Multi-source ingestion of publisher articles
The SCOAP3 repository experience

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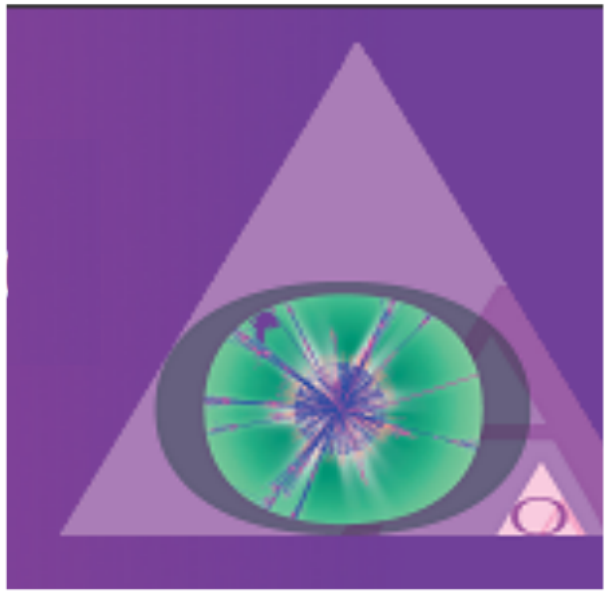
CERN, SCOAP3

Open Repositories, Helsinki 2014

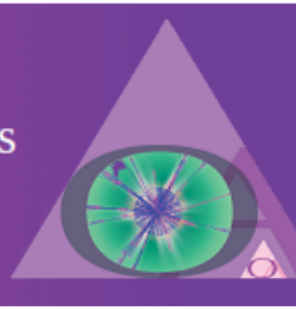
AGENDA

- SCOAP3
  - What is it?
  - How does it work?
- Mission of the repository
- Software
  - Software base
  - Content ingestion
  - Compliance checks
  - Future development
- Summary

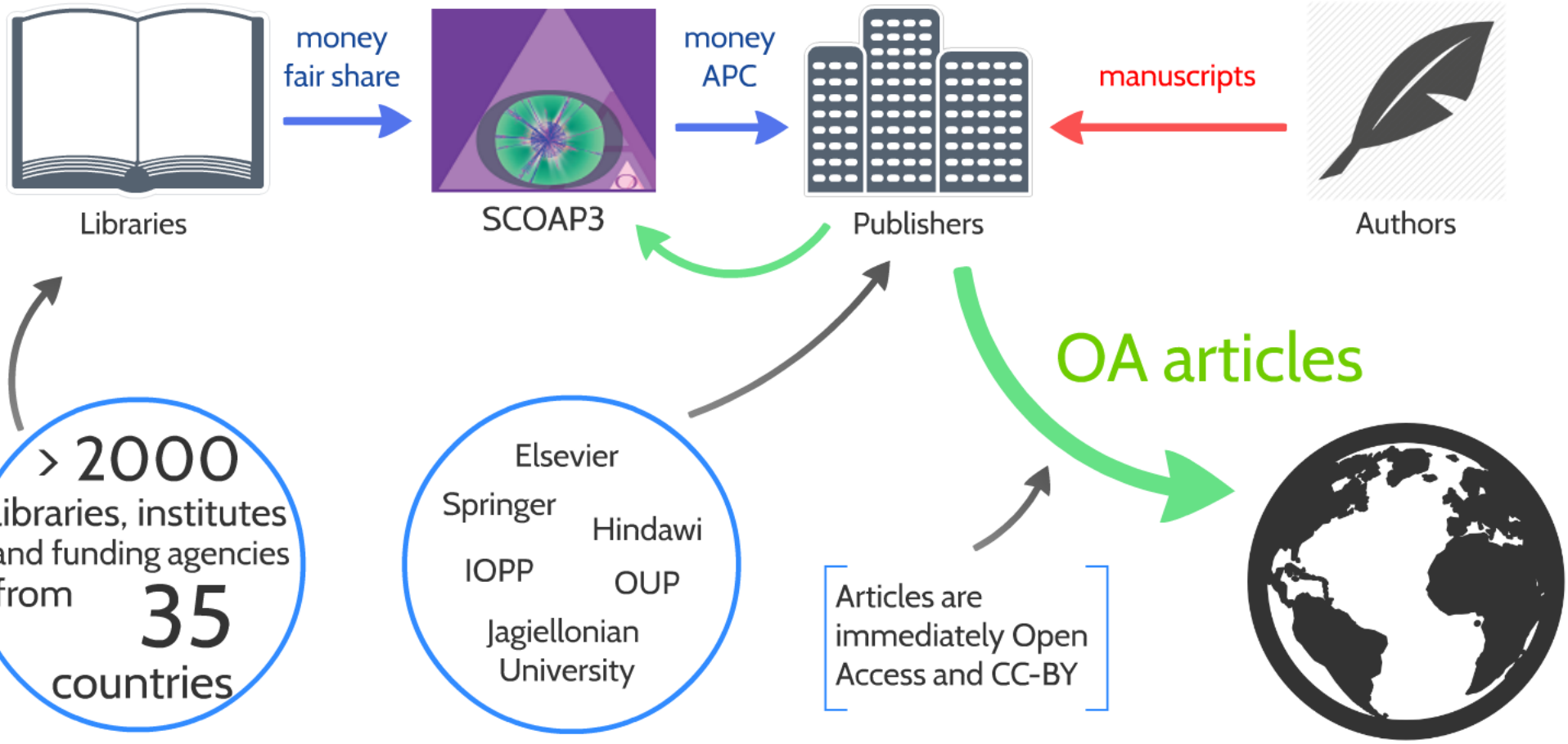


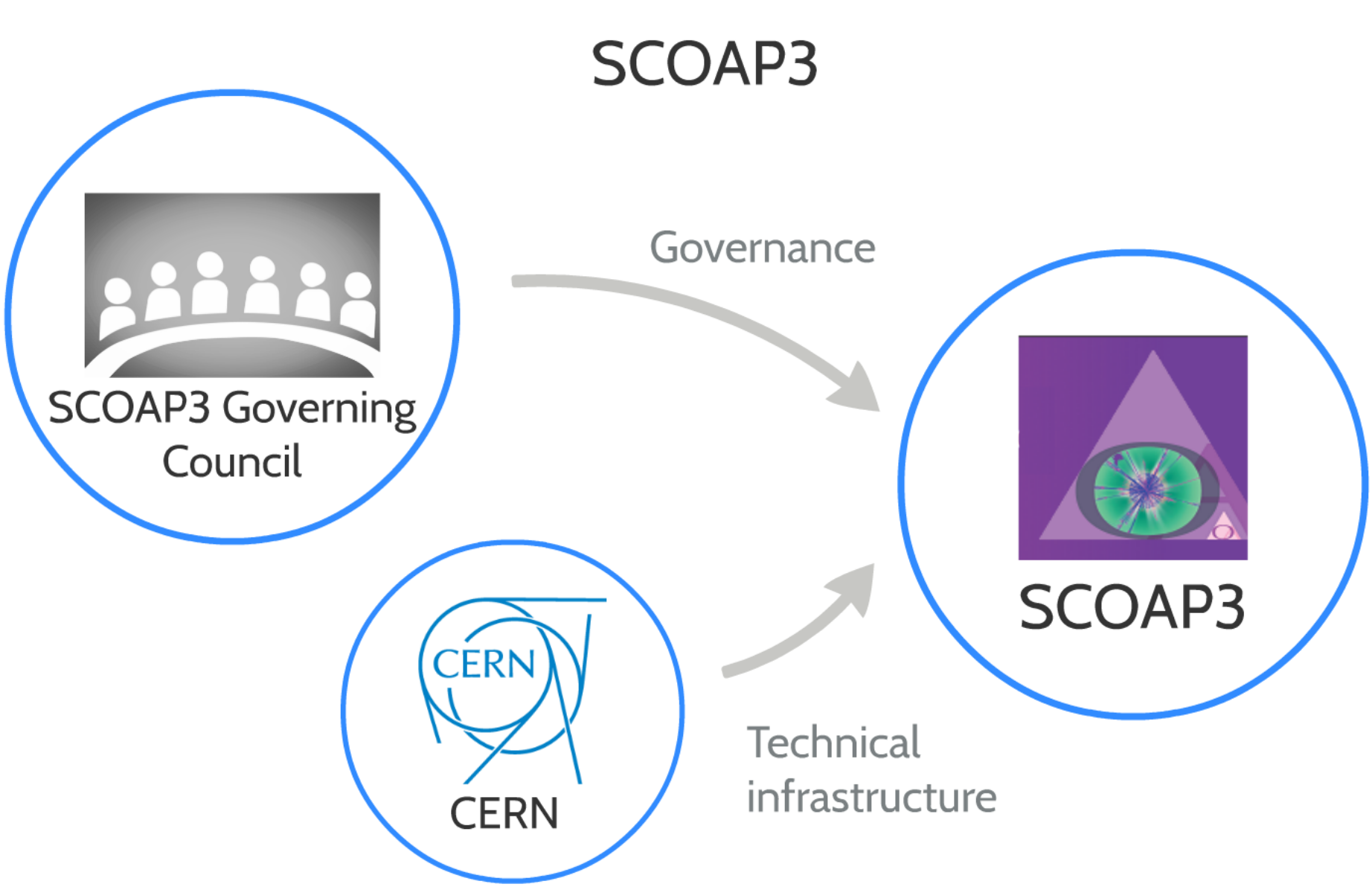
SCOAP^3 – Sponsoring Consortium for Open Access Publishing in Particle Physics

Sponsoring Consortium for Open Access Publishing in Particle Physics



HOW DOES IT WORK?

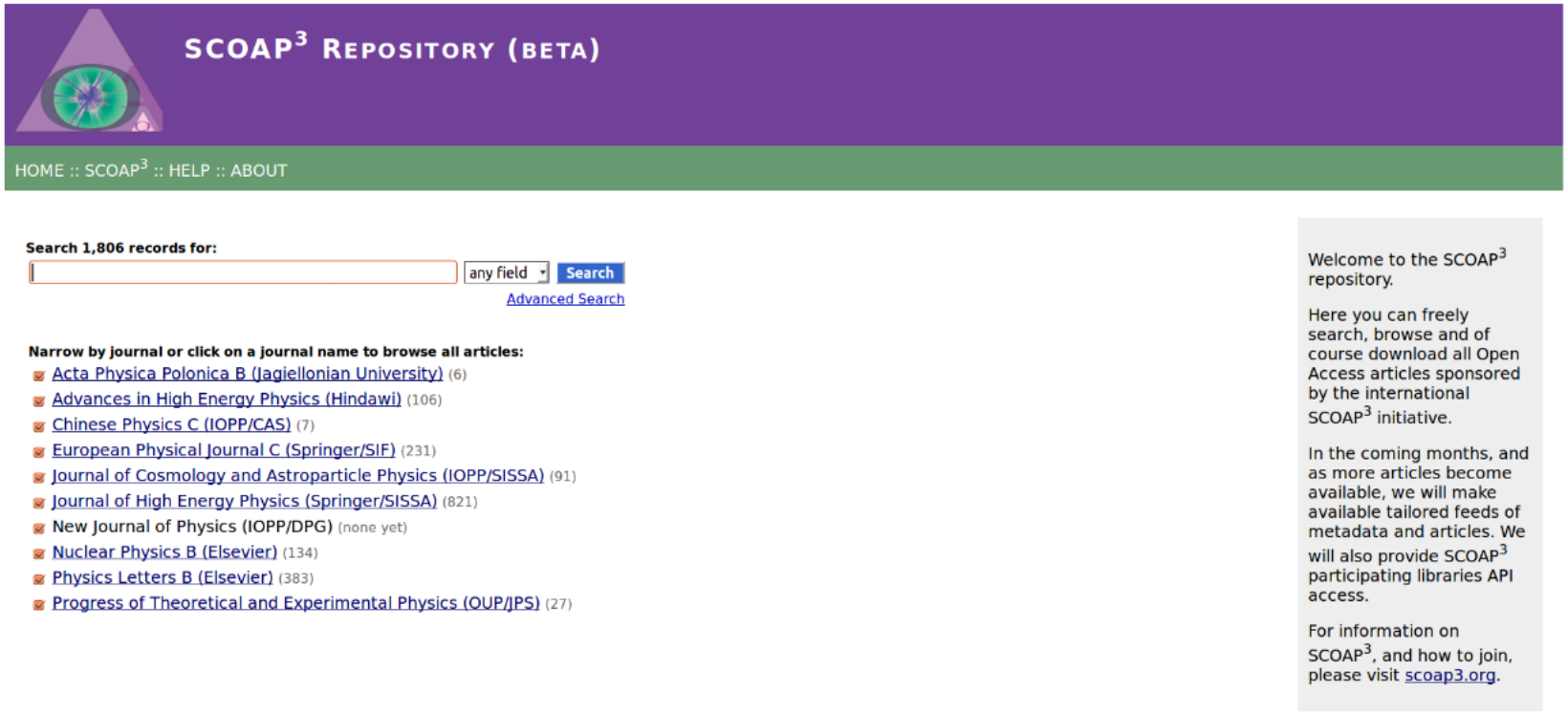



SCOAP3
SCOAP3 Governing Council
Governance
SCOAP3
CERN
CERN
Technical infrastructure

SCOAP3

http://scoap3.org/

SCOAP3 repository



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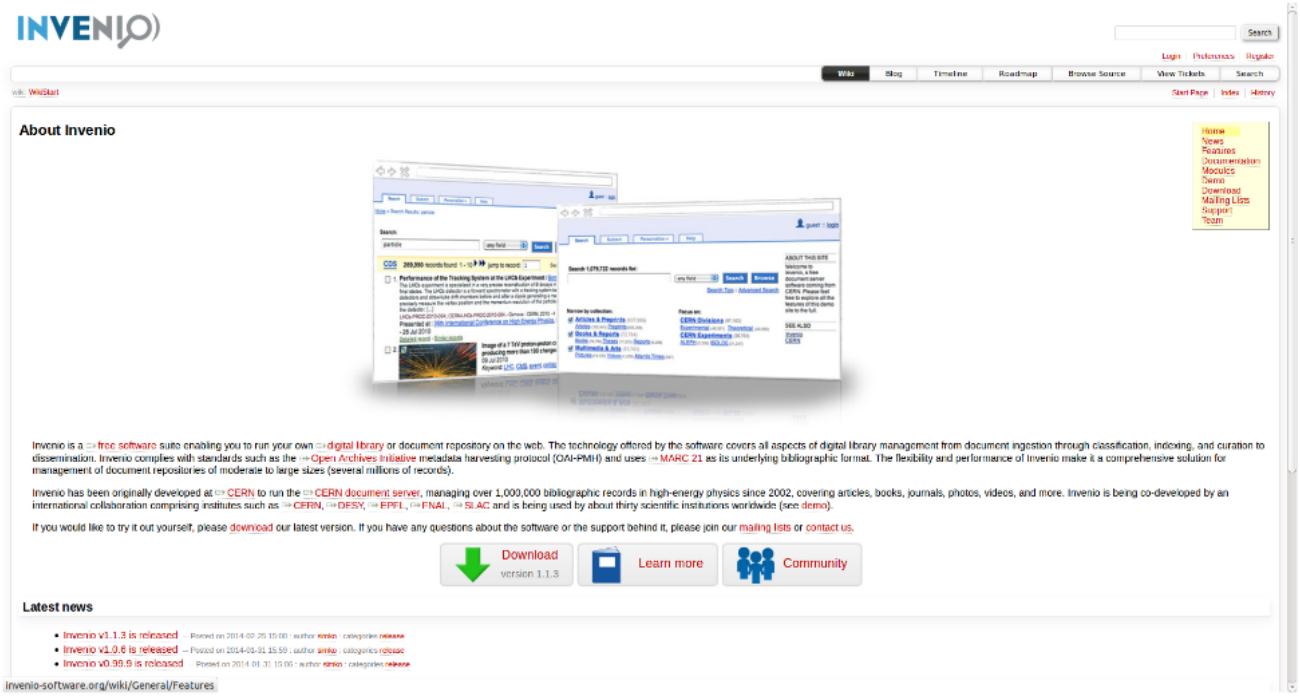
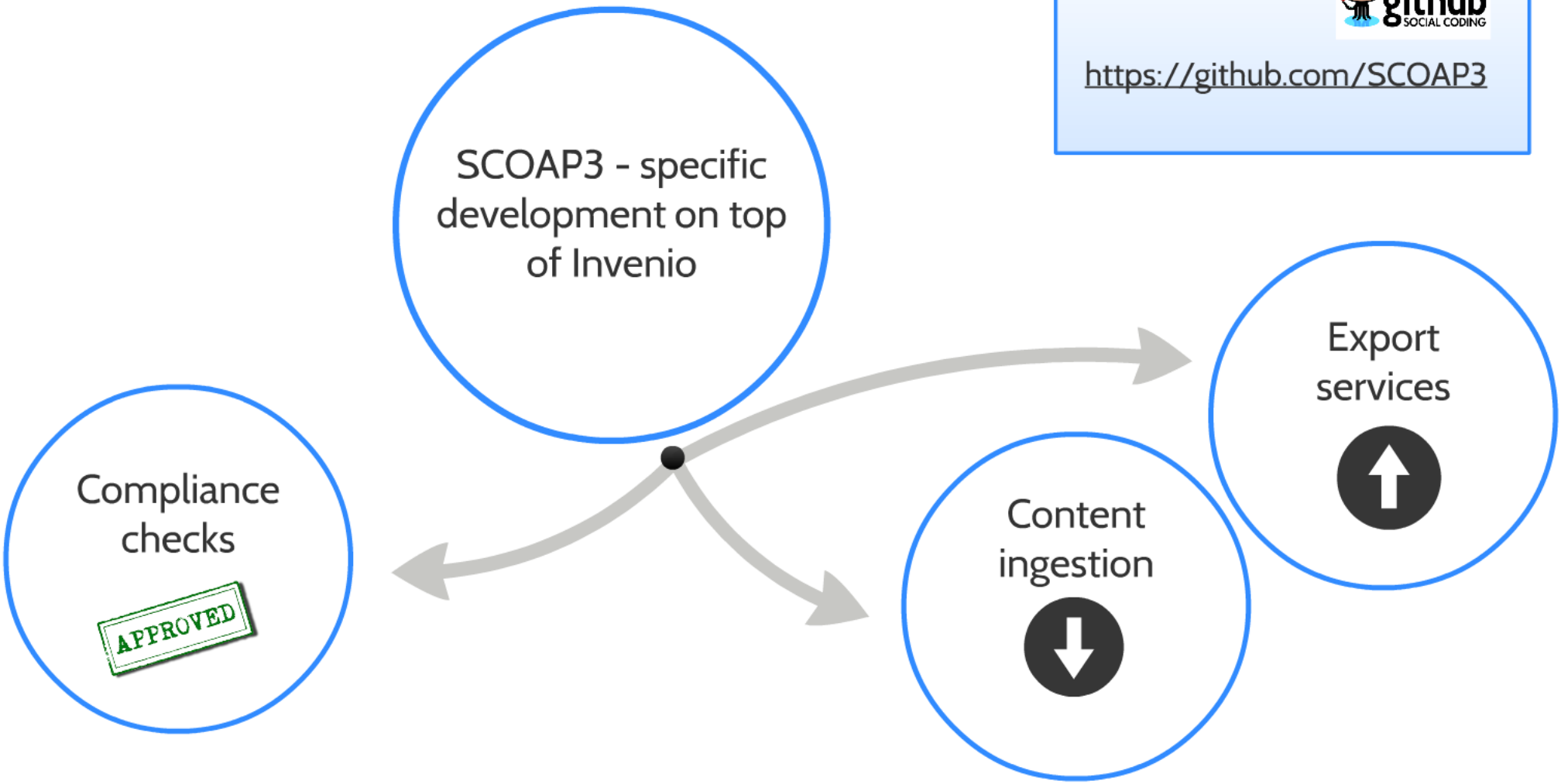
CODEBASE



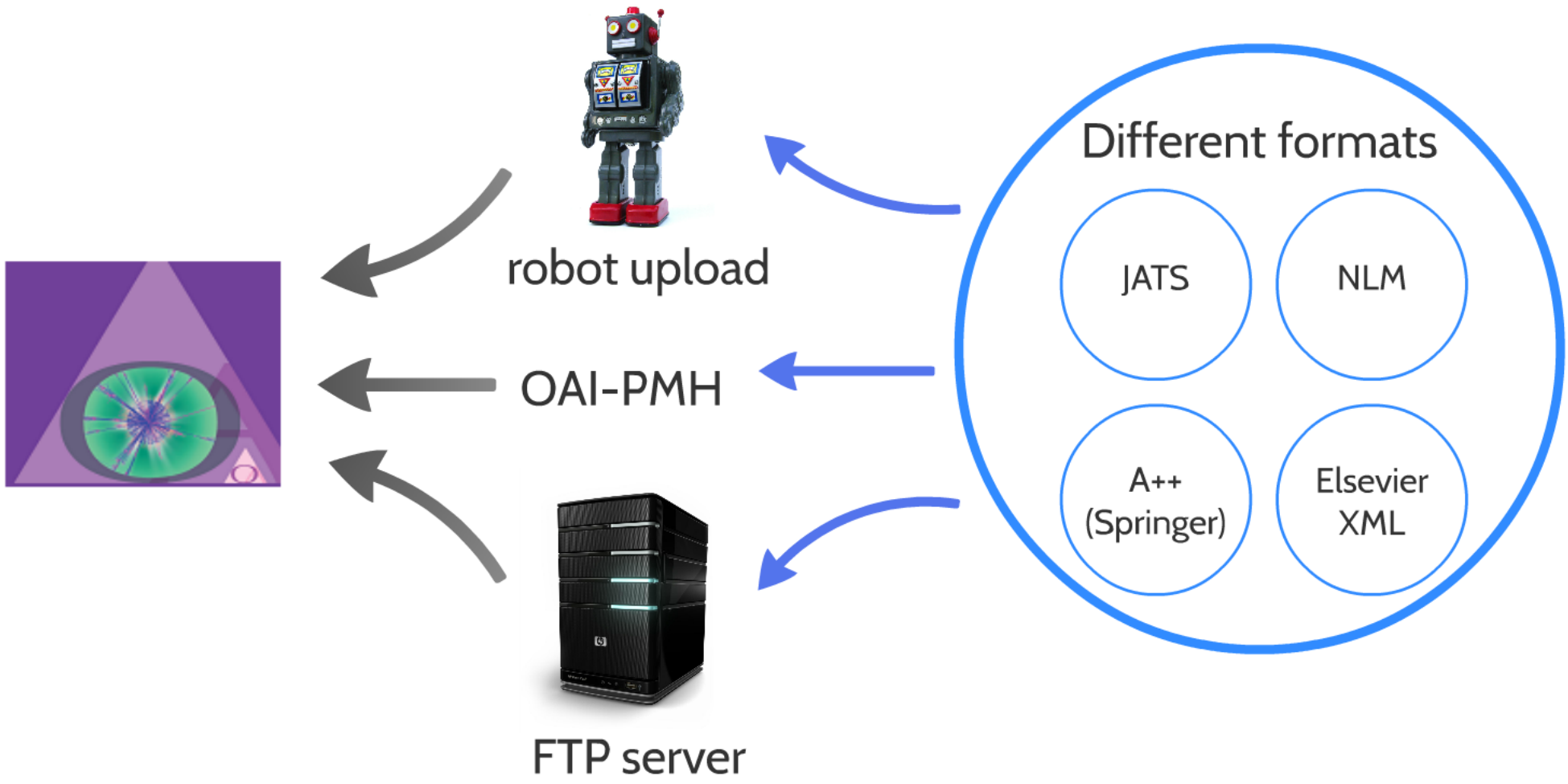
SCOAP3 is based on Invenio Software.

DEVELOPMENT

https://github.com/SCOAP3



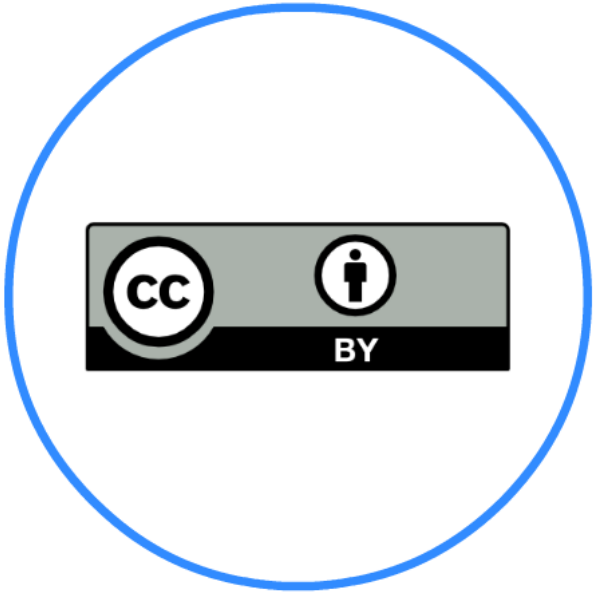
CONTENT INGESTION



COMPLIANCE CHECKS

- Integrity of delivered files
- PDF Open Access on Publishers' sites
- Immediate (within 24 hours) availability
- Metadata
- Open Access conditions

OPEN ACCESS CONDITIONS



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EXAMPLE: VERIFICATION OF OA CONDITIONS

Different versions of Open Access conditions

EXAMPLE: VERIFY CONSISTENCY WITH PUBLISHERS' SITE VERSION

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Meson decays in an extended Nambu–Jona-Lasinio model with heavy quark flavors

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Abstract: In a previous work, we proposed an extended Nambu-Jona-Lasinio (NJL) model including heavy quark flavors. In this work, we will calculate strong and radiative decays of vector mesons in this extended NJL model, including light ρ, ω, K^*, ϕ and heavy D^*, D_s^*, B^*, B_s^*.

Key words: NJL model, heavy meson, heavy quark limit

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1 Introduction

The Nambu–Jona-Lasinio (NJL) model [1, 2], in its original form as a pre-QCD theory, was constructed of nucleons that interact via an effective two-body contact interaction. The model was later reinterpreted as a theory of quark degrees of freedom [3, 4]. The most important feature of the NJL model is the chiral symmetry of the Lagrangian plus a chiral symmetry breaking ground state. The model was generalized to the $SU(3)_f$ case of light quark flavors in Refs. [5–9].

On the other hand, for heavy quark flavors, the chiral symmetry no longer holds. However, new important symmetries, such as the spin symmetry that was discovered in heavy $(Q\bar{q})$-mesons [10], which is a consequence of the order $1/m_Q$ of the spin-spin interaction in the effective quark potential [11]. In Ref. [12], the NJL model was generalized to include heavy flavors. Both the chiral symmetry in the light meson sector and the spin symmetry in the heavy meson sector were reproduced with the vector-current interaction. The bosonization technique was used there to obtain an effective Lagrangian of the meson degrees of freedom.

However, as already shown in Ref. [5], the vector-current interaction only is not enough to reproduce the experimental masses of light vector mesons, such as ρ, K^* etc. Other chiral symmetrical interactions, such as the axial-vector-current one, are needed to get satisfactory results for the light meson sector. However, these additional interactions do not obey the spin symmetry in the heavy meson sector since they generate the incorrect spin-spin interaction that is not $1/m_Q$ suppressed. In the above work [12], the authors just introduced two coupling constants G_1 and G_2 for the light meson sector and another different coupling G_3 for the heavy meson sector.

In our previous work [13], we proposed a solution to extend the NJL model to comprise the heavy quark flavors. The NJL interactions were expanded with respect to $1/m_l$ of constituent quark mass m_l, just like the expansion in the heavy quark effective theory (HQET). Naturally, the vector-current interaction is dominant while other interactions, such as the typical axial-vector-current one, should be $1/m_l$ suppressed. We had performed numerical calculations for both the light and heavy meson sectors. The mass spectra fit the experimental data quite well. The decay constants of heavy mesons were smaller than the experimental values, roughly by a factor of 2.

The strong and radiative decays provide us with important information about hadron structure. Experimentally, the decay widths of light vector mesons have been well measured [14–19] and so far, some decay widths or ratios of the charmed and bottom heavy vector mesons have been reported [20–22].

Generally speaking, it is a rigid test for any model to fit the experimental values of the decay width or ratio. The most popular model for strong decay is the $^3P_0$ model [23, 24]. This model has been applied to a great number of decay processes [25–28]. The radiative decays, mainly the M1 transition, which takes place when one of the constituent quark changes its spin and radiates one photon, has been studied in potential quark models [29, 30] or from flavor symmetry [31]. For decays

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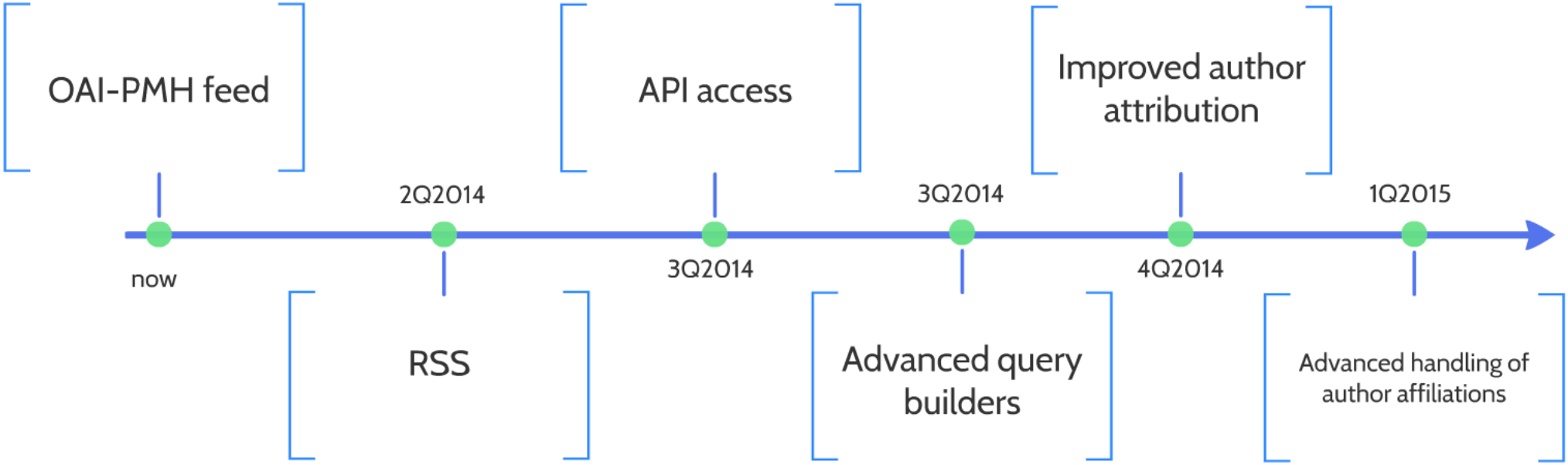
FUTURE DEVELOPMENT



SUMMARY

- Very interesting Open Access experiment and full collaboration with 6 publishers.
- Still, very different standards and lots of hard work.
- Data cleaning and large-scale automatic checks are hard.
- Looking forward to opening OAI-PMH feeds and other services for third parties to reuse this content.

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