

# Open Science activities in SIS

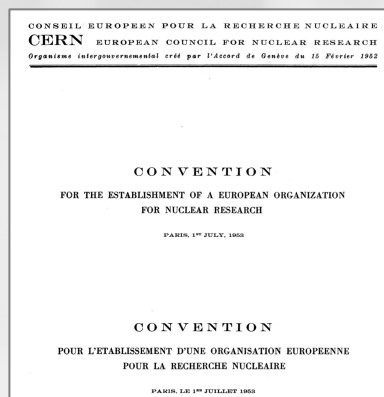
Alexander Kohls

Meeting of the Open Science Strategy Working Group  
20 September 2021



The CERN Scientific Information Service aims at efficiently **managing, preserving and disseminating scientific information** to make it **openly accessible** and **reusable** to CERN and the worldwide High-Energy Physics community.

Le Service d'Information Scientifique du CERN a pour mission de **gérer, conserver et diffuser** efficacement **l'information scientifique** afin de la rendre **accessible et utilisable** pour le CERN et pour la communauté mondiale de la physique des hautes énergies.





Open Access to scholarly articles



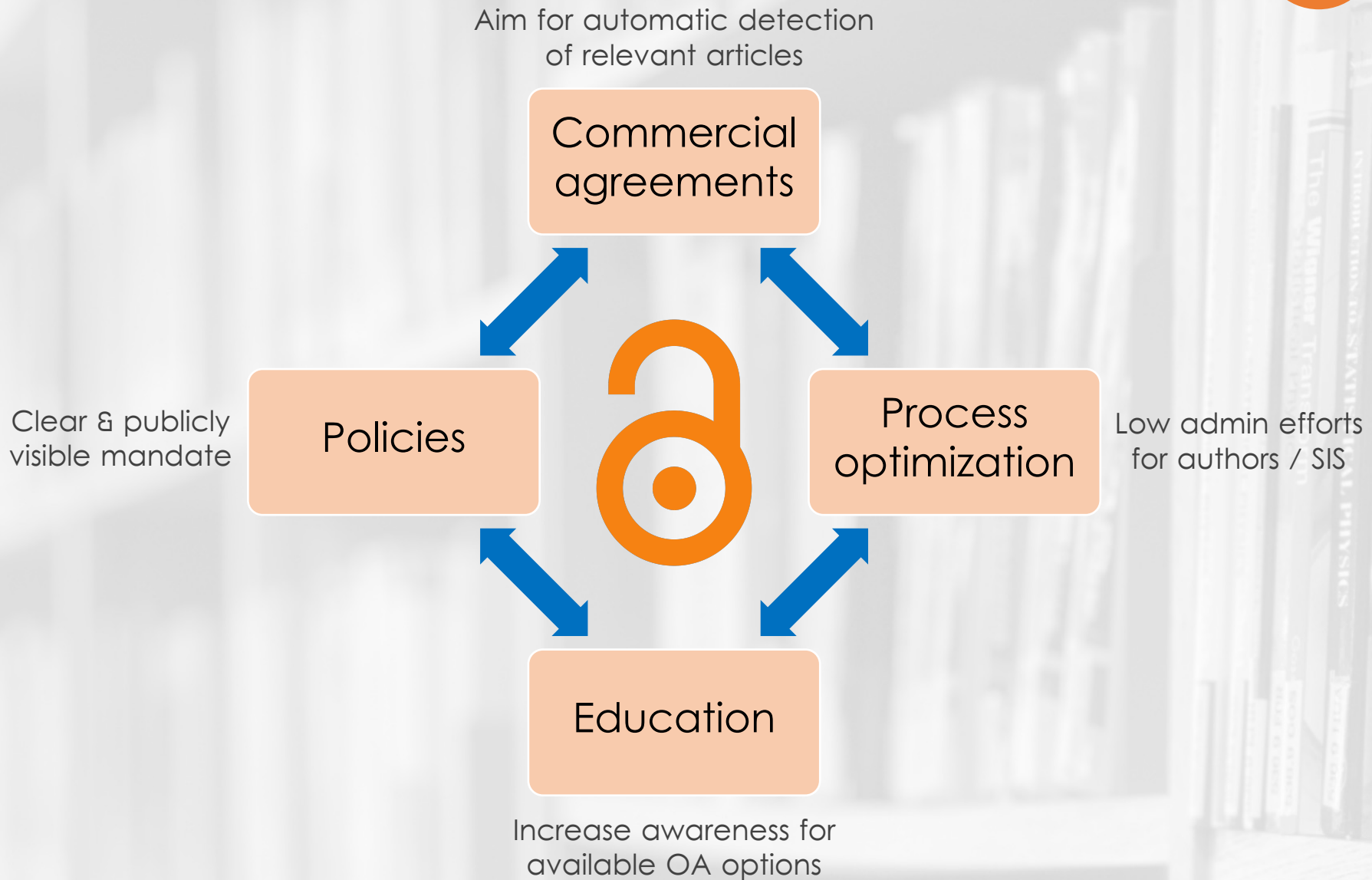
Increase findability of research and allow fair researcher assessment



Internal and external policy work



Collaboration on OS infrastructure







- In 2020, 93% of all CERN publications were openly available
- CERN has enabled multiple mechanisms for Open Access (OA) publishing of CERN's research output
  - New 'transformative' OA Agreements with publishers all major publishers (automatic)
  - Funding innovative collective OA initiatives including SCOAP<sup>3</sup>, SciPost
  - Central payment of individual article fees
- Depositing a publication in arXiv is strongly recommended and supported, e.g. helping authors with submission

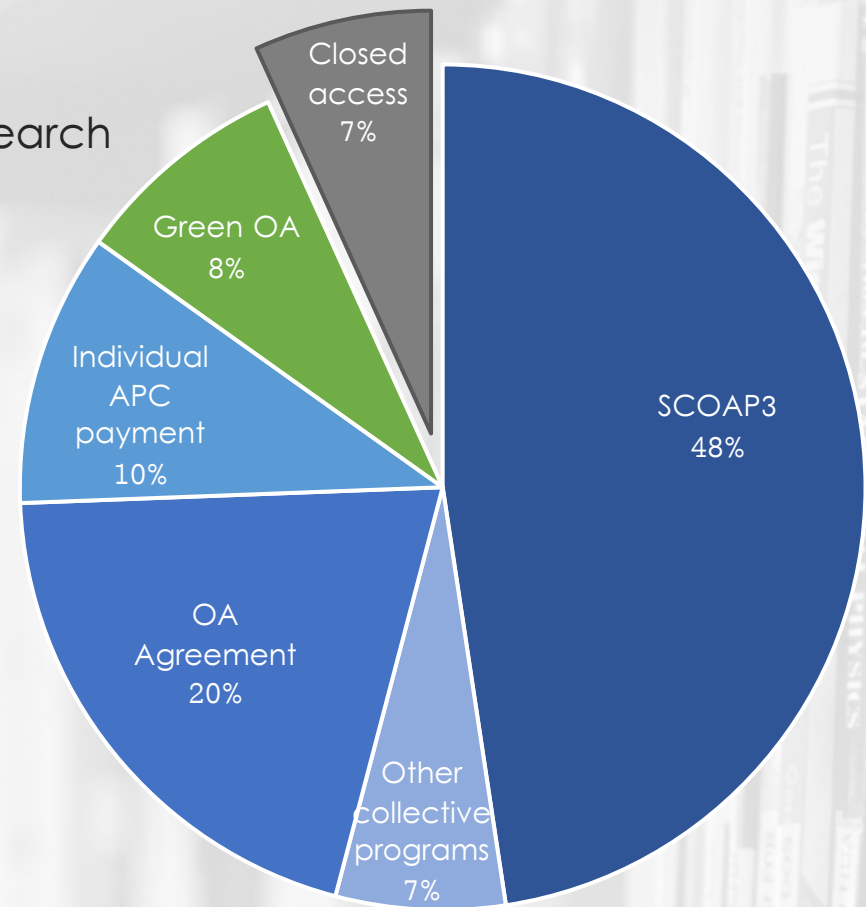


Chart: CERNs Research Output by OA Mechanism (2020)  
N=982 CERN articles

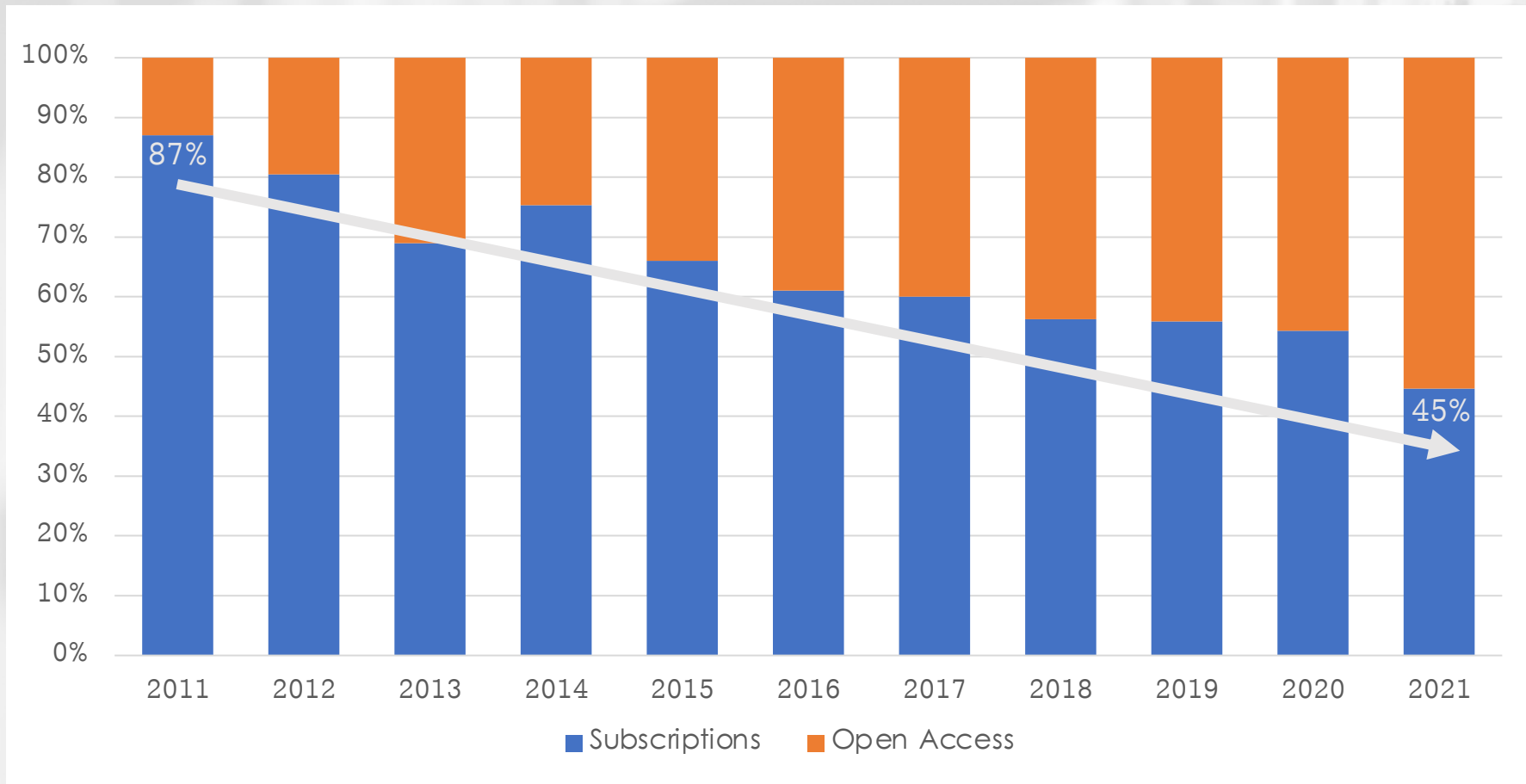


- SCOAP<sup>3</sup> remains the dominant mechanism to enable immediate OA in particle physics
  - World's largest OA initiative in operation since 2014
  - Global partnership of over 3,000 libraries across 44 countries, funding agencies and IGOs
  - Hosted and operated at CERN
  - Funded over 45,000 articles across 11 leading journals
  - SCOAP<sup>3</sup> for Books pilot is opening up >100 books
- Sponsorship and operational advice to support alternative OA publishing outlets (e.g. SciPost, arXiv) and OA enabling services (e.g. DOAJ, DOAB)





Average amount paid per article: 931 CHF!!

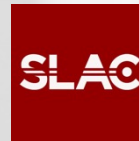




- Mar
  - Improve publication process for ISOLDE experiments
    - Majority of ISOLDE originated articles do not specify experiment/collaboration
    - IOP and APS agreements allow automatic OA for experiments IF IDENTIFIABLE!
    - Positive feedback – results to be monitored
- Mar
  - E-mails to selected Group Leaders
    - 29 groups identified, mostly in the Accelerator sector, individual e-mails
    - Selection criteria: majority of publications outside established HEP OA schemes
    - Successful engagement – lot's of positive feedback
- Apr
  - New OA publishing website: <https://cern.ch/open-access>
    - Detailed process description, author journeys, FAQ for authors
    - Interactive author tool covering the typical CERN cases
- May
  - Presentation at the EC project owner meeting
    - Goal: Increase awareness amongst EC project coordinators of specific OA requirements in EC grant agreements
    - Material to be included in standard information pack for EC projects
- Dec
  - E-learning (in development)
    - Learning suite for CERN authors



- Literature search (published & unpublished), author profiles, experiments, conferences, online seminars, HEP related jobs
- 50k active users (researchers) / 200k searches per day
- 1.4 M curated bibliographic records / 23M citations
- 6 collaborating institutions:



- Constantly improving (following community needs):
  - Extension to quantum physics (Q4 2021)
  - Crowd sourcing / self curation (Q1 2022)
  - Indexing/citation count of data sets, software, slides, posters (Q3 2022)



- Computation of precise citation counts for individual articles and researchers, considering pre-prints (and soon more...)

**Rolf-Dieter Heuer** (CERN and Hamburg U.)

hep-ex


Experiments: CERN-LEP-OPAL, DESY-PETRA-JADE, DESY-140, DESY-HERA-H1, TESLA  
 Author Identifier: R.D.Heuer.1  
 Advisor: Joachim Heintze

edit

- 2009-present  
**SENIOR, CERN**
- 1998-present  
Hamburg U.
- 2004-2009  
**SENIOR, DESY**

[Show all positions \(7\)](#)

Signatory of




**DORA**

Updated on Aug 10, 2021

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**Research works (544)** | Cited By

**Date of paper**



1976 ————— 2021

**Number of authors**

Single author 25

10 authors or less 35

**Exclude RPP**

Exclude Review of Particle Physics 544

**Document Type**

published 489

article 488

conference paper 46

review 9

report 8

book chapter 2

proceedings 2

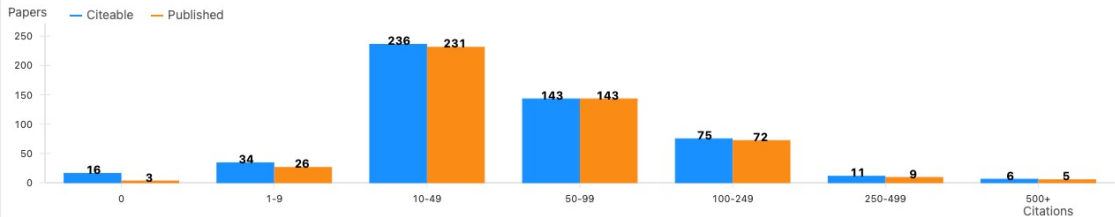
544 results | cite all  Most Recent

**Citation Summary**

Exclude self-citations

	Citeable	Published
Papers	521	489
Citations	41,103	38,748
h-index	97	95
Citations/paper (avg)	78.9	79.2

**Citations/paper (avg) Bar Chart**



**Homage to Martinus Veltman and the Standard Model** #1

R.D. Heuer (2021)  
 Published in: *Acta Phys.Polon.B* 52 (2021) 505

pdf DOI cite  0 citations







## CERN Open Access Policy

- Instituted in 2014, revised in 2017 and 2021
- Declares immediate OA mandatory for all CERN articles
- Central OA fund (via SIS) to pay publication fees

## CERN LHC Open Data Policy

- Instituted in 2020
- Commitment to publicly release Level 3 data
- Expansion to non-LHC experiments planned

## International policy and advisory efforts

- Collaboration with UNESCO on the global OS recommendations
- Contribution to the UKRI OA policy consultation
- Regular collaboration with EC on OS policy aspects
- Advisory board of OA Switchboard, HEP Data





- Platform that enables the LHC community to preserve and share their research objects (data, code, notes,...)
- Collaboration with all the major LHC experiments
- Integral part of the CERN Open Data Policy implementation
- Integration with related scientific services and universal identifiers
- Ongoing integration with CERN services that support remote execution and reuse (e.g. **reana**)

Full reproducibility mode please turn this mode on if you want to capture additional information about main and auxiliary measurements, systematic uncertainties, background estimates, final state particles

Basic Information  
Please provide some information relevant for all parts of the Analysis here

Information from CADI database  
Automatically taken from CADI, based on CADI ID

Input Data  
Please list all datasets and triggers relevant for your analysis here

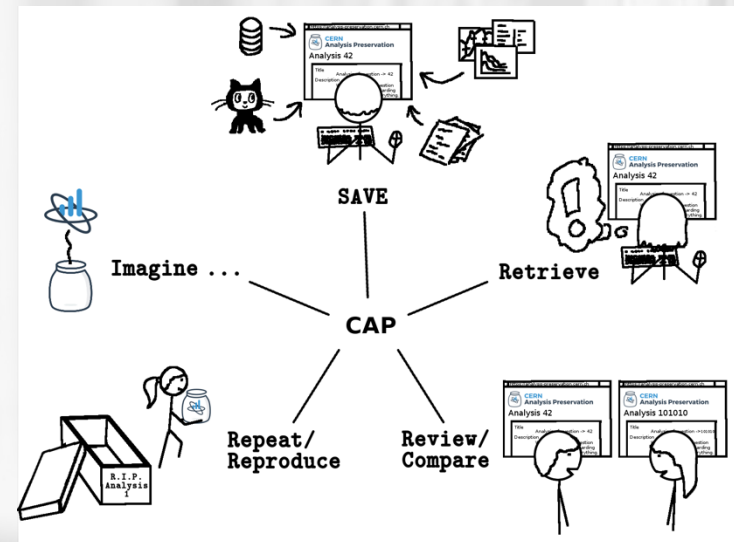
N-tuples Production [0 items]  
Provide details on the intermediate n-tuples production

Auxiliary Measurements [0 items]  
Provide details on auxiliary measurements used in the analysis

Background Estimation [0 items]  
Details on the background estimation methods

Final Results  
Please provide information necessary to generate final plots and tables for your analysis.

Main Measurements Workflows [0 items]  
Please provide information about the main measurements of your analysis



TRANSFORMING STATISTICAL PHYSICS  
The Way We Transform



## HEPData

- Close collaboration with Durham University
- Platform operated at CERN
- Support of IT strategy and implementation



## SciPost

- Backup hosting of publishing platform
- Code review and development support



## OA Switchboard

- Large-scale collaboration of commercial and society publishers, research institutions and funding agencies
- Aims to establish a standardized messaging hub for OA publishing process



## arXiv.org

- Collaboration on policy and organizational matters
- Joint project to redesign arXiv metadata model and submission process (ERC grant)

THE WILSON TRANSFORM  
STATISTICAL PHYSICS

# Current (and future) risks and opportunities



- + Very good OA awareness within HEP; almost 100% OA via pre-prints and journals (except conferences)
- OA costs continue to increase; new models required to achieve sustainability



- + Well established infrastructure; rather coherent community
- Slow transition of research assessment metrics across disciplines



- + Increasing awareness, supported by policy requirements (especially in Europe)
- Lack of standards and established infrastructure to support researchers



- + Strong momentum across all stakeholders in the process (commercial and non-commercial)
- Resource constraints to establish successful (large scale) infrastructure



# (Future) Process improvements: OA Switchboard

### How publishers can connect to the OA Switchboard to compose and send messages

**Manual**

**Option 1**  
Manually entering data via the user interface

**API**

**Option 2**  
Integration with the application programming interface (API) in the standard message structure

**Custom connector**

**Option 3**  
Generic reverse connector(s) with third party systems and/or spreadsheets, to integrate with the API

*"It's not rocket science!"*

GRANT ASSIGNED

MANUSCRIPT SUBMISSION

'ACCEPT' DECISION

ARTICLE PUBLICATION

Research, analysis, and writing    >>>    Peer review    >>>    Production

Information Enquiry (planned)    Compliance/Waiver Check (planned)    Eligibility Enquiry    Eligibility Enquiry    Eligibility Enquiry    Publication/Payment Settlement Notification

## Needs vs Reality

### Needs to manage OA budgets and deliver on strategies

Authoritative data and standardised reports

Monitoring deal compliance across many publishers

Confirming author and article compliance

**Reality: complex and administratively burdensome reporting, and a myriad of systems, portals and processes**

**BUSINESS MODELS** ▶ APC-based, membership arrangements, transformative agreements, diamond, subscribe2open, ...

**FORMAT & TYPES** ▶ Excel, PDF, CSV, XML, ...

**DATA** ▶ Persistent identifiers, article metadata, free text  
Timeliness, quality, completeness

**Drive a sustainable and equitable transition to OA**

**Input for internal and external reporting and purchasing decisions**

This involves painstaking manual human effort

Search and find publications from our researchers

Check data received, complete and enter details into our own systems

Match and check publication details with information on invoices

Correct license type and invoices after publication

## The OA Switchboard: an article-level reporting hub for Publishers, Libraries/Institutions and Funders

Delivers structured VoR data format (JSON and Excel)

Feeds data automatically into existing funder, institution and library systems for further integration, processing and analysis

Adopts the ESAC standard reporting recommendations

### Reporting made easy for all stakeholders by the OA Switchboard

Standard messaging protocol, automated validation and routing

Shared infrastructure, connecting and complementing existing systems and solutions, leveraged with PIDs

This infographic is made possible with the support of

>> see recent OA Switchboard webinar



# OA Process optimization efforts at CERN

## 1 Central open access fund and administration

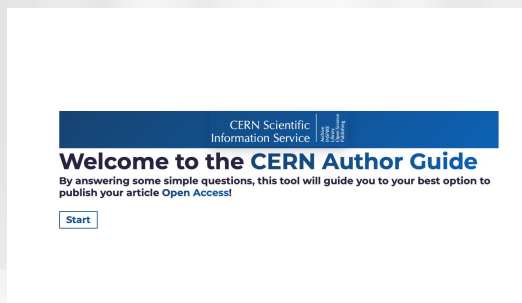
- Dedicated SIS budget for OA fees introduced with 2018 MTP
- SIS takes care of CERN internal administration (DAI's, procurement, ...)

## 2 Automatic detection of CERN articles wherever possible

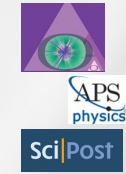
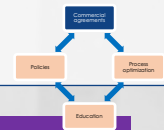
- R&P deals and other agreements help to make articles consistently OA
- In all other cases, early involvement of SIS important

## 3 Support authors with varying process requirements

- E-mail hotline and Service Now tickets
- New SIS author support tool under [scientific-info.cern/author-guide](https://scientific-info.cern/author-guide)



# Overview of CERN OA agreements



## 1) SCOAP<sup>3</sup> and other collective models ca. 55% of the CERN articles

- Eur.Phys.J.C, JHEP, Nucl.Phys.B, Phys.Lett.B fully covered by SCOAP<sup>3</sup>
- PRAB by APS and all SciPost journals fully covered through sponsorship
- Act.Phys.Pol.B, AHEP, Chin.Phys.C, PRC, PRD, PRL, Prog.Theor.Exp.Phys. partially covered by SCOAP<sup>3</sup>

- All articles
- All articles
- HEP articles (arXiv primary category)



## 2) Read & Publish agreements ca. 15% of the CERN articles

- Over 4'200 journals by Elsevier, IEEE, Springer, Wiley (from 1<sup>st</sup> May)
  - CERN Corresponding Authors automatically detected as eligible
  - SIS validates article acceptance, afterwards added to central invoicing
- Most journals published by APS and IOP Publishing (> 60 journals)
  - CERN Corresponding Authors + CERN Experiments eligible
  - SIS validates article acceptance, afterwards added to central invoicing

- Default OA for eligible article
- Default OA for eligible article



## 3) Other OA agreements ca. 10% of the CERN articles

- Journal of Instrumentation
  - All CERN articles automatically detected as eligible
- Gold OA journals published by Frontiers and MDPI
  - Eligible authors (CERN affiliation) select central CERN funding
  - Discount from institutional membership program

- All CERN articles
- Authors select CERN funding



## 4) Individual APC payments from central OA fund ca. 10% of the CERN articles

- All other Gold OA or Hybrid journals
  - CC-BY required for CERN funding

- Authors select OA and CERN funding