

Approaches to Ethical Hacking: A Conceptual Framework for Research

Authors : Lauren Provost

Abstract : The digital world remains increasingly vulnerable, making the development of effective cybersecurity approaches even more critical in supporting the success of the digital economy and national security. Although approaches to cybersecurity have shifted and improved in the last decade with new models, especially with cloud computing and mobility, a record number of high severity vulnerabilities were recorded in the National Institute of Standards and Technology (NIST), and its National Vulnerability Database (NVD) in 2020. This is due, in part, to the increasing complexity of cyber ecosystems. Security must be approached with a more comprehensive, multi-tool strategy that addresses the complexity of cyber ecosystems, including the human factor. Ethical hacking has emerged as such an approach: a more effective, multi-strategy, comprehensive approach to cyber security's most pressing needs, especially understanding the human factor. Research on ethical hacking, however, is limited in scope. The two main objectives of this work are to (1) provide highlights of case studies in ethical hacking, (2) provide a conceptual framework for research in ethical hacking that embraces and addresses both technical and nontechnical security measures. Recommendations include an improved conceptual framework for research centered on ethical hacking that addresses many factors and attributes of significant attacks that threaten computer security; a more robust, integrative multi-layered framework embracing the complexity of cybersecurity ecosystems.

Keywords : ethical hacking, literature review, penetration testing, social engineering

Conference Title : ICISSP 2021 : International Conference on Information Systems Security and Privacy

Conference Location : San Francisco, United States

Conference Dates : November 01-02, 2021