Application of Gis - Technology for Modelling Motion Water in the Open Channels

Petro Venherskyi, Yaryna Kokovska

Abstract - **In this paper technology that would be allowed to use ArcGIS-Extension, that is GIS-components for Web-applications based on ArcGIS Server'a. Such technologies provide simple and easy integration and use of GIS-component on the WEB-site, where a separate layer provided opportunities modeling and solving applied problems of moving water flow in rivers.**

Keywords - **equation of motion of fluid, speed of flow, section of river-bed, pressure motion, projection equation.**

I. Introduction

The technology lets you use ArcGIS-expansion, that is GIS-components for the creation of Web-applications based on ArcGIS Server'a to simulate the movement of moisture in open channels. These technologies provide simple, easy integration and use of GIS-component of the WEB-site.

II. Application of GIS – technology for Web design

The software meets the following features:

• dynamically add and remove layers of maps;

• support the basic operations with objects on layers;

• organization of the various inquiries about the characteristics of objects on layers.

Also, an additional layer are typical features of modeling and solving applied problems of data objects layer characteristics.

Claims that this technology provides:

• GIS-component design should be similar to the design of Windows-component;

• Client side will not need to install software ArcGIS, and only family of operating systems Windows, WEB-browser Internet Explorer 5 and NET Framework 2.0;

• Security:

o HTTPS (HTTP Security protocol);

o logging system;

• Integration into existing WEB-site, based on ArcGIS Server Web ADF and ArcGIS Server Manager;

• minimal use of ArcObjects in the server-side component and work on the client side without using ArcObjects.

GIS - technology is designed to GIS-components that are used to ArcMap, you can use for the Web site created by ArcGIS Server.

The technology consists of three main parts:

1. Core;
2. Implementation Framework for ArcMap;
3. Implementation Framework for ArcGIS Server Web ADF.

Petro Venherskyi, Yaryna Kokovska – Franko National University of Lviv, Universytetska Str., 1, Lviv, 79001, UKRAINE, E-mail:p_vengersky@lnu.edu.ua

Created and built GIS-component that uses the following features and web site:

1. selection of a river;
2. increase of a river;
3. highlighting some of the river;
4. about a river;
5. solving the problem of modeling the flow of water in the river.

General view of the GIS-components is as follows:

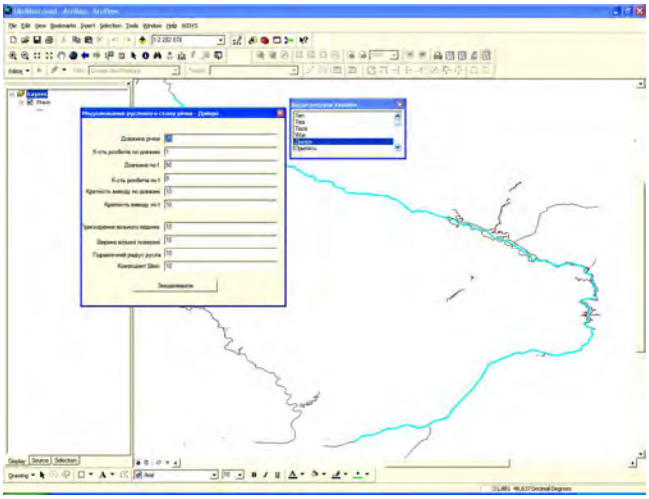

Fig.1 Form for solving the problem of modeling the movement of water in the river.

III. Conclusion

Established software implements the following capabilities for GIS-components:

• selection of a particular object;

• increasing the specific object;

• highlighting a particular object;

• information about a particular object;

• savings ArcObjects;

• setting a good user view components;

• ensure easy and intuitive to use appearance.

Also shown the possibility of extensions developed GIS-components to the simulation of water resources of Ukraine.

References

[1 [1] P. Vengersky, I. Kishchak, Y. Kokovska Modelling of liquid flow on the water catchment using WEB-GIS-applications from components based on ARCGIS SERVER'A // Scientific Notes of Taurida National V.I. Vernadsky University. – Series: Physics and Mathematics Sciences. – 2010. – Vol. 61, No. 1. – pp.36-48 (in ukr.)