Geovisualization as an Instrument for Attraction of Attention to Maps

N.A. Alekseenko, I.S. Bushueva, A.A. Medvedev
Moscow State University named after M.V. Lomonosov, Moscow, Russia

VISUAL ANALYTICS AND GEOVISUALISATION

INTRODUCTION

A geographic method of researches became the most effective instrument of a study of an appropriateness of spatial location and also a structure of geographic objects and events, their connections and dynamics of changes. The aim of this research is using new ways of a geovisualization to attract attention of untrained people to maps.

Geo visualization is materially "window to base of data", which allows representing objects and their relations on the Earth as intellectual maps and other geographic documents. The instruments of the geo visualization allow geographers and other specialists to research and analyze different spatial data to answer to difficult geographic questions.

Animation cartography is a high-capability mean to visualize dynamic information, however it don't replace the traditional static cartography, but provides it with new possibilities. That's why we propose to use it not only for a demonstration of a dynamic, but for an animation of landscape.

METHODOLOGY

We created a map of Jizdrinskii part of the national park "Ugra". It is possible to mark out 3 steps of the research: a preparation of a common geographic base, a definition of a thematic content and a design of the map. The elements of the common geographic base were received by a visual deciphering of a remote sensing image. This image was preliminarily composed from several parts and referenced in the UTM projection zone 37 WGS-84. At the same time contour lines and terrain relief were obtained from DEM.

The second step is the most important in this research. The thematic content is mainly presented as animated signs on the map. All animations of this work were made using Macromedia Flash 8 Professional software. The generated signs can be divided on the 3 groups:

- signs, moving on the map, but not changing its shapes or colours during the movement,
- signs, moving on the map and changing its shapes or colour during the movement,
- signs, not moving on the map, but changing its shapes or colour in a period.

Several signs were created using images found on the web. These images were edited, designed and changed subsequently in Adobe Photoshop. The signs of the first type were animated on the last stage of the map creation while only the images were created preliminarily.

The signs of the second and the third type are more interesting. It is possible to mark out also two groups of them, which are stipulated by the difference in the methods of creation.

The effect of movement is achieved by replacement of images. That means that several images of one object or event exist and they are insignificantly derated. The effect of continuous change of shape is achieved by their quick replacement. This method of animation was applied for the sign of a bicyclist, who moves his legs and arms, and a campfire where tongues of flame move.

The signs of the second group were animated in a different way. Only one image was used, but it was vectorial. This image was divided on some parts and individual elements were selected. Then each of these individual parts was set in motion by such tools as Motion and Shape Tween. A girl who lies on the beach and moves her hand, a fisherman, who casts the line were animated in such a way.

Besides the thematic component some elements of the common geographic base were also animated. So you can see on the map a car, which rides on the roads and smokes, an elk walking in forest.

On the third step the thematic content were put on the common geographic base. Every animated sign is an individual multimedia clip, therefore it is easy to plot them on the map. Also the guide lines were created for those signs which move on the map. Then they were made invisible, so they are not shown on the map. The speed of movement was chosen separately for each sign to make the map more realistic. Such guide lines define routes of cars, bicycles, elks.

On this step the difficulties appeared. If to place the objects horizontally, the impression that they are moving on roads or paths is not created. At the same time if to place the signs parallel to the guide lines, the objects fall to the borders on the map in some places. This question is not solved completely and requires improvement.

RESULT

As a result the generated map demonstrates the places where different types of activity are allowed (fishing, swimming, making a fire, camping) besides the typical landscape. The animated signs were created to attract attention to the map and increase its comprehension. Therefore the map is a naturalistic picture of the country, which includes fixed and moving elements. The accurate positions of all objects, presence of the grid tell the map from an animation view. This map is used by children, tourists, and we guess to download it in PDAs, so people can always take it with them.

CONCLUSION

We suppose that the map we generated will attract attention of untrained users and they will begin to use more serious maps to learn the world in future. By-turn we are planning to develop and introduce new ways of geo visualization, which bring closer a map to the reality. An example of such methods can be using of sound (ringing of cloister bells), a change of day and night or seasons of a year.