The Industry Documents Library (IDL) uses Apache Solr to index the document corpus. Users who are interested in accessing the data programmatically can query the Industry Documents Library (IDL) Solr server directly. This allows the user to easily export documents to another system, execute search queries and process search results by program. Data can be exported in these formats: xml, json, python, ruby, php, and csv.

**Individual Documents**

Each document is uniquely identified by an ID. The ID is an alphanumeric string. It consists of 8 characters with four letters followed by four digits, e.g. kylw0221. The ID is not case sensitive: KYLW0221, kYLw0221, kylw0221 all refer to the same document.

To access a document’s metadata in xml format, please query the Industry Documents Library (IDL) Solr server with the ID.

For example, to extract the information of document with ID kylw0221:

https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=id:kylw0221

The response looks like this:

```
<response>
<lst name="responseHeader">
<int name="status">0</int>
<int name="QTime">10</int>
<lst name="params">
<str name="q">id:kylw0221</str>
</lst>
</lst>
<result name="response" numFound="1" start="0">
<doc>
<str name="id">kylw0221</str>
<str name="tid">ctg37j00</str>
<arr name="collection">
<str>Depositions and Trial Testimony (DATTA)</str>
</arr>
<arr name="availability">
```
The parameters of interest are:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>q</td>
<td>query</td>
<td>id:[ID]</td>
</tr>
<tr>
<td>wt</td>
<td>writer type</td>
<td>xml (default)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>json</td>
</tr>
<tr>
<td></td>
<td></td>
<td>python</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ruby</td>
</tr>
<tr>
<td></td>
<td></td>
<td>php</td>
</tr>
<tr>
<td></td>
<td></td>
<td>csv</td>
</tr>
</tbody>
</table>

If one is interested in extracting the same data in json format, simply attach &wt=json to the url:

https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=id:kylw0221&wt=json

The response looks like this:

```json
{
    "responseHeader":{
        "status":0,
        "QTime":2,
        "params":{
            "indent":"true",
            "q":"id:kylw0221",
            "wt":"json"},
    "response":{"numFound":1,"start":0,"docs":[
```
Searches

Users can also run queries against the Solr server and extract results in the desired format. In order to prevent user issued queries from overloading the Solr server, we allow the retrieval of 100 records at a time, users can page through the results by appending &start=[number] to the request. Deep paging using start is expensive for a Solr server, so allow maximum of 10,000 pages using start. If you wish to access further, you will need to use cursorMark.

The parameters of interest are:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>query</td>
<td>The default is to return all records. If no q is passed in or q=* or q=::* all records are returned. Please see the &quot;Query Notes&quot; section below for more details on how to query the Solr server. Use Boolean operators to refine your query: AND, OR, NOT.</td>
</tr>
<tr>
<td>Wt</td>
<td>writer type</td>
<td>xml (default) json python ruby php csv</td>
</tr>
</tbody>
</table>
| Start     | start       | For paging through results. 100 records are returned at a time. **NOTE:** Using start is costly for solr server when paging deeply. We have a restriction on start value that cannot be bigger than 10,000. If you
For example, to query for all documents with author Glantz and extract the data in xml format:

https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=author:glantz

The response looks like:

```xml
<response>
  <lst name="responseHeader">
    <int name="status">0</int>
    <int name="QTime">2</int>
    <lst name="params">
      <str name="q">author:glantz</str>
    </lst>
  </lst>
  <result name="response" numFound="1189" start="0">
    <doc>
      <str name="id">qpnl0052</str>
      <str name="tid">dpl03c00</str>
      <arr name="collection">
        <str>RJ Reynolds</str>
      </arr>
      <str name="area">OPERATIONS; ENGINEERING; BOHANON HR; SR PRINCIPAL ENGINEER</str>
      <arr name="availability">
        <str>public</str>
        <str>no restrictions</str>
      </arr>
      <str name="topic">CTR/TIRC/TI; TOBACCO INSTITUTE</str>
      <str name="box">NA; RJR9941</str>
      <arr name="case">
        <str>US RESEARCH AND MANUFACTURING DOCUMENT PRODUCTION</str>
      </arr>
      <str name="title">ECNOMIC IMPACT OF GOVERNMENT MANDATED SMOKING RESTRICTIONS ON THE RESTAURANT INDUSTRY.</str>
      <arr name="author">
        <str>RJR</str>
        <str>BOHANON H</str>
        <str>GLANTZ S</str>
        <str>TI</str>
        <str>GLANTZ & SMITH</str>
        <str>OSHA</str>
        <str>WAXMAN H</str>
        <str>SENATE</str>
        <str>EPA</str>
        <str>CRAIG</str>
    </doc>
</result>
</response>
```
The attribute `numFound=1189` shows that there are 1189 records that match this query. Since we only return 100 records at a time, paging is needed to access all records.

To see the next 100 records, append &start=100 to the url:

https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=author:glantz&start=100

To see the remaining 32 records, append &start=200 to the urls:

https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=author:glantz&start=200

If the user wants to find `author:glantz` only in the tobacco industry, then you should add `AND industry:tobacco` to the query.


If the user wants to find all records from the Brown & Williamson collection with type letter but NOT with brand Kool. Please note that you cannot use & directly in the URL query. You must substitute it with %26. (Also see the Ampersand Section under Query Notes.) This is because & is a special URL character. The query should look like this:

Example with cursorMark deep paging

- You must have a sort order. This example uses sort by id desc
- Initial request must pass cursorMark=* 
- Response will have a nextCursorMark value, let’s call it XXX
- Subsequent requests pass nextCursorMark value into &cursorMark=XXX

Initial Request:
https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=tobacco&wt=json&cursorMark=*&sort=id%20desc

At the end of the response, you will see:
"nextCursorMark":"AoEoenp5eDAyMTY="

Next Request:
https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=tobacco&wt=json&cursorMark=AoEoenp5eDAyMTY=&sort=id%20desc

Pseudo code for looping through search results using cursorMark:

```php
// NOTE: This is not real code.
//       This is pseudo code to demo the logic of how to loop through
//       the result set using cursorMark.
//       Please translate to your programming language of choice.

$params = [ q => $some_query, sort => 'id asc', cursorMark => '*' ]
$done = false
while (not $done) {
    $results = fetch_solr($params)
    // write logic here to do something with $results
    if ($params[cursorMark] == $results[nextCursorMark]) {
        $done = true
    }
    $params[cursorMark] = $results[nextCursorMark]
}
```

**Query Notes**
The Industry Documents Library (IDL) Solr server does not have the syntax sugar that the Industry Documents Library (IDL) website adds for the user. But most of the queries entered on the website can be directly issued to the Solr server with a few exceptions.

**Dates:**
The date fields are stored as a string in the format of “4-digit-year month 2-digit-day”, for example “2001 November 09”.

Searching for an exact date can be done on the date field, for example `q=documentdate:"2001 November 09"`.

However, range searches do not work on string fields. We also store the date fields in ISO
format that is meant for date range searches. If one wants to search for documents dated between 2001 and 2011, the search must be done on the `documentdateiso` field 
(q=documentdateiso:[2001-01-01T00:00:00Z TO 2011-12-31T00:00:00Z]).

Bates search:
When searching for a bates number on the Solr server, please use the `batesexpanded` field code (q=batesexpanded:XXXXX). This is because bates number could cover a range. One could find a single bates number within the bates range by querying the `batesexpanded` field.

cited:yes/cited:no:
The query `cited:yes` works on the website, but it needs to be issued as `q=cited:*` with the Solr server directly. Similarly `cited:no` needs to be issued as `q=–cited:*` or `q=NOT cited:*` to the Solr server.

Ampersand &
Some field values have Ampersand in them, for example Brown & Williamson. Ampersand is a special character in the URL and when searching for values with ampersand, please use %26.

For example: https://metadata.idl.ucsf.edu/solr/ltdl3/query?q=collection:"brown %26 williamson"

Operators:
Use operators AND, OR, NOT to refine your search. Always remember to use parentheses to indicate how you want your query to be interpreted.
For example:
q=author:glantz AND type:letter OR brand:kool

The above query will give you unexpected results if you don’t add parenthesis to the query.

You **MUST** use parentheses to explicitly indicate how you want the query to be executed:

q=((author:glantz AND type:letter) OR brand:kool)
OR
q=(author:glantz AND (type:letter OR brand:kool))