

## Abstract

Humanitarian assistance, disaster response and stability/peacekeeping operations are an important part of current national defense strategy and represent an opportunity for the United States to project goodwill around the world. This thesis explores using Volunteered Geographic Information (VGI) to streamline the process through which aid and assistance is routed to those most in need. The acronym SWEAT-MSO (Security, Water, Electricity, Academics, Trash, Medical, Safety, Other) describes the metrics the United States Military uses for evaluating infrastructure health in support of foreign stability operations. SWEAT-MSO features are coded as green, amber, red or black based on the severity of damage and their ability to function. Assessments are currently completed by deployed service members but by incorporating VGI, this burden can be shifted to those who live and work within an affected area. Under the proposed framework, volunteers use a browser-based infrastructure assessment app to capture metrics and store them within a spatial database for analysis by Civil Affairs (CA) teams. VGI assessments are displayed in real time within a common operating picture that spreads awareness of infrastructure issues throughout the area of interest. This thesis demonstrates the VGI infrastructure assessment concept by creating a custom app to collect assessments and a common operating picture dashboard to display the results of the assessments. Unskilled volunteers collected test assessments in two rural communities and the results were analyzed for spatial and thematic accuracy. The successful collection of targeted infrastructure metrics and the user reviews of the assessment app and the operations dashboard indicate that this method can be expected to produce results in a forward deployed environment.