SCOAP^3

PAST – PRESENT - FUTURE

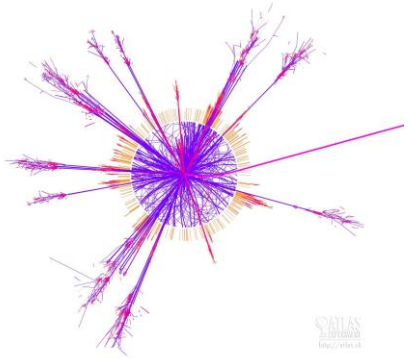
16 April 2015

PAST

SCOAP^3 in a broader context

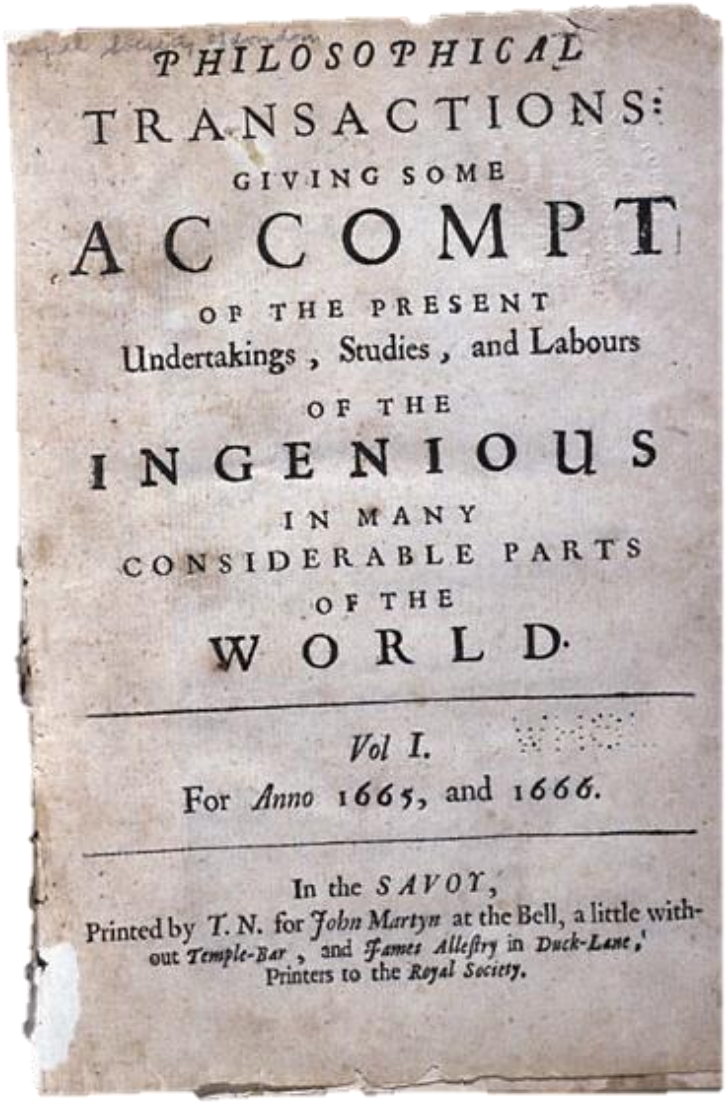
Introduction

- Continued trend towards OA
- Global collaboration across countries, publishers, libraries, research centers
- Inspired by culture of scientific collaboration



- Pre-print culture in HEP: mature community
- arXiv.org ubiquity (almost 100%)
- Incongruity of paying (journal) content, free on arXiv.org
- Peer-review journals crucial
- Global cooperation culture and infrastructure (CERN)

Scientific journals: dissemination and attribution



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OF THE
WORLD.

Vol I.
For *Anno* 1665, and 1666.

In the *SAVOY*,
Printed by *T. N.* for *John Martyn* at the Bell, a little without *Temple-Bar*, and *James Allestry* in *Duck-Lane*,
Printers to the *Royal Society*.

Scientific publication in High-Energy Physics

John Ellis in his office at CERN

- High-Energy Physics ~7’500 papers/year
- 90% written by 1, 2 or 3 authors
- Only 2% of overall publications from CERN

HEP Researchers mailed each-other preprints of articles

CERN paper-based Open Access preprint repository 1954-1997

The CERN preprint collection

Pre-print on the internet: arXiv.org (circa 1991)

[1207.7214] Observation

arxiv.org/abs/arXiv:1207.7214

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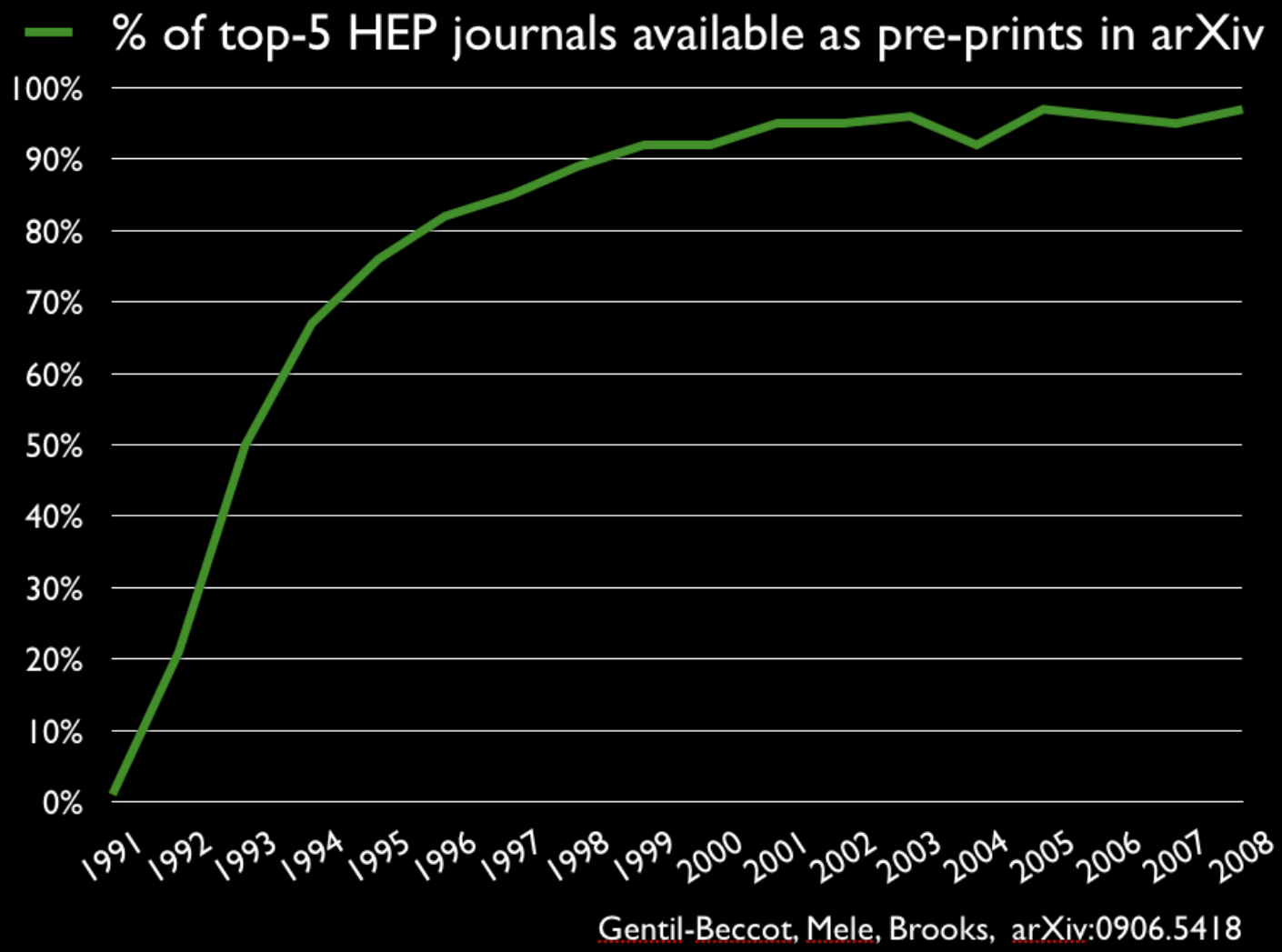

Gentil-Beccot, Mele, Brooks, arXiv:0906.5418

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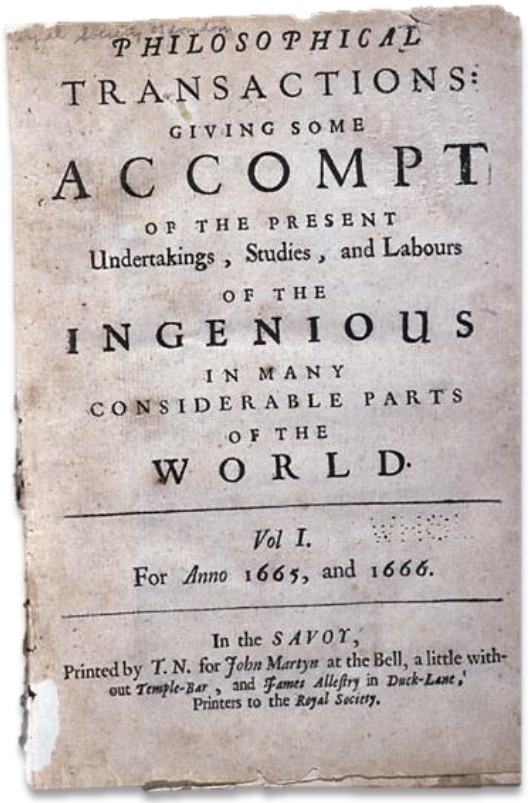

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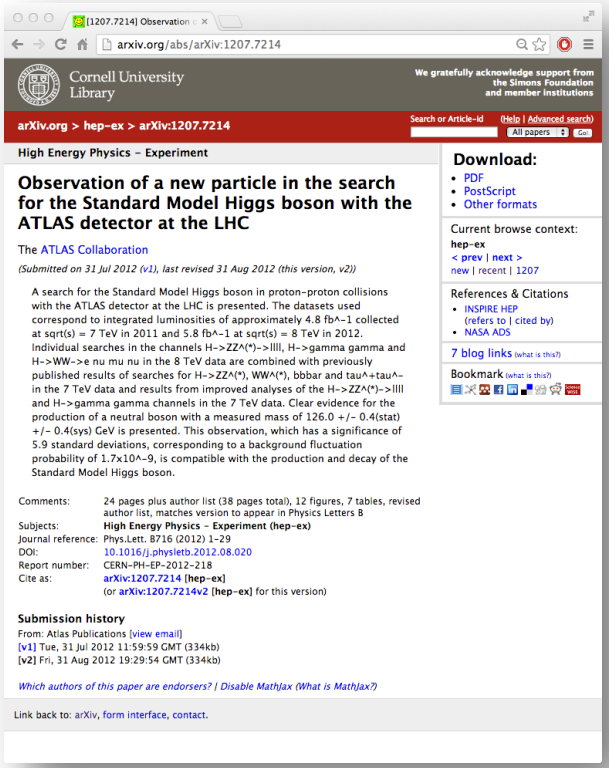

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Both the ATLAS and CMS Collaborations reported excesses of events in their 2011 datasets of proton–proton (pp) collisions at centre-of-mass energy $\sqrt{s} = 7$ TeV at the LHC, which were compatible with SM Higgs boson production and decay in the mass region 124–126 GeV, with significances of 2.9 and 3.1 standard deviations (σ), respectively [17,18]. The CDF and DØ experiments at the Tevatron have also recently reported a broad excess in the mass region 120–135 GeV; using the existing LHC constraints, the observed local significances for $m_H = 125$ GeV are 2.7σ for CDF [14], 1.1σ for DØ [15] and 2.8σ for their combination [16].

The previous ATLAS searches in 4.6–4.8 fb^{-1} of data at $\sqrt{s} = 7$ TeV are combined here with new searches for $H \to ZZ^{(*)} \to 4\ell$, $H \to \gamma\gamma$ and $H \to WW^{(*)} \to e\nu\mu\nu$ in the 5.8–5.9 fb^{-1} of pp collision data taken at $\sqrt{s} = 8$ TeV between April and June 2012.

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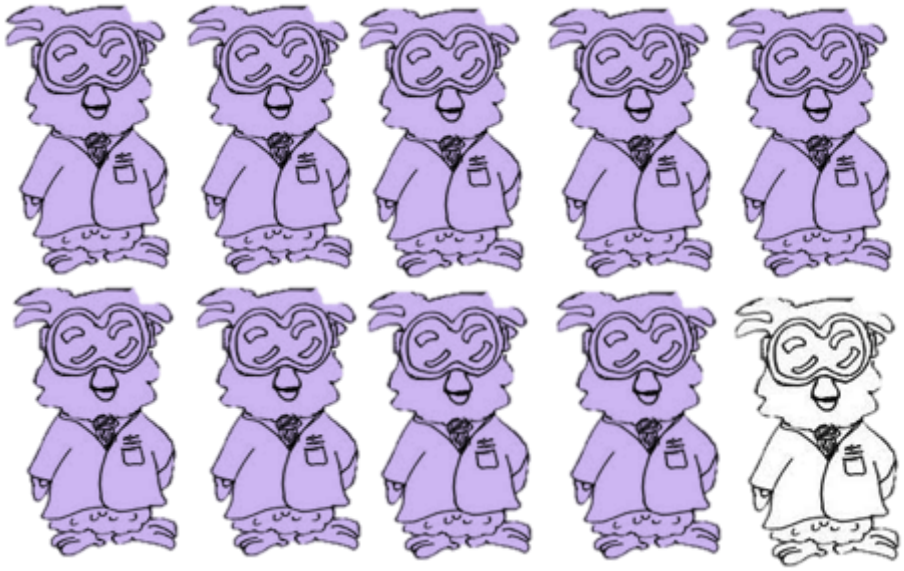
1 The symbol ℓ stands for electron or muon.

Do High-Energy Physics researchers “read” journals ?

9 HEP scientists in 10…



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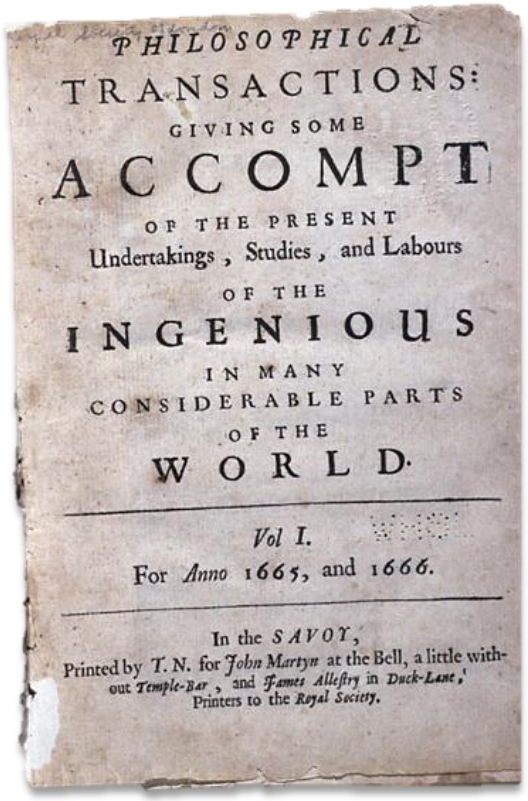

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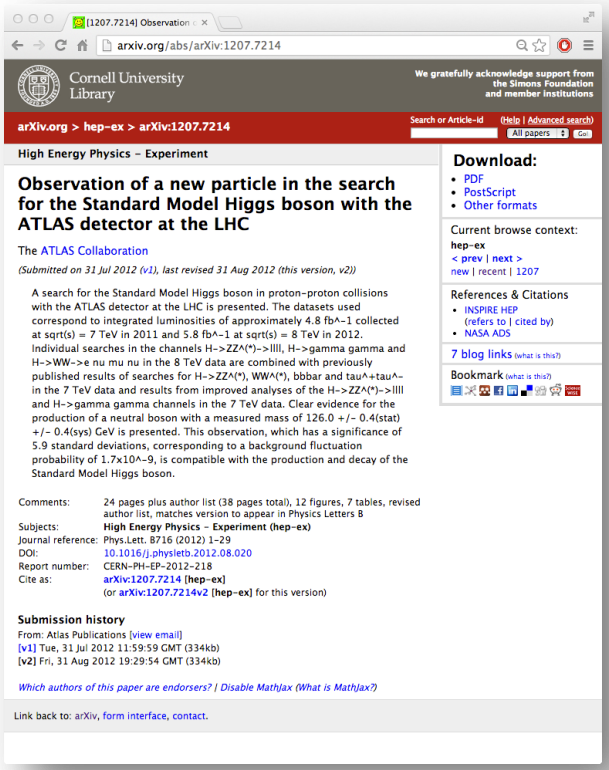

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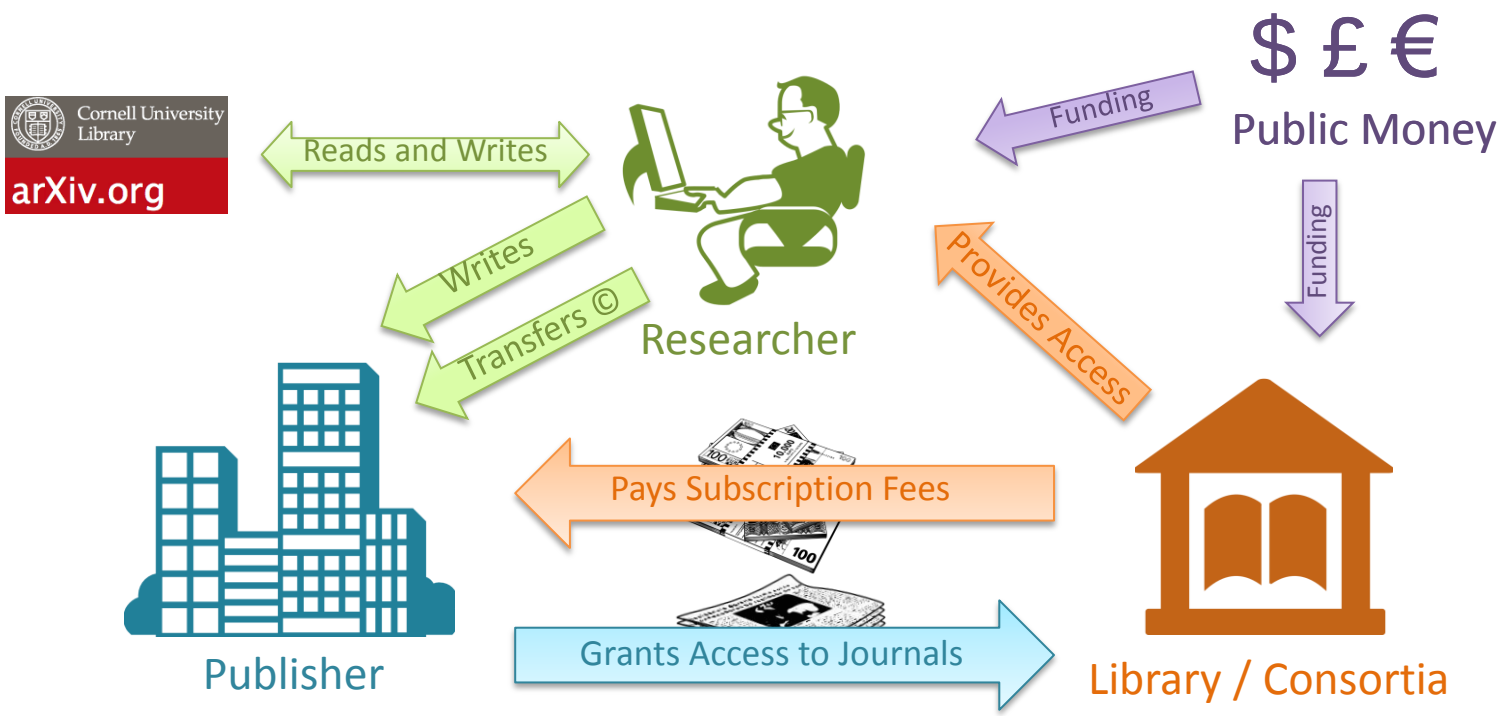

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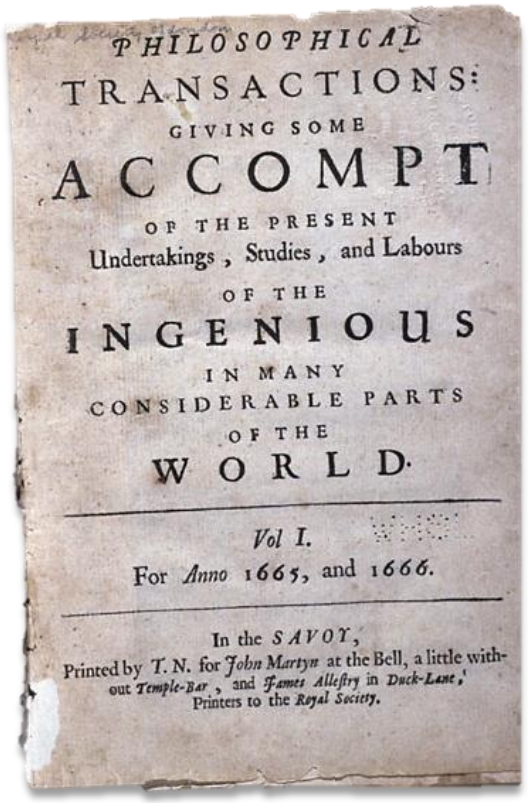

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Editor: W.-D. Schlatter

ABSTRACT

A search for the Standard Model Higgs boson in proton–proton collisions with the ATLAS detector at the LHC is presented. The datasets used correspond to integrated luminosities of approximately 4.8 fb^{-1} collected at $\sqrt{s}=7$ TeV in 2011 and 5.8 fb^{-1} at $\sqrt{s}=8$ TeV in 2012. Individual searches in the channels $H\to ZZ^{(*)}\to 4\ell$, $H\to\gamma\gamma$ and $H\to WW^{(*)}\to e\nu\mu\nu$ in the 8 TeV data are combined with previously published results of searches for $H\to ZZ^{(*)}$, $WW^{(*)}$, $b\bar{b}$ and $\tau^+\tau^-$ in the 7 TeV data and results from improved analyses of the $H\to ZZ^{(*)}\to 4\ell$ and $H\to\gamma\gamma$ channels in the 7 TeV data. Clear evidence for the production of a neutral boson with a measured mass of $126.0\pm0.4\,(\text{stat})\pm0.4\,(\text{sys})$ GeV is presented. This observation, which has a significance of 5.9 standard deviations, corresponding to a background fluctuation probability of 1.7×10^{-9}, is compatible with the production and decay of the Standard Model Higgs boson.

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1. Introduction

The Standard Model (SM) of particle physics [1–4] has been tested by many experiments over the last four decades and has been shown to successfully describe high energy particle interactions. However, the mechanism that breaks electroweak symmetry in the SM has not been verified experimentally. This mechanism [5–10], which gives mass to massive elementary particles, implies the existence of a scalar particle, the SM Higgs boson. The search for the Higgs boson, the only elementary particle in the SM that has not yet been observed, is one of the highlights of the Large Hadron Collider [11] (LHC) physics programme.

Indirect limits on the SM Higgs boson mass of $m_H < 158$ GeV at 95% confidence level (CL) have been set using global fits to precision electroweak results [12]. Direct searches at LEP [13], the Tevatron [14–16] and the LHC [17,18] have previously excluded, at 95% CL, a SM Higgs boson with mass below 600 GeV, apart from some mass regions between 116 GeV and 127 GeV.

Both the ATLAS and CMS Collaborations reported excesses of events in their 2011 datasets of proton–proton (pp) collisions at centre-of-mass energy $\sqrt{s}=7$ TeV at the LHC, which were compatible with SM Higgs boson production and decay in the mass region 124–126 GeV, with significances of 2.9 and 3.1 standard deviations (σ), respectively [17,18]. The CDF and D0 experiments at the Tevatron have also recently reported a broad excess in the mass region 120–135 GeV; using the existing LHC constraints, the observed local significances for $m_H=125$ GeV are 2.7σ for CDF [14], 3.1σ for D0 [15] and 2.8σ for their combination [16].

The previous ATLAS searches in 4.6–4.8 fb^{-1} of data at $\sqrt{s}=7$ TeV are combined here with new searches for $H\to ZZ^{(*)}\to 4\ell$, $H\to\gamma\gamma$ and $H\to WW^{(*)}\to e\nu\mu\nu$ in the 5.8–5.9 fb^{-1} of pp collision data taken at $\sqrt{s}=8$ TeV between April and June 2012.

The data were recorded with instantaneous luminosities up to 6.8×10^{33} cm^{-2}s^{-1}; they are therefore affected by multiple pp collisions occurring in the same or neighbouring bunch crossings (pile-up). In the 7 TeV data, the average number of interactions per bunch crossing was approximately 10; the average increased to approximately 20 in the 8 TeV data. The reconstruction, identification and isolation criteria used for electrons and photons in the 8 TeV data are improved, making the $H\to ZZ^{(*)}\to 4\ell$ and $H\to\gamma\gamma$ searches more robust against the increased pile-up. These analyses were re-optimised with simulation and frozen before looking at the 8 TeV data.

In the $H\to WW^{(*)}\to e\nu e\nu$ channel, the increased pile-up deteriorates the event missing transverse momentum, $E_{\mathrm{T}}^{\mathrm{miss}}$, resolution, which results in significantly larger Drell–Yan background in the same-flavour final states. Since the $e\mu$ channel provides most of the sensitivity of the search, only this final state is used in the analysis of the 8 TeV data. The kinematic region in which a SM Higgs boson with a mass between 110 GeV and 140 GeV is

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* E-mail address: atlas.publications@cern.ch.

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http://dx.doi.org/10.1016/j.physletb.2012.08.020

[1] The symbol ℓ stands for electron or muon.

Pay for peer-review and publishing services, content Open Access, no transfer of copyright

The SCOAP^3 Business Model

Redirecting existing subscription money

Publisher

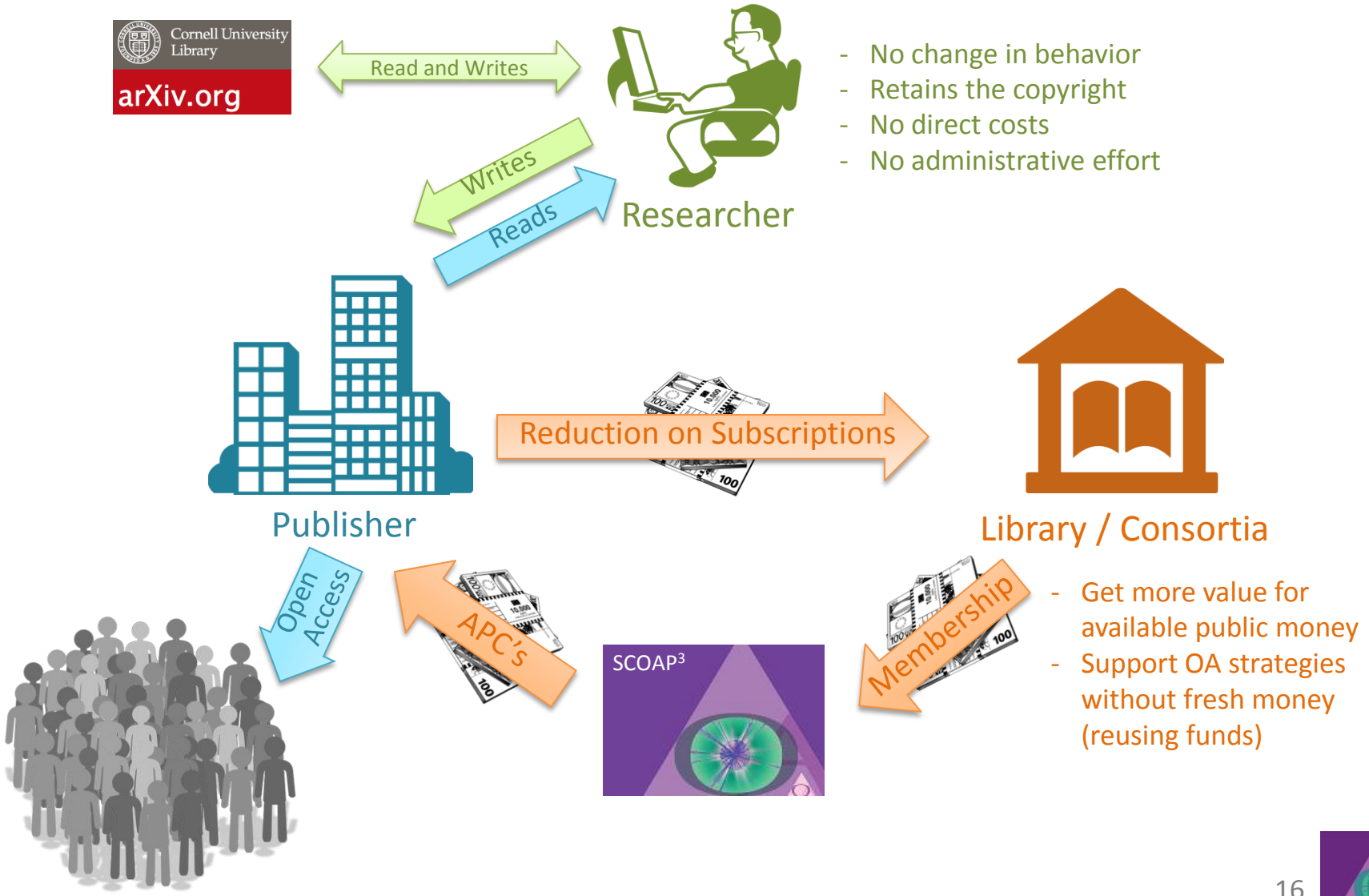
- Price of package reduced according to SCOAP^3 content
- Contracts adjusted for subscribers worldwide
- Refunds/credits for 2014

Library / Consortia

- Get more value for available public money
- Support OA strategies without fresh money (reusing funds)

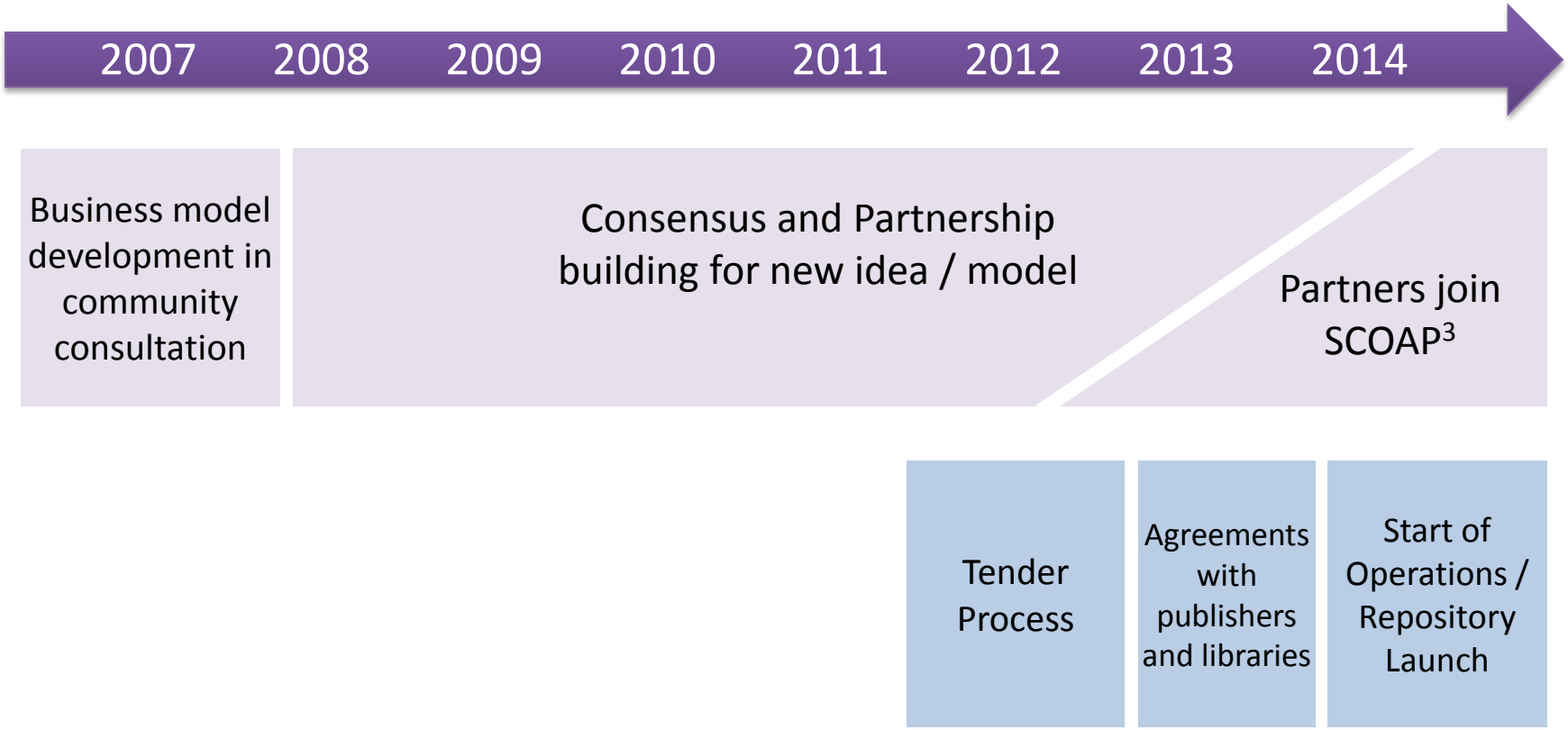
The SCOAP^3 Business Model

Redirecting existing subscription money



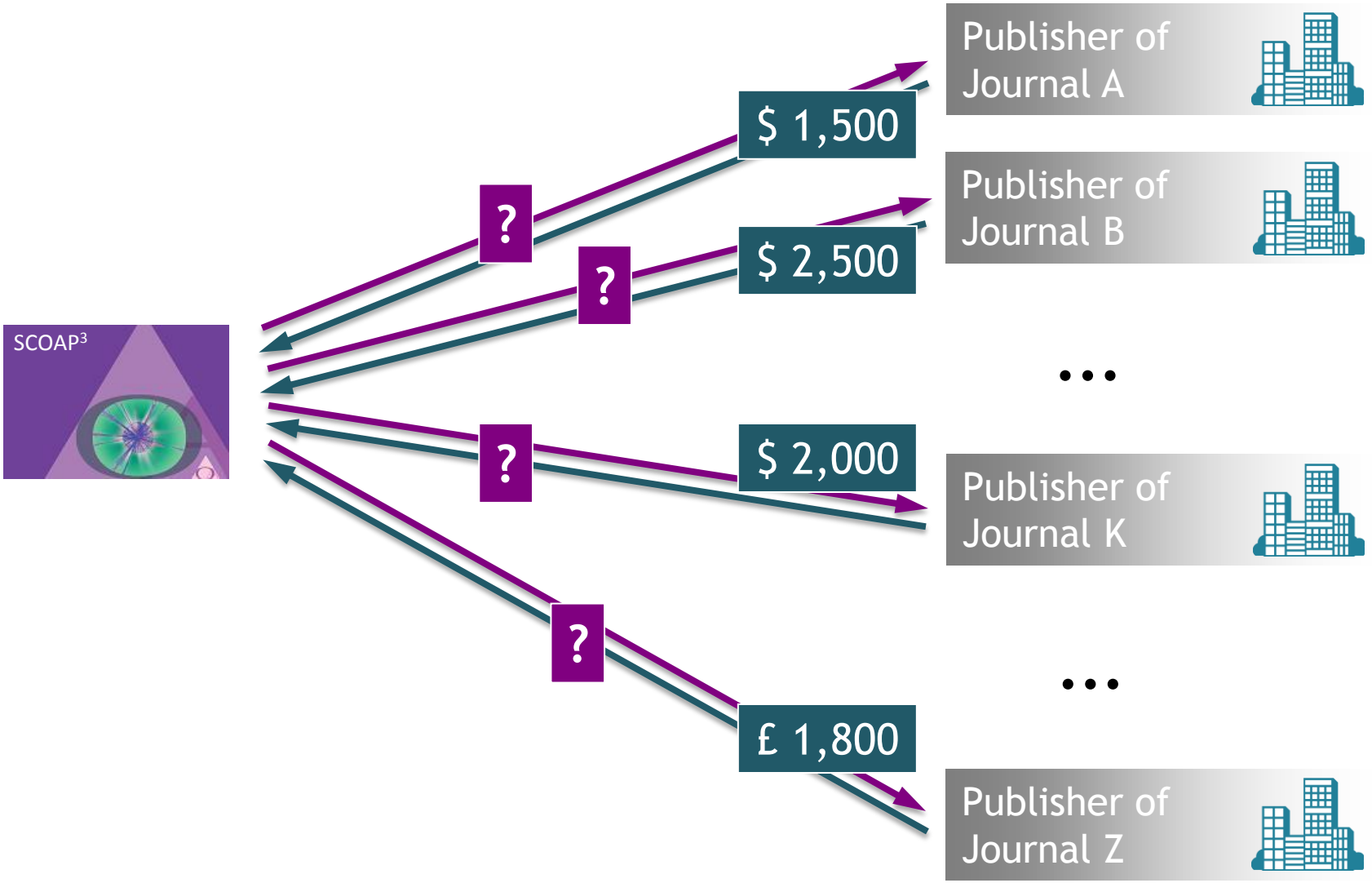
A Brief Look To The Past

The way to a successful launch in 2014



The SCOAP³ Tender Process

Three steps to determine the “best value for money”



Fictive numbers for explanation only!

The SCOAP^3 Tender Process (cont'd)

Three steps to determine the "best value for money"

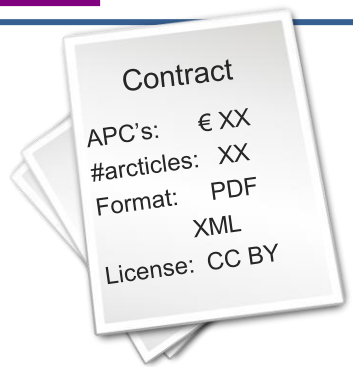
Fictive numbers for explanation only!

The SCOAP^3 Tender Process (cont'd)

Three steps to determine the "best value for money"

Ranked by (high) quality and (low) price

Journal	Price	Volume	Contract	Expenditure
Journal K	$ 2,000	1,100	$ 2.2mn	€ 1.8mn
Journal A	$ 1,500	2,000	$ 3.0mn	€ 4.2mn
Journal Z	£ 1,800	800	£ 1.4mn	€ 5.9mn
Journal F	€ 4,000	300	€ 1.2mn	€ 7.1mn
Journal L	€ 2,000	700	€ 1.4mn	€ 8.5mn
Journal R	€ 1,800	650	€ 1.2mn	€ 9.7mn
Journal Q	£ 3,000	90	£ 0.3mn	€ 10.0mn
Journal P	$ 800	120		
Journal W	£ 5,000	100		
...	...	...		



Fictive numbers for explanation only!

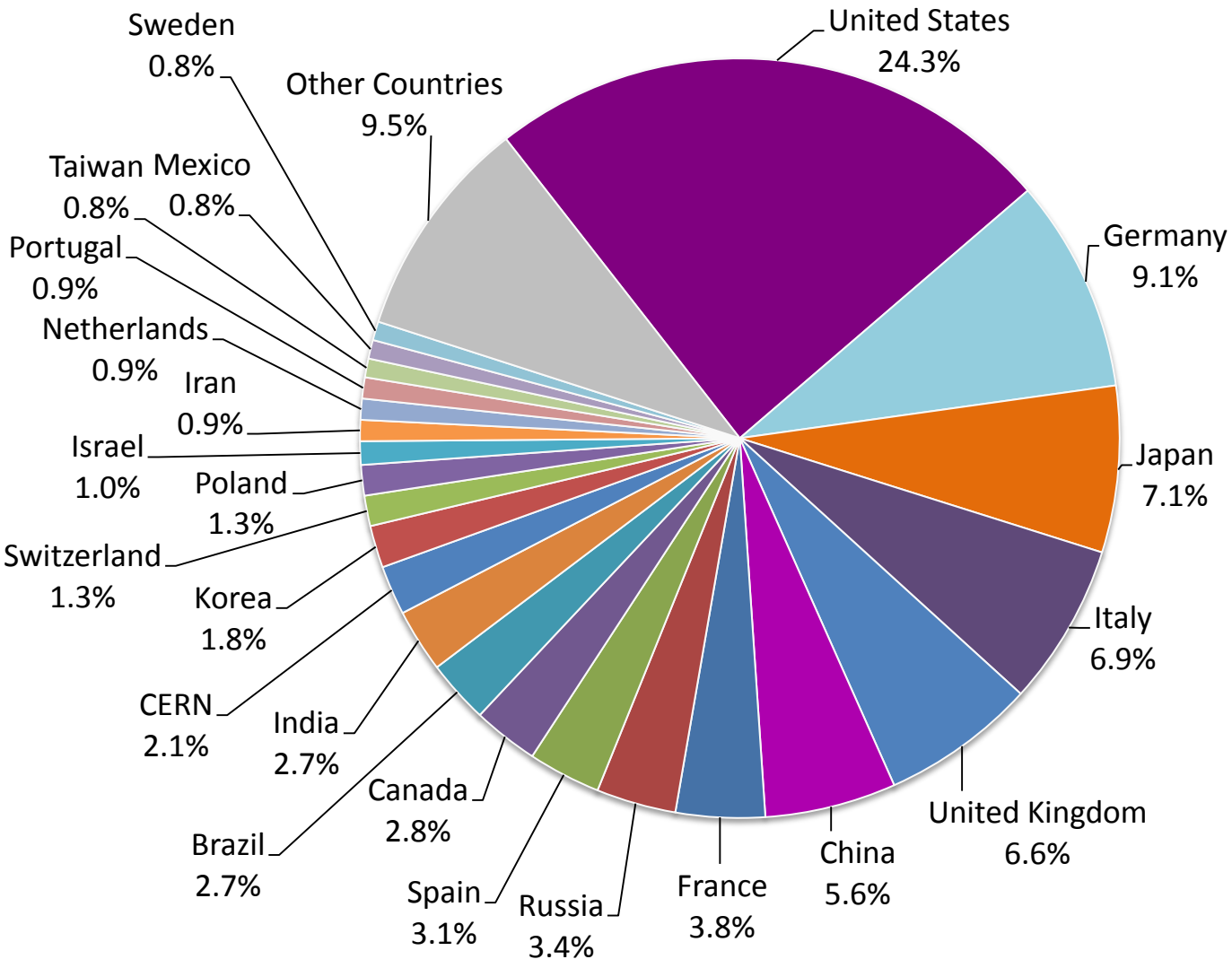
SCOAP^3 Tender Results in alphabetical order

Publisher	Journal	SCOAP^3 share 2011	APC	SCOAP^3 articles 2011	# articles 2014
~~APS~~	~~Physical Review D~~	~~ALL~~	~~$1,900~~	~~2,989~~	
~~APS~~	~~Physical Review C~~	~~9.9%~~	~~$1,900~~	~~107~~	
Elsevier	Nuclear Physics B	ALL	$2,000	284	321
Elsevier	Physics Letters B	ALL	$1,800	1,010	890
Hindawi	AHEP	ALL	$1,000	28	198
IOPp/DPG	New Journal of Physics	2.7%	£1,200	20	9
IOPp/SISSA	JCAP	30.9%	£1,400	138	236
IOPp/CAS	Chinese Physics C	7.2%	£1,000	16	18
Jagellonian	Acta Physica Polonica B	22.1%	€ 500	32	11
Springer/SISSA	Journal of HEP	ALL	€ 1,200	1,652	2,009
Springer/SIF	European Physical J. C	ALL	€ 1,500	326	525
OUP/JPS	PTEP	36.2%	£ 1,000	46	63
		Average	**€ 1,311**	**3,552**	**4,280**

Journals not listed either did not participate or the quality/price did not fit the €10mn budget envelope. See more details under: http://scoap3.org/scoap3journals/journals-apc

Authorship in High-Energy Physics

Geographical Distribution



http://scoap3.org/contributions

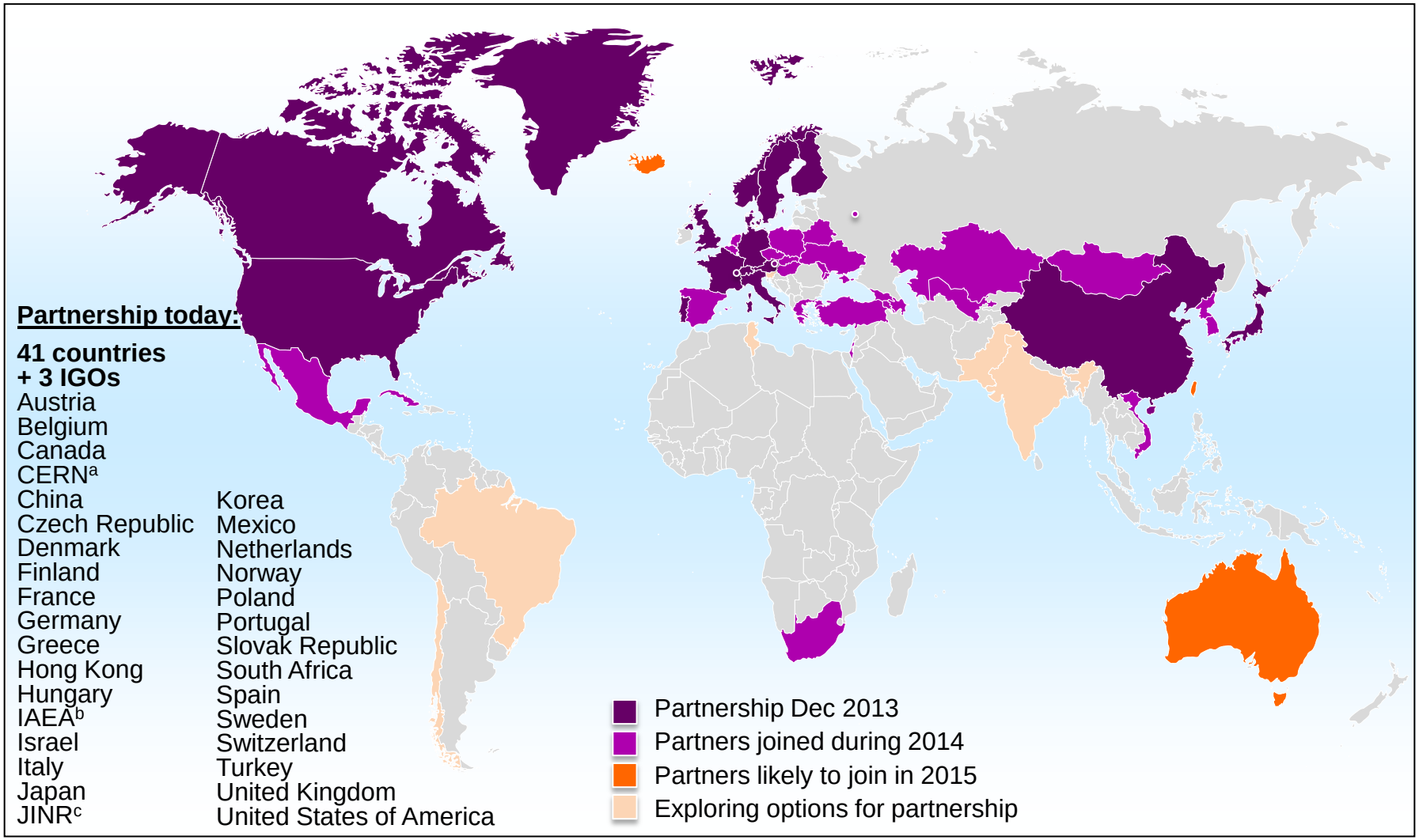
SCOAP^3 budget: € 5,000,000/year

Partners contribute based on national share of HEP publications

http://scoap3.org/contributions

SCOAP³ – a continuously growing network

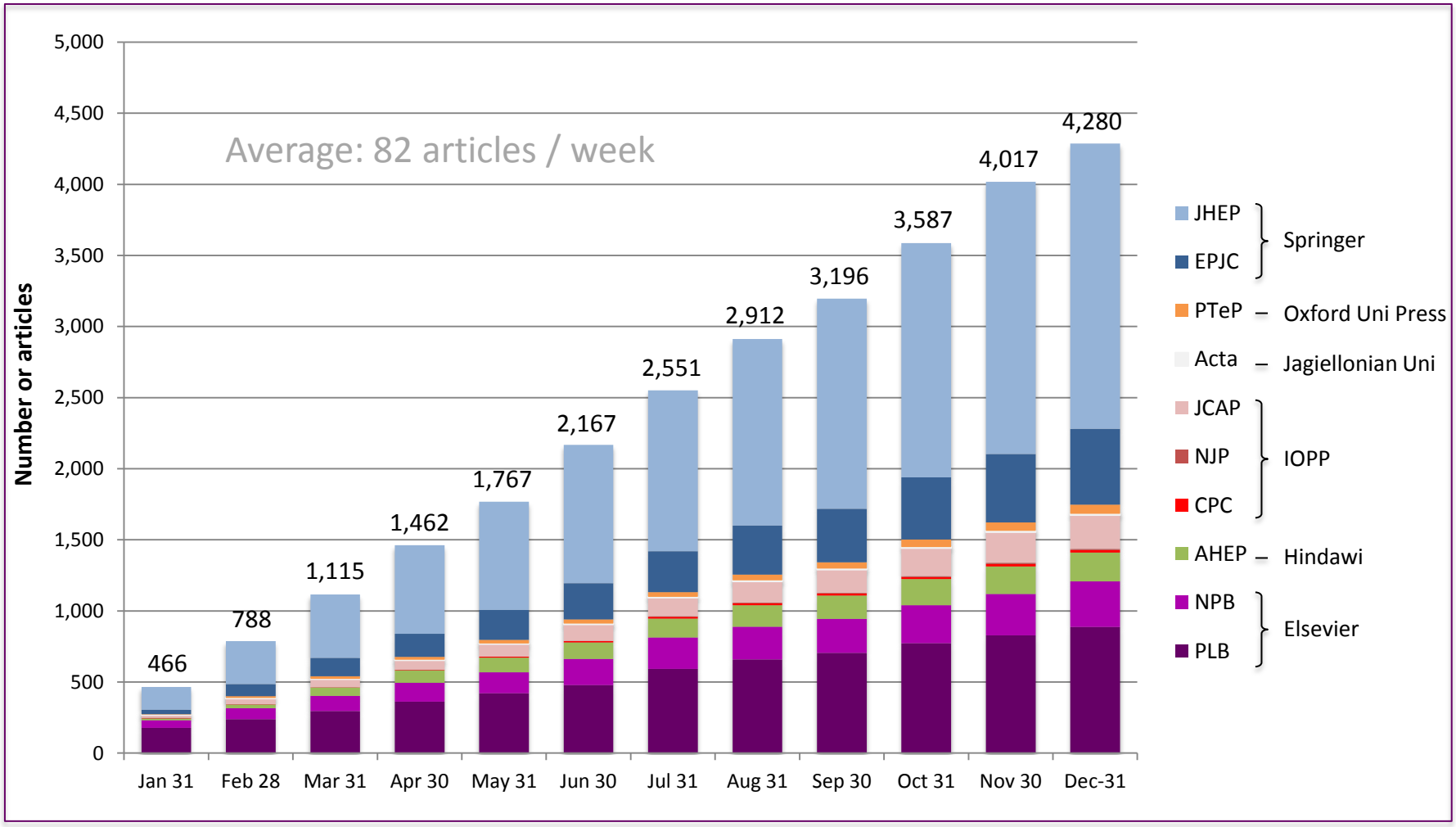
~3,000 libraries, funding agencies and research institutions



a) European Organization for Nuclear Research, Geneva
b) International Atomic Energy Agency, Vienna
c) Joint Institute for Nuclear Research, Dubna representing 12 of its member states

PRESENT

Articles funded by SCOAP^3



Article Compliance

Compliance of delivered articles regularly validated

- Delivery within 24 hours after DOI registration
- CC BY license and copyright with the authors
- Delivery with proper labeling as SCOAP^3 funded
- Formats according to contract (XML, PDF, PDF/A)

- No major issues encountered so far
- 99% of the articles immediately compliant
- Remaining 1%: isolated problems with different publishers
- Excellent reactions: Correction usually submitted immediately

2014 Effective Article Processing Charges

- Publisher contracts specify APCs per journal but are capped to a maximum annual amount (ceiling)
- Additional articles to be published Open Access at no additional cost
- For 2014, maximum amount = 2011 volume of articles (only number available at the Tender stage)
- Effective APCs will be lower as a result of the capping

Effective Article Processing Charges

Publisher	Journal	APC	2011 reference articles	2014 actual # articles	# payable articles	Amount projection
Elsevier	Nuclear Physics B	2,000 USD	284	321	284	€ 428k
	Physics Letters B	1,800 USD	1,010	890	890	€ 1,206k
Hindawi	Advances in High Energy Physics	1,000 USD	28	198	28	€ 21k
IOPP	Chinese Physics C	1,000 GBP	16	18	16	€ 20k
	Journal of Cosmology and Astroparticle Physics	1,400 GBP	138	236	138	€ 240k
	New Journal of Physics	1,200 GBP	20	9	9	€ 13k
Jagiellonian Uni	Acta Physica Polonica B	500 EUR	32	11	11	€ 6k
Oxford Uni Press	Progress of Theoretical and Experimental Physics	1,000 GBP	46	63	46	€ 57k
Springer	European Physical Journal C	1,500 EUR	326	525	326	€ 489k
	Journal of High Energy Physics	1,200 EUR	1,652	2,009	1,652	€ 1,982k
	Average:	**1,311 EUR**	**3,552**	**4,280**	**3,396**	**€ 4,461k**

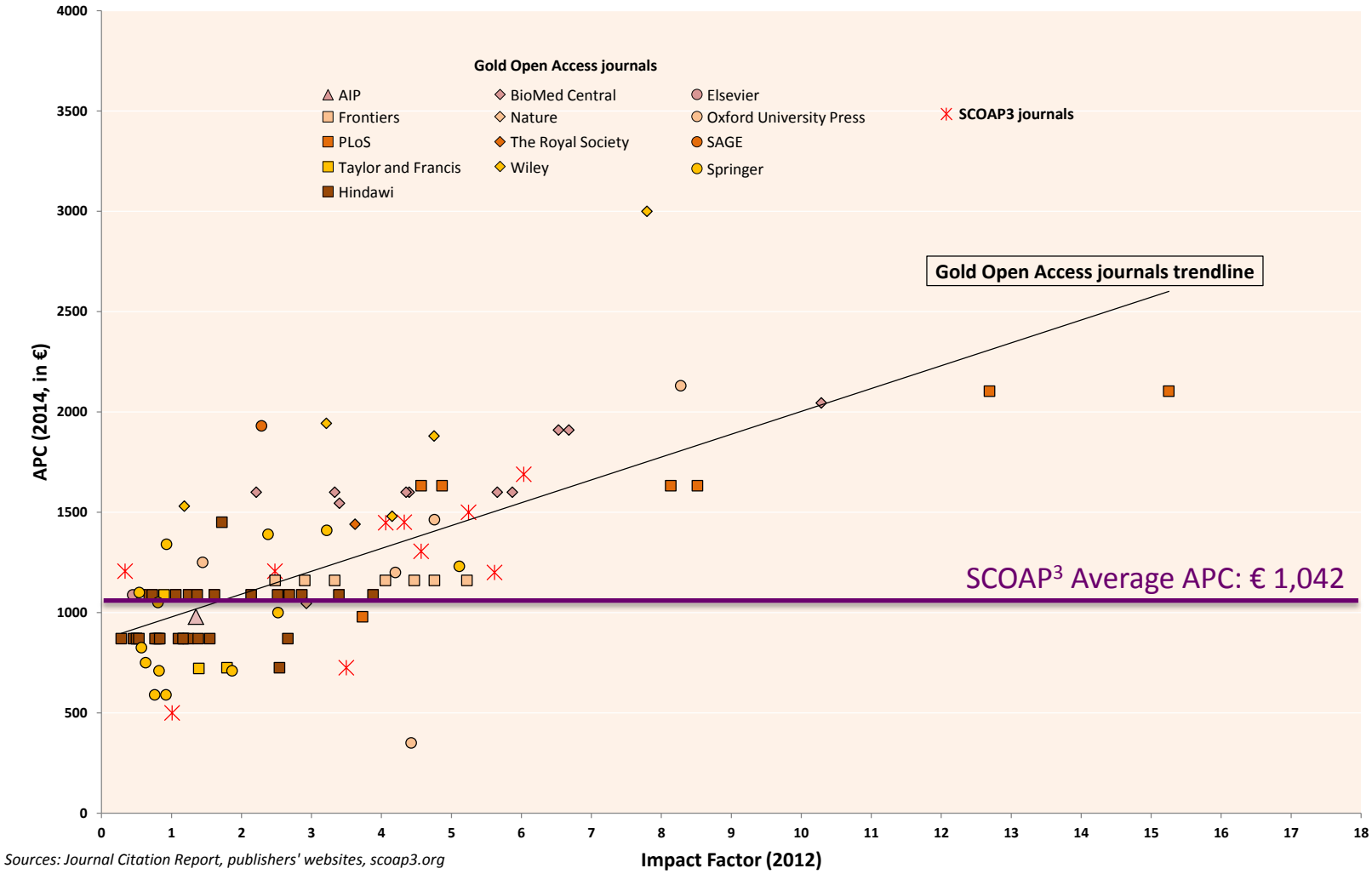
Final 2014 number is higher than the maximum payable number of payable articles

Final 2014 number is lower than the maximum payable number of payable articles

Average APC: € 1,042

C. Romeu *et al.* (2014) *The SCOAP3 initiative and the Open Access - Article-Processing-Charge market: global partnership and competition improve value in the dissemination of science* DOI: 10.2314/CERN/C26P.W9DT

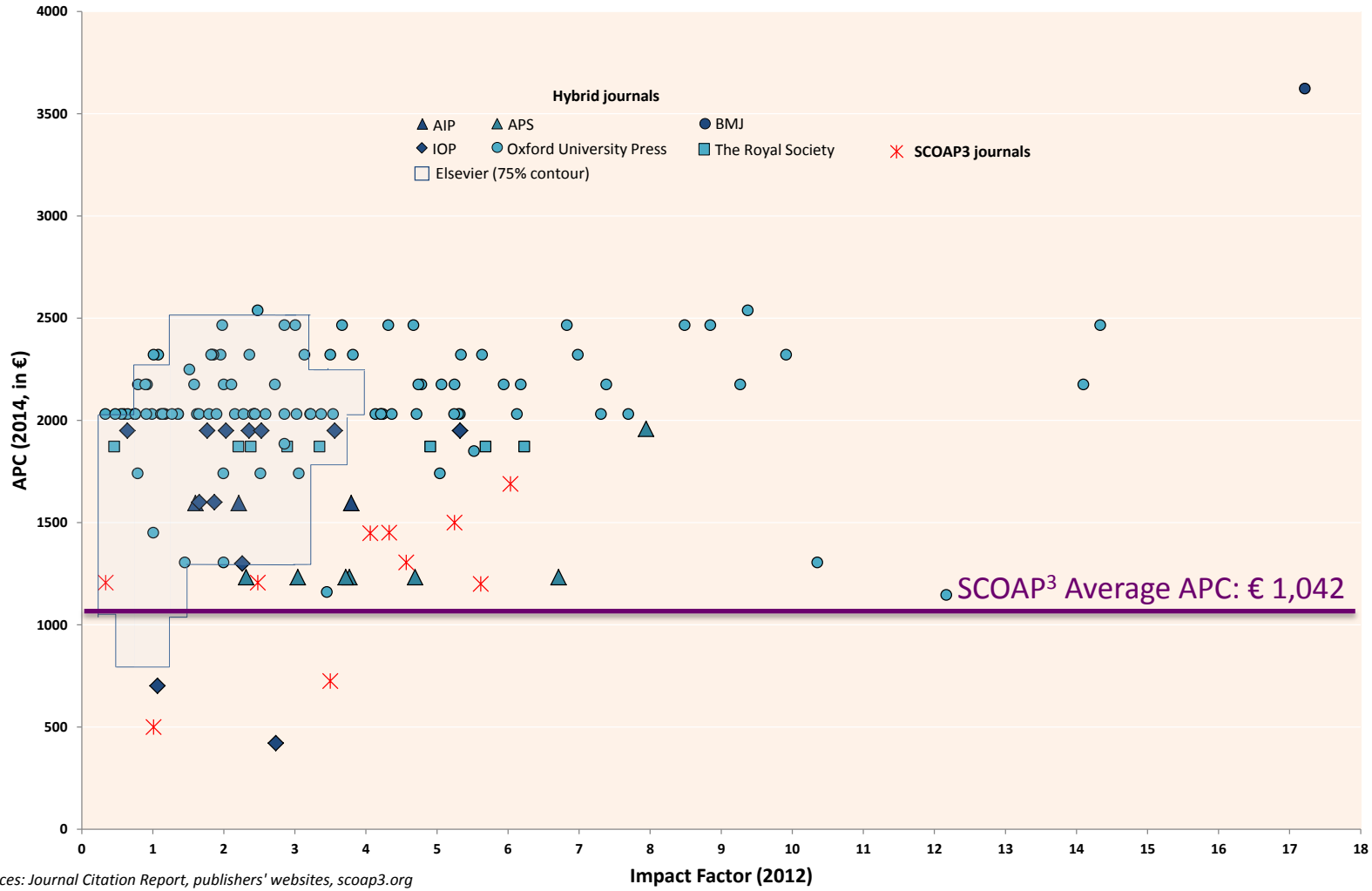
APCs for Gold OA Journals correlate with IF



Sources: Journal Citation Report, publishers' websites, scoap3.org

C. Romeu *et al.* (2014) *The SCOAP3 initiative and the Open Access - Article-Processing-Charge market: global partnership and competition improve value in the dissemination of science* DOI: 10.2314/CERN/C26P.W9DT

APCs for Hybrid Journals

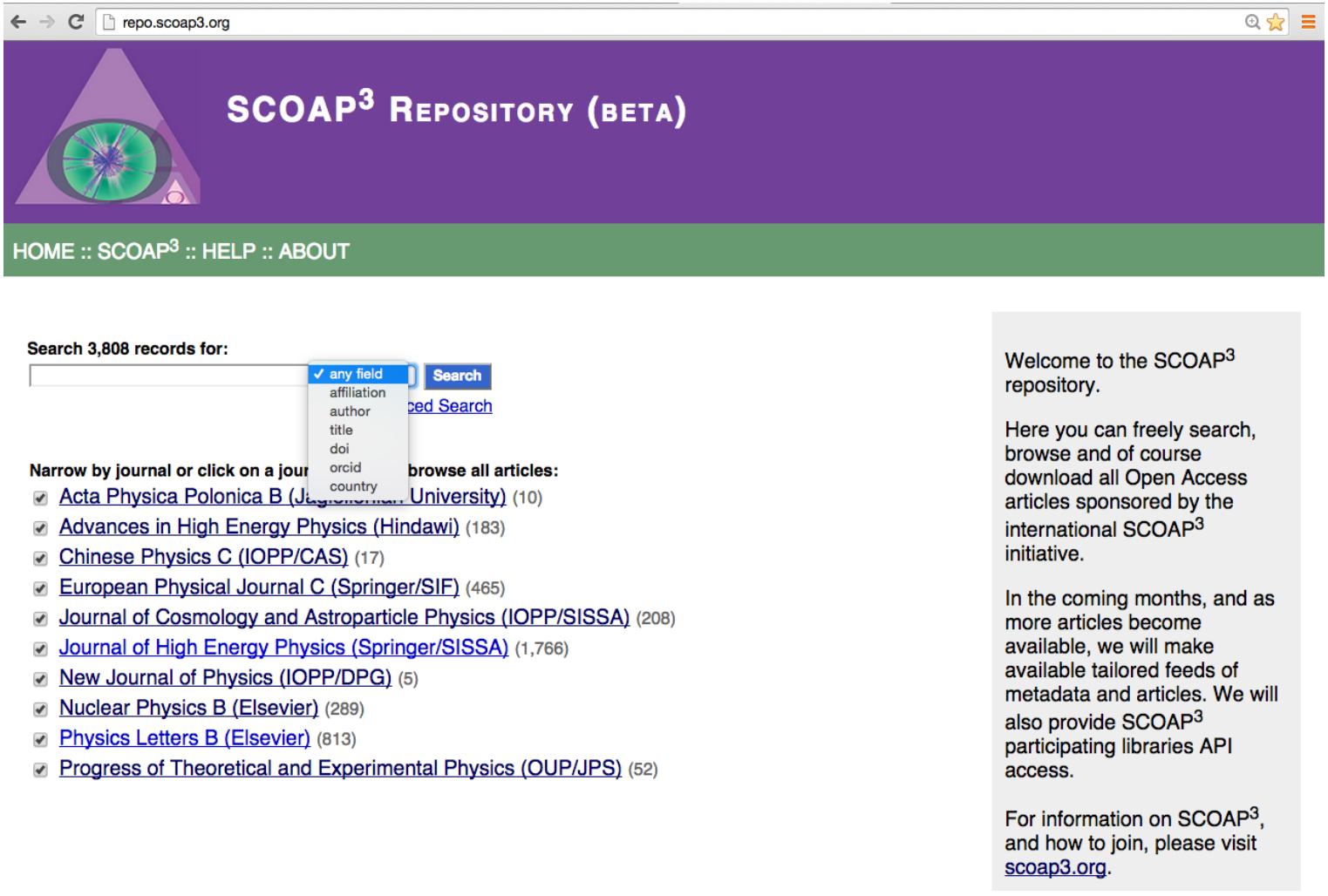


Sources: Journal Citation Report, publishers' websites, scoap3.org

C. Romeu *et al.* (2014) *The SCOAP3 initiative and the Open Access - Article-Processing-Charge market: global partnership and competition improve value in the dissemination of science* DOI: 10.2314/CERN/C26P.W9DT

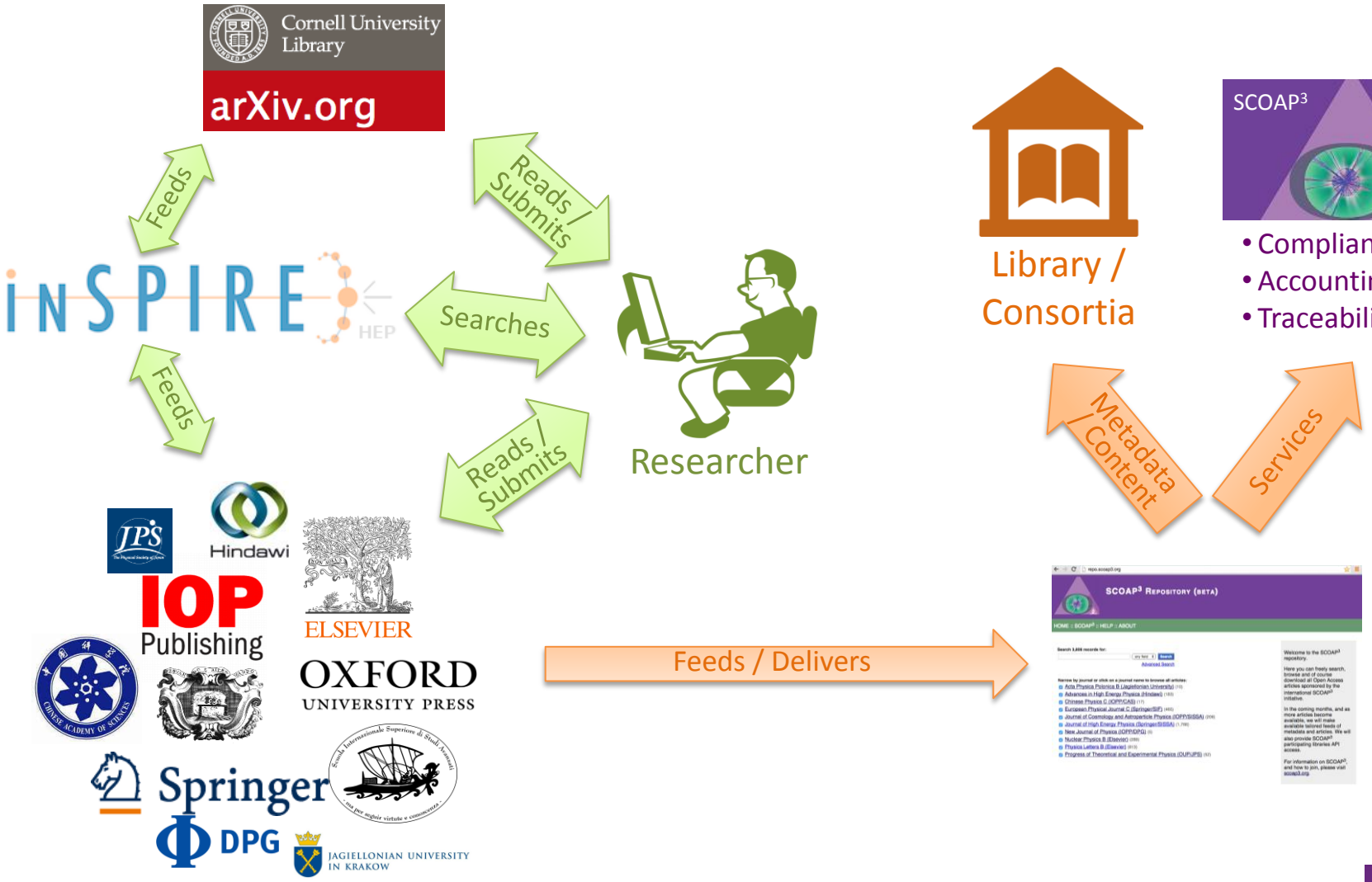
The SCOAP^3 Repository

Launched in February 2014 at repo.scoap3.org (Invenio based)



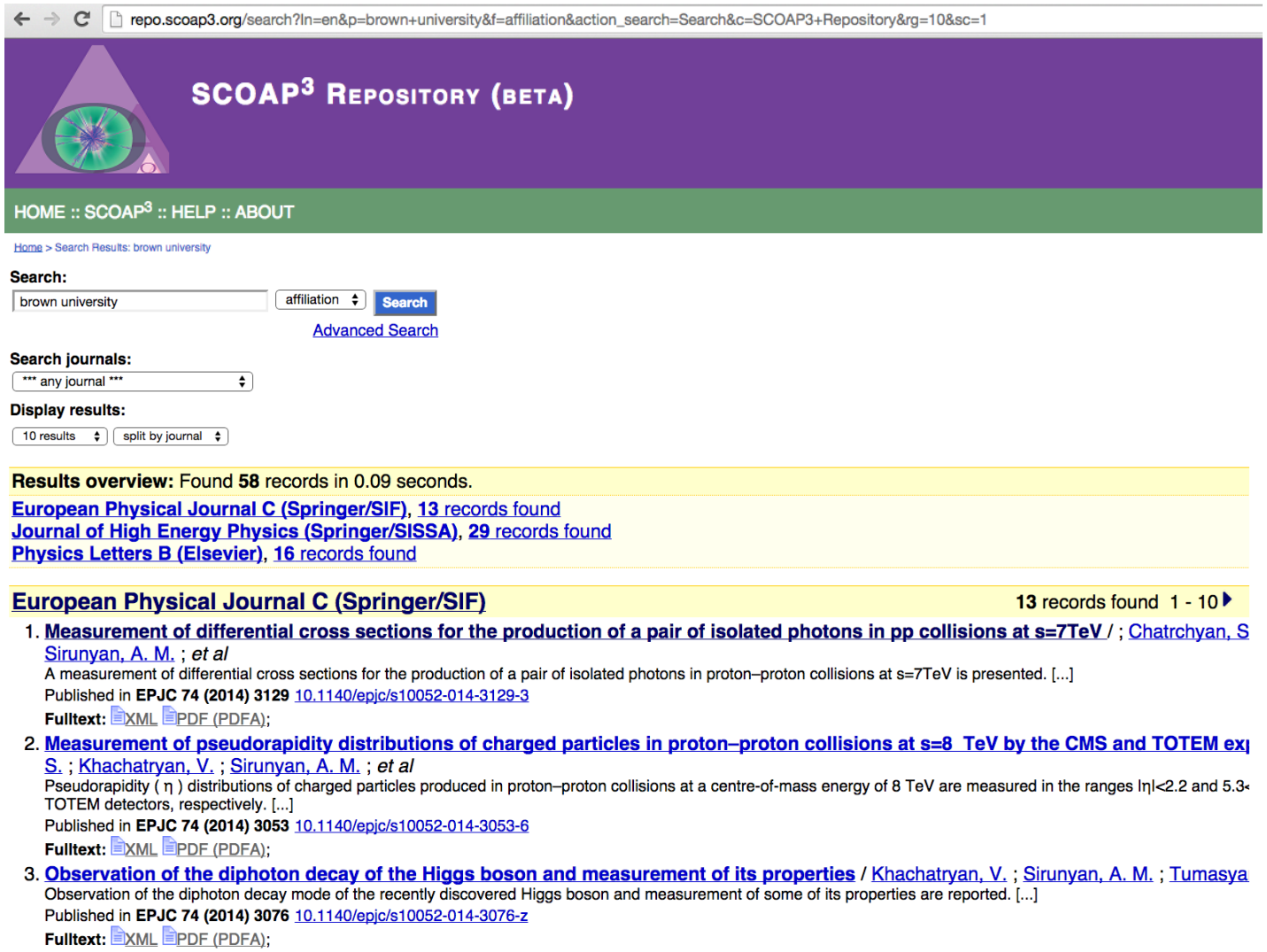
The SCOAP^3 Repository – A tool for participating libraries

Open metadata, feeds and content to build services. SCOAP^3 compliance monitoring



Searching the SCOAP³ Repository

How to select articles from a given country or institution?



Searching the SCOAP^3 Repository

Affiliations and countries as starting points for extracting records

Examples: Searching by country

Country of affiliation extracted from publishers' feeds*

Example 1

Returns all records where at least one author is affiliated to a German Institute.

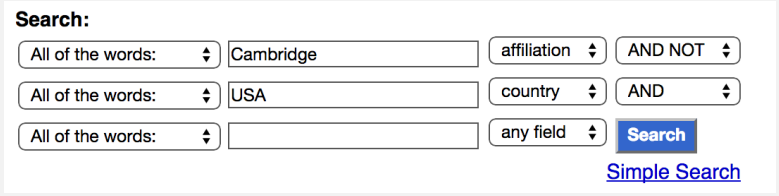
Example 2

Returns all records with at least one author affiliated to a German Institute and one to a French institute.

*Country extracted from the last string (comma separated) in the affiliation provided by the publisher; normalized to standard English country name or abbreviation.

Example: Advanced Search

Example 3



Returns all records with authors from Cambridge (not the U.S. one)

NB Information on "Corresponding Author" is not available.

ORCID – tool for libraries to extract relevant data

Known ORCIDs are fed by publishers and displayed in the repository

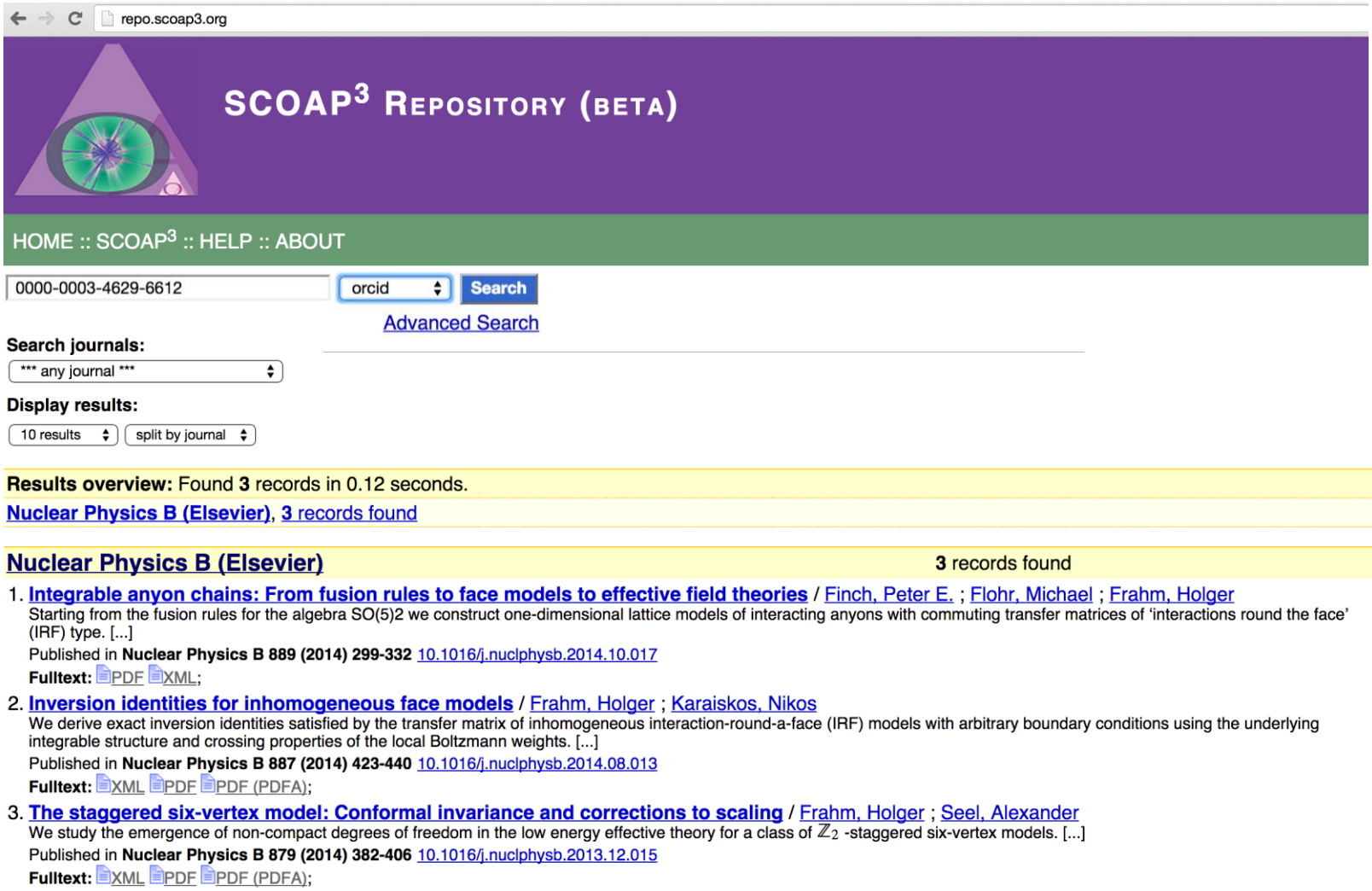
Already ~8% of articles and ~2% of authors with ORCIDs in the repository

Large growth to be expected: publishers not yet capturing authors ORCIDs

SCOAP3 partners can promote ORCIDs with their authors, and later query the repository.

ORCIDs in the SCOAP^3 Repository (cont'd)

Search for ORCID already enabled



Extraction of relevant records, content, metadata

Two options already supported

OAI-PMH standard (Open Archives Initiative Protocol for Metadata Harvesting)

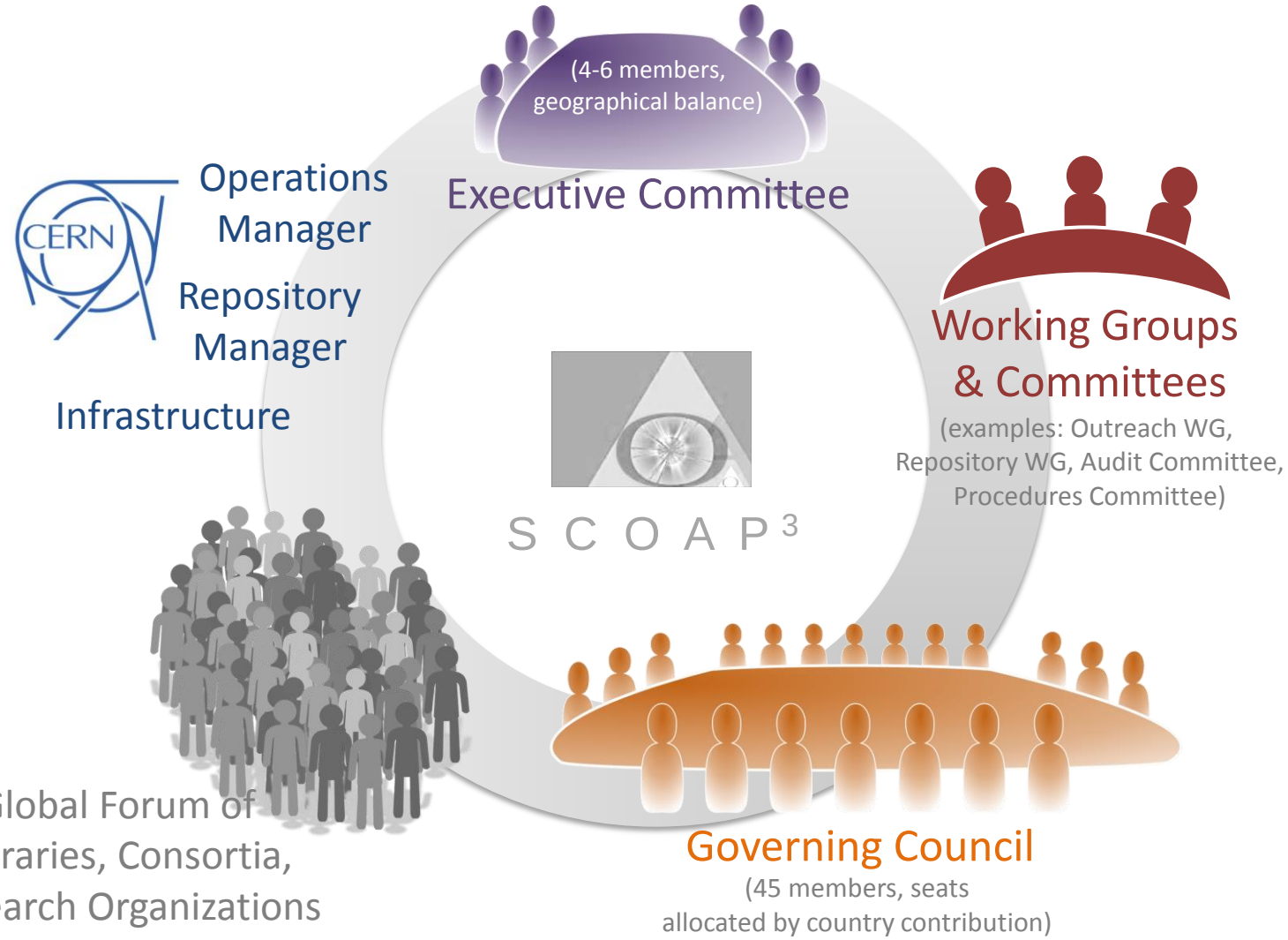
- Formats: DublinCore, MARCXML
- Connector: http://repo.scoap3.org/oai2d
- Sets: http://repo.scoap3.org/oai2d?verb=ListSets (global & for every journal)
- Documentation: http://scoap3.org/scoap3-repository/oai-pmh-feed

Search API to return arbitrary set of records from (complex) searches

- Formats: MARCXML
- Connection by HTTP request: http://repo.scoap3.org/search?p=xxxxxx&of=xm
  - xxxxxx => actual query (e.g. affiliation:Cambridge not country:USA)
  - of=xm => return XML format
- Documentation: http://scoap3.org/scoap3-repository/xml-api

Governance Structure

Global participation for transparency and good governance



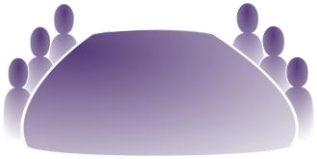
Governance Structure (cont'd)

SCOAP^3 global team

Governing Council

Chair: Dr. Ralf Schimmer (Germany)

Deputy Chair: Ivy Anderson (USA)



Executive Committee: Clare Appavoo (Canada)
Ivy Anderson (USA)
Dr. Jun Adachi (Japan)
Nina Karlstrøm (Norway)
Dr. Salvatore Mele (CERN)
Dr. Stefano Bianco (Italy)

Operations Manager: Alexander Kohls (CERN)

Repository Manager: Wojciech Ziółek (CERN)

FUTURE

A Forward Look

2014 set up the operations, 2015 will target the next phase

2014

Accomplishments in the First Phase

- Established and solidified operations
- Significantly expanded the partnership

2015

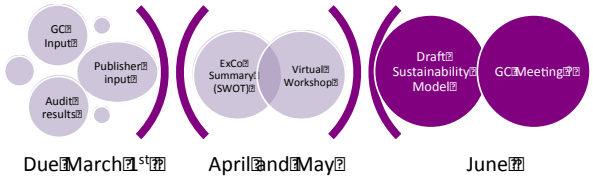
Preparation of the next phase 2017-2019 with many things to do:

- Assess progress to date ✔
- Solicit the views of all partners and stakeholders: libraries & consortia / funding agencies / publishers ✔
- Review journal growth and quality ✔
- Liaise with new journals that might have appeared in the meantime
- Reach out to other journals / publishers not part of the first phase

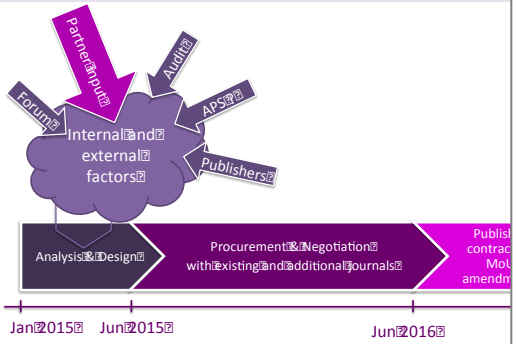
✧ Additionally, in 2015 we will continue to extend the partnership to more countries and libraries!

SCOAP³ SWOT Analysis – call for action in December

Process Towards a Sustainability Model



Roadmap for SCOAP³ second cycle



Request for input from GC: analysis papers

Papers could contain:

- SWOT Analysis
  - For SCOAP³ Globally
  - At country level
- Discussion of other issues

Top themes partnership

Strengths

Weaknesses

Opportunities

Threats

A Forward Look

Extending our achievements into the future

Phase 2 will build on the assets that we have successfully cultivated thus far:

- The commitment of CERN to host the initiative
- Robust governance structure with dedicated professionals from around the world
- Diverse funding structure with some 3,000 institutions contributing t
- Experience from the first tendering process (including reconciliation facility)
- Continuously growing global partnership
- Sound processes, workflows and technical solutions
- Strong partnership with the participating publishers

CERN, the Governing Council and the Executive Committee are jointly developing a roadmap that will lead us into the second phase 2017-2019 in consultation with all parties and stakeholders.