Solr for newbies

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code{4}lib
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Workshop Outline

1. Introduction
(concepts, quick tour, installation)

2. Schema
(fields, field types, query/ index analyzers)

3. Searching
(query parsers, search params, facets, highlighting)

4. Miscellaneous
(directories, configuration, replication, synonyms)

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Useful Links

GitHub repo (slides, tutorial, sample data)

`https://github.com/hectorcorrea/solr-for-newbies`

Google doc (links to public Solr and other stuff)

`http://tinyurl.com/solr-for-newbies`

Code4Lib code of conduct

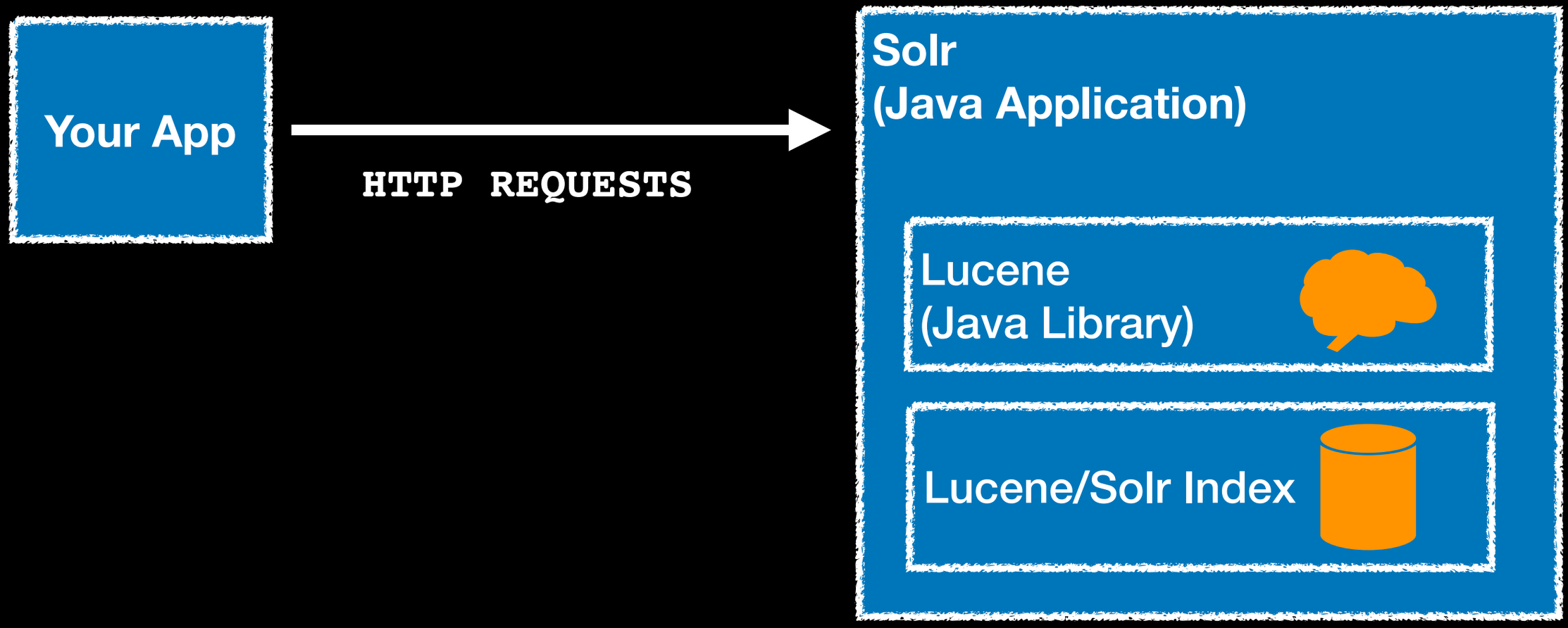
`http://2018.code4lib.org/conduct/`

What is Solr

“Solr is the popular, blazing-fast,
open source enterprise **search platform**
built on Apache Lucene.”
- Solr’s Home Page

“Solr is a scalable, ready-to-deploy
enterprise **search engine** that’s optimized
to search large volumes of text-centric data
and return results sorted by relevance.”
- Solr in Action [p. 4]

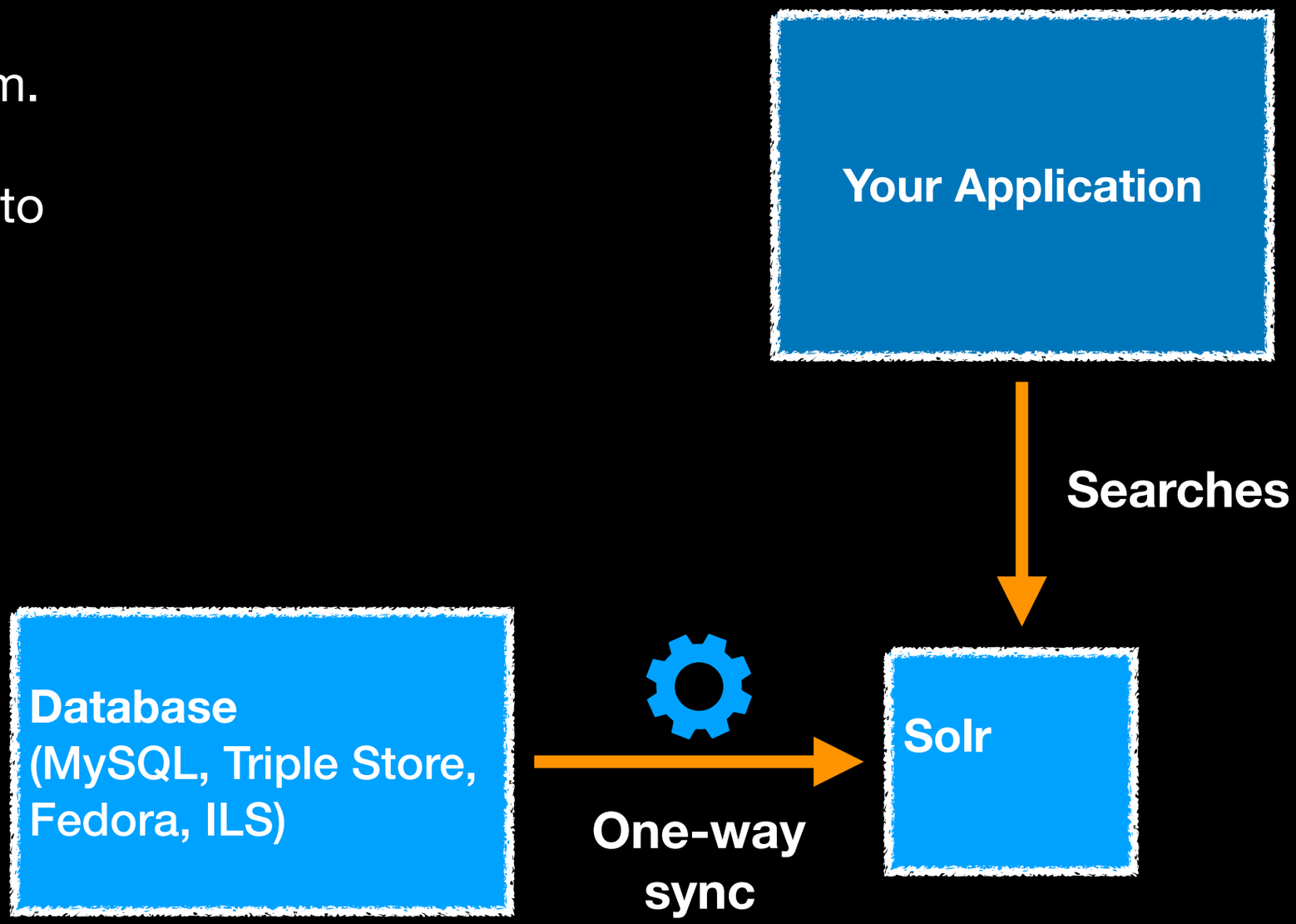
Your App, Solr, and Lucene



Typical Architectures I

Your application searches via Solr, but the data is maintained in another system.

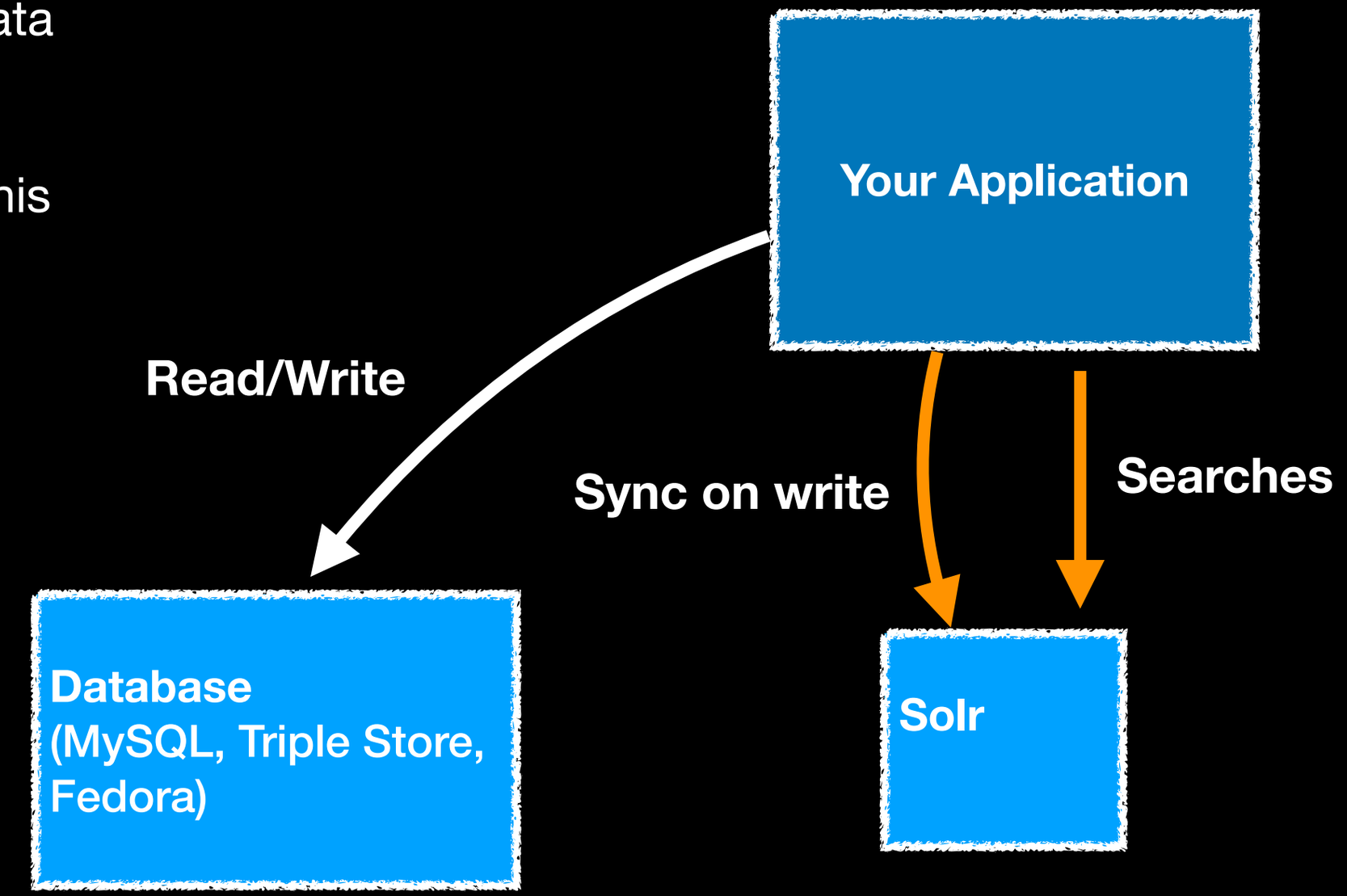
Blacklight applications tend to follow this pattern.



Typical Architectures II

Your application uses a database to maintain the data and Solr for searches.

VIVO and SamVera follow this pattern.



Document Model
(how Solr stores your data)

```
your_data:
[
  {id:"1", title:"DC guide for dogs", subjects: ["animals", guides"]},
  {id:"2", title:"DC tour guide", subjects: ["guides"]},
  {id:"3", title:"cats and dogs", subjects: ["animals"]}
]
```

Relational Model

Document Model

```
solr_doc: {
  id:"1",
  title:"DC guide for dogs",
  subjects: ["animals", guides"]
}
```

Sorl Documents are flat
(i.e. there is no support nested objects)

```
your_data:
{
  id:”9041”,
  title:”Using Qualitative Inquiry to Promote…”,
  authors: [
    {uri:”http://somebody/51", name: “Loya, Karla”},
    {uri:”http://somebody/82", name: “Kimball, Ezekiel”}
  ],
  subjects: [“higher education”, “org theory”]
}
```

data in Solr is flatten

```
solr_doc: {
  id:”9041”,
  title:”Using Qualitative Inquiry to Promote…”,
  authors_uri: [”http://somebody/51”, ”http://somebody/82”],
  authors_name: [“Kimball, Ezekiel”, “Loya, Karla”],
  subjects: [“higher education”, “org theory”]
}
```

Inverted Index
(how Solr indexes your data)

```
your_data:
[
  {id:"1", title:"DC guide for dogs"},
  {id:"2", title:"DC tour guide"},
  {id:"3", title:"cats and dogs"}
]
```

Traditional Index

id	title
1	DC guide for dogs
2	DC tour guide
3	cats and dogs

Inverted Index

key	ids
DC	1, 2
guide	1, 2
dogs	1, 3
tour	2
cats	3

Solr Admin - Quick Tour

Solr

- Dashboard
- Logging
- Core Admin
- Java Properties
- Thread Dump

bibdata

- Overview
- Analysis
- Dataimport
- Documents
- Files
- Ping
- Plugins / Stats
- Query
- Replication
- Schema
- Segments info

Request-Handler (qt)

/select

common

q

subjects:medicine

fq

sort

start, rows

0 10

fl

id,title,author,subjects

df

Raw Query Parameters

key1=val1&key2=val2

wt

------

indent off

debugQuery

dismax

edismax

hl

facet

spatial

spellcheck

Execute Query

http://localhost:8983/solr/bibdata/select?fl=id,title,author,subjects&q=subjects:medi


```
{
  "responseHeader":{
    "status":0,
    "QTime":1,
    "params":{
      'q':"subjects:medicine",
      'fl':"id,title,author,subjects",
      '_':"1518201320605"}},
  "response":{"numFound":76,"start":0,"docs":[
      {
        "id":"00012830",
        "title":["The complementary and alternative medicine information s
        "subjects":["Alternative medicine",
          "Alternative Medicine",
          "Alternative Medicine"]},
      {
        "id":"00003310",
        "author":["Allchin, William Henry,"],
        "title":["A manual of medicine,"],
        "subjects":["Medicine"]},
      {
        "id":"00003317",
        "author":["Black, John Janvier,"],
        "title":["Forty years in the medical profession, 1858-1898,"],
        "subjects":["Medicine"]},
      {
        "id":"00005043",
        "author":["Gould, George M."],
        "title":["The student's medical dictionary; including all the word
        "subjects":["Medicine"]},
      {
        "id":"00005150",
        "author":["Stedman, Thomas Lathrop,"],
        "title":["Twentieth century practice; an international encyclopedi
        "subjects":["Medicine"]},
      {
        "id":"00006523",
```

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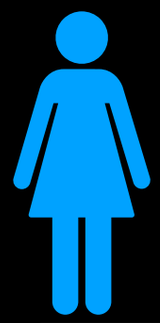
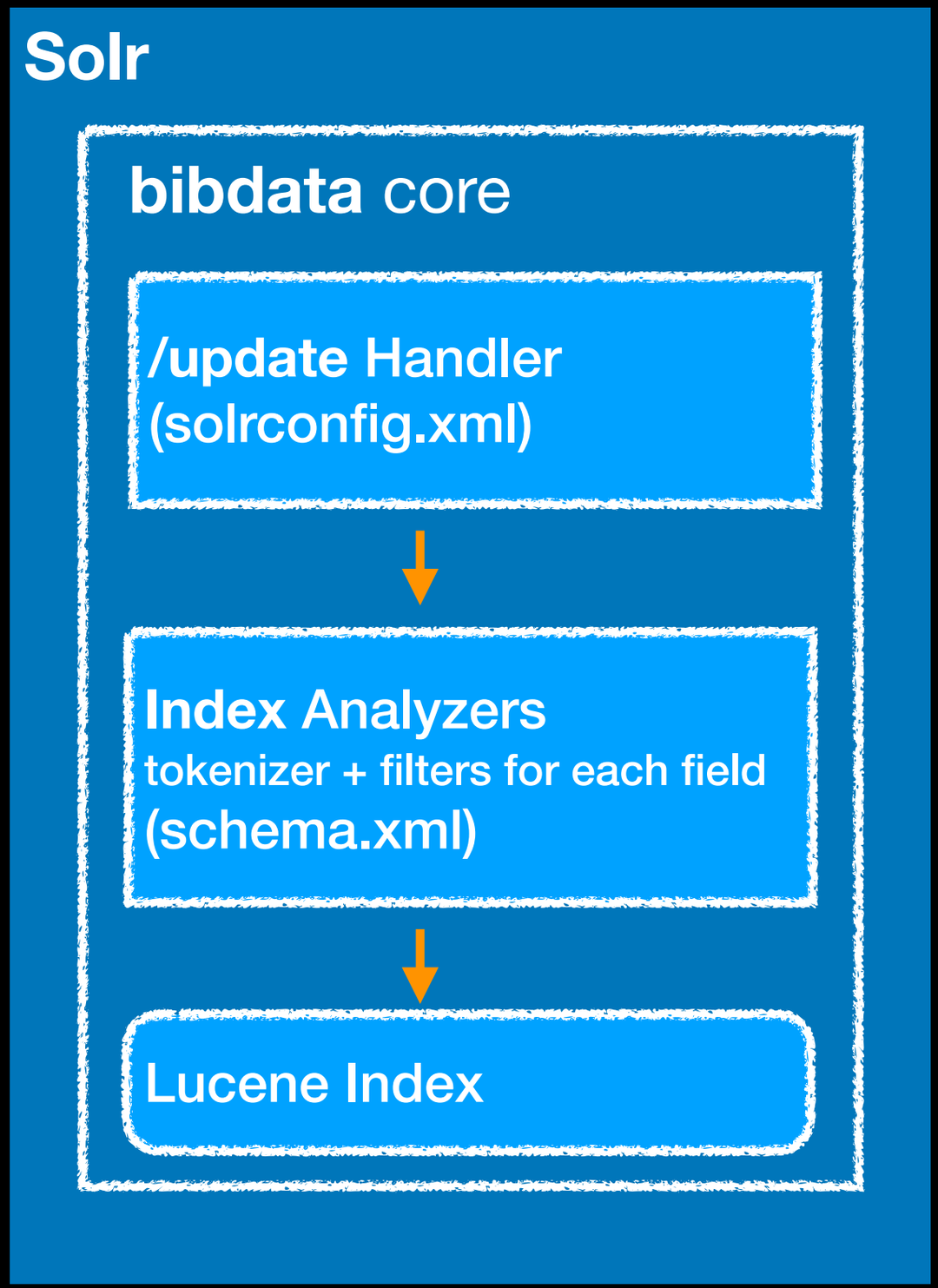
Adding a document to Solr



HTTP POST
http://localhost/solr/**bibdata**/**update**

```
{
  id:"1",
  title:"history of medicine",
  subject: "medicine"
}
```



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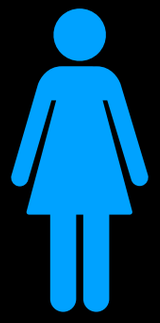
Searching for documents in Solr



HTTP GET
http://localhost/solr/**bibdata**/**select**
?q=subject:medicine

Solr

bibdata core

/select Handler
(solrconfig.xml)

Query Parser - eDisMax

Query Analyzers
tokenizer + filters for each field
(schema.xml)

Lucene Index

Documents
Facets
Highlighting
...

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Thanks and good luck

Stay in touch

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