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**Thesis title:**
Strengthening and Formally Verifying Privacy in Identity Management Systems

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**Citation:**
This thesis proposes methods to strengthen and verify users’ privacy in a digital world using an anonymous credential system. The main contributions of this thesis include the design of protocols to protect users from unauthorized revelation of their identity information, and a novel use of Coloured Petri Nets to model and verify users’ privacy. This thesis also examines how anonymous credential systems can be applied efficiently such that users and service providers can reduce the number of expensive cryptographic computations required.