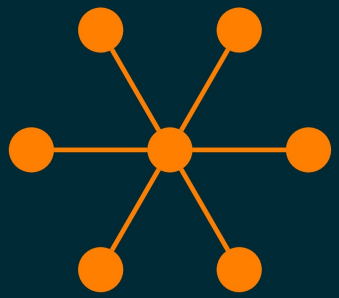
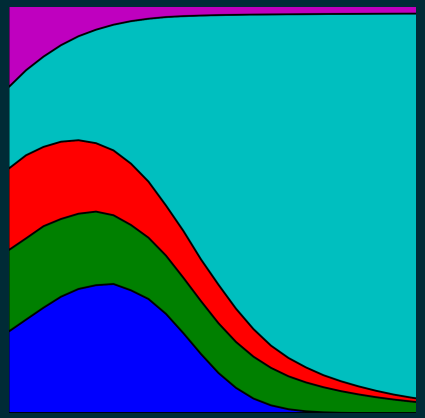
Arcas: Using Python to access open research literature

@NikoletaGlyn



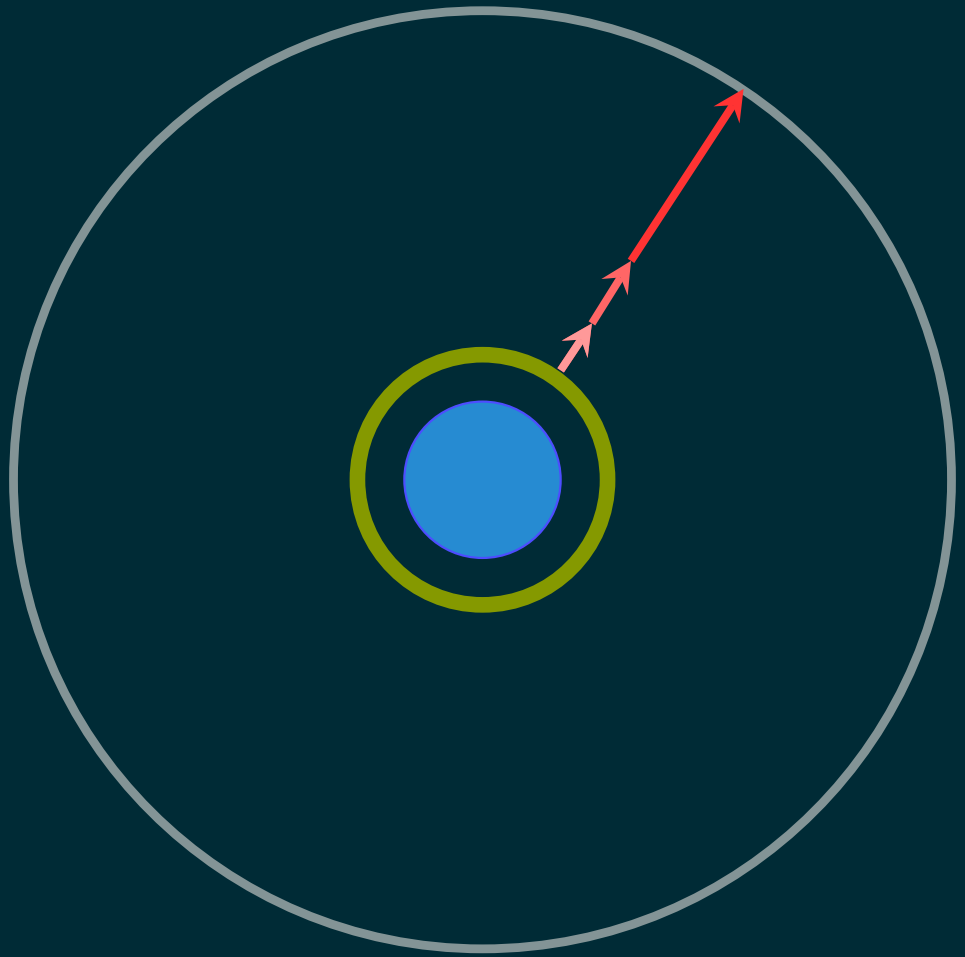


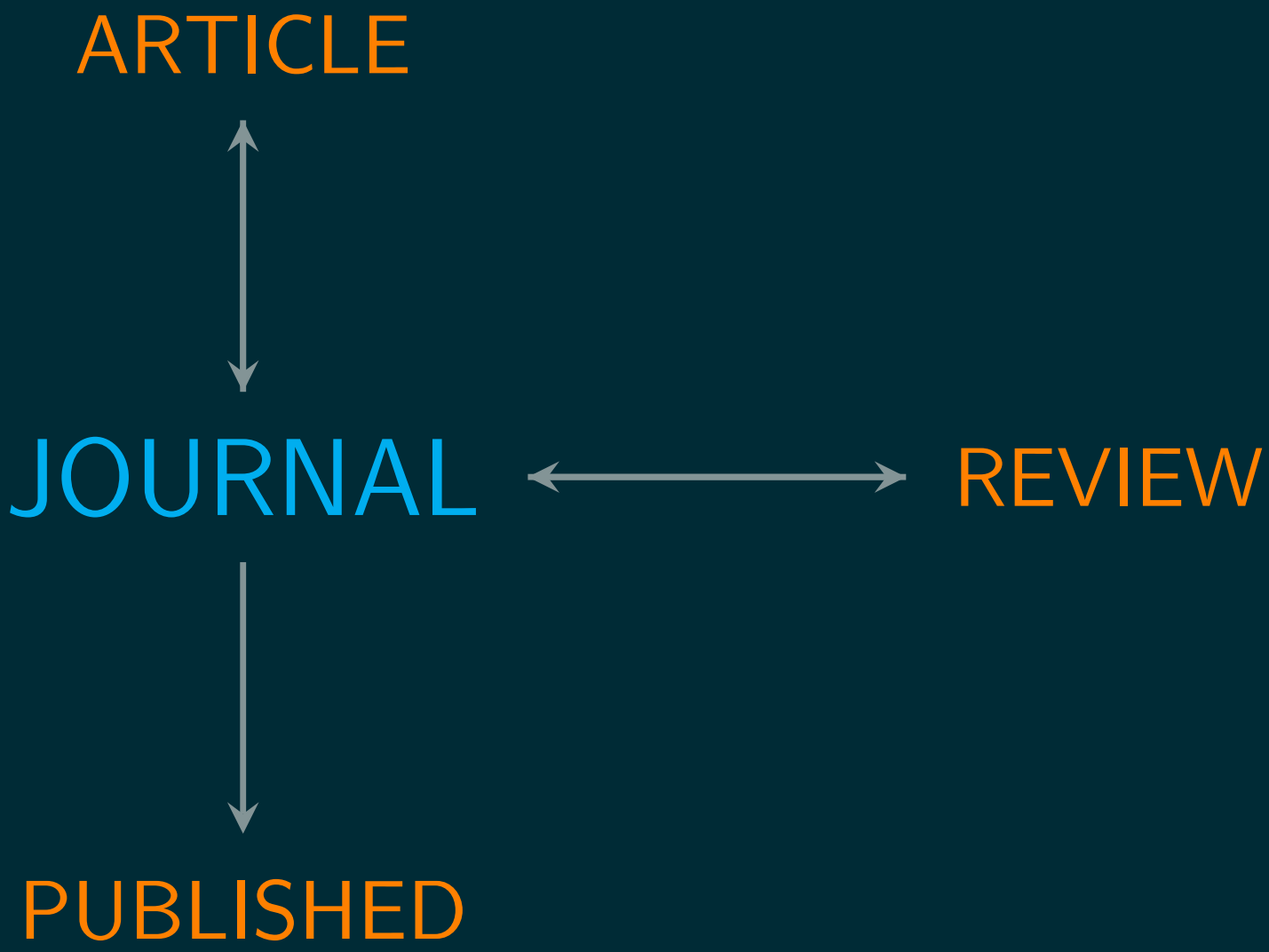
Software
Sustainability
Institute

The illustrated guide to a Ph.D.

Matt Might

http://matt.might.net/articles/phd-school-in-pictures/

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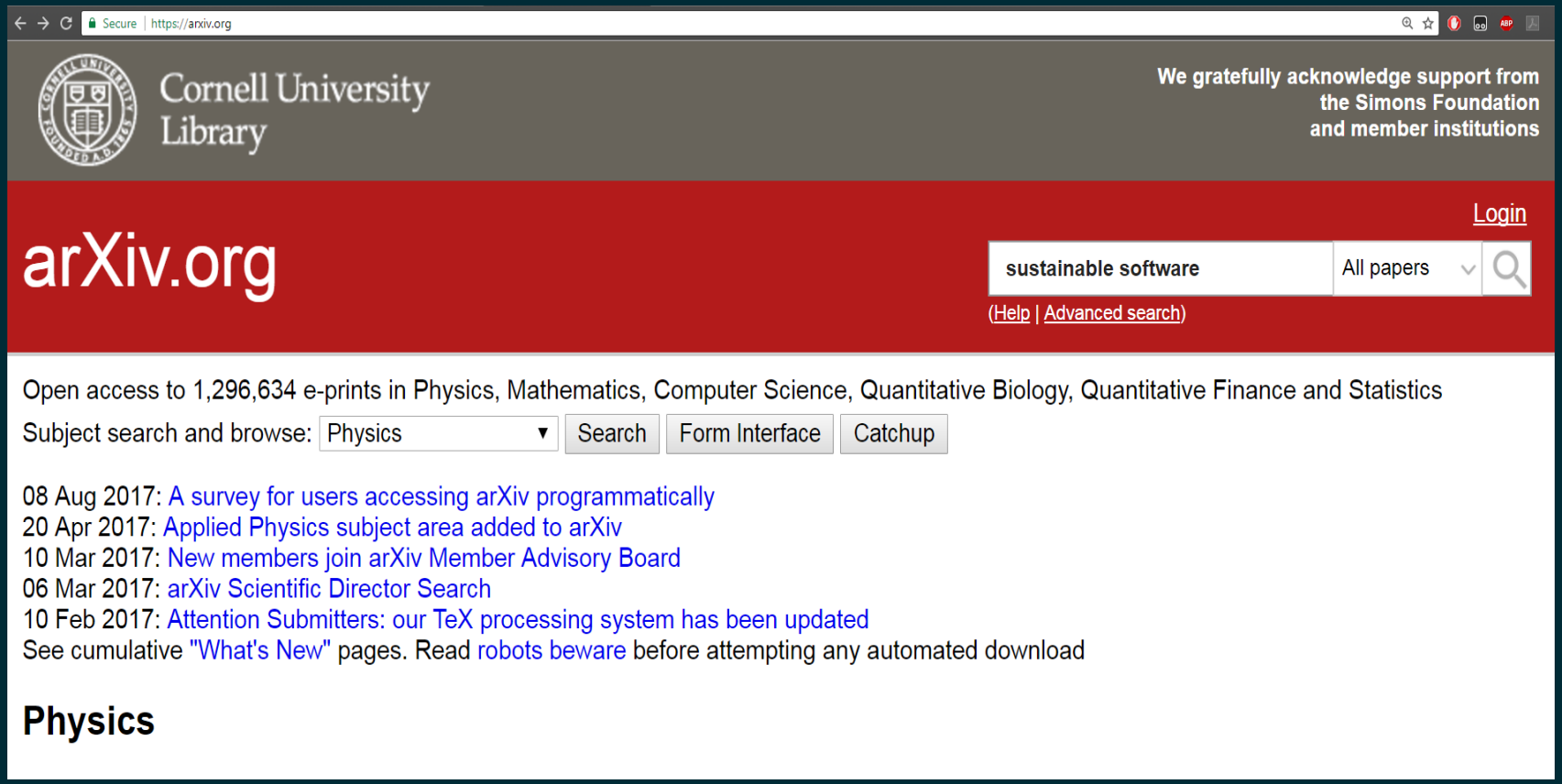
JOURNAL
REVIEW
PUBLISHED

Sustainable Software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08 Aug 2017: A survey for users accessing arXiv programmatically
20 Apr 2017: Applied Physics subject area added to arXiv
10 Mar 2017: New members join arXiv Member Advisory Board
06 Mar 2017: arXiv Scientific Director Search
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Physics

Secure | https://arxiv.org/find/all/1/all:+AND+sustainable+software/0/1/0/all/0/1?skip=100&query_id=ed0a58351b37d8f0

102. **arXiv:1309.1828** [pdf]

Sustainable Software Development for Next-Gen Sequencing (NGS) Bioinformatics on Emerging Platforms

Shel Swenson, Yogesh Simmhan, Viktor Prasanna, Manish Parashar, Jason Riedy, David Bader, Richard Vuduc

Comments: 4 pages

Subjects: **Computational Engineering, Finance, and Science (cs.CE)**; Distributed, Parallel, and Cluster Computing (cs.DC)

103. **arXiv:1309.1817** [pdf]

Initial Findings from a Study of Best Practices and Models for Cyberinfrastructure Software Sustainability

Craig A. Stewart, Julie Wernert, Eric A. Wernert, William K. Barnett, Von Welch

Comments: Workshop on Sustainable Software: Practices and Experiences, 4 pages

Subjects: **Software Engineering (cs.SE)**

104. **arXiv:1309.1813** [pdf, other]

Reusability in Science: From Initial User Engagement to Dissemination of Results

Ketan Maheshwari, David Kelly, Scott J. Krieder, Justin M. Wozniak, Daniel S. Katz, Mei Zhi-Gang, Mainak Mookherjee

Comments: 5 pages, WSSSPE 2013 workshop

Subjects: **Software Engineering (cs.SE)**; Distributed, Parallel, and Cluster Computing (cs.DC)

105. **arXiv:1309.1812** [pdf, other]

Cactus: Issues for Sustainable Simulation Software

Frank Löffler, Steven R. Brandt, Gabrielle Allen, Erik Schnetter

Comments: submitted to the Workshop on Sustainable Software for Science: Practice and Experiences 2013

Subjects: **Computational Engineering, Finance, and Science (cs.CE)**; Mathematical Software (cs.MS); Software Engineering (cs.SE)

106. **arXiv:1309.1810** [pdf]

Niche Modeling: Ecological Metaphors for Sustainable Software in Science

Nicholas Weber, Andrea Thomer, Michael Twidale

Comments: Position paper submitted to: Workshop on Sustainable Software for Science: Practice and Experiences (WSSSPE) SC13, Sunday, 17 November 2013, Denver, CO, USA

Subjects: **Software Engineering (cs.SE)**; Computers and Society (cs.CY)

107. **arXiv:1309.1805** [pdf]

nanoHUB.org: Experiences and Challenges in Software Sustainability for a Large Scientific Community

Lynn Zentner, Michael Zentner, Victoria Farnsworth, Michael McLennan, Krishna Madhavan, Gerhard Klimeck

Comments: 4 pages, 1 figure, this version contains minor revisions to correct an acronym, update a quotation, improve grammar, and add a reference

Subjects: **Software Engineering (cs.SE)**; Computational Engineering, Finance, and Science (cs.CE); Digital Libraries (cs.DL)

108. **arXiv:1309.1796** [pdf, ps, other]

VisIt: Experiences with Sustainable Software

Sean Ahern, Eric Brugger, Brad Whitlock, Jeremy S. Meredith, Kathleen Biagas, Mark C. Miller, Hank Childs

Subjects: **Software Engineering (cs.SE)**

$$0.5\text{min} + 100 \times 1.5\text{min} + 10 \times 0.5\text{min} =$$
$$155.5\text{min} \Rightarrow 2\text{h and } 35.5\text{min}$$

API

QUERY

http://export.arxiv.org/api/query?search_query=ti:Sustainable%20Software

export.arxiv.org/api/query?search_query=ti%3ASustainable%20Software

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  <entry>
    <id>http://arxiv.org/abs/1309.1796v1</id>
    <updated>2013-09-07T00:16:52Z</updated>
    <published>2013-09-07T00:16:52Z</published>
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    <summary>  The success of the VisIt visualization system has been wholly dependent upon
the culture and practices of software development that have fostered its
welcome by users and embrace by developers and researchers. In the following
paper, we, the founding developers and designers of VisIt, summarize some of
the major efforts, both successful and unsuccessful, that we have undertaken in
the last thirteen years to foster community, encourage research, create a
sustainable open-source development model, measure impact, and support
production software. We also provide commentary about the career paths that our
development work has engendered.
</summary>
    <author>
      <name>Sean Ahern</name>
    </author>
    <author>
      <name>Eric Brugger</name>
    </author>
    <author>
      <name>Brad Whitlock</name>
    </author>
    <author>
      <name>Jeremy S. Meredith</name>
    </author>
    <author>
```

$$15\text{min} + 1\text{min} + 50\text{min} = 66\text{min} \Rightarrow 1\text{h and } 6\text{min}$$

QUERY

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QUERY

http://export.arxiv.org/api/query?search_query=ti:
Sustainable%20Software

http://api.plos.org/search?q=title:
Sustainable%20Software&rows=100

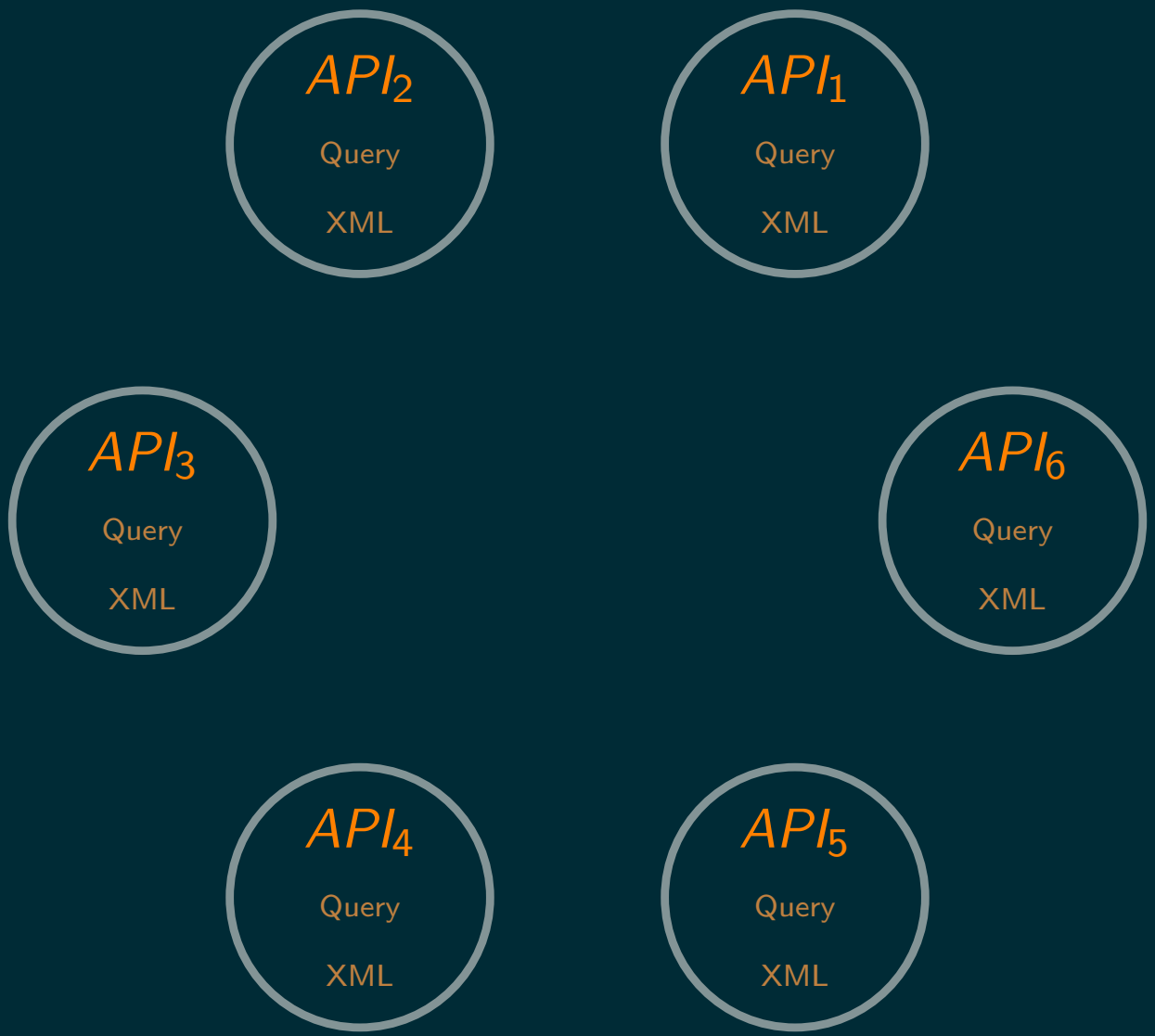
QUERY

http://export.arxiv.org/api/query?search_query=ti:Sustainable%20Software

http://api.plos.org/search?q=title:Sustainable%20Software&rows=100

http://www.nature.com/opensearch/request?queryType=cql&query=dc.title%20adj%20SustainableSoftware&maximumRecords=100

...


API_2
Query
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API_3
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API_6
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API_4
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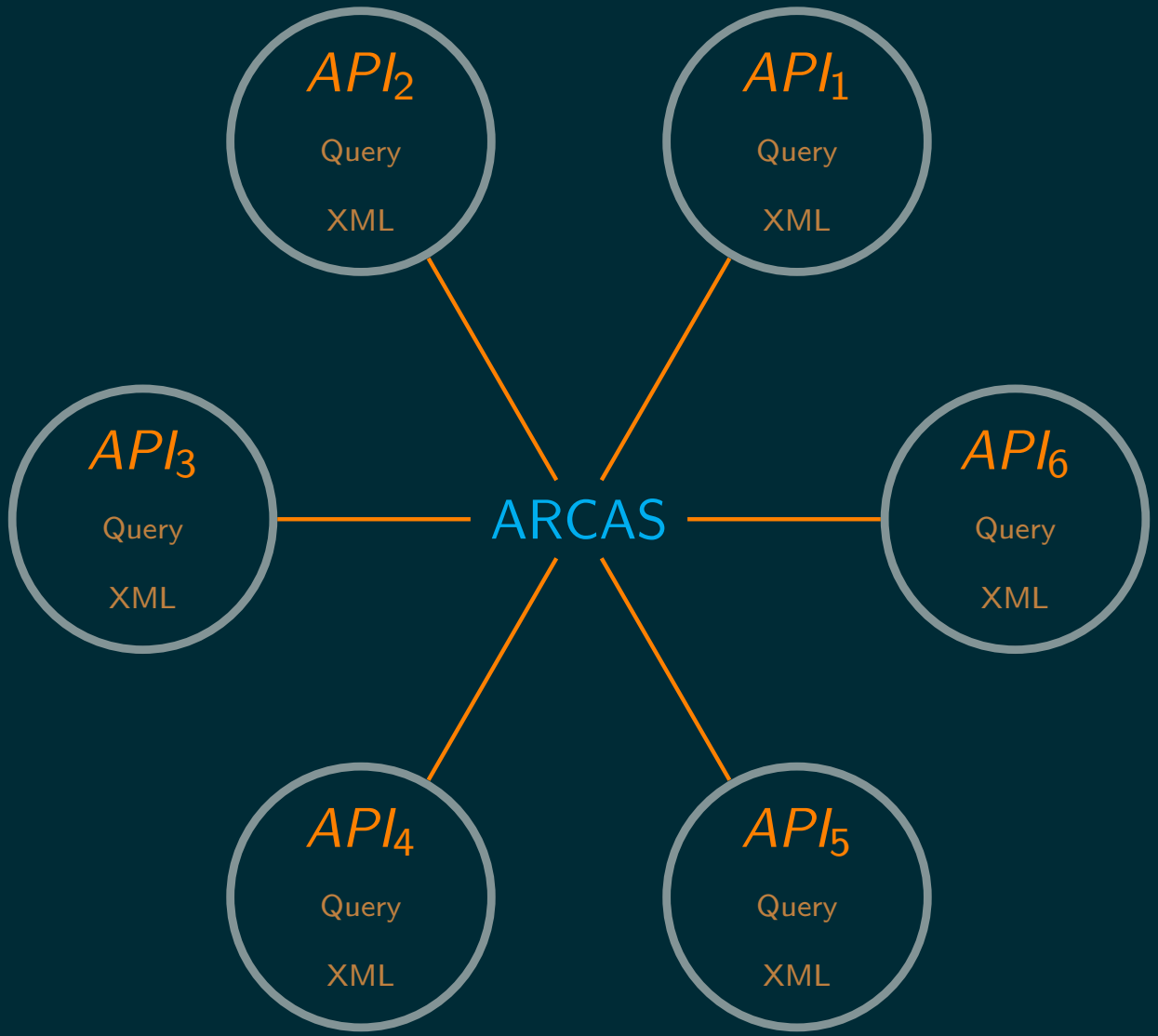
API_5
Query
XML


API_2
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XML
API_1
Query
XML
API_3
Query
XML
ARCAS
API_6
Query
XML
API_4
Query
XML
API_5
Query
XML

```
$ pip install arcas
```

```
>>> import arcas

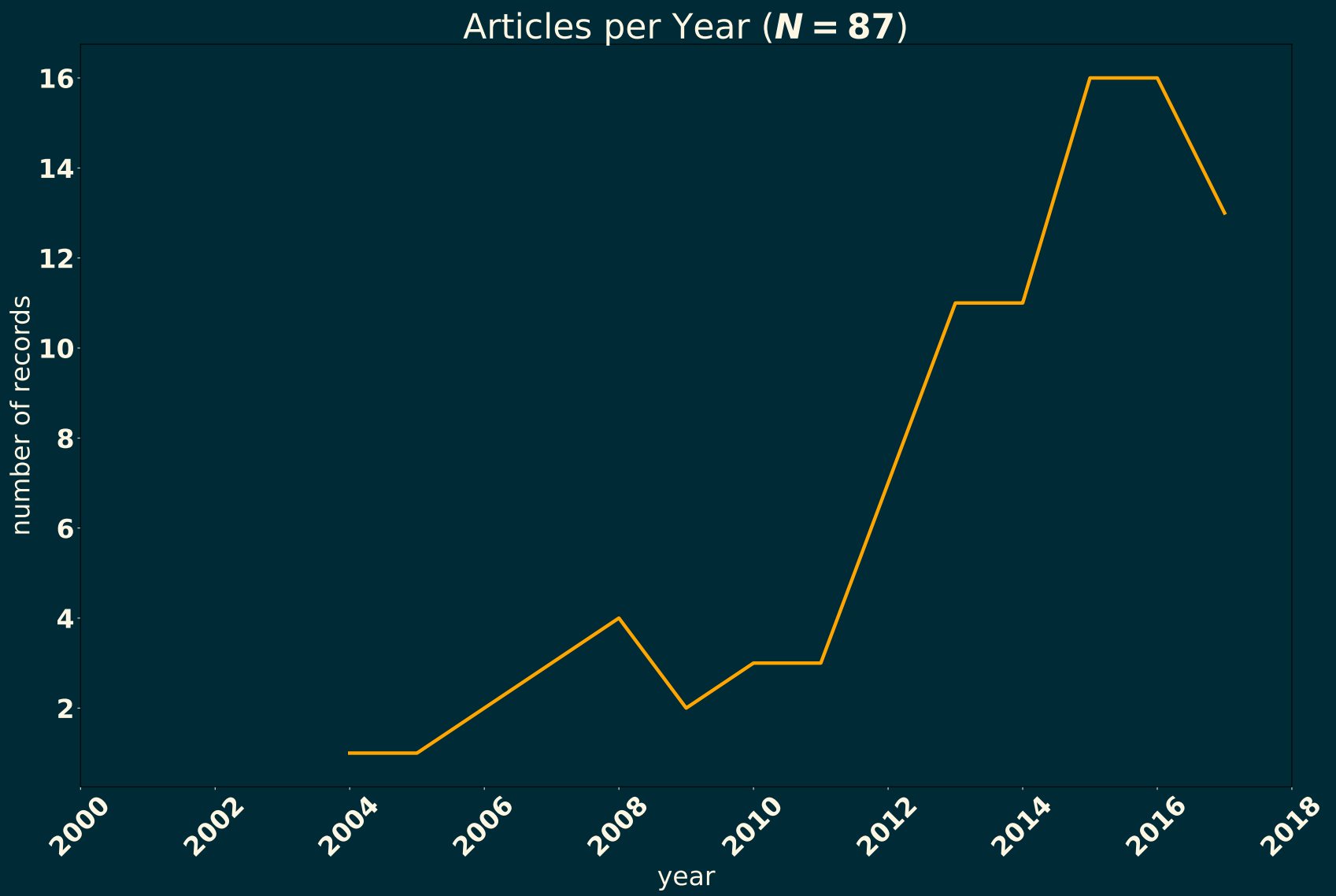
>>> api = arcas.Arxiv()
>>> parameters = api.parameters_fix(
...     title='sustainable software', records=1, start=1)
>>> url = api.create_url_search(parameters)
>>> request = api.make_request(url)
>>> root = api.get_root(request)
>>> raw_article = api.parse(root)

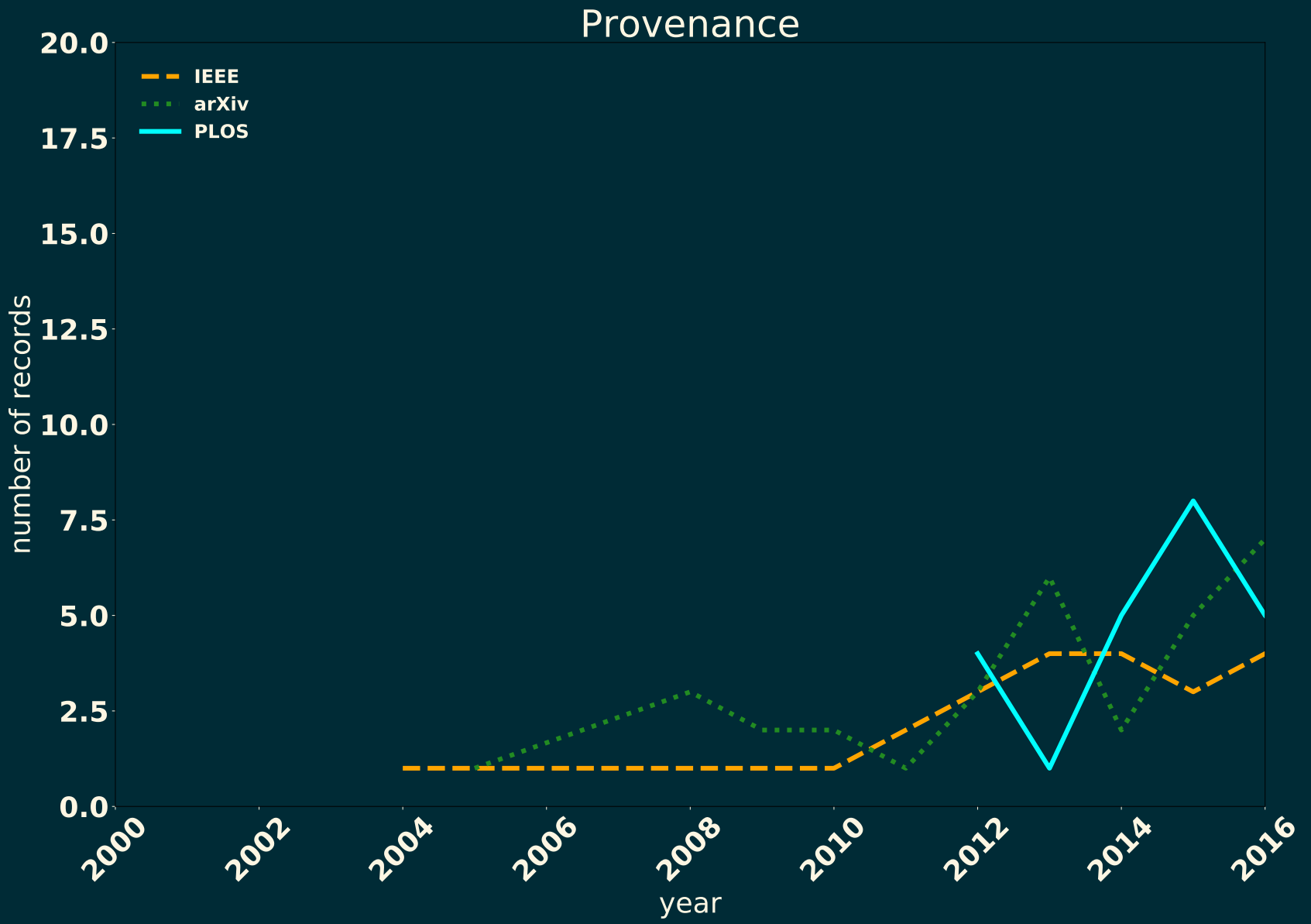
>>> article = api.to_dataframe(raw_article[0])
>>> api.export(article, "result.json")
```

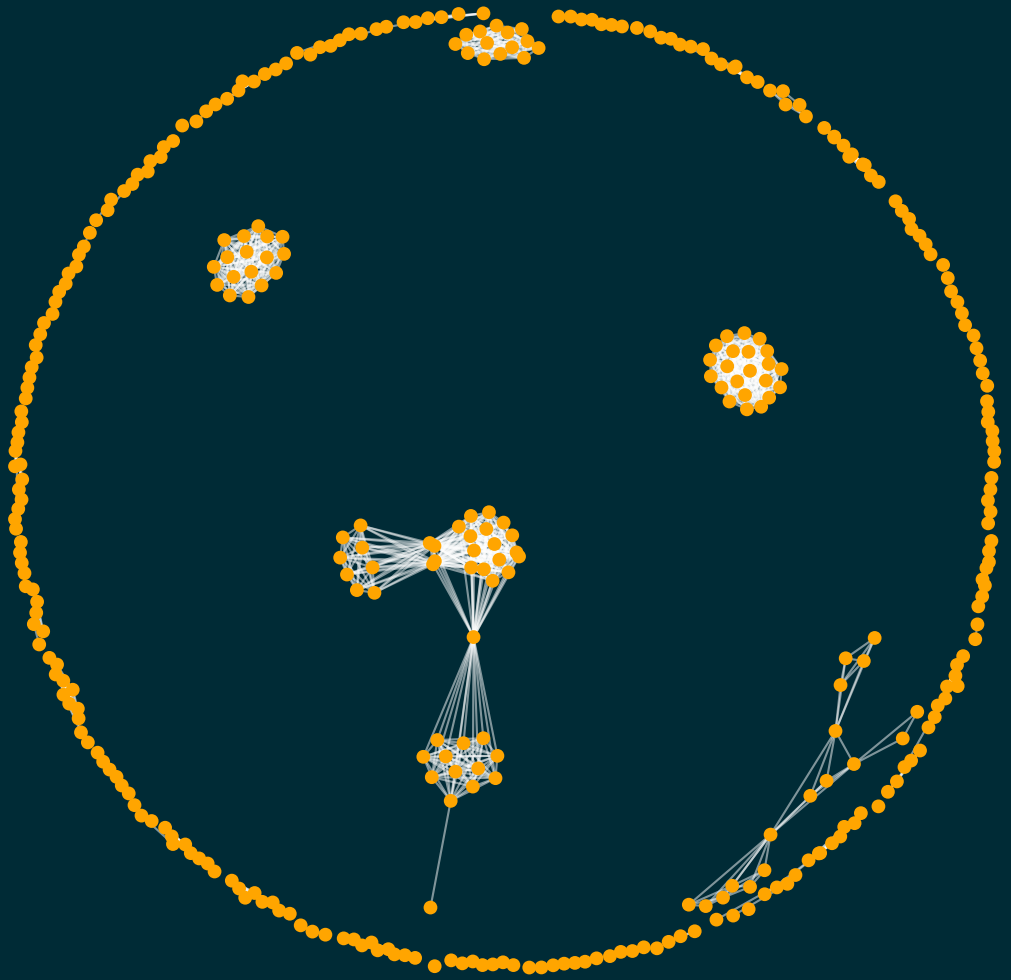
```
{"key":{"0":"Ahern2013"},
 "unique_key":{"0":"698d27415f69258ef122f46b184a77e0"},
 "title":{"0":"VisIt: Experiences with Sustainable Software"},
 "author":{"0":"Sean Ahern","1":"Eric Brugger"},
 "abstract":{"0":"  The success of the VisIt visualization..."},
 "date":{"0":2013},
 "journal":{"0":"arXiv"},
 "provenance":{"0":"arXiv"}}
```

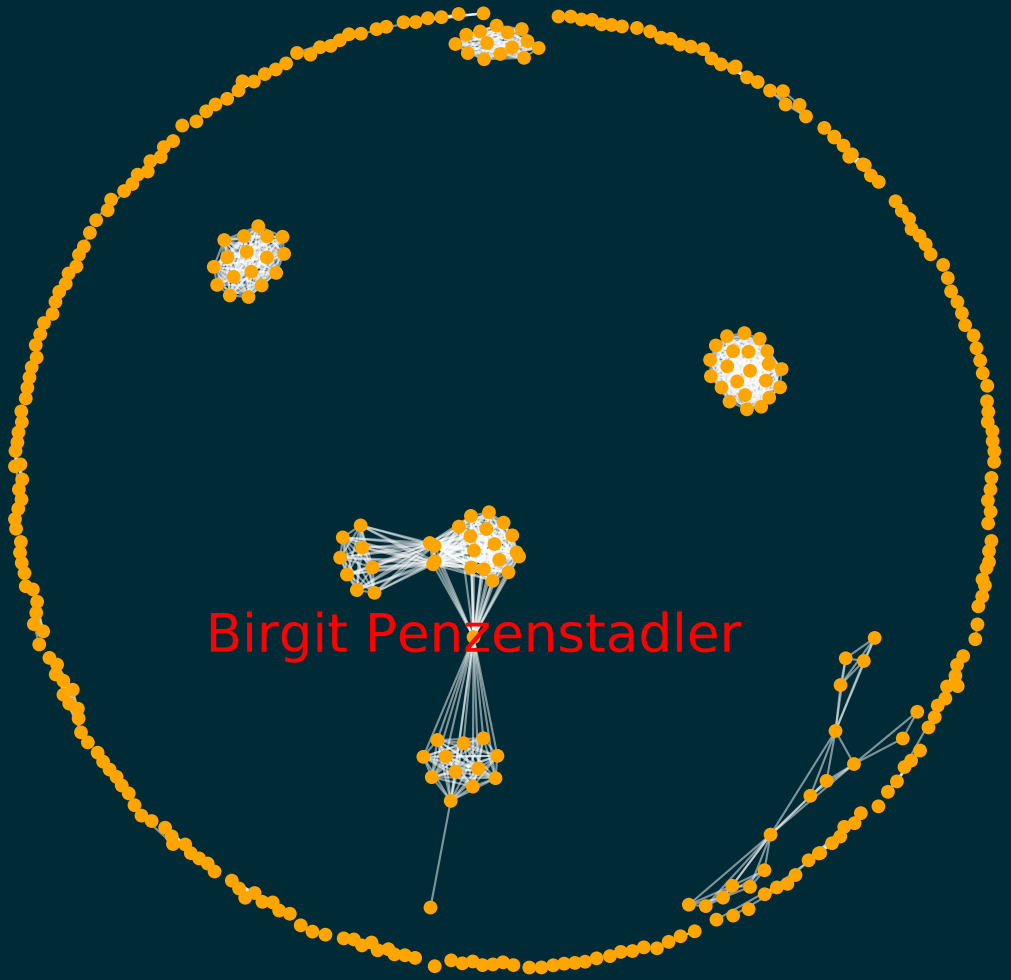
```
>>> for p in [arcas.Arxiv, arcas.Nature, arcas.Ieee, arcas.Plos]:
...     api = p()
...     parameters = api.parameters_fix(
...          title='sustainable software', records=1, start=1)
...     url = api.create_url_search(parameters)
...     request = api.make_request(url)
...     root = api.get_root(request)
...     raw_article = api.parse(root)
...     try:
...         for art in raw_article:
...             article = api.to_dataframe(art)
...         api.export(article, "result_from_{}.json".format(
...             api.__class__.__name__))
...     except TypeError:
...         pass
```

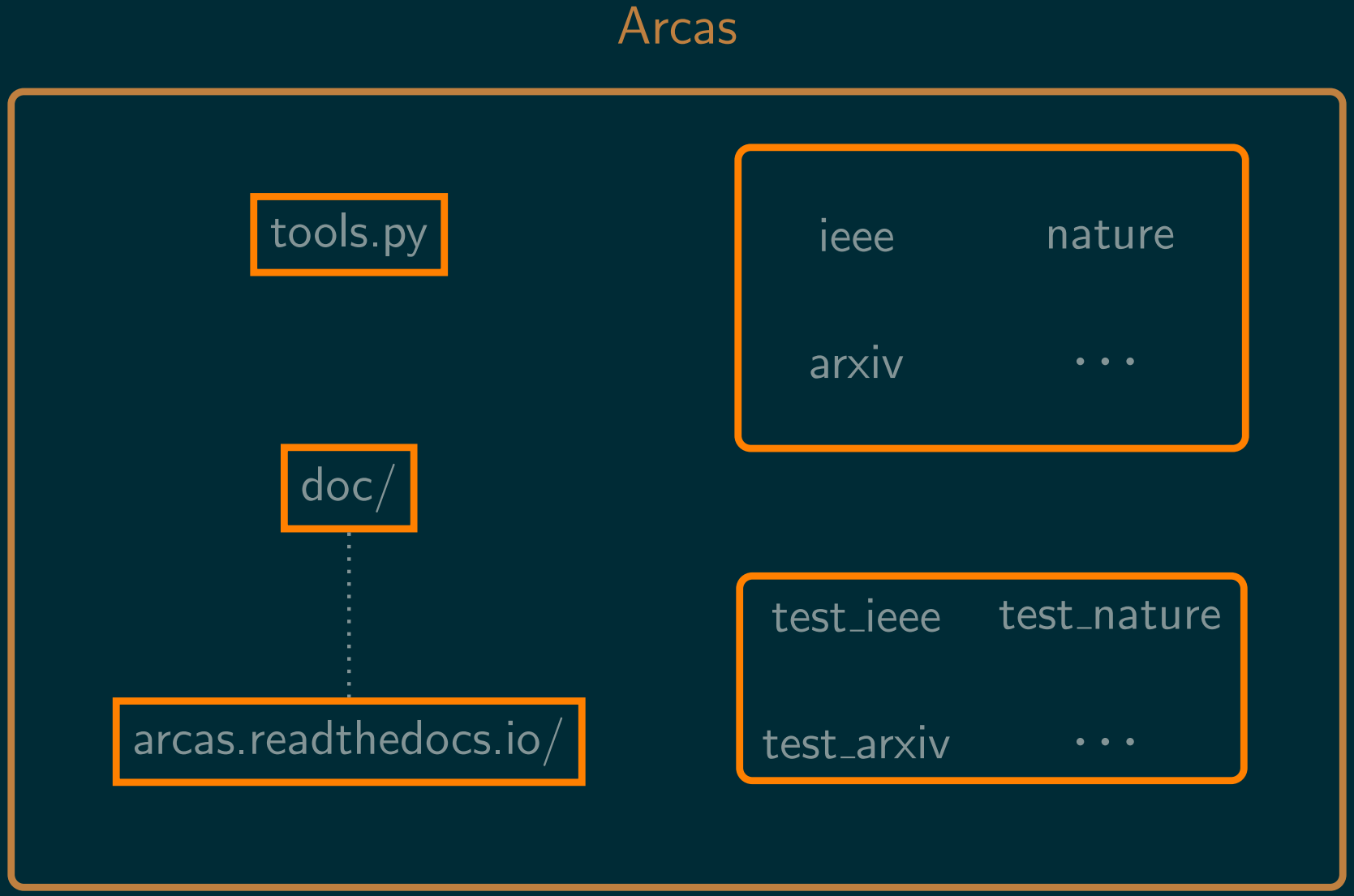
$$15\text{min} + 5\text{min} = 20\text{min}$$


Articles per Year (N = 87)
number of records
16
14
12
10
8
6
4
2
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
year


Provenance
IEEE
arXiv
PLOS
number of records
year
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
2000
2002
2004
2006
2008
2010
2012
2014
2016




Birgit Penzenstadler


Arcas
tools.py
doc/
arcas.readthedocs.io/
ieee
nature
arxiv
• • •
test_ieee
test_nature
test_arxiv
• • •

```
$ arcas_scrape --version
Arcas 0.0.3
```

```
$ arcas_scrape -p arxiv -t "Sustainable Software" -r 1
http://export.arxiv.org/api/query?search_query=ti:Sustainable
Software&max_results=1&start=1
```

@NikoletaGlyn
https://github.com/ArcasProject/Arcas
https://nikoleta-v3.github.io