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Developing a US National PID Strategy

Todd A. Carpenter

ORFG PID Strategy Working Group Co-Chair

Executive Director, National Information Standards Organization (NISO)

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MINISTRY OF EDUCATION, YOUTH AND SPORTS

NTK Národní technická knihovna National Library of Technology

NCRIS National Research Infrastructure for Australia An Australian Government Initiative

ARDC Australian Research Data Commons

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Open Research Funders Group

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ORFG PID Strategy Working Group

In June of 2022, the Open Research Funders Group (ORFG) collaboration with members of the Higher Education Leadership Initiative for Open Scholarship (HELIOS Open) launched a public effort to improve research output tracking.

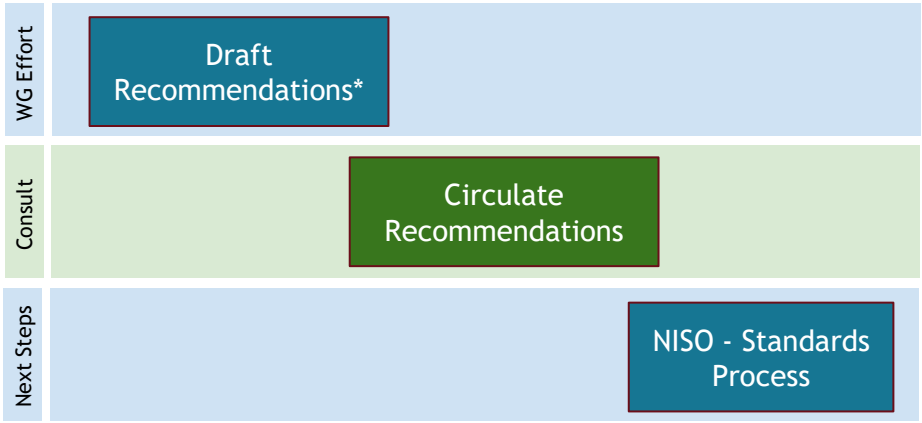
In June 2023, ORFG convened four workstreams, including a workstream focused on a US national strategy on PIDs and metadata (concept note)

Utilizing framework created by the RDA National PID Strategies Interest Group

Process: Community Calls, Working Group Meetings, Stakeholder Consultations, and Writing Sessions.

Context Setting

Purpose: Define desirable characteristics for PID systems and develop recommendations for a formal US National PID Strategy



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PIDs in the Research Ecosystem

- **PIDs in the International Landscape**
  - The US's engagement in international research activities is extensive and impactful, necessitating consistent use and interoperability of PIDs in global collaborations
  - International efforts, such as the UNESCO Open Science Toolkit, highlight the global recognition of the need for robust PID infrastructure to connect research
- **PIDs in the US Research Ecosystem**
  - PIDs provide a foundation for citation, linking, cataloging, and supporting research discovery through associated metadata
  - The US research community has been instrumental in developing and adopting PID infrastructure, enhancing global research efficiency and resilience
  - Current US Policy and Guidance has created a perfect time to develop a US National PID Strategy

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Proposed Components of a National PID Strategy

Embracing PIDs Across Stakeholders: Encouraging widespread adoption of PIDs by all stakeholders in the research ecosystem, including funding organizations, research institutions, publishers, and researchers

Desirable Characteristics of PIDs: Highlighting the need for PIDs to be open, persistent, resolvable, and interoperable to ensure their effectiveness and reliability

Strategic Recommendations: Outlining specific strategies for enhancing PID infrastructure, such as supporting core PID services, transitioning beyond legacy systems, and promoting centralized PID management

Investment and Support: Recommending areas for additional investment

Measuring Success: Suggesting an approach to assess the impact of a National PID strategy through adoption rates, interoperability, and the advancement of research integrity and efficiency

Benefits of Embracing PIDs

Funder: Facilitates tracking of research outputs and impact, enhancing accountability and informed decision-making

Researcher: Provides a unique scholarly identity, ensuring proper attribution and recognition of work, aiding in career development and collaboration opportunities

Publisher: Ensures long-term discoverability and accessibility of publications, supporting citation tracking and impact analysis

Research Institution: Enhances research management and administration, improves data preservation, and facilitates compliance with funding mandates

PID Infrastructure Provider: Promotes system efficiency and interoperability, contributing to a robust and sustainable research ecosystem

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Benefits of Embracing PIDs

Key Benefits

- **Reduction of Administrative Burden**: Streamlines processes like grant applications, manuscript submissions, and reporting
- **Cost Savings and Scalability**: Provides significant efficiency gains, reducing manual data management efforts
- **Improved Research Assessment**: Enables effective tracking of research outputs and outcomes, supporting evidence-based evaluation of research impact
- **Research Integrity**: Enhances transparency and accountability in research, fostering trust and credibility within the scholarly community

Desirable Characteristics of PIDs

https://upstream.force11.org/desirable-characteristics-for-persistent-identifiers/

Stability and Persistence: consistent over time, ensuring long-term access to digital objects despite changes in location or ownership

Global Uniqueness: uniquely identify an object, eliminate ambiguity & ensure precise referencing

Resolvability: easily resolvable to the object they reference, through a URL, enabling access to the object and its metadata

Open Availability of Metadata: PID metadata should be openly accessible, promoting transparency and reusability of digital objects

Community Governance: PID systems should involve community input and consensus

Documentation: documentation of PID policies, practices, & technical specifications

Monitoring and Reporting: monitor functionality of PIDs and to report any issues, ensuring their continued reliability

Ease of Assignment and Metadata Curation: Assigning PIDs and curating associated metadata should be straightforward and user-friendly

Interoperability: facilitate seamless exchange and integration of data

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Recommendations for PID Infrastructure

- **Unified Approach Across Stakeholders**: Encourage a coherent and consistent adoption of PIDs among stakeholders, including govt agencies, academic institutions, and publishers
- **Compliance with Public Access Policies:** Align PID strategies with public access policies at both the govt & institutions to ensure transparency and accessibility of research outputs
- **Evaluation of PID Infrastructures**: Develop a consistent method for evaluating desirable characteristics of PID infrastructure to meet community needs & adhere to best practices
- **Adoption of Standardized PIDs**: Promote the use of widely recognized and standardized PIDs for different research entities to enhance interoperability and data exchange
- **Support for Core PID Services:** Encourage participation in & support for foundational PID services, recognizing the roles of users, champions, supporters, and adopters in the PID ecosystem

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Recommendations for PID Infrastructure

- **Transition from Legacy Systems**: Move beyond legacy and non-interoperable identifier systems to adopt PIDs that ensure long-term accessibility & discoverability of research
- **Centralized PID Management**: Advocate for centralized approaches to managing PIDs to streamline processes, improve efficiency, and foster collaboration
- **Investment in Emerging Needs**: Identify and invest in emerging areas requiring PID support
- **Measure and Evaluate Success**: Establish metrics and methods for assessing the impact of PID strategies on research management, collaboration, and open scholarship goals

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Supporting Core PID Infrastructure

Value in contributions from all stakeholders in enhancing the PID infrastructure's robustness, interoperability, and utility.

Users	Direct beneficiaries who utilize PIDs in their research and scholarly activities	Provide feedback, participate in user testing, and advocate for PID usage in their research outputs
Champions	Advocates who promote the adoption and integration of PIDs within their networks and communities	Include PIDs in organizational policies, educate peers about the benefits, and advocate for PID best practices
Supporters	Contributors who provide financial or resource support to maintain and develop PID services	Join PID initiatives, contribute to PID organizations, and prioritize PID integration in systems and tools
Adopters	Entities that integrate PIDs into their systems, workflows, and policies, furthering the infrastructure's reach and effectiveness	Implement PID assignment in publishing and data management processes, and require PIDs in grant applications and reports

Moving Away from Legacy Identifiers

- **Limitations of Legacy Systems:** Lack granularity, interoperability, and long-term persistence, which can hinder the efficient management and discovery of research outputs. While Modern PID Systems offer more detailed, interoperable, and persistent identifiers, facilitating better data management and access
- **Need for Transition:** To improve the sustainability and accessibility of research outputs
- **Challenges in Transitioning:** Such as the need for technological updates, changes in workflows, and ensuring stakeholder buy-in
- **Strategies for Effective Transition:** Such as phased implementation, stakeholder engagement, training, and support for affected users
- **Call to Action:** Encourage stakeholders to actively participate in the transition towards modern PID systems, highlighting the collective benefits for the research ecosystem

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Supporting Centralized PID Infrastructure

- **Importance of Centralization:** Centralized PID systems enhance interoperability, reliability, and efficiency within the research ecosystem, facilitating easier access and management of research outputs
- **Benefits for US Research:** A unified approach to PID management addresses the diverse needs of stakeholders across federal, state, and institutional levels, ensuring consistency and collaboration
- **Key Drivers:** The heterogeneity of the US research landscape, the need for cross-agency collaboration, the facilitation of public-private partnerships, and the promotion of national and international research cooperation
- **Facilitating Compliance and Transparency:** Centralized PIDs simplify compliance with regulatory and funding mandates, enhancing research integrity and accountability

Additional Areas of Investment

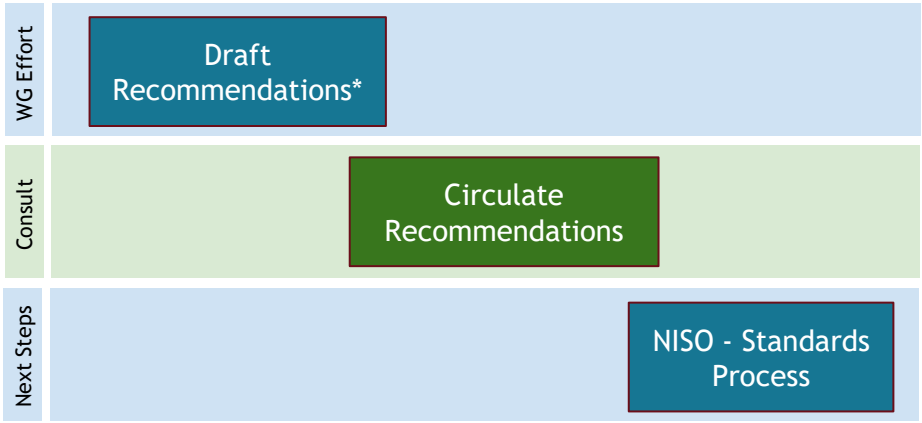
- **Infrastructure and Technology:** The need for investment in PID infrastructure and technology to ensure scalability, reliability, and adaptability to new objects and use cases
- **Community Engagement and Governance:** Importance of investing in community engagement initiatives & governance models to ensure PIDs are responsive to community
- **Education and Outreach:** Investment in education and outreach programs to raise awareness about the benefits of PIDs and encourage their widespread adoption
- **Interoperability Standards:** Development and adoption of centralized PIDs as interoperability standards to ensure PID systems work together seamlessly
- **International:** Align PID strategies across borders, promoting global interoperability
- **Innovation and Research:** Explore new applications, improve existing systems, and address emerging challenges in research management and dissemination

Measuring Success

- **Case Studies and Impact Stories:** Specific instances where PIDs have significantly contributed to research management, collaboration, or discovery
- **Benchmarking and Comparative Analysis:** Conduct benchmarking against initial goals and comparative analysis with pre-PID implementation metrics to quantitatively measure the impact of PIDs:
  - Adoption Rates & Interoperability Improvements
  - Policy Alignment
  - Efficiency Gains
  - Data Accessibility and Discoverability
  - Research Integrity

Next Steps

Purpose: Define desirable characteristics for PID systems and develop recommendations for a formal US National PID Strategy



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Resources

Developing a US National PID Strategy:
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Desirable Characteristics of Persistent Identifiers:
https://doi.org/10.54900/c3hdq-0ev76

A Roadmap for Developing a US National PID Strategy:
https://scholarlykitchen.sspnet.org/2024/03/21/a-roadmap-for-developing-a-us-national-pid-strategy/

Community discussion at PID Forum: https://pidforum.org/t/developing-a-us-national-pid-strategy-report