CZECH TECHNICAL UNIVERSITY IN PRAGUE

FACULTY OF ELECTRICAL ENGINEERING

OSW - Road accidents within the weather context in Prague - CP 0

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Motivation

A lots of traffic accidents are caused by weather (poor visibility, strong wind or rainfall, humidity on the road etd.). An integration of a road info (accidents) and meteorological sensors/stations could help to see connections between accidents and weather. This information could be used in an road safety application that will be able to notificate drivers against imminent danger due to weather.

Data source selection

I have selected folowing data sources from different providers (see table below) for the data integration of a road and meteorological data . I have found also other datasets that could be taken into account. These data sources are marked by star label.

Table 1. Data source overview

Data source/set #	Provider	Web sides	Format	Description
DS 1	Ředitelství silnic a dálnic ČR	http://www.dopravniinfo.cz/	xml	Integrated Traffic Information System for the Czech Republic
DS 2	Český hydrometeorologický ústav	http://portal.chmi.cz	xls	Prague Ruzyně station. A dataset of daily hydrometeorological data from 1961 to 2016. Updates are done once a year.
DS 3*	Český hydrometeorologický ústav	http://portal.chmi.cz	xls	Prague Libuš station. A dataset of daily hydrometeorological data from 1961 to 2016. Updates are done once a year.

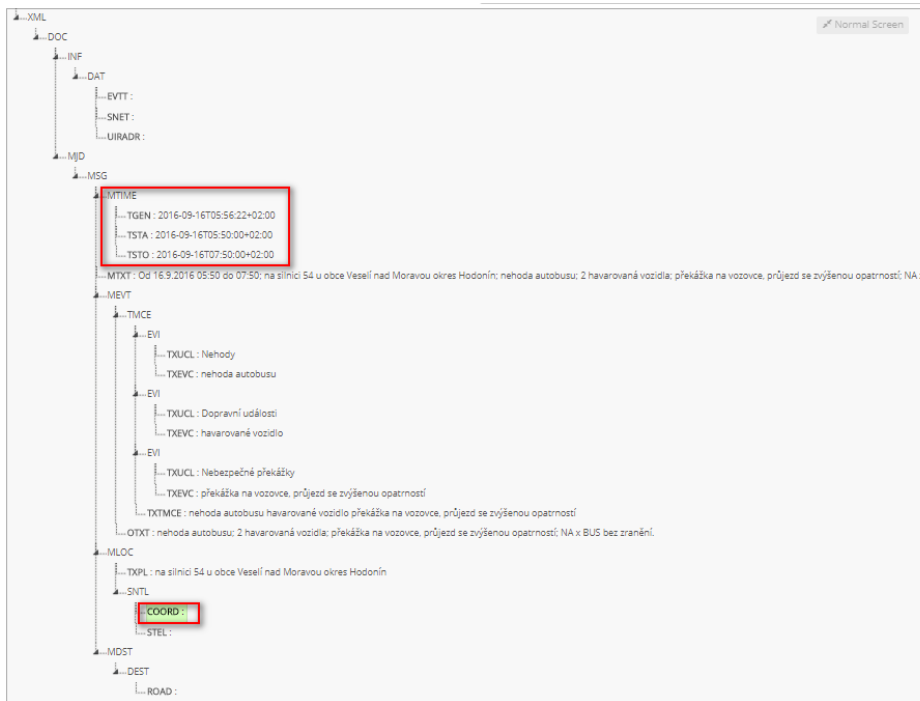| Data source/set #	Provider	Web sides	Format	Description
DS 4*	Český hydrometeorologický ústav	http://portal.chmi.cz	xlsx	Regular meteorological measurements at the Prague Clementin Observatory. Average daily temperature, air temperature extremes (since 1775), daily rainfall (since 1804). Update once a year.
DS 5*	Technická správa komunikací hlavního města	API rss/json	http://www.tsk-praha.cz	Meteo Stations - List of all weather sensors in Prague. DS contents interesting meteorological measurements like the road temperature and wet.

Data sources description

The following sections describe the datasets described above.

DS1

The machine readable XML dataset (appx. 300MB) about the road traffic from the B4M33OSW website [1: https://cw.fel.cvut.cz/wiki/courses/osw/semestral_work] with events about road accidents in the Czech Republic in several months.

Preview

Figure 1. DS1 preview

Data description

The data are freely accessible (https://portal.gov.cz/portal/ostatni/volny-pristup-k-ds.html).
Only a subset of data (a month) will be selected due to the data size. The data schema
contents the detailed description of the accident including the dates and values of the
geographical location.

DS2 and DS3*

Datasets DS2 and DS3* have the same data schema and also other data aspects.

Previews

Figure 2. DS2 and DS3 preview one*

Figure 3. DS2 and DS3* preview two

Data description

Simple data table format (xls). The datasets content xls sheets. The first one describes meteorological station (e.g. latitude and longitude) and the next sheets contens daily hydrometeorological data about rainfall, the total amount of snow, humidity, air pressure, wind speed, sunshine and max/min/average temperature from 1961 to 2016, thus the datasets contain a large amount of data.

DS4*

Regular meteorological measurements at the Prague Clementin Observatory. Average daily temperature, air temperature extremes (since 1775), daily rainfall (since 1804). Update once a year.

Preview

	A	B	C	D	E	F	G	H
1	rok	měsíc	den	T-AVG	TMA	TMI	SRA	Flag
88341	2016	11	12	1,5	2,5	0,8	0,0	T
88342	2016	11	13	0,3	3,6	-1,6	0,0	
88343	2016	11	14	-0,3	3,6	-3,5	0,0	
88344	2016	11	15	1,7	3,4	-2,7	2,0	
88345	2016	11	16	7,9	9,3	3,4	3,5	
88346	2016	11	17	10,3	12,2	8,9	0,0	
88347	2016	11	18	10,5	12,1	8,5	1,8	
88348	2016	11	19	7,5	10,5	7,4	3,9	
88349	2016	11	20	5,7	9,3	4,6	0,0	
88350	2016	11	21	6,1	7,6	2,4	0,0	
88351	2016	11	22	7,5	10,5	4,0	0,0	
88352	2016	11	23	8,6	9,8	7,4	0,0	T
88353	2016	11	24	8,5	9,6	7,6	0,0	
88354	2016	11	25	6,8	9,2	6,2	0,0	
88355	2016	11	26	5,8	7,1	4,1	0,0	
88356	2016	11	27	4,9	7,4	3,9	0,0	T
88357	2016	11	28	1,2	4,0	0,5	0,0	T

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Figure 4. DS4* preview

Data description

Simple data table format (xlsx). Geographical locations of the Prague Clementin Observatory are not available in the dataset, thus its need to be manually added. This dataset contains less meteorological values than DS2 and DS3*.

DS5*

Meteo Stations - List of all weather sensors in Prague. Available via API as JSON or RSS format. Get only actual data. A data collection is required.
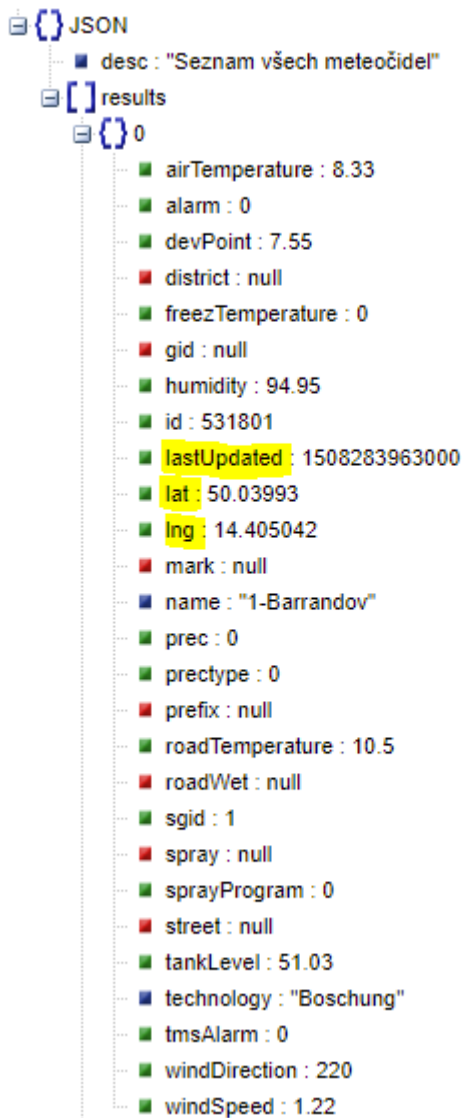
- http://www.tsk-praha.cz/tskexport3/json/meteosensors
- http://www.tsk-praha.cz/tskexport/rss/meteocidla

Preview

Figure 5. DS5* preview JSON

Figure 6. DS5* preview RSS

Data description

This data source contents very interesting meteorological measurements like the road temperature and wet. The disadvantage is that a long time data collection is needed to get a dataset.

Conclusion

The DS1 and DS2 can be integrated by date values. In my point of view the idea of this assignment could have a considerable potential in in a practical use. I would like to discuss personally with the lecturers the possiblities of this assignment idea due to a lack of practical knowledge in the Ontologies and Semantic Web field. The main discussion topic is whether the geographical integration of datasets is possible.