Digital Identity Attributes Cohesion to Access E-services: Major Issues and Challenges in Digital Society

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Abstract

Today, many of our daily tasks are accomplished through the use of E-services that require user’s authentication based on specific number of digital identity attributes. These attributes are dependent to particular context of an E-services provider. For an end-user, different E-services may require different sets of attributes, which reside in multiple locations. More often digital identity attributes aggregation or cohesion is needed to establish trust during the authentication process when accessing E-services. In this paper, we provide a literature review of major issues and challenges related to digital identity cohesion. In the first line, we lay a particular emphasis on technical issues and in the second line we provide an overview of major economic and ethical challenges.

Keywords

Digital identity, attributes-based cohesion, E-services grant, cohesion issues and challenges

I. OUT OF MANY, ONE

Broadband Internet is diffusing rapidly and it is accelerating online activities and E-services grant such as online shopping, education, use of government services, download and playing digital content, and use of video telephony [1]. We ascribe “Out of Many, One”, a Latin translation of “E Pluribus Unum” that is used in the Great Seal of the United States, to point out the idea of digital identity aggregation and cohesion. The goal of digital identity cohesion is to establish a relationship between individual’s attributes in order to allow users to contract E-services.

In the offline world, anonymous transactions are conducted successfully, but in the online service-oriented world, E-services providers need to know identity information of the service recipient. Thus, building identity infrastructures is considered an attempt to establish a community of trust, which becomes a requirement for online business [2]. When E-services provider compels a combination of multiple identities residing in fragments within distributed and disparate business applications to be presented in order to fully identify the individual, identity cohesion capabilities become a requirement for E-services access control.

This article deals with major challenges and consequences of digital identity cohesion when accessing E-services. We present basic concepts of identity and digital identity in section two. In section three, we describe the importance and needs of digital identity cohesion in general and particularly in the context of E-services. In section four, we stress on technical issues of digital identity cohesion for users and E-services providers; and we provide an overview of major economic and ethical ones. We conclude in section five by providing few recommendations.

II. IDENTITY AND DIGITAL IDENTITY

II.1. Basic Concepts of Identity

The concept of identity is evolving over time. The term ‘identity’, which is firstly known used in 1570, has been used in many different ways in academic research and in popular usage [3]. The term is still of disputed origins, but its origin may derive from Middle French ‘identité’, from Late Latin ‘identitatis, identitas’, or probably from Latin ‘identidem’ repeatedly, a contraction of ‘idem et idem’ and literally ‘same and same’ [4]. Several decades ago, human identity was defined by geography, community, and family relationships. If an individual was born into a well-known and rich family or in a poor remote community, he or she would remain and would typically not be able to change their life pattern or economic status over time. One’s geophysical space and place in society were inextricably linked and the declaration of an individual’s name, sometimes accompanied by the name of their city or village, was sufficient to prove his identity. Today, individuals are having