The Ethical Researcher – Responsible Innovation and Managing Data

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HumanIC project has received funding from the European Union's Horizon Europe research and innovation program under the Marie Sklodowska-Curie (HORIZON-MSCA-2022-DN-01, project no 101119726

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Training Objectives

- Understand the concept of *Responsible Research and Innovation* (RRI) and its relevance in publicly funded research projects
- Identify potential ethical and societal risks within research projects.
- Develop an Ethical Research Plan tailored to your ow research project.
- Understand the principles of responsible research data management (FAIR principles, open science, GDPR compliance).
- Analyze possible unintended consequences of research activities and outputs.
- Make informed research decisions under conditions of ethical uncertainty.
- Understand principles of responsible authorship and publication ethics, including fair attribution of contributions and management of authorship conflicts.

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Training scope

Modul I. Responsible Innovation

Modul II. Managing Research Data Responsibly

Modul III. Formulate Ethical Research Plan

Module IV. Responsible Authorship and Publication Ethics

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Modul I.

Responsible Innovation

Why Responsible Research Matters Today?

Research does not operate in isolation.

Scientific work shapes society, and is shaped by it.

- Public funding → public accountability
- Increasing societal impact of research
- Technological acceleration → ethical complexity
- Trust in science as a strategic asset

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What is Responsible Research and Innovation?

Responsible Research and Innovation (RRI) is an approach that anticipates and assesses potential implications and societal expectations regarding research and innovation, with the aim of fostering inclusive and sustainable outcomes.

Research and innovation should be:

- **Ethically acceptable**
- **Sustainable**
- **Socially desirable**

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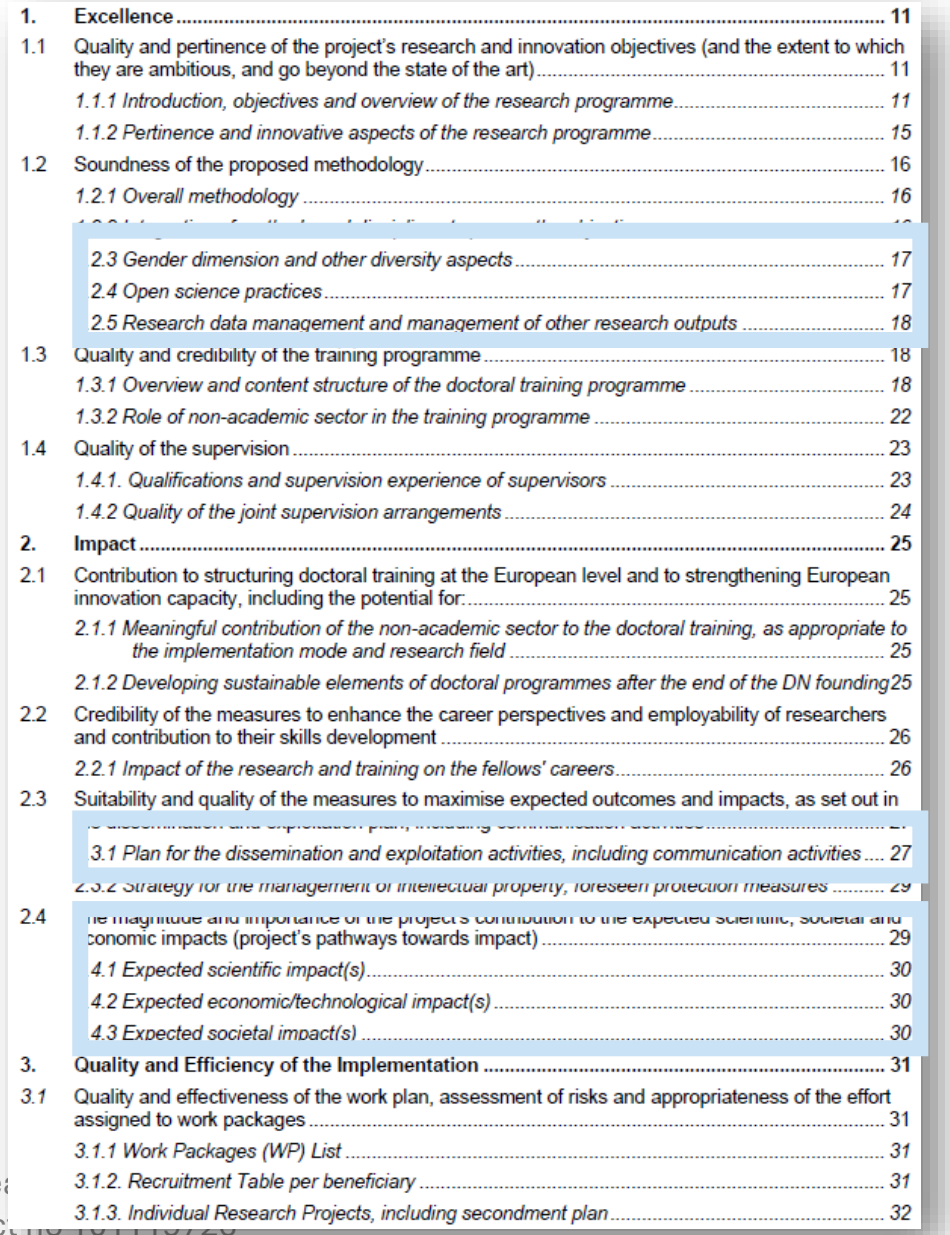
Why RRI in Publicly Funded Research?

Key principles in EU research frameworks

- Ethics by design
- Open science
- Gender equality
- Public engagement
- Societal, economic/technicological and societal impact

Public funding implies responsibility toward:

- Citizens
- Stakeholders
- Future generations



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Governance of Scientific Research

What is research governance?
The system of:

- Rules
- Standards
- Institutional procedures
- Oversight mechanisms that guide how research is conducted.

Levels of governance:

- International (EU regulations, GDPR)
- National (research integrity frameworks)
- Institutional (ethics committees, data policies)
- Project level (internal procedures, DMP, ethics plans)

Governance is not restriction - it is a structure that protects researchers and society.

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Stakeholders in Research

Who are stakeholders?
Individuals or groups who:

- Are affected by the research
- Can influence its development
- Have legitimate interests in its outcomes

Examples:

- Research participants
- Patients
- Industry partners
- Policymakers
- Local communities
- Future users
- Vulnerable groups

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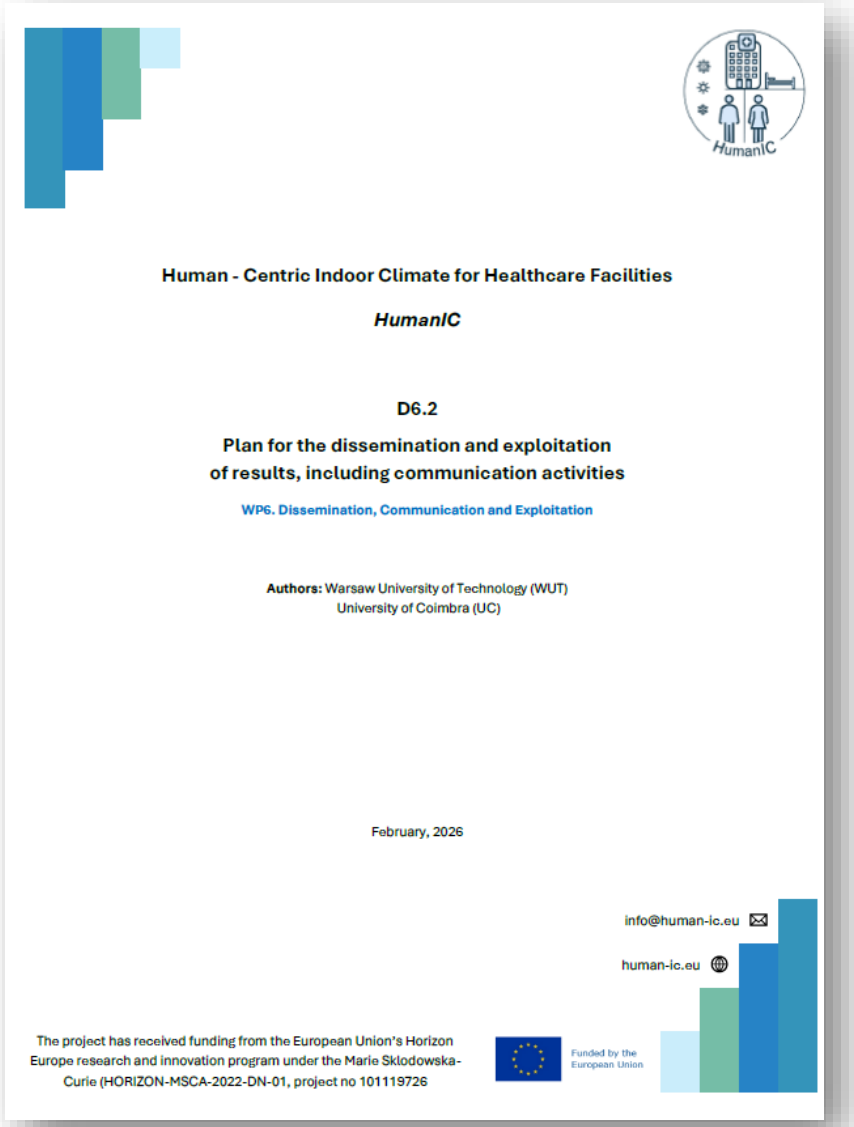
HumanIC Stakeholders in Research



Human - Centric Indoor Climate for Healthcare Facilities

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D6.2

Plan for the dissemination and exploitation of results, including communication activities

WP6. Dissemination, Communication and Exploitation

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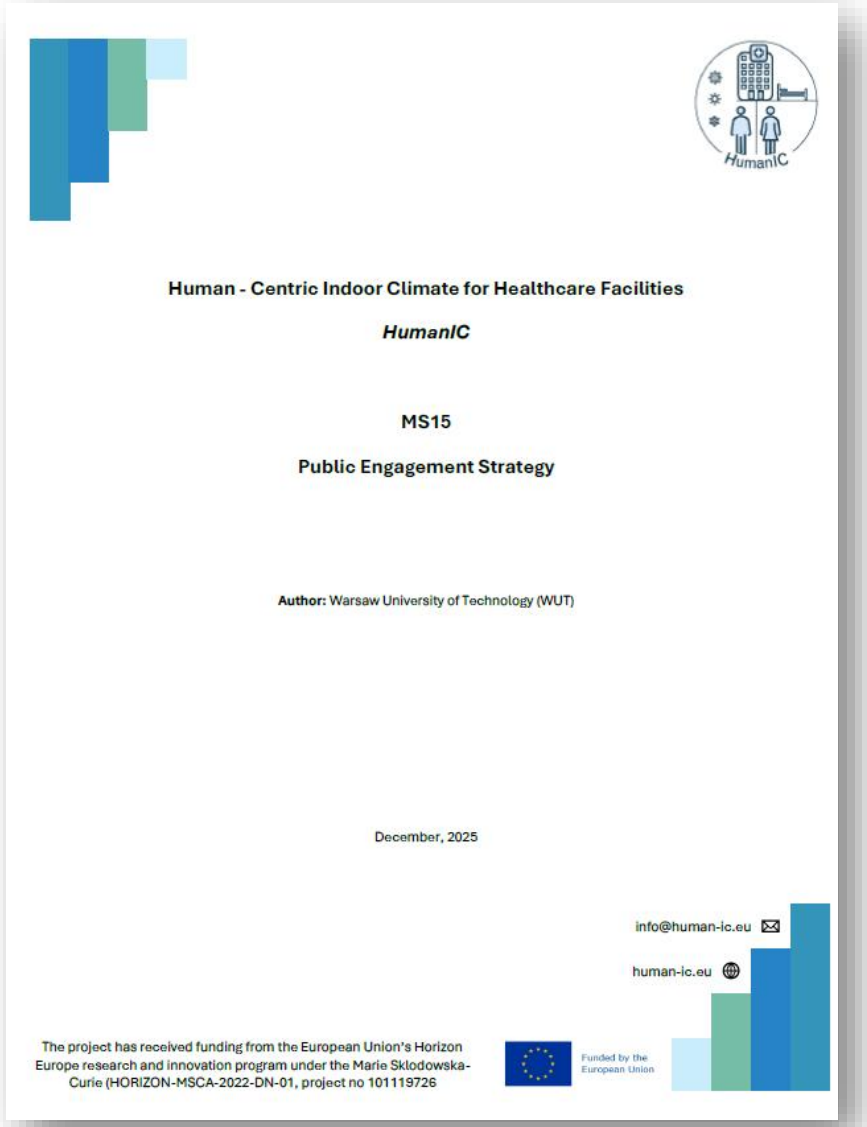

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MS15

Public Engagement Strategy

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The AREA Framework

A – Anticipation

Systematically thinking about:

- What could go wrong?
- What could be misused?
- What long-term consequences might emerge?

R – Reflection

Critical examination of:

- Assumptions
- Values embedded in research design
- Personal biases

E – Engagement (Inclusion)

Involving:

- Stakeholders
- Interdisciplinary perspectives
- Affected communities

A – Action (Responsiveness)

Capacity to:

- Adapt research direction
- Modify methods
- Implement safeguards

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The AREA Framework

A – Anticipation

Systematically thinking about:

- What could go wrong?
- What could be misused?
- What long-term consequences might emerge?

Examples:

- Dual-use risks
- Algorithmic bias
- Environmental side effects
- Data misuse

Not predicting the future, but preparing for plausible scenarios.

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The AREA Framework

R – Reflection

Critical examination of:

- Assumptions
- Values embedded in research design
- Personal biases

- Why am I framing the problem this way?
- Who benefits from this framing?
- Who might be excluded?
- What norms are embedded in my methodology?

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The AREA Framework

E – Engagement (Inclusion)

Involving:

- Stakeholders
- Interdisciplinary perspectives
- Affected communities

Inclusion can take many forms:

- Stakeholder consultations
- Advisory boards
- Public dialogue
- Participatory research design

Early engagement reduces downstream conflicts and unintended harm

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The AREA Framework

A – Action (Responsiveness)

Capacity to:

- Adapt research direction
- Modify methods
- Implement safeguards

Responsiveness means:

- Changing course if new risks emerge
- Adjusting communication strategies
- Updating ethical safeguards
- Revising data management practices
- Responsible research is dynamic.

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Ethical Maturity in Research

Ethical maturity means:

- Moving beyond compliance
- Understanding broader societal implications
- Acting under uncertainty
- Taking ownership of consequences

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Ethical Dilemmas in Research

ROOM 1

Scenario 1: “Unexpected Application”

A doctoral candidate develops an algorithm predicting infection risk in hospitals. The results may improve patient safety, but could also be used to restrict access to treatment for “high-risk” patients.

Group Tasks

- **Ethical Risk Mapping**
  - Identify short-term and long-term ethical risks.
  - Consider risks related to discrimination, bias, and unequal access to care.
  - Does the algorithm create new forms of vulnerability?
- **Stakeholder Analysis**
  - Map direct and indirect stakeholders.
  - Who benefits? Who may be disadvantaged?
  - Who should be involved in oversight?
- **Risk Mitigation Strategies**
  - Propose safeguards in design, validation, and implementation.
  - Should transparency mechanisms be introduced?
  - Should clinical decisions remain fully human-controlled?
- **Access and Control**
  - Should access to the algorithm or data be restricted?
  - If yes, under what governance structure?
  - Who decides how the tool is used?

Ethical Dilemmas in Research

ROOM 2:

Scenario 2: “Data Ownership Conflict”

The project collects data from hospital laboratories. An industrial partner intends to commercialise the database.

Group Tasks

- **Regulatory Framework Analysis**
  - Identify applicable regulations (e.g., GDPR, institutional data policies, contractual obligations).
  - What legal basis governs data processing?
- **Ethical and Legal Tensions**
  - Who owns the data?
  - What type of consent was obtained?
  - Is anonymisation sufficient?
- **Data Governance Design**
  - Propose a governance model balancing:
    - Open science principles
    - Commercial interests
    - Patient rights
  - Should data access be tiered?
- **Negotiation Strategy**
  - How should the research team respond to the industrial partner?
  - What compromises are ethically acceptable?

Ethical Dilemmas in Research

ROOM 3

Scenario 3: “Pressure to Publish”

A supervisor suggests “optimising the presentation of results” to increase publication chances.

Group Tasks

- **Boundary Analysis**
  - Where is the line between legitimate interpretation and manipulation?
  - What constitutes selective reporting?
- **Conflict of Interest Assessment**
  - Identify potential conflicts (career pressure, funding pressure, institutional expectations).
  - Who is accountable?
- **Decision-Making Strategy**
  - What options does the doctoral candidate have?
  - What institutional mechanisms could support ethical conduct?
  - How should concerns be documented?
- **Preventive Measures**
  - What practices reduce publication bias?
  - How can transparency be strengthened?

Module II.

Managing Research Data Responsibly

Why Responsible Data Management Matters

- Data as foundation of scientific credibility
- Legal accountability (GDPR, contractual obligations)
- Reproducibility crisis
- Open science requirements

Good data management protects:

- **participants**
- **researchers**
- **institutions**
- **long-term scientific value**

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The Research Data Lifecycle

1. Planning
2. Data collection
3. Processing & cleaning
4. Analysis
5. Storage & documentation
6. Sharing / publication
7. Archiving / preservation

Data management begins before data collection and continues after publication.

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What Counts as Research Data?

Examples:

- Experimental measurements
- Simulation outputs
- Survey responses
- Interview transcripts
- Images / video recordings
- Software code
- Metadata

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FAIR Principles

FAIR does not necessarily mean "open" — it means usable.

F – Findable

Persistent identifiers (DOI)

Rich metadata

I – Interoperable

Standard formats

Shared vocabularies

A – Accessible

Clear access conditions

Standardised retrieval protocols

R – Reusable

Clear licences

Detailed documentation

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Data Management Plan

What is a DMP? A structured document describing:

- *What data will be collected*
- *How data will be managed*
- *How data will be stored*
- *Whether and how data will be shared*
- *How long data will be preserved*

In EU-funded projects:

- *Mandatory deliverable*
- *Living document*
- *Updated during project lifecycle*

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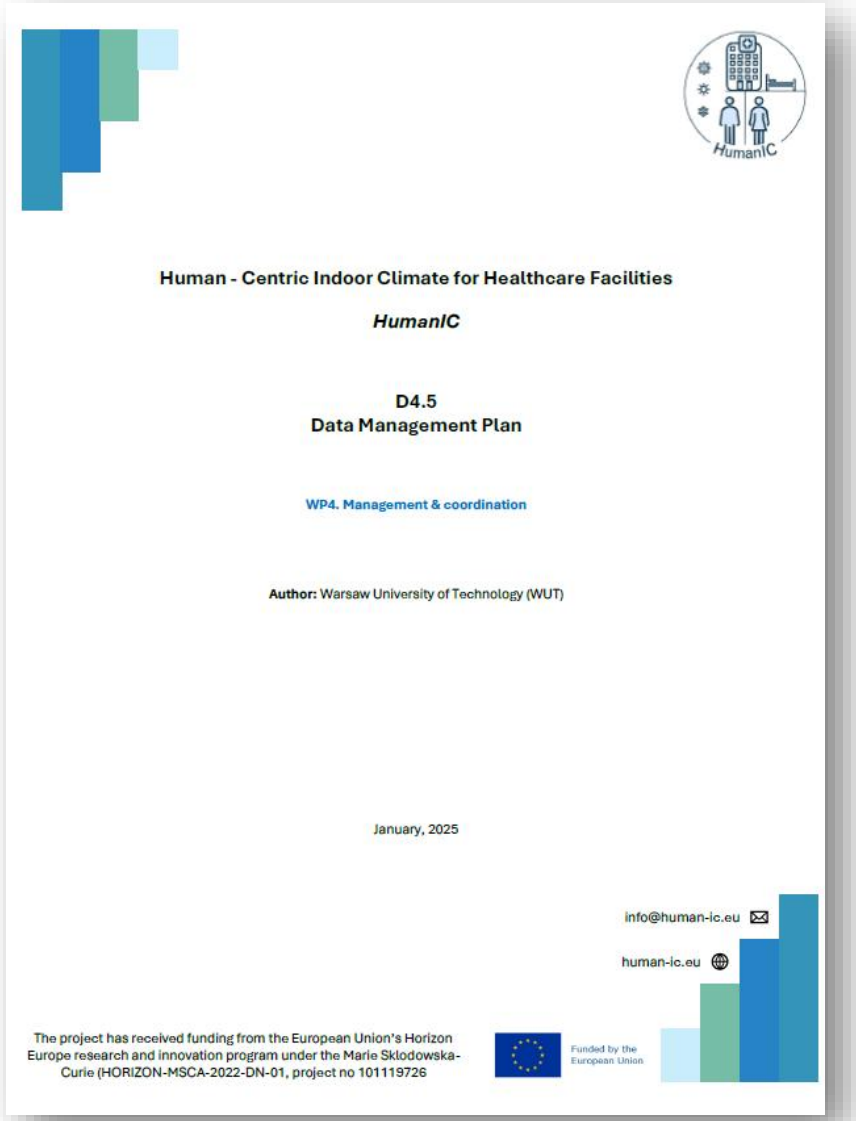
HumanIC Data Management Plan



Human - Centric Indoor Climate for Healthcare Facilities

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D4.5
Data Management Plan

WP4. Management & coordination

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Sensitive Data and GDPR

Examples of sensitive data:

- Health data
- Personal identifiers
- Biometric data
- Location data
- Ethnicity, religion, political views

Core GDPR principles:

- Lawfulness
- Data minimisation
- Purpose limitation
- Storage limitation
- Integrity and confidentiality

Document 32016R0679

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance)

OJ L 119, 4.5.2016, pp. 1–88 (BG, ES, CS, DA, DE, ET, EL, EN, FR, GA, HR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)

In force: This act has been changed. **Current consolidated version:** 04/05/2016

ELI: http://data.europa.eu/eli/reg/2016/679/oj

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Anonymisation vs Pseudonymisation

Anonymisation:

- Irreversible removal of identifiers
- No re-identification possible

Pseudonymisation:

- Identifiers replaced with codes
- Re-identification possible with key

Only truly anonymized data fall outside GDPR scope.

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Data Security

Key measures:

- Encrypted storage
- Institutional servers (not personal devices)
- Access control policies
- Version control systems
- Secure data transfer protocols

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Archiving and Long-Term Preservation

Why archive?

- Scientific integrity
- Reproducibility
- Compliance with funder requirements

Options:

- Institutional repositories
- Certified discipline-specific repositories
- Controlled-access repositories

Retention policy: How long must data be stored?

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Reproducibility and Transparency

Responsible data management enables:

- Verification of results
- Reuse by other researchers
- Increased citation and impact

Best practices:

- Document methodology thoroughly
- Share code when possible
- Use version tracking

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Common Data Management Risks

- Storing data on private laptops
- Lack of metadata
- Unclear ownership agreements
- Informal consent procedures
- Sharing without licence clarification

Transition: How do these risks apply to your own research?

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Responsible Data Management Check

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Module III.

Formulate Ethical Research Plan

Why an Ethical Research Plan?

Ethics is not a declaration. It is a structured, operational framework that translates principles into concrete actions throughout the research lifecycle. An Ethical Research Plan moves beyond general statements of compliance and provides a clear roadmap for anticipating, managing, and monitoring ethical dimensions of a project.

From Reflection to Implementation

- Transforms abstract ethical principles into measurable procedures
- Connects risk identification with specific mitigation strategies
- Assigns responsibilities within the research team
- Establishes documentation and accountability mechanisms

Anticipating Risks Before They Escalate

- Identifies potential harm to participants or stakeholders
- Recognises dual-use or misuse risks
- Detects privacy and data protection vulnerabilities
- Considers long-term societal and environmental consequences
- Proactive planning reduces the likelihood of crisis-driven decision-making.

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Why an Ethical Research Plan?

Supporting Compliance and Governance

- Facilitates ethics review procedures
- Aligns with funder requirements
- Supports GDPR and data governance obligations
- Strengthens institutional accountability

A well-structured plan simplifies reporting and audit processes.

Strengthening Scientific Credibility

- Demonstrates transparency in research design
- Enhances trust among collaborators and stakeholders
- Reduces reputational risk
- Signals ethical maturity to journals and funding bodies

Ethical planning is part of research excellence.

Promoting Responsible Innovation

- Encourages stakeholder awareness
- Integrates societal considerations into research strategy
- Enables adaptive response to emerging risks
- Fosters a culture of responsible decision-making

An Ethical Research Plan is not static. It is a living document that evolves with the project.

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What Is an Ethical Research Plan?

A concise document that:

Identifies ethical and societal risks

Defines mitigation strategies

Clarifies responsibilities

Integrates data governance

Establishes monitoring mechanism

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Structure of the Mini Ethical Research Plan

- **Project description**
- **Ethical risk identification**
- **Stakeholder mapping**
- **Risk mitigation mechanisms**
- **Data management integration**
- **Monitoring and update strategy**

Define the Research Context
- What problem does the project address?
- Why is this problem socially, scientifically, or technologically relevant?
- Who defines the problem and how is it framed?

Clarify Research Design
- What methodological approach is used (experimental, computational, qualitative, mixed)?
- What limitations are inherent in the chosen methods?

Define the Data Dimension
- What categories of data will be generated?
- Are personal or sensitive data involved?
- Who controls access to the data?

Identify the Application Pathway
- Who are the intended users of the results?
- In what contexts might the results be implemented?
- Is there potential for dual-use or misuse?

Broader Ethical Framing Questions
- Who might benefit from this research?
- Who might be disadvantaged?
- Are there groups not represented in your research design?
- How might results affect policy, regulation, or professional practice?

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Analyse risks across four dimensions:

Risks to Participants
- Physical
- Psychological
- Privacy-related

Societal Risks
- Discrimination
- Inequality reinforcement
- Public mistrust

Environmental Risks
- Resource use
- Ecological impact

Misuse or Dual-Use Risks
- Weaponisation
- Commercial misuse
- Manipulative applications

1. Encourage classification by:
Likelihood (low/medium/high)
Impact (low/medium/high)

2. Focus mitigation on high-impact risks.

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Structure of the Mini Ethical Research Plan

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- **Ethical risk identification**
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Identify:

- **Direct stakeholders**

Participants, users, collaborators

- **Indirect stakeholders**

Institutions, regulators, communities

- **Potentially vulnerable groups**

Who could be disproportionately affected?

- **Guiding question:**

Who is not currently visible in your research design?

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Core Principle

Each identified risk must correspond to:

Risk → Defined mitigation measure → Responsible person → Monitoring mechanism → Review timeline

Procedural Safeguards
- Structured informed consent procedures
- Clear withdrawal mechanisms for participants
- Ethical review board approval
- Regular compliance checks
- Documentation of decisions and protocol changes

Data Protection Measures
- Data minimisation (collect only necessary data)
- Anonymisation or pseudonymisation
- Encryption and secure storage
- Access control and authentication systems
- Defined data retention and deletion policies

Governance and Oversight
- Internal review milestones
- Clear assignment of responsibilities within the team
- Escalation procedures for ethical concerns

Transparency and Communication
- Honest reporting of limitations
- Disclosure of conflicts of interest
- Responsible communication of results to media and stakeholders
- Transparency reduces reputational and societal risks.

Technical and Methodological Controls
- Sensitivity analysis
- Reproducibility checks
- Peer review within the research team

Organisational Safeguards
- Clear collaboration contracts
- Defined intellectual property arrangements
- Conflict resolution procedures

Adaptive Mechanisms
- Trigger-based reassessment (e.g., change of methods, new data type)
- Stakeholder feedback integration
- Revision documentation

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Structure of the Mini Ethical Research Plan

- **Project description**
- **Ethical risk identification**
- **Stakeholder mapping**
- **Risk mitigation mechanisms**
- **Data management integration**
- **Monitoring and update strategy**

Every data-related decision, from collection to deletion, carries ethical implications and must be justified within the overall research integrity framework.

Data type

Storage location

Access control

FAIR compliance

Retention period

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Structure of the Mini Ethical Research Plan

- **Project description**
- **Ethical risk identification**
- **Stakeholder mapping**
- **Risk mitigation mechanisms**
- **Data management integration**
- **Monitoring and update strategy**

Define Review Timeline

The plan should specify:

- Scheduled periodic reviews (e.g., every 6–12 months)
- Review aligned with project milestones
- Review prior to major deliverables or publications
- Review before expanding data collection

Regular review prevents outdated safeguards.

Identify Trigger Events

The plan should be revisited when:

- New data types are introduced
- Sensitive or personal data are added
- Methodological design changes
- External collaborators join the project
- Results move toward commercialisation
- Ethical concerns are raised internally or externally
- Policy or regulatory frameworks change

Establish Documentation Procedure

Include:

- Written record of each review
- Log of identified new risks
- Description of mitigation updates
- Version control for the Ethical Research Plan
- Secure archiving of revisions

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Module IV.

Responsible Authorship and Publication Ethics

Why Authorship Matters

Academic and Career Implications
- Publications are a primary metric in hiring, promotion, and funding decisions
- First and corresponding authorship carry significant weight
- Authorship affects visibility, citation impact, and professional recognition

Accountability and Responsibility
- Authors are collectively responsible for the integrity of the work
- Each author should be able to identify their contribution
- Authors share responsibility for addressing errors, corrections, or retractions
- Misconduct by one author can affect all co-authors

Legal and Ethical Responsibility
- Authorship implies accountability for data accuracy and ethical compliance
- In cases of misconduct, authors may face institutional or legal consequences

Trust in Science and Public Confidence
- Transparent authorship practices strengthen credibility
- Unethical practices (gift or ghost authorship) undermine trust
- Clear contribution statements enhance research transparency
- Responsible authorship supports research integrity culture

Team Dynamics and Power Structures
- Authorship reflects collaboration and intellectual contribution
- Power asymmetries (e.g., supervisor–doctoral candidate) may influence decisions
- Early agreement on authorship reduces conflict

Long-Term Scientific Integrity
- Accurate attribution preserves the scholarly record
- Responsible authorship fosters a culture of fairness

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What Constitutes Authorship?

Widely accepted international standards (e.g., ICMJE-style principles, adapted generically) define authorship as a combination of **substantial intellectual contribution and accountability**.

Authorship requires meaningful contribution to **all** of the following dimensions:

1. Conceptualisation or Study Design
- Formulating the research question
- Developing hypotheses
- Designing methodology or experimental framework

2. Data Acquisition, Analysis, or Interpretation
- Conducting experiments or collecting data
- Performing statistical or qualitative analysis
- Interpreting findings in a scientifically meaningful way

3. Drafting or Critical Revision of the Manuscript
- Writing substantial sections of the manuscript
- Providing intellectually significant revisions
- Improving argumentation, structure, or scientific clarity

4. Final Approval of the Version to Be Published
- Reviewing the complete manuscript
- Agreeing with its content and conclusions
- Confirming readiness for submission

5. Accountability for the Work
- Taking responsibility for accuracy and integrity
- Being prepared to respond to questions about the work
- Cooperating in case of corrections or investigations

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What Constitutes Authorship?

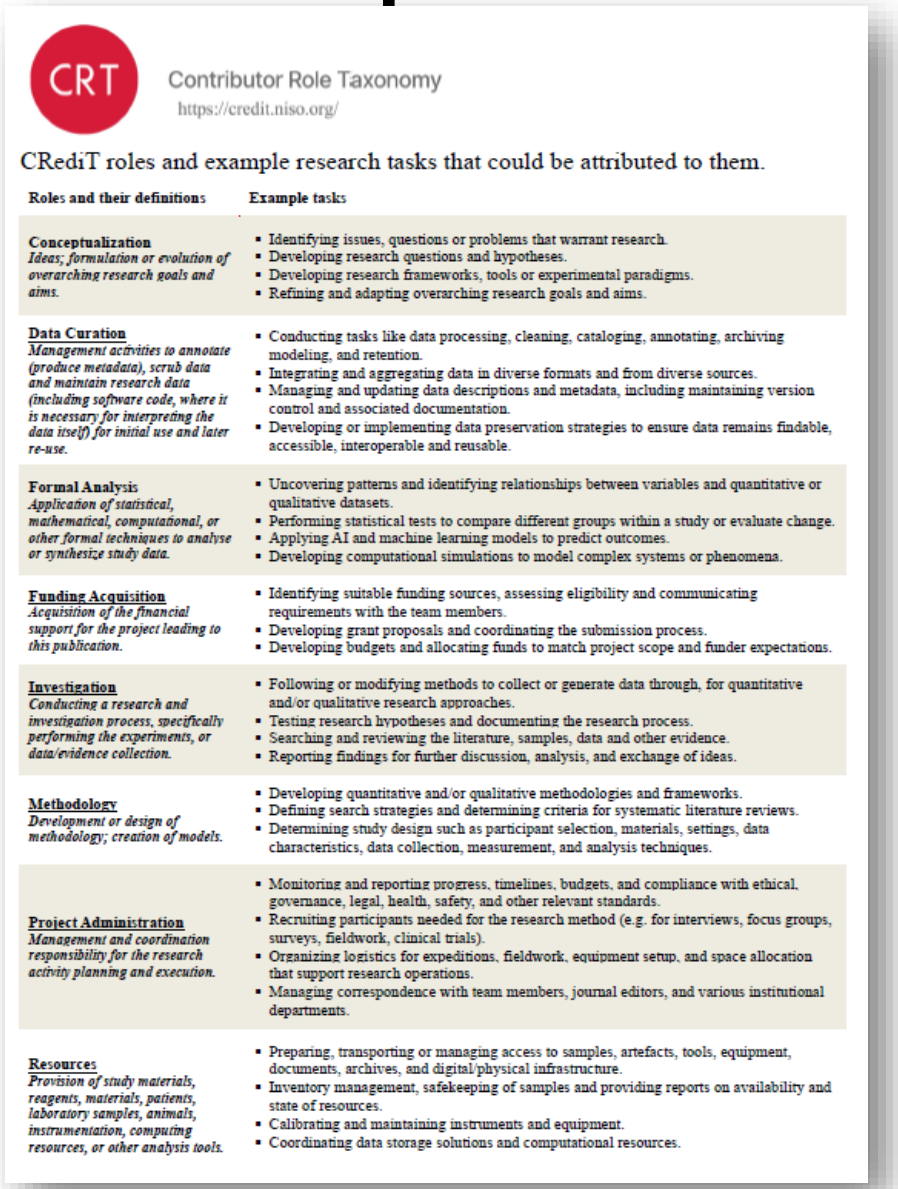
ICMJE – Defining the Role of Authors and Contributors
(International Committee of Medical Journal Editors)
https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html

COPE – Committee on Publication Ethics
https://publicationethics.org/authorship

CRediT Taxonomy (Contributor Roles Taxonomy)
https://credit.niso.org/

European Code of Conduct for Research Integrity
(ALLEA – All European Academies)
https://allea.org/code-of-conduct/

ORI – Office of Research Integrity (U.S.)
https://ori.hhs.gov/education/products/niu_authorship/index.htm



CRT Contributor Role Taxonomy
https://credit.niso.org/

CRediT roles and example research tasks that could be attributed to them.

Roles and their definitions	Example tasks
Conceptualization *Ideas; formulation or evolution of overarching research goals and aims.*	▪ Identifying issues, questions or problems that warrant research. ▪ Developing research questions and hypotheses. ▪ Developing research frameworks, tools or experimental paradigms. ▪ Refining and adapting overarching research goals and aims.
Data Curation *Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.*	▪ Conducting tasks like data processing, cleaning, cataloging, annotating, archiving modeling, and retention. ▪ Integrating and aggregating data in diverse formats and from diverse sources. ▪ Managing and updating data descriptions and metadata, including maintaining version control and associated documentation. ▪ Developing or implementing data preservation strategies to ensure data remains findable, accessible, interoperable and reusable.
Formal Analysis *Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesize study data.*	▪ Uncovering patterns and identifying relationships between variables and quantitative or qualitative datasets. ▪ Performing statistical tests to compare different groups within a study or evaluate change. ▪ Applying AI and machine learning models to predict outcomes. ▪ Developing computational simulations to model complex systems or phenomena.
Funding Acquisition *Acquisition of the financial support for the project leading to this publication.*	▪ Identifying suitable funding sources, assessing eligibility and communicating requirements with the team members. ▪ Developing grant proposals and coordinating the submission process. ▪ Developing budgets and allocating funds to match project scope and funder expectations.
Investigation *Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.*	▪ Following or modifying methods to collect or generate data through, for quantitative and/or qualitative research approaches. ▪ Testing research hypotheses and documenting the research process. ▪ Searching and reviewing the literature, samples, data and other evidence. ▪ Reporting findings for further discussion, analysis, and exchange of ideas.
Methodology *Development or design of methodology; creation of models.*	▪ Developing quantitative and/or qualitative methodologies and frameworks. ▪ Defining search strategies and determining criteria for systematic literature reviews. ▪ Determining study design such as participant selection, materials, settings, data characteristics, data collection, measurement, and analysis techniques.
Project Administration *Management and coordination responsibility for the research activity planning and execution.*	▪ Monitoring and reporting progress, timelines, budgets, and compliance with ethical, governance, legal, health, safety, and other relevant standards. ▪ Recruiting participants needed for the research method (e.g. for interviews, focus groups, surveys, fieldwork, clinical trials). ▪ Organizing logistics for expeditions, fieldwork, equipment setup, and space allocation that support research operations. ▪ Managing correspondence with team members, journal editors, and various institutional departments.
Resources *Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.*	▪ Preparing, transporting or managing access to samples, artefacts, tools, equipment, documents, archives, and digital/physical infrastructure. ▪ Inventory management, safekeeping of samples and providing reports on availability and state of resources. ▪ Calibrating and maintaining instruments and equipment. ▪ Coordinating data storage solutions and computational resources.

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Authorship vs. Acknowledgement

Authorship implies:

- Substantial intellectual contribution (conceptualisation, design, analysis, interpretation)
- Active participation in manuscript development (drafting or critical revision)
- Approval of the final version
- Full accountability for the integrity of the work

Authors share responsibility for:

- Accuracy of data
- Ethical compliance
- Responding to post-publication questions
- Corrections or retractions if necessary

Authorship reflects intellectual ownership and shared responsibility.

Acknowledgement recognises valuable support that does not meet authorship criteria.

- Technical assistance
- Data collection without intellectual interpretation
- Laboratory or equipment support
- Administrative coordination
- Language editing
- General supervision
- Funding acquisition alone

Acknowledged contributors are not responsible for the scientific integrity of the full work.

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Common Authorship Problems

Gift (Guest) Authorship
Including an individual as author despite insufficient intellectual contribution. Common motivations:
- Hierarchical pressure
- Strategic positioning
- Reciprocity expectations
- Institutional culture

Ghost Authorship
Omitting someone who made a substantial intellectual contribution. Often involves:
- Junior researchers
- Professional writers
- Industry contributors

Honorary Authorship
Adding senior figures (e.g., department heads) based on position rather than contribution. Often justified as:
- “Tradition”
- “Leadership recognition”
- “Political necessity”

Exclusion of Junior Researchers
Doctoral candidates or postdocs may be:
- Removed from author list
- Placed in inappropriate order
- Pressured to accept unfair attribution

Disputes Over Author Order
Common tensions:
- First authorship vs shared first authorship
- Last authorship significance
- Alphabetical vs contribution-based order
- Corresponding author disputes

Late-Stage Addition of Authors
Authors added:
- After manuscript drafting
- Shortly before submission
- Without clear contribution

Inadequate Documentation of Contributions
- No written agreement
- No contribution statement
- Informal decisions

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Power Asymmetry in Academia

Academic environments are inherently hierarchical. Differences in status, experience, funding control, and institutional authority can significantly influence decision-making, including authorship attribution.

Structural Sources of Power Imbalance
- Supervisors control access to funding, data, and infrastructure
- Senior researchers influence publication strategy and journal selection
- Recommendation letters affect career progression
- Contract duration may depend on project outcomes
- Institutional hierarchies discourage open disagreement

Particular Vulnerability of Doctoral Candidates
- Strong dependency on supervisors for career advancement
- Limited negotiation power in authorship decisions
- Pressure to publish within fixed contract timelines
- Fear of reputational consequences
- Limited knowledge of formal authorship standards

Common Risk Situations
- Supervisor demanding first authorship without substantial contribution
- Junior researcher excluded after project completion
- Pressure to accept unfair author order
- Silence in response to questionable publication practices
- Reluctance to report concerns due to fear of retaliation

Psychological and Cultural Factors
- “This is how it has always been done”
- Loyalty expectations
- Cultural differences in hierarchy perception
- Fear of being labelled “difficult”

Consequences of Unmanaged Power Asymmetry
- Erosion of trust within research teams
- Loss of motivation and morale
- Increased likelihood of formal disputes
- Damage to institutional reputation
- Long-term negative impact on research culture

Mitigation Strategies
- Early written authorship agreements
- Transparent contribution documentation
- Regular team discussions on publication planning
- Use of structured contribution taxonomies
- Access to ombudsperson or ethics advisory mechanisms
- Institutional training in research integrity

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Author Order and Contribution Transparency

Relative contribution:
- First author (main intellectual driver)
- Last author (senior oversight)

Equal contribution
- Alphabetical order

Multiple “first” authors
Multiple “last” authors
Negotiated order

Encourage:
- Written authorship agreements
- Contribution statements (f.ex. CRediT taxonomy model)

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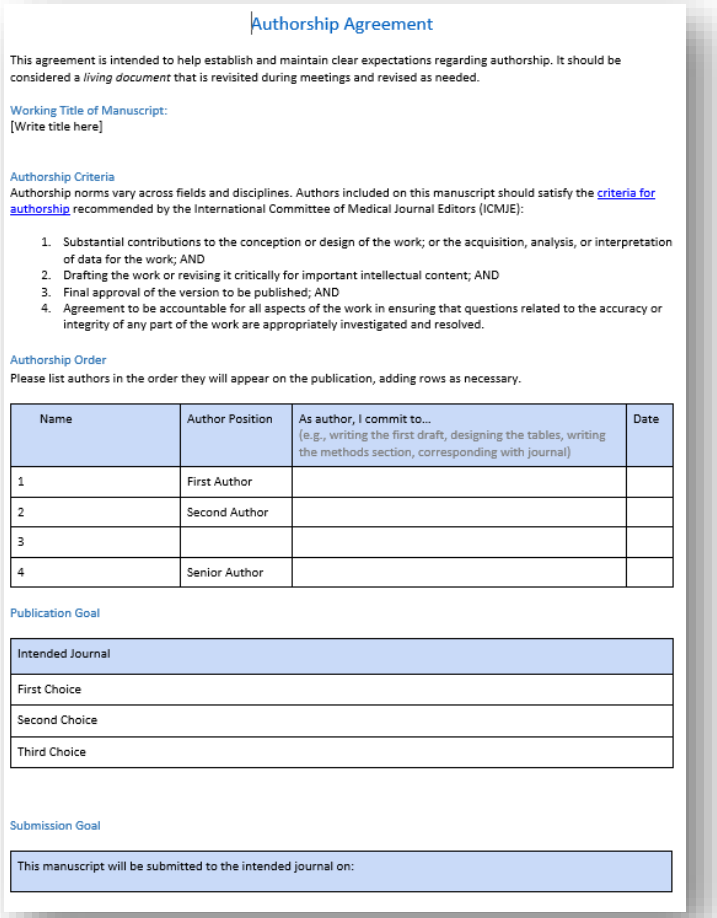
Authorship Agreement

https://ukrio.org/wp-content/uploads/Authorship-Template-Strategy-Agreement.docx



Authorship Agreement

This agreement is intended to help establish and maintain clear expectations regarding authorship. It should be considered a *living document* that is revisited during meetings and revised as needed.

Working Title of Manuscript:
[Write title here]

Authorship Criteria
Authorship norms vary across fields and disciplines. Authors included on this manuscript should satisfy the criteria for authorship recommended by the International Committee of Medical Journal Editors (ICMJE):

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Authorship Order
Please list authors in the order they will appear on the publication, adding rows as necessary.

Name	Author Position	As author, I commit to... (e.g., writing the first draft, designing the tables, writing the methods section, corresponding with journal)	Date
1	First Author		
2	Second Author		
3			
4	Senior Author		

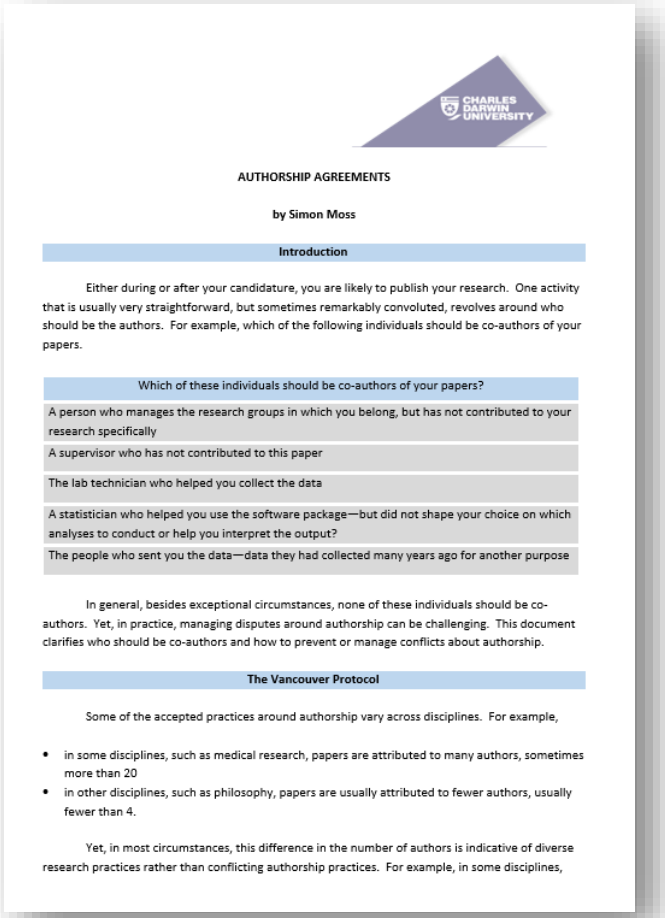
Publication Goal

Intended Journal
First Choice
Second Choice
Third Choice

Submission Goal

This manuscript will be submitted to the intended journal on:

https://www.icre.pitt.edu/documents/Authorship_Agreement.docx



AUTHORSHIP AGREEMENTS

by Simon Moss

Introduction

Either during or after your candidature, you are likely to publish your research. One activity that is usually very straightforward, but sometimes remarkably convoluted, revolves around who should be the authors. For example, which of the following individuals should be co-authors of your papers.

Which of these individuals should be co-authors of your papers?
A person who manages the research groups in which you belong, but has not contributed to your research specifically
A supervisor who has not contributed to this paper
The lab technician who helped you collect the data
A statistician who helped you use the software package—but did not shape your choice on which analyses to conduct or help you interpret the output?
The people who sent you the data—data they had collected many years ago for another purpose

In general, besides exceptional circumstances, none of these individuals should be co-authors. Yet, in practice, managing disputes around authorship can be challenging. This document clarifies who should be co-authors and how to prevent or manage conflicts about authorship.

The Vancouver Protocol

Some of the accepted practices around authorship vary across disciplines. For example,

- in some disciplines, such as medical research, papers are attributed to many authors, sometimes more than 20
- in other disciplines, such as philosophy, papers are usually attributed to fewer authors, usually fewer than 4.

Yet, in most circumstances, this difference in the number of authors is indicative of diverse research practices rather than conflicting authorship practices. For example, in some disciplines,

https://www.cdu.edu.au/files/2020-07/Authorship%20agreements.docx

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Workshop: Authorship Negotiation

Room 1: – "The Dominant Supervisor"
Scenario
A doctoral candidate:

- Designed the research concept
- Conducted experiments
- Analysed data
- Wrote the first full manuscript draft

The supervisor:

- Secured funding
- Provided strategic guidance
- Revised the manuscript extensively
- Insists on being first author because "without funding there would be no paper."

A postdoc:

- Provided methodological advice
- Contributed to interpretation discussions

Complicating factors:

- The doctoral candidate's contract ends in 3 months
- The supervisor controls future recommendations

Task

1. Decide the authorship list and order.
2. Justify your decision based on recognised authorship principles.
3. Draft a short authorship agreement.
4. Propose how this conflict should be addressed ethically.

Workshop: Authorship Negotiation

Room 2 – "The Industrial Partner"
Scenario
A collaborative project between university and industry.

Doctoral candidate:
- Designed study
- Collected and analysed all data
- Drafted manuscript

Industrial partner researcher:
- Provided access to proprietary dataset
- Helped interpret practical implications
- Requests co-authorship

Lab technician:
- Performed routine measurements

The company requests that:
- Their senior manager be included as co-author
- Certain results be softened before submission

Complicating factors:
- Funding agreement includes confidentiality clause
- The company threatens to block future collaboration

Task
1. Determine legitimate authorship.
2. Decide whether the senior manager qualifies as author.
3. Address the request to "soften" results.
4. Draft a transparent authorship and disclosure statement.

Workshop: Authorship Negotiation

Room 3 – "The Late Contributor"

Scenario

A multi-year project involving:

Doctoral candidate:

- Developed core idea
- Collected data over 2 years
- Left the institution before manuscript submission

New postdoc:

- Re-analysed data
- Rewrote large parts of manuscript
- Improved statistical robustness

Supervisor:

- Coordinated revisions
- Communicated with journal

The doctoral candidate is currently unreachable for final approval.

Complicating factors:

- Journal requires all authors to approve submission
- The postdoc claims intellectual ownership of new analysis

Task

1. Determine authorship list and order.
2. Address the issue of author approval.
3. Decide whether new analysis changes intellectual leadership.
4. Draft a fair authorship agreement and responsibility statement.

Summary

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Learn more

- ALLEA – European Code of Conduct for Research Integrity (2023) https://allea.org/code-of-conduct/
- European Commission, *Guidelines on FAIR Data Management in Horizon Europe* https://horizoneuropencpportal.eu/repository/5b7fcc0e-73da-4e76-8b46-3682a36fa59b
- European Open Science Cloud https://open-science-cloud.ec.europa.eu/
- European Commission, *Ethics and data protection*, https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ethics-and-data-protection_he_en.pdf
- Wilkinson, M., Dumontier, M., Aalbersberg, I. *et al. The FAIR Guiding Principles for scientific data management and stewardship*. *Sci Data* **3**, 160018 (2016). https://doi.org/10.1038/sdata.2016.18
- Jensen EA, Reed MS, Daybell J et al. *Responsible research impact: Ethics for making a difference* [version 1; peer review: 1 approved, 2 approved with reservations]. Open Res Europe 2025, 5:92 (https://doi.org/10.12688/openreseurope.19649.1)
- Jack Stilgoe, Richard Owen, Phil Macnaghten, *Developing a framework for responsible innovation*, Research Policy, Volume 42, Issue 9, 2013, Pages 1568-1580, ISSN 0048-7333, https://doi.org/10.1016/j.respol.2013.05.008
- European Commission – Ethics Self-Assessment https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/how-to-complete-your-ethics-self-assessment_en.pdf
- UNESCO Recommendation on Open Science https://unesdoc.unesco.org/ark:/48223/pf0000379949

AI Use Disclosure
Some graphical elements included in this presentation were generated with the support of artificial intelligence tools. AI-based tools were also used for language refinement and proofreading to improve clarity of the English text. All substantive content, structure, and academic input were developed and reviewed by the author.

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