

Role of Persistent Identifier for the Knowledge Repositories - IIT Hyderabad

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Abstract

This paper would like to emphasize the persistent Identifier "ORCID" and its impact on the Indian Institute of Technology, Hyderabad [IITHYD] Institutional Repository. With the advent of the PID Open Researcher and Contributor ID [ORCID] into the faculty profile management systems at the IITHYD, the visibility factor of the IITHYD intellectual research output had a significant impact. The phase-wise shift of the institutional repositories embedding the vitality of the persistent identifiers has changed the perception of the institutional repositories as one channel for creating the awareness of research visibility, encouraging the researchers to publish in the repositories for better outreach of the research.

Keywords: ORCID, Persistent Identifiers; Institutional Knowledge repositories, Research Visibility

1. Introduction

For decades the information which is being generated or better to say produced from various sources is enormously increasing day by day, the produced information in various formats has been reaching different nodes upon which it is being properly utilized and reframed for the betterment of society and other advanced research enhancements. We have been seeing over a period of time the different ways of storing silos of information for better dissemination. The storage silos may be from Academic institutions to research and development organizations to the scope of the research which it specifically deals with. Simultaneously the increasing amount of knowledge generated from this information is being published in various channels. The global research information ecosystem of the 21st century is from the institutional repositories of academic, research and development centres are significantly increasing (Stephen Pinfield et al., 2014). The knowledge is published in peer-reviewed journals, conference papers, books, monographs, etc. document types. This published research is not easily accessible to the research community, as few among these are protected behind the paywalls by the top brass publishing houses. This is the major hurdle for the researchers in proceeding with the research activities. To overcome this, the role of institutional repositories will arise to cater to the researchers. To contribute to the open access movement, IRs are at the forefront, representing the academic and R&D organizations, the intellectual output which has been published may reach to some extent where the counterpart can gain, but the researchers are keen to know about the community associated



with that particular research, identifying the researcher and their association with specific research body was an herculean task. Author ambiguity and shifting of the institute affiliations are the obstacles in finding the core collaborators to ignite research ideas. In the research eco-system identifiers such as ISBN, ISSN, and DOI, which are linked to the IRs, are also getting linked with PIDs for the unique identity of the researcher to facilitate and track the needs of the researcher's activities (Kannan, 2015).

The in-house institutional repositories are developed to create a platform for researchers to browse the literature and the intellectual output with the organization to collaborate with colleagues (Scholastica Chizoma Ukwoma et al., 2017) and for long-term preservation. Institutional repositories are the platforms to publish their works for a quick reach and availability to the scholarly literature, which can increase the impact of the research through citations. (Aghassibake et al., 2023) his study revealed that the PIDs are significant in that the research output from the academic and research community will be accessible and interoperable only if the research infrastructure is open in nature and follows FAIR data principles.

2. Importance of Persistent Identifiers

With Web-based persistent identifiers for 20 years, the different persistent identifiers are available in the various systems for adequately identifying the research findings in the form of data; it was felt by (Klump & Huber 2017) that has become a key component of the global research management infrastructure. The need for a PID has been rightly pointed out by (Golodoniuc et al., 2017) that ambiguity is the major hurdle which can be overcome with the proper implementation of persistent identifier (PID) systems to a large extent, it can be catered for identifying the uniqueness, integrity, and persistence. (Burton et al., 2023) et al. rightly say that the potential research derived from the research community, with the help of public funding, can only reach the larger community through proper publishing models using the PID involved in research, which helps others working in the same subject domain to get connected for the betterment of the study. The broader community of researchers associated with research laboratories, academic institutions, funding agencies, and others will purely depend on the research information being generated; the dissemination of the research to this community is more useful by sharing the information between these communities using the Research Information Management (RIM) systems such as IRINS developed by Information and Library Network Centre (INFLIBNET) (Jeyapragash et al., 2019). PID is vital in disseminating information among these communities (Meadows & Haak, 2018).

3. Literature Review

Aghassibake et al. (2023) described that the institute's research visual perception is only identified with proper PIDs metadata. Persistent identifiers like ORCID iDs, DOIs, and ROR IDs are crucial for open research infrastructure and making research data more FAIR (Findable, Accessible, Interoperable, and Reusable). A project by the ORCID US Community and Drexel University created resources for visualizing collaboration data from ORCID profiles. The project uses an R script to retrieve data and create visualizations in Tableau Public. The project aims to promote the use of PIDs and FAIR data practices.

Plomp (2020) reported that recent years have focused on improved research data management, including introducing Persistent Identifiers for various research components. Efforts have been made to standardize naming conventions for physical samples and artefacts to enhance data interpretation and reuse. Persistent identifiers can make physical data more findable and facilitate collaboration across disciplines. Adopting persistent identifiers for physical aspects of research requires increased awareness and support from research communities, funders, and institutions. Implementing persistent identifiers and standardization in documentation can enhance the impact and visibility of research involving physical resources.

Wittenburg (2019) studied from persistent identifiers to digital Objects to make data science more efficient. The use of persistent identifiers can help integrate data from different sources and define Digital Objects, potentially solving data management issues. Establishing a Global Digital Object Cloud and Type-Triggered Automatic Processing domain is required. The C2CAMP collaboration aims to develop code for these aspects and showcase their applicability. The group emphasizes the importance of automation and efficiency in handling the increasing volume of data generated by smart devices.

Meadows et al., (2019) say that by enabling the PIDs in the research information infrastructure to access the information and creating collaboration opportunities by cutting down the overhead activities of the administrators. A trust will build across the research community to ponder with the research. The research will also be clear and transparent, meeting the FAIR principles if PIDs are included.

4. Discussion

4.1 International Standard Name Identifier

ISNI (International Standard Name Identifier), certified under ISO 27729, is a globally recognized 14-digit number for the global standard for identifying individuals involved in creative works and their distribution. This includes researchers, writers, artists, performers, and publishers. Its purpose is to uniquely identify contributors and reduce ambiguity in search and discovery processes. ISNI is governed by the International Standards Organization (ISO); ISNI works alongside ORCID iDs, allowing for interoperability.

4.2 ResearcherID

ResearcherID provided by Thomson Reuters from the year 2008 onwards and It is Integrated with web of Knowledge. ResearcherID helps authors solve author identity issues. Ensure correct attribution between author and their publication on the web of knowledge. Add dynamic citation metrics from the web of knowledge core collection and other missing metadata to publication records on authors Publon Profile, Web of Knowledge and Incites etc.

4.3 ScopusID

Scopus ID is not like other PIDs; an author will be assigned a Scopus ID as soon as who submits a research paper in the Scopus-indexed journals; this is a unique eleven-digit identifier which again has an essential

element of interoperability in other indexing systems. The system also allows the authors to merge their profiles, identify unwanted publications for deletion, and provide easy updates to the affiliations.

4.4 ORCID

(Haak, 2014) ORCID provides a unique and persistent identifier for researchers with a unique 16 digit; this unique ID will form the digital network among the research ecosystem. The major problem in today's research ecosystems is name ambiguity; this can be overcome with the help of ORCID, which specifically works on the person naming protocols. Also, the network across the institute and individual level can be highlighted by including the ORCID identifier in the research while writing a research plan or at the repository archival stage (Figure-1). Now, the publishers are also making it mandatory for subject experts, scientists and the research, academic community to submit the ORCID identity while they submit their research to get published.

N. Aghassibake et al. / Visualizing institutional activity using persistent identifier metadata

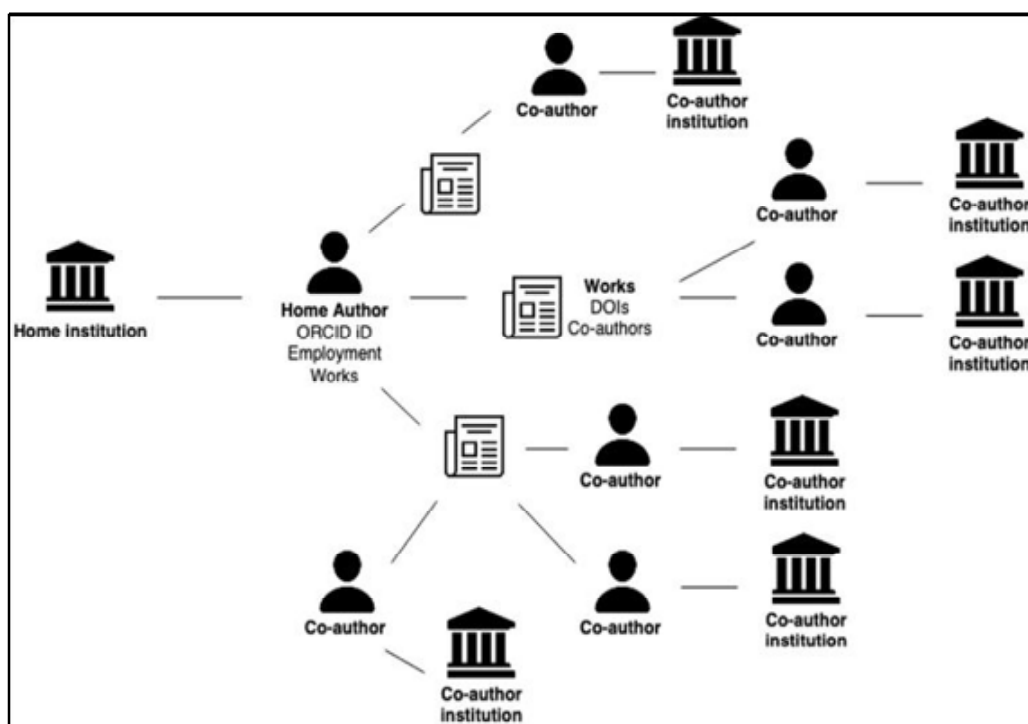


Figure 1 R script data retrieval workflow for a single organizational author.

Note: This figure was produced by Aghassibake, N., Castello, O. G., Gujilde, P., & Rabun, S. (2023). Visualizing institutional activity using persistent identifier metadata. *Information Services & Use*, 43(3-4), 335-342. <https://doi.org/10.3233/ISU-230218>

5. IIT Hyderabad Repositories

Under the Institutes of Technology Act, 1961, certain institutions of technology are to be declared as institutions of national importance; as per the 1961 Act, in the year 2008, the Ministry of Human Resource and Development, Govt. of India has identified Jodhpur, Mandi, Gandhinagar, Hyderabad, Indore, Bhubaneswar, Ropar and Patna to set up Indian Institute of Technology(IIT) in the respective cities. The Indian Institute of Technology Hyderabad(IITH) is one of the second-generation IITs. From the initial stage, the institute's basic knowledge foundation was based on research and innovation; it has created a unique holistic approach to education that offers interactive learning with flexible academic structure, cutting-edge research, strong industry collaboration, and entrepreneurship. According to the National Institutional Ranking Framework(NIRF) under the aegis of MoE, GoI. IITH ranked among the top 10 institutes in India under the Engineering category and made itself the best engineering institute among the second-generation IITs (Nassa et al., 2021). It offers UG programs in engineering and allied sciences, design, and advanced interdisciplinary areas. The faculty strength statistics retrieved from the Council of Indian Institute of Technology system clearly depict the faculty strength of the Indian Institute of Technology Hyderabad(IITH)[Table-1]; the vibrant research culture is evident from the number of publications IITH produced consistently yearly.

Table 1: Indian Institute of Technology Hyderabad Year-wise Faculty strength

Academic Year	Onroll Male Faculty Strength	Onroll Female Faculty Strength	Faculty Total Strength
2023-2024	266	38	304
2022-2023	261	36	297
2021-2022	221	34	255
2020-2021	207	30	237
2019-2020	180	27	207
2018-2019	172	25	197
2017-2018	158	21	179
2016-2017	148	19	167
2015-2016	131	18	149

Data Source: <https://www.iitsystem.ac.in/facultystas>

The total number of publications published by the IITH fraternity and research community was 9975, which comprises different document types. Articles, conference papers, reviews, book chapters, editorials, etc., There has been a drastic increase in the output of research publications, especially under the article head. All the authors affiliated with IIT Hyderabad have ORCID linked to their profiles.

Table 2 : Indian Institute of Technology, Hyderabad Publications

Indian Institute of Technology Hyderabad Publications													
Year	Article	Book	Book chapter	Conference paper	Data paper	Editorial	Erratum	Letter	Note	Retracted	Review	Short survey	Total Publications
2008				2									2
2009	1			1									2
2010	33		1	22									56
2011	65		1	46		2							114
2012	109		1	58		1							169
2013	149		1	93		5		1			2		251
2014	218	1	8	150		1	1				8		387
2015	257	1	12	153		4	1			1	10		439
2016	289	2	13	153		6	1		1		8		473
2017	382	3	11	217		6		1	1		19		640
2018	505		12	244		4	3	2	1		14		785
2019	574	2	27	264		5	1	2			19		894
2020	715	1	32	254		6	4	2	1		37		1052
2021	822	2	40	265	1	13	9	3	3		51		1209
2022	921	1	56	330		12	7	4	1		73	1	1406
2023	950	4	56	343	1	14	6	1	5		90	1	1471
2024	497		14	76	1	4	2	2	2		27		625
TOTAL	6487	17	285	2671	3	83	35	18	15	1	358	2	9975

(Shankar, 2018) detailed the importance of the IITH knowledge repository, which has shown its impact on the institute's research output. The institute's knowledge repositories are moving towards the new platform, which has more visibility regarding the content held since 2010. Embedding the PIDs into the knowledge repository is a step forward to boost the performance of the repository systems. Now, the structure of the institutional knowledge repository (IKR) is robust, and it is at the forefront of making intellectual resources available to institutions. The interoperable linking mechanism allows the IKRs to interlink and be more effective in the search retrieval system, where (Bellini et al., 2012) expressed that the Persistent Identifier Domains will also foster the ontology-based metadata for a better Interoperability Framework among different systems in order to allow the implementation of those services which are required by specific communities. (Kannan, 2015) emphasis on the use of ORCID in the scholarly community, how the higher education councils and the funding agencies at the national and international level and the importance of including ORCID as a mandate in the research ecosystem platforms such as research information system and faculty profile management.

RAIITH
(Research Archive of Indian Institute of Technology Hyderabad)

Biogas reforming to syngas in a DBD plasma reactor with dielectric materials packing: Effect of H₂S on the conversion of CH₄ and CO₂

Asthana, Saket and Subrahmanyam, Challapalli (2023) *Biogas reforming to syngas in a DBD plasma reactor with dielectric materials packing: Effect of H₂S on the conversion of CH₄ and CO₂*. Biomass and Bioenergy, 173, p. 100781. ISSN 0961-9534

Text
1-42 0-S096195342300078X-main.pdf - Published Version
[Download \(HTML\)](#)

Abstract
Biogas reforming to syngas in a DBD plasma reactor with dielectric materials packing: Effect of H₂S on the conversion of CH₄ and CO₂
[error in script]

IITH Creators	ORCID
Asthana, Saket	http://orcid.org/0000-0002-6420-3304
Subrahmanyam, Challapalli	https://orcid.org/0000-0002-2643-3854

Item Type: Article

Uncontrolled Keywords: Biogas reforming; DBD plasma discharge; Dielectric material; Syngas; Alumina; Aluminum oxide; Carbon dioxide; Dielectric barrier discharge; Dielectric devices; Energy efficiency; Glass; Granular materials; Packed beds; Plasma applications; Quartz; Sulfur compounds; Synthesis gas; Wool; Yarn; Zirconia; Biogas reforming; CH₄; Dielectric barrier discharge plasma discharge; Dielectric barrier discharge plasmas; Dielectric barrier discharges; Glass bead; Packing effects; Plasma discharge; Plasma reactors; Syn gas; biogas; carbon dioxide; dielectric property; discharge; hydrogen sulfide; methane; Dielectric materials

Figure 2: IR Document type(Article) view

Home / Faculty / Department of Physics / Asthana, Saket

Asthana, Saket

Departments
Department of Physics
Department of Physics

Designation : Professor
Employee ID : F035

ORCID
<https://orcid.org/0000-0001-7345-9769>

Scopus ID
7006820783

Views: 0 | Downloads: 0 | Rating: ☆☆☆☆☆ (0) | Comments: 0

Rating this item: ☆☆☆☆☆

Figure 3: Faculty Profile

6. Benefits of having ORCID

The significant benefits of having ORCID integrated with the IITH institution knowledge repositories are:

1. It is easier to track the research output of the IITH fraternity and the research community with individual ORCID.
2. Linking the research profiles to the institute's information management system is straightforward: ORCID is linked with <https://iith.irins.org/>.
3. The visibility of the institute's research has been increased, and the citation count of the research publications has increased.
4. Moving forward in the ranking framework systems by improving the score under the "Research and Professional Practice (RP) parameter of the NIRF.
5. Increase in national and international collaboration across all the research disciplines.

7. Conclusion

The visibility of the research plays a vital role in moving forward with the research generated by academic institutions and R&D organizations. This can only happen if all the systems are mapped in the research ecosystem, whether it may be a small education institution or a university level; the GoI should bring a mandated policy across all the institutes which are under its purview to build their own indigenous Institutional Knowledge Repositories which should be of an interoperable in nature and should have all the research community to have the academic persistent identifier such as ORCID to be a mandate. By this, we can have a network research community for institutional growth and prosperity in nation-wise research.

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