

Preface

This work has been elected the best thesis in information systems in the information systems department, Faculty of Business and Economics, University of Lausanne, Switzerland (2012). It has also been nominated for European Research Consortium for Informatics and Mathematics (ERCIM) Best Ph.D. Thesis Award on Security and Trust Management (2013) and for Faculty's Outstanding Dissertation Award, Faculty of Business and Economics, University of Lausanne, Switzerland (2012). Additionally, the first published article of this work has been awarded "Best Position Paper" in one of the international conferences in information systems (2008).

We present the approach and results of work that has been conducted at the Department of Information Systems (ISI), University of Lausanne, Switzerland. We consider this work as a crucial step towards the realization of our **service-oriented cyber-security vision**: Could cyber-security be delivered a set of autonomous hosted services available per request on per-usage basis? We leave an increasingly digital footprint in cyberspace and this situation puts our digital identity at high risks. Privacy is a right and fundamental social value that could secure digital identities. Thus, the main question of this research is how to turn digital identity-related privacy in a shape of set of services that are loosely coupled, publicly hosted and available to on-demand calls. It is recognized that technical initiatives are not enough to guarantee resolution for the concerns surrounding a multifaceted and complex issue of identity and privacy. For this reason they should be apprehended within a global perspective through an integrated and a multidisciplinary approach, which dictates that privacy law, policies, regulations and technologies are to be crafted together from the beginning of the project as a set of requirements. They are drawn from global, domestic, and business-specific privacy laws and policies related to digital identity. We suggest a layered implementation DigIdERP framework in accordance to model-driven architecture approach that would help cyber-security team to implement security requirements in the form of a set of services that could accommodate Service-Oriented Architecture (SOA): Privacy-as-a-Set-of-Services (PaaS) system. The framework will serve as a basis for vital understanding between business management and technical managers on digital identity-related privacy initiatives. The layered framework presents

five practical layers as an ordered sequence as a basis of security project roadmap, however, in practice, there is an iterative process to assure that each layer supports effectively and enforces requirements of the adjacent ones. Each layer is composed of a set of blocks, which determine a roadmap that security team could follow to successfully implement PaaS. Several blocks' descriptions are based on OMG SoaML modeling language and BPMN processes description. We identified, designed, and implemented services that form PaaS and described their consumption. PaaS Java (JEE project), WSDL, and XSD codes are given and explained.

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