uk



@REPHRAIN1



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