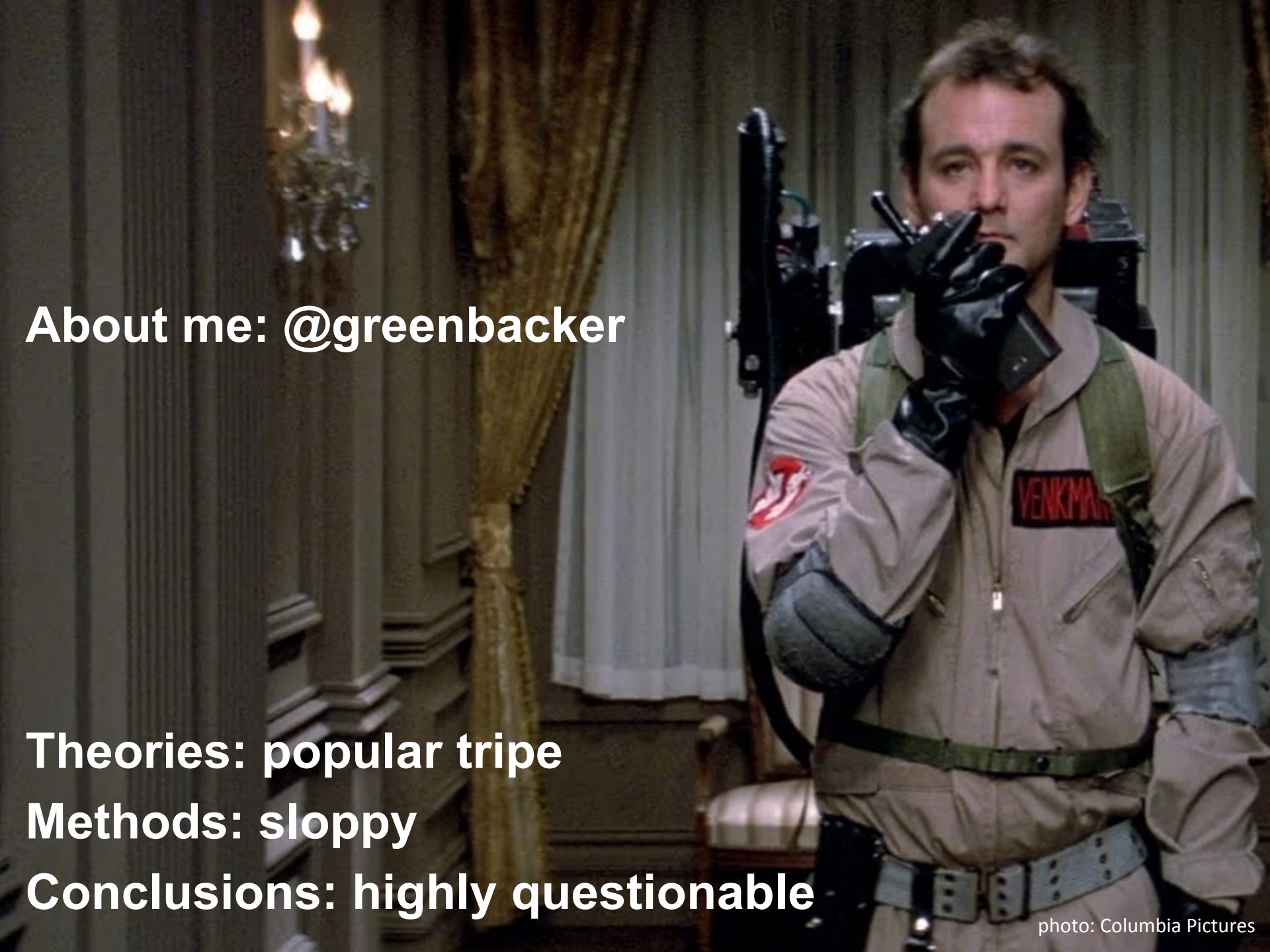
Open Source Software for Geotagging Unstructured Big Data – CLAVIN

Charlie Greenbacker, Principal Data Scientist



About me: @greenbacker

Theories: popular tripe

Methods: sloppy

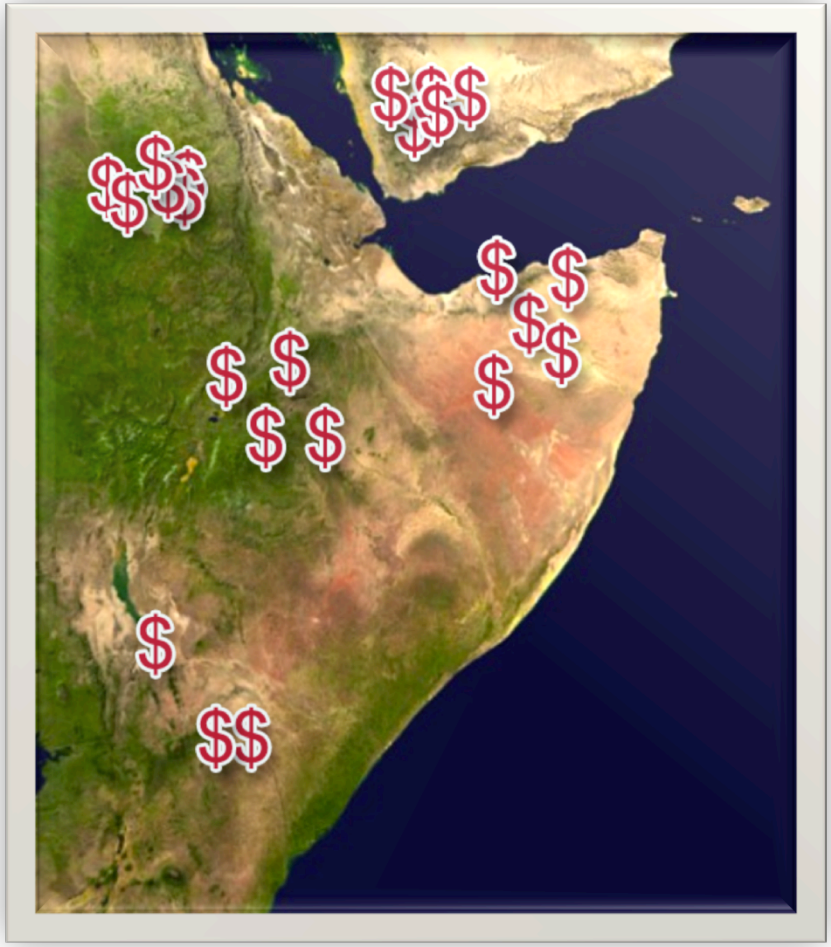
Conclusions: highly questionable

photo: Columbia Pictures


Best reason for
not finishing PhD


@BericoTech
not asleep

Goal: Make Geotagging Unstructured Text Less Painful

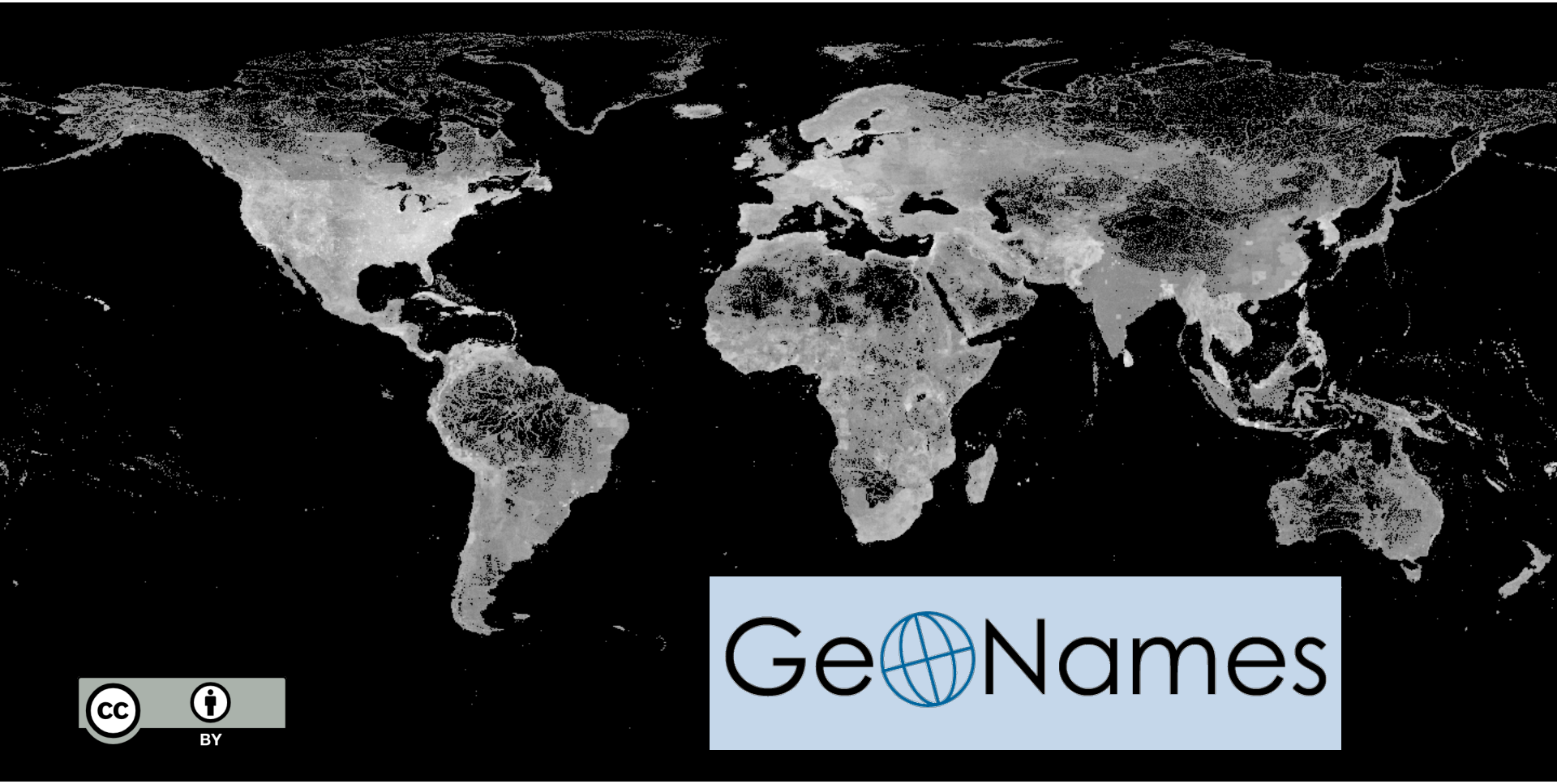


Step 1: Ingest Unstructured Text

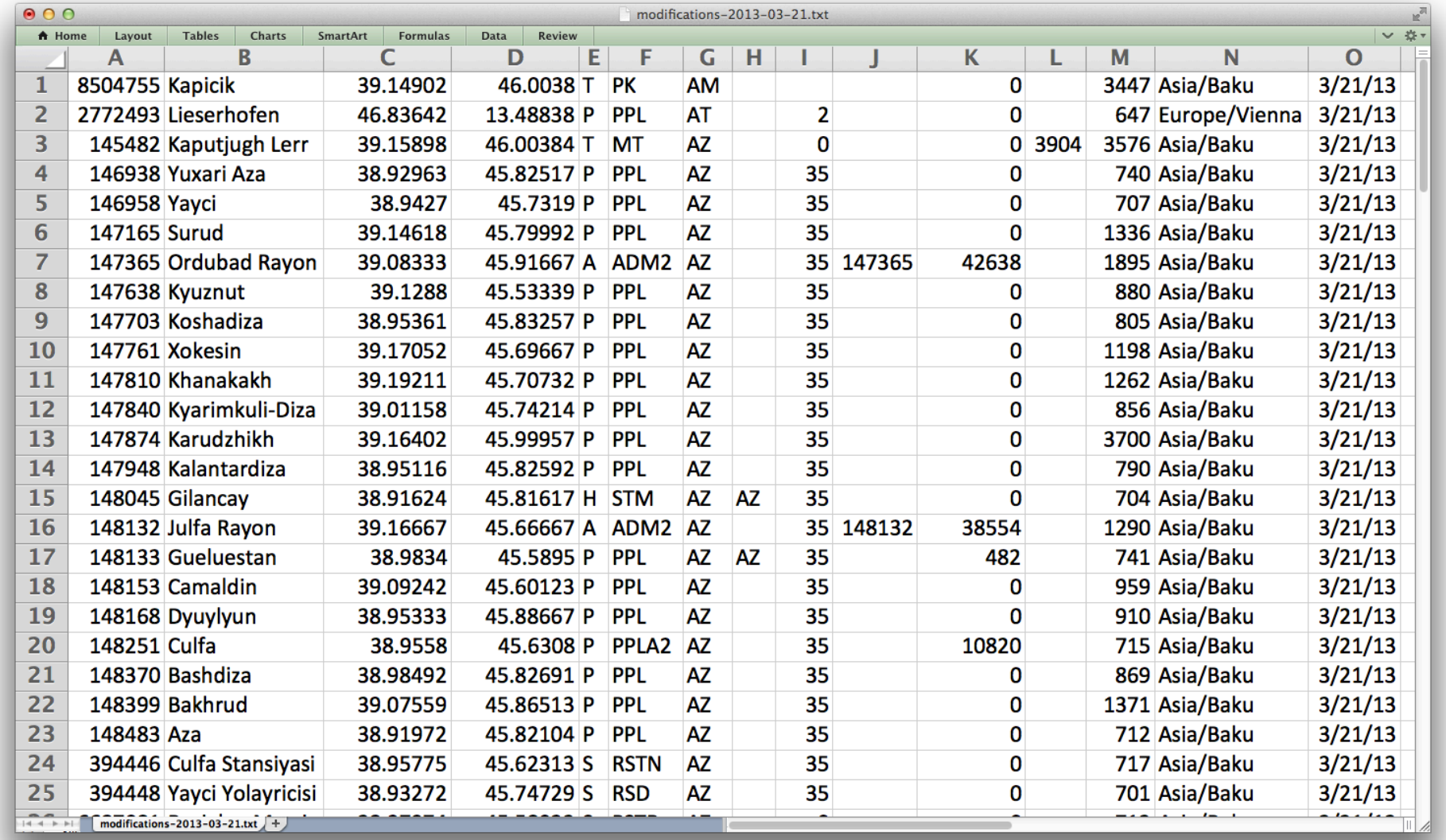
photo: Flickr user NS Newsflash

Step 2: Extract Place Names

Step 3: Disambiguate Place Names (the hard part)



Step 4: Enrich Text with Geo Data



modifications-2013-03-21.txt

Home | Layout | Tables | Charts | SmartArt | Formulas | Data | Review

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	8504755	Kapicik	39.14902	46.0038	T	PK	AM				0		3447	Asia/Baku	3/21/13
2	2772493	Lieserhofen	46.83642	13.48838	P	PPL	AT		2		0		647	Europe/Vienna	3/21/13
3	145482	Kaputjugh Lerr	39.15898	46.00384	T	MT	AZ		0		0	3904	3576	Asia/Baku	3/21/13
4	146938	Yuxari Aza	38.92963	45.82517	P	PPL	AZ		35		0		740	Asia/Baku	3/21/13
5	146958	Yayci	38.9427	45.7319	P	PPL	AZ		35		0		707	Asia/Baku	3/21/13
6	147165	Surud	39.14618	45.79992	P	PPL	AZ		35		0		1336	Asia/Baku	3/21/13
7	147365	Ordubad Rayon	39.08333	45.91667	A	ADM2	AZ		35	147365	42638		1895	Asia/Baku	3/21/13
8	147638	Kyuznut	39.1288	45.53339	P	PPL	AZ		35		0		880	Asia/Baku	3/21/13
9	147703	Koshadiza	38.95361	45.83257	P	PPL	AZ		35		0		805	Asia/Baku	3/21/13
10	147761	Xokesin	39.17052	45.69667	P	PPL	AZ		35		0		1198	Asia/Baku	3/21/13
11	147810	Khanakakh	39.19211	45.70732	P	PPL	AZ		35		0		1262	Asia/Baku	3/21/13
12	147840	Kyarimkuli-Diza	39.01158	45.74214	P	PPL	AZ		35		0		856	Asia/Baku	3/21/13
13	147874	Karudzhikh	39.16402	45.99957	P	PPL	AZ		35		0		3700	Asia/Baku	3/21/13
14	147948	Kalantardiza	38.95116	45.82592	P	PPL	AZ		35		0		790	Asia/Baku	3/21/13
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16	148132	Julfa Rayon	39.16667	45.66667	A	ADM2	AZ		35	148132	38554		1290	Asia/Baku	3/21/13
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18	148153	Camaldin	39.09242	45.60123	P	PPL	AZ		35		0		959	Asia/Baku	3/21/13
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20	148251	Culfa	38.9558	45.6308	P	PPLA2	AZ		35		10820		715	Asia/Baku	3/21/13
21	148370	Bashdiza	38.98492	45.82691	P	PPL	AZ		35		0		869	Asia/Baku	3/21/13
22	148399	Bakhrud	39.07559	45.86513	P	PPL	AZ		35		0		1371	Asia/Baku	3/21/13
23	148483	Aza	38.91972	45.82104	P	PPL	AZ		35		0		712	Asia/Baku	3/21/13
24	394446	Culfa Stansiyasi	38.95775	45.62313	S	RSTN	AZ		35		0		717	Asia/Baku	3/21/13
25	394448	Yayci Yolayricisi	38.93272	45.74729	S	RSD	AZ		35		0		701	Asia/Baku	3/21/13

modifications-2013-03-21.txt

"The Springfield Problem" (and other challenges)

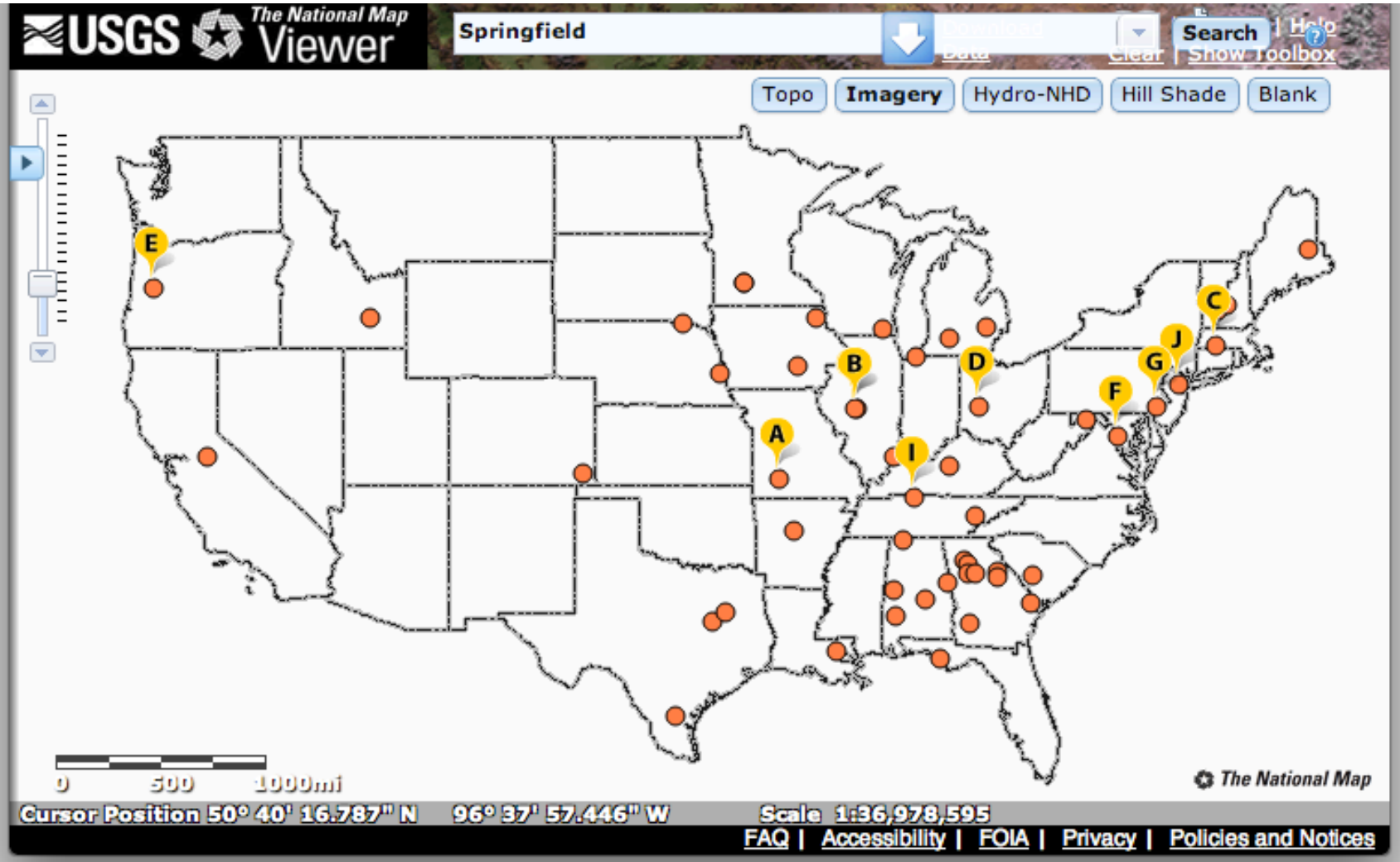
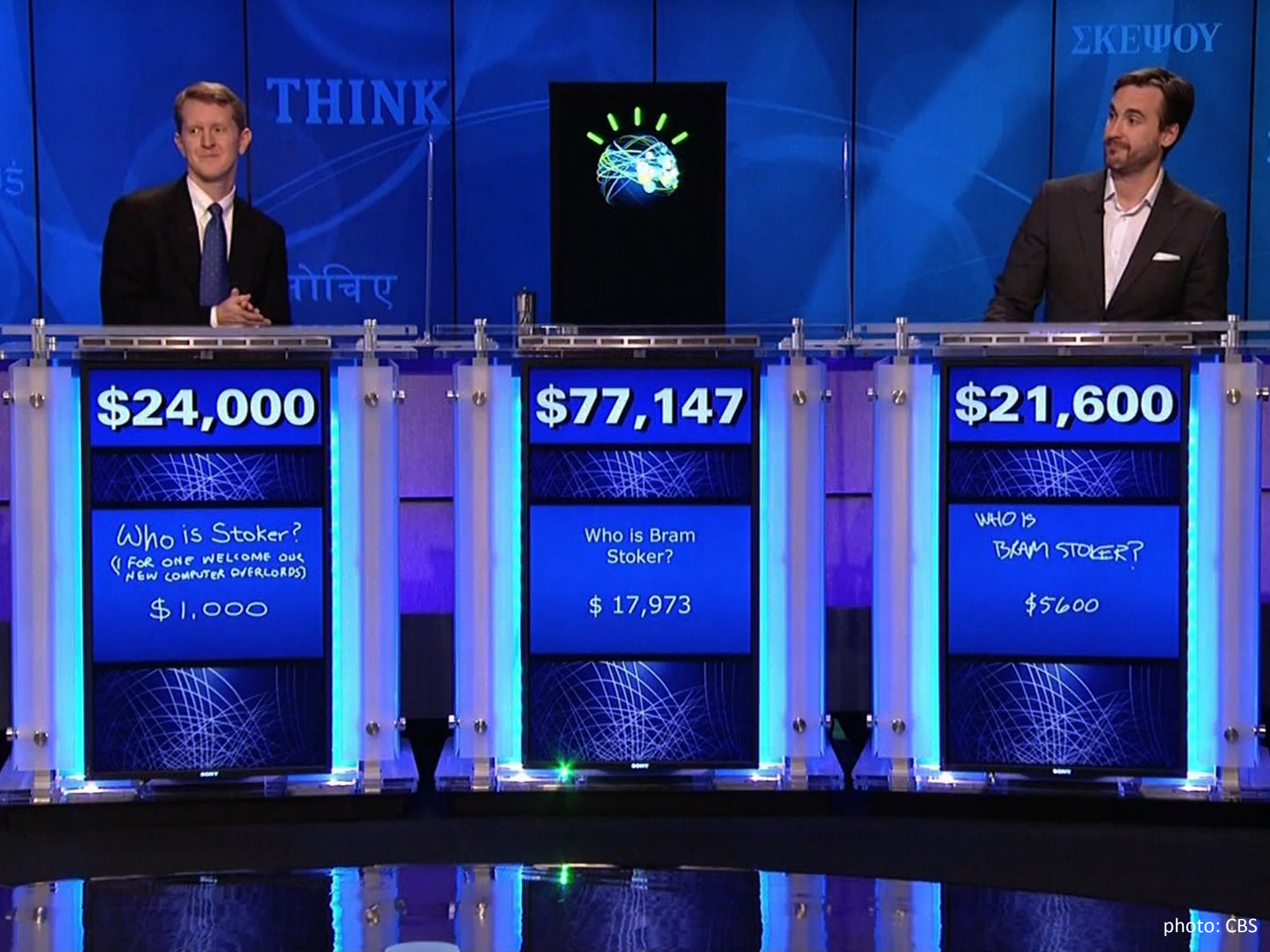


photo: readwrite.com

photo: upenn.edu


THINK
ΣΚΕΨΟΥ
$24,000
Who is Stoker?
((FOR ONE WELCOME OUR NEW COMPUTER OVERLORDS)
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WHO IS BRAM STOKER?
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photo: CBS

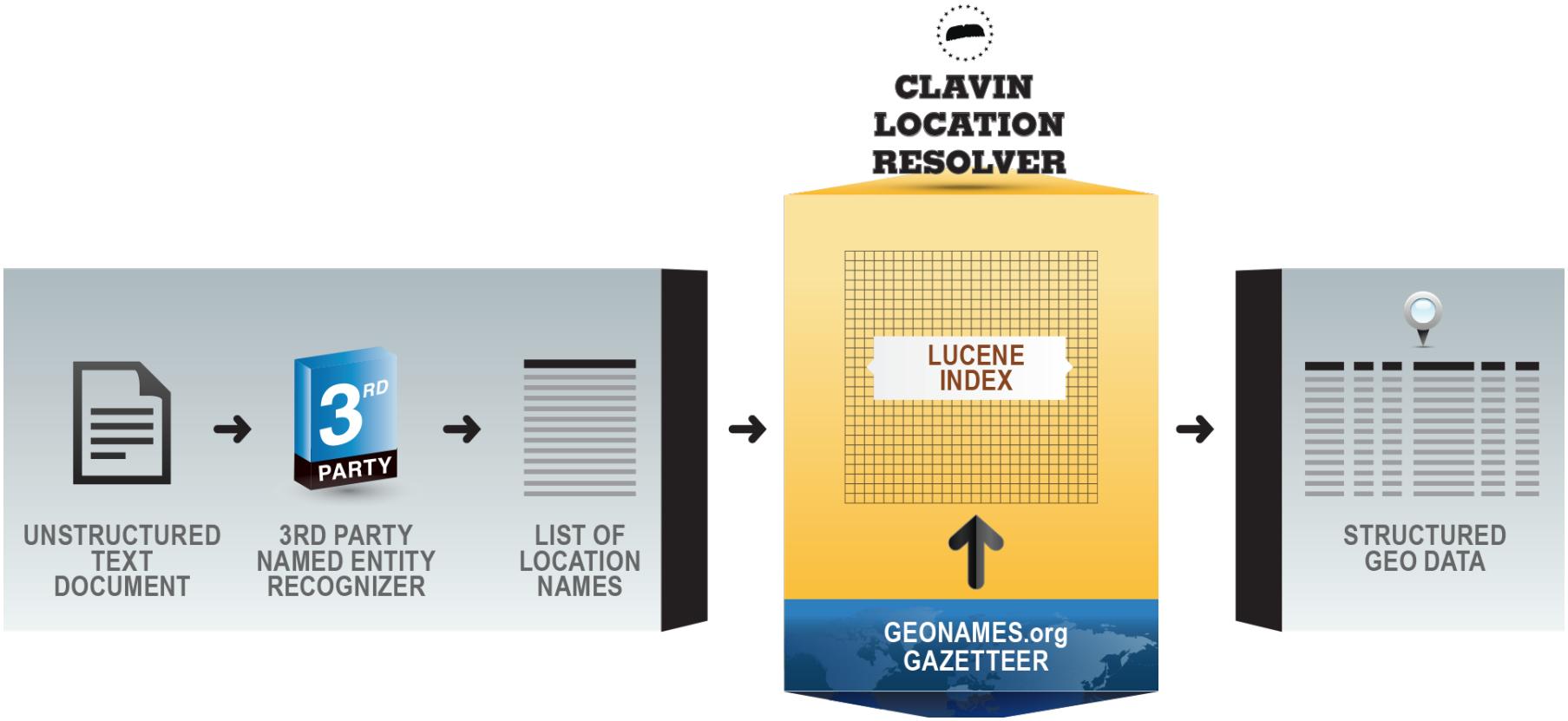
CLAVIN: an open source geoparser

IT'S A LITTLE KNOWN FACT:

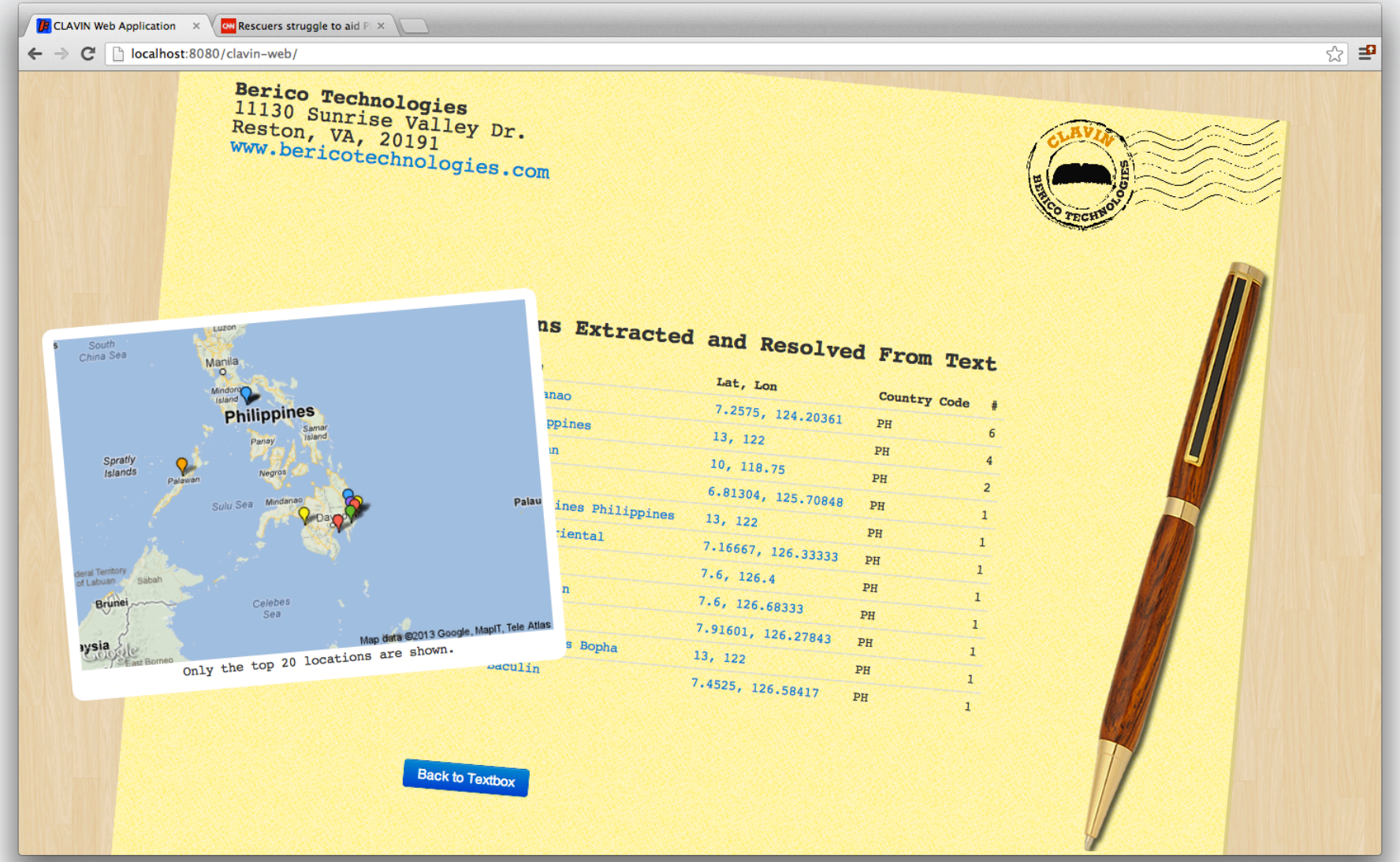
photo: CBS

42% OF DEATHS IN AMERICA ARE CAUSED BY ACCIDENTS IN THE HOME

System Architecture



Live Demo


CLAVIN Web Application
Rescuers struggle to aid P
localhost:8080/clavin-web/
Berico Technologies
11130 Sunrise Valley Dr.
Reston, VA, 20191
www.bericotechnologies.com
CLAVIN
BERICO TECHNOLOGIES
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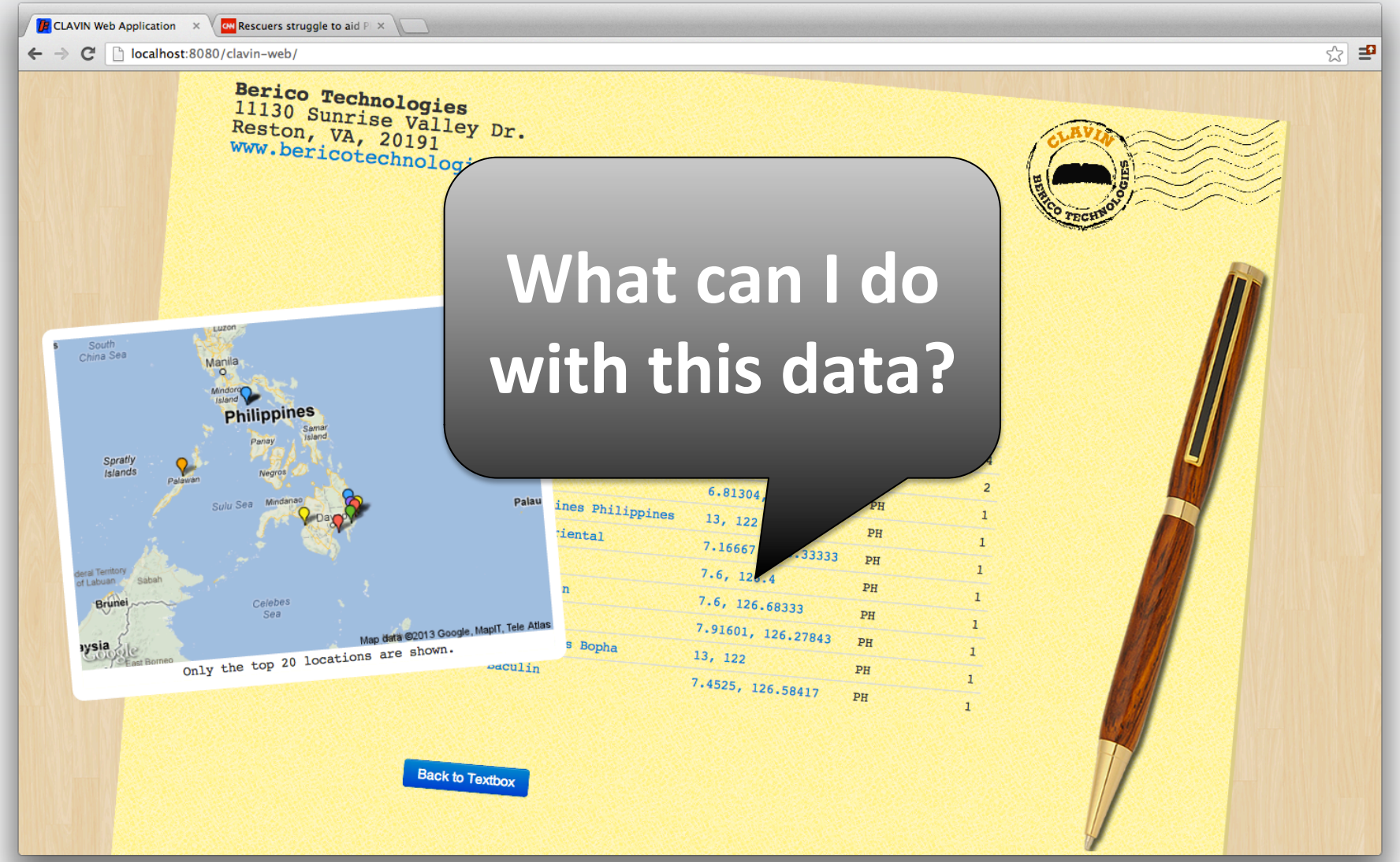
Manila
Mindoro Island
Samar Island
Panay
Negros
Palawan
Spratly Islands
Sulu Sea
Mindanao
Palau
Brunei
Sabah
Celebes Sea
South China Sea
Luzon
Map data ©2013 Google, MapIT, Tele Atlas
Only the top 20 locations are shown.
Back to Textbox

Live Demo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localhost:8080/clavin-web/
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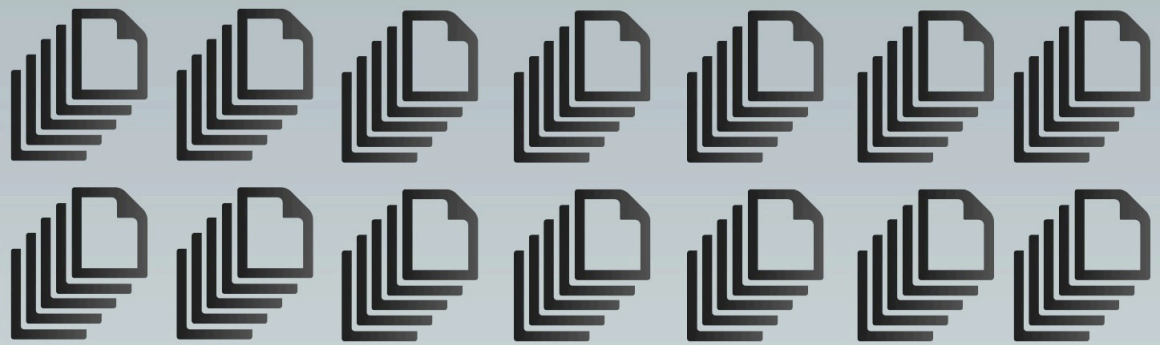
CLAVIN
BERICO TECHNOLOGIES
What can I do with this data?
Philippines
Manila
Spratly Islands
Palawan
Sulu Sea
Mindanao
Brunei
Celebes Sea
Map data ©2013 Google, MapIT, Tele Atlas
Only the top 20 locations are shown.
Back to Textbox
6.81304,
13, 122
7.16667
7.6, 126.68333
7.91601, 126.27843
13, 122
7.4525, 126.58417
PH

Map Visualizations

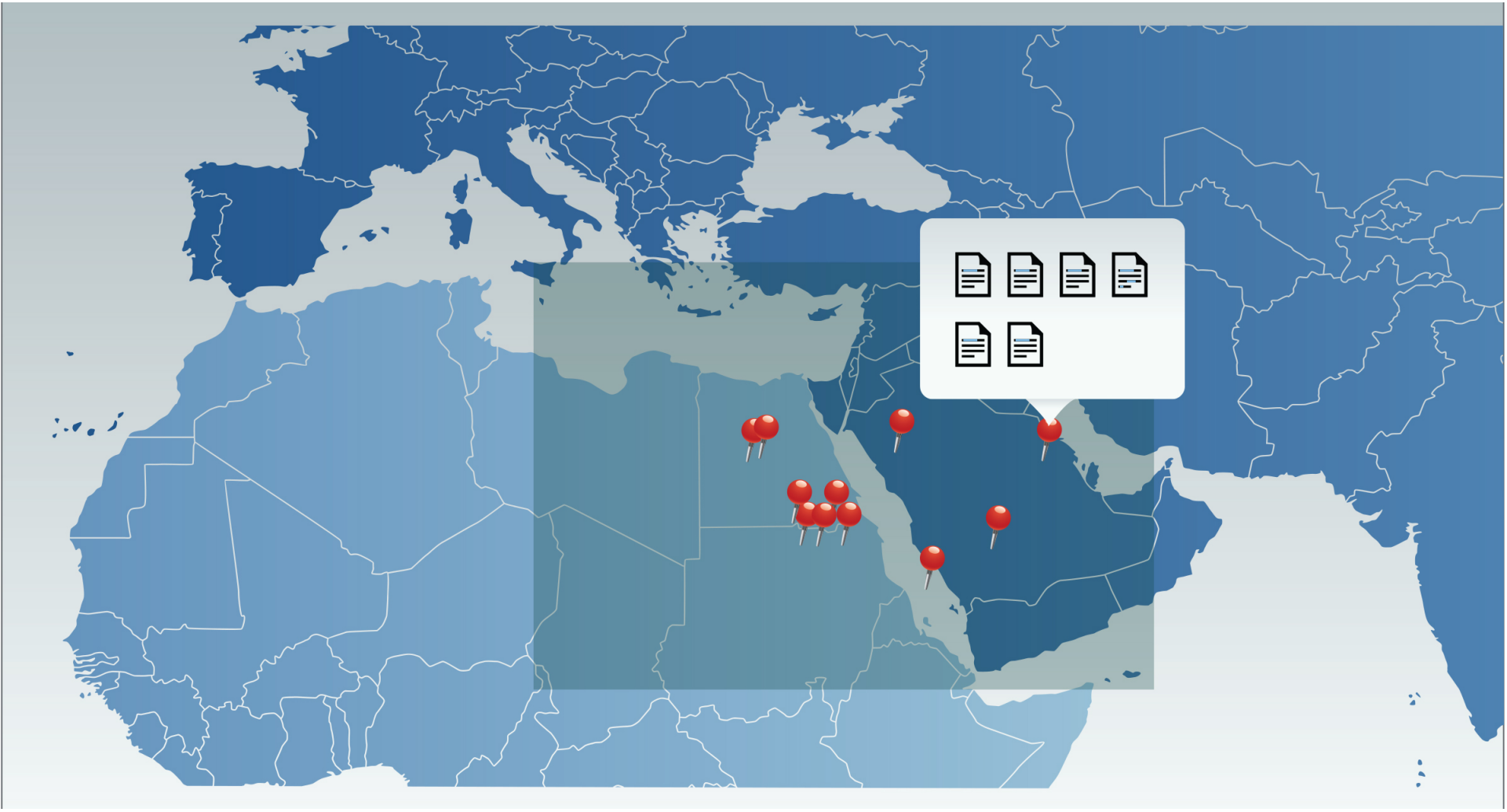
Hierarchical Geospatial Search



North Carolina

Search Results: Raleigh Charlotte

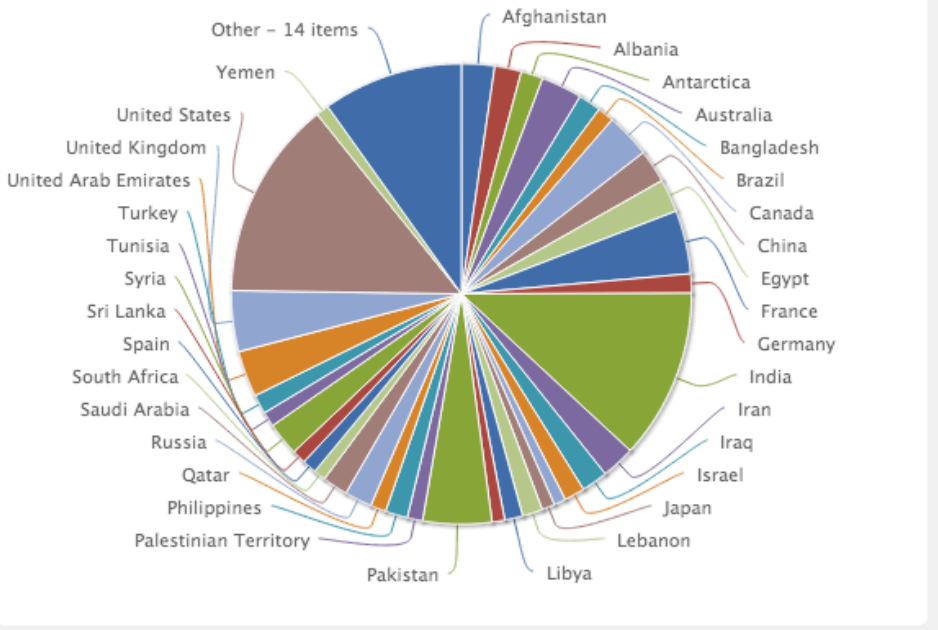
Geospatial Bounding Box Search



Geospatial Analytics on Unstructured Text

Roll up: COUNTRY

# of Values	Average	Maximum	Minimum	Midpoint
50	70997	496533 United States	20761 Sudan	46424 Libya and Turkey



Performance Metrics & Features

CLAVIN

Cartographic Location And Vicinity INdexer

- **Accurate**: 0.76 F-measure
- **Fast**: 100 locations per sec per cpu
- **Scalable**: processes 1M documents in 1 hour on a 9-node Hadoop cluster
- **Smart**: natural language processing, intelligent heuristics, & fuzzy matching
- **Easy to use**: simple Java-based API
- **Open source**: Apache License
- **Distribution**: GitHub & Maven Central

clavin.io

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