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SCOAP^3 – Towards a second phase

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Abstract. The global partnership SCOAP^3 (Sponsoring Consortium for Open Access Publishing in Particle Physics) has reached the conversion of high-quality subscription journals in the field of High-Energy Physics to Open Access through redirection of existing subscription funds by installing the SCOAP^3 Gold Open Access Repository providing free access to scientific articles in the field of High Energy Physics. This article describes the steps taken to enable a second phase (2017–2019) of this international project based on an output-based (fair share) financing model.

Keywords: SCOAP^3, Gold Open Access, High Energy Physics, flipping model, CC-BY, no costs for authors, text- and datamining, CERN, TIB Hannover

1. Introduction

Originally initiated by CERN (*European Organization for Nuclear Research*) SCOAP^3 and its Gold Open Access Repository started on January 01, 2014 with the aid of about 3000 libraries and consortia worldwide, research organisations, cooperative publishers and funding agencies. From the beginning the goal of SCOAP^3 had been to reach fair and competitive prices for open access articles. During the first phase (2014–2016) it was financed by redirecting subscription fees into the global SCOAP^3 Fund supported by funding agencies in many countries. The second phase (2017–2019) will be financed by each institution contributing an amount calculated according to its publication output during the period of 2014/2015.

2. SCOAP^3 achievements

- Gold Open Access (worldwide free accessibility over the internet).
- Key Journals in High Energy Physics have – fully or partially – been converted into Gold Open Access.
- No costs for authors.
- The copyright remains with the author.
- No administrative burden for the author.
- No administrative burden for participating institutions due to National Contact Points dealing with SCOAP^3 centrally.
- CC-BY Licences (the copyright remains with the author).
- CC0 for metadata.
- Text- and datamining allowance.

- Constantly growing number of articles available upon publication in the SCOAP^3 Repositorium (September 2016: more than 12.500 Gold Open Access articles) and the publishers' websites.

One of the most important achievements of SCOAP^3 is the *capping mechanism* implemented by the tendering process during Phase 1 (2014–2016). By implementing this capping structure SCOAP^3 has reached kind of a flat rate for High Energy Physics articles due to the fact that SCOAP^3 agreed with the publishers on a fixed number of articles paid by SCOAP^3 but compelling the publishers to publish also any further article meeting the quality criteria but not receiving additional payment for this further article. The capping mechanism thereby leads to a decrease of the virtual Article Processing Charges (APCs) for SCOAP^3 articles, the current average one being ca. 1.100 EUR. An example with fictional numbers is given in Table 1.

Table 1

Example Numbers to illustrate the capping mechanism

SCOAP^3-Journal	Number of maximum paid articles	Number of articles published in the SCOAP^3-Journal	Number of articles paid to the publisher by SCOAP^3
A	500	1.500	500
B	1.000	1.700	1.000
C	800	700	700

3. SCOAP^3-Journals

Table 2 shows the SCOAP^3-Journals participating in SCOAP^3 during Phase 1 (2014–2016). It also contains the APCs (Article Processing Charges) being the result of the international tendering process held by CERN for Phase 1 by which publishers had to compete for a participation in SCOAP^3.

Except the IOP-Journals *Journal of Cosmology and Astroparticle Physics* (*JCAP*) and presumably *New Journal of Physics* (*NJP*) all SCOAP^3-Journals will continue to participate in Phase 2 (2017–2019). The contracts between CERN and the publishers have been signed in September 2016.

Table 2

Publishers. Journals. Article Processing Charges (APCs) (Phase 1: 2014–2016)

Publisher	Journal	APCs
Elsevier	Nuclear Physics B	2.000 USD
Elsevier	Physics Letters B	1.800 USD
Hindawi	Advances in High Energy Physics	1.000 USD
Institute of Physics Publishing/Chinese Academy of Science	Chinese Physics C	1.000 GBP
Institute of Physics Publishing/Deutsche Physikalische Gesellschaft	New Journal of Physics	1.200 GBP
Institute of Physics Publishing/SISSA	Journal of Cosmology and Astroparticle Physics	1.400 GPB
Jagiellonian University	Acta Physica Polonica B	500 EUR
Oxford University Press/Physical Society of Japan	Progress of Theoretical and experimental Physics	
Springer/SISSA	Journal of High Energy Physics	1.200 EUR
Springer/Società Italiana di Fisica	European Physical Journal C	1.500 EUR

4. SCOAP^3 financing model

4.1. Calculation method

In order to reach a flip from a subscription-based financing model to a publication output-based one the chosen calculation method had always been based on the individual HEP-publication output of a country (fair share) during a certain two-year-period. The individual proportions (currently for the first phase only) are listed under: https://scoap3.org/what-is-scoap3/.

During Phase 1 of SCOAP^3 (2014–2016) these calculations had been based on publication numbers during the two-year-period of 2005/2006 leading to a portion of 9.1% for all HEP-publishing German institutions.

For Phase 2 of SCOAP^3 (2017–2019) this proportion is 9.7% based on publication numbers during the two-year-period of 2014/2015.

4.1.1. International level

On a global level CERN calculates these percentages according to the following model. If an author belongs to CERN, to Joint Institute for Nuclear Research (JINR) or to a HEP-laboratory of a certain country, his or her proportion will be counted for CERN, JINR or this laboratory. If none of these options is fulfilled the proportions will be ranked according to the per-capita gross domestic product (GDP).

4.1.2. National German level

On the national German level a proportional calculation was chosen which splits the percentages according to a real fair share model. If an author has more than one affiliation, e.g. three different ones, one third of this article will be affiliated to each of these three institutions.

During Phase 1 of SCOAP^3 this proportional model was mainly relevant for the distribution amongst the three German Partners for SCOAP^3-Max Planck Society (MPG); Helmholtz Association/German Electron Synchrotron (DESY) and German National Library of Science and Technology (TIB) – as the 50% undercoverage resulting out of the mere redirection of the subscription fees was substituted by an upfront guarantee by the German Research Foundation (DFG). This will change for Phase 2 of SCOAP^3 as the DFG cannot provide permanent support.

4.2. Financing model in Phase 1: 2014–2016

During the first phase of SCOAP^3 the yearly subscription payments have been redirected into the SCOAP^3 fund out of which the publishers are centrally paid by CERN for their services. This was made possible by the corresponding reduction of these subscription fees by the publishers thereby freeing this money for redirection.

CERN calculated globally with initially 10 Mio. € per year which had to be reduced to 5 Mio. € per year after the withdrawal of American Physical Society (APS) from SCOAP^3.

Due to this mechanism SCOAP^3 enabled the change from closed access to Gold Open Access in one go (flipping model).

The amount of 5 Mio. € per year globally required by CERN together with the proportion of 9.1% for German HEP-publications led to a contribution of 500.500€ per year required from all German institutions publishing HEP-articles.

As after collecting the subscription fees provided by nearly all HEP-publishing entities there still remained an undercoverage of ca. 50% for the German universities, SCOAP^3 could only start because this

amount was covered by the DFG by an upfront-guarantee which enabled TIB to sign the Memorandum of Understanding (MoU) with CERN.

4.3. Financing model in Phase 2: 2017–2019

During the second phase of SCOAP^3 CERN had to decide between a new tendering process bearing the risk of the dropping out of current SCOAP^3-Journals risking their Gold Open Access status as well as their continuation as such, and contract prolongation negotiations with the publishers.

CERN decided for the latter ones and reached a very good price increase of 2% for all three years of the second phase of SCOAP^3 which is a very reasonable number compared to the average 5–6% per year usually paid on the journal market.

The global sum required based on this is 4.9 Mio. € per year for Phase 2 of SCOAP^3 leads together with the proportion of 9.7% to an amount of 522.830€ per year for all German HEP-publication institutions.

The two challenges for the German support of a second phase of SCOAP^3 was the fact that there were general distortions due to the change from a subscription-based model to a publication-output-based one with regards to the individual portions to be contributed by the institutions, and the fact that the 50% undercoverage (born by DFG for the first phase) would have to be sustained by the institutions themselves according to their individual publication proportion.

The first one arose as there were institutions with high subscription redirections having relatively low publication numbers and on the other hand institutions with low subscription fees provided to SCOAP^3 but being very active on the publication field. To flip the subscription model to a mere publication-output-based model brought reasonably high sums to be contributed for those institutions with high publication numbers.

These contortions were even more palpable as the institutions had to cover the 50% mentioned undercoverage in addition to the described consequences due to the flipping.

In order to moderate these two financially painful effects, a model operating with different amounts to be paid for each year of Phase 2 of SCOAP^3 was discussed and decided during a Workshop held by TIB in May 2016.

According to this model the amount to be paid in 2017 consists of 70% of the subscription amount paid in 2016 and 30% according to the fair share proportion. These percentages switch to 30% of the subscription amount paid in 2016 and 70% according to the fair share proportion in 2018 leading to the real fair share proportion to be paid in 2019.

5. Prospects of SCOAP^3

The prospects of SCOAP^3 will continue to depend on the continuous support by the scientific community which will have to decide about its commitment how they would like to organize Open Access for HEP-Publications and/or other scientific fields in general in the future.

6. Information about SCOAP^3

Websites:
www.scoap3.org; www.scoap3.de