

Interoperability, openness, and impact

Recommendations and roadmap for
an Irish national PID strategy



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Executive Summary

This report sets out recommendations and a roadmap for a national persistent identifier (PID) strategy for Ireland. PIDs are a cornerstone of a modern, digital research system. They uniquely identify entities involved in research, such as grant awards, researchers, instruments, datasets, or publications, and enable structured information about those entities to be shared.

The project to deliver this roadmap was initiated in response to Ireland's *National Action Plan for Open Research 2022-2030*¹ which outlines objectives and actions for the next chapter in Ireland's transition to open research. Implementation of the *National Action Plan for Open Research* is being overseen by Ireland's National Open Research Forum (NORF) and delivered under *Impact 2030: Ireland's Research and Innovation Strategy*.² Included in the *National Action Plan for Open Research* are actions to: invest in persistent identifier infrastructure; support the Irish Open Researcher and Contributor Identifier (ORCID) consortium; and develop a roadmap, in line with international best practice, to boost the adoption of PIDs.

This report is led by NORF and the NORF PID Task Force, together with scholarly communications consultants, MoreBrains Cooperative.

The vision of this roadmap is of a more efficient, transparent, and open research ecosystem in Ireland, one in which information flows more easily between systems and organisations, bureaucratic burdens are reduced, and research transparency and integrity are enhanced. PIDs underpin this vision because they act as bridges between systems, provide a rich information resource to reduce time-consuming and error-prone manual data entry, and can be used to automate processes and to demonstrate connections between entities, such as a grant and a dataset. These

benefits apply across disciplines and throughout the research lifecycle, but must be delivered fairly and equitably; the full value of the network can only be delivered when all Irish institutions participate.

Our research showed that, while there is much to be done in terms of PID adoption, the community prioritises the benefits that this will bring, especially in terms of improved reporting, better interoperability, and reduced data errors. The PIDs listed in the *National Action Plan for Open Research* – Digital Object Identifiers (DOIs), ORCID, Research Activity Identifiers (RAIDs), and Research Organization Registry (ROR) identifiers – are themselves open. Access to many of their core services is free at the point of use, and the metadata they hold is licensed for unrestricted re-use. These features are vital if they are to be used as the foundation for the tools, systems, and services that are provided to Irish researchers, administrators, and funders.

Lack of user buy-in and inconsistent implementation are seen as the biggest barriers to the delivery of the benefits of PIDs. Therefore, this report recommends the creation of a national service to support PID adoption and integration in Ireland, with a clear focus on community engagement (to improve awareness and buy-in) and technical support (to enable cost-effective and consistent PID implementations).

In addition to the recommendations and roadmap, we also conducted a cost-benefit analysis of PID adoption in Ireland.³ This shows that the cost of investing in a central support service, and of implementing PIDs in 25 publicly-funded, research-performing Irish institutions, would be more than outweighed by the time and cost savings generated by metadata re-use. The estimated efficiency gain is equivalent to more than 4,000 days of staff time savings each year, or

1 <https://norf.ie/national-action-plan/>

2 <https://www.gov.ie/en/publication/27c78-impact-2030-irelands-new-research-and-innovation-strategy/>

3 Efficiency and insight: a cost-benefit analysis for a central service to support persistent identifier implementation in Ireland (zenodo.org)

nearly €1.8M in staff salary and overhead. Taking into account the costs of implementation at every institution, as well as the cost of setting up and running a central support service, the net benefit would be €1.6M over five years.

The current report opens with a description of the practical context of Irish institutions, their priorities, their unique challenges and opportunities, and the current state of access to PIDs. Based on our findings, we offer 15 detailed recommendations, under four broad headings:

- 1. Governance and leadership.** Political ownership, community buy-in, and accountability are vital to the delivery of comprehensive PID adoption. The four recommendations under this heading are intended to provide clarity on the 'ask' and expectations of each stakeholder group, as well as establishing mechanisms to assess progress and course correct as needed.
- 2. Community.** Placing inclusion at the heart of the roadmap is essential if all institutional types, disciplines, and sectors in Ireland are to benefit from PIDs, and if the PID network as a whole is to be robust and effective. Our three recommendations under this heading focus on the community networks and fora needed to inform the roadmap delivery, and the information resources that will help to engage and support everyone involved in discovering and implementing PIDs.
- 3. Culture change.** Adapting processes and engaging with new systems and partnerships implies behavioural changes, engagement with the rationale for change, and trust in those delivering it. This sort of change is not easy, and we therefore strongly advocate including a culture change component in the roadmap. Our four recommendations here focus on assembling the expertise and experience to effect this change, and to embed advocates for PIDs within Irish communities of practice.
- 4. Technical implementation.** To deliver the full benefits of PIDs, they must be consistently and effectively implemented in digital research systems. Our three recommendations here are designed to increase access to technical expertise, streamline implementations, and ensure that PIDs are integrated in the systems that will bring tangible benefits to every research stakeholder.

The report concludes by setting out detailed actions that are required to deliver the vision of a PID-optimised research ecosystem for Ireland, spanning the period until 2030. They begin with the formation of a representative community group to oversee and guide implementation of the PID roadmap, and end with a formal evaluation of the programme of work, with the goal of determining which activities, if any, need to continue or be launched in subsequent years.

List of Acronyms

CBA	Cost-Benefit Analysis
CRIS	Current Research Information System
DFHERIS	Department of Further and Higher Education, Research, Innovation and Science
DOI	Digital Object Identifier
HEI	Higher Education Institution
HR	Human Resources
HRB	Health Research Board
ICHEC	Irish Centre for High-End Computing
IRel	Irish Research e-Library
IRMAA	Irish Research Managers and Administrators Association
IUA	Irish Universities Association
NORF	National Open Research Forum (Ireland)
OECD	Organisation for Economic Co-operation and Development
ORCID	Open Researcher and Contributor Identifier
OSTI	Office of Scientific and Technical Information (US Department of Energy)
PEST	Political, Economic, Social, and Technological
PID	Persistent Identifier
R&I	Research & Innovation
RAiD	Research Activity Identifier
RDA	Research Data Alliance
RMS	Research Management System
ROR	Research Organization Registry
RFO	Research Funding Organisation
RPO	Research Performing Organisation
SWOT	Research Performing Organisation
THEA	Technological Higher Education Association

1 Background

In September 2023, and in order to support the implementation of Ireland's *National Action Plan for Open Research 2022-2030*,⁴ Ireland's National Open Research Forum (NORF) engaged MoreBrains to undertake a review and analysis of the Persistent Identifier (PID) landscape in Ireland with the aim of developing:

1. An Irish PID Cost-Benefit Analysis (CBA) and
2. A National PID Strategy and Roadmap

This second output, the strategy and roadmap, sets out our assessment of the current Irish PID landscape, together with our vision for what could be achieved through increasing and accelerating the adoption of PIDs and PID-enabled workflows, and our recommendations for how to progress towards this future.

PIDs are increasingly being recognised as a key infrastructure that supports an international, digitalised, open research system. They provide long-lasting, resolvable links to things (e.g. journal articles), places (e.g. individual universities), and people (e.g. specific researchers) which are enriched with metadata and links to other PIDs. Through the network effect, these links will reduce administrative burdens, while growing opportunities for strategic insights and data-driven decision-making.

MoreBrains have worked closely with NORF colleagues and the PID Task Force to deliver a set of pragmatic recommendations to support increased understanding and uptake of PIDs that can be folded into future iterations of Ireland's National Action Plan for Open Research. We began by developing an engagement plan which consisted of a suite of consultation activities (that is, survey, focus groups, workshop, and outreach materials) and mapped the stakeholders and communities that would need to be

involved in each step of the process. As each stage of the consultation process has been delivered, we have conducted a validation step by submitting preliminary findings to the Task Force, and then folded the resulting insights into the succeeding consultation phase.

Throughout, the CBA has run alongside the consultation activities, with each strand of the project feeding and shaping the other. Consequently, while the CBA report has been published separately (<https://zenodo.org/records/11085316>), we include an abbreviated version below so that the interrelationship and its implications are clear.

4 Specifically, Action 4.4.2 "Develop a national roadmap for the adoption of a range of Persistent Identifiers according to international best practice, such as ORCID, DOIs, RAIDs and ROR identifiers. Implement this roadmap to consolidate national coordination and accelerate the uptake and integration of priority identifiers." <https://norf.ie/national-action-plan/>

2 Findings

2.1 Survey outline

From 11 November - 1 December 2023, we conducted a community survey of key stakeholder groups from across the Irish research ecosystem, including some overseas organisations that serve the community, in order to gauge their current understanding of and engagement with PID usage.

The survey questions were developed and set up (as a Google form) by the MoreBrains team, in consultation with NORF, and the survey was jointly deployed. It was promoted directly to 52 Irish research organisations, as well as on social media, at Ireland's National Open Research Festival (NORFest), and via the NORF newsletter. We also encouraged respondents to invite their colleagues to complete the survey.

More than one response per organisation was allowed, and a total of 68 responses were received from individuals at 45 organisations – 42 based in the Republic of Ireland, and three that serve the Irish research community. Respondents were asked to select the best descriptor(s) for their organisation from a dropdown list. They could select as many as they wished, and a majority of respondents (49) self-identified as working at higher education institutions (HEIs)/universities and/or research-performing organisations (RPOs). Funding organisations (18), research infrastructure (13), government/policy-making organisations (12), and libraries (11) were also well represented, with responses from a wide diversity of job functions. In addition, we received seven responses from publishers, one from a scientific society, and nine “others”, most of which also identified as one or more other organisation types.

Key findings are summarised below, and the full report is available online.

2.1.1 Persistent identifiers in the National Action Plan

The first questions asked about respondents' awareness of and satisfaction with PIDs, and the current/planned use of PIDs in their organisations, focusing on the identifiers included in the National Action Plan for Open Research: digital object identifiers (DOIs) for outputs and for grants; Open Researcher and Contributor Identifiers (ORCID) for researchers; Research Activity Identifiers (RAIDs) for projects; and Research Organization Registry (ROR) identifiers for organisations.

- **Awareness:** Respondents were most familiar with ORCID and DOI for outputs (both of which are already widely adopted), and least familiar with the newer PIDs: ROR IDs, DOI for grants, and RAID
- **Usage:** Current and planned use of these PIDs follows a similar pattern, with ORCID and DOI for outputs as the most widely used PIDs, and DOI for grants and RAID used the least. However, more than half of the respondents noted that their organisations are, or are planning to use ROR
- **Satisfaction:** Satisfaction levels are generally high with the more established PIDs, while a large number of respondents answered “don't know/not applicable” for the less well-known ones

2.1.2 PID opportunities and challenges

Respondents were then asked to rate several potential current or future benefits of, and barriers to, using PIDs for their organisation.

- **Benefits:** Three benefits were clear favourites overall: improved reporting; interoperability with external systems; and reduction in data errors. Saving costs on money was seen as the least important benefit although savings on time were

seen as much more valuable, somewhat counter-intuitively as time savings are how costs are reduced

- **Barriers:** Two main areas of concern emerged: the cost of implementation, and lack of user buy-in and understanding. Lack of leadership buy-in was also seen as a barrier, though slightly less so; privacy concerns and the lack of a clear value proposition were seen as the lowest barriers overall

2.1.3 PIDs in Irish research systems

The Irish research community is using a wide variety of research systems that PIDs could be integrated into – and in some cases already are, including repositories, bibliographic databases and aggregators, Current Research Information Systems or CRISs, research data management systems, grants management systems, and publishing platforms. Several of these were also mentioned in answer to a free text question asking “what one area or system would you most like to see PIDs used in and why?” The most popular answers were: tracking and reporting, CRISs, publishing systems, data archiving/repositories, and grant systems.

2.1.4 Responses by sector

We also analysed responses from those working in the key sectors represented in the survey; understanding – and addressing – the differences between sectors will be essential to the success of the national roadmap for PID adoption.

- **HEIs/RPOs:** Respondents from this sector are more likely to be familiar with the PIDs in the National Action Plan, and their organisations are more likely to be using or planning to use them. They also see the potential barriers to adoption as less serious than colleagues in several other sectors
- **Research funding organisations:** These organisations are slightly less familiar with ORCIDs, and somewhat more familiar with RORs and RAIDs, and they are significantly more likely to be planning to use DOIs for grants. Interestingly, they both see the potential benefits of PIDs as somewhat less valuable than other groups, and the barriers as somewhat less serious
- **Research infrastructure organisations:** Somewhat counterintuitively, this group is less familiar with most of the PIDs in the National Action Plan for Open Research, in particular DOIs for outputs, ORCIDs, and ROR IDs. They value the benefits of improved reporting, fewer errors, and time savings more highly than their colleagues in other sectors, but are less aligned with them on the value of cost savings. They view user buy-in and lack of a value proposition as significantly lower barriers to implementation, but cost of access, leadership buy-in, and (especially) privacy as higher barriers
- **Government departments/policymaking organisations:** This group of respondents are significantly less familiar with all PIDs in the National Action Plan than those from other sectors and, with the exception of RAIDs, significantly less likely to be using or planning to use PIDs. Other than improved reporting, all other potential benefits were less highly rated by these respondents. However, most of the barriers to PID implementation were viewed as lower or the same
- **Libraries:** Respondents from this group identified primarily as working at research libraries, and they are significantly more familiar with all the PIDs in the National Action Plan than any other sector we analysed. Their organisations are more likely to be using or planning to use DOIs for outputs and (by a significant margin) ROR IDs. They view the benefits of PIDs as more valuable or similar to other groups, and they also rate

some of the potential barriers more highly, in particular, the cost of implementation, lack of a value proposition, and cost of access

Based on our findings from the survey, we recommended that the roadmap should:

- **Identify groups and organisations that are underrepresented** or unrepresented in the survey, whose views should be incorporated
- **Plan and implement a series of community engagement events** (webinars, workshops, focus groups, etc), as well as follow-up interviews with survey respondent volunteers
- **Develop a suite of outreach materials**, with clear, consistent messaging for both the Irish research community overall and its individual components, organisational (eg, RPOs, funders) and functional (eg, librarians, IT staff),
- **Build on existing expertise in and support for PIDs** within the Irish research community in order to ensure widespread understanding of and buy-in for widespread adoption

2.2 Cost-Benefit Analysis

Concurrently with the survey work, we developed a cost-benefit analysis for PID adoption in Ireland. The analysis was designed to determine the total potential cost savings that might be realised if the 25 publicly funded higher education institutions in Ireland⁵ adopt five priority PIDs:

- DOIs for funding grants
- DOIs for outputs (eg publications, datasets, etc)

- ORCIDs for people
- RAIDs for projects
- ROR for research performing organisations

We went on to compare projected savings, as levels of PID adoption increase over time to the cost of setting up a central PID support service in Ireland whose purpose it would be to support and accelerate adoption. We used the same general method that we applied to previous cost-benefit analyses for the UK⁶, and Australia⁷. As documented in the report, *Efficiency and insight: A cost-benefit analysis for a central service to support persistent identifier implementation in Ireland*⁸, we found that total potential savings of PID adoption equate to more than 4,000 days of staff time savings each year, or nearly €1.8M in staff salary and overhead. Considering the costs of implementation at every institution and the cost of setting up and running a central support service, the net benefit would be €1.6M over five years.

2.3 The principle of cost savings through PID adoption

Widespread adoption of PIDs benefits both researchers and their organisations, including through: cost savings (time and money); support for Open Research and research integrity; improved understanding of the research landscape; better management of research data; evidence and analysis of research impact; competitive advantages for institutions through improved benchmarking and strategic insights; and more.

For our analysis we focus on a specific aspect of how PIDs save research and administrator staff time and, by extension, save institutional resources that can be

5 'List of publicly-funded higher education institutions (universities and colleges)'. Accessed: Jan. 26, 2024. [Online]. Available: <https://web.archive.org/web/20230803133604/https://www.gov.ie/en/publication/5088c-list-of-publicly-funded-higher-education-institutions/>

6 Brown, Josh, Jones, Phill, Meadows, Alice, Murphy, Fiona, and Clayton, Paul, 'UK PID Consortium: Cost-Benefit Analysis', Zenodo, Jun. 2021. doi: 10.5281/ZENODO.4772627.

7 Brown, Josh, Jones, Phill, Meadows, Alice, and Murphy, Fiona, 'Incentives to invest in identifiers: A cost-benefit analysis of persistent identifiers in Australian research systems', Zenodo, Sep. 2022. doi: 10.5281/ZENODO.7100578.

8 National Open Research Forum and MoreBrains Cooperative, 'Efficiency and insight: a cost-benefit analysis for a central service to support persistent identifier implementation in Ireland', 2024, doi: 10.7486/DRI.NZ80KT123.

redirected to meaningful research. That is, we quantify the administrative burden facing researchers and administrators as a result of repeatedly having to rekey information about research activities into various computer systems including research information systems (CRIS), repositories, performance tracking and HR systems, grant application platforms, funder progress reporting systems, research assessment processes and others.

Information about research activity is available in the metadata registries associated with PIDs. By adopting those PIDs and integrating them into those computer systems, information can flow from one system to another, without staff having to manually rekey it.

2.4 The scale of research activity

In order to assess the potential cost savings of PID adoption, we first assessed the total scale of research activity in Ireland, focusing on three main entities; awarded grants, research projects, and publication authorships.

Awarded grants were estimated based on data from the Digital Science Dimensions database⁹. Dimensions is an aggregated data source containing details of grants, publications, patents, institutions and researchers. For this analysis, we counted the number of grant awards made to any institution in Ireland from any funder. In the case of grants that were awarded to multiple institutions, because each institution must record and maintain their own research data, we counted each grant multiple times; once for each institution. To ensure that we captured as many grants as possible, we cross-checked and supplemented the Dimensions data with data obtained directly from most prolific funders.

Similarly, since each author has an individual reporting burden for every publication that they are a co-author on, we needed to count the number of authorships affiliated with Irish institutions. We used the OpenAlex database¹⁰ for this calculation.

Finally, to estimate the number of projects, as there is no accessible, overarching database of project activity, we assumed that project numbers scale with levels of research funding. Previous estimates of the number of active projects in the UK were scaled using published numbers for levels of research funding from OECD¹¹.

2.5 Calculating the opportunity cost

One significant frustration for researchers and administrators is the frequency with which the same information must be entered into multiple systems. In order to calculate the total amount of time wasted in unnecessary rekeying, we must therefore estimate the number of times information is reentered. To do that, we made use of data gathered from previous surveys that we did as part of our Australian cost-benefit analysis¹².

The total opportunity cost of all of these metadata re-entry events was then calculated by multiplying them by the amount of time they take¹³, based on pre-existing research, and also by the fully-costed salary and overhead, averaged across junior researcher, senior researcher, and a research administrator.

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- 9 D. W. Hook, S. J. Porter, and C. Herzog, 'Dimensions: Building Context for Search and Evaluation', *Front. Res. Metr. Anal.*, vol. 3, p. 23, Aug. 2018, doi: 10.3389/frma.2018.00023.
- 10 J. Priem, H. Piwowar, and R. Orr, 'OpenAlex: A fully-open index of scholarly works, authors, venues, institutions, and concepts', arXiv, Jun. 16, 2022. Accessed: Jan. 26, 2024. [Online]. Available: <http://arxiv.org/abs/2205.01833>
- 11 'Gross domestic spending on R&D'. OECD. doi: 10.1787/d8b068b4-en.
- 12 Brown, Josh, Jones, Phill, Meadows, Alice, and Murphy, Fiona, 'Incentives to invest in identifiers: A cost-benefit analysis of persistent identifiers in Australian research systems', Zenodo, Sep. 2022. doi: 10.5281/ZENODO.7100578.
- 13 See R. Johnson, H. Henderson, and H. Woodward, 'Institutional ORCID Implementation And Cost Benefit Analysis Report', Zenodo, Jul. 2015. doi: 10.5281/ZENODO.1445290 and M. H. Klausen, 'Even Minor Integrations Can Deliver Great Value – A Case Study', *Procedia Comput. Sci.*, vol. 106, pp. 153–159, 2017, doi: 10.1016/j.procs.2017.03.011.

2.6 Predicting realised benefits based on adoption levels over time

PIDs are network entities that are subject to network effects – because they facilitate information sharing, the more organisations that make use of PID integrations, the more valuable those integrations are to each organisation. To model the benefit as PID adoption increases, mapped levels of adoption over time to proportion of total potential benefit realised using a logistic function, which is a common method used to model such effects.

2.7 Financial projections for a central support service

The final step was to estimate the costs associated with a central support service to assist institutions in adopting PIDs through technical support, documentation, training materials, and community groups to share best practices. The cost of setting up and running the service was offset against the predicted cost savings as adoption rises over time to arrive at the final projections, thereby establishing that a programme to increase PID adoption in Ireland will not only be good for Irish research but save €1.6M over five years.

2.8 Consultations

Our community consultations continued with a series of focus groups, followed by a workshop – all held virtually. Many of the participants we invited to attend one or both of these events had already responded to the survey and expressed a willingness to engage further; others were identified by members of the Task Force. We sought to include people from a variety of functions, and from a range of organisation types and sizes.

2.8.1 Focus Groups

Based on the survey findings, we identified three key stakeholder groups to participate in the focus group meetings:

1. HEIs/RPOs (meeting held on March 19)
2. Research funding organisations (RFOs)/ government/policy-makers (March 21)
3. Repositories/research infrastructure organisations (March 26)

The meetings lasted approximately two hours and were attended by seven to nine participants. They each followed the same format:

- Welcome and introductions
- Overview of/background to the project
- Project update, including the survey (focusing on the responses from their community)
- Interactive exercises using Miro:
 - Using PIDs in your community: benefits and barriers
 - Ireland on the global stage: international collaborations
 - Messaging for your organisations and community
 - Exploring your community priorities

The focus groups generated some very helpful feedback and insights into their communities, which will be used throughout the project. This included, for example, a deeper dive into the benefits of and barriers to PID implementation in their communities, and suggestions about the most impactful messaging to use in community outreach materials.

Once the focus groups had been conducted, we combined the feedback from all three with the survey findings, in order to carry out a strategic SWOT (see below).

2.8.2 Workshop

The virtual workshop took place on April 30, and was attended by over 20 representatives from across the Irish research community, including institutions (libraries, repositories, university presses, etc), funding organisations, infrastructure providers/vendors, and more. Several members of the Task Force also participated.

The main purpose of the workshop was to validate and further refine the strategic SWOT, and the agenda comprised:

- Overview of the project to date
- Introduction to the strategic SWOT analysis
 - Q&A/discussion
- Validating the strategic SWOT
 - Exercise 1: Ranking the recommendations
- Break (10 minutes)
- Validating the strategic SWOT (continued)
 - Exercise 2: Prioritising the recommendations
 - Exercise 3: Agreeing next steps
- Wrap up

As with the focus groups, the workshop provided us with invaluable additional insights into how the national PID strategy can help to meet many of the Irish research community's needs. The findings from across all our community engagement and consultation activities have informed our final recommendations for the Irish PID strategy and roadmap, and will be essential to its successful implementation.

2.9 Strategic SWOT outcomes

As has been explained, insights on the PID landscape in Ireland were initially collected via the survey, then validated and refined through discussions within

the three focus group meetings (19-26 March). MoreBrains then used these findings to synthesise the first draft of the strategic SWOT analysis.¹⁴

Following a round of consultation with the Task Force in which additional interventions were specified, we then clustered the combined findings using the PEST framework, grouping potential interventions into four broad categories: Political, Economic, Social and Technological. We then worked with the workshop participants (30 April) to validate and prioritise these draft findings. As a final step, we asked the Task Force (13 May) to prioritise what interventions needed to take place, and which groups, organisations, and communities needed to be involved.

Clearly this process was very intricate, with many factors and variables being proposed, discussed, and refined over the course of the discussions. So, in order to illustrate what actually happened, we have provided a worked example of how initial concepts were grouped, regrouped and developed over time.

Once focus group participants had been provided with the initial survey findings, they were asked to consider key challenges and critical messages for their sectors with respect to an Irish national PID strategy. Among others, they identified: 'lack of clear ownership [of the PID agenda]' and 'unclear roles and responsibilities' as being issues of concern. MoreBrains then synthesised these as a single potential weakness in the SWOT analysis: 'lack of leadership and structures'.

For the strategic SWOT, this weakness was connected to the external threat 'fragmentation and incoherence [of the sector]', and the resulting strategy 'ensuring engagement plan is carried through' was formulated to minimise their respective potential dangers to the advancement of the strategy.

For the PEST stage of the analysis, this intervention was categorised as social.

¹⁴ A strategic SWOT is a two-step process. Starting with the initial exercise of identifying Strengths, Weaknesses, Opportunities and Threats, the results are then further examined with reference to each other. Strengths are implemented to take advantage of opportunities as well as mitigate threats, while weaknesses are engaged with so as to avoid missing opportunities or allowing threats to develop into problems.

Once the workshop participants had seen all of the synthesised potential interventions, they were taken through a series of exercises designed to elicit the highest priority recommendations and then the highest priority next steps. As can be seen from the results below, ‘ensuring the engagement plan is carried through’ underlies responses such as B6 and C1-4. Finally, the importance of engagement activities are illustrated even more clearly by the Task Force refining recommendations, especially D1-4, 7 and 8.

2.9.1 Top priorities

Workshop results

The workshop participants ranked potential activities as follows (in order of number of votes):

Question A: What is needed to successfully maximise integration points?

1. Repositories need to add additional PIDs to their metadata
2. Funders need to implement grant IDs
3. Institutions need to standardise how they implement the same system, e.g. Pure
4. Coordination between research financing and research producing organisations to put collective pressure on vendors to support (and understand!) integrations
5. Consistency in approach - national leadership
6. RMS/CRIS systems need to fully adopt integration of PIDs
7. Establish a clear governance structure for PID management, including roles, responsibilities, and accountability mechanisms
8. Consider the role of the CRIS as being upstream from repositories, as in the main source, therefore PID integration focus

Question B: What is needed to successfully leverage the CBA?

1. Align with Impact 2030
2. Argument that Ireland risks falling behind (relative to peer/competitor countries) if we don't act
3. Engage with the relevant Government officials/Departements
4. Focus on our competitiveness in applying for grant funding at an EU/global level
5. Show how it optimises the performance of the research investment for Ireland Inc
6. Publicise it as widely as possible

Question C: What is needed to position integration support as a quick win?

1. Clear examples from other countries
2. Show clearly the benefits of the integration in the R&I ecosystem
3. Demonstrating it keeps us competitive, domestically as well as internationally
4. Show how it provides better access to information and experts to government departments and agencies
5. Quick and accurate reporting capabilities
6. Align the benefits with stakeholder interests
7. Frame it as a streamlining exercise, i.e. reducing admin, and increasing efficiencies
8. Clear costs of integrations

Task Force responses to workshop findings

After the workshop, MoreBrains and the Task Force went through a validation and prioritisation process in a separate virtual session. Having reviewed the methodology, the Task Force sifted through the results, and developed a set of synthesised interventions, shown below in chronological order:

What needs to be done to deliver the community priorities that emerged from the workshops?

1. Continued communications and pressure
2. Consolidate messages
3. Communicate/engage with research managers and administrators in Ireland. Irish association is being planned
4. Collecting use cases
5. Buy-in/ownership of a defined group
6. Repositories and CRISs need to be updated to include PIDs
7. Comms/data/evidence to decision makers, policy makers
8. Keeping this on the agenda. Demonstrating needs and benefits over and over again
9. Decide on governance approach

Who should be involved in delivering community priorities?

1. IRel
2. NORF
3. DFHERIS
4. Researcher and the research community
5. International groups / Research Data Alliance
6. Research managers and administrators
7. Funders - Research Ireland, HRB etc.

3

Recommendations

The technical integration of PIDs is a precondition for the benefits outlined in this work. However, achieving that integration consistently, at scale, and in a timely manner is a collective action problem. It demands clear decision making, to release resources within institutions or across portfolios of activity. It requires a consistent, longer-term commitment to the maintenance and support of PID activities. It requires communities of informed, empowered practitioners. Finally, the researchers and administrators who add metadata to PIDs, attach them to their works and activities, and incorporate them into their workflows need to be confident and comfortable using PIDs.

For this reason, we have grouped our recommendations into four categories, three of which are, broadly speaking, social rather than technical. The first category, governance and leadership, is essential to unlock investment and to create a clear political leadership for the PID strategy. The second, community, is vital for the buy-in and acceptance that will underpin widespread adoption of PIDs. The third category, culture change, enables the translation of the intention and vision of the strategy into action. Finally, the fourth category, technical support, is essential for the implementation and usage of PIDs.

3.1 Governance and leadership

Leadership is essential for the PID strategy to remain a high priority, and to maintain focus across the sector. Ownership of this agenda by an organisation with the convening power to bring all the necessary stakeholders together, with representation at decision-maker and/or budget holder level wherever possible will be vital to release the resources needed. As an example, in Australia, CEOs of facilities and senior leaders from key national funders are part of the Strategic Advisory Group for the national PID strategy¹⁵.

The recommendations under this heading are therefore a practical, and political, prerequisite for subsequent recommendations.

Recommendation 1: Create a long term cross-stakeholder governing group tasked with strategy delivery

The project to date has been supported and advised by a Task Force convened by NORF. This group had a time-limited remit, and was focused on developing the strategy framework. A different mix of Irish academic research stakeholders (such as funders, institutional leaders, librarians, research professionals, infrastructure providers, publishers, and researchers themselves) will be needed to deliver the strategy. This team (which we are referring to as the Governing Group) should have a longer term remit to reflect the timescale needed for both technical implementation and culture change. It should also maintain open lines of communication with key sector initiatives, such as the Impact 2030 Implementation Group.

It should include representation for the existing national PID consortia, NORF for continuity and to ensure alignment with the National Action Plan for Open Research, plus future PID membership/participation groups, and be tasked with identifying clear 'owners' for activities specified below where these are not already known.

Recommendation 2: Involve senior sector leaders in the strategy delivery

Beyond participation in the cross-stakeholder governing group, individuals with decision-making authority and/or the capacity to release budgetary or other resources will need to be engaged with and supportive of the strategy for it to succeed. If they are being asked to underpin the strategy, they must be in a position to monitor progress, be consulted on critical choices or priorities, monitor how investments

¹⁵ <https://pidroadmap.arcd.edu.au/pids/strategic-advisory-group>

are being spent, and see the results that are being delivered to be able to assure accountability.

Senior management at funding agencies, university leaders, heads of sector representative bodies, or respected experts should therefore be targeted for membership and/or oversight of the new national governing group.

Recommendation 3: Establish clear ownership of the PID agenda

Clear ownership of the overarching strategy and its specific components will be essential for effective and efficient delivery. Named organisations, roles within them, or specific individuals should take responsibility for oversight of the strategy as it evolves and is implemented.

The work of these 'owners' may need to be supported by sub-committees or expert panels under the aegis of the cross-stakeholder governing group with the remit to address specific areas. These sub-committees should have defined goals, and be time limited where appropriate.

Recommendation 4: Draft an Irish PID concordat

The cross-stakeholder group should draft a concordat that articulates the purpose and vision of the PID strategy, and should spearhead a campaign to get signatories to it. Setting out what stakeholders, such as funders or institutions, etc. will commit to doing as part of its realisation will be a valuable tool for demonstrating support and momentum, as well as strengthening understanding of fellow stakeholders' part in the overall mission (see also below, Community).

3.2 Community

Clarity around what PID integration and adoption entails, what the benefits for each group will be, consistent user experiences for PID users, and what action is required of each group in the community for these to be delivered will be essential. A diverse range of communities and grassroots voices will need to be heard to ensure that the PID strategy is equitable, can adapt to evolving needs, and can address any emerging issues. Finally, a national network of overlapping and intersecting communities of practice will need to be built up to share expertise and increase general awareness of PIDs and the national strategy.

Recommendation 5: Strengthen the voice of research management professionals

Full engagement of the professional community serving researchers and research-performing organisations is needed to understand the context and demands of the research environment within institutions, the practical challenges of meeting funder or governmental priorities, and grasping progress at the coalface of PID integration. The work being done to establish an Irish Research Managers and Administrators Association (IRMAA) should be supported and the association should be invited to participate in the governing group at the earliest opportunity.

Helping to consolidate the existing community, empowering the profession, and ensuring that it is represented and heard at the cross-stakeholder governing group and in other relevant fora will be vital for enabling the targeting and evaluation of strategy interventions.

Recommendation 6: Build out a network of networks to drive PID adoption

A programme of activity should be designed and implemented, initially by the Governing Group, with delivery tasked to PID consortia, community groups or the PID Support Service (see recommendation 13, below), that will share the strategy and engage

directly with communities of practice, the various special interest or service/system user groups, and professional associations. This programme will be key to ensuring successful adoption and integration of PIDs, tied to specific community needs. The strategy should target existing networks and expand their coverage, commonalities and coordination wherever possible.

Recommendation 7: Build a shared resource library

Lack of understanding of PIDs, uncertainty about what PID integration involves, and low levels of buy-in for PID adoption emerged at each stage of the project as a key risk for the strategy. Building a shared library of resources, like success stories, specs, documentation, or outreach materials, will help to raise general levels of understanding and awareness, provide common language for advocacy and outreach, and will act as a visible symbol of the commitment and support for the PID strategy from those tasked with delivering it. It should also highlight the importance of quality metadata in delivering the benefits of PIDs, and work with existing initiatives seeking to improve practices in metadata creation and curation.

This would be an activity coordinated by the PID support service proposed in recommendation 13, below, and should reference or extend existing resources as well as providing new materials.

3.3 Culture change

As noted above, the kind of collective action implied by a national drive for PID adoption requires changes in practice, development of new expertise, supporting communities of practice, and setting new expectations of research support, services, and processes. These are best addressed together as a programme of culture change, with the recognition that this is a long-term commitment not just to implement PIDs, but to add descriptive metadata to them, to maintain that metadata over time, and to continue to invest as the state of the art advances.

Recommendation 8: Articulate a vision with a timeline

Create a clear, ambitious vision for what PID adoption in Ireland will look like and enable, pinned to specific milestones and targets. This could be structured along the lines of Australia's ORCID Vision 2023¹⁶. It should set out the clear benefits of action for the people we want to act, and should be reinforced with evidence, leveraging the cost-benefit analysis and related activities and success stories internationally. The development of this vision should be overseen by the cross-stakeholder governing group and should be aligned with the vision and commitments contained in the Concordat.

Recommendation 9: Empower and support community champions

A formalised programme of recruiting, informing, and supporting champions for the PID strategy within key communities, especially those that have been underserved or underrepresented in PID activities and projects so far is needed to unlock enthusiasm for the vision and helping to cascade information organically. Voices from within specific communities, speaking their language, and implicitly understanding their challenges and ambitions will resonate most effectively with target communities. More work is needed to understand and articulate the support needs of champions from specific communities, or in particular contexts, and this should be undertaken by the PID support service community manager (see recommendation 13 below).

Recommendation 10: Identify and deliver quick wins

A programme of activity to identify a few of these quick wins, to specify the activities needed to deliver them, and to communicate the results should be an immediate priority. This should be overseen by the cross-stakeholder governing group as part of their strategic development and oversight, and delivered by the PID support service proposed in recommendation 13, below.

16 https://aaf.edu.au/wp-content/uploads/ORCID_Vision_2023_FIN_20210415.pdf

Recognised pain points, such as administrative bottlenecks, or inefficient processes, offer a pathway to delivering practical experience of the benefits of PIDs. Examples might include re-using information from ORCID records to streamline reporting or applications by developing integrations that pre-populate forms, or by harvesting publications linked to specific PIDs, can reduce burden and speed up information gathering in ways that are palpable to those tasked with providing the information.

Recommendation 11: Leverage existing partnerships to shape PID developments nationally and internationally

The Irish research landscape is exceptionally international. The PID network is by design global in scope and reach. As a result, many of Ireland's peers and partners are wrestling with the same or similar challenges in leveraging the benefits of PIDs in digitalised research workflows. In the USA, the Department of Energy's Office of Scientific and Technical Information (OSTI) is pushing forward with requirements for PIDs for research entities, while the EU's European Open Science Cloud has a PID policy and is introducing a RAiD pilot.

These and many others are pushing forward on PIDs. It is crucial that Ireland does not get left behind. The global PID community and these national PID initiatives show the way forward. Ireland needs to achieve parity with these and future innovators and remain at the leading edge to both stay competitive and help to shape and align with best practice. Engaging with emerging practices across the PID community will be vital to align developments with Irish needs and to help to prepare the ground for new or enhanced PID services as they evolve.

Recommendation 12: Recruit in expertise to extend and increase PID capabilities

Expertise in PID integrations is a scarce resource. A small number of individuals have built robust, fully featured PID integrations, and these are not evenly distributed across the range of research information systems currently used in Irish institutions. An international recruitment exercise is likely to be needed to bring in the right depth and breadth of expertise.

Recruiting experts, establishing a knowledge sharing network around them, and upskilling potential PID integrators across the full range of systems and services underpinning Irish research by providing training for home-grown talent will be a vital step in delivering and future-proofing the PID strategy.

3.4 Technical support

Once the governance and resources needed to implement the national PID strategy are in place, champions are actively promoting PIDs, and the sector is informed about the value of PIDs and keen to use them, systems will need to be ready to offer PIDs at the fingertips of research practitioners and professionals in the systems they actually use daily to do their jobs. It should not be an additional step to register a PID for an entity, or to pull metadata in from a PID registry: robust integrations will need to be in place to make using PIDs and seeing their benefits seamless.

As noted above in recommendation 12, this means that service providers, developers within institutions, and system vendors alike will need access to the documentation, specifications, tutorials etc. that will enable them to implement PIDs in line with best practices.

Recommendation 13: Establish a central PID support service

In preparing the cost-benefit analysis, modelling suggests that dedicated support can lower the cost of PID integrations and accelerate adoption, shortening the time to ‘break even’ on investments in PIDs. This service was specified as including two technical experts to help with specifications, documentation, knowledge exchange, liaison with PID providers etc. and a community manager to help to convene stakeholders, gather input and feedback, and help to craft shared resources.

This will lower the bar for smaller or less technically resourced institutions, and ensure equitable access to the skills and knowledge necessary to integrate PIDs. It will also enhance the capacity of existing consortia staff, with a special emphasis on PIDs that sit outside the consortium model, which currently serves ORCID and DataCite members in Ireland. It is currently envisaged as a time-limited investment to accelerate adoption, with an initial lifespan of five years.

Recommendation 14: Identify and specify key integrations

Related to the recommendations around governance and recommendation 10, which is to identify and deliver quick wins, the cross-stakeholder governing group and the PID support service should identify the systems that capture and cascade information, and target these for PID integrations to maximise metadata reuse. Where standard good practice and specifications for these systems or use cases are not already available, the group should oversee their creation.

The Irish research information system is a network. Information is recorded in and exchanged between CRISs, repositories, finance systems, grant management systems, publishing systems, metadata catalogues, and reporting platforms. Interoperability between these systems is a community priority, and will increase the efficiency and transparency of the wider

system. PIDs provide provenance for information, and can reinforce accuracy and accountability, especially when associated with robust and reusable metadata.

Recommendation 15: Investing in targeted support

A programme of new technical grants will accelerate integrations across the patchwork of commercial system vendors, open source projects, internal institutional systems, and shared tools that make up the modern research management landscape in Ireland. Such integrations will ensure inclusive and equitable access to the benefits of the PID strategy by building capacity and eliminating cost barriers to the work of extending system functionality and interoperability. As noted in the cost-benefit analysis, PIDs rely on network effects which means that the benefits will not be maximised until all stakeholders are integrating and using PIDs. This work should target a mix of the ‘quick wins’ identified in recommendation 10, above, and underpinning systems or networks of systems that will enable wider benefits in the longer term for downstream services and their users.

The technical work required by the strategy is significant. Coordinating across technical stakeholders will expose areas of low resourcing or capacity, keystone systems that would benefit from a boost in capacity and capability to deliver PID integrations, and community needs that have gone unmet.



The Irish PID roadmap

The Irish PID roadmap incorporates all our recommendations, broken down into key thematic actions. A chronological sequence of these actions with additional narrative and links to specific recommendations is provided in Appendix A.

The key stakeholders include organisations that have multiple roles, such as IReL which is involved both as a critical national research infrastructure, and also as the lead for the existing national PID consortia. NORF is a key stakeholder throughout the proposed work, as the entity responsible for the National Action Plan for Open Research which undergirds the roadmap, and also for the sake of continuity as the organisation that has led the work to date.

For efficiency, many of the actions are devolved to the Governing Group, or to the PID Support Network team acting under the direction of the Governing Group. The longest lists of stakeholders are at the beginning and end of the action list. The long list of stakeholders included at the start of the roadmap, with the establishment of the Governing Group, will ensure that consultation and inclusion are built in, and that the group is both representative and responsive. At the end of the roadmap, the widest possible stakeholder representation should be engaged in evaluating and reviewing the activities of the PID Support Network and the design of the next phase of this work, if there is one.

Table 1: Actions included in the Irish PID roadmap

Action	Description	Key stakeholders	Timeline
A1: Create a long term cross-stakeholder governing group tasked with strategy delivery	A1.1: Identify and recruit members of the Governing Group	DFHERIS, disciplinary/ professional associations, government agencies, IReL, research infrastructures (e.g. HEAnet, ICHEC), IRMAA, NORF, PID Task Force members, professional library bodies (e.g. Library Association of Ireland), publishers, RFOs, RPOs, higher education associations (THEA, IUA)	Q1 2025
	A1.2: Establish lines of communication with key sector initiatives, such as the Impact 2030 Implementation Group	Governing Group	Q1 2025
	A1.3: Identify clear owners for activities specified in the roadmap where these are not already known	Governing Group	Q1 2025
	A1.4: Engage with international PID initiatives	Governing Group, PID Support Network, IReL	Q4 2024 and ongoing
	A1.5: Identify key partners and relevant global PID initiatives	Governing Group, PID Support Network, IReL	Q1 2026 and ongoing

Action	Description	Key stakeholders	Timeline
A2: Involve senior sector leaders in the strategy delivery	A2.1: Identify key stakeholders, engage with them, and invite their support and active participation (including through the Governing Group)	DFHERIS, disciplinary/professional associations, government agencies, IReL, Research infrastructures (e.g. HEAnet, ICHEC), IRMAA, NORF, PID Task force members, professional library bodies (e.g. Library Association of Ireland), publishers, RFOs, RPOs, higher education associations (THEA, IUA)	H1 2025
	A2.2: Identify leaders in the field and exemplars of good practice and engage	Governing Group, PID Support Network, IReL	Q1 2025 and ongoing
A3: Set up a national PID Support Network	A3.1 Find a host organisation for the PID Support Network	Governing Group	Q1 2025
	A3.2: Apply for funding for PID Support Network staff and operations	PID Support Network host organisation (TBC) in partnership with Governing Group, DFHERIS, RFPs	Q2 2025
	A3.3: Establish PID Support Network, including recruitment of staff members	PID Support Network host organisation (TBC)	Q1-3 2026
A4: Articulate and promote a vision for PIDs in Ireland	A4.1: Expand the draft vision articulated in the preliminary roadmap report to create a 2030 vision and timeline, in consultation with the community	Governing Group, NORF, IReL	Q4 2024
	A4.2: Draft a PID concordat, including specific commitments for minimum levels of PID integrations adoption, with tiers and follow-up steps to maintain progress and focus	Governing Group, NORF, IReL	Q4 2024
	A4.3: Launch concordat with initial group of signatories	Governing Group, NORF, IReL	Q1 2025

Action	Description	Key stakeholders	Timeline
A5: Expand PID adoption and coverage in Ireland	A5.1: Identify quick wins. Engage with the community to find opportunities where investing in PIDs will make a difference fast	PID Support Network	Q3 - 4 2026
	A5.2: Deliver on the quick wins that have been identified. Specify what actions are needed to deliver the quick wins that have been identified, and then implement them	PID Support Network	Q1 - Q4 2027
	A5.3: Demonstrate the value of quick wins. Following implementation of the quick wins during 2026, publicly report back on their success, any lessons learned, and the benefits to the community	PID Support Network	Q1 - Q3 2028
	A5.4: Identify key communities/platforms for targeted support, including identifying key integrations, determining what support is needed, and applying for grant funding	PID Support Network, DFHERIS, RFOs	Q1 - Q4 2027
	A5.5: Identify and develop integrations in keystone systems. Build on the work to identify key integrations and communities, to identify and support those that will deliver most value	PID Support Network	Q1 2028
	A5.6: Provide targeted support for keystone PID integrations, by seeking and disbursing support grants and monitoring project progress	PID Support Network, DFHERIS, RFOs	Q3 2028 - Q4 2030
A6: Formalise and extend the Irish PID community of practice	A6.1: Map existing community groups, including the DataCite and ORCID consortia, IRMAA, the Irish National Library Association, SONRAI, and others	Governing Group, PID Support Network	Q1-3 2026
	A6.2: Launch sub-groups of the Governing Group, identify targeted or time-limited sub-groups to work with (Ireland’s “network of networks”)	Governing Group, PID Support Network	Q3 2026
	A6.3: Identify a network of community champions (both existing and potential), determine what support they need, and work to provide that support	PID Support Network	Q3 2026 and ongoing
	A6.4: Community group development. Identify and recommend any new groups needed (eg, system user groups, metadata groups), and support their establishment	PID Support Network	Q1 2028 and ongoing
	A6.5: Support the network of champions, including reviewing the work of the current network and gap-filling in under/unrepresented communities (e.g. by sector)	PID Support Network	Q1 2028 and ongoing

Action	Description	Key stakeholders	Timeline
A7: Develop information resources to support PID integration and advocacy	A7.1: Audit existing resources	PID Support Network, Governing Group sub-groups/ communities of practice	Q3 2026
	A7.2: Establish PID resource library	PID Support Network	Q1 2027
	A7.3: Develop new/missing resources. Proactively evaluate current resources, determine what more is needed, and fill those gaps	PID Support Network	Q1 2028
	A7.4: Relaunch the extended/updated resource library	PID Support Network, Governing group sub-groups/communities of practice	Q4 2028
A8: Evaluate delivery of PID vision and establish new horizons	A8.1: Annual progress reports	NORF in 2024, then the PID Support Network	Q4 2026 and ongoing
	A8.2: Evaluation of 2030 delivery	DFHERIS, disciplinary/ professional associations, government agencies, IReL, Research infrastructures (e.g. HEAnet, ICHEC), IRMAA, NORF, PID Task Force members, professional library bodies (e.g. Library Association of Ireland), publishers, RFOs, RPOs, higher education associations (THEA, IUA)	H2 2030
	A8.3: Develop 2040 vision for PID adoption and integration in Ireland and ensure that future plans are aligned with Ireland's post-Impact 2030 agenda	DFHERIS, disciplinary/ professional associations, government agencies, IReL, Research infrastructures (e.g. HEAnet, ICHEC), IRMAA, NORF, PID Task force members, professional library bodies (e.g. Library Association of Ireland), publishers, RFOs, RPOs, higher education associations (THEA, IUA)	Q1 2031

Appendix A:

Draft implementation timeline

This appendix sets out a broad timeline for implementing the roadmap, including identifying the key milestones that will help ensure that the project stays on track. Each section includes a series of activities, in (roughly) the order we recommend carrying them out, noting that some have dependencies that may impact the timings. The relevant recommendation(s) are indicated in parentheses, and milestones are shown in teal. We also recommend carrying out an annual progress review and report, which should be shared with all key stakeholders as well as being made publicly available. This annual reporting should be undertaken by NORF on the first instance in 2024, but subsequently should be conducted by the PID Support Network and evaluated by members of the Governing Group.

Immediate (2024)

Building on the momentum created over the past few months by continuing to push the project forward during the remainder of 2024 is critical to successfully implementing the roadmap; this is the point at which some other PID strategies have slowed down or even halted altogether. We therefore recommend taking the following actions – and achieving the relevant milestones – by the end of this year:

Q4: Engage with senior leaders across all sectors (R2). While a number of senior leaders have already been involved in the project, other important stakeholders are not yet engaged or, perhaps, even aware of this work. Identifying those stakeholders, engaging with them, and inviting their support and active participation (including through the governing group described below) will significantly improve the project's chances of success.

Q4: Launch and promote PID recommendations and roadmap. Establish sector-wide awareness of the roadmap and its strategic aspirations. Promote the timeline and initial steps to be taken.

Q4 and ongoing: Maintain current engagement with international PID initiatives (R11). Continue to engage with colleagues globally, as both a learning and a leadership opportunity, and to sustain momentum.

Q4 and ongoing: Socialise the roadmap and related initiatives, especially the governing group. Work with sector leaders, partners at DFHERIS, former PID task force members, existing PID consortia and other community networks to lay foundations for future participation in projects, set expectations for timelines, and encourage potential partners and governing group members to commit to the programme.

Q4 2024 - Q1 2025: First annual progress review and report

Short term (2025-26)

Much of the foundational work to implement the roadmap will be carried out during this time, including establishing the new governing group, the PID support service and setting up an Irish PID network

Q1: Establish the new governing group (R1, 2, 3, 5). As well as including some members of the PID Task Force that supported this project, the new governing group should include senior sector leaders as outlined in (1). Research management representation, through the Irish Research Management and Administrators Association (IRMAA) when established, will be critical.

Q1 2025 and ongoing: Continue to build on the IRMAA relationship (R5).

H1: Articulate the vision and timeline for the roadmap (R8). This is the top priority for the new governing group

H1: Draft the concordat, based on that vision (R4). Once the vision is agreed, the concordat is the next priority.

Q2: Apply for PID support network funding (R13). Use the cost benefit analysis to make the business case for investing in a central support network, in order to have **funding in place** as soon as possible. At the same time, work should start on **finding a suitable host organisation**.

H2 2025 and ongoing: Launch the concordat (R4). Set targets for signatories, and then promote, disseminate, and get buy-in for the concordat starting in early 2025. Monitor signatories and **celebrate milestones** (eg, the first 100, 500, etc).

Q4 2025 - Q1 2026: Annual progress review and report.

Q1-3 2026: Map existing community groups (R6). Ireland already has a number of PID and PID-supporting organisations, including the DataCite and ORCID consortia, IRMAA, the Irish National Library Association, SONRAI, and others. Mapping these, and finding common cause between them, will enable the governing group to identify targeted or time-limited sub-groups to work with. Once terms of reference and membership have been agreed, **the sub-groups (Ireland's "network of networks") can be launched**.

Q1-3 2026: Establish the PID support service (R13). Recruiting staff with the right experience and expertise (R12) will help ensure the success of the service, but may be a somewhat lengthy process, especially if international recruitment is needed (R12). Once in place, the support service team will be able to work with the governing group and its sub-groups to implement the remainder of the roadmap.

Q3-4 2026: Identify quick wins (R10). The support service team and sub-groups will be well placed to engage with the community to find opportunities where investing in PIDs will make a difference fast.

H2 2026: Audit existing resources. The support service team and sub-groups should also help identify existing resources across all sectors, recommend potential host(s) for consideration by the governing group, after which **the resource library can be established (R7)**.

Q3 2026 and ongoing: Identify champions (R9). Identifying a network of community champions (both existing and potential), understanding what support they need, and working to provide that support, will be an important element of the support service's community manager role.

Q4 2026 - Q1 2027: Annual progress review and report.

Medium term (2027-2029)

This phase of the roadmap focuses primarily on consolidating and expanding existing elements, setting the Irish community up to benefit from the investments of time, money, and expertise made to increase adoption and use of PIDs across all sectors of the research ecosystem.

Q1 - Q4 2027: Deliver on the quick wins that have been identified (R10). The support service team will need to first **specify what actions are needed to deliver the quick wins** that have been identified, and then **implement them**.

Q1 - Q4 2027: Identify key communities/platforms for targeted support (R14, 15). It will be important to prioritise providing support (financial, technical, outreach, etc) for integrations that will have the biggest impact, especially in terms of metadata reuse. This includes **identifying those key integrations, determining what support is needed, and applying for grant funding.**

Q1 2027 and ongoing: Identify key partners and relevant global PID initiatives (R11). Continuing to seek out and engage with partners and initiatives globally that fit well with Irish needs will help ensure that the community continues to benefit from the experience of others and to shape global PID developments, assuring alignment with Irish needs/priorities.

Q4 2027 – Q1 2028: Annual progress review and report.

Q1 - Q3 2028: Demonstrate the value of quick wins (R10). Following implementation of the quick wins during 2026, it will be important to publicly report back on their success, any lessons learned, and the benefits to the community.

Q1 2028 and ongoing: Community group development (R6). This includes identifying and making recommendations for where new groups are needed (eg, system user groups, metadata groups), and supporting their establishment.

Q1 2028 and ongoing: Develop new/missing resources (R7). While the resource library will continue to grow organically, it is also worth taking the time to proactively evaluate current resources, determine what more is needed, fill those gaps, and then **relaunch the library.**

Q1 2028 and ongoing: Support the network of champions (R9). Continuing to engage with and manage the membership of this group will help ensure a good flow of information within and between the Irish PID community. This includes reviewing the work of the current network, gap-filling in under/unrepresented communities (eg, by sector), and ensuring that the champions are well supported.

Q1 2028 - Q4 2029: Identify and develop integrations in keystone systems (R15). Build on the work to identify key integrations and communities to identify and support those that will deliver most value. Once identified, seek and **disburse support grants** and monitor project progress.

Q4 - Q1, 2028, 2029: Annual progress reviews and reports.

Long term (2030 and beyond)

Most specific elements of the roadmap should be delivered by now, with the Irish research community benefitting from the widespread adoption and use of PIDs. In 2030, therefore, we recommend that you publish a full summary and evaluation of roadmap delivery. This should also look forward to the next decade, articulating the 2040 vision for PID adoption and integration in Ireland and ensuring that future plans are aligned with Ireland's post-Impact 2030 agenda.

Bibliography

1. Jones PB, Meadows A, Murphy F, Brown J, Conway A, Griffith L. Efficiency and insight: a cost-benefit analysis for a central service to support persistent identifier implementation in Ireland. 2024 [cited 2024 May 10]; Available from: <https://repository.dri.ie/objects/nz80kt123/doi/nz80kt123>
2. National Open Research Forum. National Action Plan for Open Research. 2022 [cited 2024 Jan 25]; Available from: <https://repository.dri.ie/objects/ff36jz222/doi/ff36jz222>
3. Brown, Josh, Jones, Phill, Meadows, Alice, Murphy, Fiona, Clayton, Paul. UK PID Consortium: Cost-Benefit Analysis [Internet]. Zenodo; 2021 Jun [cited 2022 Sep 14]. Available from: <https://zenodo.org/record/4772627>
4. Brown, Josh, Jones, Phill, Meadows, Alice, Murphy, Fiona. Incentives to invest in identifiers: A cost-benefit analysis of persistent identifiers in Australian research systems [Internet]. Zenodo; 2022 Sep [cited 2022 Nov 7]. Available from: <https://zenodo.org/record/7100578>
5. Hook DW, Porter SJ, Herzog C. Dimensions: Building Context for Search and Evaluation. *Front Res Metr Anal*. 2018 Aug 23;3:23.
6. Priem J, Piwowar H, Orr R. OpenAlex: A fully-open index of scholarly works, authors, venues, institutions, and concepts [Internet]. arXiv; 2022 [cited 2024 Jan 26]. Available from: <http://arxiv.org/abs/2205.01833>
7. Gross domestic spending on R&D [Internet]. OECD; [cited 2024 Feb 26]. Available from: https://www.oecd-ilibrary.org/industry-and-services/gross-domestic-spending-on-r-d/indicator/english_d8b068b4-en
8. Johnson R, Henderson H, Woodward H. Institutional ORCID Implementation And Cost Benefit Analysis Report [Internet]. Zenodo; 2015 Jul [cited 2024 Jan 29]. Available from: <https://zenodo.org/record/1445290>
9. ARDC. Australian National PID Strategy and Roadmap. [cited 2024 Sep 25]. Strategic Advisory Group. Available from: <https://pidroadmap.ardc.edu.au/pids/strategic-advisory-group>

