My ePass - Your Digital Identity

Genchev, Stefan

My ePass is a platform-independent infrastructure which enables individuals and businesses to establish secure and seamless digital communication. Worldwide, there is a big diversity of standards and guidelines controlling the operation of certificate and registration authorities. For the purposes of my project I have developed my own standard based on a compilation of several widespread and well-established ones. In addition, I have introduced further technologies aiming to obtain a higher level of security. As a sample implementation of this standard I have programmed software written in .NET C#. In its core it is based on currently secure cryptographic algorithms and the public key infrastructure. My main priority throughout the work process was to design a user-friendly interface without having any impact on the application's security characteristics. In order to ensure a secure authentication process, the end-users in the system are provided with smart cards, which also guarantee the confidentiality of their personal data on the My ePass server. Users are provided with the opportunity to, inter alia, sign and encrypt documents, receive electronic mail and log into websites, supporting the technology of My ePass. Examples of additional features defined in my standard and present in its software implementation are the monitoring of signed documents and the encryption of data with decryption possibilities meeting the user’s needs. Additionally, I have developed a proof-of-concept of a quantum computing resistant public key infrastructure system, which is also compatible with the existing software.

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