

SAFE Security Audit And Field Evaluation For Computer Facilities And Information Systems

Information Systems Security Design Methods: Implications for Information Systems Development

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The security of information systems is a serious issue because computer abuse is increasing. It is important, therefore, that systems analysts and designers develop expertise in methods for specifying information systems security. The characteristics found in three generations of general information system design methods provide a framework for comparing and understanding current security design methods. These methods include approaches that use checklists of controls, divide functional requirements into engineering partitions, and create abstract models of both the problem and the solution. Comparisons and contrasts reveal that advances in security methods lag behind advances in general systems development methods. This analysis also reveals that more general methods fail to consider security specifications rigorously.

Categories and Subject Descriptors: C.0 [Computer Systems Organizations]: General—systems specification methodology; H.1.1 [Information Systems]: Systems and Information Theory—value of information; H.1.2 [Information Systems]: User/Machine Systems—human factors; K.6.1 [Management of Computing and Information Systems]: Project and People Management—systems and analysis and design; K.6.6 [Management of Computing and Information Systems]: Security and Protection—authentication; insurance; insecure software; physical security

General Terms: Management, Security

Additional Key Words and Phrases: Checklists, control, integrity, risk analysis, safety, structured systems analysis and design, system modeling

INTRODUCTION

Most designers do not intentionally set out to design an information system that is unsafe or insecure. Yet research into specification methods for the analysis and design of information systems security often seems esoteric and remote. The purpose of this article, therefore, is to provide an analytical description of the evolution of information systems (IS) security analysis and design methods. To make this description interesting to a broad audience, we will approach these methods by comparing them with more general information systems devel-

opment methods. In this way, we can understand the current techniques for creating safe computing resources and recognize critical avenues for new research in general systems development methods.

Importance of Security

The gravity of the systems security issue is reflected in widely known studies of computer abuse [Parker 1976; Whiteside 1978; BloomBecker 1990], computer viruses [Fites et al. 1989; Hruska 1990], and illegitimate computer hacking or cracking [Landreth 1989; Stoll 1989;

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Information Technology Security Evaluation Criteria (ITSEC); . This process of field evaluation, while it shares the basic goal of the current NCSC . but omits all audit facilities might represent an inappropriate combination of features. Information Technology Security Evaluation Criteria Kraus LI () SAFE: security audit and field evaluation for computer facilities and. Risk assessment is a very important part of computer security planning. Audit records Financial information stored on a database system .. An alternative solution could be using a safe deposit box and a bank. those technologies, outlining the features and uses more than providing an in-depth technical evaluation. encrypt sensitive data, (5) consistently audit and monitor system activity, and (6) Number of GAO-Identified Information Security Weaknesses at the Food and . other products pending approval; the safety of food, drug, and medical computer facilities, network devices such as routers and firewalls. The role of information technology (IT) control and audit has become a Information Security Policy Development for Compliance: ISO/IEC , NIST SP Finally, the field of computer science contributes knowledge about control or place the organization at risk; Evaluation of complex systems development life.

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