



Invenio v2.0: A Pythonic Framework for Large-Scale Digital Libraries

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CERN

Open Repositories 2014

Helsinki, Finland

9–13 June 2014

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Invenio v0 \rightarrow v1

What is Invenio?

- digital library and document repository software
 - mature platform: first public release v0.0.9 in 2002
 - rich data: articles, books, notes, photos, videos, data, code
- originated in high-energy physics
 - institutional repository: CERN Document Server
 - integrated library system: CERN Document Server
 - disciplinary repository: INSPIRE
- nowadays co-developed by an international collaboration



- participating in and collaborating with EC and non-EC projects



CERN Document Server

Access articles, reports and multimedia content in HEP

Search

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Search 1,262,525 records for:

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Articles & Preprints (1,086,540)

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High-Energy Physics Literature Database

Use "find" for SPIRES-style search ([other tips](#))

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HOW TO SEARCH

SPIRES syntax is (mostly) supported (requires "find")

[find a richter, b and t quark and date > 1984](#)
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[find fulltext "quark-gluon plasma"](#) (Note new "fulltext" operator)
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2013-03-14 Use INSPIRE to generate your TeX bibliography, see [http://arxiv.org/abs/1303.3588](#)

2

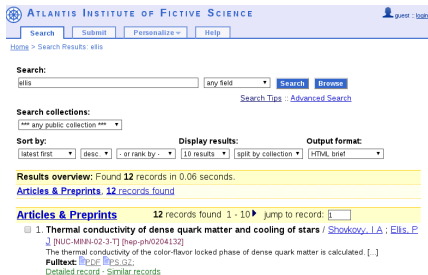
Invenio v2



Invenio User Group Workshop 2012

- developer community growing
 - 4 developers and contributors in 2002
 - 48 developers and contributors in 2012
- adapting tools and processes
 - custom MVC → mainstream MVC
 - touching all ~60 modules and ~350k LOC

Invenio v1



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Sort by: latest first desc. -or rank by - Display results: 10 results split by collection Output format: HTML, brief

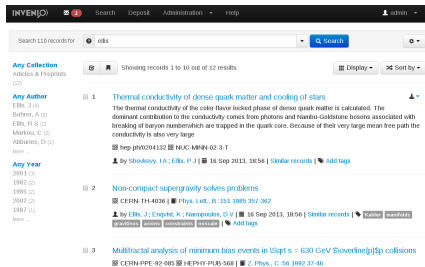
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1. Thermal conductivity of dense quark matter and cooling of stars / Shokoyev, I A ; Ellis, P J [NUC-MINN-02-3-T] [hep-ph/0204132] The thermal conductivity of the color-flavor locked phase of dense quark matter is calculated. [...] Fulltext: PDF EPS.GZ: Detailed record · Similar records

Invenio v2



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Any Author

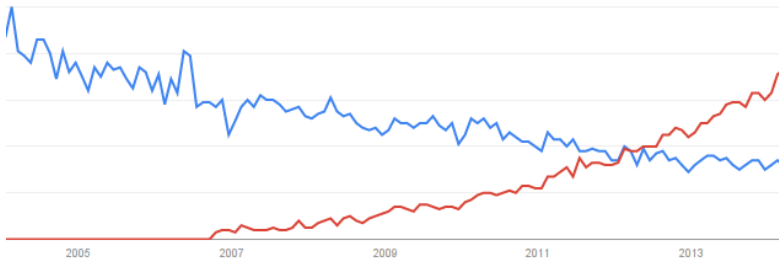
- 1 Thermal conductivity of dense quark matter and cooling of stars The thermal conductivity of the color-flavor locked phase of dense quark matter is calculated. The dominant contribution to the conductivity comes from photons and Nambu-Goldstone bosons associated with breaking of baryon number which are trapped in the quark core. Because of their very large mean free path the conductivity is also very large hep-ph/0204132 NUC-MINN-02-3-T by Shokoyev, I A ; Ellis, P J 18 Sep 2013, 1856 | Similar records | Add tags
- 2 Non-compact supergravity solves problems CERN-TH.4036 | Phys. Lett., B 351 1885 357-362 by Ellis, J ; Engholm, K ; Nanopoulos, D V 18 Sep 2013, 1856 | Similar records | Preprint | Detailed record | Add tags
- 3 Multifractal analyses of minimum bias events in Upsilon s = 630 GeV Siverline@SP collisions CERN-PPE-92-005 HEPHY-PUB-568 | Z. Phys., C 54 1892 37-46

- home-grown CSS (custom)
- fast but niche template engine (Python)

- mainstream CSS (Twitter Bootstrap)
- mainstream template engine (Jinja)

Example: REST API

- Google search trends: XML API vs JSON API



- standardising upon /api structure

```
(GET|POST) /api/<service_family>/<service_verb>  
  /<mandatoryarg>?optarg1=val1&optarg2=val2
```

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85 Open 145 Closed Sort: Newest 1 2 3

Milestone: v1.2 ⚙️

85 open issues

Labels

- c_BatchUploader 1
- c_BibAuthorID 1
- c_BibAuthority 2
- c_BibCheck 1
- c_BibCirculation 2
- c_BibDocFile 2
- c_BibEdit 7
- c_BibFormat 6
- c_BibIndex 3

🔍	BibRank: centralize record date retrieval	c_BibRank	master	p_major	t_bug	#1719
	Opened by kaplun 7 days ago 🗨️ 7 comments					
🔍	BibUpload: duplicates bibrec_bibxxx rows	c_BibUpload	maint-1.1	p_major	t_bug	#1714
	Opened by kaplun 7 days ago 🗨️ 1 comment					
🔍	BibUpload: update recjson after metadata update	c_BibUpload	master	p_major	t_bug	#1708
	Opened by tiborsinko 7 days ago 🗨️ 1 comment					
🔍	WebSubmit: fix access restrictions for /uploadfile	c_WebSubmit	master	p_major	t_bug	#1703
	Opened by ludmilamarian 7 days ago 🗨️ 1 comment					
🔍	BibAuthority: introduce support for VIAF	c_BibAuthority		p_major	t_enhancement	#1700
	Opened by tiborsinko 7 days ago					
🔍	BibAuthority: prettify output formats	c_BibAuthority		p_major	t_enhancement	#1699
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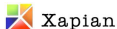
■ front-end:



Bootstrap



■ back-end:

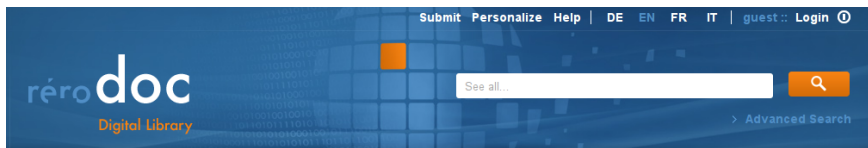


elasticsearch.

■ persistence:

SQLAlchemy





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- Fribourg (4480)

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27'455 results

1 2 3 4 5 .. 2746 →



Postprint

Phosphorus and Nitrogen regulate arbuscular mycorrhizal symbiosis in *Petunia hybrida*

Nouri, Eva ; Breuillin-Sessoms, Florence ; Feller, Urs ; Reinhardt, Didier

In: PLoS ONE, 2014, vol. 9, no. 3, p. e90841

Phosphorus and nitrogen are essential nutrient elements that are needed by plants in large amounts. The arbuscular mycorrhizal symbiosis between plants and soil fungi improves phosphorus and nitrogen acquisition under limiting conditions. On the other hand, these nutrients influence root colonization by mycorrhizal fungi and symbiotic functioning. This represents a feedback mechanism that allows...



Postprint

Herbicide and fertilizers promote analogous phylogenetic responses but opposite functional responses in plant communities

Pellissier, Loïc ; Wisz, Mary S ; Strandberg, Beate ; Damgaard, Christian

In: Environmental Research Letters, 2014, vol. 9, no. 2, p. 024016

Throughout the world, herbicides and fertilizers change species composition in agricultural communities, but how do the cumulative effects of these chemicals impact the functional and phylogenetic structure of non-targeted communities when they drift into adjacent semi-natural habitats? Based on long-term experiment we show that fertilizer and herbicides (glyphosate) have contrasting effects on...

■ separated developed Flask extensions

- Flask-Registry
- Flask-Breadcrumb
- Flask-Menu
- Flask-SSO
- Flask-Ratelimiter



■ separated independent components

- intbitset



■ separated internal components

- invenio.base
- invenio.ext
- invenio.utils
- invenio.modules

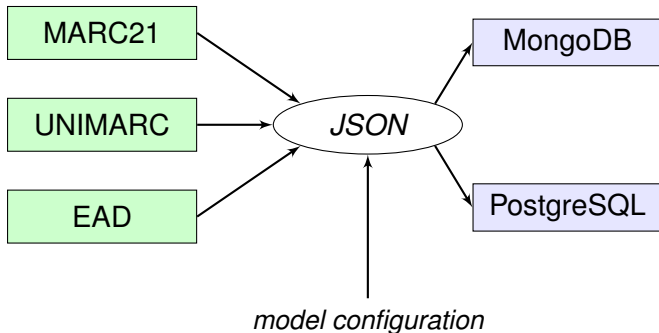


■ separated demo service overlay

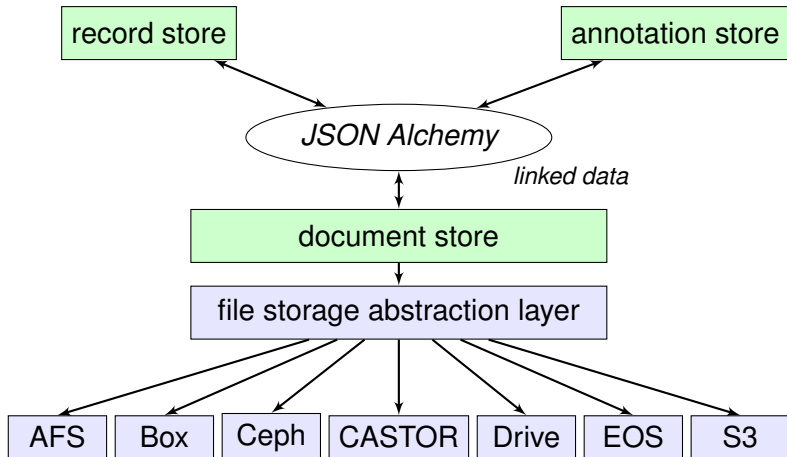
- invenio_demosite

Abstraction of records

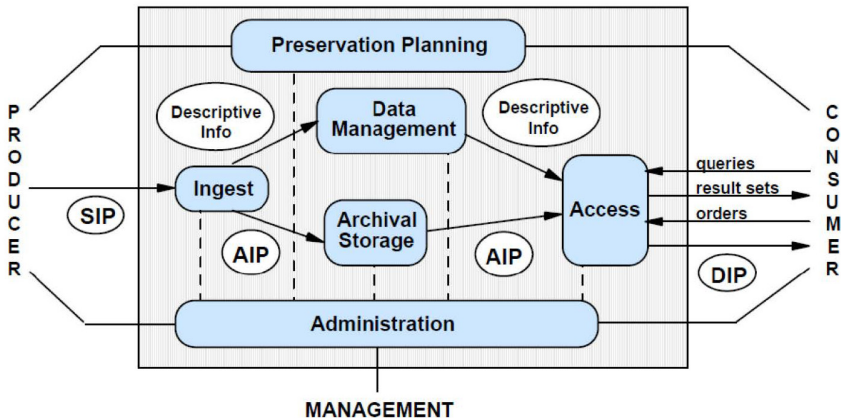
- abstraction of record fields:
 - metadata fields, e.g. author
 - derived fields, e.g. number_of_authors
 - virtual fields, e.g. number_of_citations
- abstraction of record formats:



Abstraction of storage



OAIS preservation practices



SIP = Submission Information Package · AIP = Archival Information Package · DIP = Dissemination Information Package



```

/tmp> unzip -t record_59_v1.zip
Archive: record_59_v1.zip
testing: bag-info.txt           OK
testing: manifest-md5.txt      OK
testing: bagit.txt             OK
testing: data/BlogImage_2.metadata OK
testing: data/BlogPostPage_page.html OK
testing: data/BlogPostPage_page.metadata OK
testing: data/BlogImageThumbnail_3.jpeg OK
testing: data/BlogImageThumbnail_3.metadata OK
testing: data/Post_2013-08-20_14:21:21ucnxAN.metadata OK
testing: data/Post_2013-08-20_14:21:21ucnxAN.xml1_mets OK
testing: data/record_59_v1.xml1 OK
testing: data/BlogImage_2.jpeg OK
No errors detected in compressed data of record_59_v1.zip.
/tmp>

```


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Intel's mobile plan: Zero to Hero



Intel CEO Paul Otellini show inoff Orange new phone at MWC

The hottest smartphone maker at this year's Mobile World Congress in Barcelona isn't Intel. You didn't know Intel designed phones? Neither did most people until the chipmaking giant designed a top-of-the-line smartphone for the global telecom giant Orange.

It all started about a year ago, when extremely frustrated top brass at Intel decided the company's chips would work on mobile phones — a field dominated by mobile chip designing rival PowerPoint presentations, no matter how impressive, just weren't persuading phone makers.

So Intel hired several hundred engineers from all over Silicon Valley and opened up a startup inside the company.


Late last year, Intel began to show off the fruit of its labors to the same folks who used to be designing entirely and exclusively at Intel's Santa Clara headquarters — has all runs Google's (GOOG, Fortune 500) Android operating system beautifully, and looks real good. That shouldn't be surprising. Intel's head of mobility, Mike Bell, worked at Apple (AAPL), iPhone project before leaving for Palm.

"Our device is fully buzzword-compliant," said Bell, in an interview on Tuesday. "Intel is becoming handheld computers. It's natural for us to get into this space."


Intel finally ups the ante in mobile

Intel built a few thousand of the phones and started handing them out to any and all potential carriers. In addition to Orange, Indian carrier Lava is planning on shipping a similar phone last month.

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- developed Invenio ↔ GitHub bridge
- archive software automatically upon release; mint it with a DOI

The image illustrates the workflow of archiving software on Zenodo. It shows the Zenodo 'Get started' page with a '1 Flip the switch' step, where the 'invenio.org/decouple' repository is selected. This leads to the GitHub repository page for 'invenio/invenio-decouple', which lists releases. A callout box highlights a release 'v1.1.3' with a DOI of '10.5281/zenodo.8345'. Another callout box shows the corresponding '.zenodo.json' file, which contains metadata for the release, including the name, affiliation, description, access rights, license, and identifiers.


Releases

```

{
  "name": "Plain, 11man",
  "affiliation": "Institut f\u00fcr Theoretische Ph",
  "description": "This repository contains the soft",
  "access_rights": "open",
  "license": "mit-license",
  "related_identifiers": [
    {
      "identifier": "arXiv:1401.0088",
      "relation": "isCitedBy"
    }
  ]
}
    
```

.zenodo.json

DOI: 10.5281/zenodo.8345



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Aiftimiei, Cristina (18)

De Angelis, Filip... (18)

Alves, Everton ... (16)

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Gazetas, George (16)

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1



25 January 2014 Presentation Open access

The Effective Use of "Research Tools" and Resources – Training of Trainers (TOT)

View

Ale Ebrahim, Nader

With the increasing use of information and communications technology (ICT), researchers are able to use computer software tools to find, organize, analyze, and share relevant information. However, there are hundreds of such tools to select from, for ...

Uploaded by [Nader Ale Ebrahim](#) on 28 January 2014.

3

Conclusions

- Invenio v2: major technology update
 - to meet growing user and developer community
 - to answer rising customisation needs
 - to modernise and refresh technology stack
- technology and process standardisation
 - Python, Flask, Jinja, Twitter Bootstrap, REST API
 - GitHub, Travis, Coveralls, Read the Docs
- Invenio v2: timeline
 - two years of efforts are now finished
 - already in production on BlogForever, B2SHARE, ZENODO
 - official release happening later this summer

See 14 more Invenio talks at OR2014



<http://invenio-software.org/>

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