

## **GIS Model of Terrain Mobility for Military Vehicles**

Mladen Pahernik, Hrvoje Heštera, Marko Zečević, Jelena Petrović  
hrvoje.heстера@morh.hr  
Hrvatsko vojno učilište dr. Franjo Tuđman, Ilica 256b, Zagreb, Croatia

### **Abstract**

Terrain mobility of vehicles is one of the key elements of modern use of armed forces, both in wartime and in various peacekeeping operations and support of civil population. Terrain mobility involves terms associated to ground mobility, mean speed movement and movement autonomy. Defining terrain mobility or trafficability is a complex process which requires a comprehensive multidisciplinary approach. Vehicle cross-country mobility depends on physical geographic characteristics of the selected area and tactical and technical capabilities of the specific vehicle. The physical geographic factors affecting vehicle mobility are morphometric parameters and genetic types of relief, soil base, hydrographic network, weather conditions and land cover. Field research was done and spatial analysis conducted using the ArcGIS software package. Results are presented of establishing a military vehicle mobility model for the Republic of Croatia and its compatibility with the NATO reference mobility model (NRMM). Special emphasis is put on issues of defining model parameters and implementation of existing data into individual mobility factors of the mobility model.

**Keywords:** terrain mobility, GIS, military geography