

Making Maps with the CONTENTdm API

CONTENTdm User Group Meeting
Nashville, TN - August 6-7, 2015

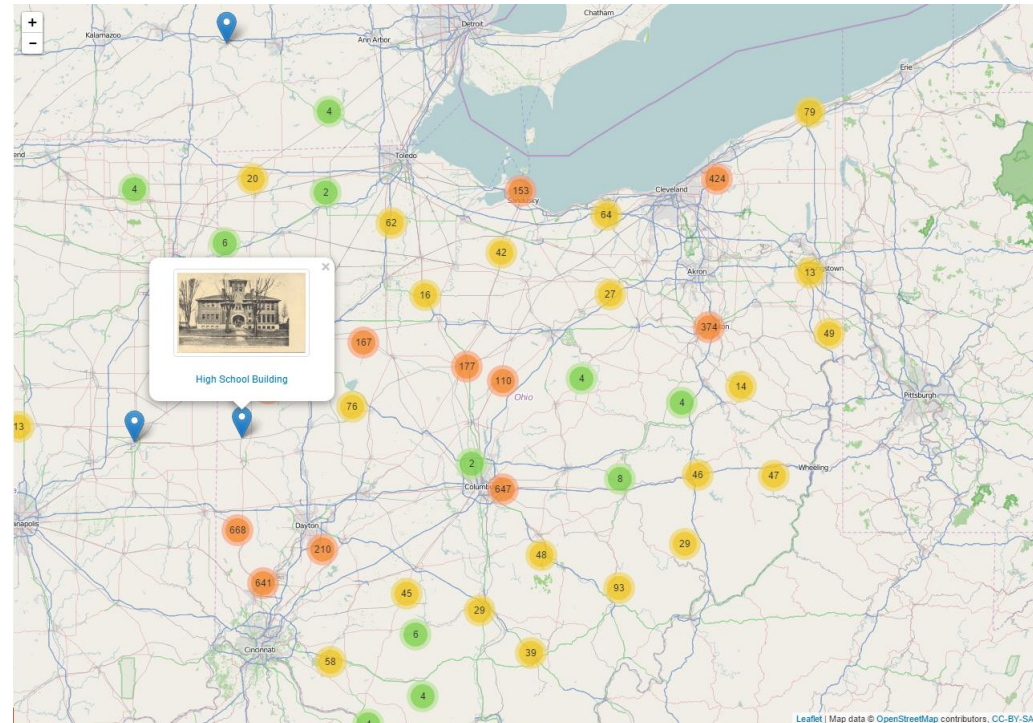


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Special Collections Librarian

Easy, free method of displaying a CONTENTdm collection geographically using the API and publically available code

REQUIREMENTS

- SQL database
- [Leaflet Javascript Library](#)
- [Leaflet.markercluster](#)
- Customized query and map PHP



Example: <http://bit.ly/1HF5Z2R>

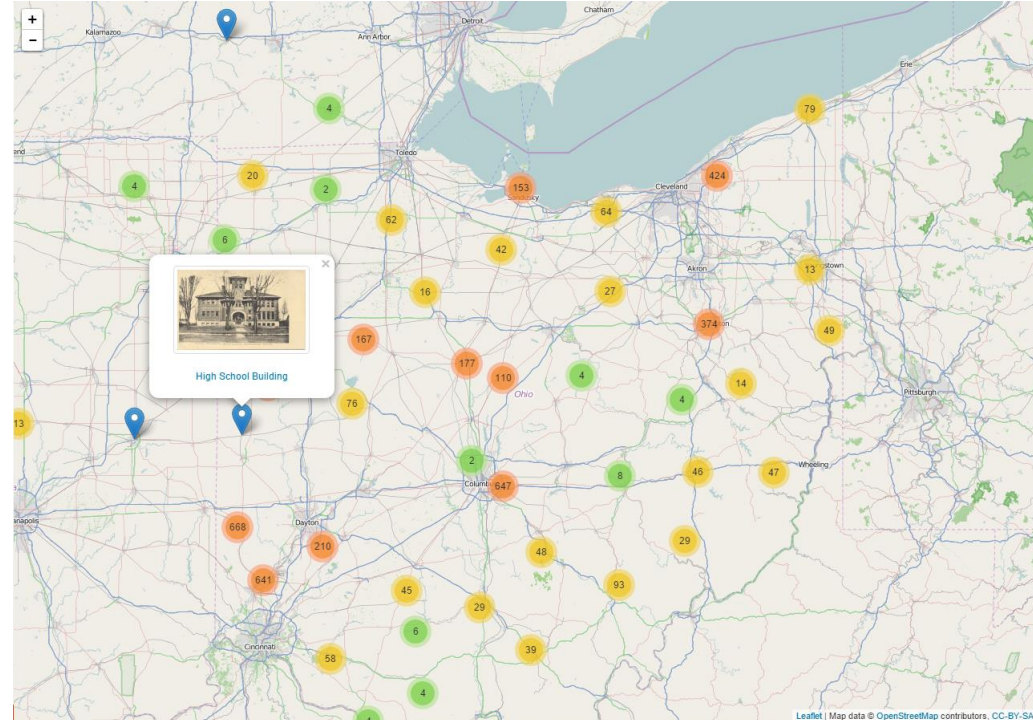
GitHub: <http://bit.ly/1llyB1d>

STRENGTHS

- Free
- Easily customizable
- Handles large collections well
- Mobile interface

WEAKNESSES

- apiquery script must be run to register collection updates
- Street addresses rely on Google Maps API which can be buggy



Example: <http://bit.ly/1HF5Z2R>

GitHub: <http://bit.ly/1llyB1d>

How it Works

Field name	Alt key	Sub-type	Large	Search	Index	Revised	Work	edit	test
01 Address	Basic	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
02 Date	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
03 Title	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
04 Author	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
05 Subject	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
06 Creator	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
07 Publisher	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
08 Location	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
09 Description	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10 Producer	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11 Language	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12 Format	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13 Date Printed	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15 Language	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29 Address	Text	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30 Date Released	Date	Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes

CONTENTdm API allows data to be harvested

```
24 /* This function queries the Google Maps API to convert street addresses into coordinates */
25
26 function getCoordinates($paddress)
27 {
28     $paddress = str_replace(" ", "+", $paddress); // replace all the white space with "+" sign to match with g
29
30     $purl = "http://maps.google.com/maps/api/geocode/json?sensor=false&address=$paddress";
31
32     $presponse = file_get_contents($purl);
33
34     $pjson = json_decode($presponse, TRUE); //generate array object from the response from the web
35
36     return $pjson['results'][0]['geometry']['location']['lat'].",".$pjson['results'][0]['geometry']['location
37 }
38
39 $id = array();
40
41 $soid = array();
42
43 $i = 0;
44
45 /* Done with Google Maps API set up */
46
47 /* This queries the CONTENTdm API and gets the CONTENTdm ID number for each record and stores it in the ar
48 changed in line 57 */
49
50 while ($i < 10000) {
51
52     $metsdata_url = $contentserver . "/download/index.php?q=Query" . $collectionname . "/?i=$i";
53
54     $data = file_get_contents($metsdata_url);
55
56     $array = json_decode($data, true);
57
58     $records = ($array['records']);
59
60     foreach ($records as $y) {
61         $id[] = $y["idnumber"];
62     }
63 }
64 }
```

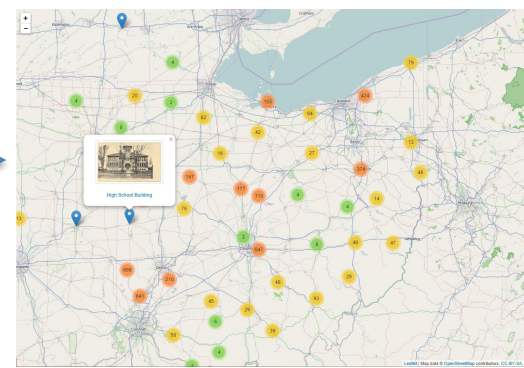
Running apiquery.php pulls the data from the CONTENTdm API...

...and stores it in an SQL table

map.php uses the SQL table to generate the final map

Options	Title	ID	URL	Thumbnail
✖ Edit	Indie Edit	4802	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	4803	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	4804	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	4805	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	5	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	8	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	11	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	14	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	17	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	20	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	23	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	26	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	29	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	32	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...
✖ Edit	Indie Edit	38	http://digital.lib.miami.edu/cdm/compoundobject/	http://contentdm.lib.miami.edu/ufdl/getThumbnail...

```
1 #!/usr/bin/php
2 /* Configure your variables here */
3
4 $servername = "localhost"; // Replace $servername with the location of your SQL database */
5 $username = "username"; // Replace $username with the name of your SQL database */
6 $password = "password"; // Replace $password with the password for your SQL database */
7
8 //SQL set up
9
10 $conn = mysqli_connect($servername, $username, $password, $dbname);
11
12 if (!$conn) {
13     die("Connection failed: " . mysqli_error($conn));
14 }
15
16 $sql = "SELECT * FROM $table";
17
18 $result = mysqli_query($conn, $sql);
19
20 if (mysqli_num_rows($result) > 0) {
21     while($row = mysqli_fetch_assoc($result)) {
22         $id[] = $row["idnumber"];
23     }
24 }
25
26 //DOCTYPE html
27 <?php
28 <?php
29 <meta name="viewport" content="width=device-width, initial-scale=1.0">
30
31 <link rel="stylesheet" href="leaflet.css" />
32 <link rel="stylesheet" href="markercluster.css" />
33 <link rel="stylesheet" href="markercluster.default.css" />
34 <link rel="stylesheet" href="//unpkg.com/leaflet@1.9.3/dist/leaflet.css" />
35
36 <script src="leaflet.js"></script>
37 <script src="markercluster.js"></script>
38 <script src="markercluster.default.js"></script>
39
40 <script src="//unpkg.com/leaflet.markercluster"></script>
```



WHY THE SQL TABLE?

WHY NOT JUST DRAW STRAIGHT FROM THE CONTENTdm API?

Developed to meet specific needs

- Server storing CONTENTdm data struggled to process a large number of requests
- SQL table led to faster loading
- Uses Google Maps API to create the table, which has a max daily query limit of 2,500

Show: 30 row(s) starting from row # 30 in horizontal mode and repeat headers after 100 cells

	title	id	url	thumb	col
<input type="checkbox"/>	McKinley High School	4882	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	40: -81
<input type="checkbox"/>	Timken Roller Bearing Company	4885	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	40: -81
<input type="checkbox"/>	Masonic Temple	4888	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	40: -81
<input type="checkbox"/>	Close-up View of McKinley Memorial	4891	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	40: -81
<input type="checkbox"/>	Greetings from the AAA School Patrol Assembly	5	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	38: -77
<input type="checkbox"/>	Greetings from Georgia	8	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	32: -82
<input type="checkbox"/>	Penna Rail Road Station	11	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	38: -75
<input type="checkbox"/>	High School	14	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	36: -94
<input type="checkbox"/>	Rebel Cafeteria - Greyhound Bus Terminal	17	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	34: -86
<input type="checkbox"/>	Greetings from Florida	20	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	27: -81
<input type="checkbox"/>	California Missions	23	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	36: -11
<input type="checkbox"/>	Harrington Public School	26	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	38: -75
<input type="checkbox"/>	Two Elevations of Highway U.S. 40	29	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	39: -10
<input type="checkbox"/>	U.S. Post Office	32	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	36: -93
<input type="checkbox"/>	Markers at the Summit of Berthoud Pass	38	http://digital.lib.miamioh.edu/cdm/compoundobject/...	http://contentdm.lib.miamioh.edu/utils/getthumbnai...	39: -10

Google Maps has an API that will take address queries and convert them into coordinates, but it is buggy.

Bug #1: Dropping entries

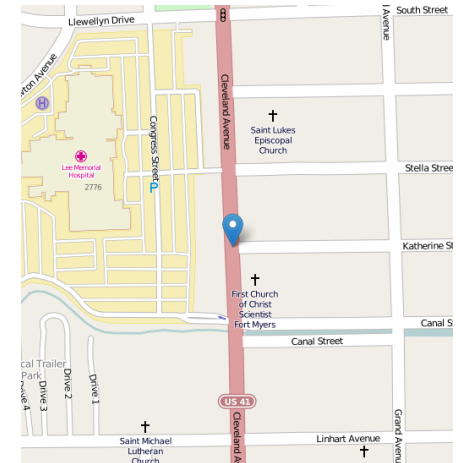
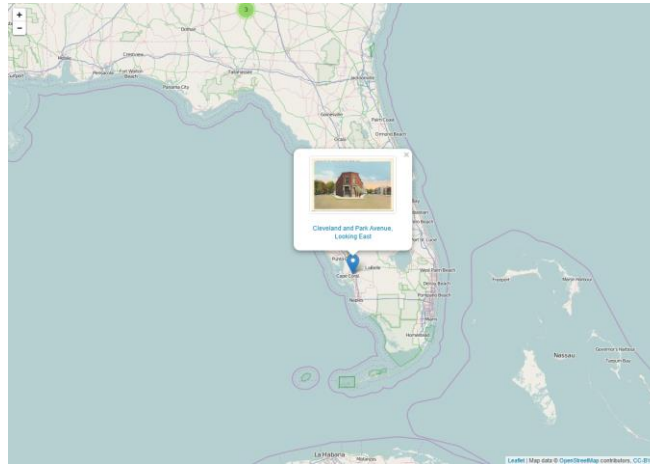
- Even under 2,500 queries, sometimes a query will return empty. This breaks the Javascript used in map.php
- RESOLUTION: before adding new entries to the SQL table, apiquery.php will check for entries with an empty 'coords' field and delete any found

```
82 $mapsstm = "select coords FROM " . $dbtable;
83
84 $sqlstm = $pdo->prepare($mapsstm);
85 $sqlstm->execute();
86
87 $response = $sqlstm->fetchAll(PDO::FETCH_COLUMN, 0);
88
89 $cfail = ", ";
90
91 foreach ($response as $ctest) {
92
93     if ($ctest==$cfail) {
94
95         $cstm = "DELETE FROM " . $dbtbl . " WHERE coords=', '";
96
97         $sqlstm = $pdo->prepare($cstm);
98         $sqlstm->execute();
99
100     }
101 }
```

Google Maps has an API that will take address queries and convert them into coordinates, but it is buggy.

Bug #2: Bad coordinates

- Sometimes the coordinates returned to a street address are inaccurate. No perfect resolution found



Location

Ohio--Amherst

STRATEGIES:

- Minimize unnecessary information in metadata (e.g. building names)
- Include postal codes in addresses
- Constant quality control

id	url	thumb	coords
2263	http://img174.110-nl.com/comp/.../collection/postcard/414263	http://img174.110-nl.com/comp/.../collection/postcard/414263	41.4271216, -81.472317



id	url	thumb	coords
2263	http://img174.110-nl.com/comp/.../collection/postcard/414263	http://img174.110-nl.com/comp/.../collection/postcard/414263	41.398897, -81.203487

Questions?

GitHub

https://github.com/laddmm/CONTENTdm_Map

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