Diffusion in Marushka Design

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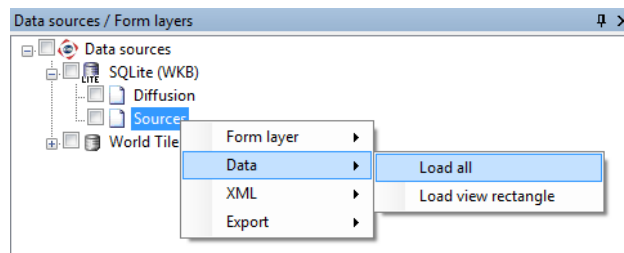# 1   Aim of the Example

In this example we will demonstrate, how to visualize disperse phenomena in Marushka Design. This example was created in version 4.1.0.3, so it does not have to be compatible with older versions.

2   Working with Example

o   Unzip the **Diffusion_EN.zip** into **c:\MarushkaExamples** folder. The target folder must be respected due to interconnection of paths with the project. In case of placing the files in the different folder, it would not be possible to work with an example.

o   Open the project **Diffusion_EN.xml** in MarushkaDesign environment.

o   Select form layer **Sources**, in the context menu choose Data – Load all:
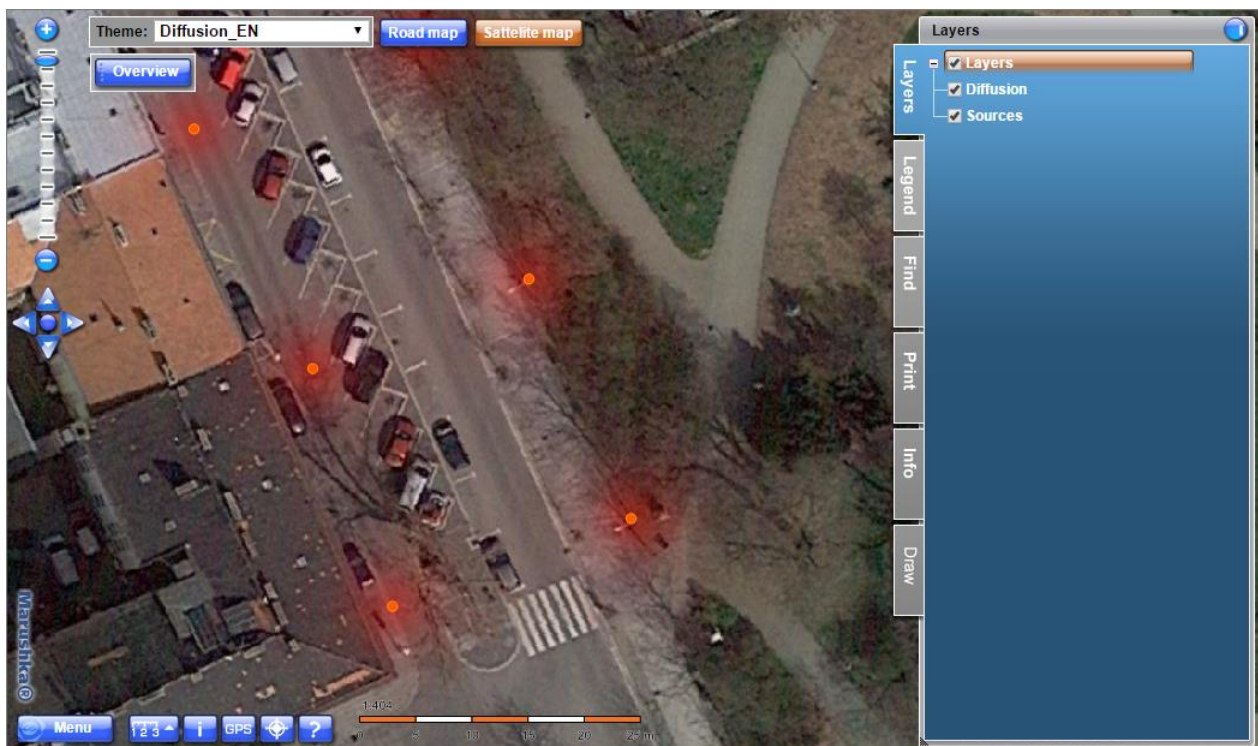
o   In map window choose „Fit All":

o   Launch the local web server:

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3 Dialog Box Sample

Img 1: Section Diffusion in symbology set for form layer Diffusion

Img 2: Sample of displayed street lamps and visualized light that spreads from them

4 A brief description of the Example in Marushka Design

This example demonstrates how it is possible to visualize the dispersion phenomena (noise, light smog, pollution, etc.) in Marushka Design. As a source of the processes are points (WKBPoint) or symbols (WKBSymbol).

This sample project contains a data store SQLite with layer Sources that contains symbol, in this case displaying the light form the radiation source (lamp).

There are two underlying project maps, satellite map and road map.

The actual diffusion is set in layer symbology *2. Scale, order and symbology ~ Diffusion*. The user can define here following:

DistOffset: determines how far the phenomenon will be displayed by the maximum intensity, form this distance the intensity will decrease

Exponent – exponent of phenomenon fading due to the distance from the source (usually value 2)

Factor – multiplication factor, the higher the value, the more vivid is the resulting color

OneColor – symbology color of the drawn dispersion phenomenon

Use – determines, whether this section of symbology is active or not

It is possible to edit values in symbology, for each phenomenon are obviously suitable different colors and intensities.

The formula for the calculation of disperses processes has the following form:

$$t(a) = f \sum_{i=1}^{n} \frac{M_i}{r(a, P_i)^E + O}$$

- Sources are elements point (Point Symbol ..), the following elements can have numeric attribute INTENSITY, in case of its absence is INTENSITY = 1
- *Pi* - point source(s) of phenomenon, i = 1..n
- *Mi* – intensity of phenomenon in point Pi (attribute INSTESITY at point geometry)
- *E* - fading phenomenon exponent due to the distance from the source (usually 2) in the symbology property Symbology.Diffusion.Exponent formal layers
- *f* - multiplication factor () property Symbology.Diffusion.Factor in form layer symbology
- *O* - minimum divisor, property Symbology.Diffusion.DistOffset in form layer symbology
- *r (a, b)* - the distance from point a to point b.
- *t (a)* - the transparency of dots (pixels)

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