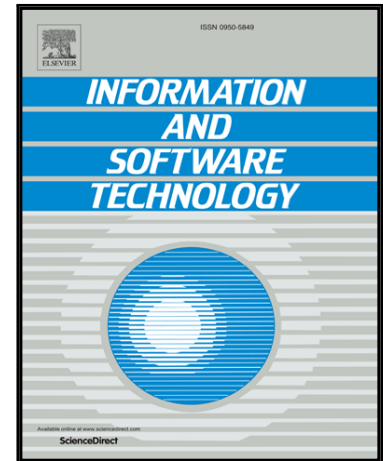


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Design and Preliminary Evaluation of a Cyber Security Requirements Education Game (SREG)

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Abstract

Context: Security, in digitally connected organizational environments of today, involves many different perspectives, including social, physical, and technical factors. In order to understand the interactions among these correlated aspects and elicit potential threats geared towards a given organization, different security requirements analysis approaches are proposed in the literature. However, the body of knowledge is yet to unleash its full potential due to the complex nature of security problems, and inadequate ways to improve security awareness of key players in the organization. **Objective:** Objective(s) of the research study is to improve the security awareness of players utilizing serious games via: **i)** Know-how of security concepts and security protection; **ii)** guided process of identifying valuable assets and vulnerabilities in a given organizational setting; **iii)** guided process of defining successful security attacks to the organization. **Method:** Important methods used to address the above objectives include: **i)** a comprehensive review of the literature to better understand security and game design elements; **ii)** designing a serious game using cyber security knowledge and game-based techniques combined with security requirements engineering concepts; **iii)** using empirical evaluation (observation and survey) to verify the effectiveness of the proposed game design. **Result:** The solution proposed is a serious game for security requirements education, which: **i)** can be an effective and fun way of learning security related concepts; **ii)** mimics a real life problem setting in a presentable and understandable way; **iii)** motivates players to learn more about security related concepts in future. **Conclusion:** From this study, we conclude that the proposed Security Requirement Education Game (SREG) has positive results and is helpful for players of the game to get an understanding of security attacks and vulnerabilities.

Keywords: Organizational Security, Security Requirements Inception, Requirements Engineering, Security Awareness, Security Education, Serious Game, Social Engineering, Cyber Security, Empirical Study

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