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QUALIFIED ELECTRONIC SIGNATURE – eIDAS STRIKING CZECH PUBLIC SECTOR BODIES

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Abstract

Electronic IDentification, Authentication and trust Services ("eIDAS") is a standardized system for trustworthiness, effectiveness and efficiency. Since 2018, Czech public sector bodies have to use qualified electronic signatures when officially acting via electronic documents. This calls for a pioneering study entailing three purposes: (i) to identify provisions set by the EU law and Czech law of this duty and to interpret them, (ii) to study and assess how this duty is materialized and observed while using a pioneering Czech micro case study and (iii) to discuss and compare the yielded results with the *status quo* in other EU member states. A multi-disciplinary and multi-jurisdictional research of primary and secondary sources is performed along with a Czech micro case study exploring the readiness, implementation and consequences of this new duty on five Czech public sector bodies – Prague municipalities. The qualified electronic signature is a reality in the EU, but its standardized use is welcome and materialized with varying intensities.

Keywords: eIDAS, qualified electronic signature, public sector body, electronic communication, digital single market

INTRODUCTION

Electronic IDentification, Authentication and trust Services ("eIDAS") is a standardized system of electronic identification and trust services for electronic transactions in the European Internal Single Market. It was created by EU Regulation 910/2014 of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC ("Regulation 2014"). Regulation 2014 is critical for materialization of EU strategies (Erixon, 2010; Stec and Grzebyk, 2017). It penetrates into the national settings (Azolai, 2011) and is binding and directly applicable in all EU member states since 2016, except for certain provisions which had their application moved to 2014 or 2018 (Art. 52). Hence, in 2019, electronic identification means that all EU member states are standardized and mutually recognized, even by and vis-à-vis national public sector bodies (Art. 6).

The Czech Republic has recognized the legislative, economic, social and information system/information technology ("IS/IT") impact of the Regulation 2014 and enacted *lex specialis*, i.e. Act No. 297/2016 Coll., on services establishing trust for electronic transactions ("Act 2016"), which repeals a prior leading law source on electronic signature, Act No. 227/2000 Coll., on electronic signature. On 19th September 2018, Act 2016 became both valid and applicable, i.e. fully entered into force.

By the digitalization, innovation, inter-operability and transparency in the internally borderless EU (Solesvik and Gulbrandsen, 2013) and by eIDAS, both signatories and recipients, should enjoy more convenience and security in the entire EU and

especially benefit by secure and seamless electronic transactions (Vogt, 2016). Public sector bodies and research institutions and universities (Staníčková *et al.*, 2013) should perceive it as a public good (Czyzewski *et al.*, 2016) and are to become the flagship of this higher form of secured digitalization creating their duty to use the qualified electronic signature, qualified electronic stamp and qualified electronic seal. Despite its critical importance and significant consequences for the daily operation of public sector bodies, so far this topic has received very little attention from the academic sphere. Therefore, it is highly desirable to conduct and report a pioneering study about the exact dimensions of the legal duty of public sector bodies to use such an electronic signature and how this legal duty is perceived and observed, in the EU and in the Czech Republic in particular. This implies the indicated three purposes of this paper, the use of a case study and the expansion of the yielded propositions and recommendations beyond Prague's borders as well as the Czech borders.

MATERIALS AND METHODS

eIDAS brings a compulsory standardization in the digital field and ultimately new duties, such as the legal duty of public sector bodies to use an enhanced form of electronic signature. This calls for a pioneering study entailing three purposes: (i) to identify provisions set by the EU law and Czech law of this duty and to interpret them, (ii) to study and assess how this duty is materialized and observed while using a pioneering Czech micro case study and (iii) to discuss and compare the yielded results with the *status quo* in other EU member states. It requires a multi-disciplinary and multi-jurisdictional research of primary and secondary data. The EU and Czech legislative sources are to be employed along with official statements and published official, as well as unofficial, academic and laic propositions. The interplay of economic, legal and technical aspects shapes the focus, targeting both qualitative and quantitative data and entailing deductive and inductive aspects of legal thinking (Matejka, 2013). The legislation is interpreted according to the appropriate approaches, in particular a teleological and purposive approach and only supportively by a literate and golden rule approach. Due to the novelty of eIDAS, the case law is not yet developed and hence the jurisprudence cannot be explored. Data extracted from the legislative and academic sources is further holistically, critically and comparatively processed while using the method of description and Meta-Analysis (Silverman, 2013) and refreshed by Socratic questioning (Areeda, 2016). Therefore, the legislative and literature overview covers both the EU and Czech Republic and, based on its results, the micro case study using Prague municipalities is performed and its results are anchored in the EU context in order to provide propositions and recommendations going beyond the Czech Republic. The biggest data strength consists in the field search and the Czech micro case study based on the questionnaire inquiry regarding a homogenous sample of Czech public sector bodies - five Prague municipalities, see Tab. I.

Hence, the primary data is collected via questionnaires from these municipalities and targets the financial and time demands of the new

I: *Respondents, their inhabitants, revenues and expenses – 2018*

Municipality	Inhabitants	Revenues (in million CZK)	Revenues per capita (in CZK)	Expenses (in million CZK)	Expenses per capita (in CZK)
Prague City	1,304.773	60,187	46,128	80,722	61,903
Prague 1	29.499	825	27,967	1,026	34,780
Prague 2	49.624	404	8,141	722	14,549
Prague 4	129.455	722	5,571	995	7,686
Prague 11	77.600	394	5,077	496	6,392

Source: Prepared by authors

II: *Questions included in the questionnaires*

Q 1 Technical IS/IT	Which technical and/or IS/IT means were used to establish the capacity to sign via a qualified electronic signature with a qualified electronic seal?
Q 2 Finance	How much has been spent for these technical and/or IS/IT means, i.e. a qualified electronic signature/ seal?
Q 3 Aut. Officers	How many officers have the capacity to sign via a qualified electornic signature /qualified electronic seal?
Q 4 Double-Check	How can third parties double-check your identity in relation to conditions and access to documents and information on your profile?

Source: Prepared by authors

legal duty for these bodies and the perception of this duty by these municipalities. The generally used method of collection, categorization, verification and analyzing data is complemented by further specific methods, determined based on the type of explored sources. The primary sources generated by the micro case study via questionnaires lead to data to be addressed by the method of critical and comparative expert analyses. The questions included in the questionnaire and answered by all respondents are indicated in Tab. II, below.

In sum, the multi-disciplinary and multi-jurisdictional research of primary and secondary data and the holistic Meta-Analysis with Socratic questioning, especially with respect to the micro case study, shines a light on and displays, in a pioneering manner, the new legal duty of public sector bodies to use an enhanced form of electronic signature.

Legislative and Literature Overview

The identity in the digital space, especially on the Internet, and its verification is critical for the operation of the global society, especially with respect to public services and business operations (Erixon, 2010; Pohulak-Zoledowska, 2016). Electronic identification ("eID") is a typical answer to this challenge and the modern European integration, focusing on the single internal market, cannot avoid the eID issue. It is well accepted that a common and/or unified infrastructure for eID across the EU and EU member states would be beneficial, in particular forpublic administration, and would lead to an increase in efficiency and service quality (Ribeiro *et al*., 2018). Indeed, despite the sui generis status of the European Union (EU) and the alleged chronic EU blurring of the distinction between truth and reality (Chirita, 2014) and between law and politics (MacGregor Pelikánová, 2013) in a business and competition context (Damro, 2012), the EU is committed to modern concepts such as integration in the digital dimension or CSR (MacGregor Pelikánová, 2019). The use of eID and eIDAS should be a positive factor for proper operation of the public sector as well as the private sector, i.e. contribute to proper competition (Dima *et al*., 2018) and even 'coopetition' (Christ *et al*., 2017; Cygler *et al*., 2018).

The Strategy Europe 2020 and its drive for the smart, sustainable and inclusive growth, emphasizes the critical importance of the development of the digital single market (Pasimeni and Pasimeni, 2016), digital agenda (Cvik and MacGregor Pelikánová, 2016) and technological potential (Balcerzak, 2016; Zelazny and Pietrucha, 2017), and of the synchronization and mutual recognition of national and sectorial eID systems (Stec and Grzebyk, 2017; Radulescu, 2018). This is materialized by Regulation 2014, i.e. eIDAS is a result of the European Commission's focus on Europe's Digital Agenda, transparency and general digital growth in the EU, leading to the creation of mandatory standards for electronic communications and transactions in the European Single Internal Market (Pohulak-Zoledowska, 2016). The main EU intent of eIDAS is to drive innovation by adhering to standardized IS/IT. This should support the trustworthiness of electronic communications and transactions in the EU, the establishment of the interoperability by the creation of a common framework recognizing eIDs from EU member states, regardless of the underlying projects, such as STORK, SPOCS, PEPPOL, eCodex, epSOS, etc. (Ribeiro *et al*., 2018) and the transparency, via a clear and accessible list of trusted services to be used for the framework.

Regulation 2014 should be the legal fundament for safe and secure electronic interactions between Europeans, including citizens, businesses and public sector bodies, and ultimately should support both the effectiveness and efficiency of public and private services and the mutual cooperation and coopetition (Cygler *et al*., 2018). It defines electronic signature, electronic seal, electronic stamp and their qualified versions (Art. 3 Regulation 2014) makes them truly equivalent to their tangible counterparts, and limits the legal effects of electronic signatures which are not advanced or qualified electronic signatures (Art. 25 Regulation 2014). It reflects intellectual property aspects (Vivant, 2016) to make sure that high security and IS/IT methods are used, while paying particular attention to public sector bodies and their function. EU member states have to establish and participate in a common framework for this electronic communication which recognizes, controls and verifies eID from different EU member states. Tab. III provides an overview of the legal duty for public sector bodies based one the Regulation 2014.

Based on the Regulation 2014 (Art. 27), the European Commission has adopted a set of implanting acts regarding eIDAS which focus either on electronic identification or on electronic trust services (EC, 2018). To the former belongs e.g. Commission Implementing Regulation (EU) 2015/1502 of 8 September 2015 on setting out minimum technical specifications and procedures for assurance levels for electronic identification means, and to the latter belongs e.g. Commission Implementing Decision (EU) 2015/1506 of 8 September 2015 laying down specifications relating to formats of advanced electronic signatures and advanced seals to be recognized by public sector bodies. Pursuant to these implementing acts and due to the validation and double checking needs, qualified electronic signatures and seals must take the format of CAdES-, XAdES-, PAdES- oder ASiC (Vogt, 2016).

The Regulation 2014 is applicable and binding in each and every EU member state (Andrasko, 2017). The Czech Republic, in the process of adjusting

III: *Selected provisions of Regulation 2014*

Art.2 Scope	This Regulation applies to electronic identification schemes that have been notified by a Member State, ...
Art.3 Definitions	(7) 'public sector body' means a state, regional or local authority, a body governed by public law ... (12)'qualified electronic signature' means an advanced electronic signature that is created by a qualified electronic signature creation device, and which is based on a qualified certificate for electronic signatures; (27)'qualified electronic seal' means ...
Art. 16 Penalties	Member States shall lay down the rules on penalties applicable to infringements of this Regulation. ...
Art. 17 Supervisory body	1. Member States shall designate a supervisory body established in their territory or, upon mutual agreement with another Member State,. ...
Art. 25 Legal effects of electronic signatures	1. An electronic signature shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in an electronic form ... 2. A qualified electronic signature shall have the equivalent legal effect of a handwritten signature. 3. A qualified electronic signature based on a qualified certificate ... shall be recognized as a qualified electronic signature in all other Member States.
Art. 27 Electronic signatures in public services	... Member State requires an advanced electronic signature based on a qualified certificate to use an online service offered by, or on behalf of, a public sector body...By 18 September 2015,... the Commission shall... define reference formats of advanced electronic signatures.
Art. 29	Requirements for qualified electronic signature creation devices 1. Qualified electronic signature creation devices shall meet the requirements laid down in Annex II.
Art. 46	An electronic document shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in an electronic form.

Source: Prepared by authors

the national Czech law to this new eIDAS system, went perhaps even beyond the strict minimum by enacting three key Acts. Firstly, Act 2016 reflects the demands of Regulation 2014 and goes even further, distinguishes various types of signatories and recipients and orders that public sector bodies acting via electronic documents must use a qualified electronic signature i.e. an electronic signature based on a qualified certificate (Art. 3 Regulation 2014 and Art. 5 Act 2016) and seal with a qualified electronic seal (Art. 8 Act 2016) and stamp with a by a qualified electronic stamp (Art. 11 Act 2016). Secondly, Act No.298/2016 Coll., changes a large number of Czech Acts to make them compatible with the Regulation 2014 and Act 2016. Thirdly, Act No. 250/2017 Coll., on electronic identification, regulates the qualified systems, accreditation and even fines. The Ministry of the Interior has created a web application CertIQ for the verification of certificates vis-à-vis trustworthiness eIDAS database.

In sum, eIDAS and Regulation 2014 have a massive impact across the EU, e.g. since the 19th of September, 2018, Czech public sector bodies have to sign such electronic documents while using a qualified electronic signature (Art. 5 and Art. 19 Act 2016) established by a qualified instrument equipped with an appropriate qualified certificate, unless the law states otherwise. Tab. II summarizes the types and requirements for electronic signatures (Art. 5 – Art. 7 Act 2016).

A public sector body has to be equipped with technical and IS/IT devices, schemes and systems allowing for putting the highest type of electronic signature, i.e. a qualified electronic signature, on electronic documents along with qualified electronic seals. In addition, they need to be able to verify the validity of electronic signatures and seals from other EU member states. It is done via a system of high trust and allows such a verification of data that any following changes can be discovered by appropriate cryptographic algorithms and standards. If Czech public sector bodies, such as Prague municipalities, officially act via electronic documents, they have to use a qualified electronic signature (Art. 5 Act 2016) and add an electronic time stamp (Art. 11 2016). Hence, they must have the appropriate equipment and a qualified certificate for that, along with a private key, saved on a certified means and used by the entrusted natural person when such a person electronically signs for the public sector body, i.e. for the municipality. Technical and IS/IT devices, schemes and systems for qualified electronic signatures can entail chip cards or tokens, certified HSM modules (external hardware equipment) or the service of a distant signing via a selected provider. What is the reality of this situation? How they perceived it and addressed it?

IV: *Types and requirements of electronic signatures*

Qualified electronic signature	= an advanced electronic signature that is created by a qualified electronic signature creation device, and which is based on a qualified certificate for electronic signatures generated by appropriate IS/IT and hardware devices (Art. 3 Regulation 2014, Art. 5 Act 2016)	• it uses a digital certificate and was encrypted; • qualified digital certificate is a certificate that attests to a qualified electronic signature's authenticity that has been issued by a qualified trust service provider.
Advanced electronic signature	= an electronic signature which meets the following requirements: a) it is uniquely linked to the signatory; b) it is capable of identifying the signatory; c) it is created using electronic signature creation data that the signatory can, with a high level of confidence, use under his sole control; and d) it is linked to the data signed therewith in such a way that any subsequent change in the data is detectable. (Art. 26 Regulation 2014)	• it provides unique identifying information that links it to its signatory. • the signatory has sole control of the data used to create the electronic signature. • it can be technically implemented, following the XAdES, PAdES, CAdES or ASiC Baseline Profile (Associated Signature Containers) standard for digital signatures, specified by the ETSI.
Simple electronic signature	data in electronic form, which is logically associated with other data in electronic form and which is used by the signatory to sign,	It can be a simple typing name (even under digital signature).

Source: Prepared by authors

Czech Case Study – Prague municipalities and eIDAS

Pursuant to the Regulation 2014 and Act 2016, Czech public sector bodies have to use qualified electronic signatures if they officially act via electronic documents. Consequently, they have to be fully aware about it, implement it by using appropriate IS/IT instruments and systems and materialize it in their daily operation. This concept requires the unification of identification of all officers, i.e. entrusted employees of public sector bodies, so it can be synchronized with the central management and issuing of qualified means with certificates allowing qualified signatures and qualified seals. Czech public sector bodies have to expand their file system "e-spis" by modules allowing for the communication with the selected certification authority. Further, they have to select and use technologies from the list of qualified instruments endorsed by the EU. The unification of the identity of officers and of the issuing of the qualified instruments for verification and signatures should lead to the maximal effectiveness and efficiency. Failures should have a crippling effect and be punished by sanctions – loss of legal effects and even fines. Therefore, Czech public sector bodies, such as Prague municipalities, have to understand this new legal duty and get adjusted to it, i.e. they have to expend money and time and effort in this respect.

A homogenous sample of Czech public sector bodies, five Prague municipalities, was used to assess their perception and readiness in this respect. Technical, IS/IT, financial, human resources and verification aspects were targeted. The Prague City Municipal Authority deals naturally with the largest number of inhabitants and with the largest budget and provided answers as indicated in Tab. V.

Prague 1 Municipal Authority is the smallest respondent considering the number of inhabitants, but the second biggest considering revenue, revenue per capita, expense and even expense per capita. Tab. VI summarizes the answers provided by Prague 1 based on the questionnaire.

The Prague 2 Municipal Authority is the second smallest respondent considering the number of inhabitants, revenues and expenses, and the third smallest if this is calculated per capita. Tab. VII summarizes answers provided by Prague 2 based on the questionnaire.

V: *Respondent Nr. 1 Prague City Municipal Authority*

Q1 Technical IS/IT	For qualified electronic signatures – we use qualified means, namely chip card ProID+Q. For qualified electronic seal – nothing, we do not use it.
Q2 Finance	Our expense reached 323,400 CZK without VAT, i.e. we spent slightly over CZK 323 thousand on technical means allowing for making the qualified digital signature.
Q3 Authorized officers	The number of authorized Officers reaches 542, i.e. in total 542 employees are empowered via qualified electronic certificates to use a qualified electronic signature.
Q4 Double-Check	No answer was provided about the identity verification.

Source: Prepared by authors

VI: *Respondent Nr. 2 Prague 1 Municipal Authority*

Q1 Technical IS/IT	For qualified electronic signatures – we use qualified means, namely USB Token MINILECTOR-S EVO with chip card. For qualified electronic seal – we use external holder of the qualified certificate for electronic seals, this is more effective and efficient than if we would do it by ourselves.
Q2 Finance	Our expense for these IS/IT means reached CZK 98,313 including VAT, including especially the price for 125 tokens.
Q3 Authorized officers	The number of authorized Officers is 111, i.e. 111 employees are empowered via a qualified electronic certificate to use a qualified electronic signature. We do not keep track of how many per each internal department.
Q4 Double-Check	The verification, is done via Tender Arena System, i.e. web Tender Arena verified by SS1 certificated which is encrypted and the electronic means is certified.

Source: Prepared by authors

VII: *Respondent Nr. 3 Prague 2 Municipal Authority*

Q1 Technical and IS/IT	For qualified electronic signatures – we use qualified means, namely IDPPRIME MD 840. For qualified electronic seal – nothing, we do not use it.
Q2 Finance	Our expense for these IS/IT means reached CZK 97,139 including VAT.
Q3 Authorized officers	The number of authorized officers reaches 90, i.e. in total 90 employees are empowered via a qualified electronic certificate to use a qualified electronic signature. In each internal department at least two authorized officers – the deputy and the vice-deputy. Further, each member of the Council of Municipality Prague 2 is empowered to use qualified electronic signature.
Q4 Double-Check	The double checking, i.e. verification, is done via issued certificates which are available on the portal of the certification authority which issued these certificates.

Source: Prepared by authors

VIII: *Respondent Nr. 4 Prague 4 Municipal Authority*

Q1 Technical IS/IT	For qualified electronic signatures and qualified electronic seal – information not provided.
Q2 Finance	Our expense for these IS/IT means reached CZK 11,000.
Q3 Authorized officers	The number of authorized officers reaches 25, i.e. in total 25 employees are empowered via a qualified electronic certificate to use a qualified electronic signature.
Q4 Double-Check	No answer was provided regarding the question about the double necking of identity.

Source: Prepared by authors

IX: *Respondent Nr. 5 Prague 11 Municipal Authority*

Q1 Technical IS/IT	For qualified electronic signatures – we use qualified means, namely chip card ProID+Q.
Q2 Finance	Our expense for these IS/IT means reached CZK 200,703.
Q3 Authorized officers	The number of authorized officers reaches 114, i.e. in total 114 employees are empowered via a qualified electronic certificate to use a qualified electronic signature.
Q4 Double-Check	Verification by third parties can be done by automatic verification of electronic documents, since the certification authority PostSignum was selected to be the issuer of the electronic certification and Post Signum publishes on its website (webportal) the list of invalid certificates.

Source: Prepared by authors

The Prague 4 Municipal Authority is the second biggest respondent considering the number of inhabitants, revenues and expenses and Tab. VIII summarizes its answers based on the questionnaire.

The Prague 11 Municipal Authority is the third biggest respondent considering the number of inhabitants, but the smallest one regarding revenue, revenue per capita, expense and even expense per capita. Tab. IX summarizes its answers based on the questionnaire.

Tab. X provides an overview of officers able to do a qualified electronic signature for each

X: *Municipalities, officers-qualified e-signature, cost, IS/IT*

Municipality	Inhabitants	Officers	Cost CZK	IS/IT
Prague City	1,304.773	542	323,400	chip card ProID+Q
Prague 1	29.499	111	98,313	USB Token MINILECTOR-S EVO with chip card.
Prague 2	49.624	90	97,139	IDPPRIME MD 840
Prague 4	129.455	25	11,000	
Prague 11	77.600	114	200,703	chip card ProID+Q

Source: Prepared by authors

municipality and contrasts it with the number of inhabitants. This is just indicative, because naturally the potential addressees are not a natural person but as well a legal entity.

DISCUSSION

Two decades ago, national eID systems and schemes appeared with the the prime objective of secure authentication in national public sector and private sector services (Ribeiro *et al.*, 2018) and with second objective of increasing effectiveness and efficiency along with the reduction of the bureaucracy as one of the most chronic EU public administration issue (MacGregor Pelikánová, 2017). Over time, the national and sector fragmentation and lack of interoperability became a serious obstacle for the Digital Single Internal Market, and eIDAS, via the Regulation 2014, was formed to address it. Consequently, Czech public sector bodies, such as Prague municipalities, are subject to a new legal duty to use the qualified electronic signature for their acting via electronic documents, and it is obvious that the compliance requires technical arrangements, finance, human resources and other supports and efforts. Prague municipalities are aware about it and the critical provisions set by the EU law and Czech law are well known to them as well as their duty to behave effectively, efficiently and along with requirements of good husbandry. In sum, they know that they have to arrange for a qualified electronic signature, that this requires costs and efforts, and that they should not be wasteful. It corresponds to the required SMART approach, which means an innovative and functional approach that deals responsibly with situations and with a positive impact on society (Turečková and Nevima, 2018).

The complete integration of Regulation 2014 in Prague, i.e. by the Prague City Municipal Authority and all municipalities of Prague parts, is promised by the Prague City Municipal Authority by the deliberation Nr. 1634 from the 26th of June, 2018 "Central system for electronic verification of document pursuant to the Regulation eIDAS and its integration to file services" ("Deliberation"). This Deliberation is the foundation for a project under which auspices the Prague City Municipal Authority will provide technical and IS/IT support to other Prague Municipal Authorities, including the means for the qualified electronic signature and seal. This project was scheduled to be launched in July, 2018, with an expected fulfillment within 6 months. The expected cost for the realization of this project was set as CZK 58,171,537 including VAT.

However, the realization of this project does not progress as quickly as planned and, so far, the project is not yet completed and ultimately Prague municipalities and their authorities are not fully ready and compliant as expected for eIDAS as envisaged by the Regulation 2014 and Act 2016. Since the project has been delayed, municipalities generally have opted to invest the strict minimum and make minimum efforts regarding the agenda of electronic identification. The answers provided by five Prague municipalities, especially the clear admission of the employment of diverse (more and less suitable) low cost instruments and of non-compliance or a decline to provide any information, demonstrate that. Further representatives of these municipalities spontaneously explained that they have limited resources for eIDAS and that they basically wait for support and means from the Prague City Municipal Authority via the project as promised by the Deliberation or otherwise. In sum, they are between a rock and a hard place. On one hand, they have the responsibility to implement eIDAS and they are liable for failures, including the failure to fully satisfy the qualified electronic signature duty. On the other hand, representatives and agents of municipalities have to satisfy the duty to act with appropriate care and diligence, including the duty of husbandry and efficiency. So far, it seems that the Prague municipalities and their officers are more inclined to follow the latter and avoid "wasting resources on something to be paid by somebody else". In sum, they have done only the strict minimum to reach a partial compliance, i.e. to have a basic foundation of a qualified electronic signature available.

It is highly relevant to consider the situation across the EU. The leading state with respect to the eID and eIDAS is Germany which has a long tradition of a focus on the legal certainty in the digital setting (Vogt, 2016) and which provided, as the first of the EU member states, the description of the eID scheme for the mutual recognition purposes of eIDAS and

this was already in February, 2017 (Andrasko, 2017). The German law clearly underlines that the qualified electronic signature is a true equivalent to the handwritten signature and moves on to other issues, such as which officers and employees of public sector bodies should be empowered to use the qualified electronic signature and to so act for the public sector body, how the data about it can be stored safely and permanently on servers with security moduls and how to extend personal keys for individual signatures to businesses and public sector bodies keys allowing somebody to sign for them (Vogt, 2016). Similar issues are addressed in Austria by a mobile number signature system and TAN-Code, i.e. the signing person is able to proceed with a qualified electronic signature or other signatures only during a short time period (Vogt, 2016). In Germany and Austria, the legal security is ensured on an ongoing basis and it is set in a transparent manner about how each officer needs to go through the security identification process, how he or she obtains the private key, how and what he or she can sign by using an electronic qualified signature of the public sector body, etc. (Vogt, 2016). Despite this stable and developed system, German public sector bodies do not move completely from hardcopies and handwritten signatures for the sake of the legal certainty and continuity (Vogt, 2016).

While in Germany and Austria, hard and soft law develops in this respect and high quality and security mechanisms with mobile signatures and signature cards signature also develops, in the Czech Republic even the basic parameters of a qualified electronic signature remains obscure and the micro case study points out not only the differences in the implementation and use of the qualified electronic signature, but as well the reluctance to answer or the direct lack of knowledge about how the double checking is performed.

Boldly, in Germany and Austria, there are transparent systems allowing the public-at-large to know and to control whether the qualified electronic signature was done correctly and by the correct officer. As well, there are even propositions that the capacity to use a qualified electronic signature should be controlled on an ongoing basis and should be made only for a short time (Vogt, 2016). Other EU member states, such as Slovakia, have already worked for an extended period of time on their eGovernment services, but still eIDAS requirements and the combined effects of the Regulation 2014 and domestic Acts represent a challenge (Andrasko, 2017). Well, Prague municipalities are definitely not that far and even are not fully aware and/or do not openly inform about who can use the qualified electronic signature.

CONCLUSION

The legal actions of public sector bodies in the digital environment need to be done effectively, efficiently and safely. The EU brought eIDAS, and the majority of EU member states welcomed it and embraced it. The mutual recognition, reinforced security and supported transparency are perceived as critical and positive aspects of eIDAS. EU member states having a longer-term experience with electronic documents and electronic signatures, such as Germany and Austria, not only welcome eIDAS but go even further and explicitly perceive it as a wonderful vehicle to make the operation of public sector bodies more effective, efficient, safe, transparent and even citizen friendly (Vogt, 2016). The enthusiasm and drive for improvements of the qualified electronic signature and its use by public sector bodies are not, however, shared by other EU member states, such as Slovakia or the Czech Republic. Indeed, due to the similarity of the legal concepts and regimes, further comparative studies should focus in particular on eIDAS settings and applications in post-Habsburg Empire regions, such as the Czech Republic, Slovakia and Austria.

While Regulation 2014 represents a move more to unification than simple harmonization it appears, despite its validity in the entire EU and general compliance, it might be argued that critical provisions and aspects of eIDAS, such as the legal duty of the public sector bodies to use qualified electronic signature, is nationally implemented more *de lege* than *de facto*. Boldly, the identification and interpretation of eIDAS rules, including the demand of the qualified electronic signature duty for public sector bodies, is feasible and in combination with national rules provides a very clear image about the extent of these legal obligations. Regulation 2014 and Act 2016 are good examples of the implementation of eIDAS in the Czech national law and of a good solution *de lege.* However, the study and assessment about how eIDAS legal duties are materialized based on a pioneering Czech micro case study shows a lot of hesitation and passivity. Responding Prague municipalities seem to do only what is obligatory, and this even in a slightly formalistic, fragmented and low cost manner. Considering their resources and budget, it can be argued that, if they were truly committed, they would act and not formalistically do something rather symbolic and wait for assistance and guidance from above – by the Prague City Municipal Authority. The situation in other EU member states is pretty diverse and the hesitation of the Prague municipalities is far from unique. Prague municipalities deserved recognition that they have started towards *de facto* materialization of eIDAS

and that they plan to some extent a unified action. It is highly recommendable to take advantage of their recent experience and lessons learned, especially regarding the cost and reliability of used tools. Such information should be compared with results regarding other Czech and Slovak municipalities. There is not time to be wasted inasmuch as Regulation 2014 and Act 2016 took effect and eIDAS is definitely important for effective, efficient, transparent and safe actions and communications of public sector bodies and there is neither a benefit nor reason for delay.

The qualified electronic signature is a reality for the EU, including Czech public sector bodies, but the commitment and ultimately its observance and employment varies significantly. EU member states and public sector bodies with a longer and deeper experience perceive this duty as an opportunity to improve their operation, transparency, effectiveness and efficiency. However, EU member states and public sector bodies having less experience in this field hesitate to fully engage in this respect, and in particular are reluctant to spend the efforts and make investments, 'time and money', even if marginal, for it. The proposition of a central or "from above" support and the strict command to cost efficiency seems rather contra-productive, makes the public sector bodies less active, more afraid and slows down the entire process of implementation. A further enhancement of awareness, soft guideliness and a more active, flexible and open-minded role of public sector bodies are both to be highly recommended and might lead to a faster and smoother finalization of eIDAS in the entire EU and to the very needed improvement of secure electronic identification and communications.

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