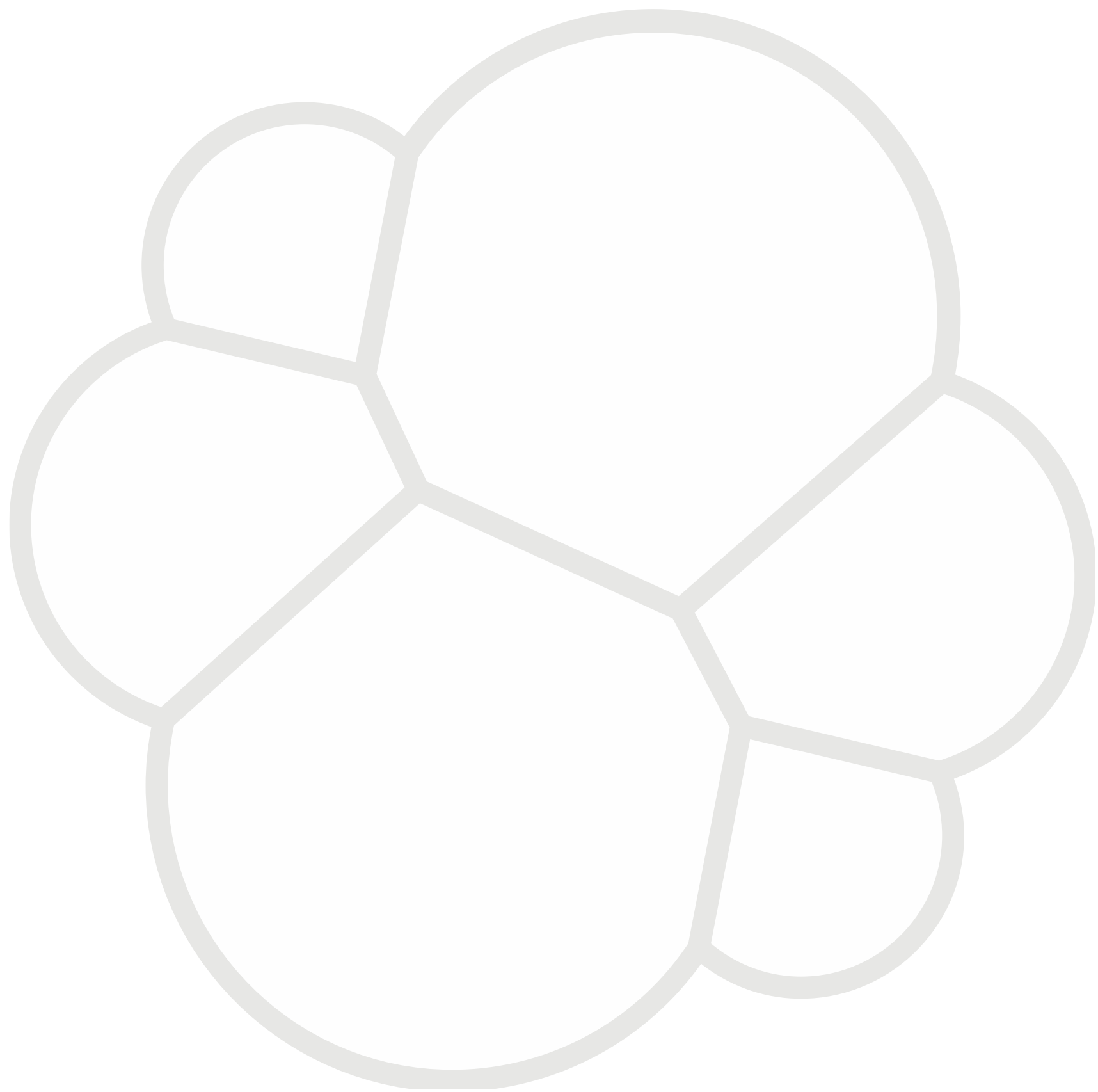


Elasticsearch for Lua Developers

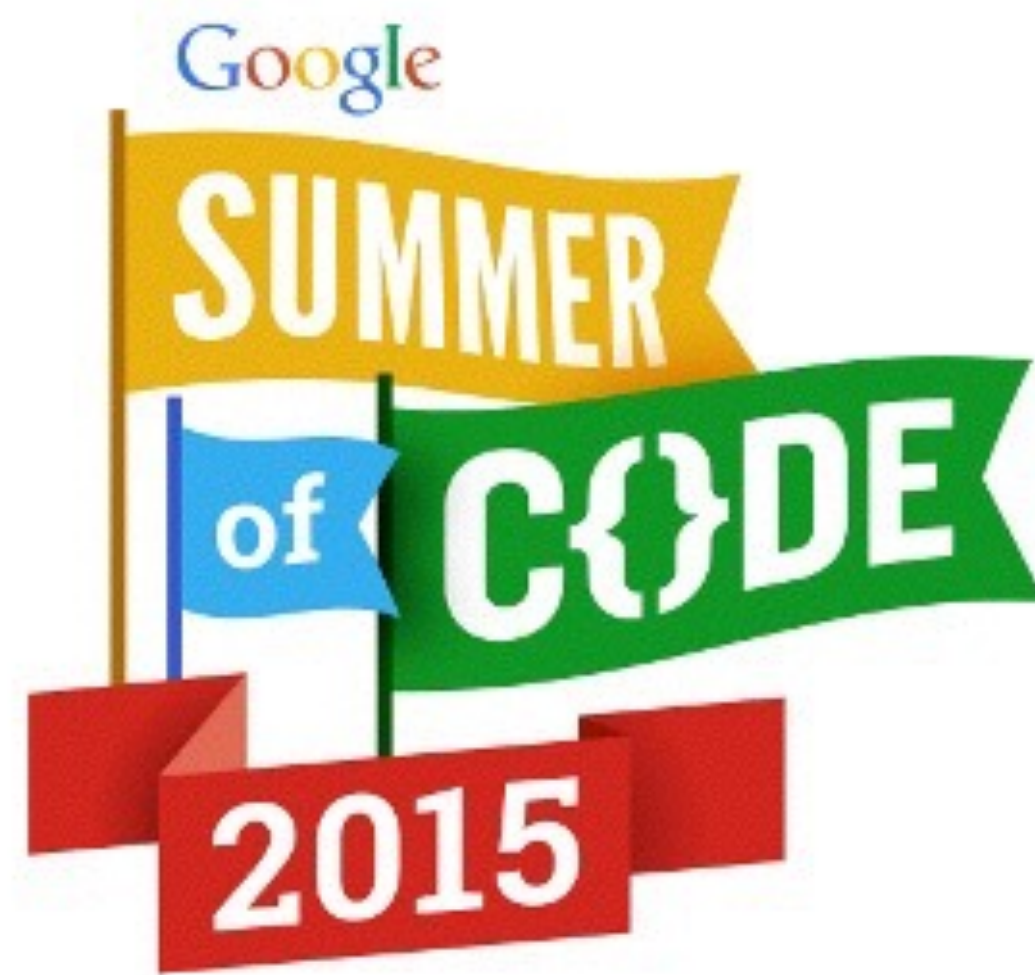


Pablo Musa
pablo@elastic.co





+



+



elastic

Me

Pablo Musa
Educational Engineer @ Elastic

Which student?

- 5 interested students
- 3 very good proposals
- Key Points:
 - Background (Lua, Elasticsearch, Open Source)
 - Availability (how many hours per week)
 - Future (development likelihood after GSoC)

3rd year computer science student at IIT Roorkee

Active participant in CTFs. Also, a developer and challenge setter of Backdoor CTF.

(<http://backdoor.sdslabs.co/>)

Dhaval Kapil

<https://dhavalkapil.com/>

Mostly **self-taught** himself by **reading books** and **online articles**.

Passionate about **networking, security** and **development**

Agenda

- Elasticsearch
- Elasticsearch & Lua
- elasticsearch-lua
- WERpapers
- Elastic

Elasticsearch is ...

Elasticsearch is...

an open source, distributed, scalable,
highly available, document-oriented, RESTful
full text search engine
with soft real-time search and analytics capabilities

Elasticsearch is...

an **open source**, distributed, scalable, highly available, document-oriented, RESTful, full text search engine with real-time search and analytics capabilities

Apache 2.0 License

<https://www.apache.org/licenses/LICENSE-2.0>

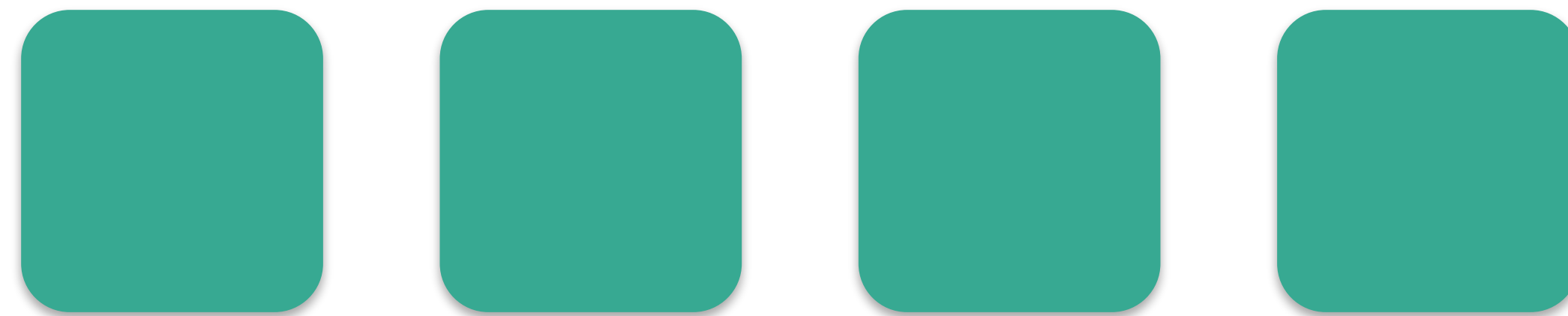
Elasticsearch is...

an open source, **distributed, scalable**, highly available, document-oriented, RESTful, full text search engine with real-time search and analytics capabilities



Elasticsearch is...

an open source, **distributed, scalable**, highly available, document-oriented, RESTful, full text search engine with real-time search and analytics capabilities



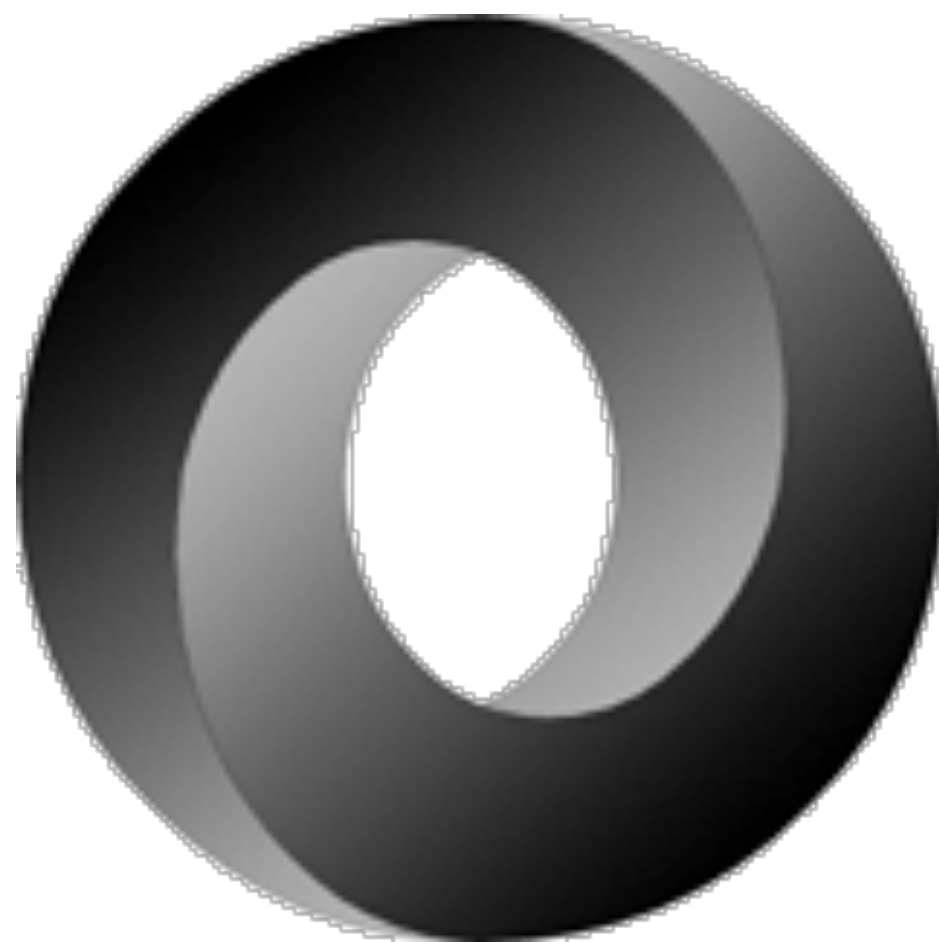
Elasticsearch is...

an open source, distributed, scalable, **highly available**, document-oriented, RESTful, full text search engine with real-time search and analytics capabilities



Elasticsearch is...

an open source, distributed, scalable, highly available, **document-oriented**, RESTful, full text search engine with real-time search and analytics capabilities



Source: <http://json.org/>

```
{  
  "name" : "Webinar"  
  "geo" : {  
    "city" : "Amsterdam",  
    "lat" : 4.85, "lon" : 52.34  
  }  
}
```

Elasticsearch is...

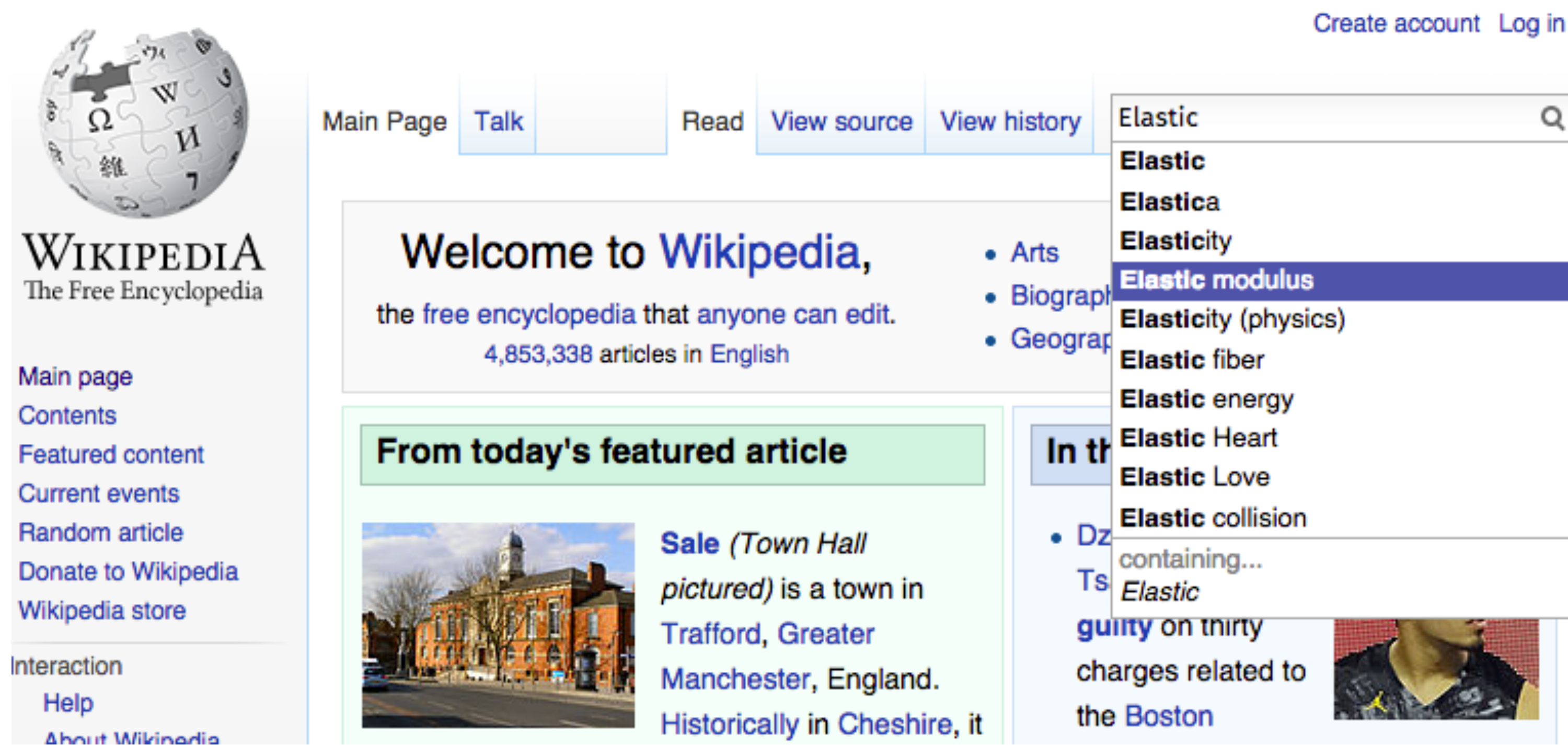
an open source, distributed, scalable, highly available, document-oriented, **RESTful**, full text search engine with real-time search and analytics capabilities



Source: <https://httpwg.github.io/asset/http.svg>

Elasticsearch is...

an open source, distributed, scalable, highly available, document-oriented, RESTful, **full text search engine** with real-time search and analytics capabilities



The image shows a screenshot of the Wikipedia homepage. On the left is the Wikipedia logo and navigation links. The main content area features a 'Welcome to Wikipedia' message and a 'From today's featured article' section with a photo of Sale, Greater Manchester. A search bar at the top right contains the text 'Elastic', and a dropdown menu is open, listing various search results such as 'Elastic modulus', 'Elasticity (physics)', and 'Elastic collision'. The dropdown menu is currently highlighting 'Elastic modulus'.

Elasticsearch is...

an open source, distributed, scalable, highly available, document-oriented, RESTful, full text search engine with **real-time search and analytics capabilities**



Getting up and running... is easy

```
$ wget https://download.elastic.co/elasticsearch/elasticsearch/elasticsearch-1.7.1.tar.gz  
$ tar -zxvf elasticsearch-1.7.1.tar.gz  
$ cd elasticsearch-1.7.1  
$ ./bin/elasticsearch
```

<http://localhost:9200>

Elasticsearch & Lua

About the Project

- 3-month project
- A "complete" Lua client to access the Elasticsearch REST API
- Influence of official clients
- Respect the student

Elasticsearch Clients Design Principles

"Nobody should have a reason not to use the client"

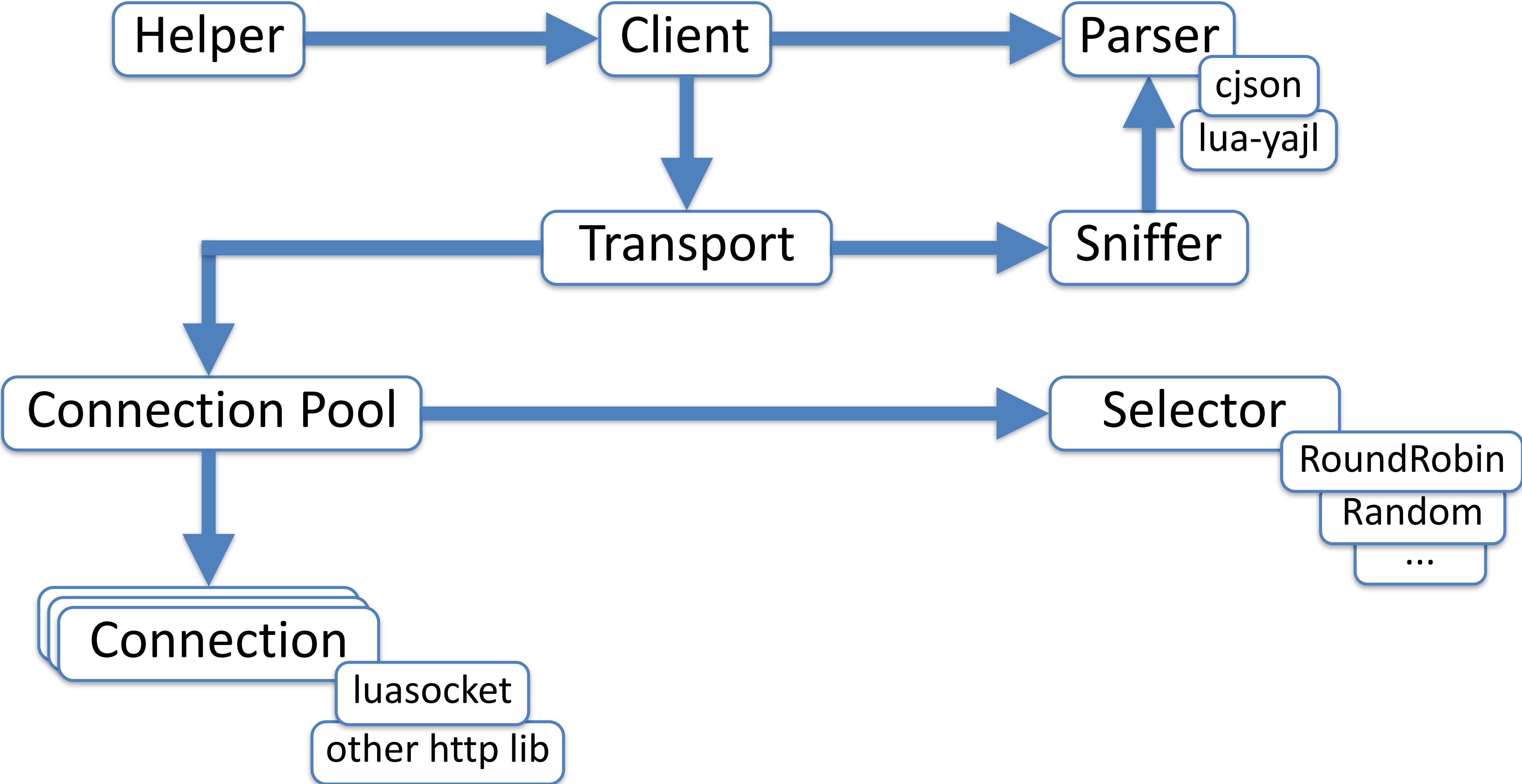
We have no opinions

Respect the language

Much more than just a "JSON and HTTP wrapper"

- Distributed systems
 - sniffer
 - selector
- Add Features
 - reindex
 - common syntax

High Level Architecture



`elasticsearch-lua`

Lua vs JSON

```
{
  title      = "A Requirements Elicitation Approach Based in Templates and Patterns",
  author     = "A. Durán Toro",
  add_authors = { "B. Bernárdez Jiménez", "A. Ruiz Cortés", "M. Toro Bonilla" },
  key_words  = { "requirements engineering", "requirements elicitation" },
  language   = "en",
  conference = "WER99",
}
```

```
{
  "title"      : "A Requirements Elicitation Approach Based in Templates and Patterns",
  "author"     : "A. Durán Toro",
  "add_authors" : [ "B. Bernárdez Jiménez", "A. Ruiz Cortés", "M. Toro Bonilla" ],
  "key_words"  : [ "requirements engineering", "requirements elicitation" ],
  "language"   : "en",
  "conference" : "WER99",
}
```


CRUD

```
local paper = {  
  title = "A Requirements Elicitation Approach Based in Templates and Patterns",  
  ...  
}
```

```
local elasticsearch = require"elasticsearch"  
local client = elasticsearch.client() -- use default configs  
local r, e = client:index(  
  index = "papers", type = "wer", id = 1, body = paper  
)
```

```
local r, e = client:get( { index = "papers", type = "wer", id = 1 } )
```

```
local r, e = client:update(  
  index = "papers", type = "wer", id = 1, body = { doc = { title = "Updated Title" } }  
)
```

```
local r, e = client:delete( { index = "papers", type = "wer", id = 1 } )
```

Searching

```
local response = client.search( { index = "papers" type = "wer" q = "requirements" } )
{
  took = 1.0, timed_out = false,
  _shards = { total = 5.0, successful = 5.0, failed = 0.0 },
  hits = {
    total = 1.0, max_score = 0.17673586,
    hits = [ {
      _index = "papers", "_type": "wer", "_id": "1",
      _score = 0.17673586,
      _source = {
        title = "A Requirements Elicitation Approach Based in Templates and Patterns",
        key_words = { "requirements engineering", "requirements elicitation" },
        year = "2013"
      }
    }
  ]
}
}
```

Why Elasticsearch?



Ibero-american community of researchers on Requirements Engineering

- Dedicated site to the WER publications
- Apache + CGI Lua + **MySQL** + **Google Search**





Not for full text search

- Slow
- No text analysis
- No scoring
- No auto-completion
- ...

Google™ Custom Search

Search

← → ↻  cse.google.com/cse?cx=009472974280876244117:xpn-pdgov3q&q=requireme... 

Google pesquisa personalizada

requirements

Pesquisar

Aproximadamente 262 resultados (0,45 segundos)

[Research Findings on Empirical Evaluation of Requirements ...](#)

Formato do arquivo: PDF/Adobe Acrobat

Research Findings on Empirical Evaluation of **Requirements**. Specifications Approaches.

Nelly Condori-Fernandez. 1. , Maya Daneva. 2. , Klaas Sikkel. 2.

wer.inf.puc-rio.br/WERpapers/artigos/artigos.../fernandez.pdf

[Metamodeling for Requirements Reuse](#)

Formato do arquivo: PDF/Adobe Acrobat

description make **requirements** reuse difficult. In this paper we present a meta- model to integrate some different types of semiformal diagrams into a require-.

[wer.inf.puc-rio.br/wer02/zip/Metamodeling_reuse\(6\).pdf](http://wer.inf.puc-rio.br/wer02/zip/Metamodeling_reuse(6).pdf)

- Implement your own search result page
- Relevancy based on downloads, title, abstract, etc.
- Auto-complete, Highlighting, Geo, etc.
- Everything in Lua

Elasticsearch is not Alone

Elastic



Elasticsearch
Store, search, analyze

Logstash
Collect, parse and enrich data

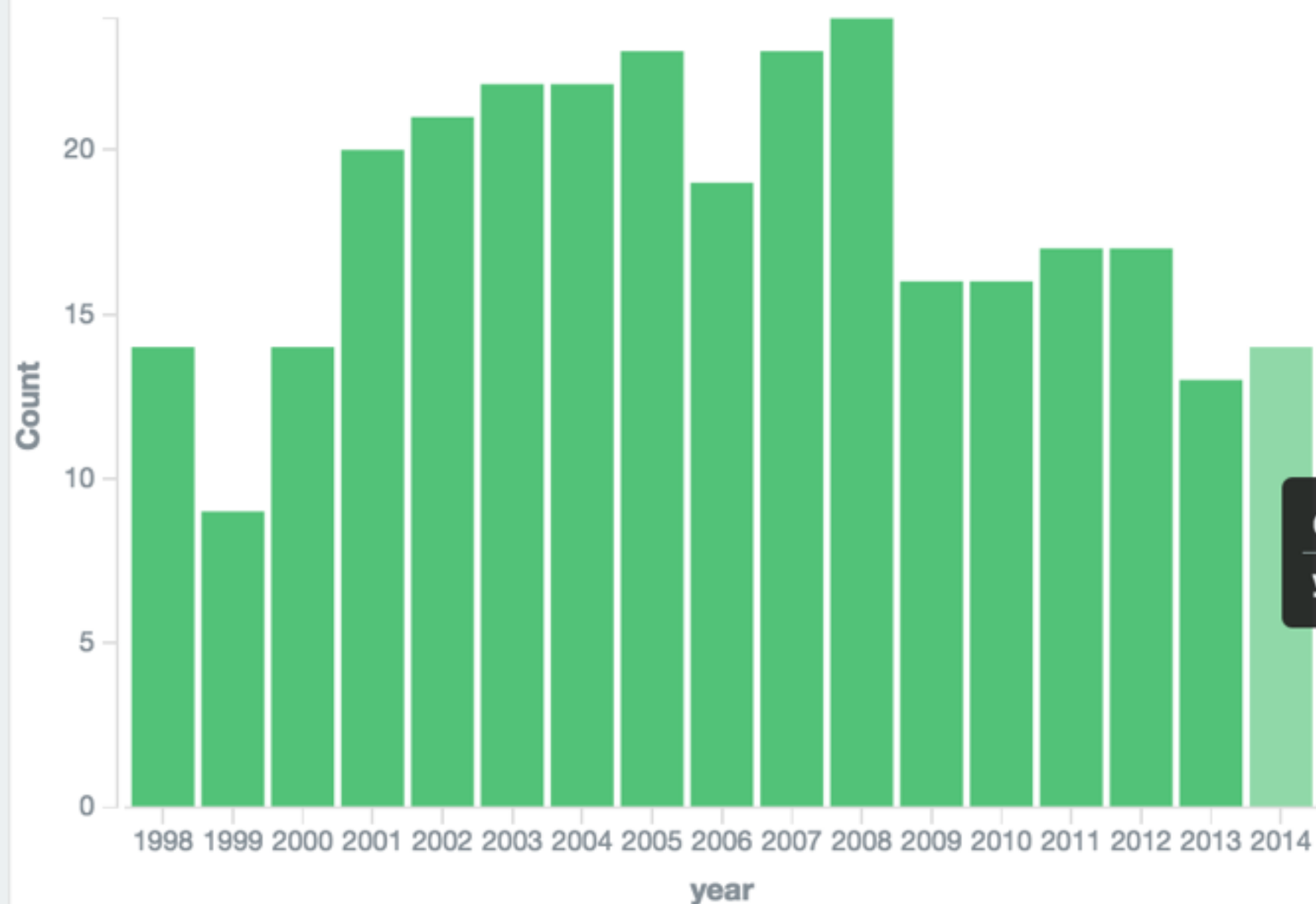
Kibana
Visualize and explore data

Found
Elasticsearch as a Service

Werpapers

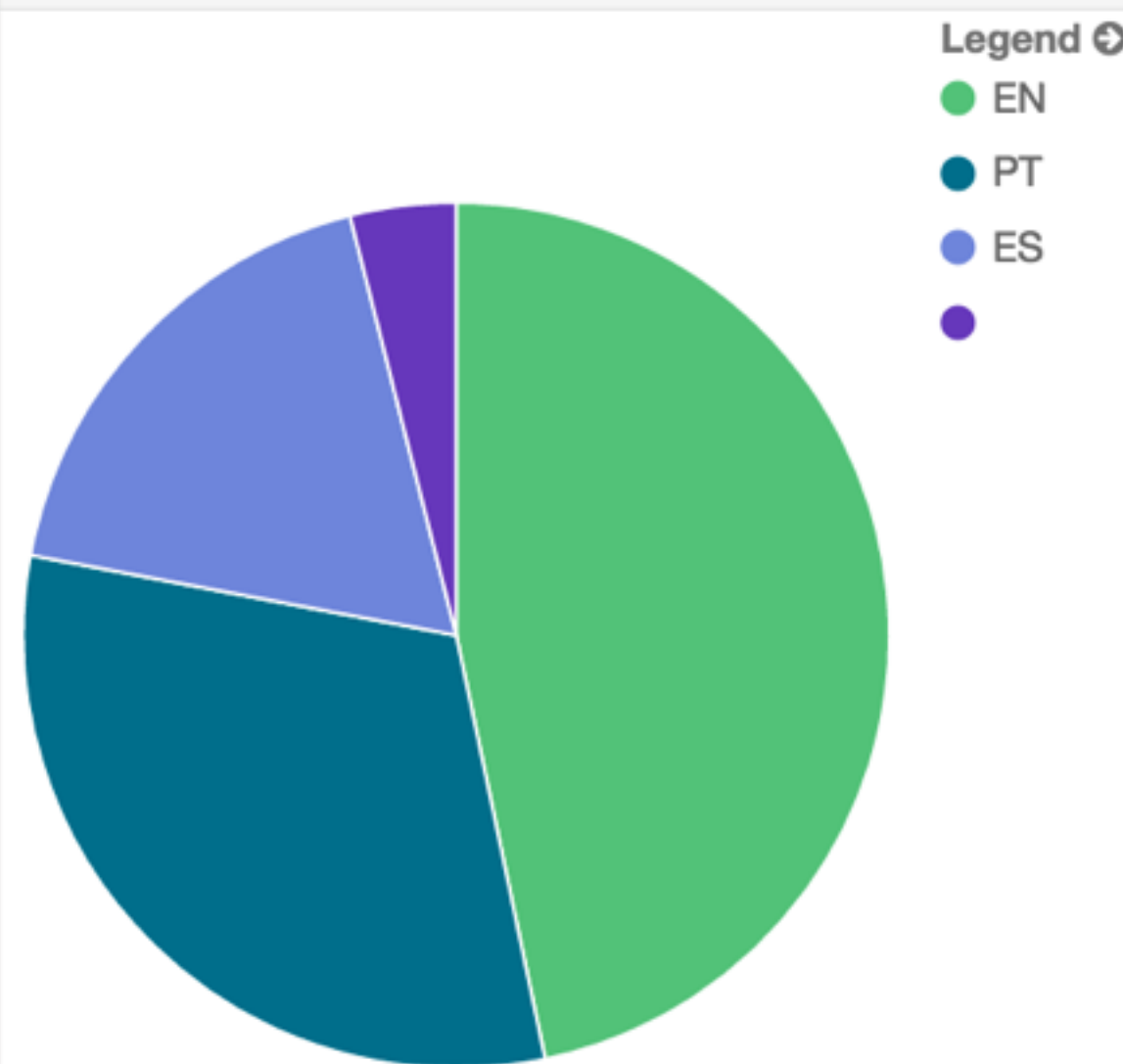


Papers per Year



Count 14
year 2014

Languages Share



Top Languages

Top 0 language	Count
EN	142
PT	95
ES	55
	12

Top Authors

Top 4 author.raw	Count
Luiz Marcio Cysneiros	6
Carla Silva	4
Edna Pacheco Zanlorenci	4
Graciela Hadad	4

Top Keywords

Top 4 key_words	Count
requirements	55
requisitos	43
software	29
engineering	23

Top Keywords - EN

Top 4 key_words	Count
requirements	45
engineering	18
development	10
model	9

Top Keywords - PT

Top 4 key_words	Count
requisitos	32
software	17
engenharia	16
modelagem	8

Top Keywords - ES

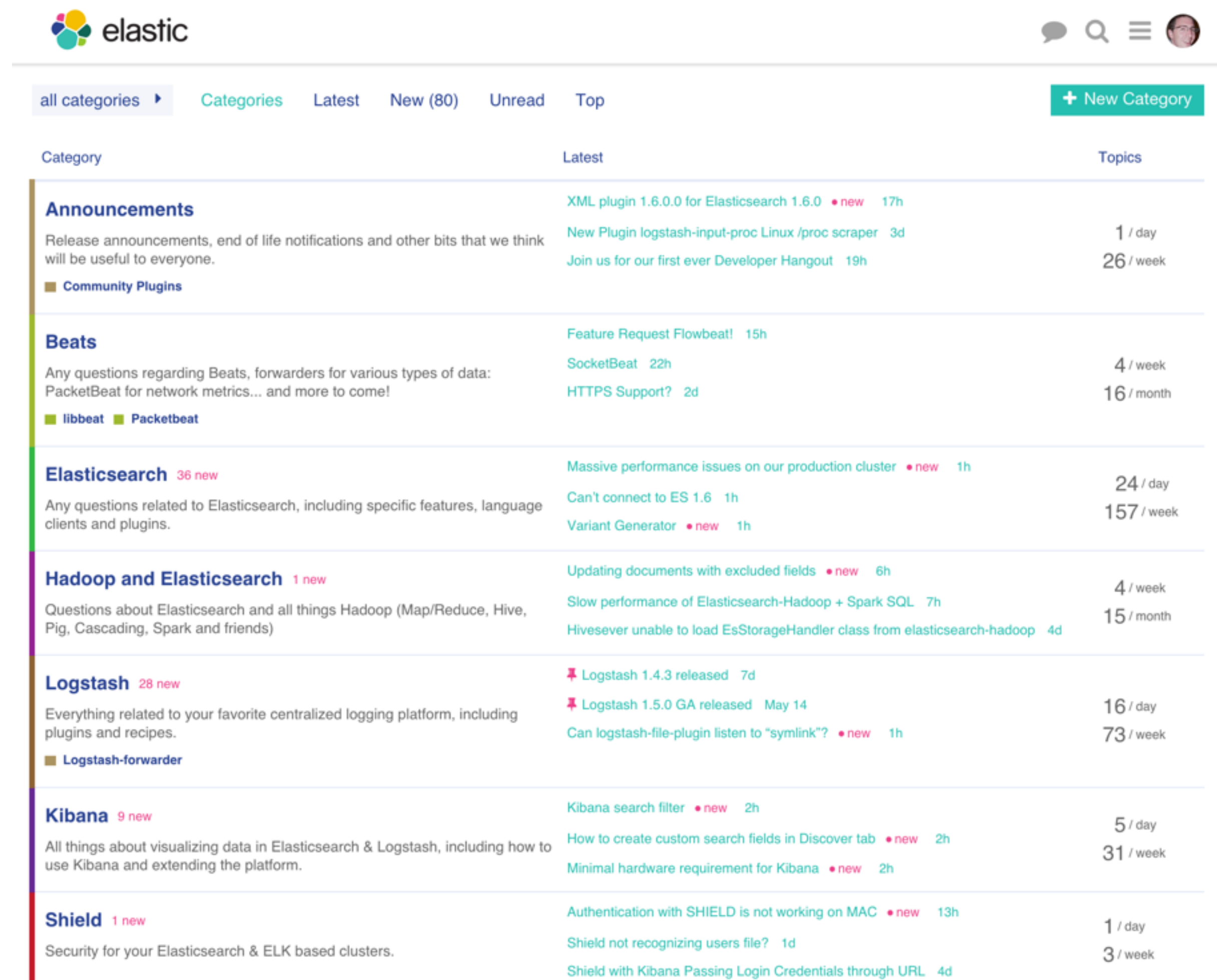
Top 4 key_words	Count
requisitos	11
escenarios	8
ingeniería	6
léxico	5

Community, community, community

- Forums for all products

- Issue tracker

- User groups & Meetups

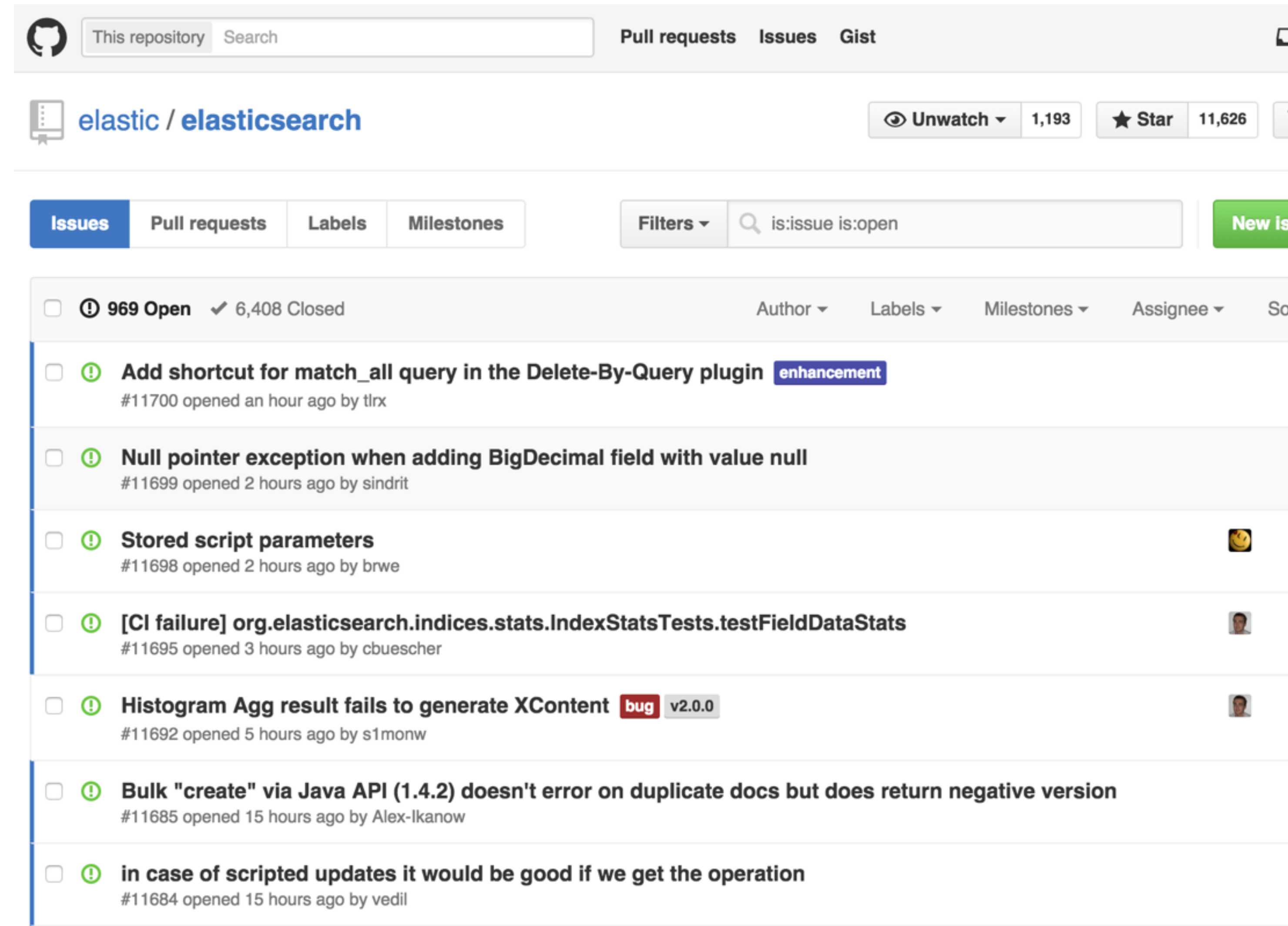


The screenshot displays the Elastic community forums interface. At the top, there's the Elastic logo and navigation options like 'all categories', 'Categories', 'Latest', 'New (80)', 'Unread', and 'Top'. A '+ New Category' button is also visible. The main content is a table of forum categories:

Category	Latest	Topics
Announcements Release announcements, end of life notifications and other bits that we think will be useful to everyone. Community Plugins	XML plugin 1.6.0.0 for Elasticsearch 1.6.0 • new 17h New Plugin logstash-input-proc Linux /proc scraper 3d Join us for our first ever Developer Hangout 19h	1 / day 26 / week
Beats Any questions regarding Beats, forwarders for various types of data: PacketBeat for network metrics... and more to come! libbeat Packetbeat	Feature Request Flowbeat! 15h SocketBeat 22h HTTPS Support? 2d	4 / week 16 / month
Elasticsearch 36 new Any questions related to Elasticsearch, including specific features, language clients and plugins.	Massive performance issues on our production cluster • new 1h Can't connect to ES 1.6 1h Variant Generator • new 1h	24 / day 157 / week
Hadoop and Elasticsearch 1 new Questions about Elasticsearch and all things Hadoop (Map/Reduce, Hive, Pig, Cascading, Spark and friends)	Updating documents with excluded fields • new 6h Slow performance of Elasticsearch-Hadoop + Spark SQL 7h Hivesever unable to load EsStorageHandler class from elasticsearch-hadoop 4d	4 / week 15 / month
Logstash 28 new Everything related to your favorite centralized logging platform, including plugins and recipes. Logstash-forwarder	Logstash 1.4.3 released 7d Logstash 1.5.0 GA released May 14 Can logstash-file-plugin listen to "symlink"? • new 1h	16 / day 73 / week
Kibana 9 new All things about visualizing data in Elasticsearch & Logstash, including how to use Kibana and extending the platform.	Kibana search filter • new 2h How to create custom search fields in Discover tab • new 2h Minimal hardware requirement for Kibana • new 2h	5 / day 31 / week
Shield 1 new Security for your Elasticsearch & ELK based clusters.	Authentication with SHIELD is not working on MAC • new 13h Shield not recognizing users file? 1d Shield with Kibana Passing Login Credentials through URL 4d	1 / day 3 / week

Community, community, community

- Forums for all products
- Issue tracker
- User groups & Meetups



The screenshot shows the GitHub interface for the `elastic/elasticsearch` repository. At the top, there's a search bar for the repository and navigation links for Pull requests, Issues, and Gist. Below that, the repository name is displayed along with 'Unwatch' (1,193) and 'Star' (11,626) buttons. The 'Issues' tab is selected, showing a list of open issues. The list includes:

- 969 Open, 6,408 Closed
- Issue #11700: Add shortcut for match_all query in the Delete-By-Query plugin (enhancement)
- Issue #11699: Null pointer exception when adding BigDecimal field with value null
- Issue #11698: Stored script parameters
- Issue #11695: [CI failure] org.elasticsearch.indices.stats.IndexStatsTests.testFieldDataStats
- Issue #11692: Histogram Agg result fails to generate XContent (bug v2.0.0)
- Issue #11685: Bulk "create" via Java API (1.4.2) doesn't error on duplicate docs but does return negative version
- Issue #11684: in case of scripted updates it would be good if we get the operation

Community, community, community

- Forums for all products
- Issue tracker
- User groups & Meetups



meetup Find a Meetup Group Start a Meetup Group

ElasticSearch Meetups

Find out what's happening in ElasticSearch Meetup groups around the world and start meeting up with the ones near you.



Powered by Leaflet

Groups	Members	Interested	Cities	Countries
114	27,667	2,229	81	29

Next Steps

+Use cases

+Real applications

+Tests

Automate Integration with Elasticsearch

Make it an official client

Thanks for listening! Questions?

Pablo Musa
pablo@elastic.co

References

<https://github.com/DhavalKapil/elasticsearch-lua>

<https://dhavalkapil.com/blogs/Elasticsearch-Lua/>

<http://lua-users.org/wiki/JsonModules>

<http://wer.inf.puc-rio.br/WERpapers/>