# Sybil Proof Anonymous Reputation Management

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## ABSTRACT

Many new Internet applications base on openness to externally contributed content. The numerous user contributions offer both opportunities and threats. A priori, the quality of those user-generated contributions is unknown. The customers have to decide which offer they want to make use of. Reputation systems can help to optimize the user's return-of-investment. Privacy with respect to user provided reputation information is important for the acceptance.

This work presents an architecture for *Anonymous Reputation Management* **(ARM)**, which is explained for the example of File Sharing **(ARM4FS)**. We propose an anonymization layer separating private data needed for the reputation system from the publicly accessible reputation information, which is a very general concept. Anonymous reputation management (ARM) can be plugged on top of many reputation systems in order to preserve the users' privacy for many scenarios. Our implementation of ARM4FS uses the EigenTrust algorithm [17].

Furthermore, we present a technique for *Anonymous Attestation of Unique Service Subscription* **(AAUSS)** in order to prevent Sybil attacks by enforcing that each user has at most only one account without compromising the users' anonymity.

## Categories and Subject Descriptors

E.3 [**Data**]: Data Encryption; E.4 [**Data**]: Coding and information theory—*Formal models of communication*; C.2.4 [**Computer Communication Networks**]: Distributed Systems

## General Terms

Communication System Security, EigenTrust


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## Keywords

Privacy, Anonymity, Reputation Management