US Army Corps
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Engineer Site Identification for the Tactical Environment (ENSITE)

Program Overview

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PURPOSE: The Engineer Site Identification for the Tactical Environment (ENSITE) program is dedicated to empowering military planners with the data and knowledge for construction locations. ENSITE serves the full life cycle of design, construction/deconstruction, operations/management, and it includes the potential sociocultural impacts of those processes. With such a tool, planners (as well as designers, operators, and managers) can rapidly assess current and future situations to provide proactive operational control and timely alternative situational analyses. This tool can be used while deployed or as part of training programs. The end result is a software solution that evaluates the built, natural, and social attributes of a location in support of the commander's intent, as shown by the figure below.

ENSITE uses spatial and social relationships to answer the following questions that need to be addressed when siting infrastructure, particularly in-theater.

- What do we build?
- Where do we build it?
- What resources and infrastructure are locally available?
- Are operations likely to affect the life patterns of the local population?

SOFTWARE DEVELOPMENT: ENSITE is a prototype application software tool that is designed to run in the Windows® desktop or tablet environment. Research for its development began in 2016, sponsored by the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)). ENSITE builds upon leading geospatial platforms already in use by the Army, including ArcMap, to offer an easy-to-use, customized set of workflows for contingency base (CB) planners. Within this platform are remote devices and software components, or plug-ins, that add specific functions and features while minimizing complexity for the end user. Thus, ENSITE's agility allows users to deploy it in the field. ENSITE employs open-source datasets, militarily-derived datasets, and Army authoritative datasets to provide a comprehensive picture of the operational environment. Datasets are used in conjunction with user input to execute automated processes that are capable of utilizing large amounts of environmental data in a rapid, consistent, and standardized manner to produce analyses of construction locations which are consistent with doctrine and industry best-practices.

PLUG-IN ANALYSIS TOOLS: Plug-ins offer custom functions and features so that each user can tailor site evaluations to specific needs. Each plug-in integrates feedback directly into the ENSITE user interface, delivering intuitive control of all main parameters with clear and immediate dynamic response. Below is a list of key plug-ins currently available in ENSITE. New plug-ins are continuously developed, and users may request specific applications.

- Terrain Suitability—ranks the best locations based on a combination of slope, distance to water, and distance to roads.
- Landuse Suitability—ranks the fitness of in-situ land use for varied infrastructure uses.
- Soil Suitability—indexes soils suitable for varied building types and vehicle types.
- Engineering Report—provides easy access of engineering information, including climate.
- Line of Sight—generates a viewshed of areas visible or non-visible from one or more observer locations to produce integrated, terrain-driven force protection analyses.
- Avenues of Approach—determines the best areas of mobility for two types of force, dismounted troops and M1 Abrams tank units.
- Cultural and Heritage Sites—generates an index of internationally recognized cultural and natural centers or assets within a defined region that surrounds proposed CB site locations.
- Building Materials—calculates the accessibility of locally procured building materials. Includes a variety of materials at varied quality standards.
- Golden Hour—identifies areas within one-hour travel distance for a MediVac; also accounts for flight restrictions due to political and topographic factors.
- Spatial Nodes of Attraction—identifies the sociospatial conditions in urban areas that foster and promote the formation of crowds.
- Potential Road Zones—identifies land areas suitable for a road.
- Twitter Analysis—provides insight into the reactions and emotions of a population.

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