

## Research Data Alliance (RDA) Interest Group

# Infrastructure for Non-Traditional Research Outputs & Processes (Infra4NTROs)

## Statement of Work - Updated Version

### Introduction

Non-Traditional Research Outputs (often referred to as NTROs) are those which do not take the form of published books, book chapters, journal articles or conference publications<sup>^1</sup> -- examples include film, photography, sound recordings, performances, gallery exhibitions, and other composite multimedia outputs. Often the primary means of communication in the creative, visual and performing arts, NTROs are created across a wide range of other disciplines as well (including in the social sciences, humanities, natural sciences, and engineering), which bring their own languages for talking about and describing these materials, and their own cultures of storing, sharing, and reusing them.

The Infrastructure for Non-Traditional Research Outputs & Processes (Infra4NTROs) Interest Group addresses research outputs created through creative practice and multimodal research methodologies - specifically focusing on describing *what is created, how it is created, and who is creating it* - where current information standards and structures provide inadequate representation.

**Primary Focus Areas:** Drawing from established NTRo frameworks, we concentrate on:

- Creative works and performances, including art objects themselves (whether or not installed, exhibited, staged, or gathered), installations, live performances, creative practice portfolios, and interdisciplinary research outputs that combine methodologies across traditional disciplinary boundaries
- Recorded/rendered works requiring complex technical and contextual metadata, recognizing that all outputs in our scope benefit from rich contextual metadata that captures the conditions, processes, and communities involved in their creation
- Curated exhibitions and events with distributed authorship and/or temporal elements
- Research portfolios combining practice with narrative documentation
- Web-based presentations (often the only feasible means of capturing complex creative works)
- Interdisciplinary and transdisciplinary research outputs that don't fit within single-discipline infrastructure models, including practice research that bridges creative, social science, and technical approaches

**What Makes Our Approach Unique:** We think beyond current perceptions of what 'counts' as research output, aiming for nuanced representation of research process, practice, outcomes and objects that often unfold over time. This includes addressing:

- Complex contributorship and attribution (beyond traditional authorship models)
- Context, provenance, rights and licensing for creative and collaborative works
- Portfolio concepts that integrate process documentation with outcomes
- Time-based and processual elements essential for understanding and reuse

**Contextual Boundaries:** While we acknowledge that all knowledge can be considered 'data' (following Leonelli's relational definition), our focus remains within a research outputs context. We explicitly coordinate with rather than duplicate the efforts of:

- Collections as Data IG (for collection-level approaches)
- Software preservation groups (for software as source code)
- Complex Objects groups (for technical object management)
- Domain-specific IGs (for traditional research data)

This focused approach enables meaningful progress while acknowledging the broader ecosystem of related work and the myriad challenges still to be addressed along multiple axes.

We focus on research outputs that inherently include processual elements, where the documentation and representation of research processes are themselves, valuable scholarly contributions requiring infrastructure support. Examples include:

- Practice research portfolios where process documentation is integral to the research contribution
- Collaborative project documentation that captures decision-making and iteration processes
- Time-based creative works where temporal development is essential for understanding and citation
- Participatory research narratives where community/public engagement processes are core to the research value

This aligns with established practice research methodologies and does not extend beyond the research output focus appropriate for RDA.

## Interdisciplinary Research Infrastructure Gaps:

Our work explicitly addresses the infrastructure challenges faced by interdisciplinary research, which despite high-level policy support remains extremely difficult to fund, assess, and communicate effectively. Current academic structures (funding schemes, assessment frameworks, conferences, repositories) are organized around discrete disciplines, creating systematic barriers for research that operates across boundaries.

This includes:

- Visual art practice combined with information science or social science methodologies
- Community-engaged research that bridges academic and non-academic knowledge systems
- Design research that integrates technical, social, and aesthetic considerations
- Practice research that combines creative methodologies with systematic inquiry

## Process Documentation as Research Quality Indicator:

As research integrity concerns grow with the proliferation of low-quality information and generative AI, the documentation of research processes and provenance becomes increasingly crucial for establishing trustworthiness and enabling appropriate reuse. This applies across all research types but is particularly challenging for NTROs where traditional documentation models are inadequate.

Our focus on process documentation serves both methodological transparency and research quality assurance functions, making these outputs more valuable for secondary users and more robust against questions of authenticity or appropriateness for reuse contexts

# Value Proposition

These NTRO-centric communities bring different perspectives, approaches, practices, and ways of thinking about research data management and scholarly communication; indeed, in many cases, they have even developed local infrastructure to support these practices - which creates sustainability challenges as these initiatives are often not integrated with global infrastructure. However, many of these communities and disciplines tend to fly below the radar of the RDA community due to the fact that the concerned fields have historically been quite peripheral to many of the conversations that now make up what we could call a 'mainstream' of RDM and scholarly communication. This is to the detriment of the RDA community, though, as these communities and disciplines have the potential to bring new insights about how these forms of knowledge can be deployed to diversify the RDA community, to inform the development of a more inclusive infrastructure landscape, and even to inform innovations that cater to more 'traditional' data types and modes of scholarly communication.

It also means that researchers who have funding (with associated expectations to share and re-use data) will benefit from an infrastructure that enables (rather than constrains) their data sharing. Right now there is still much to be done to enable the infrastructure to reflect their ways of doing things.

## User scenario(s) or use case(s) the IG wishes to address

- 1. Current scholarly landscape retrofits NTROs, without fully understanding and embedding them**  
The knowledge created by disciplines (including performing and visual arts) has long had to 'fit in' to an existing scholarly publishing landscape which assumes a single entity, end product 'output' such as the journal article, conference proceeding, book chapter or book as the preferred 'currency'. While research data has become more visible as a valued output it still very much reflects that text-based landscape. Any form of knowledge beyond this, including the process or practice that takes place during the research, is assumed as an 'add on' and often treated based on its format (e.g. audio, sound) rather than valuing its form and function. There have been initiatives to better represent this work, primarily focussed on making it 'fit in' rather than truly recognising a way to represent it.
- 2. There is a need to work with NTRO centric communities to better describe and document NTROs, their associated processes, narratives and context; and relationships between their diverse components.**  
This will underpin their support and inclusion across the standards-based open infrastructure landscape. These NTROs could include compound objects such as portfolios, collections, artefacts, or events, zines as well as literature based outputs and processes. This also needs to include a nuance about where structure is needed and flexibility can be enabled - to enable disciplinary nuances.
- 3. What 'structure' looks like for NTROs? Moving from an assumption of primary, text based, single file, object (with perhaps a connected single data set) to a compound object view that reflects multiple objects, associated narrative and context and which reflects the relevant relationships. Ensure practice and infrastructure adequately reflects NTROs to enable them to benefit.**  
Over the past 3.5 years a UK team, led by proposed co-chair Jenny Evans, has developed and documented a standard ([PR Voices schema](#)) to better reflect these forms of knowledge, created by 'making and doing' (or practice). This work has been carried out in close collaboration with creative and performing arts researchers and open and data standards domain experts including National Information Standards Organisation (NISO)<sup>[3]</sup>, DataCite<sup>[4]</sup>, ORCID<sup>[5]</sup> and PIDfest<sup>[6]</sup>, repositories<sup>[7]</sup>, and research data management.<sup>[8]</sup> What is unique about this approach is that it uses the 'practice research<sup>[9]</sup>' lens, with the key concepts of portfolio and research narrative<sup>[10]</sup> to recognise this knowledge and to develop a structured information standard while allowing flexibility in the public

discovery user interface. This approach provides an opportunity to provide a baseline from which to build and a mechanism for engagement with the range of communities and initiative with an interest in this work.

4. **Explore and document what is currently implemented in the underpinning taxonomies and ontologies, in relation to open standards and their surrounding practice, and discuss the boundaries and blockers. Identify what could be improved with existing or emerging standards, and where further development may be appropriate. There is a need to enrich metadata for NTROs that capture specific facets of direct value for the communities who produce them.**

Examples of existing use cases:

- a. **Practice Research Voices project** (PR Voices) workstream on metadata, persistent identifiers and a taxonomy invited representatives from the DataCite, the Contributor Roles (CRediT) taxonomy and the Research Activity Identifier (RAiD) communities to consider how these might support practice research outputs. This included looking at where DataCite or RAiD might be more relevant for the portfolio concept and what changes could be made to adjust and/or update DataCite. See: [2022-05-26-PRvoices-workshop-DataCite-thoughts](#)
- b. The PR Voices project developed a framework which has subsequently been documented as a draft schema - the [PR Voices schema](#) to identify how it could be implemented in repositories. It's approach is based on DataCite using principles of re-using existing schema approaches and identifying gaps. Key elements include: highlighting relationships, foregrounding context, adding context and provenance fields, enhancing organisational unit and rights fields, and removing the implicit hierarchies of contributorship.
- c. The [KULTUR metadata schema](#) and [Kaptur technical analysis report](#) were part of a number of projects carried in the UK between 2007 and 2011 ([documented here](#)) to better describe arts research.
- d. The [Practice Research Advisory Group UK \(PRAG-UK\) reports](#) documented recommendations for improved sharing of practice research outputs.
- e. **Australia's FAIR and Open Non-Traditional Research Outputs framework** documents how to increase the proportion of NTROs by Australian university researchers that are appropriately described, archived, preserved and made accessible.

# Objectives

1. Commitment to establishing a dedicated Interest Group centred on non-traditional Research Outputs (NTROs) supported by participants, across 7 countries, and with ongoing work to engage beyond those referenced below.
2. Using the Practice Research Voices schema as a baseline, gather feedback from a variety of domain and discipline communities (within and beyond RDA) to continue to iterate an agreed standard.
3. Document case studies and map this schema to existing (e.g. DataCite, ORCID, COAR) and emerging (e.g. RAIID) standards to illustrate a more inclusive ecosystem.
4. Create a collaborative action plan, part of this draft case statement, followed by an IG proposal submission (this document) culminating in community activities and the first IG meeting at P25.
5. Strengthen international partnerships to facilitate ongoing dialogue and collaboration on managing outputs, data and processes across discipline communities including the creative, visual, and performing arts.

This work will contribute to the core infrastructure needed to enable real culture change<sup>11</sup> across not only the RDA community but a wider range of intersecting communities. It will inform work across a range of communities.

**The Infrastructure for Non-Traditional Research Outputs and Processes Interest Group** will address the following issues and gaps:

1. The need to describe and document multi-component compound objects, which could include portfolios, collections, artefacts, or events as well as text-based outputs, including one-off and ongoing (including time based) outputs and processes.
2. Lack of nuanced representation of the above, and their associated narratives and context; and relationships between their diverse components, in the data, metadata, controlled vocabulary, and open standards landscapes.
3. Insufficient range and types of contributors including creators, collaborations and participants, especially actors from outside the academy and those who don't engage with mechanisms such as ORCID
4. The need to enable both better harnessing of the existing open standards (including metadata and persistent identifiers) landscape to make NTROs 'FAIR' and to identify what requires additional development.
5. Lack of recognition and value (and as such incentives) for these communities and their materials/outputs vis-a-vis the continued use of 'other' and 'non-' categories, which position them as outliers or exceptional cases (when in fact they are common to many disciplines/domains/approaches) and deserve parity with more traditional means of scholarly communication.
6. Understanding what citation, referencing, and attribution practices within these communities look like and ways to infrastructurally support them.
7. The need to develop robust provenance frameworks that document creation processes, ownership histories, and transformations of NTROs while honouring both FAIR and CARE principles (Collective benefit, Authority to control, Responsibility, Ethics), enabling appropriate attribution, rights management, and culturally respectful reuse across diverse contexts.
8. The need to review the FAIR Principles for co-created, and/or participatory research in collaboration with these communities.
9. The need to bring in discipline community representatives to actively participate in this work.
10. Insufficient knowledge among domain experts about the sharing and reuse practices among these communities, thus hampering the development of support for making their resources more 'open'

11. The need to acknowledge, recognise and build skills within both domain and discipline communities, and to work with them to ensure they are represented in and inform related initiatives,
12. The challenges (and opportunities) to harness (and influence) aligned work including
  - a. open research initiatives to improve the transparency and, where relevant, reproducibility of research and knowledge production.
  - b. international infrastructure development (e.g., EOSC, FAIRsFAIR, Barcelona Declaration).
  - c. research assessment reform (e.g., the Coalition for the Advancement of Research Assessment - CoARA).

# Engagement with RDA community

This work is led by invested co-chairs and a core group who have built momentum (and the necessary support) across RDA to ensure success.

- Established networks from 3.5 years of PR Voices project development
- Participants from RDA P22, P23, and P24 BoF sessions representing UK, Netherlands, France, Finland, Costa Rica
- Technical collaborators from DataCite, ORCID, NISO, and PIDfest engagements
- Active discipline connections through DARIAH, creative research networks, repository communities, Royal Musical Association, Media, Communication and Cultural Studies Association (MeCCSA), and Canadian collaborative projects
- Current funding for the NL-based Community Archive & Repository for Multimodal and Artistic Research (CARMA) project
- Upcoming UK funding through Enact pathfinder projects to directly engage discipline colleagues in RDA activities

## Targeted Community Segments:

- Researchers working with practice-based and creative methodologies
- Repository, research data and research managers supporting non-traditional outputs
- Infrastructure developers seeking to extend current systems for creative research
- Policy makers working on research data and research assessment reform
- Museum and cultural heritage information professionals (including archivists, curators and records managers)
- Professional staff at Research Performing Organisations (RPOs) who provide direct support to researchers working with NTROs, including data stewards and scholarly communication librarians

## Evidence of Community Demand:

- Growing policy emphasis on non-traditional research outputs (UK Research Excellence Framework, European research assessment reform)
- Proliferation of bespoke tools and local solutions indicating unmet infrastructure needs, creating ongoing sustainability challenges for these community-developed solutions
- Active participation in our RDA BoF sessions with consistent growth across plenaries
- Established collaborative relationships with major infrastructure providers
- Increasing interest in novel avenues for sharing and reusing NTROs amongst researchers and professional staff at RPOs

The case statement will also enable us to go back to

- a. aligned communities including CODATA, DataCite, ORCID, RAiD, NISO, CRediT, FAIR Sharing (Europe) and Open Repositories
- b. local communities including ReCNTR (Leiden University) and practice research discipline communities in the UK.

It will also provide a foundation for engagement with broader research data management (e.g. International Digital Curation Conference), digital preservation communities (Digital Preservation Coalition), responsible research evaluation (Coalition for Advancing Research Assessment - CoARA), reproducibility (UK Reproducibility Network). It will also enable outreach strategies to engage with disciplines that don't

traditionally participate in RDA including discipline communities such as the Royal Musical Association, the Media, Communication and Cultural Studies Association and the Council for Higher Education in Art and Design in the UK and DARIAH-EU with a view to getting representatives from these communities to become more actively involved in RDA.

We are aware current expressions of interest are from individuals based on existing connections (and are currently in conversation with connections in South Africa and Botswana). We are actively seeking contributions and a co-chair from LMICs. Often national initiatives have a particular focus / priorities - what we are looking for is those not represented - and we are working our way through suggested contacts as we identify them.

## Enhanced Collaboration Strategy

### Planned RDA Collaborations:

- Complex Citation Implementation IG: Joint work on citing processual and collaborative outputs, building on shared challenges with non-traditional citation requirements
- IGSN: Learning from physical sample identification approaches for creative artifacts and installations, particularly relevant for museum and gallery-based research
- Collections as Data IG: Shared approaches to representing non-traditional data formats and collection-based research outputs, with particular collaboration on portfolio-based research where individual components gain meaning through their collection context
- FAIR Digital Objects IG: Extension of FDO principles to creative and practice-based outputs
- Evaluation of Research IG: Advising on development of monitoring and evaluation strategies that are responsive to/inclusive of NTROs
- Repository Platforms for Research Data IG: Technical collaboration on platform capabilities for NTROs

### External Partnership Strategy:

- DARIAH-EU (arts and humanities research infrastructure)
- CODATA (global data science perspectives on non-traditional formats)
- LIBER (European library network supporting creative research)
- National research agencies (UK Research England, NWO, others)
- UKRI Digital Research Infrastructure (DRI) and Enact programme, particularly relevant as UKRI DRI are hosting RDA in London in 2026
- EOSC (European Open Science Cloud) infrastructure initiatives
- National, regional, and domain-specific repositories/archives (CESSDA, QDR, Dataverse, others)
- Professional associations (museum informatics, practice research networks)
- Africa PID Alliance: Collaboration on aggregate persistent identifiers for narrative research outputs, building on their DOCiD initiative for documenting creative and cultural contributions

## RDA Mission Alignment:

This Interest Group directly supports RDA's mission by:

- Extending RDA's global reach to previously underserved research communities
- Developing infrastructure solutions that enable data/output/process sharing across new domains
- Fostering international collaboration on shared sociotechnical challenges
- Contributing to the evolution of global research infrastructure

# UN Sustainable Development Goals (SDGs)

"Open science and open scholarship are the enabling environment through which all Sustainable Development Goals (SDGs) may be accomplished."<sup>12</sup> In contributing to developing more inclusive global research infrastructure, this Interest Group will enable recognition of a wider range of knowledge across the research landscape to inform data management, sharing and re-use to address the SDGs.

## Concrete SDG Contributions:

- **SDG 4 (Quality Education):** Making diverse forms of knowledge more discoverable and reusable for learning across disciplines
- **SDG 9 (Infrastructure/Innovation):** Developing inclusive digital research infrastructure that serves previously marginalized research communities
- **SDG 17 (Partnerships):** Connecting fragmented research communities globally and enabling new forms of international collaboration

**Example:** Standardized approaches to documenting community-engaged research enable more effective knowledge transfer between academic researchers and community partners working on sustainability challenges, directly supporting multiple SDG objectives

## Detailed 12-Month Implementation Plan

### Phase 1: Foundation and Use-Case Development (October-December 2025) - PRIORITY

- Monthly virtual meetings (3rd Wednesday, 14:00 UTC)
- Quarterly in-person meetings at RDA events
- **Deliverables:**
  - 5-7 documented use-cases from different disciplines and geographic regions, with explicit attention to interdisciplinary examples
  - Preliminary infrastructure gap analysis report
  - Community skills and needs assessment
- **External Engagement:** Liaison meetings with Collections as Data IG, Complex Citations IG, FAIR Digital Objects IG

### Phases 2-3: Adaptive Implementation (January-June 2026)

- Meeting frequency and working group formation will be determined based on Phase 1 outcomes and community capacity
- Focus areas will be refined based on the most pressing gaps identified in Phase 1
- **Minimum deliverables:** ◦ Expanded infrastructure gap analysis report, incorporating: ▪ PR Voices schema mapping against at least 2-3 key standards (DataCite, ORCID) ▪ Technical requirements specification for priority infrastructure extensions
  - **Stretch deliverables** (if capacity allows):
    - Working group formation for high-priority areas
    - Identify partner repositories for pilot implementations

## Phase 4: Strategic Planning (July-September 2026) - PRIORITY

• **Deliverables:** ○ Community engagement impact assessment ○ Strategic plan for Years 2-3, including realistic WG transition proposals based on actual community engagement and capacity ○ Roadmap for sustainable development beyond initial IG phase

### **Ongoing Activities:**

• Monthly "NTRO Spotlight" case studies • Quarterly cross-IG collaboration reviews • Regular community surveys tracking growth and satisfaction • Continuous documentation via shared repository

## Outcomes

1. Creation of a space to enable these discussions to take place
2. Development and delivery of a case statement that makes clear the rationale, goals and objectives for this group
3. Clear agreement and visibility of terminology.
4. Documentation of a roadmap to FAIR NTROs and processes
5. Move away from NTROs being perceived as OTHER
6. Provide global space for intersecting communities with a shared focus on NTROs
7. Discussion and development of the PR Voices schema and plans to map against existing standards
8. Creation of case studies to document this work
9. Benefit aligned communities interested in portfolios, capturing process as it happens.

## Mechanisms

- Direct emails with interested individuals and the creation of an email list (April 2025)
- Prior to approval by RDA schedule meetings in June (Doodle Poll shared) and September 2025 with an agenda and allocated actions.
- Bluesky and LinkedIn accounts set up
- The case statement is a key engagement tool
- Project work plan agreed with the group at an early meeting

## Potential Group Members

First name	Last name	Email	Job Title	Role
Jenny	Evans	J.Evans2@westminster.ac.uk	Research Environment and Scholarly Communications Lead, University of Westminster	Co-Chair
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Robin	Burgess	robin.burgess@ardc.edu.au	Engagements Manager, The ARDC	Co-chair
Adam	Vials Moore	adam.vialsmoore@jisc.ac.uk	Product Specialist: Persistent Identifiers	Co-chair
Miranda L.	Barnes	mlb79@cam.ac.uk	Research Associate, Materialising Open Research Practices in the Humanities and Social Sciences (MORPHSS Project)	Member
Liise	Lehtsalu	liise.lehtsalu@rda-foundation.org	Senior Science Officer, RDA Europe	Member
Francis P.	Crawley	fpc@gcpalliance.org	Co-chair, EOSC-Future/RDA AIDV-WG	Member
Daniel	Manrique-Castano	daniel.manrique-castano@alliancecan.ca	Data curator officer	Member
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Wolfgang	Kaltenbrunner	w.kaltenbrunner@cwts.leidenuniv.nl	Senior Researcher, CWTS	Member
Céline	Richard	c.j.e.richard@fsw.leidenuniv.nl	Research data steward and policy officer, Leiden University	Member
Louise	Bezuidenhout	l.m.bezuidenhout@cwts.leidenuniv.nl	Senior researcher, CWTS	Member
Marcel	LaFlamme	marcel@arl.org	Director of research policy and scholarship, Association of Research Libraries	Member

- [1]: <https://dataportal.arc.gov.au/era/nationalreport/2018/pages/section1/non-traditional-research-outputs-ntros/>
- [2]: We ourselves have reservations about continuing to use the term 'Non-Traditional Research Outputs (NTROs),' including using it in the name of this proposed IG; however, we recognize that a lot of important work has been done under this banner over the last several years and that it is a notion that is increasingly legible to the RDA community, pointing to specific communities whose needs remain unmet, and specific areas of the infrastructure and policy landscape that are ripe for continued innovation and evolution to better meet these community needs. Discussions at P24 led to the addition of processes to the proposed title.
- [3]: <https://doi.org/10.34737/w1739>
- [4]: <https://doi.org/10.23636/j6wh-ev50>
- [5]: <https://doi.org/10.34737/vzq86>
- [6]: <https://doi.org/10.48813/0cfb-6662> and <https://doi.org/10.48813/z9nd-v923>
- [7]: <https://zenodo.org/records/8091554>
- [8]: <https://zenodo.org/records/6652239> and <https://www.dpconline.org/blog/capturing-and-preserving-practice-based-research>
- [9]: Practice research "An umbrella term that describes all manners of research where practice is the significant method of research conveyed in a research output. This includes numerous discipline-specific formulations of practice research, which have distinct and unique balances of practice, research narrative and complementary methods within their projects." from Bulley, James and Şahin, Özden. *Practice Research - Report 1: What is practice research?* P1. London: PRAG-UK, 2021. <https://doi.org/10.23636/1347>.
- [10]: "In a practice research output, a research narrative may be conjoined with, or embodied in, practice. A research narrative articulates the research enquiry that emerges in practice." Bulley, James and Şahin, Özden. *Practice Research - Report 1: What is practice research?* P1. London: PRAG-UK, 2021. <https://doi.org/10.23636/1347>.
- [11]: <https://www.cos.io/blog/strategy-for-culture-change>
- [12]: <https://www.un.org/en/library/OS>