

Formalizing Evidence and Trust for User Authorization (Proposal Number: 0209059)

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Abstract

Research is proposed to develop authorization mechanisms for secure information access by a large community of users in an open environment. The research problem is to formalize the trust that is associated with each user for granting privileges of access to data warehouse and the World Wide Web. Evidence is used to prove certain properties of a user in order to build a trust model. Evidence is formalized and a computational model for the reliability of evidence is developed. This research combines the concepts of role-based access control, user behaviors and profiles, mathematical theory of evidence, and data mining. This research contributes to the design and development of a trust-enhanced role-mapping server. For adaptive user authorization, this server cooperates with existing role-based access control mechanisms. A series of experiments are planned to study the performance issues of the trust model prototype. An efficient and adaptive algorithm for role assignment will be developed as a result of these experimental studies. This research will provide a framework for secure authorization systems with applications in the Semantic Web, e-commerce, airport security procedures, intelligence gathering and policymaking in military, homeland security, and database access in general.