EDP Sciences-SMAI Subscribe-to-Open program

2022 Transparency Report

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2022 Transparency Report
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EDP Sciences-SMAI Subscribe-to-Open program

EDP Sciences is a reputed publishing house in Science and Technology, based in France. The Society of Applied and Industrial Mathematics (SMAI) is a French learned society. We have been partners for the publication of applied mathematics journals for nearly 20 years. For the last 3 years, we have implemented a Subscribe-to-Open program to transition the journals that we co-publish to open access.

For the second year in a row, we are very pleased to share this second Transparency Report for 2022. As advocates of open science, we support the principle of transparency of costs and prices. The 2022 Transparency Report updates the metrics published in the 2021 transparency report: evolution of subscription prices, renewal targets, publication costs, and other key measures, and includes additional metrics such as publication statistics and subscription price per article. More detailed information is available to interested libraries on request. For more information on the EDPS-SMAI S2O program, see the FAQs or download the leaflet. Last year's 2021 Transparency Report is still available to download.

Subscribe-to-Open (S2O) is an alternative, transformative model that aims to transition subscription journals to open access using subscription revenue to cover open access publication costs. First introduced by Annual Reviews, S2O has been embraced by a number of publishers who have come together in the S2O Community of Practice. This innovative model builds on historical collaborative initiatives such as SCOAP3 and Knowledge Unlatched, and has quickly become an accepted approach for achieving open access, particularly in the mathematics community.

A journal publishing under a Subscribe-to-Open model will publish its content in open access if sufficient subscriptions have been renewed at the end of the renewal period. In our implementation of the model, authors are then able to publish in open access, free of charge, and articles are published under a Creative Commons CC-BY license which allows authors to retain the copyright and others to share and adapt the content. If subscription renewal targets are not met, the content remains or reverts to being accessible to subscribers only.

Journals involved

2020: Pilot project: Mathematical Modelling of Natural Phenomena

In 2019, EDP Sciences in partnership with SMAI piloted a Subscribe-to-Open publication model with a first journal, Mathematical Modelling of Natural Phenomena (MMNP). The model change was communicated to subscribers in October 2019. The subscription renewal campaign was declared successful at the end of February 2020 with 98% subscriptions renewed, exceeding the target of 95% renewals that had been set. MMNP transitioned to open access in early March 2020, see press release. Throughout the remainder of the year, additional subscription renewals were received, and 100% subscription were renewed before the end of the year. MMNP was the first mathematics journal in the world to publish in OA under the S2O model.

2021: Extension to the whole portfolio

The success of the MMNP S2O pilot, albeit on the basis of a small number of subscribers, paved the way for the extension of the S2O program to 5 other maths journals, see press release. However, 2021 saw the rise of the COVID pandemic and with it challenging economic conditions that affected library budgets. Despite falling short of our self-imposed targets, we decided nevertheless in May 2021 to publish all the journals in open access. The decision to proceed was based on a range of exceptional factors and would not necessarily have been taken had finances alone been considered. See press release announcing the transition to open access of the whole portfolio. A blog post written for the S2O community of Practice explains our decision process further.

The 6 maths journals currently taking part in the program to transition to open access under a S2O model are listed in the following Table. Following the success of the 2022 subscription renewal campaign (see below for details), all journals in the portfolio will continue publishing in open access in 2022 without interruption.

Table 1. Journal full name, short name, year of joining the S2O program, and years published in open access (OA) vs. subscription (subs).

Journal full name and link	Short name	Year joining S2O program	Year published in open access		
			2020	**2021**	**2022**
Mathematical Modelling of Natural Phenomena	MMNP	2020	OA	OA	OA
ESAIM: Control Optimisation & Calculus Variations	ESAIM:COCV	2021	subs	OA	OA
ESAIM: Mathematical Modelling & Numerical Analysis	ESAIM:M2AN	2021	subs	OA	OA
ESAIM: Probability & Statistics	ESAIM:PS	2021	subs	OA	OA
RAIRO - Operations Research	RAIRO-RO	2021	subs	OA	OA
RAIRO -Theoretical Informatics and Applications	RAIRO-ITA	2021	subs	OA	OA

All journals are published in partnership by EDPS and SMAI, except RAIRO-ITA which is published by EDPS only. Although not co-published by SMAI, RAIRO-ITA has benefitted from the resources of the S2O program to transition to open access.
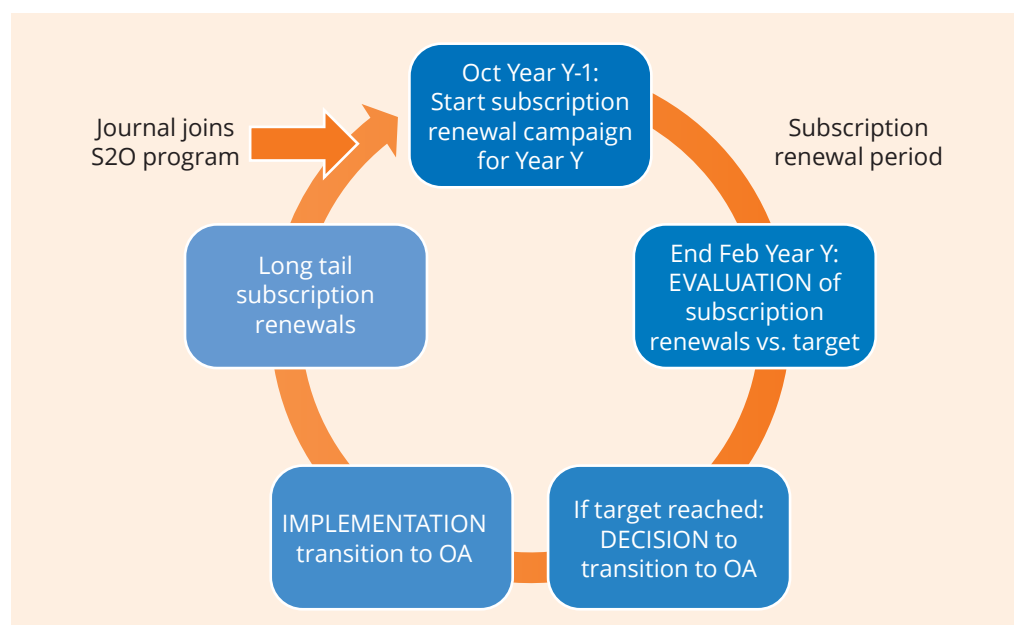
EDPS and SMAI also publish together ESAIM: Proceedings and Surveys, which has been in open access from the beginning. The journal publishes mainly conference proceedings. Production costs are covered by conference organizers. This journal is not included in the EDPS-SMAI Subscribe-to-Open program.

Definitions

The decision to publish the 6 maths journals under a Subscribe-to-Open model was made by EDP Sciences and SMAI in 2019 (for the first pilot journal MMNP) and during the course of 2020 (for the other journals).

Subscribe-to-Open cycle: The decision to publish a journal under the S2O model in year Y is made in year Y-1 and communicated to agencies and subscribers at the time of subscription renewals for year Y. At this time, the journals are announced as being *published under a S2O model*, even if they do not end up being *published in open access* in the current year. The journals then enter the S2O cycle. The annual S2O cycle runs typically from end of February of year Y to end of February of Year Y+1. The cycle repeats every year, with the aim to keep the journals in open access with no break period and thus perennialize the transition to open access under the S2O model. See Figure 1 below.

Figure 1. Subscribe-to-Open cycle for a journal joining the Subscribe-to-Open program in Year Y-1.

Subscription renewal period: The subscription renewal period typically runs from October of Year Y-1 to end of February of Year Y. From October of Year Y-1, EDP Sciences sales department starts contacting its existing subscribers through the usual channels, inviting them to renew their subscription for Year Y, on the basis of a Subscribe-to-Open model.

The evaluation of the 2021 renewal campaign was postponed from end of February to end of April 2021 due to delays in renewals in the context of the COVID pandemic. A decision was made to transition the journals to open access publication despite the subscription renewal target not having been reached (see below for details).

By contrast, the 2022 renewal campaign was declared successful at the end of February 2022, with the online subscription renewal target being met for all journals except one (see below).

Grace period: To account for administrative delays, a grace period is given to subscribers to renew their current year's subscription. In 2022, EDP Sciences set the grace period to the end of January 2022 (instead of mid-February in previous years). After the grace period, access to content not published in open or free access is discontinued for subscribers not having renewed their subscription. This applies to all subscription journals published by EDP Sciences.

Archives: Access to the archives of the maths journals is reserved for subscribers.

A 5-year "moving wall embargo" was in place until 2021 for the journals MMNP, ESAIM:COCV, ESAIM: M2AN and ESAIM:PS. This resulted in gradual opening of all content older than 5 years in free access to all. The "moving wall embargo" was frozen for these journals from 2022: content not yet opened will remain permanently in gated access. This allows to provide a material benefit reserved to subscribers of the journals under the S2O model.

RAIRO-RO and RAIRO-ITA were not under a moving wall embargo: content published since 1999 and until the transition to open access has always been in gated access. Pre-1999 archives of these two journals were digitised in 2017 under the NUMDAM program (NUMérisation de Documents Anciens Mathématiques) of the French Ministry of Research and the CNRS and are available in free access.

Table 2. Availability of content on EDPS's platform for the maths journals included in the S2O program. Content in free access is free to read for all. Content published in open access is free to read for all and free to share and adapt under a CC-BY 4.0 licence.

Journal short name	Content in free access	Content in gated access	Content in open access under S2O program
MMNP	2006-2016	2017-2019	2020-present
ESAIM:COCV	1996-2016	2017-2020	2021-present
ESAIM:M2AN	1967-2016	2017-2020	2021-present
ESAIM:PS	1997-2016	2017-2020	2021-present
RAIRO-RO	1968-1998	1999-2020	2021-present
RAIRO-ITA	1974-1998	1999-2020	2021-present

S2O renewal target: For the maths S2O program, the subscription renewal target is set at 95% of the total yearly subscriptions being renewed at the end of the subscription renewal period, compared to the baseline year.

The totality of subscriptions may not be renewed by the end of the subscription renewal period, there is a long tail of subscriptions to the current year of content being renewed throughout the year. The renewals coming after the end of the renewal period do not affect the decision to open the content, which is made at the end of the renewal period, typically at the end of February in the current subscription year.

Baseline year: The baseline year on which the success of every year's subscription renewal campaigns is evaluated at the end of the subscription renewal period is set at 2020. This remains the baseline year against which subscription renewals are evaluated every year.

Evaluation of the subscription renewals: At the end of the subscription renewal period, the number of "traditional" subscriptions renewed (%subscriptions) is evaluated against the target set, for each journal. This determines whether the subscription renewal campaign was successful or fell short of the target and thus whether the content can continue to be published in open access.

Traditional subscriptions: This term designates all single-site and multi-site institutional subscriptions, not including the French national agreement.

French national agreement: The French national agreement (2017-2021) is a transformative agreement ("Read & Publish") providing a subscription to EDP Sciences journals for participating institutions and the possibility for their authors to publish in open access in these journals without APCs.

Decision to publish in open access: Following the evaluation of the subscription renewal campaign, EDP Sciences and SMAI make a concerted decision on which journal(s) will transition to open access publication in Year Y. If the target is not reached, the decision may be to keep or revert the journal(s) in gated access. This decision is made again every year at the end of the subscription renewal campaign.

Implementation of open access publication: Publication of the content in open access follows the S2O calendar. When a journal transitions to open access under the S2O model, newly accepted content from the time of the decision to transition to OA is published in open access under a CC-BY 4.0 license. Articles accepted before the transition date are not published in open access.

Consequently, there is shift between the S2O cycle (running typically from end of February to end of February of the following year) and the publication year/volume (running from January to December). Conversely, in subsequent years, if the decision is made to close the content again, articles accepted before the decision to close the content will still be published in open access.

In addition, there is a time lag between the decision to transition to open access and the first articles effectively published in open access, while articles accepted before and after the transition go through the production process. This time lag may be longer if there is a significant backlog of articles accepted and waiting for publication before the transition to OA (see below actions taken to reduce the historical backlog to prepare for the transition).

When a decision is made to publish a journal to open access in a given year, the content previously published in this journal from the start of the current subscription year to the time the first articles are published in open access, is opened in free access. That is, the content is made free to read but not under CC-BY license. The articles published during years when the journal was in open access under S2O model remain in open/free access forever. The archives in gated access remain in gated access (see above, Archives). Individual articles published in open access during a year when the content was in gated access (individual articles in paid open access or articles published in open access under a transformative agreement) remain in open access forever.

Sustainability target: Overall, the portfolio of maths journals is seeing an operational deficit. The sustainability target will be achieved when income from subscriptions and other sources of funding covers the publication costs of the journals. Subscription prices may be discounted in future years if the sustainability target is reached (see section below on revenue vs. publication costs).

Subscription prices

Evolution of subscription prices

EDP Sciences is committed to fair subscription prices, and fair price increases. Typical year-on-year increases vary from 0 to 3%.

In 2020, an exceptional 11% year-on-year increase was applied for RAIRO-RO. This reflected the addition of an issue in the 2020 volume, from 5 to 6 issues per year, to follow the growth in the journal and reduce the backlog of accepted articles that were on hold for publication.

In 2021, EDP Sciences froze subscription prices over its entire portfolio of journals in the context of the COVID pandemic (see press release).

In 2022, we decided on a more substantial price increase of 5% across the portfolio of maths journals. This follows a 0% price increase for two years in a row in 2020 and 2021 (apart from RAIRO-RO which increased the number of issues published in 2020). The price increase also allows for journal growth and faster publication times going forward.

A number of journals in the portfolio have seen large increases in submissions and accepted articles year-on-year. Prior to the transition to the S2O model, we chose to limit the increase in subscription prices and instead restrict the number of pages published every year. This led to a backlog of articles for the fastest growing journals, namely ESAIM:M2AN, ESAIM:COCV, and RAIRO-RO. A backlog of articles in production is not compatible with a S2O publication model which may require opening and closing newly published content on a yearly basis depending on subscription renewals. Going forward, while the journals are published under a S2O model, we are committed to publishing all articles as soon as possible after they are accepted, to limit the potential lag between the time a decision is made to open or close the content, and effective publication in open or close access.

The Table below summarizes the price increases per journal since the inception of the Subscribe-to-Open program in 2019.

Table 3. Evolution of subscription prices since 2019 and year-on-year price increase (%)

Year	MMNP	ESAIM: COCV	ESAIM: M2AN	ESAIM: PS	RAIRO-RO	RAIRO-ITA
2019	€353	€389	€996 (O) €1487 (P+O)	€226	€449	€429
2020	€360 (2%)	€389 (0%)	€996 (O) (0%) €1487 (P+O) (0%)	€226 (0%)	€499 (11%)*	€429 (0%)
2021	€360 (0%)	€389 (0%)	€996 (O) (0%) €1487 (P+O) (0%)	€226 (0%)	€499 (0%)	€429 (0%)
2022	€378 (5%)	€408 (5%)	€1046 (O) (5%) €1562 (P+O) (5%)	€237 (5%)	€524 (5%)	€450 (5%)
Average yearly price increase 2019–2022	2.4%	1.6%	(O) 1.7% (P+O) 1.7%	1.6%	5.5%	1.7%

ESAIM:M2AN is the only journal offering a print edition in 2021 (P+O: print + online, O: online). Other figures are for online subscriptions only.
* From 2020, the number of issues published in RAIRO-RO went from 5 to 6 issues per year, to accompany the growth of the journal. The subscription price increased by €40.

The prices indicated in the Table above are the list prices communicated on the EDPS website and to the subscription agencies. For the full 2022 subscription price list, please see here.

Average price increases since the beginning of the S2O program are close to 2% per year, with a higher increase for RAIRO-RO. RAIRO-RO went from 5 to 6 issues per volume in 2020 to decrease the structural backlog. This was accompanied by a subscription price increase. ESAIM:M2AN also publishes 6 issues per volume, while the other journals have ceased to publish individual issues and instead publish a single "open volume" per year.

Publication statistics

In this second edition of our Transparency Report, we chose to include additional publication statistics for the journals included in the S2O program: number of articles and pages published per year. This information can be put in parallel with subscription prices and yearly price increases, see previous section.

Table 4a. Number of articles published per journal per year and overall year-on-year increase (%)

Year	MMNP	ESAIM: COCV	ESAIM: M2AN	ESAIM: PS	RAIRO-RO	RAIRO-ITA	Total
2019	47	85	76	38	110	9	365
2020	79	127	80	42	99	7	434 (18.9%)
2021	59	109* 141**	102* 138**	17	190* 340**	13	490* (12.9%) 708**

* Not including articles published in Supplements to prepare for the S2O transition, see below.
** Including articles published in the Supplements.

Table 4b. Number of pages published per journal per year and overall year-on-year increase (%)

Year	MMNP	ESAIM: COCV	ESAIM: M2AN	ESAIM: PS	RAIRO-RO	RAIRO-ITA	Total
2019	884	2515	2158	990	1961	206	8714
2020	1518	3616	2378	1002	1888	91	10493 (20.4%)
2021	1168	3221* 4211**	3111* 4130**	459	3842* 6892**	219	12020* (14.6%) 17079**

* Not including pages published in Supplements to prepare for the S2O transition, see below.
** Including pages published in the Supplements.

Over the whole portfolio, there has been a much larger year-on-year increase in the number of articles (+10 to 20% increase per year) published per year than the yearly subscription price increase (on the order of 2% per year), even without taking into account the Supplements published in three journals at the beginning of 2021. Supplements are accounted for separately from the "regular" content as funding from the *Fonds National pour la Science Ouverte* was used to fund in part publication costs of the Supplements (see below). Publication of the one-off Supplements did not contribute to the subscription price increase for libraries in 2021.

The number of pages per articles published in these journals is very large, for example in 2021 the average size of an article published in ESAIM:M2AN was 30.5 pages.

This overall increase in published content is not distributed equally between journals. Some journals even published less material in 2021 than in 2020. MMNP in particular published a higher volume of content in 2020 than in 2021, explained in part by a large special issue in 2020 on "Coronavirus: Scientific insights and societal aspects".

The overall figures are biased by the weight of the largest journal, RAIRO-RO. Publication statistics before 2021 are also to be taken with caution as the yearly increase in the number of published articles and pages was restricted, to limit year-on-year publication cost increase. The publication statistics do not strictly follow the growth in the number of articles submitted and accepted. In the future, with the lifting of the page restrictions, these statistics will be more representative of the true growth of the journals.

With these caveats in mind, the subscription price increase applied by EDPS/SMAI to the maths journals portfolio has been very moderate with regards to the growth in published content available to the subscribing institutions year on year. A 2016 study similarly put in perspective serials subscription price increases in the light of growing scientific output.

Subscription price per article

In this section we provide statistics on subscription price per article published. This can be used to benchmark these journals with similar journals published by other publishers.

Table 5. Subscription price per article published (€/article)

Year	MMNP	ESAIM: COCV	ESAIM: M2AN*	ESAIM: PS	RAIRO-RO	RAIRO-ITA
2019	7.5	4.6	13.1	5.9	4.1	47.4
2020	4.6	3.1	12.4	5.4	5.0	61.3
2021	6.1	3.6 **	9.8 **	13.3	2.6 **	33.0

* For ESAIM:M2AN, the only journal which has both an online and a print edition, the subscription price per article is calculated on the basis of the online-only subscription price.
** For ESAIM:COCV, ESAIM:M2AN and RAIRO-RO, the subscription price per article is calculated on the basis of articles published outside of the 2021 Supplement

The subscription price per article is a relatively common metric, see for example the database created by Bergstrom and McAfee which allows to compare price per article and price per citation for journals in various disciplines. For mathematics journals included in the database until 2013, mean price per article was around 25.88 $/article and median price per article was $17.56 /article, with a very wide range between around $2/article and over $200/article.

Our subscription price per article is generally below average for mathematics journals and offers good value for subscribers.

Subscription renewals

2021 subscription renewal campaign update

The previous 2021 Transparency Report reported partial subscription renewal figures for 2021. We reported subscription renewals at the end of February 2021, compared to the full baseline year 2020. The end of February 2021 was the date originally set as the end of the subscription renewal period. Both the % of subscribers and % revenue were reported. In a normal year, most subscriptions are renewed by the end of February.

As the targets were not met by the end of February, recognizing the exceptional situation brought about by the COVID pandemic, we extended the deadline. A decision was finally made in mid-May to publish all the journals in the portfolio in open access (see press release announcing the decision to publish in open access in 2021, and blog post for the rationale of this decision)

In the current report we update these figures at three key dates: end of February 2021 (original deadline, reported in the 2021 Transparency Report), 30 April 2021 (extended deadline, decision to transition to open access), and end of December 2021 (renewals at the end of the year, including late subscriptions received throughout the year).

Table 6a. Percentage of subscriptions renewed at key dates throughout 2021 compared to baseline year (2020). Highlighted: 95% renewal reached.

Date	MMNP	ESAIM: COCV	ESAIM: M2AN	ESAIM:PS	RAIRO-RO	RAIRO-ITA
23/02/2021	89.3	77.2	81.7 (O) 82 (P+O)	93.0	77.3	79.2
30/04/2021	100.0	88.6	86.6 (O) 89.7 (P+O)	100.0	86.4	89.6
20/12/2021	100.0	93.7	91.5 (O) 97.4 (P+O)	100.0	88.6	91.7

ESAIM:M2AN is the only journal offering a print edition in 2021 (P+O: print + online, O: online). Other figures are for online subscriptions only.

Table 6b. Percentage of subscription revenue renewed (€) at key dates throughout 2021 compared to baseline year (2020). Highlighted: 95% renewal reached.

Date	MMNP	ESAIM: COCV	ESAIM: M2AN	ESAIM: PS	RAIRO-RO	RAIRO-ITA
23/02/2021	99.2	78.1	81.5 (O) 78.2 (P+O)	98.3	79.6	81.5
30/04/2021	106.6	88.4	84.8 (O) 86.4 (P+O)	102.7	86.7	89.9
20/12/2021	106.6	94.0	90.0 (O) 94.4 (P+O)	102.7	89.2	92.4

ESAIM:M2AN is the only journal offering a print edition in 2021 (P+O: print + online, O: online). Other figures are for online subscriptions only.

The differences in the percentage renewals in terms of number of subscribers and in terms of revenue are explained by the following factors:

● Subscriptions include multi-site licenses (not including the French national agreement), thus the revenue is not proportional to the number of subscribers;

● Variations of currency conversion rates from $/€ also explain some of the differences, in particular the higher than 100% renewal of subscription revenue for MMNP and ESAIM:PS.

The Tables above show that by the end of the normal subscription renewal period, the percentage of renewals was short of the target set at 95% to open the content for both metrics, except for MMNP (99% of 2020 subscription revenue renewed by end of February). This was attributed partly to delayed renewals in the context of the COVID pandemic.

By the end of May, more subscriptions were renewed, supporting our hypothesis that the shortfall at the end of February was in part due to administrative delays due to the COVID rather than non-renewals. Still, only two journals had renewed more than 95% of 2020 subscriptions by the end of May: MMNP and ESAIM:PS. The decision was made to open the content nevertheless.

By the end of December, a few more subscriptions were renewed, but no other journals reached 95% subscriptions renewed at the end of the year.

Partnership with Knowledge Unlatched (KU)

Recognizing the natural rate of attrition of subscriptions year-on-year, the exceptional economic circumstances of 2020-2021, the risk of "free-riding" related to the Subscribe-to-Open model, and the pre-existing operational deficit of the maths journals portfolio, we thought that we needed additional sales resources for the maths portfolio. For this EDP Sciences turned to Knowledge Unlatched (KU), and concluded a 3-year agreement in the spring of 2021, see press release. EDP Sciences is receiving support from KU in introducing the S2O model to libraries. The partnership with KU concerns exclusively the sale of the package of the 6 maths journals to institutions. This can be in the form of "upselling" the full package to institutions already subscribing to one or more journals, or of selling the full package to institutions that were not already subscribers in 2021.

2022 subscription renewal campaign

The following figures for 2022 subscription renewals below include organic renewals of the existing subscriptions, as well as new subscriptions secured via the partnership with KU.

Subscription renewals were evaluated every two weeks between December 2021 and end of February 2022. The percentage renewals on the 20th of February 2022 are reported in the Tables below.

Table 7a. Percentage number of subscriptions renewed compared to baseline year, at the end of the normal subscription renewal period (end of February). Highlighted: 95% renewal reached.

Date	MMNP	ESAIM: COCV	EASIM: M2AN	ESAIM: PS	RAIRO-RO	RAIRO-ITA
20/02/2022	128.6%	89.9%	56.4% (P+O)	116.3%	102.3%	95.8%
			95.1% (O)			

ESAIM:M2AN is the only journal offering a print edition in 2021 (P+O: print + online, O: online). Other figures are for online subscriptions only.

Table 7b. Percentage of subscription revenue renewed (€) compared to baseline year, at the end of the normal subscription renewal period (end of February). Highlighted: 95% renewal reached.

Date	MMNP	ESAIM: COCV	ESAIM: M2AN	ESAIM: PS	RAIRO-RO	RAIRO-ITA
20/02/2021	146.8%	93.8%	64.4% (P+O)	126.6%	108.7%	98.4%
			98.0% (O)			

ESAIM:M2AN is the only journal offering a print edition in 2021 (P+O: print + online, O: online). Other figures are for online subscriptions only.

MMNP, ESAIM:PS, RAIRO-RO, RAIRO-ITA and ESAIM:M2AN online version reached over 95% renewals in quantity compared to the target year 2020, some reaching over 100% renewals. This is attributed in part to the collaboration with Knowledge Unlatched for the sale of the package of journals, and in part to recovery from year 2021 which was negatively impacted by the COVID pandemic.

The percentage of turnover renewed (€) at the end of February is even more positive. This is mainly attributed to the increase in the subscription price in 2022.

ESAIM: COCV and M2AN print + online version did not reach the 95% target. There is less and less demand for print subscriptions.

Overall, the 2022 subscription renewal campaign was declared successful at the end of February 2022, and EDPS and SMAI made the decision to continue publication of all journals in open access in 2022, see press release.

Exceptional revenue

Funding from the Fonds National pour la Science Ouverte (FNSO)

SMAI in partnership with EDP Sciences were awarded funding for 3 years (2021-2023) by the *Fonds National pour la Science Ouverte* (FNSO), see press release. The FNSO support aims to perennialize the transition to open access of the 5 journals co-published by EDP Sciences and SMAI under a S2O model: MMNP, ESAIM:COCV, ESAIM:M2AN, ESAIM:PS, RAIRO-RO. The FNSO funding supports 3 aspects:

1. **Preparation of the transition.** Historically, subscription price increases were kept low and did not keep pace with a larger year-on-year growth in the number of accepted articles in some of the journals in the maths portfolio. This did not allow the number of articles published each year in the journal to match the volume of accepted articles. Excess articles were kept on hold before final publication. To mitigate this situation, accepted articles are published as "forthcoming" articles which are citable prior to final publication.

   As part of the switch to a S2O model, to avoid a significant time lag before newly accepted articles could be published in open access, we published the bulk of these excess articles at the beginning of 2021. This was published in the form of one-off supplements to the regular 2021 volumes of the journals RAIRO-RO, ESAIM:COCV, ESAIM:M2AN. The supplements published represent a significant volume of content, equivalent to 6 months of regular content for ESAIM:COCV and ESAIM:M2AN, and 15 months for RAIRO-RO. See the Publisher's note published in the respective journals for more information, e.g. the Publisher's note in RAIRO - Operations Research. These 3 supplements are available to subscribers and non-subscribers in free access in perpetuity.

2. **Commercial activities**. Commercial activities aim to retain existing subscribers under a S2O model, attract new subscribers (in particular institutions using the content in open access and/or publishing in the journal in open access free of charge), encourage subscribers to upgrade to the package of maths journals instead of individual journals, and experiment with new commercial offers. In this context, a partnership was established in 2021 between EDP Sciences and Knowledge Unlatched for the sale of the Subscribe-to-Open mathematics package.

3. **Marketing and communication activities**. Marketing and communication activities undertaken by both partners EDP Sciences and SMAI aim firstly to educate the community about the S2O model, and secondly to support commercial activity, via various communication channels (promotional material, news and press releases, social media, participation in events and so on).

Even though the subscription renewal target of 95% compared to the baseline year (2020) was not reached in 2021, EDPS and SMAI made a concerted decision to nevertheless transition to open access publication in 2021. Although the grant allocated by the FNSO was not earmarked to compensate for loss of subscribers, the support of the FNSO weighed in the balance of the decision to publish the journals in open access in 2021.

Funding from the Centre National de la Recherche Scientifique (CNRS)

SMAI in partnership with EDP Sciences were awarded funding for 3 years (2022-2024) by the French *Centre National de la Recherche Scientifique* (CNRS), see press release. Similarly to the FNSO support, the CNRS subsidy aims to perennialize the transition to open access of the 5 journals co-published by EDP Sciences and SMAI under a S2O model: MMNP, ESAIM:COCV, ESAIM:M2AN, ESAIM:PS, RAIRO-RO.

In the short term, part of the CNRS subsidy will compensate for part of the publication costs not covered by subscriptions. In exchange, EDP Sciences is committed to continue publishing articles as soon as they are accepted, avoiding the reintroduction of page restrictions. EDP Sciences is also engaged in a continuous process to review its production costs.

The CNRS subsidy will also allow to invest additional resources in sales and communication in favour of open access and the S2O model, in partnership with organisations and agencies specializing in open access publication. The aim is to engage the long-term support of libraries and institutions, to take over from one-off financial support such as that provided by the FNSO and the CNRS.

Use of the CNRS funds in 2022-2024 will be reported in forthcoming transparency reports.

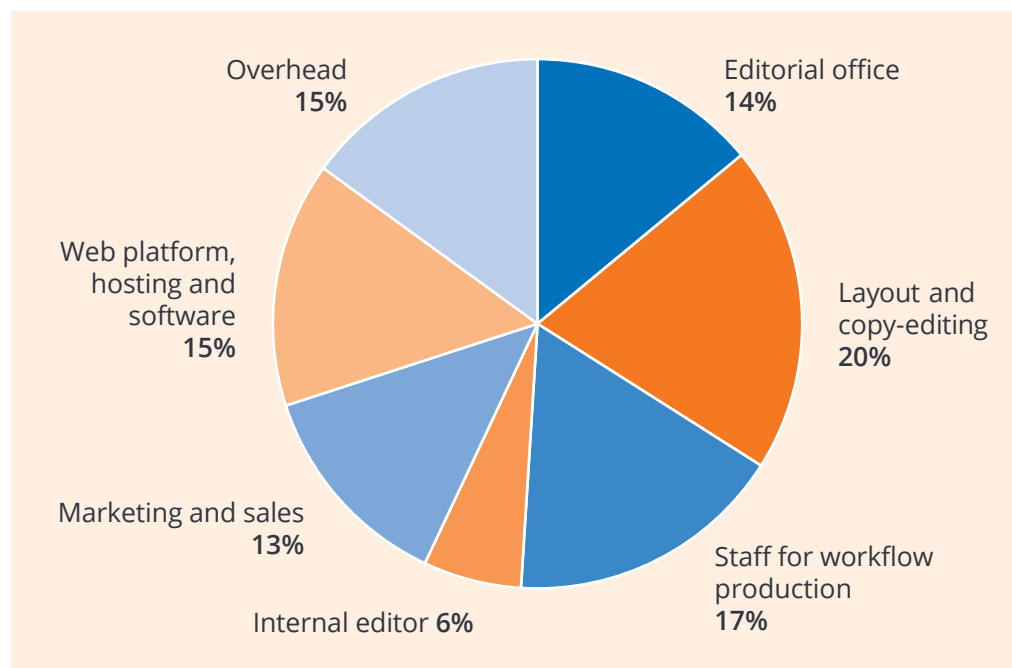### Exceptional support from laboratories and individuals

In 2021, SMAI circulated a call to French mathematics laboratories for exceptional support to the SMAI-EDPS S2O program which was affected by budget cuts suffered by libraries during the COVID pandemic.

This call was met with several generous donations, which are all gratefully individually acknowledged (see list of Individual and Institutional sponsors).

Revenue vs. publication costs

Publication costs

The average publication cost for an article is €1000 (profit margin not included). This is broken down as per figure below. This is a rough estimate for the entire portfolio of the maths journals, and doesn't take into account differences between the journals, particularly in the editorial services provided. For instance, EDP Sciences and SMAI are providing a dedicated editorial office for the journals ESAIM:M2AN, ESAIM:COCV, ESAIM:PS, RAIRO-RO. The editorial office budget for MMNP and RAIRO-ITA would in reality be lower. This figure is arguably the least robust figure provided in this Report. For reference on the cost of publishing scientific articles, see also this 2013 Nature article.

Figure 2. Breakdown of publication costs for the portfolio of maths journals.

To calculate the overall publication costs over the entire portfolio, we multiplied the estimated publication cost of €1000 per article by the number of articles published in 2020 (434 articles published) and 2021 (490 articles published not including Supplements). The publication cost of the Supplements was partly covered by the FNSO funding and is therefore excluded from this analysis.

Revenue

In this analysis, we took into account the following sources of revenue:

- "Traditional" subscription revenue, individual and multi-site, as per Tables above;
- Part "read" and "publish" of the French national agreement allocated to the maths journals;
- Exceptional support from laboratories and individuals in 2021. The appeal for exceptional support aimed to compensate for the shortfall in subscriptions in 2021 due to the COVID pandemic. Contributions received before the start of the 2022 subscription renewal campaign (Oct. 2021) are accounted for in 2021, contributions received later will be accounted for in 2022.
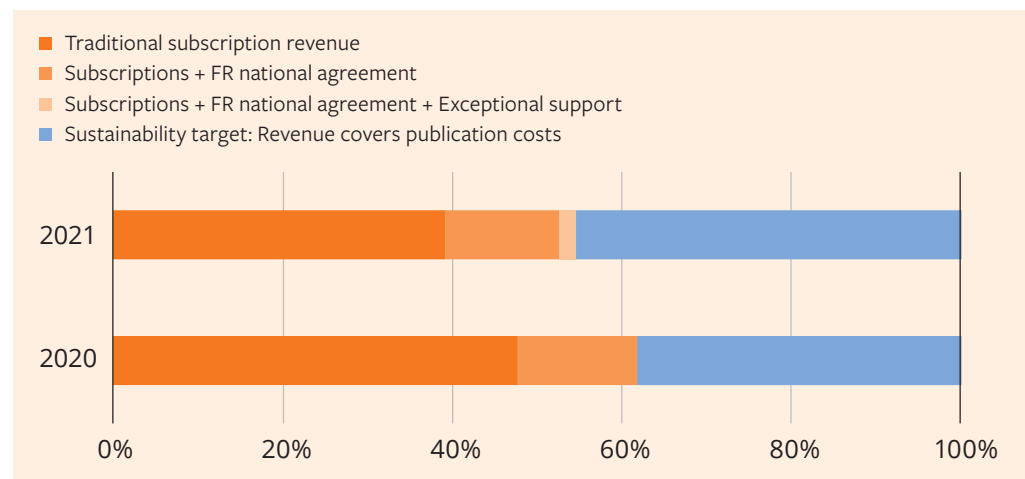
In this analysis, we did not take into account the funding awarded by the FNSO to the EDPS-SMAI Subscribe-to-Open initiative. The support from the FNSO is not allocated to operating costs but is invested in communication and sales initiatives to perennialize the S2O program.

Funding from the CNRS was received in December 2021 and will be used for the SMAI-EDPS S2O program during 2022-2024.

Revenue vs. publication costs

The Figure below represents the revenue vs. publication cost over the entire maths portfolio in 2021, in percentage of the publication cost. Revenue and publication costs are calculated as above.

Figure 3. Difference between revenue and publication costs for the entire maths portfolio (% production costs), on the basis of an average publication cost per article of €1000. The sustainability target is for revenue to cover publication costs.

- Traditional subscription revenue
- Subscriptions + FR national agreement
- Subscriptions + FR national agreement + Exceptional support
- Sustainability target: Revenue covers publication costs

Overall, the portfolio of maths journals has been historically in operational deficit. The only journals making a profit individually are ESAIM:M2AN and RAIRO-ITA. ESAIM:M2AN is the largest and most successful journal in the portfolio, and partly cross-subsidizes the other journals.

In the baseline year 2020, income from subscriptions including the French national agreement covered only 62% of publication costs. The S2O renewal target was set to 95% of 2020 subscriptions (number of subscribers) being renewed in 2021.

In 2021, only 91% of subscription revenue was renewed compared to 2020. In addition, more articles were published in 2021 than in 2020, leading to higher production costs, while subscription prices were frozen in 2021. The income from subscriptions and the French national agreement thus covered only 51.6% of production costs in 2021. Exceptional support from laboratories and individuals brought this total to 53.8%.

The sustainability target is set at 100% of publication costs covered. Our objective is to reach financial equilibrium for the portfolio of maths journals, through a combination of reducing publication costs, growing the subscriber basis, and new sources of funding such as sponsorship. EDP Sciences is engaged in reducing subscription prices when the sustainability target is reached. Once a balance is reached at the level of the portfolio and some contingency is set aside for interannual variations, the subscription price can be discounted to reward supporters of the S2O program.
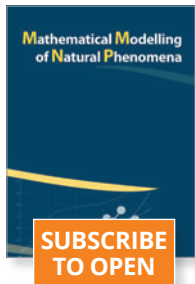
Program governance

An Advisory Committee was set up as part of the governance of the EDP Sciences-SMAI Subscribe-to-Open initiative. One of its chief interests is the perennity of the transition of the journals to open access under the S2O model. This includes exploration of alternative sources of funding in addition to subscriptions to the journals under a S2O model. The Advisory Committee can also be consulted on aspects of transparency and accountability. The Committee aims to meet twice per year. In 2021, the Committee met three times at key dates: in March (introduction of the S2O program), July (update on renewals, implementation of the open access transition) and December 2021 (review of first year of open access publication, perspectives for 2022).

The Advisory Committee is constituted of representatives from EDP Sciences, SMAI, RNBM (Réseau National des Bibliothèques de Mathématiques), INSMI (Institut National des Sciences Mathématiques et de leurs Interactions), INRIA (National Institute for Research in Digital Science and Technology), COSO (Comité pour la Science Ouverte) and the Couperin consortium. The Committee was joined in December 2021 by a representative from CNRS, following the grant allocated by this organism to the program. The Advisory Committee thus includes the major players of scientific publishing in mathematics, and of open access publishing in France, as well as the major funders of the program.

Although the EDPS-SMAI S2O program is advised by a mainly French Committee, the journals are international by their editorial board and their publication.

In addition, both EDP Sciences and SMAI are represented in the international S2O Community of Practice. This is a forum for publishers and libraries to share their experiences with the model and to establish definitions and boundaries for S2O approaches.

World-class mathematics journals – enabling open access through Subscribe-to-Open
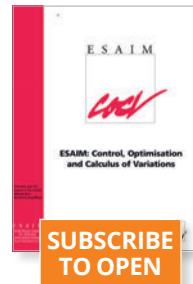
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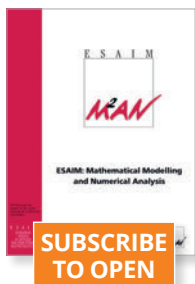
mmnp-journal.org

The first mathematics journal in the world to transition to open access using Subscribe-to-Open!

ESAIM: Control, Optimisation and Calculus of Variations

SUBSCRIBE TO OPEN

ESAIM: COCV publishes papers and surveys in the areas of Control, Optimisation, and Calculus of Variations. Articles may be theoretical and/or computational and cover topical subjects.

esaim-cocv.org

ESAIM: Mathematical Modelling and Numerical Analysis

SUBSCRIBE TO OPEN

ESAIM: M2AN publishes original research papers in Mathematical Modelling and Numerical Analysis providing rigorous theoretical analysis and evidence of computational relevance.

esaim-m2an.org

ESAIM: Probability and Statistics

SUBSCRIBE TO OPEN

ESAIM: P&S publishes original research and survey papers in Probability and Statistics. It covers theoretical and practical aspects and methodological developments with applications.

esaim-ps.org

RAIRO – Operations Research

SUBSCRIBE TO OPEN

RAIRO – RO is an international journal of high-level pure and applied research on Operations Research. It includes theory and methodology papers, case studies and state-of-the art surveys.

rairo-ro.org

RAIRO – Theoretical Informatics and Applications

SUBSCRIBE TO OPEN

RAIRO – ITA publishes original high-level research papers in the area of theoretical computer science and its applications including game theory, quantum computation, cryptography.

rairo-ita.org

Subscribe-to-Open (S2O)
An equitable open access model

What is S2O?
- An innovative, transformative model that aims to move subscription journals to open access

How does it work?
- Following the subscription renewal cycle, a journal joining the S2O programme will publish its newly-accepted content in open access as soon as all subscription renewals have been received, typically at the end of February in Year 1
- Pricing is established in a transparent way to balance the costs of publication – libraries are involved in the process through an independent committee
- If a journal does not reach the subscription threshold, only subscribers will receive access to papers published in the coming year

Benefits for subscribers
- Institutions support journals for the common good of the academic community and demonstrate their commitment to open access
- Only subscribers get access to 'moving wall' archive content that is not yet in open access (embargoed for 5 years)

Benefits for authors
- Authors publish in S2O journals in open access, free of charge (no APCs) - publication fees are covered by the subscription income
- Articles are published under a CC-BY 4.0 license allowing authors to retain the copyright
- The license enables authors to be fully compliant with the open access requirements of their institution or funding organisation(s)

Benefits for the community
- It supports open access and open science and helps to guarantee the long-term scientific independence of researchers through a diversity of publishing models
- It supports the values of the mathematics community
- It helps to meet the growing demand for open access publications, e.g. Plan S

How can I support S2O?
- New subscribers may join the mathematics S2O programme at any time by contacting subscribers@edpsciences.org
- Additional participation will help the S2O model to thrive and will reduce the subscription price for subscribers

Where can I find out more?
- Contact SMAI – smai-vp-publications@emath.fr
- EDP Sciences Frequently Asked Questions (FAQs) – bit.ly/S2OFAQs
- Subscribe to Open Community of Practice – subscribetoopencommunity.org

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smai.emath.fr

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