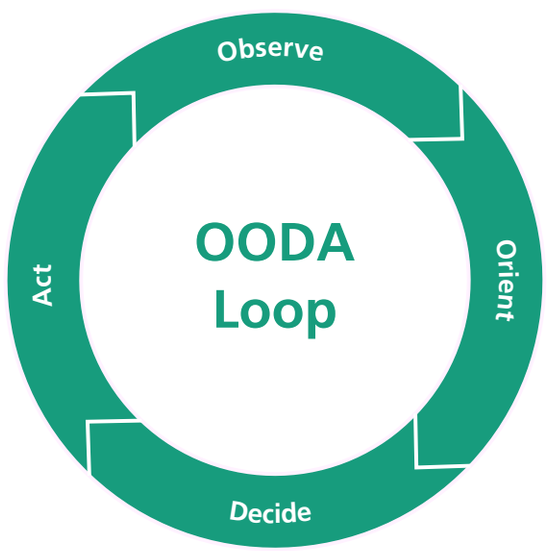
Dynamize your own leadership process to increase the responsiveness of decisions. «

KdoH, Thesis paper I,
How will land forces fight in the future?



OODA loop

Profile of the Geo-Intelligence Group

The Geo-Intelligence group researches and develops advanced methods and tools for the evaluation of images and spatial information. From this, geodata products are generated that represent end products or serve as intermediate products for further analysis.
One focus of development is on methods for generating geotypical and geospecific simulation data, primarily from 3D data of different characteristics and origins. These can be photogram-metrically derived 3D data from image and video data, results of laser scans or inventory data from geographic information systems (GIS). On this basis, the group develops thermal simulations and suitable visual system simulation modules, for example for training data generation. For this purpose, the simulation should be as physically correct as necessary and as fast as possible.
In addition, geodata-based methods to support and automate decision-making are being explored. A digital representation of real objects, called a digital twin, can provide assessments for both real-world and imaginary scenarios. From a large number of scenarios, the best ones are selected and made available to a human decision maker.

Contact

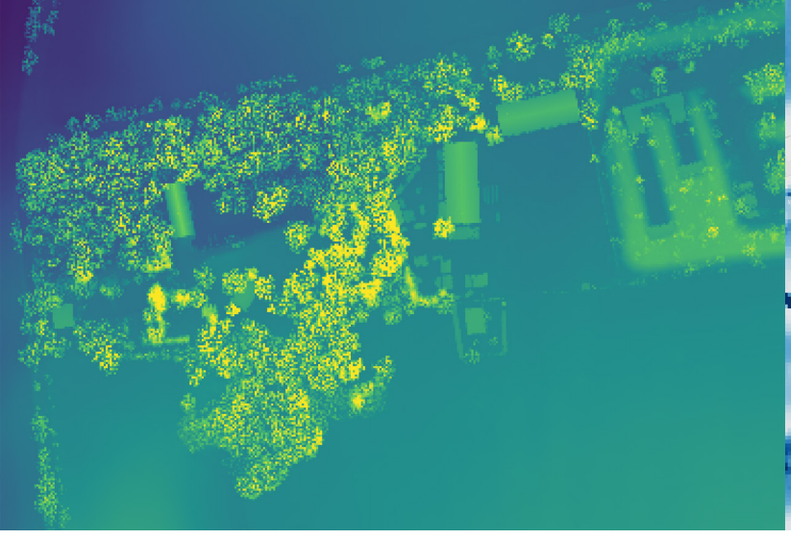
Peter Wernerus
peter.wernerus@iosb.fraunhofer.de

Fraunhofer Institute of Optronics,
Systems Technologies and Image Exploitation
Gutleuthausstr. 1, 76275 Ettlingen
www.iosb.fraunhofer.de

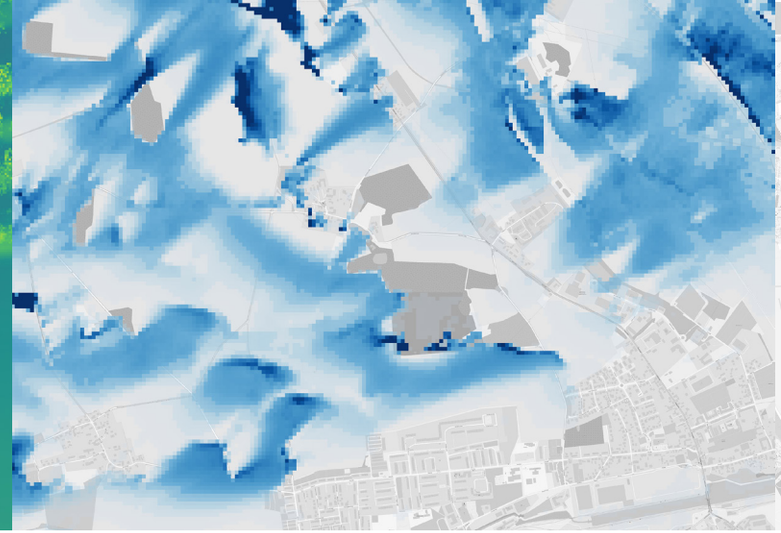
Fraunhofer IOSB

Position Selection Assistant

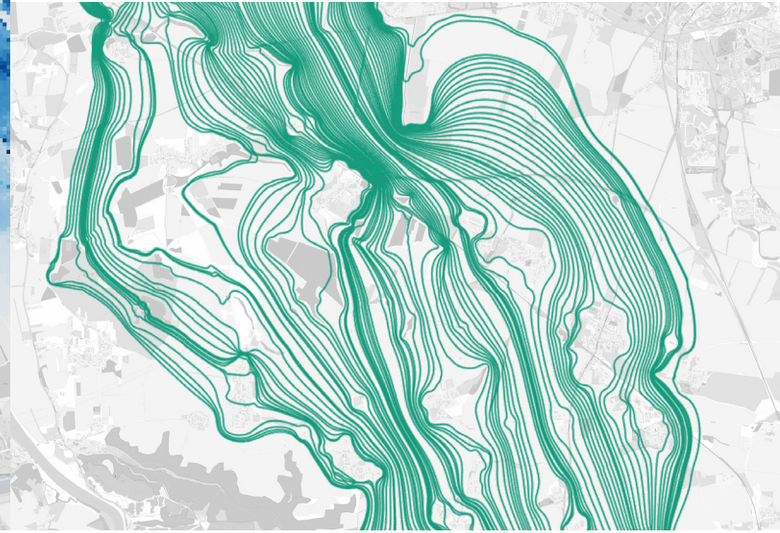
Terrain evaluation to support operational planning and battle management



Digital surface model



Position evaluation in blue, enemy direction southwest



Prediction of enemy movements

Position Selection Assistant

The Position Selection Assistant (German: SWA - Stellungswahlassistent) is designed to accelerate the land forces decision making process. The objective is the automated examination of the terrain for characteristic features of effective positions.

Application

An evaluation of the terrain is calculated in order to identify suitable positions. In particular, the maximum combat distance, visibility, and vehicle height, as well as the enemy's direction of attack are important parameters for the calculation. Knowledge of the own and the enemy weapon systems allows for a sound choice of parameterization. The military importance of terrain can be considered as a weight.

Result

The user receives an evaluation of the area according to its positional quality. This allows unsuitable terrain to be discarded and suitable terrain to be closer investigated. Special terrain features suitable for strong lines or flanking positions become visually visible. Exercises with users have shown that this can save a considerable amount of time. Terrain reconnaissance is accelerated by a factor of about 5.

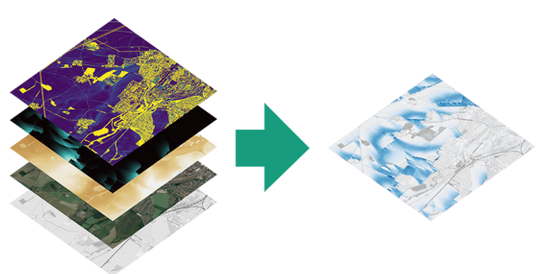
Data basis

The current version requires a digital terrain and surface model with a resolution of 1 m, as well as vector data for power lines and railways. For planned developments, vector data on land cover, buildings, water bodies, and roads are also required.

Outlook

In addition, accessibility of the chosen positions in the terrain is of crucial importance. Therefore, one focus of the development is the evaluation of arrival and departure routes as well as the interconnection of positions. This will be done using data such as cover and navigability.

Another focus of development is the prediction of enemy movements. On the one hand, this can support combat using constricted terrain and artificial obstacles, and on the other hand, it has an impact on the evaluation of positions.



Aggregation of different layers to the result