



CERN Academic Training website

Building a website to promote the CERN
Academic Training lectures

BSc Project - 07/09/2023



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ACADEMIC TRAINING

Search a lecture...



ABOUT

EVENTS

CONTACT



ACADEMIC TRAINING



Introduction

- Overview of the project and its objectives
- Importance of promoting the CERN Academic Training lectures



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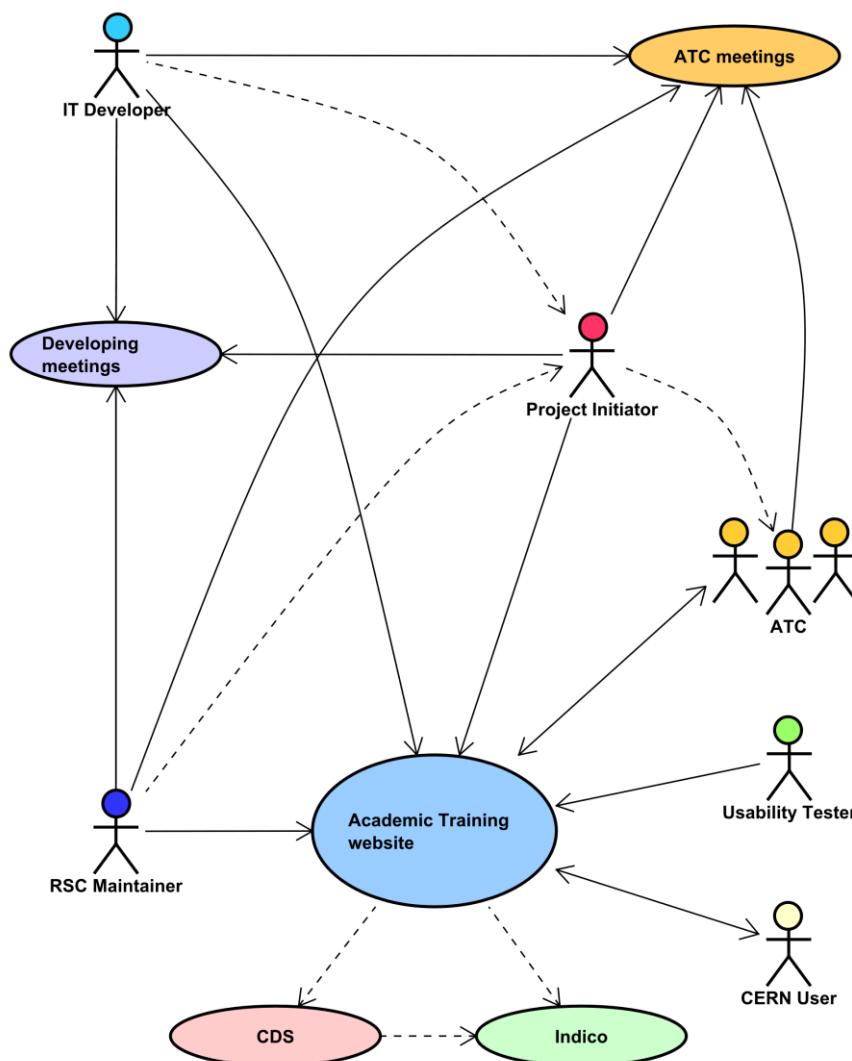
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Group Description and Collaboration

- Active exchange of information between IT developer and RCS maintainer
- Occasional inputs from the project initiator during technical sessions
- Regular feedback from CERN pilot users
- Meetings transitioned from Zoom to physical due to COVID-19

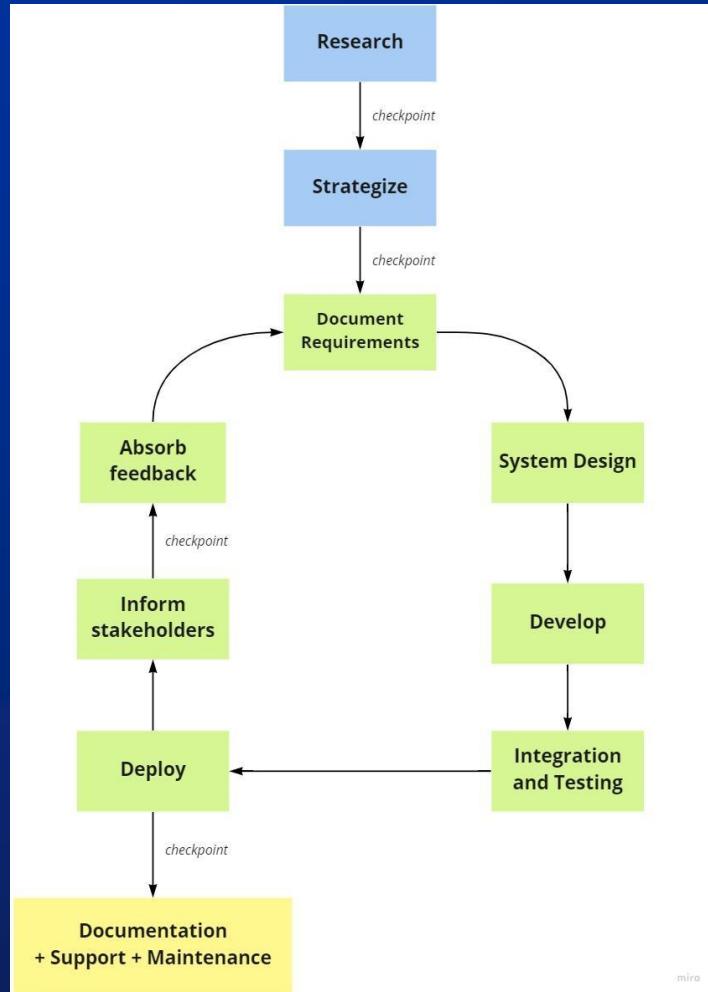




Methodology

- Combined version of Agile and Waterfall methodology
- Periodic return to requirements due to stakeholder changes
- Challenges in using SCRUM Sprints due to scheduling constraints





Project Execution

- Agile-Waterfall hybrid method used
- Challenges faced: Frequent changes from stakeholders, scheduling meetings with busy CERN members
- Tools used: **JIRA**, **CodiMD**, **Mattermost**, **CERNmail**, **Indico**, and **Zoom**



Functional and Non-Functional Requirements

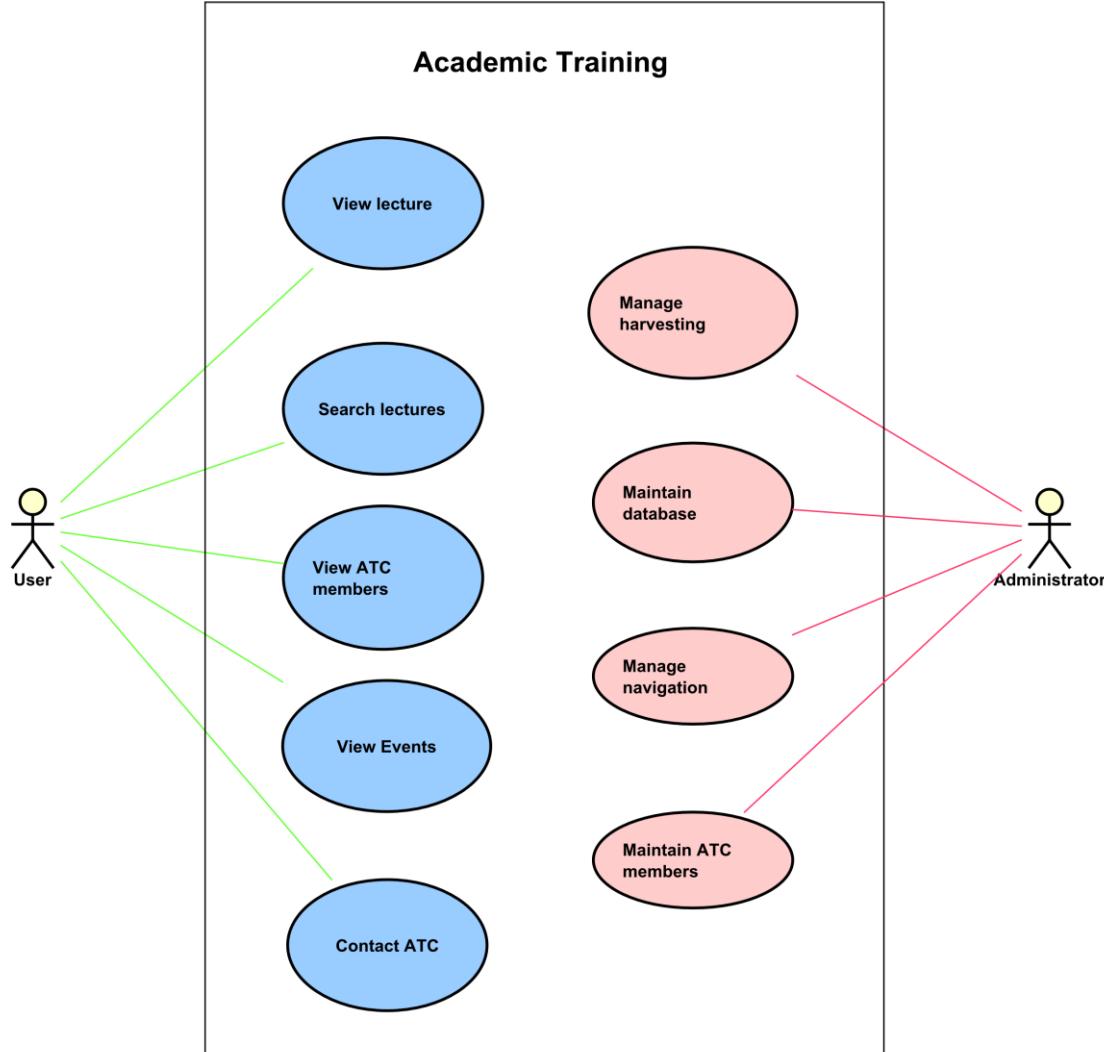
- Display, Search and Sort lectures
- Harvest from CERN Document Server (CDS)
- Publicly accessible software with a new Academic Training Committee (ATC) design and logo
- Display mixed data (mainly videos and files, lately two-channel videos too)
- + Guidelines and Regulations from **CERN**



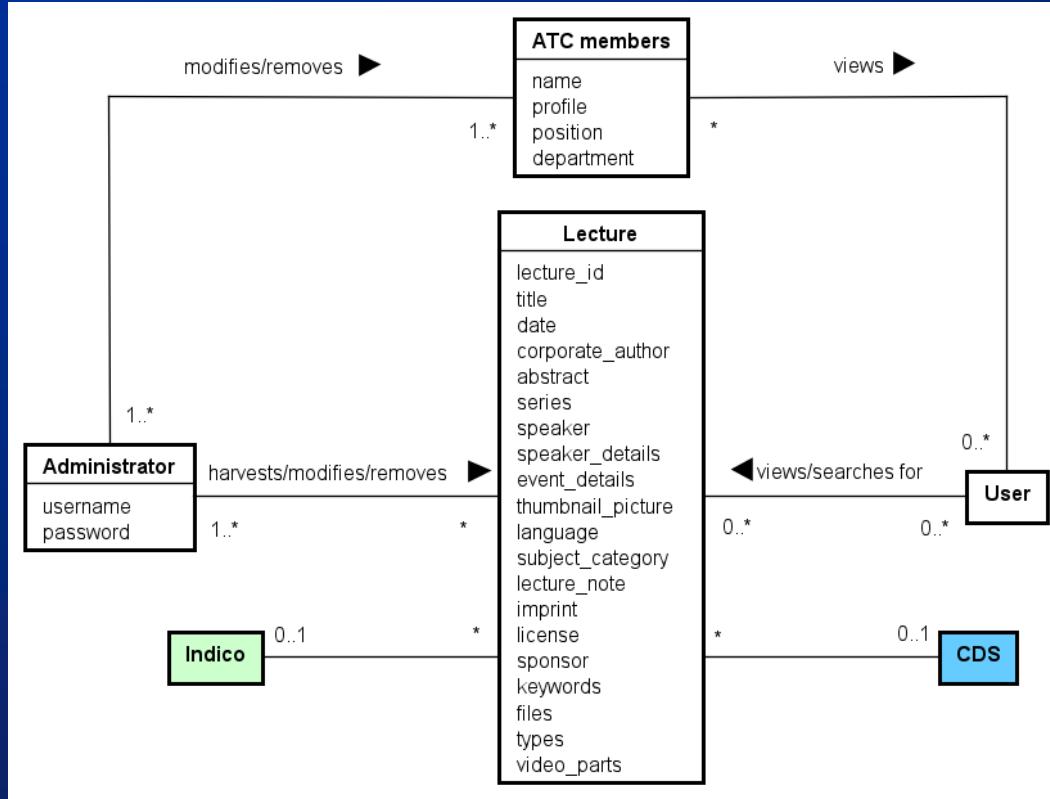
Use Cases



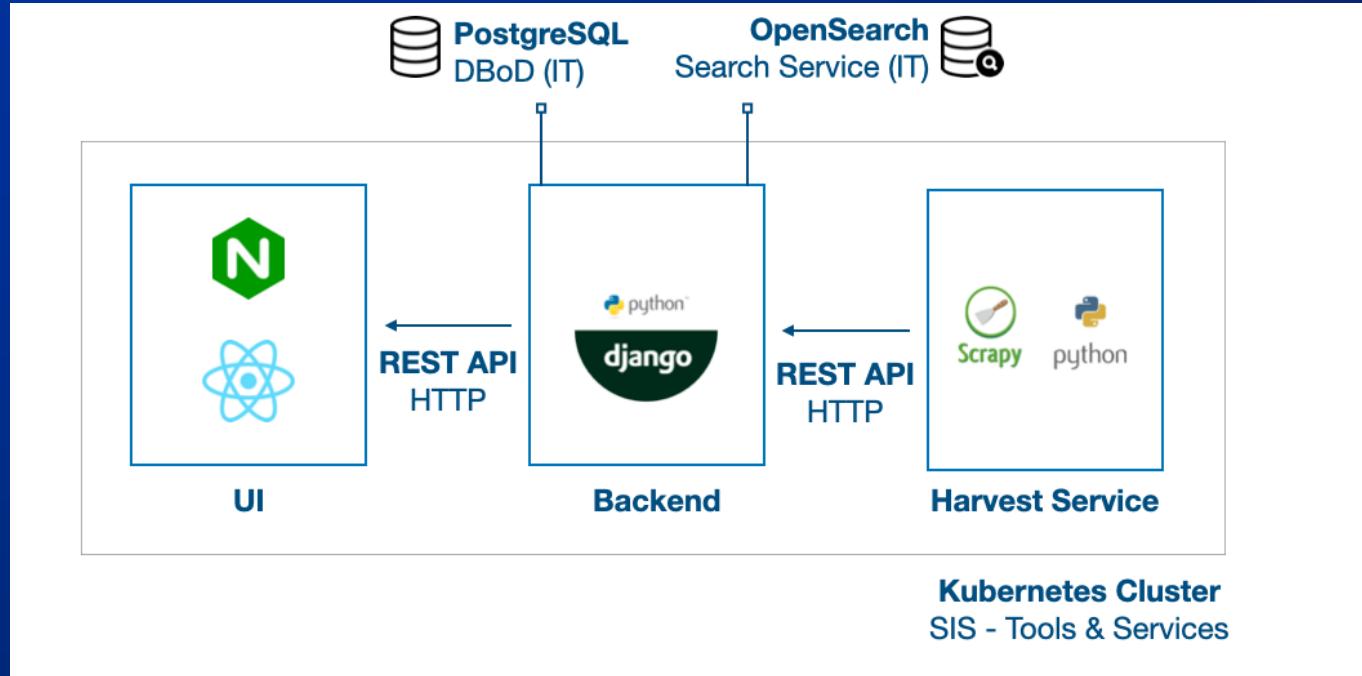
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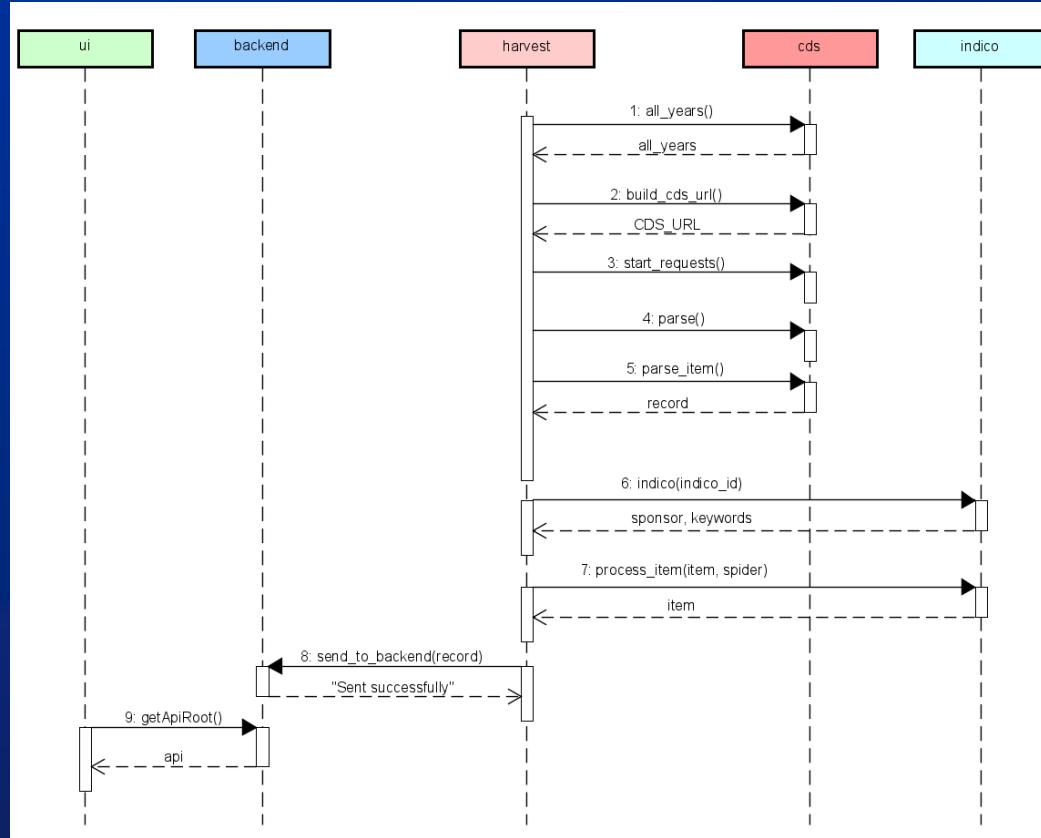
Domain Model



Architecture



Sequence Diagram



Development Tools and Technologies

- **Adobe XD** for UI/UX design
- **GitHub** for git management and team collaboration
- **GitLab** for site documentation
- **Node.js** for running the React app
- **Visual Studio Code** for coding
- **JIRA** for project management
- **Docker** for application packaging
- **Stack Overflow** for debugging



Implementation and some Technical Aspects

- View lecture
- Search lecture
- View ATC members
- Contact ATC
- Harvesting
- Navigation



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View lecture



/ui/src/api/api_root.tsx

```
const api = axios.create({ baseURL: `/api/v1/` });

export function getApiRoot() { return api; }
```



/ui/src/routes/lecture.tsx

```
const fetchLecture = async () => {
  ...
  const results = await getApiRoot().get(`/lectures/${lectureId}/`);
  ...
};
```



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Search lecture



/backend/cds/views.py

```
class LectureViewSet(viewsets.ModelViewSet):  
    queryset = Lecture.objects.all()
```

```
class LectureDocumentView(DocumentViewSet):  
    document = LectureDocument  
    ...  
  
    simple_query_string_options = { "default_operator": "and" }  
  
    filter_fields = {  
        "lecture_id": None,  
        "types": None,  
        "keywords": None,  
        "series": None,  
        "sponsor": None,  
        "speaker": None,  
        "subject_category": None,  
    }
```



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/ui/src/components/SEARCH_BAR.tsx

```
const onKeyDown = (ev: any) => {
  const searchValue = ev.target.value;
  if (searchValue) {
    navigate(`/search/?search=${ev.target.value}&page=1`);
  } else {
    navigate("/search");
  }
};
```



/ui/src/routes/results.tsx

```
const searchLectures = useCallback(async () => {
  ...
  const response = await getApiRoot().get(`/search/lectures/`, {
    params: {
      ...
      search_simple_query_string: searchValue,
      ...
    },
  });
  setLectures(response.data.results);
  ...
}, [searchValue, ...])
```



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View ATC members



/ui/src/photos/members/members.ts

```
const MEMBERS: any = {
  core: [
    {
      key: 1,
      name: "Urs WIEDEMANN",
      profile: require("./profiles/Urs_Wiedemann.jpg"),
      position: "Chair",
      department: "TH",
    },
  ],
};
```



/ui/src/routes/about_us.tsx

```
{MEMBERS["core"].map((member: any) => {
  return (
    ...
    <Title level={3}>{member.department}</Title>
    <Avatar size={120} src={member.profile.default} />
    <Title level={2}>{member.name}</Title>
    <p>{member.position}</p>
    ...
  );
})}
```



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MEMBERS



TH

Urs WIEDEMANN

Chair



IT

Maria DIMOU

Advisor



DG

Marika FLYGAR

Administrative Assistant

DEPARTMENTS



EP

André DAVID

Chair High Energy Physics Working Group



BE

Massimo GIOVANNOZZI

Chair Applied Physics Working Group



IT

Giacomo Tenaglia



EN

Anne Laure PERROT



TE

Valeria PEREZ REALE



SY

Antonio PERILLO-MARCONCONE

Contact ATC



/ui/src/components/MENU.tsx

```
<Menu>
  ...
  <Menu.Item className="contact-us" key="contact-us">
    <Typography.Link href="mailto:atc-contact@cern.ch" target="_blank">
      <Title level={2} className="contact-us-link">
        Contact
      </Title>
    </Typography.Link>
  </Menu.Item>
</Menu>
```



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Harvesting

- Scripts for harvesting lectures from CDS in MARCXML format
- **OAI-PMH** (Open Archives Initiative Protocol for Metadata Harvesting) - used to translate XML files to JSON format



CERN Document Server

[Search](#) [Submit](#) [Help](#) [Personalize](#)
[Home](#) > [Lectures & Events](#) > [Academic Training Lectures](#) > [REMOTE: Geodetic metrology for future accelerators - Towards the alignment of future colliders](#)

[Information](#) [Discussion \(0\)](#) [Files](#)

Talk

Title: REMOTE: Geodetic metrology for future accelerators - Towards the alignment of future colliders

Video

Academic Training
Geodetic Metrology for Future Colliders
Towards the Alignment of Future Colliders

Hélène Mainaud Durand
16 June 2022

If you experience any problem watching the video, click the download button below

[Download](#) [Embed](#) 158 views (not distinct)

Author(s)
Mainaud Durand, Hélène (speaker) (CERN)

Corporate author(s)
CERN, Geneva

Document contact
Contact: Massimo Giovannozzi

Imprint
2022-06-16 - 05:8:19.

Series
(Academic Training Lecture Regular Programme ; 2021-2022)

Lecture note
on 2022-06-16T11:00:00

Subject category
Academic Training Lecture Regular Programme

colliders.

Short Bio Hélène Mainaud Durand

Hélène Mainaud Durand is head of the Geodetic Metrology group, inside the Beams department, (BE-GM) group at CERN. Her group provides metrology and alignment for components installed in the accelerators, their beam transfer lines and the physics experiments throughout the CERN complex. The BE-GM group also performs research and development related to all these tasks for upgrades to existing machines and for future accelerator and experimental projects. She is president of the European Society of Precision Engineering and Nanotechnology (euspen) and fellow of the International Academy of Engineering and Technology. She is the author of more than 70 papers on survey and alignment in particle accelerators.

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Record created 2022-06-16, last modified 2022-06-16

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External link:



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 Norsk/Bokmål Polski Português Русский Slovenščina
 Svenska 中文(简) 中文(繁)



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```
<collection xmlns="http://www.loc.gov/MARC21/slim">
  <record>
    <controlfield tag="001">2812455</controlfield>
    <controlfield tag="005">20220616205752.</controlfield>
    <datafield tag="024" ind1="8" ind2=" " >
      <subfield code="a">oai:cds.cern.ch:2812455</subfield>
      <subfield code="p">forSciTalks</subfield>
      <subfield code="p">cerncds:TALK</subfield>
    </datafield>
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      <subfield code="a">eng</subfield>
    </datafield>
    <datafield tag="110" ind1=" " ind2=" " >
      <subfield code="a">CERN, Geneva</subfield>
    </datafield>
    <datafield tag="111" ind1=" " ind2=" " >
      <subfield code="a">REMOTE: Geodetic metrology for future accelerators - Towards the alignment of future
colliders</subfield>
      <subfield code="c">CERN - </subfield>
      <subfield code="9">2022-06-16T11:00:00</subfield>
      <subfield code="z">2022-06-16T12:00:00</subfield>
      <subfield code="g">1073860</subfield>
    </datafield>
    <datafield tag="245" ind1=" " ind2=" " >
      <subfield code="a">REMOTE: Geodetic metrology for future accelerators - Towards the alignment of future
colliders</subfield>
    </datafield>
    <datafield tag="260" ind1=" " ind2=" " >
      <subfield code="c">2022</subfield>
    </datafield>
    <datafield tag="269" ind1=" " ind2=" " >
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    </datafield>
    <datafield tag="270" ind1=" " ind2=" " >
      <subfield code="p">Massimo Giovannozzi</subfield>
    </datafield>
    <datafield tag="300" ind1=" " ind2=" " >
      <subfield code="a">0:58:19</subfield>
    </datafield>
    <datafield tag="542" ind1=" " ind2=" " >
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      <subfield code="g">2022</subfield>
    </datafield>
    <datafield tag="340" ind1=" " ind2=" " >
      <subfield code="a">Streaming video</subfield>
    </datafield>
    <datafield tag="490" ind1=" " ind2=" " >
      <subfield code="a">Academic Training Lecture Regular Programme</subfield>
      <subfield code="v">2021-2022</subfield>
    </datafield>
    <datafield tag="518" ind1=" " ind2=" " >
      <subfield code="d">2022-06-16T11:00:00</subfield>
    </datafield>
    <datafield tag="520" ind1=" " ind2=" " >
```



CDS Spider

- Scrapy file that collects data from CDS
- Builds CDS URL
- Requests from CDS
- XML-JSON conversion



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/harvest/harvest/spiders/cds_spider.py

```
def __build_cds_url(self, query, field=None, size=SIZE):
    if field is not None:
        return CDS_URL_WITH_FIELD.format(query=query, size=size, field=field)
    return CDS_URL.format(query=query, size=size)
```

```
def start_requests(self):
    if self.migrate_all:
        self.all_years_gen = self.__gen_all_years
        item = next(self.all_years_gen)
        url = self.__build_cds_url(item["year"], item["field"])
    else:
        query = ">".join(self.query)
        url = self.__build_cds_url(query)
```

```
try:
    if self.migrate_all and (item := next(self.all_years_gen)):
        LOGGER.debug("Harvesting next page", year=item["year"])
        url = self.__build_cds_url(item["year"], item["field"])
        LOGGER.debug("Harvesting url", url=url)
        yield Request(url, callback=self.parse)
except StopIteration:
    LOGGER.debug("Harvesting all is finished.")
```



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XML-JSON conversion

```
from dojson.contrib.marc21.utils import create_record
from inspire_dojson.cds import cds2hep_marc
```

```
def parse_item(self, selector, original=None):
    ...
    record["lecture_id"] = selector.xpath("./controlfield[@tag=001]/text()").get()
```

```
    data = cds2hep_marc.do(create_record(original))
    ...
    return record
```



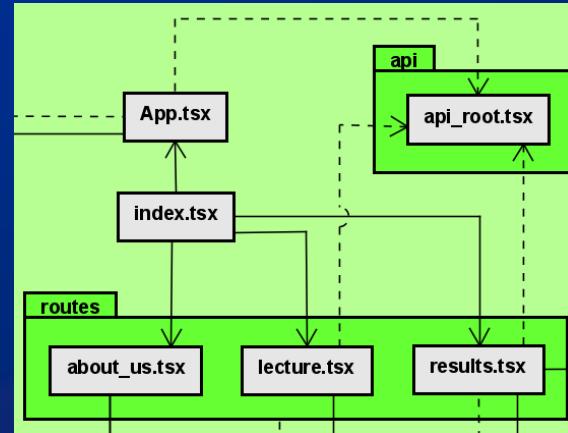
Maintain DB

- for the admin
- through **Django**

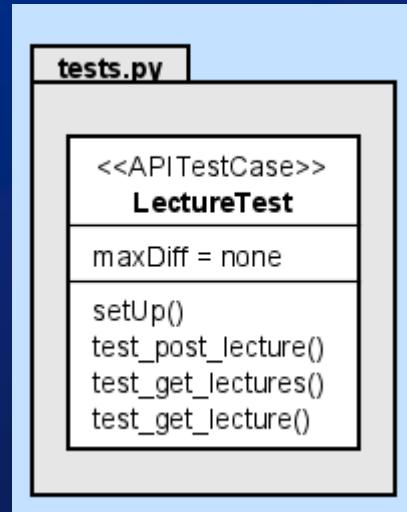


Navigation

- Main page – “/”
- Search results page – “/search”
- About Us page – “/about-us”
- Collection of lectures – “/lectures”
- Lecture page – “/lectures/:lectureId”
- Blank page (in case of a route that has no endpoint & leads nowhere) – “/*”



Unit Tests for API calls





```
def test_post_lecture(self):
    response = self.client.post(self.url, self.data, format="json")
    self.assertEqual(response.status_code, status.HTTP_201_CREATED)

def test_get_lectures(self):
    response = self.client.post(self.url, self.data, format="json")

    self.assertEqual(response.status_code, status.HTTP_201_CREATED)

    response = self.client.get(self.url, format="json")

    expected_data = {
        "abstract": "<div>TEST</div>",
        "corporate_author": "This is an author",
        "date": "2021-10-22",
        "event_details": "Event Details",
        "files": [],
        "id": 2,
        "imprint": "01:03:18",
        "keywords": [],
        "language": "eng",
        "lecture_id": 2800620,
        "lecture_note": "2021-10-22T11:59:35Z",
        "license": "2021 CERN",
        "series": "(Academic Training Lecture Regular Programme ; 202",
        "speaker": ["de Jong, Michiel"],
        "speaker_details": ["Speakers details"],
        "sponsor": "",
        "subject_category": "Academic Training Lecture Regular Programme",
        "thumbnail_picture": "http://mediaarchive.cern.ch/MediaArchive/Video/Public/Conferences/2021/1049666/1049666-presenter-cover.png",
        "title": "REMOTE: Federated Data Architectures",
        "types": [],
        "video_parts": []
    }

    self.assertEqual(json.loads(response.content)["results"][0], expected_data)
    self.assertEqual(response.status_code, status.HTTP_200_OK)

def test_get_lecture(self):
    response = self.client.post(self.url, self.data, format="json")
    self.assertEqual(response.status_code, status.HTTP_201_CREATED)

    response = self.client.get(f"{self.url}2800620/", format="json")
    self.assertEqual(response.status_code, status.HTTP_200_OK)
```



Conclusion

- Overall achievements of the project
- Future recommendations and improvements



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The Website

- <https://academictraining.cern.ch/>



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The Documentation site

- <https://academictraining-admin.docs.cern.ch>



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