

ISSN INTERNATIONAL CENTRE ACTIVITY REPORT FOR 2022



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INTERNATIONAL CENTRE

Introduction

The health situation has gradually improved in 2022. However, the ISSN International Centre preferred to hold the 24th General Assembly of Member Countries remotely once again, fearing that the costs incurred for the conference in Paris would be disproportionate to the attendance. On the other hand, the 91st Board of Directors meeting was held in Paris because it involved a small number of people who had all confirmed their attendance.

The year 2022 saw the completion of a major three year IT project . The ISSN+ data production application was officially launched on 26 June 2022. The Information Systems Department was heavily involved in defining the functionalities of this new tool, which replaces an application implemented in 2004 that had become outdated. The Metadata and Technical Coordination of the Network Department organized remote training for the National Centres that catalogue directly in ISSN+ and for those that use it to check the quality of their data. Following the deployment of ISSN+ V1, feedback from National Centres has been very positive. Since then, additional versions have been deployed in production to complement initial functionalities. The year 2022 has seen the streamlining of the ISSN International Centre's IT infrastructure through the strengthening of the IT team.

In the second half of 2022, the resumption of professional in-person conferences allowed the ISSN International Centre to reconnect with its partners. At the 2022 IFLA conference in Dublin, Ireland, a reception was held at the International Centre's booth to meet with the international library community. A joint presentation with ISSN Ireland focused on the revision of the ROAD criteria. The Director of the International Centre gave a keynote speech on the cooperation between ISO and IFLA in the field of library standardization.

In September 2022, the Director of the Centre also contributed to the reflection initiated by NISO on the importance of identifiers and metadata quality for the dissemination of scientific research. As a result of her participation, she was asked to sit on the organizing committee of the NISO+ 2023 conference during which she moderated two sessions and gave a presentation about ISSN as a PID. She participated in the Charleston Library Conference in November 2022 with a communication on open access journal selection in cooperation with DOAJ and Latindex. She also delivered there a communication on the Keepers Registry service in cooperation with CLOCKSS. Finally, she served as an expert in the Knowledge Exchange think tank and reviewed the study on identifiers that was published in early 2023 by Scidecode Consulting. Early 2022, she was solicited by the open access International Journal of Knowledge Engineering and Management, issued by the Federal University of Santa Catarina, Brazil, to write an article on identifiers and open science.

Regarding the production of ISSNs, the global number of identified continuing resources decreased in 2022 with about 52,000 new ISSN assigned. The ISSN International Centre contributed 2,387 new ISSNs to the database in 2022. This decrease in ISSN assignments may be explained by the overall decrease in publisher revenues in 2022 compared to 2021. The Association of American Publishers has recently reported that calendar year 2022 higher education course materials revenues were \$2.9 billion, down 7.5% compared to 2021. Professional books, including business, medical, law, technical and scientific, were down 5.5% as compared to 2021. The same phenomenon happened in Germany with notably the magazine market shrinking by 2 to 3 %.

The ISSN International Centre communicated extensively in 2022 about its network and services through press releases and visual works like the Did You Know series addressing a range of issues from the specification of the place of publication on a continuing resource



to lists of contacts and supporting materials for the ISSN Network. The monthly ISSN newsletter is still very popular and its subscriber base continues to grow steadily.

The consultation with the National Centres on the evolution of the ISSN Manual is still ongoing. The objective was to review the bibliographic procedures of the ISSN Network by the end of 2022 and work on alignment with other bibliographic standards. The revision appears to be more cumbersome than expected and will continue during 2023.



1. The ISSN Network

1.1 Coverage and extension of the ISSN Network

In 2022, the ISSN Network comprised 93 member states.

1.2 Activities of the ISSN Network

1.2.1 Governance bodies

Four Governing Board meetings were held in 2022:

- The 90th meeting on 17 February 2022 (remotely),
- The 91th meeting on 25-26 April 2022 (in-person),
- The 92th meeting on 21 June 2022 (remotely),
- The 93th meeting on 7 November 2022 (remotely).

The ISSN 24th General Assembly was held remotely due to concerns about the still ongoing pandemic that could have prevented colleagues from travelling to Paris to attend in-person. Instead of one General Assembly in-person meeting, the staff of the ISSN International Centre organized four 3-hour distant meetings:

- May 2nd, 2022: 24th meeting of the General Assembly (in English),
- May 3th, 2022: 24th meeting of the General Assembly (in French),
- May 4th, 2022: 24th meeting of the General Assembly (in Spanish),
- May 5th, 2022: 24th meeting of the General Assembly (in English).

The General Assembly online attendance was good reaching **61 representatives of member countries** who approved several important decisions regarding financial and strategic matters. Elections were held remotely to appoint the ten representatives of member states to sit at the Governing Board beside the representatives for France and UNESCO. The newly appointed Governors for a 2022-2024 mandate represent Brazil, Bosnia & Herzegovina, Croatia, Germany, Mauritius, Spain, Sweden, Tunisia, United Kingdom, United States of America.

1.2.2 ISSN National Centres

The 47th ISSN Directors' Meeting took place in Cairo, Egypt, 20-24 November 2022 at the kind invitation of ENSTINET and ISSN Egypt. The ISSN International Centre and the ISSN Network are grateful to ENSTINET for the outstanding organisation of the meeting which was the first in-person meeting since 2019. As the meeting was held in Africa, six grants were distributed on a first come, first served basis to colleagues from African National Centres to allow them to participate. The awardees were colleagues from ISSN Algeria, ISSN Ghana, ISSN Mauritius, ISSN Namibia, ISSN Seychelles, and ISSN Nigeria.

All sessions were held in English. In-person and online attendance was good. 35 representatives from National Centres attended the meeting in Cairo. One observer from South Africa was also present. Thirty-one colleagues attended online. The six grantees were given the opportunity to introduce their organisations. As usual, the presentations were shared on the extranet. A big thanks to all ISSN colleagues who turned these meetings into a success!

Since 2019, the Project Officer has been managing administrative relations with ISSN National Centres and in particular the renewal of working agreements, as well as the collection of information about their activities in line with the ISSN International Centre policy and ISO regulations.

In 2022, 79 National Centres filed their annual report and 14 National Centres did not file. Annual reporting is a requirement as per the agreement between the ISSN International Centre and the National Centres. The ISSN International Centre will monitor the situation closely in 2023 to get all reports in due time.

As of March 2023, **50 ISSN National Centres** have signed the new working agreement.

1.3 Pursuing the 2024 Strategic Plan

The ISSN International Centre 2024 Strategic Plan was approved by the Governing Board and the ISSN Network member countries in April-May 2020.

OBJECTIVE 1: Develop the global interoperability of the ISSN Portal by improving the management of ISNIs within the ISSN Portal

The ISSN International Centre believes it is important that the ISSN be interconnected with other identifiers and thus be part of the web-based identification ecosystem. The ISSN International Centre has been a member of the ISNI-IA since 2015 and has access to the ISNI professional and curated database.

The ISSN International Centre also works with ISSN National Centres that already use ISNIs (ISO 27729: 2012) as identifiers for individuals and legal entities in their own local databases. These ISNIs are retrieved by the ISSN International Centre when records are imported into the ISSN Portal.

The ISSN International Centre wants to use ISNI to create standardized access points for publishers and organizations in the ISSN Portal to enhance search query results. The ISSN International Centre will also request the creation of ISNIs for those entities that do not yet have one.

Key Performance Indicator: All organisations and publishers within the ISSN Portal are identified with ISNIs by 2024.

The primary focus was on commercial publishers. An internal wiki was set up to identify about 300 multinational publishers, their affiliated publishers and related brands that populate the ISSN database. This wiki is managed by the ISSN International Centre with input from a score of National Centres responsible for identifying and describing the publications of these multinational publishers. The objective is to complete the list by the end of March 2023 and publish it online.

After successfully testing the batch uploading of ISSN data in the ISNI database in 2021, the ISSN International Centre has been working with the ISNI Library Sector Steering Group to address the following actions:

- Describe the current ISNI data schema for publishers as organizations,
- Benchmark against existing data models for publishers,
- Check whether the recommended options in OCLC's report "Addressing the Challenges with Organizational Identifiers and ISNI" are relevant to enhance the identification of publishing entities,
- Define a specific data schema for publishers OR suggest relevant amendments to the current data schema for organizations,



- Describe the processes necessary to create and update data re publishing entities,
- Submit a final report to the ISNI Library Sector Steering Group and the ISNI Quality Team for comments and further implementation.

The dedicated working group reflected upon a data schema for:

- 1/ A publisher having changed its name,
- 2/ A publisher having changed its name and acquired a diachronic work from another publisher,
- 3/ A publisher having acquired two publishers.

Based on these three models, the following issues were identified:

- Inactive and active publishers may not have ISNIs,
- The relation between a publisher and a diachronic work, i.e. a journal, does not exist in ISNI current data schema,
- The date of a journal title transfer between two publishers cannot currently be specified in the ISNI schema,
- The timespan of a relation between two publishers cannot be expressed in the ISNI schema,
- The various names of a publisher are not currently registered in distinct and appropriate fields in ISNI data schema.

In 2023, the ISNI Quality Team will thus work on the review of the existing technical documentation to accommodate these requirements. Further to this update that should address the needs expressed by the ISSN International Centre, ISSN data including publishers' names and three related ISSNs will be batch uploaded to ISNI database and, as a result, ISNIs will be retrieved to populate the ISSN database. Quality reviews will be scheduled at the various stages of the project.

OBJECTIVE 2: Encourage the creation of new ISSN National Centres to extend the ISSN network worldwide

UNESCO has 195 Members and 9 Associate Members, and the United Nations has 193 Member States. In 2020, 90 countries had an ISSN National Centre. Our recurrent strategic objective is to ensure that all countries have a centre where it appears viable, and to encourage low-performing centres to meet standards and good practice. To succeed, it will be necessary to strengthen initial and in-service training and to carry out awareness-raising activities. Our aim is to open at least five new National Centres between 2020 and 2024, to revise the initial training programme and then implement it, to work with the less successful centres, to help set up new infrastructures, to formalise the process of evaluating the application of a new member country, and to create several tools for monitoring the activities of the centres and the agreements ISSN International Centre has signed with them.

Key Performance Indicator: Five new ISSN National Centres are opened by 2024.

It was an exceptional year for three national centres to open in 2021 in part catching up to delays from the interruptions caused by the Covid-19 pandemic. 2022 allowed opportunities for face-to-face meetings again, through which two strong candidates for hosting new national centres emerged. The accession process is being pursued, and if all goes smoothly, there should be at least one new national centre opening by the end of 2023. A detailed document on how to open a national centre has been written to assist serious host candidates in the process.

OBJECTIVE 3: Implement the sixth version of the ISSN standard by creating the family ISSN and other cluster ISSNs

Tracking the changes that a serial publication undergoes over time is a long-standing challenge and the relationship between old and current titles is recorded in the MARC bibliographic formats in specific fields. For several years, ISSN-L has been used to collate the different versions of a continuing resource across multiple media. However, it is only with the sixth version of the ISO 3297 standard, which was released in October 2020, that it will be possible to create other cluster ISSNs. A survey of our user community in 2019 revealed an interest in what could be called an ISSN-F grouping together titles identified by ISSNs and representing the same family. Discussions within the ISSN International Centre determined that an ISSN-F could be embodied as a URI providing access to a visual representation of a publication's history. This representation could be easily created and managed centrally without additional work for the National ISSN Centres as it is already available in the ISSN Portal without yet having a URI or being identified via an ISSN-F.

Key Performance Indicator: Creation of specific fields for cluster ISSNs in data encoding schemes

A discussion paper submitted in May 2021 was followed by a proposal for the MARC Advisory Committee (MAC) about the creation of a repeatable new tag for cluster ISSNs, the 023, so that a URI subfield in \$0 or \$1 would be unambiguous. The discussion paper used the hypothetical example of ISSN-F, a Family ISSN, to illustrate a possible future new Cluster ISSN. The boundaries of ISSN-F were unclear at that time and the extent of the “family” and use cases for it were questioned by MAC members and subsequently explored in the ISSN Review Group. The proposal in November 2021 presented the resulting ISSN Review Group plan to replace the Family ISSN concept with a plan for the Title History ISSN, ISSN-H, an identifier that will group the successive titles held by a publication over time. The proposal was eventually withdrawn before final submission to the MAC. However, after initial feedback from the Library of Congress, MARC Committee requested more investigation into the needs of integrated library system vendors and the impact a new tag would have. Discussions with industry leaders were conducted over the fall of 2022 and winter 2023, and the proposal was resubmitted based on the results in mid-2023. Initial internal tests using ISSN+, the ISSN Network metadata production, show that the automated creation of ISSN-H will work, however a repeatable and distinct MARC 21 field will be required for effective and broad adoption.

OBJECTIVE 4: Implement the sixth version of ISO3297 - ISSN by assigning ISSNs to various types of continuing resources

Significant changes in the publishing landscape may impact the ISSN over the next years. While there is no doubt that serial publications will continue, questions will arise as to their relative importance. The ISSN needs to better identify and include resources such as academic repositories and databases, and make appropriate investments to consolidate its position in the identifier ecosystem. This objective does not imply a change in the format or definition of the ISSN as it already encompasses integrating resources. The ISSN Network aims to raise awareness among producers of all serial publications to ensure that their publications are assigned an ISSN to achieve full implementation of the standard.

Key Performance Indicator: Publication of updated definitions of continuing resources and new data encoding values

A proposal was passed by the MARC Advisory Committee in January 2021 to include additional types of continuing resources defined for the control field (tag 008 position 21) to reflect the full scope of continuing resources covered by ISO 3297:2020. Three code definitions were revised, and six new codes were added. A change request for the

equivalent codes for UNIMARC followed suit in April, and by Fall 2021, the new codes were officially published in both schemes. Official network-wide adoption of the codes happened with the launch of ISSN+ in June 2022. The ISSN Review Group provided an advanced release of the revised ISSN Manual chapter covering this topic in December 2022 to explain in more detail how to use the new codes.

OBJECTIVE 5: Develop interoperability of the ISSN Portal through the management of persistent identifiers and URLs of digital continuing resources

The ISSN International Centre manages metadata of digital serial publications in the ISSN Portal. According to the ISSN Manual, it is mandatory to include the URLs of electronic publications in field 856 of the MARC 21 record. On the ISSN Portal, the URLs in the 856 tags are used to link to the resource itself. Like all bibliographic databases managing URLs of documentary resources hosted on external servers, such as those of issuing bodies and commercial publishers, the ISSN Portal is confronted with URL obsolescence when online publications cease to be updated, disappear or change hosting server. The ISSN International Centre does not index the web permanently and systematically as search engines do to retrieve current URLs. Moreover, a number of resources are not freely available on the web and cannot be retrieved. Our assumption is that only the archived digital resource is stable because it has a persistent URL provided by an archiving agency. Only a minority of digitized or digital titles are archived for the time being but digital preservation is a booming activity. On the ISSN Portal, a specific actionable identifier will be used to bring together the URLs of the resource as published originally, the URLs of the successive publishers if applicable and the URLs for the archived version managed by archiving agencies. This new service will add value to the ISSN Portal by aggregating at a single point the URLs provided by publishers and by archiving agencies for a given digital serial resource.

Key Performance Indicator: The ISSN International Centre to manage operational resolver handling various types of URLs by 2024.

The ISSN International Centre has set up a URN:ISSN resolver (<https://urn.issn.org/>) which integrates the URLs available in field 856. This resolver could be used as the linchpin for the redirection process linking to current and archival URLs. A discussion paper was submitted to the MARC Advisory Committee (MAC) in December 2021, entitled Enrichment of Web Archive Information in Field 856 in the MARC 21 Formats, with the goal of redefining some of the subfields to track archiving information and persistent identifiers (PIDs) and find a solution to link rot and content drift. The January discussion paper resulted in two papers submitted for the June MAC meeting: one proposal to update the 856 field and a second discussion paper on the creation of a new 857 field. The requested changes to Field 856 passed and have been included in the Update No.35 in December 2022. There is now a separate 856 subfield to store PIDs, and another to track non-functioning URIs. The concluding proposal for Field 857 was submitted in November, and passed at the January 2023 mid-winter MAC meeting. Field 857 - Electronic Archive Location and Access should become official with Update No.36 scheduled for June 2023. Further to this formal adoption, the ISSN International Centre shall test with the National Library of Finland the retrieval of archival status data and URLs (operational, past and archival) included in MARC21 856 and 857 fields. The ISSN Manual will be amended to reflect the MARC21 update. The data under 856 and 857 will be stored in ISSN+. The URN:ISSN resolver will then be upgraded to accommodate the various URLs recorded in ISSN+ and thus redirect users successively to the present location of the resource, the archival location of the resource and ultimately the ISSN Portal page. If the test with the National Library of Finland proves successful, the scheme will be extended to all volunteer National Centres.

OBJECTIVE 6: Promote and develop Keepers Registry to associate new agencies and increase the number of identified archived resources

Keepers Registry is a free service that aims to inform the library and publishing community about the actions taken by archiving organizations to preserve titles of digitized and digital serial publications identified with ISSNs in order to promote long-term access to these resources and to stabilize scientific references for the research sector.

For the ISSN International Centre, the takeover of the Keepers Registry service in December 2019 was a strategic decision that resulted in the expansion of the ISSN Portal offering: the ISSN International Centre and the ISSN Network together produce an indispensable source of information on periodicals at all stages of their existence, from their identification and description by the ISSN Network to their preservation by partner archiving agencies.

Key Performance Indicator: The number of archiving agencies participating in KR to reach 20 by 2024.

A meeting of all Keepers agencies was held in March 2022. KR Agencies expressed their interest in initiating a discussion on the themes of resilience, redundancy and collection priorities within the Keepers registry's framework. Particular focus should be placed on how KR can help inform the retention policies of participating agencies in ways that make it more sustainable. It was also noted that KR agencies often have a retention mandate limited to national publications. To increase diversity among archived titles, it is desirable to involve organizations with an international scope such as AJOL and Latindex in the Keepers Registry. Discussions have been initiated by the ISSN International Centre with both organisations.

The Technical Advisory Committee held two remote meetings in 2022. TAC members changed in 2022. The TAC members are: John Chodacki, California Digital Library, Ted Westervelt, Library of Congress, Kate Wittenberg, PORTICO, Judith Barnsby, DOAJ, Ana Maria Cetto Kramis, Latindex, Wendy Robertson, NASIG, Michelle Polchow, UC Davis, and Stephen Marks, U Toronto as consultative experts. Peter Burnhill is still a consultant to the ISSN International Centre Director.

Further to the resolutions approved during the two TAC meetings, the ISSN International Centre ISSN International Centre has developed new public statistics (<https://keepers.issn.org/stats>). They focus on the number of online resources distributed by country of publication which are preserved by Keepers agencies compared to the total number of online resources identified with ISSN per country. They also show the number of OA scholarly resources described in ROAD that are also preserved by Keepers agencies. Another table shows the number of resources issued in a given country that are preserved by each involved agency. A third table shows how archiving is distributed per agency for preserved resources from a given country. These statistics shall help inform the ISSN International Centre's policy regarding the recruitment of new archiving agencies in countries or regions that are not well covered by existing Keepers. TAC members also suggested the ISSN International Centre develop a policy regarding the inclusion of future agencies according to their specificities (geographical diversity, multilingualism, representativeness). This policy will be defined in 2023 and implemented as from 2024.

Two new agencies have been approved to join Keepers Registry, i.e. the ZBW-Leibniz-Informationszentrum Wirtschaft (ZBW) in Germany and the National Library of Spain (BNE). There are now sixteen active agencies and two inactive agencies, i.e. the British Library and the Swiss National Library, that no longer update their data.



Keepers Registry is also a partner of DOAJ, CLOCKSS, Internet Archive and Public Knowledge Project in the JASPER project. Phase One of Project JASPER is a scoping exercise aiming to find a solution that will reduce the number of unarchived open access journals. Starting with a list of diamond open access (i.e. non-APC charging) journals from DOAJ, the five partners have been working together to produce a technical process to archive journals. The project is now actively looking for funding while ingesting more journals. Keepers agencies will be solicited at a later stage to join the scheme once funding has been secured.

On a technical note, Keepers data stored within ISSN+ will be migrated into the new MARC 21 Field 857 - Electronic Archive Location and Access when it is activated in June 2023.

OBJECTIVE 7: Promote the ISSN Portal as a professional tool for the ISSN National Centres to improve the ISSN assignment process

The Governing Board of the ISSN International Centre was informed of the difficulties encountered to achieve this objective, as the National Centres did not show interest in the turnkey options. The ISSN International Centre, with the approval of its Governing Board, decided to abandon this objective in 2022 as the ISSN Portal needs to be overhauled and functionalities will be reviewed.

2. Activities of the ISSN International Centre

2.1 Department of Metadata and Technical Coordination of the ISSN Network (MTCIN)

2.1.1 The development of the ISSN Portal (please see annex 1)

At the end of 2022, the ISSN Portal contained **2,287,852** confirmed ISSN.

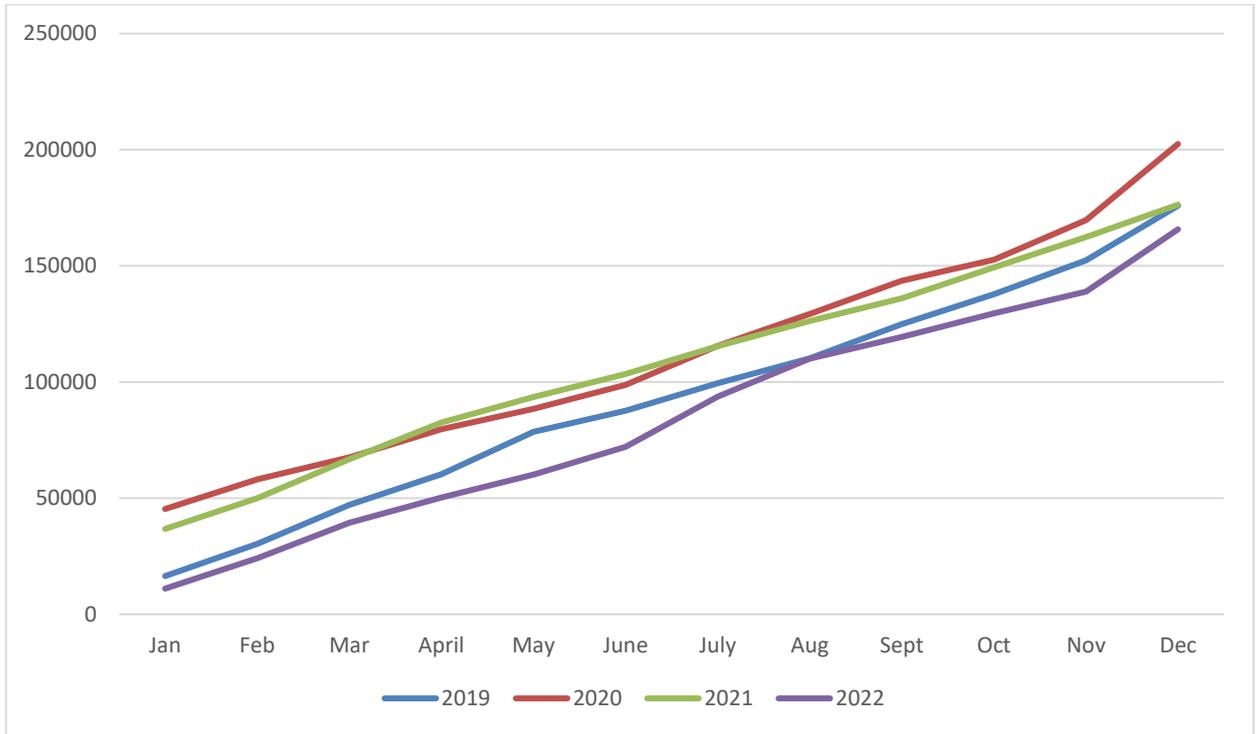
52,329 new ISSNs were added to the ISSN Portal in 2022.

50 ISSN National Centres sent **165,747 new and updated records** which were ingested into the ISSN database in 2022 (instead of 51 centres with 176,330 in 2021). There is a decrease (-10,583) in the number of records produced in 2022 by the ISSN Network compared to 2021.

17,580 errors were corrected by ISSN International Centre staff in records received. This represents a 3.8-fold increase in the number of errors corrected compared to 2021. This increase is due to the implementation of ISSN+ whose validation rules have been aligned with the latest standard bibliographic practices, thus allowing for a more accurate identifications of errors. Network-produced records were loaded on a daily basis to ensure the accuracy and the quality of the ISSN Portal.



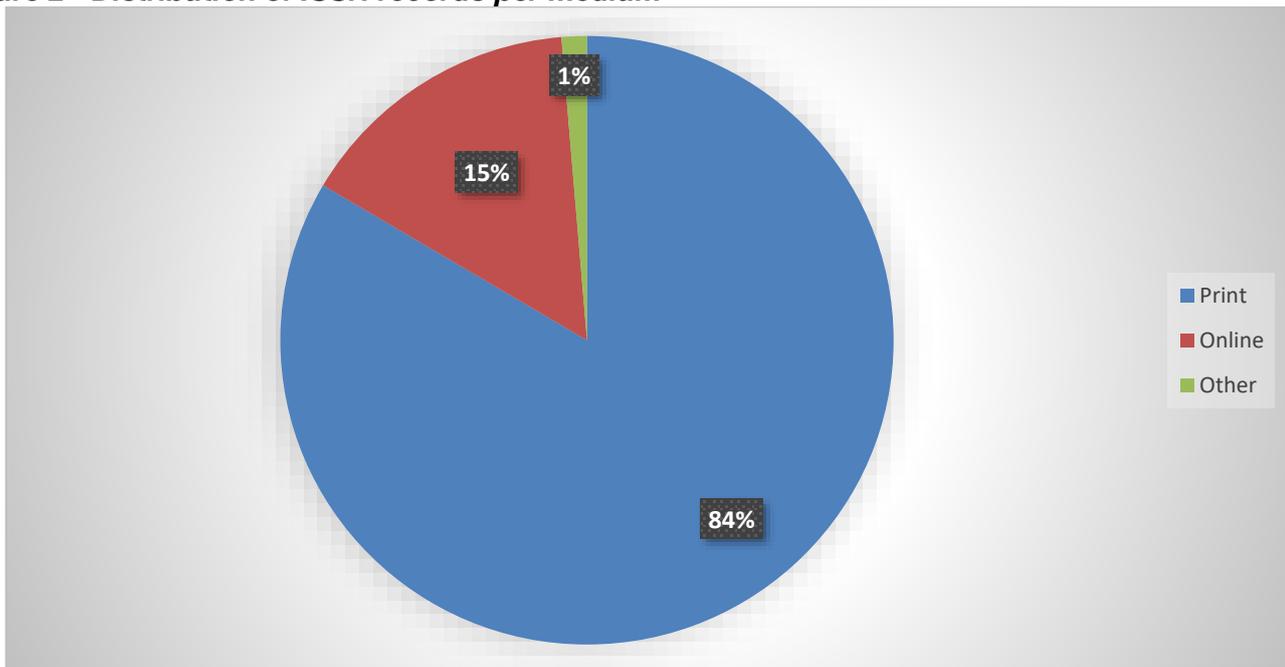
Figure 1 - Number of new and updated records imported into the ISSN Portal, 2017-2022



ISSN assignments to digital resources continued to grow steadily. 23,565 new online resources were identified in 2022, i.e. **45%** of 2022 assignments.

Globally, as of January 2023, **346,173 online resources** are identified in the ISSN Portal, i.e. 15% of total records.

Figure 2 - Distribution of ISSN records per medium





2.1.2 Serving publishers

ISSN requests

In 2022, **2,913 new ISSN assignment requests** were handled by the ISSN International Centre, compared to 2,636 in 2021. **2,387** (82%) requests were processed and **526** (18%) were rejected.

Table 1: Distribution by type of request and status of ISSN requests handled by the ISSN International Centre in 2022

2022	Processed	Provisional	Subtotal	Other: incomplete, rejected	Total requests handled
Assignment	1,935	156	2091	384	2475
Modification	296	0	296	142	438
Total	2,231	156	2,387	526	2,913

Note: usually, a request results in the assignment of two ISSN(s) (print/online)

As of March 2023, there are **6,727 publishers** registered with user accounts on the ISSN Portal.

The **distribution of requests by country** is quite stable compared with the 2021 distribution. Publishers in Hong Kong Special Administrative Region of the People's Republic of China are the most active. Then come Pakistani publishers and International Organizations.



Table 2: Number of active publishers in countries under the responsibility of the ISSN International Centre (cumulative number of ISSN requests since 2018 and as of March 2023)

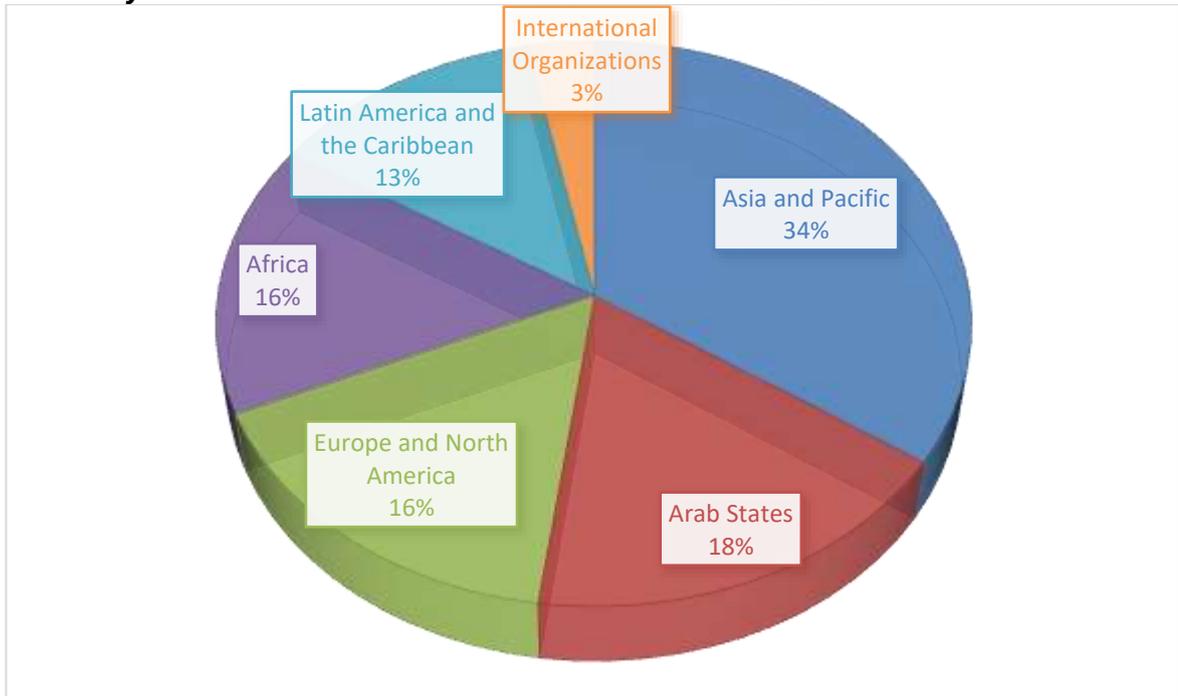
Country	UNESCO Region	Number of publishers	Number of processed requests
Hong Kong S.A.R., China	Asia and Pacific	301	1838
Pakistan	Asia and Pacific	800	1295
International organizations	all regions	213	1176
South Africa	Africa	227	656
Iraq	Arabic States	560	606
Bangladesh	Asia and Pacific	374	545
Kenya	Africa	145	490
Taiwan, Province of China	Asia and Pacific	310	408
Kazakhstan	Asia and Pacific	202	317
Ethiopia	Africa	151	117

Publishers' countries of operations can be associated with a UNESCO region (excluding International organizations). The distribution of registered publishers by region has notably changed over the years with publishers operating in Pakistan, Iraq and Bangladesh being more numerous.

Table 3: Number of registered publishers by UNESCO Region under the responsibility of the ISSN International Centre as of March 2023

UNESCO Region	Number of registered publishers	Number of ISSN requests since 2018	Number of ISSNs assigned since 2018
Asia and Pacific	2,319	4,842	5,604
Arab States	1,190	1,622	1,658
Europe and North America	1,088	2,582	3,071
Africa	1,050	1,795	1,979
Latin America and the Caribbean	867	2,090	2,395
International Organizations	213	1,176	1,521
Total	6,727	14,107	16,228

Fig. 3: Distribution of registered publishers by UNESCO Region under the responsibility of the ISSN International Centre as of March 2023



ISSN assignments by the ISSN International Centre

The MTCIN Department assigned **2,815** new ISSN in 2022, i.e. **2,605** confirmed ISSNs and **210** provisional ones. The assignment activity thus **increased by 9% in 2022** compared to 2021.

Please note that the figures below do not take into account modifications of existing records.

Table 4: Number of ISSN assigned by the ISSN International Centre from 2016 to 2022, sorted by status and type of media

	Confirmed ISSNs			Total confirmed records	Provisional ISSNs			Total provisional records	Total all records
	Print	Online	Other*		Print	Online	Other*		
2016	2,111	1,306	35	3,452	433	143	8	584	4,036
2017	2,139	1,424	26	3,589	254	73	4	331	3,920
2018	1,917	1,019	21	2,957	142	46	5	193	3,150
2019	1,455	1,496	31	2,982	163	88	3	254	3,236
2020	1,638	1,396	20	3,054	160	112	4	276	3,330
2021	1,129	1,190	23	2,342	153	90	3	246	2,588
2022	1,381	1,210	14	2,605	123	83	4	210	2,815

* Any other type of media: CD, DVD, USB sticks, etc...

The ISSN International Centre serves publishers operating in countries without a National Centre. As explained above, publishers from Pakistan and Hong Kong S.A.R., China, as well as International organisations submitted the majority of ISSN requests in 2022 and consequently received the majority of ISSNs assigned.

Table 5: Number of ISSN assigned by the ISSN International Centre from 2016 to 2022, sorted by top countries (totalling confirmed and provisional records)

Country	Nb of ISSN assignments (2018)	Nb of ISSN assignments (2019)	Nb of ISSN assignments (2020)	Nb of ISSN assignments (2021)	Nb of ISSN assignments (2022)	Total ISSN assignments (since 2018)
Pakistan	162	205	287	379	433	1466
International Org.	308	532	300	236	378	1754
Hong Kong S.A.R., China	424	346	347	398	368	1883
Kenya	50	86	92	147	185	560
South Africa	83	117	162	135	172	669
Bangladesh	105	408	129	112	125	879
Iraq	59	112	101	109	114	495
Taiwan, P.O.C.	106	91	101	112	81	491
Kazakhstan	71	63	65	91	69	359
Ethiopia	16	32	22	24	21	115

The assignment workflow with Springer-Nature

The overall Springer-Nature workflow consists in semi-automatic provisional ISSN assignment to publications not yet issued, followed by the confirmation of the provisional ISSNs once the titles have been published. The post-publication workflow is based on a monthly report generated and sent to the ISSN International Centre by Springer-Nature. This report contains a list of titles that were published the month before it was generated. The report also contains ISSN and other metadata. Upon reception of this report, the ISSN International Centre forwards it to the relevant ISSN National Centres that will catalogue the resources and thus confirm their ISSNs.

During year 2022, **372 ISSNs** were provisionally assigned to Springer-Nature planned publications by the ISSN International Centre. Out of these provisional ISSNs, **117 ISSNs** were confirmed in 2022 by concerned National Centres, notably by ISSN Switzerland, ISSN Germany, ISSN UK, and ISSN Singapore. Moreover, **194** provisional ISSNs assigned prior to 2022 were confirmed by National Centres in 2022. Through this workflow, provisional ISSNs are confirmed when the publication is actually issued which can occur 1 to 3 years after Springer-Nature starts planning the publication project.

Table 6 – Number of ISSNs assigned and confirmed in 2022

2022	Nb of provisional ISSNs assigned	Nb of subsequently confirmed ISSN	Nb of ISSNs remaining provisional
Journals	102	52	50
Series	270	65	205
Total	372	117	255



Figure 4 – Percentage of ISSNs confirmed for journals

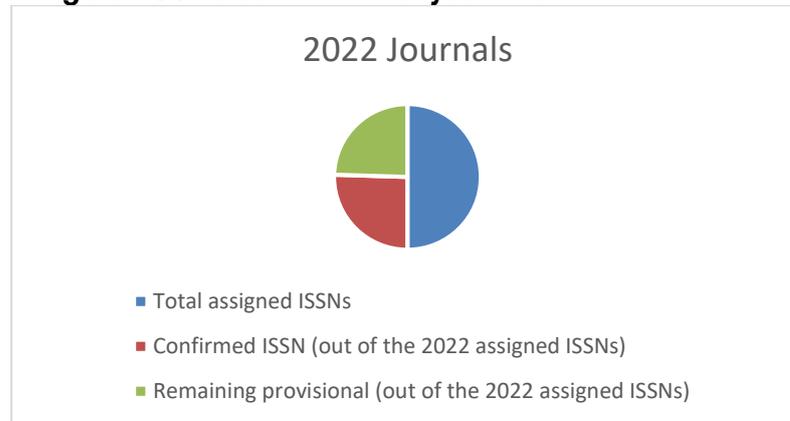
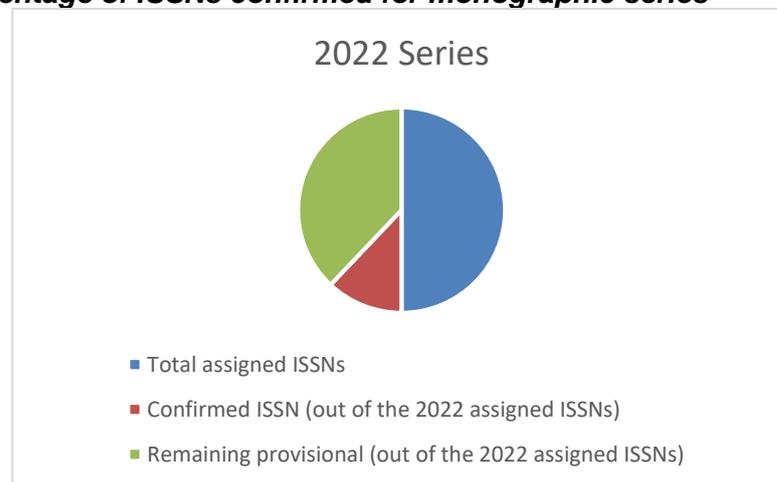


Figure 5 – Percentage of ISSNs confirmed for monographic series



2.1.3 Relationships with ISSN National Centres

The team of the MTCIN Department focused on training National Centres to use ISSN+ functionalities in April and May 2022 (see 1.1.4).

Beside formal training sessions, the bibliographic expertise provided by the MTCIN team to National Centres is delivered on a daily basis. The flow of bibliographic questions from the National Centres is steady with enquiries focusing on ISSN block allocation, questionable publishers, ISSN+, partners, scope and assignment criteria, and responsibility. In July 2022, the generic mailbox Bibquestions used by National Centres to submit their enquiries was coupled with a new management tool that provides for tagging, processing and archiving them.

2.1.4 Implementing ISSN+

ISSN + was launched in June 2022. Prior to the launch, the MTCIN Department set up 21 online training sessions in April-May 2022 to introduce ISSN+ to all National Centres. These sessions were held in French, English, Russian and Spanish. Videos were recorded and made available on the ISSN International Centre Vimeo account for reference. Specific Help Pages in four languages were designed on the ISSN International Centre wiki to guide National Centres in using this new tool.

2.1.5 Quality projects for ISSN Data

Quality of ISSN data is a key element to increase future usage on the ISSN Portal and the corporate extranet, attract new customers and set up partnerships with database vendors, aggregators and other information providers. The plan emphasized the accuracy of the bibliographic data, the coverage of ISSN identification, the enhancement of processes and workflows and the interoperability with partners' data.

Corrections made when importing records from the National Centres are also invaluable to the quality plan. **79,972** records under the responsibility of ISSN France were checked and modified to better reflect the type of continuing resource with the latest adopted codes in field 008 (MARC21).

Projects with partners provide great opportunities to correct mistakes and check the structural validity of the ISSN records in their databases. In 2022, the ISSN International Centre worked with DBC Digital (Denmark) to make amendments to records listed monthly by this partner. The University of Geneva requested the provision of data from **571** records. A request from ANVUR, the Italian National Agency for the Evaluation of the University and Research Systems, led to the extraction and correction of **22,440** records. The same operation was done for NAVER (Republic of Korea) with **122** records and for the Federation of Finnish Learned Societies (Finland) for **22,000** records. **556** eISSNs were checked for African Journal Online. 300 titles and their ISSN numbers were checked for Sabinet (South Africa).

Partnerships are also an opportunity to enhance ISSN coverage. **CIDEMIS** is the automated system managed since 2015 by ABES, i.e. the French Bibliographic Agency for Higher Education, the National Library of France (BnF) and the ISSN International Centre. CIDEMIS helps manage the requests for ISSN assignments and amendments to records regarding continuing resources described in SUDOC (<http://www.sudoc.abes.fr>), the French Higher Education Union Catalogue, involving more than 3,400 libraries nationwide. In the course of their activities, SUDOC cataloguers may identify periodicals and other ongoing resources lacking an ISSN or ISSN data needing an update.

In 2022, **2,094** requests were created in CIDEMIS and transmitted to the ISSN International Center and its network, excluding ISSN France which has a specific workflow in CIDEMIS. These requests included **186** updates and **1122** allocations. **863** requests were processed by the ISSN network in 2022, resulting in 651 ISSN numbers assigned, **102** assignments refused, **110** updates accepted. 41% of requests submitted in 2022 were processed. Overall, at the end of 2022, out of 2,700 completed requests submitted between 2015 and 2022, 49% of requests have been processed, of which 42% have been accepted and 7% refused. 51% of requests remain to be processed. Over the period 2015-2022, of the 1151 requests accepted, 982 ISSN numbers have been assigned and 169 records have been updated by ISSN network centers at the request of Sudoc centers.

The main national centers that have contributed to the assignment of ISSN numbers under CIDEMIS are ISSN Belgium, ISSN USA and ISSN Spain, with 600 assignments in total.

Since 2018, **ISNIs** (International Standard Name Identifiers) have been progressively added to ISSN records. As of March 2023, **39,440 records with ISNIs** are recorded in the ISSN database. The latter contains **9,178 unique ISNIs** that identify issuing bodies and international organizations. MTCIN staff also contribute to ISNI database enrichment by signalling duplicate entries and enhancing ISNI records with names in original alphabet and links pointing to issuing bodies' institutional websites. Since Fall 2021, the ISSN



International Centre has been sitting on the ISNI Library Sector Steering Group. A report was submitted to this group in 2022 regarding the challenges of ISNI assignment to publishers.

2.1.6 The development of the Directory of Open Access Scholarly Resources (ROAD)

4,880 ISSN records describing Open Access (OA) scholarly resources were added to ROAD in 2022. Globally, as of December 2022, ROAD contained **57,638 OA titles** (+ 9% compared to 2021). Open access scholarly resources represent **16% of online publications** described in the ISSN Portal. Progress is good despite the definition of new and stricter inclusion criteria. The ISSN International Centre reviewed **3,368** publications recorded when the service launched in 2013 and that were not indexed in any partner database. Each publication was scrutinized and **1,742 titles** were eventually removed from ROAD.

Table 7 – Evolution of the number of resources in ROAD

	2018	2019	2020	2021	2022
Journals	29,732	34,461	42,068	47,427	52,467
Academic repositories	429	443	450	458	430
Monographic series	550	585	654	887	861
Conference proceedings	325	414	539	765	664
Scholarly blogs	2,220	2,544	2,953	3,221	3,216
Total publications	33,256	38,447	46,664	52,758	57,638

Figure 6 - Evolution of total number of OA publications 2018-2023

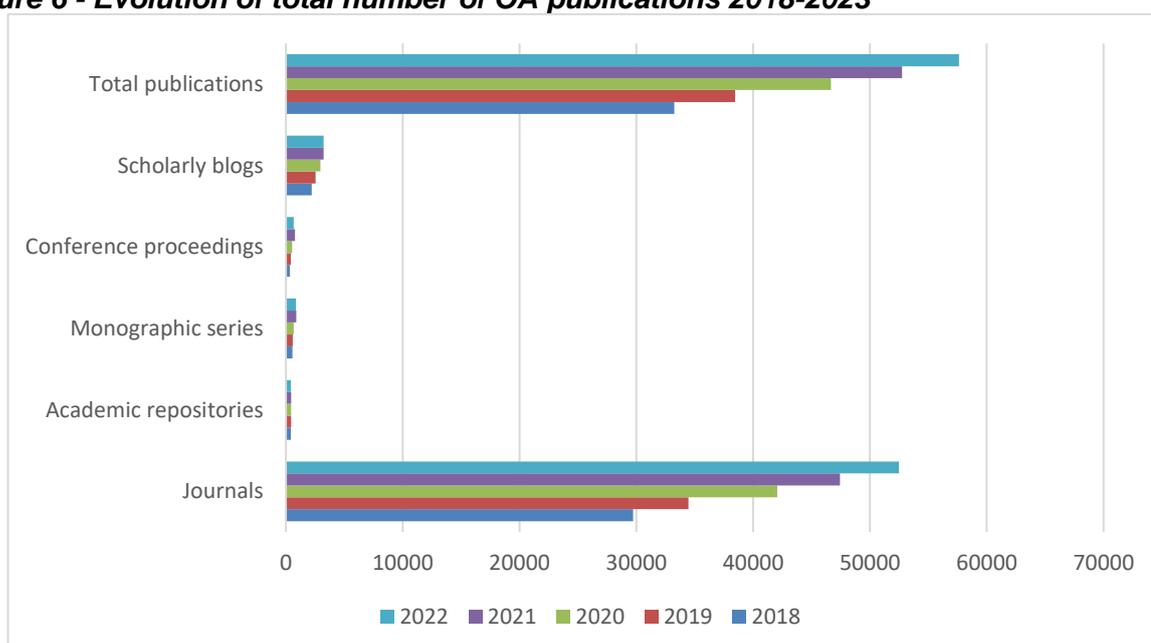


Table 8: Outcome of the 2022 Review of 3,368 ROAD records

3,368 records re-assessed	
Exclusion criteria	Nb
Invalid URL	825
Hybrid journal (OA/paid or OA/unavailable items or OA/restricted access)	322
No article available	252
Non-academic content	78
Less than 5 articles per issue	80
No academic affiliation	50
Restricted access	34
No editorial board	28
No dedicated website	22
No editorial responsibility	20
No editorial line	14
Subscription journal	12
No publishing entity	2
Journal not published	1
No location of the journal	1
No definition of the journal	1
Records with ROAD code removed	1742
Records with ROAD code added or maintained	1626

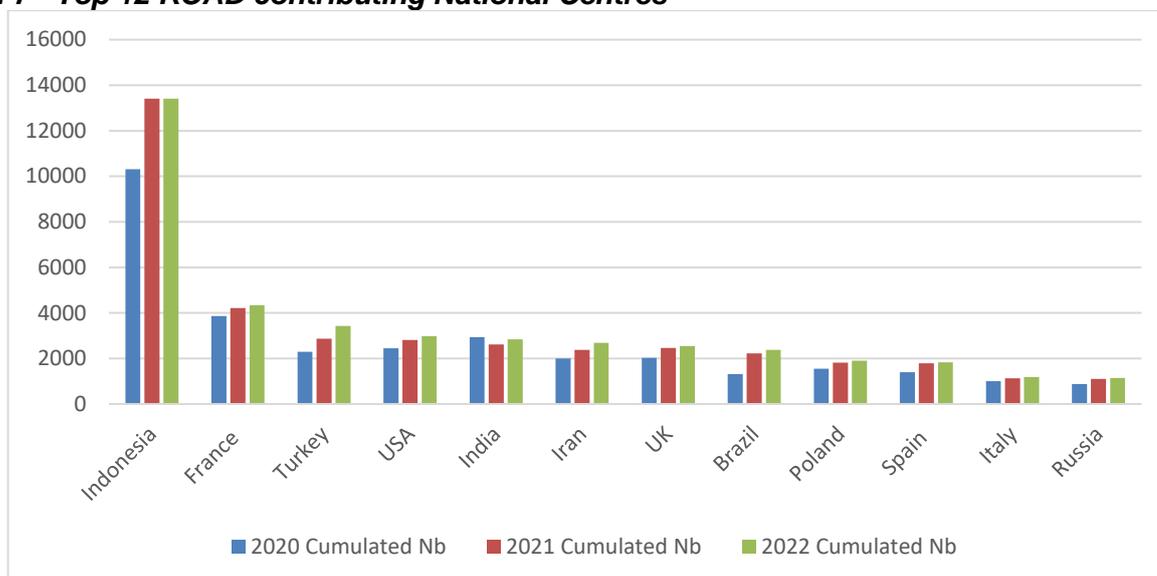
The **distribution per contributing countries** (Table 9) has not changed significantly. **Indonesia** is still in the lead with **13,412 OA resources** but with **only 7 new resources added in 2022**. **Iran** has changed ranking with more OA resources identified in ROAD than the United Kingdom. Altogether, the top 12 countries account for **70%** of all open access titles in ROAD.

Table 9 – Distribution per country of OA scholarly resources in ROAD

	Indonesia	France	Turkey	USA	India	Iran	UK	Brazil	Poland	Spain	Italy	Russia
2020 Cumulated Nb	10,307	3,861	2,289	2,451	2,938	1,994	2,028	1,317	1,550	1,393	1,005	884
2021 Cumulated Nb	13,405	4,209	2,872	2,819	2,616	2,383	2,457	2,221	1,816	1,788	1,136	1,108
2022 Cumulated Nb	13,412	4,345	3,432	2,979	2,843	2,681	2,547	2,381	1,895	1,826	1,189	1,144



Fig. 7 - Top 12 ROAD contributing National Centres



When checking how ROAD resources are indexed by other databases, the following observations can be made:

- 56% of ROAD titles have title-DOIs with Crossref (32,490);
- 20% of titles are being preserved and reported in The Keepers' Registry (11,361);
- 25% are indexed by the Directory of Open Access Journals (14,467),
- 9% are indexed by Latindex (5,722)
- 11% are indexed by Scopus (6,732),
- 17% (9,951) are indexed by both Crossref and Keepers Registry,
- 10% (6,043) are indexed by Crossref, Keepers Registry and DOAJ.

2.1.7 The development of Keepers Registry

As of March 2023, 17 agencies share their preservation data with the ISSN International Centre on a regular basis. The ZBW – Leibniz Information Centre for Economics joined the initiative in 2022. The British Library and the Swiss National Library withdrew from the project in 2019-2020 and updates are no longer made available to the service.

82,168 titles are preserved by partner agencies and **21,172 titles** are archived by three agencies at least. More statistics can be found at <https://keepers.issn.org/stats>.

Data supplied by archiving agencies is matched with ISSN data. When necessary, updates are made in the ISSN Portal. In 2022, **431 provisional records** were confirmed. When necessary, new eISSNs can be assigned by the ISSN International Centre and the ISSN network using data supplied by archiving agencies.

2.1.8 The development of TRANSFER

The ISSN International Centre collaborates with NISO's Transfer Group to disseminate information about changes in publishers of journal titles. The ISSN International Centre operates the Transfer Alerting Service (<https://journaltransfer.issn.org>) which publishes



information about these changes free of charge. Information is made available via an RSS feed, a mailing list and an API.

As of March 2023, **103 receiving publishers** are registered in the ISSN Portal. **7 new publishers** joined Transfer in 2022 and were registered on the ISSN portal which they use to report title transfers. **103 title transfers** were reported by receiving publishers in 2022. Sage Publishing, Taylor and Francis and Wiley are the most active receiving publishers while Wiley, Libertas Academicas and self-publishing companies are the most active transferring publishers.

2.2 Standardization and International Cooperation activities

2.2.1 ISSN Review Group (ISSN RG)

The ISSN Review Group met twenty-one times in 2022.

Among many different topics, the ISSN RG and ISSN liaisons have been working on:

- the harmonization between RDA, ISBD and ISSN;
- the review process, best practices and appropriate collaboration tools, and the reviews of the ISSN Manual, ISBD, and the IFLA Standards Procedure Manual;
- the relationships between ISSN National Centres and multinational publishers (notably through the ongoing development of the Multinational Publisher Wiki);
- the viability and definition of a new type of cluster ISSN called ISSN-History which would group ISSN numbers linked through title changes;
- the developments in linked data.

2.2.2 ISSN Manual

The project to update the ISSN Manual was launched by the ISSN Review Group after the Directors' Meeting in New Delhi in 2019. The policy review and rewriting phase began in July 2020 and remains ongoing. The tool which will be used for the approval process, and for publication and ISSN network access, is a customized wiki built using Xwiki software. It is expected the final draft will be ready in mid-2023.

2.2.3 Activities in the framework of the International Standard Organisation

The seventh edition of ISO 3297 standard was made available to the public in June 2022 after a minor revision was voted in 2021 to introduce editorial amendments.

2.2.4 International Federation of Library Associations (IFLA)

At IFLA, the ISSN International Centre is represented in and works with various committees:

- the Advisory Committee on Standards,
- the Serials and Other Continuing Resources Section (SOCRS),
- the Standing Committee of the Cataloguing section,
- the ISBD Review Group,
- the Bibliographic Conceptual Models Review Group,
- the PRESS₀₀ Review Group,
- the IFLA Standards Procedure Manual Revision Working Group,
- the Linked Data Technical Sub-Committee, which aims to support the publication of IFLA namespaces for the diffusion of IFLA bibliographic standards via the semantic web.

The annual World Library and Information Congress (WLIC) was held in Dublin, Ireland, and three presentations were managed by the ISSN International Centre. The National Centre of Ireland gave an overview of its activities, followed by an ISSN International Centre presentation “Identifying OA Journals: A Core Business of the ISSN Network” at a well-attended Expo Pavilion session. The ISSN International Centre Director was the keynote speaker for the Advisory Committee on Standards open session where she presented “Standards Banquet: What happens when IFLA and ISO come to the same table” (<https://repository.ifla.org/handle/123456789/2044>).

The LRMoo Working Group together with the CIDOC CRM Special Interest Group (part of ICOM) replaced FRBRoo at the same time as harmonizing it with the CIDOC CRM, by mapping all entities, attributes and relationships in IFLA LRM to OO classes and properties. This streamlining is completed and LRMoo is expected to be officially approved and published by the Fall of 2023 after a world-wide review in the Spring. The IFLA Namespaces <https://www.iflastandards.info/> was launched in mid-June 2020, and as of October 2021 contains the FRBR, ISBD, LRM, UNIMARC, and MulDiCat Vocabularies. The PRESSoo elements have not yet been added to the namespace, as a revision is still needed for PRESSoo after the LRMoo is finalized. The PRESSoo Review Group met in November 2022 to review the major changes from replacing FRBRoo with LRMoo and to develop a workplan to start the review work in 2023.

Further to the work done by the “ISBD Editorial Group”, launched in 2018 to work on the ISBD review, the ISSN International Centre continued its participation in the ISBD for Manifestation Task Force. The work of this group has resulted in a first list of elements sets and their related stipulations for “ISBD for Manifestation”(ISBDM). The task force held a webinar in February 2023 (<https://www.ifla.org/news/webinar-materials-available-from-isbd-to-isbdm-a-bibliographic-standard-in-transformation/>). In an updated timeline, the group will present a draft ISBDM for the ISBD Review Group in March 2023, with a revision and commenting phase for WLIC 2023, and to forward the final draft to the Committee of Standards at the end of 2023 for publication in 2024. An official extension of the ISBD revision to include a full LRM-implementation has to be formally decided by the ISBD Review Group.

2.2.5 RDA

The beta version of the RDA toolkit that was launched in June 2018 under the 3R project became the official toolkit as of December 15, 2020. No major library which is a member of EURIG or the ISSN Network has yet made the switch from the original RDA Toolkit to the current one, due to the complexity of creating policy statements and application profiles, and updating training materials. In 2022 cataloguing consortia continued to push back the deadline for the switch. The ISSN Manual will include equivalency tables of ISSN terms to RDA terms, however a ISSN RDA Toolkit Application Profile is not the priority for the time being.

The ISSN International Centre participates on the RDA-FR Continuing Resources Subcommittee developing France’s adaptation of RDA updated to incorporate the LRM conceptual model.

Also under ongoing discussion at ISSN Review Group meetings are the possible conflicts in cataloguing practice caused by the RDA Toolkit’s implementation of the “WEM lock” principle of the LRM model. Recommendations are being made in particular to ensure RDA options for a new description do not conflict with the ISSN Manual.



2.3 Department of Sales, Marketing and Communication (SMC)

In 2022, SMC activities were focused on:

- The renewal of ISSN current subscriptions in order to develop ISSN Services turnover as per the provisional 2022 budget;
- Promoting current ISSN Portal functionalities;
- Prospecting new customers in Europe by publishing news and ads on various media.

2.3.1 Sales

- The sales turnover from ISSN subscriptions increased by 1% in 2022. The sales of ISSN credits decreased by 22%.
- The main services invoiced remain the access to ISSN Portal (56,21 %) and the ISSN Data File (19,27 %).
- The ISSN Portal turnover increased in 2022 compared to 2021 due to the fact that some current customers increased the number of sessions or numbers of accesses to the ISSN Portal.
- Five new customers subscribed to the ISSN Portal in 2022, three new customers and nine existing customers subscribed to the ISSN API, three current customers requested the ISSN International Centre to process their data files through the ISSN Premium service.
- The ISSN Data File turnover decreased compared with 2021 figures.
- -Regarding the ISSN API, eight test accounts were created in 2022 and three organisations subscribed to this service.

2.3.2 Contributions from Member Countries

In 2022, the paid contributions represented **95 %** of the total amount budgeted. The ISSN International Centre recovered a few overdue contributions.

2.3.3 Communication and marketing activities

The 2022 communication plan focused on:

- The ISSN Portal: we published testimonials of ISSN customers on the usage they make of ISSN Data, their views about the future of the ISSN as a persistent identifier and its role in the publishing industry;
- Various ISSN news were published through social networks, on the ISSN institutional website and the ISSN Portal;
- Did you know: twelve “did you know” were circulated through the ISSN Mailing list and on ISSN social networks;
- We issued three ads for IFLA participation:
 - ISSN+ production tool ad;
 - Ads regarding Transfer service distributed to publishers registered with the ISSN Portal (Hong Kong and International Publishers);
 - Ad regarding the ISSN International Centre participation in Frankfurt Book Fair 2022;

- Cooking party ads: we posted 11 recipes selected by ISSN International Centre colleagues through our social networks and on the ISSN mailing list;
- Posters: we issued a cotton-printed poster that highlights the differences in criteria between a traditional ISSN assignment for the ISSN Portal and a more selective assignment for academic open access publications on ROAD. These posters were distributed during the 2022 Directors' Meeting in Cairo (Egypt) and sent via surface mail to National Centres that did not attend.

Promotion of ISSN services (Please see examples of ads and news in Annex 2.)

The ISSN International Centre promoted its services and projects as shown in the list below:

-Archimag :

https://www.archimag.com/sites/archimag.com/files/archimag_360_bases_de_connaissance.pdf

And

https://www.archimag.com/sites/archimag.com/files/archimag_356_ecoresponsabilite.pdf

-Research Information, issue 120, Summer 2022, Suppliers' directory (page 29), ISSN services (page 35):

<https://content.yudu.com/web/tzly/0A44jfm/Rlsum22/html/index.html?page=14&origin=reader> and <https://content.yudu.com/web/tzly/0A44d9o/RI-Spring-22/html/index.html?page=38&origin=reader>

-DPC News, 22 April 2022: <https://www.dpconline.org/news/issn-has-lasting-appeal>

-Information today & Computers in Libraries: ads in Computers in Libraries, volume 42, numbers 7 and 8, October 2022, Information Today-Volume 39, issue 8, October 2022, Information Today-Volume 39, issue 7-October 2022, Online Searcher- volume 46, September – October 2022

-Latindex published a Facebook article (March 2021):

<https://www.facebook.com/notes/latindex/the-keepers-registry-is-now-available-on-the-issn-portal-httpsportalissnorg/1041489816222742/>

-NISO published an article on its website (April 2022): <https://www.niso.org/niso-io/2022/04/issn-has-lasting-appeal>

News published on the ISSN institutional website and through social media

- Institutional website

16 news items were published on www.issn.org in 2022. All news was translated in six languages.

- Social media

The ISSN Facebook page (<https://fr-fr.facebook.com/ISSNInternationalCentre>) reached 3,105 likes in February 2023 (2,939 likes in March 2022) and 3,244 followers

in February 2023 (3,180 followers in March 2022). The ISSN Facebook page is regularly updated with news, photos, and videos from the ISSN Network.

As of February 2023, ISSN International Centre Twitter account (https://twitter.com/issn_ic) had approximately 1,342 subscribers (1,223 subscribers in March 2022). The ISSN International Centre Twitter account gets 16-24 new subscribers per month. 100 tweets were issued by the ISSN International Centre in 2022 reaching 30,000 impressions.

An institutional LinkedIn page (<https://fr.linkedin.com/company/issn-international-centre>) was created in October 2021. As of February 2023, this account has 263 followers (209 followers in March 2022).

- Participation in professional events

The ISSN International Centre participated in various professional events:

- **UKSG, 30 May-1st June 2022 (online)**

- **IFLA WLIC 2022, 26-29 July 2022, Dublin (Ireland)** (<https://2022.ifla.org/>): the ISSN International Centre was “premium exhibitor” and delivered a presentation entitled “Identifying Open Access Journals: a Core Business of the ISSN Network”.

- **Frankfurt Book Fair 2022** (19-23 October 2022) as delegates.

2.4 Information Systems Department

In 2022, the IS Department continued to provide its technical services to ISSN International Centre staff, the ISSN Network, and to external customers and partners by providing regular data exports.

In 2022, the IT team was strengthened with the recruitment of two junior developers, a project leader and a part-time IT consultant. This new context means that a fully-fledged IT service is now operational and in a better position to meet the various needs of the ISSN International Centre and coordinate the work of the various partners contributing to IT activities. Daily operations of data management have been fully secured (backups, management of scripts, documentation...) and streamlined.

2.4.1 Switch to production of ISSN+ and further developments

ISSN+ continued to be a major activity for the IS Department in 2022.

Thanks to the collective effort of the ISSN International Centre and the support of contractor Anybox, it was possible to switch to production the “MVP” (Minimum Viable Product) version of ISSN Plus on 26 June 2022.

The various data processing scripts developed internally at the ISSN International Centre both for data input (external data flows: Keepers etc.) and for data extractions from the production system (for the Portal, external users etc.) were streamlined and a detailed documentation was drafted in order to ensure their proper maintenance.

The following items were developed between September 2022 and January 2023 and substantially improved the application:

- Data enrichment (automated adding of external data to ISSN records): as in the ISSN Portal, ISSN cataloguers have now access to a full version of the ISSN records with data elements originating from external sources (Keepers, DOAJ, Crossref, Wikipedia, etc.);
- Tabular exports: ISSN cataloguers can export ISSN records in a format directly compatible with Excel or Open Office;
- Kibana statistics: The “Kibana” module of the ElasticSearch search engine was configured so as to make it possible to access in real time various statistic tables showing the contents of the ISSN database;
- Record extractions through the submission of an ISSN list: it is now possible to extract ISSN records based on a list of ISSNs provided in a text file;
- Automated management of linking fields: linking fields (MARC21 tags 760 through to 787) are now automatically added or deleted in order to preserve the consistency and logic of reverse linking; key titles in linking fields are also automatically updated whenever the reference tag is modified;
- Submission of lists of ISSNs: it is now possible to submit a tabular file of ISSNs and to retrieve an Excel file containing the most important ISSN data elements (including Keepers and external sources metadata), as well as diagnostics concerning the numbers submitted;
- Error dashboards (internal ISSN International Centre development set up in cooperation with Anybox): all National Centres can now access a specific table of error messages attached to their ISSN records which can be drilled down, filtered, reordered, etc. to have an overview of the remaining issues to be solved; these tables are updated on a daily basis and an Excel export is possible;
- MARC 21 Profile web version: the MARC 21 reference structure used internally by ISSN+ for the validation of ISSN records and for cataloguing is now published automatically as a web page to be used as a reference tool by ISSN cataloguers.

2.4.2 Technical support to the ISSN International Centre

The contract with the Normaprint company, in charge since 2016 of the monitoring and management of the local computer system infrastructure at the ISSN International Centre, has been ongoing in 2022.

Thanks to this fruitful cooperation, apart from regular current checks and assistance, the following items were taken care of during this period:

- Setting up of an internal server at the Turbigio office for the simulation of the ISSN+ and ISSN Portal applications (in order to help with testing, development, fault tolerance solution);
- Systematization of backup outsourcing;
- All the computers at the Turbigio office were replaced by newer laptop versions; staff members now have a dedicated laptop at home for teleworking activities and a specific office laptop.

Due in particular to the fact that the ISSN International Centre is now managing its own production tool, security issues need to be addressed. We have used the service of an external auditing company twice, i.e. L’Informantique communicante, in order to assess potential problems with the ISSN+ application as such and with internal processes.

2.4.3 Maintenance and updating of the ISSN Portal

The ISSN Portal is basically functional but practice has shown that it is difficult to maintain and improve, due to the specific way it was coded and structured. Furthermore, it relies on a version of the CMS Drupal which is longer maintained and the transition to a newer version would entail a fundamental overhaul. The solution retained is to develop a new version of the Portal tightly linked to ISSN+. A business analyst was hired end of 2022 in order to help

with the redesign of our public data exposure tool and of its different components. The goal is to link this new Portal as much as possible to ISSN+ so as benefit from existing blocks of code and to obtain a set of logically articulated components corresponding to our different needs.

In October 2022, as the contract for the maintenance of the software was coming to the end of its normal annual renewal and as the IT team thought it had gained sufficient practical knowledge, the IT team decided to take over this activity. The contract with Tech'Advantage, which had previously bought the original company "Progilone", was not renewed and a smooth transition was organised.

The IT team can now correct all current bugs in this application.

The hosting of the ISSN Portal was switched from the Gandi platform to OVH cloud where the ISSN International Centre stores its various virtual machines. This means that all public ISSN services are now hosted on our OVH servers, the only exception being the institutional web site www.issn.org, also hosted on OVH but through a specific hosting partner (MyOwn).

The last step to a unified computer infrastructure was performed beginning of 2023. As there was no need to maintain the dedicated server in Montpellier at CINES which had hosted the Virtua application for many years, the remaining scripts were moved to one of the existing OVH machines, which allowed for the termination of this specific contract with CINES.

2.4.4 Deployment of IT tools

The ISSN International Centre implemented the tools below to smoothen its daily processes.

- **Gitlab**

Until 2022, the IS Department had no unified repository for the maintenance of the code of the various services and applications, even though a "Github" account had already been established. After some transitioning work, all applications, services and scripts (including the ISSN Portal, ISSN Plus etc.) are now managed in a common "Gitlab" account. This also means that a common "code of good practice" has been established concerning procedure whenever any kind of modification has to be made to any piece of code.

- **Freescout**

The IT service set up an external "ticketing" service (Freescout) which was built on top of two mailboxes, i.e. bibquestions@issn.org (for bibliographic issues) and support@issn.org (for IT issues). Thanks to this service, ISSN International Centre staff members may share and process all enquiries sent by National Centres. This also allows for a better monitoring of pending issues and enhances cooperative work among staff members.

- **OpenProject**

The IT service set up this widely used project management system mainly as an internal ticketing service in order to coordinate the work of the developers. It is also the fundamental tool for the whole team working on ISSN+ and is also used to maintain the internal documentation of the service. It should be stressed that IT shared documentation has been substantially improved over the last year.

- **Xwiki**

This tool is used to host three different services (as specific “Wikis”):

- the identification of multinational publishers;
- the ISSN Manual;
- the ISSN Plus Help pages.

- **Weblate**

This application was set up in order to manage the multilingual translations of the ISSN+ software.

- **Mailjet**

The ISSN International Centre team now uses this service to manage “mass” emailing to our partners and contacts.



Conclusion

The highlight of the year 2022 was the launch of the ISSN+ application, which represents the culmination of significant investments and required a major mobilization of the team. The National Centres are satisfied with this new tool which drastically improves the quality of their production. The satisfactory adoption of the tool by the network is extremely gratifying for the International Centre team.

The smooth operations of the IT team allow us to serenely tackle the projects of 2023, in particular the redesign of the ISSN Portal, which should become the showcase of the International Centre and its network. This new portal will merge all of the International Centre's services as well as information for the various users within and outside the network. This redesign will include the technological aspects of strategic projects.

The International Centre is a data manager and provider for libraries, publishers, researchers and the general public. Like all organizations and businesses, especially those located in Europe, the Centre faces geopolitical tensions and environmental challenges. The current threats will lead the ISSN International Centre to reflect on the long-term protection of its data, its transmission and the sustainability of its development model with regard to its carbon footprint.



ANNEXES

ANNEX 1: 2022 Usage Statistics for the ISSN institutional website and the ISSN Portal

ANNEX 2: Examples of ads, Did You Know and press releases



ANNEX 1: 2022 Usage Statistics for the ISSN institutional website and the ISSN Portal

1/ Usage of the institutional website (<https://www.issn.org>)

Over the last years, the ISSN International Centre has enhanced its institutional website by providing information in all six official languages of the United Nations. As a result, the statistics show that this website is now widely used. **539,813 users** were counted in 2022 (- 2,64 %), including **530,914** new users. The English-speaking (37%) and Chinese-speaking (21%) audiences are the most represented.

Table 1 - Global visit distribution on the institutional website per country in 2022

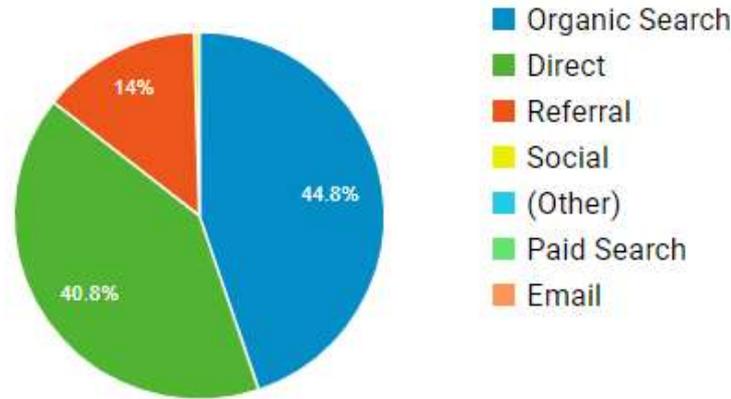
Country	Users	% Users
1.  China	118,923	 22.13%
2.  India	50,517	 9.40%
3.  United States	42,032	 7.82%
4.  Mexico	24,578	 4.57%
5.  Spain	20,775	 3.87%
6.  France	16,092	 3.00%
7.  Brazil	13,805	 2.57%
8.  Indonesia	11,337	 2.11%
9.  Germany	10,852	 2.02%
10.  United Kingdom	10,771	 2.00%

Visits to the ISSN website come from search engines (45%), direct access (41%) and from other websites (14%), in particular from elsevier.com (50% of referrals from other web sites). Social media do not generate much use. 17 % of users of the website use a mobile phone.



Fig. 1 - Acquisitions of the institutional website in 2022

Top Channels



As shown in the list below, the most visited pages on the institutional website are first the page of the List of Title Word Abbreviations (LTWA) and secondly the home page.

Page	Page Views
/services/online-services/access-to-the-ltwa/	294,404
/	232,412
/services/requesting-an-issn/	47,349
/understanding-the-issn/what-is-an-issn/	34,577
/es/	33,339
/es/comprender-el-is...e-es-el-numero-issn/	32,446
/centre/india-inde/	21,447
/understanding-the-is...s/use-of-issn-in-doi/	19,144
/the-centre-and-the-...-issn-network-today/	17,725
/zh-hans/services-et-...igne/acces-a-la-ltwa/	17,607

2/ Usage of the ISSN Portal (<https://portal.issn.org>)

In 2022, **3,014,313** visits were counted on the ISSN Portal with an average visit duration of **3 min 14s (413,757 using a smartphone, i.e. 14% approx.)**. 60% visits have bounced, i.e. left the website after one page. On average, there were 3.8 actions (page views, downloads, outlinks and internal site searches) per visit.

Visits come mostly from **India** (384,629), the **USA** (337,996), **Brazil** (173,649), **Indonesia** (141,166) and **China** (111,784). China is the newcomer among the top five.



Table 2 - Global visit distribution on the ISSN portal per country in 2022

COUNTRY	VISITS
India	384,629
United States	337,996
Brazil	173,649
Indonesia	141,166
China	111,784
Spain	101,941
United Kingdom	95,737
France	91,814
Mexico	74,621
Turkey	74,005

3,014,313 visits



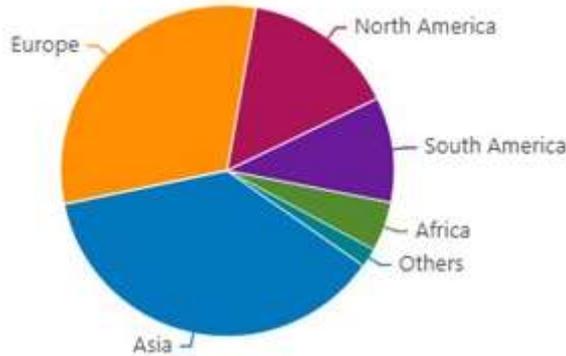
World-Wide

Visits

9,240,822 pages were viewed over the period and there were **6,231,781 unique page views** (5,173,697 last year). Users performed **1,362,635 total searches** on the portal (1,105,415 in 2021) using **4,364** unique keywords. There were **46,003 downloads** among which 42,263 unique downloads.

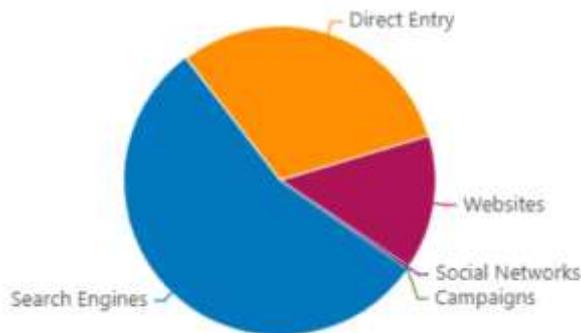


Fig. 2 - Distribution of visits on the ISSN Portal per continent in 2022



As shown below, search engines are the main route to the ISSN Portal for users, direct entries are the second route and Websites rank third.

Fig. 3- Acquisitions of the ISSN Portal in 2022



Below is the list of the main websites providing visits to the ISSN Portal:

WEBSITE	▼ VISITS	ACTIONS
doaj.org	14.6% 62,047	115,806
www.issn.org	6.3% 26,998	147,668
www.mendeley.com	4.5% 19,133	30,596
road.issn.org	4.4% 18,578	147,569
catalogue.bnf.fr	2.2% 9,208	17,516
es.wikipedia.org	2.2% 9,181	13,357
rsf.research.ac.ir	1.8% 7,719	13,574
es.m.wikipedia.org	1.5% 6,339	9,131
link.zhuhu.com	1.5% 6,209	24,844



ANNEX 2: Examples of ads, Did You Know and press releases

ISSN PORTAL The Global Index
for Continuing
Resources

K
Keepers Registry

TRANSFER

ROAD INSTITUTE
OF OPEN ACCESS
LIBRARIANRY
RESOURCES

THE ISSN HAS LASTING APPEAL

ISSN Data and the associated suite of services have become an essential element in the identification of continuing resources worldwide: the ISSN Portal to freely and easily identify more than 2.5 million serials; ROAD to access Open Access scholarly resources curated by the ISSN Network; Keepers Registry to check which digital resources are archived by our 14 contributing agencies; and Transfer Alerting Service to track journal transfer information.

Since 1975, the ISSN has been the unique and persistent identifier for journals and other continuing publications. On a daily basis, it serves librarians, editors, publishers, content providers, database managers, scholars, students.

Bodil Dalgaard-Møller, Database Consultant at **DBC DIGITAL**, the Danish Library Centre with the Danish Union Catalogue (DanBib) and library.dk, emphasizes that "ISSN is important as the official reference for identifying and distinguishing continuing resources".

For 10 years, the **Copyright Licensing Agency** (CLA), a UK non-profit organization, has been using the ISSN Portal. Caroline Baldry-Last, CLA Data Team Manager comments "CLA has had a positive relationship with ISSN Portal for over 10 years. We use their services on a daily basis as a trusted source to identify bibliographic metadata in order for us to accurately distribute our revenue to copyright holders."

In 2021, more than 3 million ISSN visits were made to the ISSN Portal to check and find reliable data on archived, ceased and current publications. Denise Peres, Librarian coordinator at **SciELO** notes that their aim is to benefit from "a reliable source, with a single standardized record format for generating data and indicators."

The latest version of ISO 3297 standard published in 2020 takes into account the requirements of the library and the publishing communities. The standard has been improved by introducing the following items:

- the concept of "cluster **ISSN**" to group serials based on various characteristics, e.g. print and digital media formats or preceding and succeeding titles,
- the expansion of the list of resource types eligible for ISSN assignment, e.g. blogs, conference proceedings,
- the specification of ISSN interoperability with other identification systems, e.g. DOI, EAN, URN.

Contact us to learn more about our offers for professionals: sales@issn.org

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INTERNATIONAL CENTRE



45, rue de Turbigo - 75003 Paris - France - www.issn.org

EL PORTAL DEL ISSN: LA BASE DE DATOS ACREDITADA PARA LOS RECURSOS CONTINUADOS



El Portal del ISSN (<https://portal.issn.org/>) es el punto de acceso a todos los datos del ISSN. El Portal permite identificar un recurso continuado de manera inequívoca mediante su ISSN, ISSN-L, título clave, título propiamente dicho, país de publicación, soporte y URL.

- 2.5 millones de ISSN y de títulos de revistas impresas y en línea identificados en el mundo,
- Datos actualizados en tiempo real,
- Alrededor de 60 000 nuevos ISSN añadidos cada año,
- Casi 130 000 modificaciones al año,
- Búsqueda simple, avanzada y experta para identificar recursos en serie ya publicados o que van de publicarse en el futuro,
- Búsquedas por faceta, incluida la clasificación por materia,
- Funciones de visualización mejoradas, historial de títulos y relaciones de título,
- Los datos del ISSN están disponibles para descargar en varios formatos, por ej., MARC 21, UNIMARC, MARC XML, RDF/XML, RDF turtle, JSON,

Póngase en contacto con nosotros para conocer nuestras
ofertas
sales@issn.org



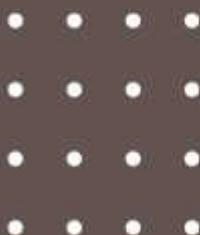
AS A PUBLISHER, DO YOU WANT MORE INFO ON HOW TO SUBMIT AN ISSN REQUEST?



You are a publisher, please create an account:

- 1) Select your country of publication below to be directed to the relevant ISSN centre
- 2) Read carefully the [Guidelines](#) and the [FAQ](#) before submitting an ISSN request.

YOU CAN REFER TO THE GUIDELINES ON THE ISSN PORTAL



<https://portal.issn.org/>



THE ISSN IC HAS DEVELOPED ITS OWN PRODUCTION TOOL TO BETTER SERVE THE ISSN NETWORK AND TO PROVIDE BETTER METADATA TO ITS CLIENTS!

ELASTICSEARCH SEARCH
ENGINE

BASED ON OPEN SOURCE
TECHNOLOGIES

VUE.JS
FRONTEND

PYTHON
BACKEND



ISSN +

- **ДОСТУП К VIRTUA БУДЕТ ОКОНЧАТЕЛЬНО ПРИОСТАНОВЛЕН В ЧЕТВЕРГ 23 ИЮНЯ В 17:00 CEST - 15:00 UTC**
- **С ПЯТНИЦЫ 24 ИЮНЯ ПО ВОСКРЕСЕНЬЕ 26 ИЮНЯ КАТАЛОГИЗАЦИЯ БУДЕТ НЕВОЗМОЖНА**
- **ВВОД В ЭКСПЛУАТАЦИЮ ISSN+ СОСТОИТСЯ В ПОНЕДЕЛЬНИК 27 ИЮНЯ В 9:00 CEST - 7:00 UTC.**





LES SUPER FONCTIONNALITÉS D'ISSN+

**ATTRIBUTION AUTOMATIQUE
DES ISSN**



**SUGGESTIONS DE
TITRES ABRÉGÉS**



**RECHERCHE AVANCÉE SUR
TOUS LES CHAMPS
MARC21**



**NOUVELLES FACETTES
POUR FILTRER LES
RÉSULTATS DE RECHERCHE**



INTERFACE INTUITIVE



**RECHERCHES
PAR EXPRESSION RÉGULIÈRE**

