

# **Dissemination of scientific results in High Energy Physics: the CERN Document Server vision.**

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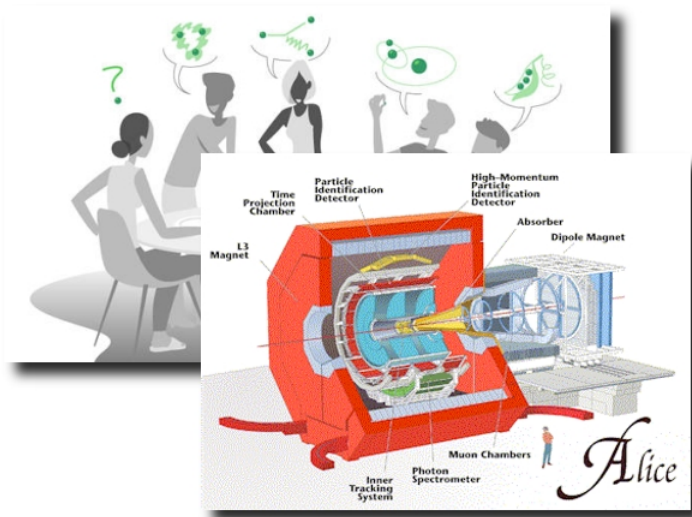
15 February 2006

# The lifecycle of scientific research ... [1]



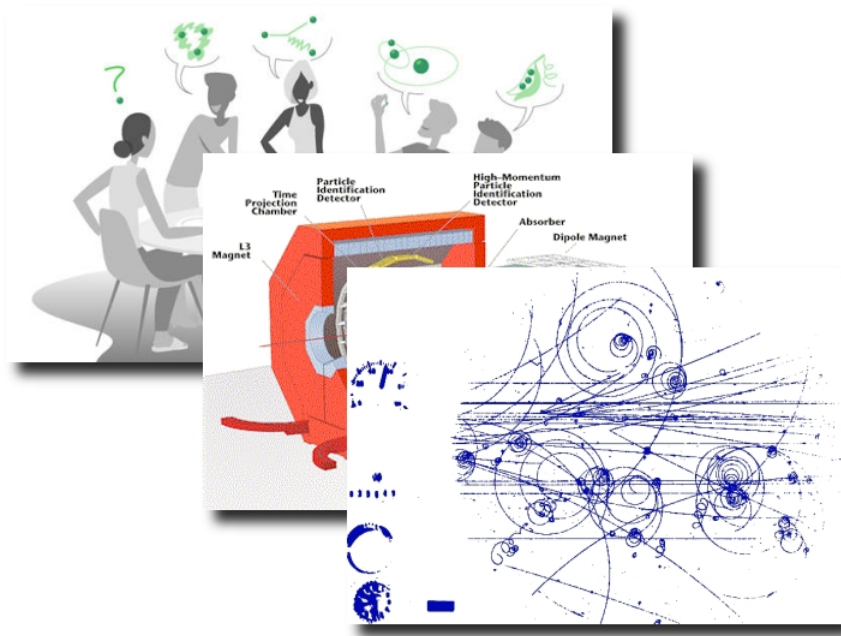
**study,  
research,  
collaborate,  
brainstorm!**

# The lifecycle of scientific research ... [2]



**experiment,  
investigate**

# The lifecycle of scientific research ... [3]



**extract,  
analyze,  
output data**

# The lifecycle of scientific research ... [4]



**document,  
publish,  
archive,  
inform!**

- ... but every discipline can have its own lifecycle
- also, within a discipline various different publishing models may exist

# The physics scenario

- Traditional publishing channels and **self-archiving** in digital repositories (e.g. **arXiv.org**) have co-existed for some time
- In the repositories, research material is
  - available immediately
  - free
- At CERN, a massive amount of scholarly output every year:
  - **2,250** publications
  - **10,000** conference contributions
  - ... **TONS** of raw experimental data!
- The **CERN Document Server** is the institutional repository of CERN:
  - open access to high-energy physics (HEP) related material
  - not just storage, but plenty of library and user-oriented features
  - “orthogonal” to arXiv.org

# The CERN scenario: history [1]

- **1954** - CERN is established. Convention says:
  - ... the results of CERN's experimental and theoretical work shall be published or otherwise made generally available*
- **1954-1960s** - free paper dissemination of preprints by the CERN Library
- **1990-1993** - WWW: preprints distribution continues via FTP
- **1993** - CERN Preprint Server on the web
  - institutional repository
  - two collections: CERN preprints, SCAN series
- **1996** - CERN WebLib — adding books, periodicals, and other library objects

## The CERN scenario: history [2]

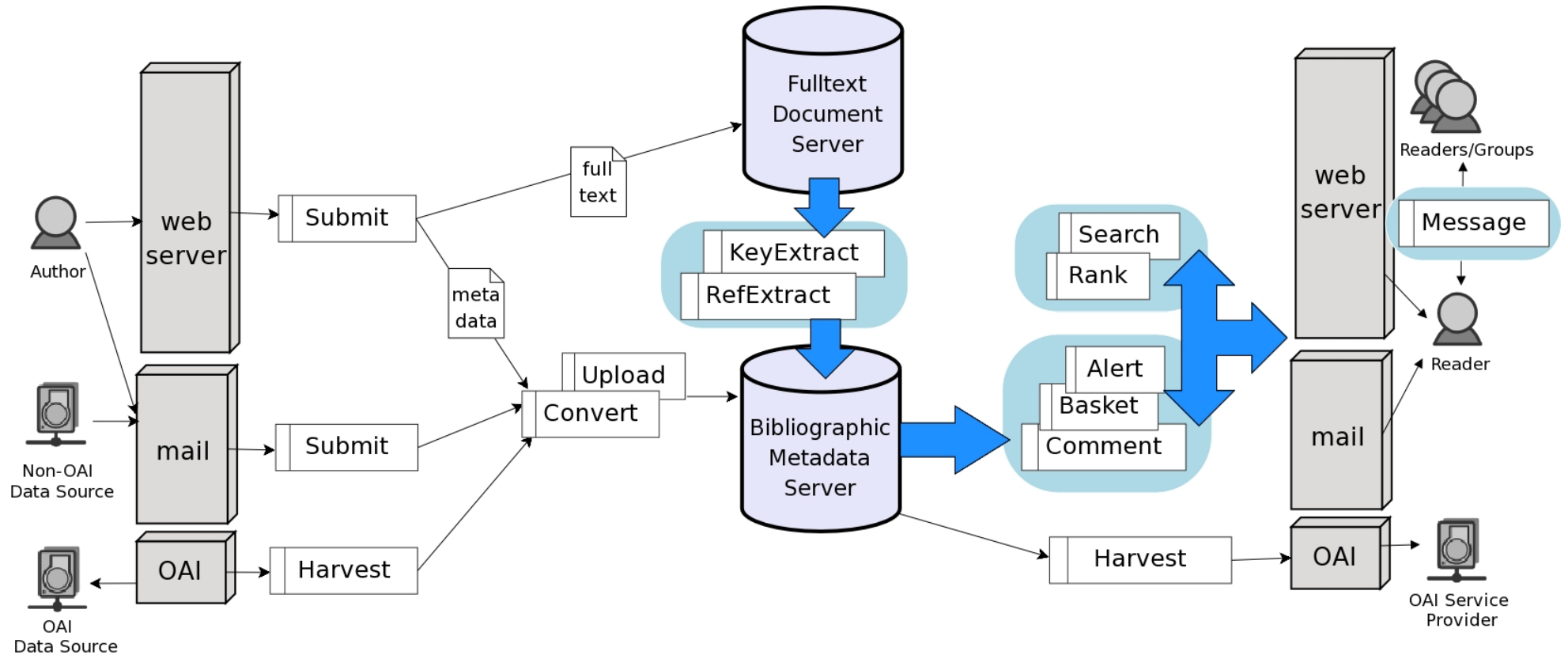
- **1999** - CERN Agenda (now Indico) — sister application for conferences and meetings
- **2000** - CERN Document Server
  - adding multimedia material (photos, posters, brochures, videos)
  - packaged as CDSware (now installed at 15 places outside CERN)
- **2002** CDS adopts OAI-PMH protocol — enhanced interoperability
- **2003** First archiving policy document to reinforce habit of self-archiving
- **2004** CERN signs Berlin declaration — officially committed to Open Access (OA)
- **today ...**



# The CERN scenario: today

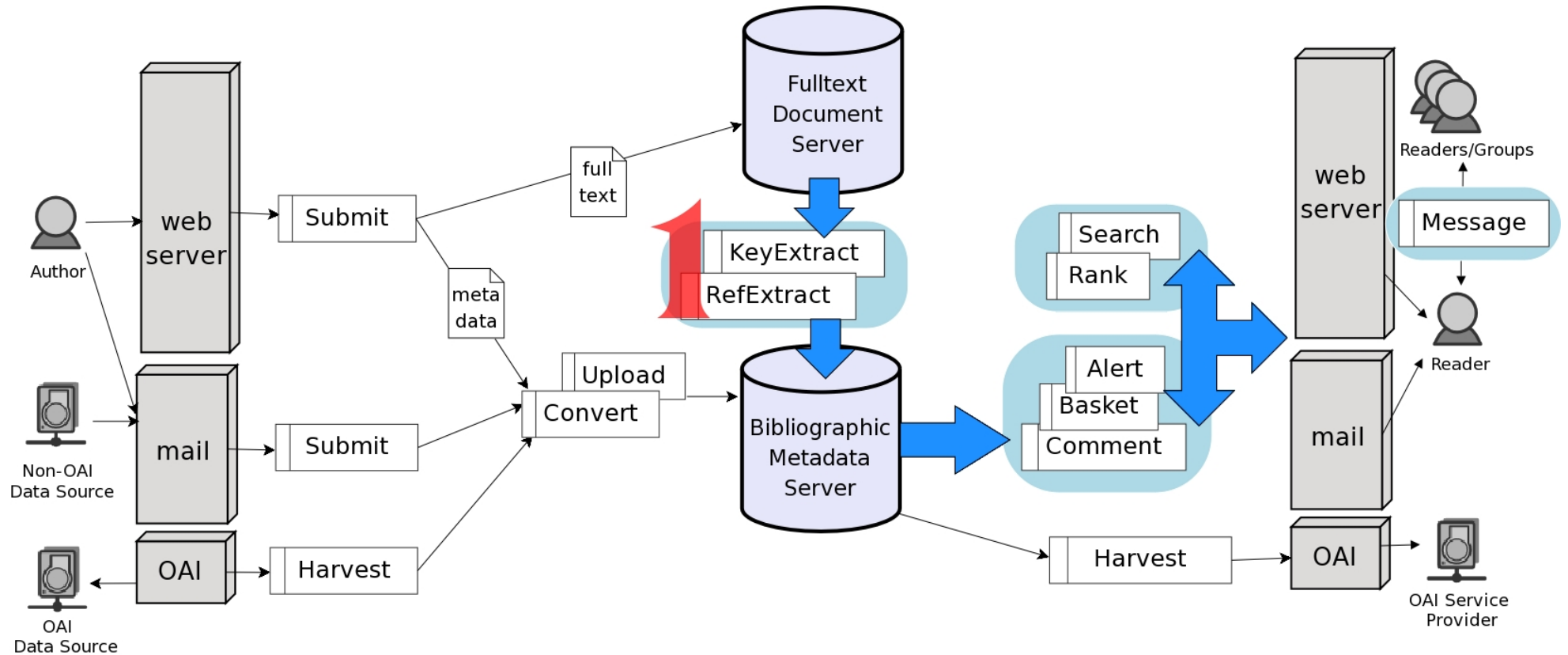
- CERN policy on Open Access (**crucial for upcoming LHC papers!**):
  - to mandate self-archiving in an open access repository
  - to encourage publication in open access journals
- CERN Document Server grows bigger:
  - **800,000** bibliographic records
  - **400,000** fulltext documents
  - **20,000** unique visitors per month
  - **200,000** searches per month
- CDS Indico is the software of choice to manage more and more events (including CHEP 2006!)

# CDS document workflow (simplified)



## From data acquisition to data delivery

# CDS technology: step 1



## Information-rich library objects

# 1. Information-rich library objects

- From all documents in CDS, **keywords** and **references** (citations) automatically extracted:
  - enriched metadata
- The usage of these pieces of information aids:
  - indexing and classification (keywords)
  - alternative ranking (citations)
- but also, the storage of information-rich objects enhances the document
  - pinpointing
  - visibility
  - long-term preservation

# 1. Information-rich library objects

## **A Combination of Preliminary Electroweak Measurements and Constraints on the Standard Model /** **Alcaraz, Jet *et al.*- ALEPH Collaboration.- DELPHI Collaboration.- L3 Collaboration.- OPAL Collaboration.- LEP** Electroweak Working Group.

This note presents a combination of published and preliminary electroweak results from the four LEP collaborations ALEPH, DELPHI, L3 and OPAL based on electron-positron collision data taken at centre-of-mass energies above the Z-pole,  $\sqrt{s} = 130 \text{ GeV}$  to  $\sqrt{s} = 209 \text{ GeV}$  (LEP II), as prepared for the 2005 summer conferences. [...] [hep-ex/0511027](#); [CERN-PH-EP-2005-051](#); [LEPEWWG-2005-01](#); [ALEPH-2005-004](#); [PHYSICS-2005-027](#); [PHI-2005-027-PHYS-947](#); [L3-Note-2832](#); [OPAL-PR-413](#) - Geneva - CERN - 9 Nov 2005 - 1

- [1] The LEP Collaborations ALEPH, DELPHI, L3, OPAL, the LEP Electroweak Working Group, the SLD Electroweak and Heavy Flavour Groups, A Combination of Preliminary Electroweak Measurements and Constraints on the Standard Model, Eprint [[hep-ex/0412015](#)] CERN, 2004
- [2] The ALEPH, DELPHI, L3, OPAL, SLD Collaborations, the LEP Electroweak Working Group, the SLD Electroweak and Heavy Flavour Groups, Precision Electroweak Measurements on the Z Resonance, Eprint [[hep-ex/0509008](#)] CERN, 2005
- [3] DELPHI Collaboration, J. Abdallah *et al.* [Eur. Phys. J., C: 37 \(2004\) 405](#)
- [4] W. Heitler, Quantum Theory of Radiation, (Oxford University Press, second edition, 1944), pages 204-207
- [5] F. A. Berends and R. Kleiss [Nucl. Phys., B: 186 \(1981\) 22](#)
- [6] ALEPH Collab [Eur. Phys. J., C: 28 \(2003\) 1](#) and ref. therein; DELPHI Collab., DELPHI 2001-093 CONF 521 and ref. therein; L3 Collab [Phys. Lett., B: 531 \(2002\) 28](#) and ref. therein; OPAL Collab [Eur. Phys. J., C: 26 \(2003\) 331](#) and ref. therein
- [7] S. D. Drell [Ann. Phys.: 4 \(1958\) 75](#)
- [8] F. E. Low, [Phys. Rev. Lett. 14 \(1965\) 238](#)
- [9] O. J. P. Eboli, Astron. Astrophys. Natale, and S. F. Novaes [Phys. Lett., B: 271 \(1991\) 274](#)
- [10] P. Mery, M. Perrottet, and F. M. Renard [Z. Phys., C: 38 \(1988\) 579](#)
- [11] S. J. Brodsky and S. D. Drell [Phys. Rev., D: 22 \(1980\) 2236](#)

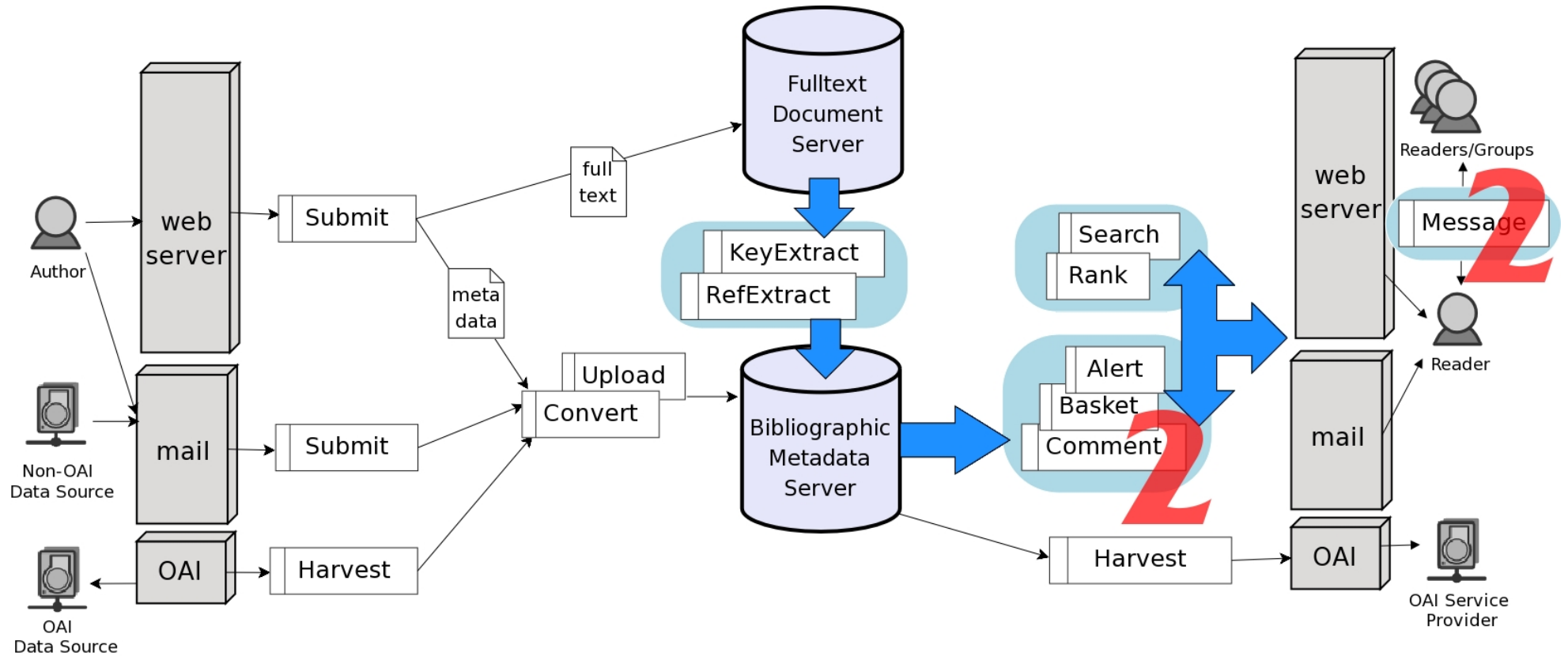
**Record**

ALEPH  
L3  
DELPHI  
OPAL  
statistical  
differential  
W-  
correlation  
coupling  
W+  
pair production  
gauge  
luminosity  
interference  
decay

**Key  
Words**

**References**

# CDS technology: step 2



## Collaborative and groupware features

## 2. Collaborative and groupware features

- Want to allow anyone to immediately express their opinions on documents in the repository, i.e.
  - write reviews (and sign them)
  - write comments (discussion cf. message boards)
  - rate a document (or another user review)
  - interact with each other privately via a messaging system
- in other words, “**open reviewing**”! Controversial (cf. Amazon.com and Wikipedia), but...
  - may be thought as an **added-value** to traditional peer-reviewing (PR)
  - interesting alternative when PR not possible (e.g. thesis)
  - ... a “**closed review**” is very well possible by setting up restrictions on access/review privileges

## 2. Collaborative and groupware features

Rate this article:

Give a title to your review:

Write your review:

**Edit**

This bulletin includes some detailed information on registration dates and venues, transport arrangements and the social programmes. For most up-to-date information, please visit the website created at URL <http://www.tifr.res.in/chep06/> where the information will be continually updated. For any query, please contact us at [chep06@tifr.res.in](mailto:chep06@tifr.res.in). Registration of the conference will start on Sunday February 12, 2006 afternoon at 16:00 until 20:00. Registration will also be possible on Monday morning from 08:00 hour and each subsequent mornings for delegates who arrive later in the week. For the participants attending the Service Challenge workshop from February 10, registration will start on Thursday February 9, 2006 afternoon at 16:00 until 19:00 and will again be on from 08:00 hour on the Friday morning. For the participants attending the School, registration will start from late afternoon of Friday February 10, 2006 and will continue on Saturday from 08:00 hour. All registration will take place in the Homi Bhabha Auditorium foyer inside the TIFR premises. There has been an increased security at TIFR these days and all participants are required to carry the conference badge and passport at all times. Badges will be provided to all the participants on their arrival at the hotel (from February 9 afternoon).

**Review**

There is a total of 1 review  
**Average review score:** ★★★★★ based on 1 reviews

**Write a review**

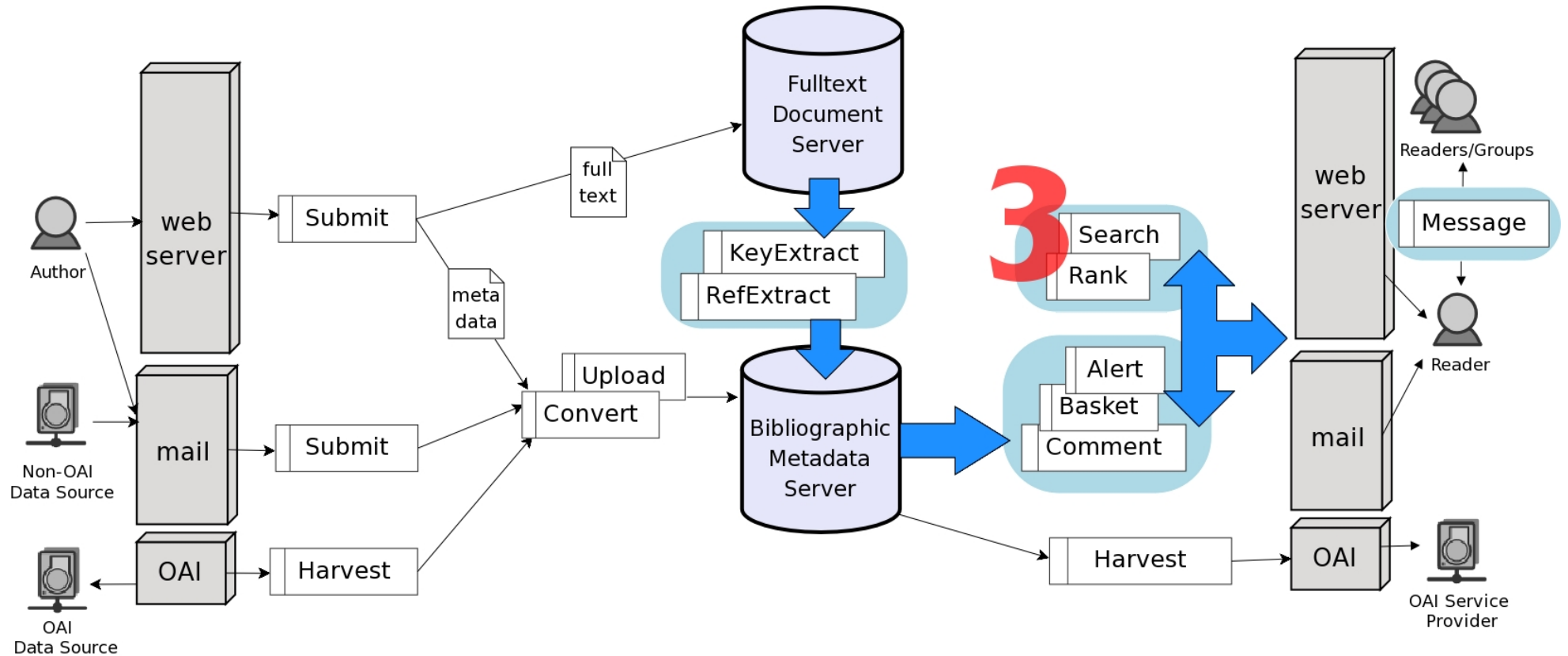
★★★★★ **This is a test for the CHEP2006 conference slides**  
Reviewed by [user #112013](#) on 09 Feb 2006, 16:16  
0 out of 0 people found this review useful

Was this review helpful? [Yes](#) / [No](#) ([Report abuse](#))  
([Back to search results](#))

**Display**



# CDS technology: step 3



## Citation and usage statistics

## 3. Citation and usage statistics

- Authors often ask themselves

*... how many times have I been cited?*

*... how many times have I been downloaded?*

- Need to provide methods to measure relevance:
  - ranking (sorting) of documents by number of:
    - \* citations (from rich metadata extracted in step 1)
    - \* downloads (from analysis of web access logs)
  - provide details of citing documents and user habits
  - graphs showing citation and usage impact over time
- Controversial too! But in open access repositories an effective means of giving authors **recognition and prestige**

# 3. Citation as a ranking indicator

## CERN Document Server

Search:

All of the words:

All of the words:

All of the words:

Search collections:  
\*\*\* any collection \*\*\*

Sort by: latest first | asc. | times cited

Display results: 10 results | single list

Output format: HTML brief

Cited by: 2333 records

(945) [An Alternative to Compactification](#) - Randall, L *et al* - hep-th/9906064

(458) [Anti-de Sitter Space, Thermal Phase Transition, And Confinement in Gauge Theories](#) - Witten, Edward - hep-th/9803131

(373) [Strings in flat space and pp waves from  \$\mathcal{N}=4\$  Super Yang Mills](#) - Berenstein, D E *et al* - hep-th/0202021

(299) [Wilson loops in large  \$N\$  field theories](#) - Maldacena, J M - hep-th/9803002

(280) [Supergravity and The Large  \$N\$  Limit of Theories With Sixteen Supercharges](#) - Itzhaki, N *et al* - hep-th/9802042

[more](#)

CERN Document Server 753766 records found 1 - 10 ►► jump to record

Citation history: 0.10 seconds.

1 **The Large  $N$  Limit of Superconformal Field Theories and Supergravity** / Maldacena, Edward (2333) We show that the large  $N$  limit of certain conformal field theories in various dimensions include Anti-deSitter spacetimes, spheres and other compact manifolds. [...] hep-th/9711200; HUTP-98-A-097.- Cambridge, MA : Harvard Univ. Lyman Lab. Phys., 28 Nov 1998 pp.231-252 - CERN library copies [Detailed record](#) - [Similar records](#) - [Cited by](#)

2 **Anti-de Sitter Space And Holography** / Witten, Edward (1715) Recently, it has been proposed by Maldacena that large  $N$  limits of certain conformal field theories on the product of  $d+1$ -dimensional  $AdS$  space with a compact manifold. [...] hep-th/9802150, 1998 - Fulltext - Published in: Adv. Theor. Math. Phys.: 2 (1998) p. 253-282 - [Detailed record](#) - [Similar records](#) - [Cited by](#)

3 **Gauge Theory Correlators from Non-Critical String Theory** / Gubser, S S; Klebanov, Steven (1567) We suggest a means of obtaining certain Green's functions in  $3+1$ -dimensional  $\mathcal{N} = 4$  superconformal string theory. [...] hep-th/9802109; PUPT-1767.- Princeton, NJ : Princeton Univ. Joseph-Henry Lab. Phys., 17 Feb 1998 . - 15 p [Fulltext](#) - Published in: *Phys. Lett., B* 428 (1998) 105 - [Detailed record](#) - [Similar records](#) - [Cited by](#)

Graph

Year	Times Cited
1998	200
1999	200
2000	450
2001	350
2002	300
2003	280
2004	250
2005	250
2006	500

# 3. Usage as a ranking indicator

## CERN Document Server

Search:

All of the words:

All of the words:

All of the words:

Search collections:

\*\*\* any collection \*

Sort by:

latest first

asc.

People who downloaded this document also downloaded:

- (25) [Numerical analysis of the Higgs mass trivality bound](#) - Heller, U M *et al.* - hep-ph/9303215
- (24) [Description of the ATLAS Organisation](#) - Åkesson, T - ATL-GEN-96-016
- (22) [Quantum Topology, Quantum Topodynamics, Differential Topology in Quantum Space, Gauge Theory of Gravitation](#) - Ahmed, D A - physics/9812037
- (22) [Track Chamber, TC](#) - CERN-PPE-95-161
- (21) [Calibration and Light Yield measurements of Steel-plastic scintillator calorim](#)

People who viewed this page also viewed:

- (4) [The Large N Limit of Superconformal Field Theories and Supergravity](#) - Maldac
- (2) [CERN Book fair](#) - CERN Central Library and IT Department Bookshop - BUL-GI-20
- (2) [Stretched chemical bonds in Si6H6: A transition from ring currents to localize](#)
- (2) [A generalized canonical ensemble and its equivalence with the microcanonical](#)
- (2) The record has been deleted.

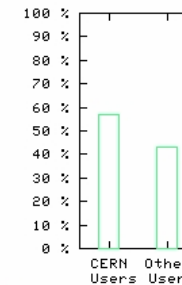
CERN Document Server

73766 records found 1 - 10 / 77 jump to record: 1

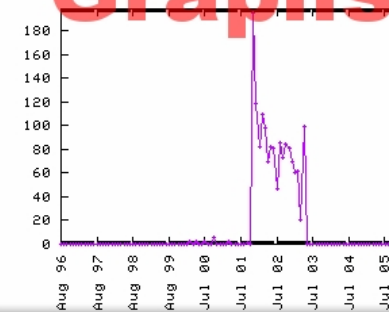
- 1 Energy Loss to Coaxial Vacuum Chambers in LEP and LHC** / Gluckstern, R L; Zotter, B V (1581) In many high-energy storage rings the beam chamber is connected to a separate pump chamber by a metallic rest gas. [...] [CERN-SL-96-056](#); Geneva : CERN, 26 Aug 1996. - 9 p [Fulltext](#) - [CERN library copies](#) [Detailed record](#) - [Similar records](#) - [Cited by](#)
- 2 Large  $N$  analysis of the Higgs mass trivality bound** / Heller, U M; Neuberger, H; Vrana (1567) We calculate the trivality bound on the Higgs mass in scalar field theory models whose global symmetry group been replaced by  $SO(N)$  and  $U(N)$  has been taken to infinity. [...] [hep-lat/9207024](#); FSU-SCRI-92-99. - Tallahassee, FL : Florida State Univ., 1993 [Fulltext](#) - [Published in:](#) [Detailed record](#) - [Similar records](#) - [Cited by](#)
- 3 Numerical analysis of the Higgs mass trivality bound** / Heller, U M; Klomfass, M; Neuber (1558) Previous large  $N$  calculations are combined with numerical work at  $N=4$  to show that the Minimal Standard Model is stable up to energies of the order 2 to 4 times the Higgs mass,  $M_H$ , only if  $M_H \leq 710 \text{ pm}60 \sim \text{GeV}$ . [...] [hep-ph/9303215](#); CU-TP-590; FSU-SCRI-93-29; RU-93-6. - Irvington-on-Hudson, NY : Columbia Univ. Dept. Ph 405 (1993) 555-573 [Detailed record](#) - [Similar records](#) - [Cited by](#)

Details

Downloads history: and Users repartition



Graphs



# Conclusions

- Traditional publishing paradigm is experiencing a profound change
  - towards an electronic archive-based approach
  - towards a “**more open**” **access** to scholarly material
- Particle physicists can lead this change by
  - self-archive their preprints/articles in an open archive
  - consider publishing their articles in open access journals
- **so never forget to self-archive!**
  - all your CHEP06 contributions will be openly available on CDS in the next few days (we do the archiving for you!)

 ... thanks and goodbye!

<http://cdsweb.cern.ch>

<http://indico.cern.ch>

<http://cdsware.cern.ch>