

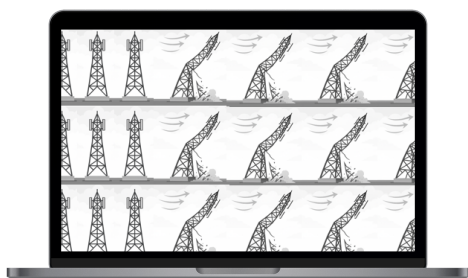
Vulnerability Assessment Synoptic Engine (VASE)

by Resilience Guard

About

VASE is a vulnerability estimation software. The tool provides real-time vulnerability assessments of critical infrastructure by integrating data from interdependency analyses, scenario simulations, and asset state monitoring. It dynamically updates risk evaluations as threats unfold, enabling the definition, analysis, and recommendation of mitigation measures to support risk-informed decision-making for first responders and security practitioners. To date, the VASE tool has focused on the vulnerability assessment of power towers in Cyprus, with the objective of designing appropriate fragility curves.

VASE is developed by Resilience Guard within the context of the SPARROW project, which aims to improve societal resilience and crisis management in the face of digital breakdowns.



Use case

Given the geographic locations of the towers and the directional characteristics of a windstorm event, the tool is capable of estimating the failure probability associated with each tower. By defining a connectivity criterion for the telecoms tower network, the tool enables the evaluation of network coverage at any arbitrary spatial location.

In addition, by incorporating the taxonomy of the business sector within the affected area and the required time for replacing a collapsed telecoms tower, the tool can estimate the indirect losses associated with digital service disruption, expressed in terms of Gross Value Added (e.g. in regions with a predominantly tourism-based economy).

Therefore, in the incident of a windstorm of a given intensity (wind speed), the emergency planning department—having an estimate of the expected damage percentage to the telecommunications tower network, the required recovery time, and the associated socioeconomic impacts—can determine the necessary stock resources and develop an effective recovery plan.

End users



Emergency organisation support
Dispatchers, planners, coordinators, analysts



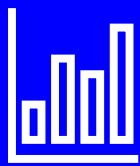
Non-emergency organisations
Public authorities, planning and resilience forums

Benefits

VASE represents a groundbreaking evolution in critical infrastructure assessment. It introduces dynamic, predictive analysis, driven by advanced algorithms and machine learning, allowing for real-time, proactive vulnerability assessments that anticipate emerging threats.

VASE goes a step further by considering not only vulnerabilities but also the resilience of critical infrastructure components, evaluating their capacity to recover in the face of adversity.

Furthermore, it carries out a socioeconomic evaluation of indirect losses expressed in terms of Gross Value Added (GVA), considering the business sector taxonomy of the affected area.



Predictive analysis



Threat detection



AI & ML engine



Real-time assessment



Socio-economic evaluation



Indirect-loss calculation



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