Exercise „Analysis of Spatial Data" WS 2010/2011 - Information Systems and Machine Learning Lab (ISMLL) - **Prof. Dr. Alexandros Nanopoulos, Osman Akcatepe**

Exercise sheet 1

Deadline: Dienstag, 7.12.2010 bis 00.00 Uhr

Your task is in the following:
A spatial database must be produced to the automation of the district "Orange" in California, USA. The following conditions must be fulfilled at the same time:

- The database should encompass the geographic boundaries of the district so that one can know, what within and what is outside of the boundaries of the district.

- The district is partitioned ("partitioned" = "distributed" so that the entirety of all parts never yields the entire, and two parts are overlapping) geographically into a quantity of demographic blocks (so-called "census blocks").

- To every block, different administration sectors (culture, cleaning, social affairs, etc.) belong. It can be that some blocks have not some administration sectors, but to every sector, that is available in the block, there is one (or more) responsible employee(s) who administers that the sector. The users of the database should be capable to discover these responsible people.

- In the database the traffic network of the district (railway and country road) is supposed to be encompassed.

- For the cleaning of the single sections of the country road, specific parts of the cleaning administration are responsible. What we must be capable is, to find the assigned cleaning responsibilities (that is, who is responsible for the cleaning of which part of the traffic network.)

- The municipal zones of the district belong to the geographic area of the district. We should be capable to identify its boundaries. Other zones are rural, they not however must be encompassed.

- The schools in the district are divided in two groups: Elementary schools and secondary schools. On the single schooling plains (elementary schools and/or secondary schools), there are some administrative districts, that within the geographic boundaries of the district. (The administrative districts on the single training plains are not unconditionally same). We should know the boundaries of these districts per schooling plains (that is, we should know what to a district belongs and on which schooling plain a certain district is).

- The superior school director of the district leads a school. We should be able to discover the directors of the schools for the single administrative districts and schooling plains.

- In the database the water resources of the district are supposed to be encompassed. Including hydrographical entities, so like rivers, streams and lakes.

Sketch (expanded) ER diagram with use of pictograms. To every entity and relation, you should assign needs meaningful characteristics (it does not need to be completely, but it should not be also minimalist. Any design program (e.g. MS Visio) or simply the design tools of MS Word can be used.