Repositório ISCTE-IUL

Build Efficient Response Techniques to Catastrophes

Marina A. P. Andrade[1], Mário Simões Marques[2,3], Filomena Teodoro[3,4]

[1] ISTAR, ISCTE, Instituto Universitário de Lisboa, Lisboa, Portugal
marina.andrade@iscte.pt
[2] Instituto Hidrográfico, Portuguese Navy, Lisboa, Portugal
[3] CINAV - Center of Naval Research, Portuguese Naval Academy,
Universitary Military Institute, Almada, Portugal,
[4] CEMAT - Center for Computational and Stochastic Mathematics,
Instituto Superior Técnico, Lisbon University, Portugal
mteodoro64@gmail.com

Abstract

Disaster situations, of natural origin or caused by man, in general, are emergency situations of great demand, both in terms of human issues and as to the spatial-geographical needs that require a quick response, whether to meet the first assessments of affected sites or to discontinue the process.

The main objective of this project is to build and implement a set of auxiliary tools to different decision support systems that allow, in each process, define priorities for scaling teams, taking into account the importance of each team in action, and what should be the sequence of tasks and orders to be carried out from which the alert is given until the final action is considered.

The definition of a decision support system (DSS) that introduces the possibility of redefine and adjust in real time the weights assigned to the experts involved in the solution obtained by the THEMIS - Distributed Holistic Emergency Management project Intelligent System shall be considered as an improvement. To redefine the weights, it was intended to use techniques multi-criteria, namely the multi-criteria decision analysis approach (Multiple-Criteria Decision Analysis - MCDA).

Keywords

Disaster situation, Decision support systems, Weights assigned to the experts.

References

Teodoro, M.F., Marques, M.J.S., Nunes, I., Calhamonas, G., Andrade, M.A.P. (2022). New Refinement of an Intelligent System Design for Naval Operations. In: Machado, J., Soares, F., Trojanowska, J., Yildirim, S. (eds) Innovations in Mechatronics Engineering. icieng 2021. *Lecture Notes in Mechanical Engineering*, 164–177. Springer, Cham. https://doi.org/10.1007/978-3-030-79168-1_16

Teodoro, M.F., Marques, M.J.S., Nunes, I., Calhamonas, G., Andrade, M.A.P. (2020). Using MDS to compute the contribution of the experts in a Delphi forecast associated to a naval operation's DSS. In: Gervasi, O et al. *Lecture Notes in Computer Sciences*, *12251*, 446–454. Springer, Cham. ttps://doi.org/10.1007/978-3-030-58808-3_32