

PAMFILOS FOKIANOS

# CERN ANALYSIS PRESERVATION

IMPROVE PRESERVATION AND RE-USE OF  
RESEARCH RESULTS AT CERN



# CERN ANALYSIS PRESERVATION

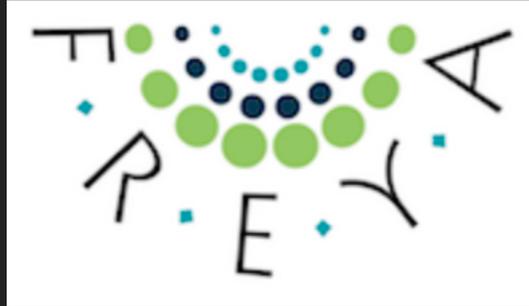
tool for physicists to capture, preserve and make  
their analysis reusable for the future

Development: CERN SIS-OS

Collaboration/Consulting: CERN IT, LHC experiments



# PART OF THE FREYA PROJECT



Improving discovery,  
navigation, retrieval, and  
access to research resources

The project aims to build the  
infrastructure for persistent  
identifiers as a core component  
of open science

## Partners



# CERN ANALYSIS PRESERVATION

## Welcome to the CERN Analysis Preservation Portal.

Our mission is to preserve physics analyses to facilitate their future reuse

Do you want to know more? Check out what the service is about

[Log in with CERN](#)

CERN Analysis Preservation BETA


?
Create

### QUICK SEARCH

17

Total

	Your Drafts	13
	Published	4
		Total
		17

### DRAFTS

<p><b>J/psi and psi(2S) prompt double differential cross sections in pp collisions at 7 TeV</b> </p> <p><i>We describe the measurement of the double-differential (in transverse momentum, pT, and absolute rapidity,  y ) cross sections of the promptly-p...</i></p>	<p>updated 5 hours ago</p>
<p><b>Open Data validation Mu MuMonitor 2010</b> </p> <p><i>This is the validation example for the 2010 Mu and MuMonitor legacy datasets. It can be run either from an internal CMSSW 4_2_8 setup (with S...</i></p>	<p>updated 5 hours ago</p>
<p><b>Search for Wprime -&gt; tau nu</b> </p> <p><i>This analysis searches for a new heavy vector boson, denoted W' boson, in its decay to a tau lepton and missing transverse energy using LHC dat...</i></p>	<p>updated 3 weeks ago</p>
<p><b>Search for W' -&gt; l nu</b> </p> <p><i>A search for a new heavy gauge boson W' decaying to an electron or muon and a low mass neutrino is presented. This analysis uses 2012 data c...</i></p>	<p>updated 3 weeks ago</p>
<p><b>Search for Black Holes</b> </p> <p><i>A search for microscopic black holes in pp collisions at a center-of-mass energy of 8 TeV is presented. The data sample corresponds to an integr...</i></p>	<p>updated 4 weeks ago</p>

### RECENTLY PUBLISHED IN COLLABORATION

<p><b>Combination of diboson resonance searches at 8 and 13 TeV</b> </p> <p><i>A statistical combination of searches is presented for massive resonances decaying to WW, ...</i></p>	<p>updated 2 weeks ago</p>
<p><b>Search for singly-produced Vector-like Quarks decaying to Wb, semi-lepto...</b> </p> <p><i>A search is presented for a heavy vector-like quark, decaying into a b quark and a W boson, ...</i></p>	<p>updated 2 weeks ago</p>
<p><b>Search for single production of T'-&gt;tH in hadronic final state</b> </p> <p><i>A search is performed for electroweak production of a vector-like top quark partner T' of cha...</i></p>	<p>updated 4 weeks ago</p>
<p><b>Search for VW in semileptonic final states: low mass extension</b> </p> <p><i>A search is presented for new massive resonances decaying to WW, WZ or ZZ bosons grated...</i></p>	<p>updated 4 weeks ago</p>
<p><b>Search for VH in the (l, l, l nu, nu nu)bb final state</b> </p> <p><i>A search for heavy resonances decaying to a Higgs boson and a vector boson is pre- sented...</i></p>	<p>updated 4 weeks ago</p>

### WORKFLOWS

<p><b>demo-workflow#2</b></p> <p>Search for VH in the (l, l, l nu, nu nu)bb final state</p>	<p>running</p>
<p><b>workflow#3</b></p> <p>Open Data validation Mu MuMonitor 2010</p>	<p>finished</p>
<p><b>demo-workflow#1</b></p> <p>Search for VH in the (l, l, l nu, nu nu)bb final state</p>	<p>finished</p>
<p><b>workflow#2</b></p> <p>Open Data validation Mu MuMonitor 2010</p>	<p>finished</p>

CERN Analysis Preservation BETA

1785 results

<p><b>CADI_STATUS</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> PUB 691</li> <li><input type="checkbox"/> PAS-only-PUB 585</li> <li><input type="checkbox"/> Completed 100</li> <li><input type="checkbox"/> AWG 63</li> <li><input type="checkbox"/> PRE-APP 49</li> <li><input type="checkbox"/> GoingToPreApp 29</li> <li><input type="checkbox"/> CWR-ended 26</li> <li><input type="checkbox"/> SUB 23</li> <li><input type="checkbox"/> RefComments 22</li> <li><input type="checkbox"/> PAS-PUB 19</li> </ul> <p><b>PUBLICATION_STATUS</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Free 1745</li> </ul> <p><b>STATUS</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> draft 1775</li> </ul> <p><b>TYPE</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> cms-analysis-v0.0.1 1775</li> <li><input type="checkbox"/> alice-analysis-v0.0.1 7</li> <li><input type="checkbox"/> lhcb-v0.0.1 2</li> <li><input type="checkbox"/> atlas-analysis-v0.0.1 1</li> </ul> <p><b>PHYSICS_OBJECTS</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> jet 9</li> <li><input type="checkbox"/> muon 6</li> <li><input type="checkbox"/> electron 3</li> <li><input type="checkbox"/> photon 3</li> <li><input type="checkbox"/> MET 1</li> <li><input type="checkbox"/> tau 1</li> <li><input type="checkbox"/> track 1</li> <li><input type="checkbox"/> vertex 1</li> </ul>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">No title provided</td> <td style="width: 60%; padding: 5px;">No abstract</td> <td style="width: 20%; padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">542b6a2ec7c547c8a5eb1651a6243217</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-12-004</b></td> <td style="padding: 5px;">Search for b' pair pr...</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">0f35habfcb0f4f52bb8e3008a29c6400</td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-10-031</b></td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">fa8fcb7ade5849c38b59c8a7f26c4686</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>13-2017-085</b></td> <td style="padding: 5px;">We report a measurement of ...</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">b3277003add44077ab3af87fe2926277</td> <td style="padding: 5px;">with the QIS detector at the ...</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>MUON</b></td> <td style="padding: 5px;">cross section as a function of ...</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">productions.</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-12-016</b></td> <td style="padding: 5px;">Search for massive vector-like quarks coupling to light quarks.</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">f8db1e306d714db4816c0d396a45e207</td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-12-003</b></td> <td style="padding: 5px;">Search for a heavy partner of the top quark with charge 5/3</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">3a69f01fb3a54342a32bb92260cafb0a</td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-15-006</b></td> <td style="padding: 5px;">Search for W'-&gt;tb in the semileptonic final state at sqrt(s)=13 TeV</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">cf04962e07bc4041bbcf74ba70912ef1</td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-14-003</b></td> <td style="padding: 5px;">VLQ T' -&gt; tH, H -&gt; gamma gamma</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">a85114be1ca84975a5f5a7fafaf4bf52</td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-15-001</b></td> <td style="padding: 5px;">Search for monopole in the muon channel in proton-proton collisions at 8 TeV</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">aa2877abd97d446fd74382ff1b1a09</td> <td style="padding: 5px;">No abstract</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"><b>12G-15-017</b></td> <td style="padding: 5px;">Search for Wprime -&gt; tau nu</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">(only 2016 data)</td> <td style="padding: 5px;"></td> </tr> </table>	No title provided	No abstract		542b6a2ec7c547c8a5eb1651a6243217			<b>12G-12-004</b>	Search for b' pair pr...		0f35habfcb0f4f52bb8e3008a29c6400	No abstract		<b>12G-10-031</b>	No abstract		fa8fcb7ade5849c38b59c8a7f26c4686			<b>13-2017-085</b>	We report a measurement of ...		b3277003add44077ab3af87fe2926277	with the QIS detector at the ...		<b>MUON</b>	cross section as a function of ...			productions.		<b>12G-12-016</b>	Search for massive vector-like quarks coupling to light quarks.		f8db1e306d714db4816c0d396a45e207	No abstract		<b>12G-12-003</b>	Search for a heavy partner of the top quark with charge 5/3		3a69f01fb3a54342a32bb92260cafb0a	No abstract		<b>12G-15-006</b>	Search for W'->tb in the semileptonic final state at sqrt(s)=13 TeV		cf04962e07bc4041bbcf74ba70912ef1	No abstract		<b>12G-14-003</b>	VLQ T' -> tH, H -> gamma gamma		a85114be1ca84975a5f5a7fafaf4bf52	No abstract		<b>12G-15-001</b>	Search for monopole in the muon channel in proton-proton collisions at 8 TeV		aa2877abd97d446fd74382ff1b1a09	No abstract		<b>12G-15-017</b>	Search for Wprime -> tau nu			(only 2016 data)	
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# CERN ANALYSIS PRESERVATION

## END GOAL

Make the **analysis components** (metadata, files, tables, plots, likelihoods, wikis, etc ) easily **reusable** - ex. in workflow engines, scripts, publication writing tools, push to other services (ex. HEPData, Inspire, Zenodo)



# CERN ANALYSIS PRESERVATION

## OUR GOALS

Build a **stable, flexible, collaborative** tool for physicists to **capture** and **share** their analysis assets ( metadata, code, containers, workflows, etc)

Capturing all the elements needed to **understand** and **rerun** an analysis even several years later and **linking them together persistently**

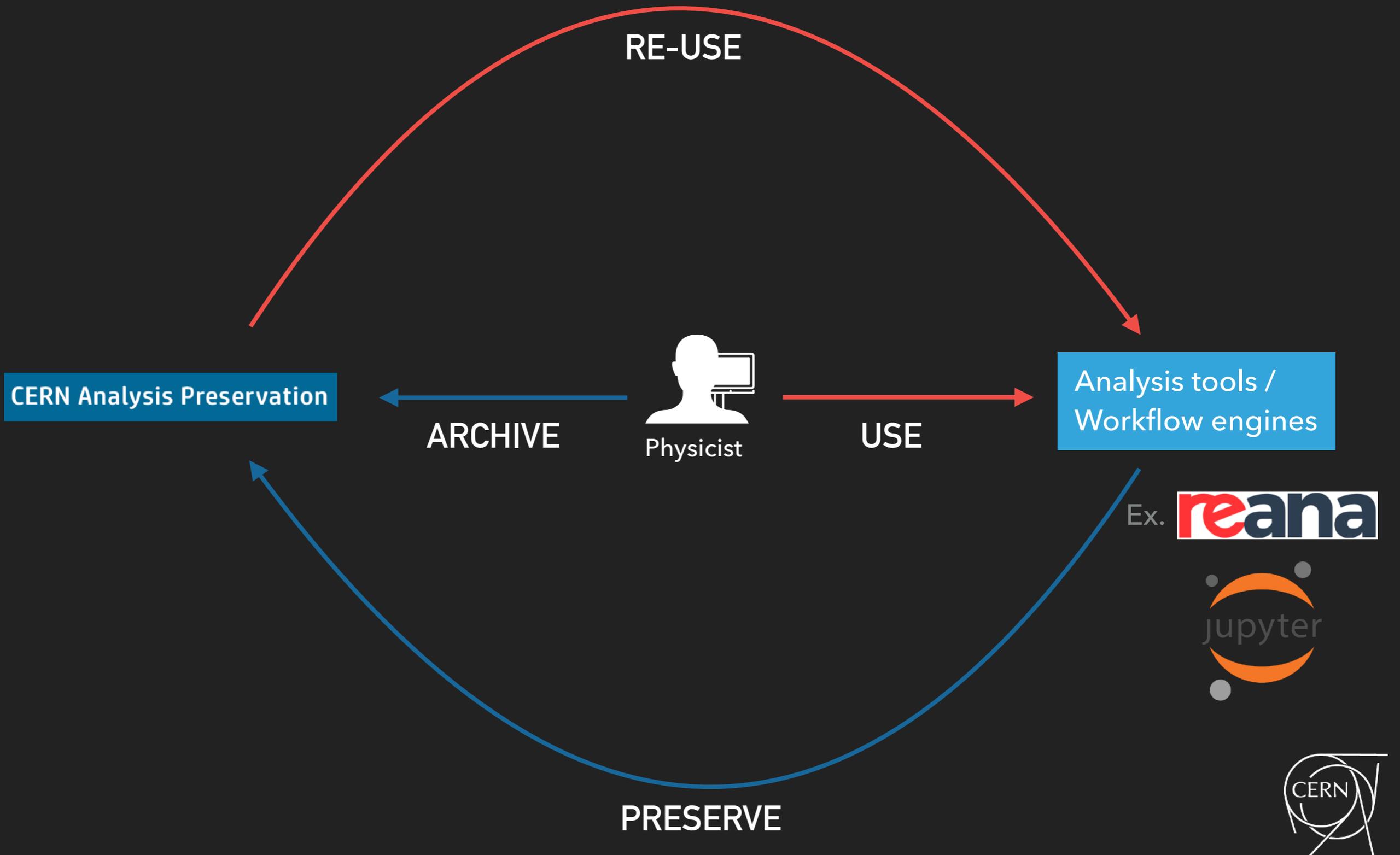
Sync with and indexing of various **experiment DBs/APIs/sources** for **searching** and **integration**

Advanced and clean forms  
Easy, automated and efficient **file uploading**

**Powerful API** (records, files, search)



# PRESERVATION $\rightleftharpoons$ RE-USABILITY



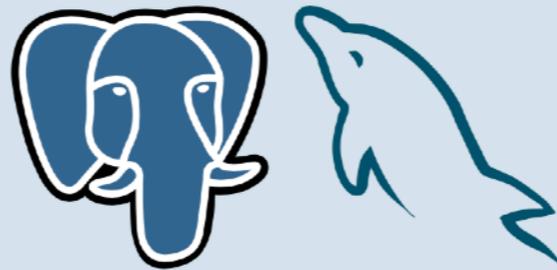
# CERN ANALYSIS PRESERVATION

## TECHNOLOGIES

INVENIO)



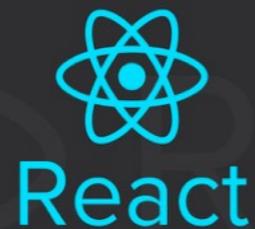
Elasticsearch



PostgreSQL or MySQL



Python/Flask



# FAIR DATA

## Established practices for “FAIR” data:

### Findable

- persistent identifiers
- rich metadata
- indexed and searchable

### Accessible

- retrievable by identifiers
- standard protocols
- metadata vs data accessibility

### Interoperable

- knowledge representation language
- common vocabularies
- references to other metadata and data

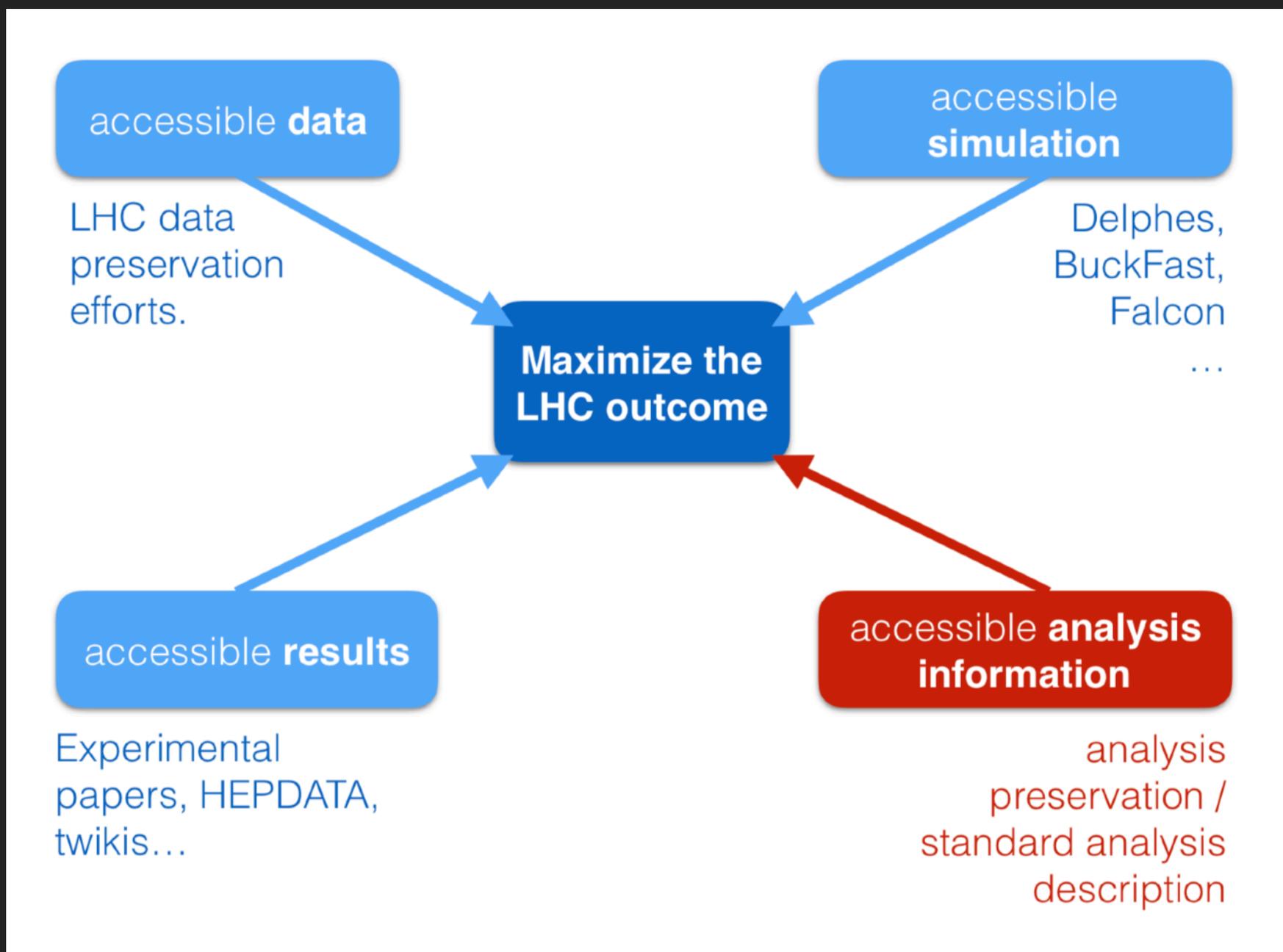
### Reusable

- domain-relevant attributes and community standards – clear licensing
- provenance tracking

**F** indable  
**A** ccesible  
**I** nteroperable  
**R** e-usable



# MAXIMIZING LHC OUTCOME



# CERN ANALYSIS PRESERVATION

## FEATURES



# CERN ANALYSIS PRESERVATION

## PROJECT/ANALYSIS WORKSPACE

collaboration wide restrictions

The screenshot shows the CERN Analysis Preservation Project/Analysis Workspace interface. The top navigation bar includes the title "CERN Analysis Preservation BETA", a search field, and icons for search, help, and create. The main content area is divided into three sections: a left sidebar with navigation options, a central form for "Basic Information\*", and a right sidebar for "Info & Details".

**Left Sidebar:**

- Search for W' -> I nu
- Basic Information
- Information from GLANCE database
- Input Data
- Workflows
- Likelihood
- Limits
- Publications

**Central Form (Basic Information\*):**

Analysis Title
Glance ID
Abstract
People Involved <span>+</span>

**Right Sidebar (Info & Details):**

ID	e2df87c88d0a4674a669c2d5c737a147
Status	draft
Experiment	ATLAS
Creator	info@inveniosoftware.org
Created:	12 seconds ago
Last Updated:	12 seconds ago

Files | Data | Source Code +



# CERN ANALYSIS PRESERVATION

## ADVANCED FORMS

The screenshot displays the CERN Analysis Preservation interface. The top navigation bar includes the text "CERN Analysis Preservation BETA" and a search icon. The main content area is titled "Input Data" and contains several sections for listing datasets and triggers. A sidebar on the left lists various analysis components, with "Reuse mode" currently turned on. Two pop-up windows are overlaid on the main form, providing options to add external resources like Gitlab repositories and Docker images, and to upload a datacard file.

**CERN Analysis Preservation BETA** Search

J/psi and psi(2S) prompt double differential cross sections in pp collisions at 7 TeV

**Reuse mode**

**Basic Information**

Information from CADI database

**Input Data**

Please list all datasets and triggers relevant for your analysis here

**Primary Datasets**

/T1tb\_GIGIToTBTB\_38xFall10/StoreResults-T1tb\_GIGIToTBTB\_38xFall10/USER

/T1T1\_2BC\_200\_50-8TeV\_madgraph/Summer12-START52\_V9\_FSIM-v1/GEN

**Monte Carlo Signal Datasets**

**Monte Carlo Background Datasets**

**Official JSON files**

[Open File Manager](#)

**Gitlab repositories of the analysis** +

**Docker images of the analysis** +

**Additional Repositories** +

**Basic scripts**

Command to execute code

**Files/Scripts** +

**Combine Datacard File**

[Open File Manager](#) -- OR -- Drag & Drop files here

**Statistics Questionnaire**

[Import](#)

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# CERN ANALYSIS PRESERVATION

Automated fetching from experiment DBs/APIs/other sources

CADI ID
EXO-17-023



CMS CADI



Information from CADI database  
CADI info

<b>Name</b>	Search for Black Holes and Sphalerons
<b>Description</b>	Search for Black Holes and Sphalerons (full 2016 data)
<b>Contact Person</b>	Ka Hei Martin Kwok (BROWN-UNIV)
<b>Twiki</b>	<a href="https://twiki.cern.ch/twiki/bin/view/CMS/EXO17023">https://twiki.cern.ch/twiki/bin/view/CMS/EXO17023</a>
<b>Created</b>	03/10/2017
<b>Paper</b>	<a href="http://cms.cern.ch:80/iCMS/analysisadmin/get?analysis=EXO-17-023-paper-v17.pdf">http://cms.cern.ch:80/iCMS/analysisadmin/get?analysis=EXO-17-023-paper-v17.pdf</a>
<b>PAS</b>	<a href="http://cms.cern.ch:80/iCMS/analysisadmin/get?analysis=EXO-17-023-pas-v1.pdf">http://cms.cern.ch:80/iCMS/analysisadmin/get?analysis=EXO-17-023-pas-v1.pdf</a>
<b>Publication Status</b>	

# CERN ANALYSIS PRESERVATION

JSON/YAML uploader/editor

Yadage Workflow [Import JSON/YAML file](#)

```
1 {
2   "stages": [
3     {
4       "name": "eventselection",
5       "dependencies": {
6         "dependency_type": "jsonpath_ready",
7         "expressions": [
8           "init"
9         ]
10      },
11     },
12     "scheduler": {
13       "scheduler_type": "singlestep-stage",
14       "parameters": [
15         {
16           "key": "name",
17           "value": "recast_sample"
18         },
19         {
20           "key": "did",
21           "value": {
22             "stages": "init",
23             "output": "did",
24             "unwrap": true,
25             "expression_type": "stage-output-select"
26           }
27         },
28         {
29           "key": "xsec_in_pb",
30           "value": {
31             "stages": "init",
32             "output": "xsec_in_pb",
```

Validates against provided  
JSON Schema

Yadage Workflow [back to Editor](#)

 Browse files

OR

Drop your JSON or YAML file here

ex. ATLAS workflow capture

# CERN ANALYSIS PRESERVATION

## Running workflows

### Create New Workflow

Serial Workflow **reana**    Yadage Workflow **reana**

### REANA Hello World Example

Create now a simple workflow that runs on REANA cluster te now a simple workflow that run on REANA cluster

[Try it now!](#)

### Current Workflows

REANA Hello World Example	finished	<a href="#">View</a>
ATLAS RECAST Example	queued	<a href="#">View</a>

### Create a REANA Workflow

Construct your workflow here and create a REANA environment to run your code.

[Create Workflow](#)

For record:

[99bba18214a444aa913d27f9610ac5ec](#)

Workflow Name

REANA analysis specification

[Import JSON/YAML file](#)

Full analysis specification including data, software, environment and workflow enabling reproducibility on a REANA cluster.

```
1 {
2   "metadata": {
3     "author": "johndoe@cern.ch",
4     "title": "REANA analysis example"
5   },
6   "outputs": {},
7   "inputs": {
8     "parameters": {}
9   },
10  "workflow": {
11    "specification": {},
12    "resources": {}
13  }
14 }
```

### REANA Hello World Example

■ queued

Engine: **reana**

Name in REANA: wine-seagull

Run: #1 (wine-seagull.1)

[▶ RUN](#)

### Workflow Info

Inputs

code/helloworld.py

[ADD FILE](#)

Specifications

Output

### Logs



# INTEGRATIONS

connect services account for seamless imports/exports



## Repositories

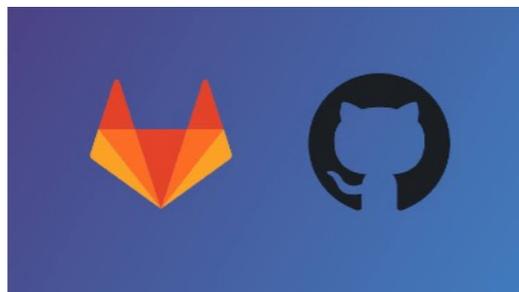
+ Connect your repo

Make the connection, follow and manage repositories. Create snapshots of your Github and CERN Gitlab repositories on custom events and preserve you code

### Connected Repositories

<a href="#">cernanalysispreservation/analysispreservation.cern.ch</a>	Github	on new Tag	last updated 24 December, 13:50	▼
<a href="#">cernanalysispreservation/analysispreservation.cern.ch</a>	Github	on push to <b>master</b>	last updated 24 December, 23:59	▲
<a href="#">cernanalysispreservation/analysispreservation.cern.ch_master.tar</a>		asf6af6asf78sdf7adfaf68f8fdas87a	14 mins ago	<a href="#">download</a>
<a href="#">cernanalysispreservation/analysispreservation.cern.ch_master.tar?version=2</a>		bbadf2342c4231aecdb789d9wea	14 mins ago	<a href="#">download</a>
<a href="#">cernanalysispreservation/analysispreservation.cern.ch_master.tar?version=1</a>		12adf2342c4231aecdb789d54f	14 mins ago	<a href="#">download</a>
<a href="#">analysispreservation/cap-client</a>	CERN Gitlab	on new Tag	last updated yesterday 04:20	▼

easy/automated integration with code  
**push/pull** capabilities



Attach here a resource fetched from a list of services

ID: 2644242

Title: UNEDLabs/rip-spec: Draft incomplete release

DOI: 10.5281/zenodo.2644242

URL: [http](#)

OK

Attach here a resource fetched from a list of services

Select service

ORCID

Zenodo.org Remove

### File Manager ( bucket )

Upload and manage project files

- helloworld.py (3.25 kB) ...
- cernanalysispreservation\_cap-client\_v1.tar.gz (10 MB) ...

Upload File Upload URL File Upload Git Repo

Upload from Gitlab CERN/Github repository url

Please provide a valid Github or Gitlab CERN repository url

- Download repo to record
- Connect the repo to my account (for real-time updates)

Upload

# CERN ANALYSIS PRESERVATION

## CAP CLIENT

Seamless and easy contributions for users work

From services, scripted or with CI

Push / pull metadata, code, files

```
$ pip install cap-client
```

```
$ export CAP_SERVER_URL=https://analysispreservation.cern.ch/
```

```
$ export CAP_ACCESS_TOKEN=<generated access token from server>
```

```
$ cap-client me
```

```
{
  "collaborations": [
    "ATLAS",
  ],
  "id": 1,
  "email": "atlas-user@cern.ch"
}
```

```
$ cap-client files list --pid/-p <existing pid>
```

```
[
  {
    "checksum": "md5:f0428126e7cf7b0d4af7091c68ae2a9f",
    "filename": "file.json",
    "filesize": 25,
    "id": "25852e50-be6d-47a5-897b-1f3df015fac7"
  },
  {
    "checksum": "md5:926fb9c44251d70614ee42d34c5365b6",
    "filename": "Analysis_Notes_07112019.pdf",
    "filesize": 160898,
    "id": "89743c9b-106d-4235-8e96-23a164c7b1f4"
  }
]
```



# CERN ANALYSIS PRESERVATION

## ADVANCED SEARCH

CERN Analysis Preservation BETA Search

1999 RESULTS

**CADI STATUS**

- PUB 855
- PAS-only-PUB 633
- Completed 100
- AWG 78
- GoingToPreApp 34
- PRE-APP 31
- PAS-PUB 24
- RefComments 24
- Thesis-Approved 19
- CWR-ended 17

**CMS WG**

- EXO 306
- HIG 298
- TOP 221
- SUS 211
- HIN 130
- SMP 130
- BPH 108
- B2G 99
- FTR 86
- QCD 66

**PUBLICATION STATUS**

Co

J/PSI AND PSI(2S) PROMPT DOUBL ...	We describe the measurement of the double-differential (in transverse sections of the promptly-produced $J/\psi$ and $\psi(2S)$ mesons, in pp collisions with the CMS data collected in the 2011 run, corresponding to an inte...
OPEN DATA VALIDATION MU MUMO ...	This is the validation example for the 2010 Mu and MuMonitor legacy 4_2_8 setup (with SL5), setting up a DemoAnalyzer, or from the Open instructions on the Open Data portal and in the attached file readme.t...
EXO-12-011	This analysis searches for a new heavy vector boson, denoted $W'$ boson, produced in pp collisions at a centre-of-mass energy of 8 TeV. The search is performed using LHC data at a centre-of-mass energy of 8 TeV. The search is performed using LHC data at a centre-of-mass energy of 8 TeV. The search is performed using LHC data at a centre-of-mass energy of 8 TeV.

### Advanced Search Tips

- To perform a free text search, simply enter a text string. This will search all the fields for the given term.
- If you look for a value in a specific field, prefix the value with the name or alias of this field.  
object:electron
- To search for an exact phrase, you will need to enclose the entire phrase in quotation marks.  
researcher:"John Doe"
- You can use wildcards in your queries ("?" for a single character and "\*" for multiple ones). Keep in mind that none of those can be used as first character in your search.  
dataset:~/MinimumBias/\*
- You can build more complex search criteria using the Boolean operators "AND", "OR", and "NOT".  
dataset:~/MinimumBias/Commissioning10-SD\_EG-Jun14thSkim\_v1/\* AND trigger:(HLT\_MinBiasBSC OR HLT\_DiJetAve15U)
- To point to nested fields in your analysis, use "." operator or one of available aliases.  
researcher reviewer ananote arxiv status keyword dataset trigger object

You can find more search tips using Lucene query syntax [here](#).

**CADI STATUS**

<input type="checkbox"/> PUB	855
<input type="checkbox"/> PAS-only-PUB	633
<input type="checkbox"/> Completed	100
<input type="checkbox"/> AWG	78
<input type="checkbox"/> GoingToPreApp	34
<input type="checkbox"/> PRE-APP	31
<input type="checkbox"/> PAS-PUB	24
<input type="checkbox"/> RefComments	24
<input type="checkbox"/> Thesis-Approved	19
<input type="checkbox"/> CWR-ended	17

**CMS WG**

<input type="checkbox"/> EXO	306
<input type="checkbox"/> HIG	298
<input type="checkbox"/> TOP	221
<input type="checkbox"/> SUS	211
<input type="checkbox"/> HIN	130
<input type="checkbox"/> SMP	130
<input type="checkbox"/> BPH	108
<input type="checkbox"/> B2G	99
<input type="checkbox"/> FTR	86
<input type="checkbox"/> QCD	66

**PHYSICS\_OBJECTS**

<input type="checkbox"/> jet	9
<input type="checkbox"/> muon	6
<input type="checkbox"/> electron	3
<input type="checkbox"/> photon	3
<input type="checkbox"/> MET	1
<input type="checkbox"/> tau	1
<input type="checkbox"/> track	1
<input type="checkbox"/> vertex	1



# CERN ANALYSIS PRESERVATION

Visualize data

CERN Analysis Preservation <sup>BETA</sup> Search

Files | Data | Source Code PUBLISHED EDIT Run Jobs

No files have been attached to this analysis.

### BASIC INFORMATION

ANALYSIS TITLE MET + H->bb search 13 TeV 2017  
GLANCE ID 225

### INFORMATION FROM GLANCE DATABASE

GLANCE ID 225  
SHORT TITLE JDM - mono-H(bb) 2017  
FULL TITLE Search for Dark Matter Produced in Association with a High Energy Photon  
PUBLICATION TITLE MET + H->bb search 13 TeV 2017  
REF CODE ANA-EXOT-2018-01  
CREATION DATE 2018-02-05  
STATUS phase0\_closed  
PHASE 0  
DATASET USED 2015-2017 with release Z1  
ID 263  
MAIN PHYSICS AIM Search for new physics in the signature of H->bb and MET boosted/merged regime and resolved regime. Non-physical background is estimated using a data-driven method. Previous analysis was EXOT-2016-25. \* Planned CP Test for background estimation from Monte Carlo with several models. \* Planned CP Test for background estimation from Monte Carlo with several models. \* Planned CP Test for background estimation from Monte Carlo with several models.  
METHODS  
MODEL TESTED -Benchmark model used: Z'-2HDM : <https://arxiv.org/abs/1707.08567>. Independent Limits also to be provided, similar to the previous analysis.

### GITLAB GROUP

ID 14349  
PROJECTS  
PROJECT ID 34774  
URL <https://gitlab.cern.ch/atlas-physics-office/EXOT/ANA-EXOT-2018-01>

### PROJECT

ID 42146  
URL <https://gitlab.cern.ch/atlas-physics-office/EXOT/ANA-EXOT-2018-01>

LIKELIHOOD [Click to Visualize](#)

INPUT DATA

PUBLICATIONS

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CERN Analysis Preservation <sup>BETA</sup> Search

Files | Data | Source Code EDIT Run Jobs

No files have been attached to this analysis.

### Visualize Data

lumi 1.00  
SigXsecOv... 5.00  
mc1\_weight... 0.00  
mc1\_shape... 0.00  
mc2\_weigh... 0.00  
mc2\_shape... 0.00

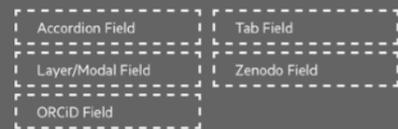
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# CONTENT BUILDER

Create your own models and start preserving

Select the field type you want to use and drag and drop it to the desired location in the form

## Advanced Fields



## Simple Fields



Root

Reuse mode

Information from CADI database

- abc Contact Person (contact)
- abc PAS (pas)
- abc Twiki (twiki)
- abc Publication Status (publication\_status)
- abc Created (created)
- abc Name (name)
- abc Paper (paper)
- abc Status (status)
- abc Description (description)

Additional Resources

- abc Additional comment (comments)
- Additional Documentations (documentations)
- abc Untitled field (documentations)
- Internal Discussions (internal\_discussions)
- abc URL (internal\_discussions)
- abc Keywords (keywords)
- Presentations (presentations)
- abc Conference/meeting (conference)
- abc Presentation (items)
- Publications (publications)

Input Data

Please list all datasets and triggers relevant

- Primary Datasets
- Monte Carlo Signal Datasets
- Monte Carlo Background Datasets
- Official JSON files

+ add new

Selected field

{ } # { } basic\_info **cadi\_id**

### Basic field info

**Title** The title of the form field. How it will be displayed on the rendered form.  
CADI ID

**Description** The title of the form field. How it will be displayed on the rendered form.

**Placeholder** The title of the form field. How it will be displayed on the rendered form.  
e.g. JME-10-107

**Format/Widget** The title of the form field. How it will be displayed on the rendered form.

### Field Layout

1/1 1/2 1/3 1/4 1/5 2/2 2/3  
2/4 2/5 3/3 3/4 3/5

Root

- Information from CADI database (cadi\_info)
- Additional Resources (additional\_resources)
- abc Full reproducibility mode (analysis\_reuse\_mode)
- Statistical Treatment (statistical\_treatment)
- abc Combine Datacard File (combine\_datacard)
- missing Statistics Questionnaire (statistics\_questionnaire)
- N-tuples Production (ntuples\_production)
- abc Your Code (code\_base)
- Processing Steps (processing\_steps)
- abc Configuration File (configuration\_file)
- abc Output (output\_data)
- abc Run Instructions (run\_instructions)
- Basic Information (basic\_info)
- abc Abstract (abstract)
- Analysis Notes (ana\_notes)
- abc Untitled field (ana\_notes)
- abc CADI ID (cadi\_id)
- abc Conclusion (conclusion)
- Input Data (input\_data)
- Official JSON files (json\_files)
- abc Untitled field (json\_files)
- Monte Carlo Background Datasets

# EXAMPLES & DOCUMENTATION

## REST API (OpenAPIv3 specs) and `cap-client` documentation

**CERN Analysis Preservation REST API (1.0.0)**

Download OpenAPI specification: [Download](#)

E-mail: [analysis-preservation-support@cern.ch](mailto:analysis-preservation-support@cern.ch) | URL: <https://analysispreservation.cern.ch/about> | License: Apache 2.0 | [Terms of Service](#)

CERN Analysis Preservation offers a REST API to access the service independently from the web interface. This allows users to automate specific tasks or create their own data interface, using simple HTTP calls.

[Click here if you are looking for our development documentation.](#)

### Introduction

CERN Analysis Preservation provides:

- resource URLs,
- HTTP response codes to indicate success or failure,
- accepts and returns JSON in the response.

You can use your favorite HTTP/REST client to interact with the API. Currently, the API is available in Python. Every API endpoint is designed to be easily accessible for automation.

### Authentication

If you want to gain access to CERN Analysis Preservation, you need an access token to authenticate with the service. CAP offers the following forms of authentication:

- API Key - `access_token`

### Access Token

Your access token will allow you to access the service with the same permissions unless specified otherwise. Do not share your personal access token.

### Deposits

The Deposit resource is used for uploading and editing records on CAP.

### Create a new draft

To create a new draft you need to pass a correct analysis type (`$ana_type`) OR a correct JSON Schema.

JSON Schemas and analysis types (`$ana_type`) depend on the access rights you have and mainly correspond to the CERN collaboration you are part of (*ALICE, ATLAS, CMS, LHCb*). To get the list of available schemas you can call the `GET /schemas` endpoint.

**AUTHORIZATIONS:** [Access Token](#)

**REQUEST BODY SCHEMA:** `application/json`

One of [Empty draft with 'ana\\_type'](#) | [Empty draft with 'Schema'](#) | [Deposit with some content](#)

`$ana_type` **required** string (Analysis Type)  
Analysis Type (schema type) of record to be create

### Responses

- > 200 OK
- 400 Validation error
- 401 Unauthorized

### Request samples

**POST /deposits**

**Payload**

```
Content type: application/json
Example: simple
{
  "$ana_type": "<an accessible analysis type>"
}
```

Copy Expand all Collapse all

### Response samples

**200** **400** **401**

**Content type:** `application/json`

```
{
  - "access": {
    + { - },
    + { - },
    + { - }
  },
  "created": "2019-08-29T08:36:37.552Z",
  - "files": [
    + { - }
  ],
  "id": "055c24bad4ee4d6fa44a9432b49fe77e",
  "links": { },
  "metadata": null,
```

Copy Expand all Collapse all

# CERN ANALYSIS PRESERVATION

WHO IS IT FOR?

**Individual Physicists**

**Experiments/Collaborations/WGs**

**Institutions**



# CERN ANALYSIS PRESERVATION

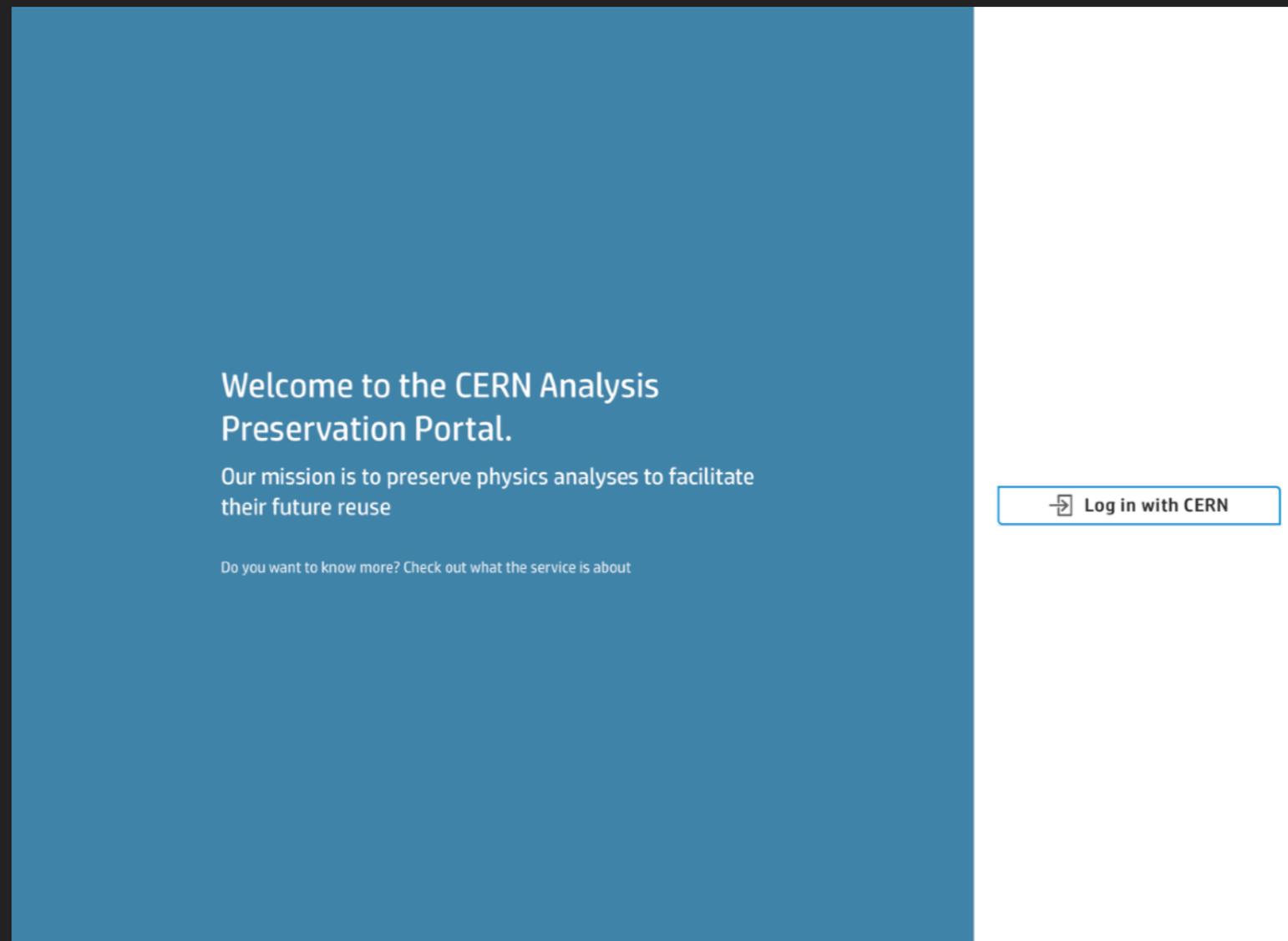
COLLABORATIONS, STATUS AND FUTURE



ALICE



# PORTALS, FRAMEWORKS AND TOOLS



Web: <https://analysispreservation.cern.ch>

Github: <https://github.com/cernanalysispreservation>

Email: [analysis-preservation-support@cern.ch](mailto:analysis-preservation-support@cern.ch)

Twitter: [@analysispreserv](https://twitter.com/analysispreserv)



# PORTALS, FRAMEWORKS AND TOOLS

**INVENIO**

Web: <http://inveniosoftware.org>

Github: <http://github.com/inveniosoftware>

Email: [info@inveniosoftware.org](mailto:info@inveniosoftware.org)

Twitter: @inveniosoftware

**reana**

Web: <http://www.reanahub.io>

Github: <http://github.com/reanahub>

Email: [info@reanahub.io](mailto:info@reanahub.io)

Twitter: @reanahub



**THANK YOU**

