REGIONAL INTEROPERABILITY AND TRUST SERVICES

IN WESTERN BALKANS

Methodology,
Implementation,
Vision
and
Action Plan

RegionalCooperationCouncil

good.
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REGIONAL INTEROPERABILITY AND TRUST SERVICES IN WESTERN BALKANS

Methodology, Implementation Vision and Action Plan

TABLE OF CONTENTS

* This designation is without prejudice on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence

ABBREVIATIONS

The following abbreviations have been used in the document in hand:

| Abbreviation	Description
API	Application programming interface
CA	Certification Authority
CAB	Conformity Assessment Body
CCB	Central Coordinating Body
CRM	Common Regional Market 2021-2024 Action Plan
EC	European Commission
eID	Electronic identification
eIDAS	Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on Electronic Identification and Trust Services for Electronic Transactions in the Internal Market and repealing Directive 1999/93/EC
eIDAS Node	eIDAS Network connector for cross-border/boundary authentication
EIF	European Interoperability Framework
EU	European Union
GG	Government gateway
IF	Interoperability framework
IOP	Interoperability platform
LOTL	List of trusted lists
MAP REA	Multi-annual Action Plan for a Regional Economic Area
MRA	Mutual recognition agreement
QES	Qualified electronic signature
QSCD	Qualified Signature Creation Device
QTS	Qualified Trust Service
QTSP/CTSP	Qualified Trust Service Provider/Certified Trust Service Provider
RFID	Radio-frequency identification
RCC	Regional Cooperation Council
SB	Supervisory Body
SEE	South East Europe
TL	Trusted List/Trust List
TSP	Trust Service Provider
USB	Universal Serial Bus
WB	Western Balkans six
2FA	Two-factor authentication

1. EXECUTIVE SUMMARY

Common Regional Market 2021-2024 Action Plan (CRM) endorsed by the Western Balkan Leaders at the Berlin Process Summit held on 10 November 2020 in Sofia represents a steppingstone for WB economies to better integrate into the pan-European market, and consists of four key areas that have a transformative effect, starting with the four freedoms approach (free movement of goods, services, capital and people), increasing the attractiveness of the region for foreign investors, integrating the WB into the pan-European digital area and transforming the industrial base and innovation infrastructures. CRM envisages mutual recognition of electronic signatures as well as other forms of eIDs and trust services between WB economies based on the relevant EU acquis.

As a starting point, Section 4 of the report gives an overview by the Western Balkan economies on the current situation concerning eID, Trust Services and service level interoperability. Legal perspective covers transposition of the relevant eIDAS Regulation principles into economy level legislation and state of play section gives an overview of practical implementation of the key eID, Trust Services and service level interoperability related key elements.

Considering the efforts that WB economies have taken to implement the European Union frameworks, clearly expressed political will to speed up economic development, and the availability of robust, well-proven, highly secure, open source interoperability platforms, the vision of the implementation concept that can be developed in a mid-term horizon can be described as an **Interoperable Western Balkans - the first fully interoperable region**.

The vision of Interoperable Western Balkans as illustrated in Figure 1 is characterised by the following criteria:

- Wide range of useful cross-border/boundary services are available for Western Balkan businesses and residents;

- eIDs and Trust Services are mutually recognised;

- Public (and private) services are accessible via mutually recognised eID schemes;

- All public entities accept eIDAS qualified electronic signatures;

- Public and private entities as well as natural persons can easily sign and validate electronic signatures on documents, including on cross-border/boundary documents;
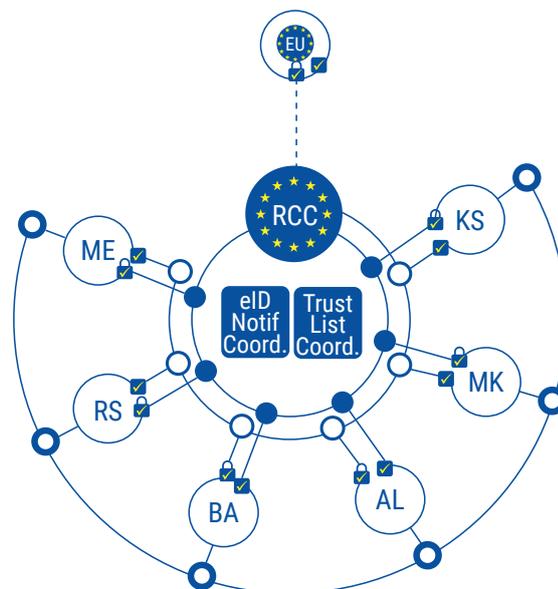
Figure 1. Vision - Interoperable Western Balkans

- Economy level implemented Interoperability Platforms are operational and interconnected;
- Once-Only principle is widely introduced.

To implement the vision of **Interoperable Western Balkans - the first fully interoperable region**, several Key Components have to be implemented, as prerequisites. Well-established eIDAS and EIF frameworks including through the support of RCC lay down a solid ground to set up those components in harmonised and coordinated manner. Higher level harmonisation makes it less complicated to interconnect eID and Trust Services and reach practical service level interoperability encouraging the WB region's economic development.

Main economy level Key Components to implement the Vision are presented in Figure 2 as follows:

- eIDAS compliant regulation;
- Technical standards covering eID and Trust Services;
- Supervisory Body;
- National level issued eID;
- eIDAS certified Trust Service Provider;
- eID and Trust Services usage environments and APIs;
- Service Level National Interoperability Platform;
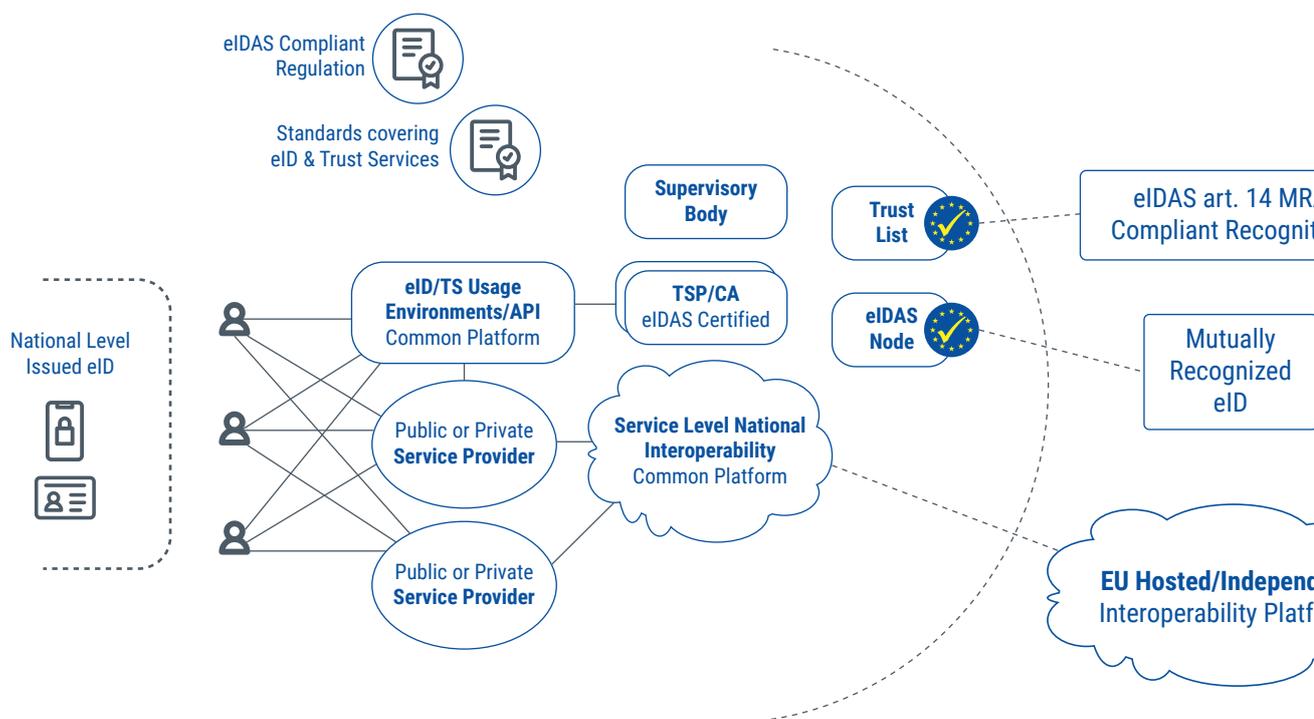- Trust List;
- eIDAS Node.

Figure 2. Economy level components to be implemented

8

Sections 7 and 8 give detailed Action Plans and Timelines for regional and economy level activities correspondingly.

Traditionally, endeavours towards implementing digital transformation in the area of interoperability and trust services focus on legislative and policy frameworks. Although those aspects represent important factors, these should not prevail over the practical needs and use-cases because without practical approach, the results will be most likely measured only in document bunches and nice slide-shows without having actual positive impact and benefits to economies.

Thus, to achieve the goals stated in a vision of Interoperable Western Balkans - the first fully interoperable region, it is highly recommended to follow a practical approach, where **priority is given to cross-border/boundary perceived needs and corresponding practical use-cases to drive interoperability related activities**. Legislative, policy and other framework related activities are to be considered only in cases when they are mandatory for practical implementation.

Economies are responsible for setting up economy level Key Components needed for implementation of the Vision. In relation to the EU harmonisation processes due date significant amount of those Key Components are already fully or partly in place, and if required by the economy, RCC can facilitate an expert support to speed up development of missing components.

Mutually beneficial cross-border/boundary services have an important role to play in facilitating economic and social development of the WB region and wellbeing of its citizens. It is essential to understand that mutual recognition of eID schemes and Trust Services without practical cross-border/boundary use-cases does not add actual value neither to economies nor to citizens. Real benefit can be achieved only via implemented useful service level use-case. That is the reason why it is highly recommended that the identified practical use-cases should drive interoperability related activities including eID schemes and Trust Services mutual recognition.
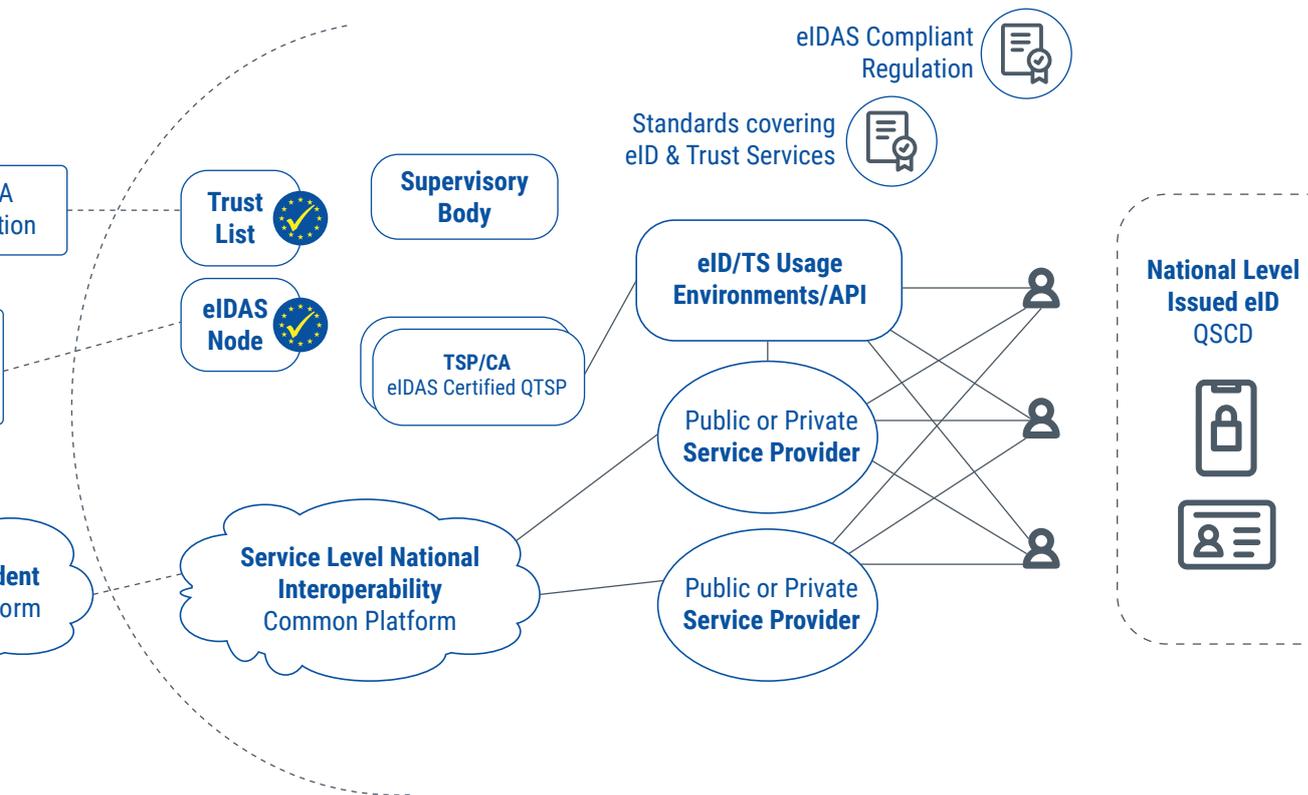
RCC can support opening a dialogue between WB economies to identify mutually useful cross-border/boundary services and to find easy-to-use and open-source interoperability platform for cross-border/boundary services interoperability.

As a result of the described Vision and Action Plans, the following is proposed:

- At least one, but rather several useful cross-border/boundary services each economy can offer to the businesses and residents of other Western Balkan economies;

- Economy level issued eID schemes are mutually recognised among Western Balkan economies following the principles fully compliant to the eID schemes recognition in EU;

- Western Balkan economies are ready for negotiations with EU to recognise economy level issued eID schemes;

- Trust Lists are mutually recognised among Western Balkan economies following the principles fully compliant to Article 14 of the eIDAS in terms of Mutual Recognition Agreement (MRA);

- Western Balkan economies are ready to initiate MRA procedures with the EU to recognise their Trust Lists.

2. INTRODUCTION

2.1. Background

Common Regional Market 2021-2024 Action Plan (CRM) endorsed by the Western Balkan Leaders at the Berlin Process Summit held on 10 November 2020 in Sofia envisages mutual recognition of electronic signatures as well as other forms of eIDs and trust services between WB economies based on the relevant EU acquis.

The objectives and actions proposed under CRM build on the work and achievements of the Multi-annual Action Plan for a Regional Economic Area (MAP REA) endorsed by Western Balkan Leaders in 2017 in Trieste with the aim of promoting further trade integration, introducing a dynamic regional investment space, facilitating regional mobility, and creating a digital integration agenda. Furthermore, Digital Agenda for Western Balkans launched on 25-26 June 2018 contributed further to supporting the digital transformation, improving service delivery for the citizens and businesses and helping Western Balkans in the preparations to integrate better into the EU Digital Single Market.

The 3rd WB Digital Summit organised in Tirana in hybrid form with virtual sessions held during 26-28 October 2020 and the Ministerial Meeting held on 2nd November 2020 concluded with the signing of two Memorandums of Understanding, one of which is the Memorandum of Understanding on regional interoperability and trust services in Western Balkan region (MoU).

2.2. Objectives and scope

Regional Cooperation Council is working to support Western Balkans in the implementation of the digital transformation related activities as part of the Digital Agenda for the Western Balkans, Digital Summits' Conclusions and CRM. In addition, Regional Cooperation Council acts upon the request of the Western Balkans in line with regional needs identified through the regional platforms.

On this note, the overall objective of the current assignment is to support the Western Balkan region to achieve greater alignment with the EU in the area of interoperability and trust services. To do this, due consideration should be given to the developments in each WB economy and EU in both areas. Due consideration should be given to European Interoperability Framework and the ongoing review process, exchange of data and documents, etc. In addition, the consultancy should support implementation of the regional agenda on interoperability and recognition of trust services in line with the strategic documents under CRM vision and agenda. At the same time, this assessment aims to define and elaborate on the actions needed at economy and regional level to ensure implementation of the MoU signed at the Digital Summit 2020.

The scope of services under this assignment includes the following:

1. Developing the regional framework in the area of interoperability and trust services, including through the preparation of a detailed list of actions with a view to enable recognition of trust services and ensure full compliance with European Interoperability Framework.

2. Providing expert advice on concrete actions at economy and regional levels as appropriate to support greater regional interoperability and recognition of trust services.

The ultimate goal is to develop and introduce practical approach and concrete action plan toward achieving the operational interoperability between WB economies and between WB and EU MS.

3. METHODOLOGY

The overall objective of the assignment in supporting the Regional Cooperation Council (RCC) Secretariat is to compose an Action Plan for the Western Balkans (WB) region that serves advancing further implementation of regional actions connected with eID and trust services mutual recognition and interoperability in line with the relevant EU *acquis*.

To achieve the said objectives, due corresponding considerations were given to the developments in each WB economy and the EU. The final deliverable envisages the Vision of Interoperable Western Balkans - the first fully interoperable region and proposes Action Plans with Timelines for regional actions as well as at each economy level defining main activities to be undertaken to achieve the Vision. According to the Vision, eID and Trust Services are mutually recognised by all WB economies and at economy level implemented Interoperability Platforms are interconnected to develop and offer cross-border/boundary services WB economies and their residents can benefit. For eID and Trust Services mutual recognition between WB economies, a methodology is used ensuring all WB economies can also initiate their eID schemes and Trust Services recognition towards the EU.

To ensure expected results, a workflow consisting of several stages was planned. First, the existing situation in WB economies was studied based on the existing materials, such are various reports, and publicly available materials. Based on our experiences and best practices regarding eID, Trust Services and their cross-border/boundary interoperability implementation, a Vision concept was developed. Discovered current situation and developed Vision concept were validated via semi-structural interviews with relevant stakeholders from each WB economy and corresponding RCC competences. As a result, economy-specific Action Plans and Timelines were developed to cover eID and Trust Services nationwide eIDAS compliant implementation, as well as eID and Trust Services interoperability between WB economies and between WB and EU MS.

From methodological perspective, the approach toward the assignment was combined with desktop research and semi-structural interviews with RCC and relevant stakeholders from each WB economy. This approach included a review of available studies, analyses, strategic documents, reports and recommendations relevant for eID and Trust Services. For this purpose, sources such as reports by European Commission and RCC were used, and publicly available materials were studied. The main methodological steps used are summarised below.

1. **Desktop research** with the aim to get an overview of the existing situation related to eID and trust services eIDAS compliant implementation in WB economies, as well as current situation of the level of maturity in eID and Trust Services interoperability domains toward connecting WB economies.

2. **Expert questionnaire A** was designed to examine the current situation in comparison to the findings and recommendations introduced in numerous relevant sources. The questionnaire A covered existing strategies, legal aspects and ongoing activities with the focus on eID and Trust Services eIDAS compliant implementation. The objective was to collect in-depth information on an economy level. More details are available in Appendix A - Economy Level Questionnaire.

13

3. **Implementation concept** consists of developing the Vision and Key components addressing eID, Trust Services and services interoperability implementation at regional and economy levels. Implementation concept describes the overall Vision and main components that should be developed and implemented on both levels and is in full compliance with eIDAS framework and principles set in EIF.

4. **Expert questionnaire B** was designed to examine and position the maturity level of the WB economies to affirm in following the proposed Vision concept. Compared to the questionnaire A, the questionnaire B focused more onto policy, organisational and technical readiness to implement the Vision concept. More details are available in Appendix A - Economy Level Questionnaire.

5. **Semi-structured interview**s with relevant stakeholders from each WB economy were held based on prepared questionnaires A and B. The aim was to obtain insights on the current situation and latest planned and ongoing developments, and also to validate the principal readiness towards the proposed Vision concept.

6. **Action plan development** with concrete actions and timeline. Based on information gathered during the semi-structured interviews, Action Plans and Timelines were developed for regional actions as well as each WB economy. Economy-specific Action Plans and Timelines cover eID and Trust Services economy-wide eIDAS compliant implementation, and eID and Trust Services interoperability between WB economies and between WB and EU MS. In addition, the Action Plan(s) covers activities that should be taken to facilitate cross-border/boundary service level interoperability.

4. OVERVIEW OF THE CURRENT SITUATION

4.1. Albania

4.1.1. Legal Perspective

With respect to the general provisions of eIDAS, the Albanian national legal framework is to a great extent compliant with eIDAS, although further actions are necessary to allow Albanian citizens and companies to use freely e-signatures/e-seals and to access public services across the EU.[1] With respect to eID and qualified trust services (including their certification and accreditation), and the regimes of electronic signatures and electronic seals, electronic time stamps, electronic registered delivery and website authentication, overall cross-border/boundary eIDAS interoperability of Albania is achieved to a good extent.[2]

National legislation is not fully aligned with Article 24, Article 30 and Annex II of the eIDAS, laying down the requirements for qualified trust service providers and requirements for certification of qualified electronic signature creation devices respectively.[3] Also, the electronic signature creation environment is not fully harmonised with eIDAS and does not meet the EU standards. These might lead to cross-border/boundary interoperability issues.[4]

eID and trust services issued by qualified trust service providers in the EU are legally recognised at national level. The existence of mechanisms for mutual recognition increases the interoperability readiness of the economy and facilitates the delivery of better electronic services to the citizens and businesses.

With regards to bilateral treaties, Albania has signed a treaty for mutual assistance and cooperation in the area of information technologies with Kosovo*, which might be considered as a prerequisite for a future treaty for cross-border/boundary use of eID and mutual recognition of trust services. Also, bilateral agreements on mutual recognition of trust services are signed with North Macedonia and Romania. There is no practical implementation based on this agreement until now, but Albania is looking forward to finding those use-cases.

Economy level Interoperability Framework (dopted in 2010), states that institutions, which have basic primary data necessary for other institutions' work, are required to make these available by 2013 and enforces institutions to exchange data with other institutions which need that data. [5]This in fact facilitates economy level interoperability and forms solid ground for fast digitalisation of services, both public and private.

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1   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and Interoperability Readiness. Law and Internet Foundation. 2019. Reference Number 032-019.

2   Ibid. page 70.

3   Ibid.

4   Ibid. page 73.

5   ReSPA Regional Comparative eGovernment Study, 2016

The above said leads to a conclusion that from the legal perspective there are no significant barriers to interoperable cross-border/boundary services including use of electronic identification and trust services, but some adjustments should be made to achieve full compliance with eIDAS and mitigate the risks to interoperability readiness. It especially concerns the requirements for QTSP, QTSP notification requirements and requirements for qualified electronic signature creation devices as stated in Annex II of the eIDAS.

4.1.2. Implementing Practice - State of Play

National Authority on Electronic Certification and Cyber Security (NAECCS), a public authority subordinate to the Prime Minister, is acting as a Supervisory Authority and is fully operational. NAECCS web site[6] gives a comprehensive overview of relevant legal acts, accredited eID schemes and QTSP. It also gives guidelines for use of electronic signature verification service of registered QTSP. Web page is available in English, which is in favour of cross-border/boundary cooperation.

Establishment of the economy level Conformity Assessment Bodies (CAB) is in progress.

There are two registered eID schemes - first Albanian eID based on National ID card and National Identification and Authentication System. Both schemes are registered with the assurance level "high". Ministry of Interior is responsible for the National ID card-based eID issuance and ID card chip is used as an eID mean. Chip-based ID cards are issued from 2014 and currently all eligible residents (over 2.2 million) have an ID card with valid eID. Chip on the ID card contains user's biometrics and qualified certificate for electronic signature which is activated upon the issuance of the ID card. Both can be used for authentication.

National Agency of Information Society (NAIS) is a government institution that develops, administrates and maintains key public infrastructure and issues qualified certificates to public administration employees and private entities, and also for the e-Prescription system. eID means provided by NAIS are on USB sticks or cloud-based certificates.

There are two registered QTSPs - NAIS and ALEAT SHPK. As mentioned earlier, NAIS is providing qualified electronic certificates (QES) for public administration and businesses, while ALEAT is issuing QES for national ID cards. QES issued by ALEAT from 2016 are fully eIDAS compliant.

Albania has made a significant progress in e-services development - over 90% of public services are available online. Once-Only principle is implemented in a way that public authorities are responsible for collection of information that is available in public institutions information systems if inquiries are not made automatically via Interoperability Platform (IOP). Most of the services are available via Government Portal (Portal). eID means and QES can be used only for registration to the Portal, while for daily operations 2F authentication and transaction confirmation is used.

The national legal framework requires a high level of assurance for public or private eID schemes in the meaning of Implementing Regulation (EC) 1502/2015 and the current practice corresponds to the requirements. Presently there is no economy level node linking the eID schemes used at national level.

Electronic signature creation and validation is connected with the e-services environments, like Portal, and there are no desktop or web environment that people or businesses can use for QES creation and validation. User software of one QTSP is not able to validate QES created by means of other QTSP. Lack of easy-to-get and easy-to-use User Software and API solution components

6   NAECCS website - https://cesk.gov.al/publicAnglisht_html/index.html

can be considered as serious obstacle to e-services take-off, eID schemes and electronic signature usage in service offering processes. Creation of economy level eID and Trust Services interoperability is a strong prerequisite for further cross-border/boundary implementation.

Economy level Interoperability Platform (IOP) is fully operational and currently 55 information systems are connected to the IOP. It is not mandatory for government entities to be connected to the IOP, but if services are offered via Portal connection to the IOP is a must. Due to the IOP, approximately 63% of all online application forms are pre-filled with information which exists in interconnected information systems. At present, the private entities are not allowed to be connected to the IOP, but it is under consideration to give them the respective access. Easy-to-connect and secure IOP is one of the main cornerstones for successful end-to-end e-services development.

In summary, most of the key components necessary for cross-border/boundary eID, Trust Services and service level interoperability are in place, practically implemented and operational. The major part of the most important government systems are fully integrated with the remote signing service. Government issued and recognised eID schemes are in place, but are not practically used in service offering processes, hence username and password is used instead. Also, easy-to-use user environments for QES creation and validation are not available. Those aspects might have negative impact for full-scale cross-border/boundary eID and Trust Services interoperability implementation.

Adjustments necessary to improve the interoperability readiness and to launch practical cross-border/boundary interoperability use-cases are described in section Action Plans and Timelines of the current report.

4.2. Bosnia and Herzegovina

4.2.1.Legal Perspective

Economy level Law on Electronic Signature is in force from 2006 (Law from 2006) and does not fully support eIDAS compliant initiatives due to the economy's specific administrative structure. The new draft Law on Electronic Identification and Trust Services for Electronic Transactions (Law) has been prepared and adopted by the Council of Ministers, but is not yet ratified by the Parliament. At the same time the draft Law has been recognised by the Directorate for European Integration of Bosnia and Herzegovina as fully aligned with the eIDAS Regulation. The activities on the preparation of implementing acts have not started due to the fact that the Law on Electronic Identification and Trust Services for Electronic Transactions has not been adopted yet.

Ministry of Communications and Transport of Bosnia and Herzegovina is currently negotiating the Draft Agreement between Bosnia and Herzegovina and Serbia on Mutual Recognition of Qualified Trust Services. To speed up the economy level acceptance it is expected that Ministry of Scientific and Technological Development, Higher Education and Information Society (MNR-VOID), as the umbrella entity institution in Republika Srpska in charge of Trust Services, is also involved in this process of negotiation.

The Interoperability Framework (IF) in Bosnia and Herzegovina was adopted in June 2018. IF creates conditions for development and better electronic service provision to citizens and eco-

nomic entities, local authorities and other user groups on different levels of administration. Due to the relatively complicated administrative structure IF is not set as mandatory for all public entities, but rather as recommended. Based on the best practices, it is not in favour of the public e-services development take-off speed.

As a conclusion, Bosnia and Herzegovina should ratify the Law in parallel with the preparation of all relevant implementing acts.

4.2.2. Implementing Practice - State of Play

Office for Supervision and Accreditation is a supervisory body at the Ministry of Communications and Transport of Bosnia and Herzegovina and is acting according to the Law on Electronic Signature, in force from 2006. Office for Supervision and Accreditation maintains electronic register of certifiers with the main office in Bosnia and Herzegovina, accredited certifiers and certifiers with main office in third countries the certificates of which are guaranteed by certifiers with the main office in Bosnia and Herzegovina. Relevant to the 2006 Law, documents and registers are available on their website[7]. For eIDAS compliance adjustments should be done after ratification of the new Law. At the entity level, electronic register of certifiers is maintained by MNRVOID in the Republika Srpska.

Electronic Identity Card (ID card) that has been issued on economy level from 2013 has a RFID chip which contains personal information certificate for authentication and certificate for digital signature, among other things. User should activate those certificates using software (middleware) and corresponding transport key provided during the ID card issuance.

At the Republika Srpska level Certification Authority of the MNRVOID issues smart cards for natural and legal persons with certificates for authentication and digital signing. There is a Certificate Practice Statement documentation that fully explains the process of issuing and delivering smart cards with certificates.

Certificates on the ID card are provided by the Agency for Identification Documents, Registers and Data Exchange of Bosnia and Herzegovina (IDDEEA). Currently IDDEEA is not registered as provider of eID scheme according to eIDAS.

Halcom Root Certificate Authority (HRCA) is the only trust service provider registered as QTSP in terms of the Law from 2006. The authority is offering qualified certificates on smart cards and USB tokens. Due to the relatively high price for qualified certificates and moderate availability of e-services, the usage of HRCA services is low.

IDDEEA is not registered as QTSP and digital signature certificates issued on ID cards are currently only for internal use in IDDEEA. In terms of eIDAS there are no registered QTSP or TSPs.

As the e-Government initiatives are under the entity level responsibility and there is a need for a strong eID and digital signature solution to offer e-services, MNRVOID in Republika Srpska has initiated a smartcard-based eID and digital signature initiative. The solution is planned to be considered as an eIDAS compliant eID scheme at level high and QSCD for qualified electronic signatures.

From the user environment/API perspective, each Halcom CA user receives Nexus personal desktop middleware to use a certificate on a smart card or USB key. Nexus personal middleware is

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7   Electronic register of certifiers with the main office in Bosnia and Herzegovina - https://www.mkt.gov.ba/Content/Read/nadzor-akreditacija-ovjerilaca

always installed locally on the user's computer and serves as a GUI for typical smart card user tasks, such as entering smart card/USB key PIN code, changing PIN code, unblocking PIN code (PUK code), etc. User environment provided by IDDEEA is currently available only for internal usage, and public usage is expected to be available after IDDEEA eIDAS certification. In line with eID schemes and trust services development, it is crucial to pay attention to easy-to-get and easy-to-use User Software and API solution components since they play significant role in e-services' take-off. Creation of economy level eID and Trust Services interoperability is a prerequisite for corresponding cross-border/boundary implementation.

Economy level IF is designed to exchange data on and between all four levels. It is fully operational, but requires more technical and administrative resources to increase the usage. In the nearest future, new administrative body involving representatives from all entities will be formed. Easy-to-connect and secure IF is one of the main cornerstones for successful end-to-end e-services development.

In summary, the IF is the only key component necessary for cross-border/boundary eID, Trust Services and service level interoperability that is practically implemented and operational. The Law should be ratified as soon as possible to lay down the legal ground for development of other eIDAS compliant components. ID card with the eID and digital signature capabilities has been issued for all eligible residents, but the price level and personal usability of the RFID card readers can be considered as serious obstacle for practical everyday usage. Easy-to-get, easy-to-use and secure mobile based solution connected to the identity management on economy level can be considered as an alternative.

Adjustments necessary to improve the interoperability readiness and to launch practical cross-border/boundary interoperability use-cases are described in section Action Plans and Timelines of the current report.

4.3. Kosovo*

4.3.1. Legal Perspective

Kosovo* has made quite considerable progress to transform eIDAS legislation and corresponding EU standards into economy level legislation framework. The draft Law on Electronic Identification and Trust Services in Electronic Transactions has been prepared (Draft Law). It is expected that Kosovo* will reach an advanced level of cross-border/boundary interoperability readiness of electronic identification and trust services when the Draft Law is adopted. At present the Draft Law is ready to be ratified in parliament and preparation of implementing acts has started. This process will enhance the digitisation process and fostering of a business environment, which encourages electronic business, increases competitiveness and profitability of the economy's profile. Furthermore, this will facilitate effective cross-border/boundary use of eID and trust services with the EU[8].

The national legal framework requires a substantial level of assurance for the eID schemes within the meaning of Implementing Regulation (EC) 1502/2015. Notified eID schemes established in the EU will be automatically recognised at national level.

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8   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and Interoperability Readiness. Law and Internet Foundation. 2019. Reference Number 032-019.

Currently, Kosovo* has signed a bilateral treaty for mutual assistance and cooperation in the area of information technologies with Albania only, which might be considered as a prerequisite for a future treaty for cross-border/boundary use of eID and mutual recognition of trust services[9].

Interoperability Framework (IF) of Kosovo* derives from the Strategy on Electronic Governance 2009-2015 and the European Interoperability Framework[10]. However, it is not set as mandatory for all government institutions to exchange information exclusively via IF implementation - the Government Gateway (GG). This in fact has negative impact on public e-services development and might influence cross-border/boundary service level interoperability readiness.

The above said leads to a conclusion that from the legal perspective the Draft Law and corresponding implementing acts should be enforced to remove barriers to interoperable cross-border/boundary services including use of electronic identification and trust services.

4.3.2. Implementing Practice - State of Play

Currently there is no Supervisory Authority corresponding to the eIDAS. It will be established once the Draft Law and its secondary legislation is enforced.

Further, at present there are no registers of economy level recognised eID schemes, Trust Service Providers and Trust List.

Kosovo's* national ID cards are issued by the Ministry of Interior (MOI) to all eligible residents from age 16. ID card has a RFID chip which contains certificates (and 4 key-pairs) for authentication, alias authentication, file encryption and digital signature. Certificates are PKI based and are issued by the Certification Authority (CA) under the MOI. To date CA has not passed certification processes and therefore cannot be treated as Trusted Service Provider.

End-user software provided by the ID cards supplier has a very limited usage and is currently available only for Microsoft Windows based desktop computers. It requires advanced technical skills to be installed and used. Signature creation is possible only for .pdf format documents using Adobe Reader. No other format is supported for digital signing. Also, multiple documents cannot be signed simultaneously.

Another serious obstacle to Kosovo* ID card usage is the need for RFID based card readers which are relatively expensive, and form a significant entry barrier, even for earlier adopters.

From service providers perspective there are no well-defined and ready-to-use components so that they can integrate the national ID card into their service environments for authentication and digital signature creation.

Kosovo* has initiated processes to develop a new CA as an eIDAS compliant QTSP and issue mobile based eID means corresponding to the eID scheme with the assurance level high and Qualified Signature Creation Device (QSCD) to create digital signatures as eIDAS qualified electronic signatures. Also, easy-to-use, secure and functional end-user software and APIs for service providers will be considered.

Interoperability platform, Government Gateway (GG), is functional and over dozen public bodies and their information systems have been connected. However, the poor quality of data in regis-

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9   Ibid.

10   e-Services in Kosovo*, Strengthening the Enabling Environment for Digital Governance of Public Service Delivery (P170431), The World Bank, 2019

tries is hampering its potential usefulness. In addition, without an accompanying strong drive to re-engineer and re-design cumbersome administrative processes, the platform will have limited impact from the perspective of service users.

There are incremental gains in service delivery in Kosovo*, particularly for businesses, but the lack of clear policy directions and co-ordination of government initiatives prevent transformative improvements. The lack of central guidance and common tools that can lead to substantially simplified procedures, such as the provision of digital signatures and online payments, are the key barriers. Because there is no clear policy on the digitisation of administrative services, only a few of the most resourceful agencies (like Tax Authority) have succeeded in making their services function well digital.[11]

In summary, there are not many key components necessary for cross-border/boundary eID, Trust Services and service level interoperability in place - practically implemented and operational. Lack of government issued and practically usable eID schema, digital signature and GG usage might become the main obstacles for full-scale cross-border/boundary eID and Trust Services interoperability implementation.

Adjustments necessary to improve the interoperability readiness and to launch practical cross-border/boundary interoperability use-cases are described in section Action Plans and Timelines of the current report.

4.4. North Macedonia

4.4.1. Legal Perspective

Recently, North Macedonia has made a good progress to transform eIDAS legislation framework into economy level legislation. In September 2020, the Law on Electronic Documents, Electronic Identification and Trust Services (LeDEIDTS) and relevant bylaws came into force and therefore, from the legal perspective, North Macedonia is fully compliant with eIDAS.

Article 20 of the LeDEIDTS prescribes that eID schemes and trust services provided by trust service providers, established within the EU are legally recognised in North Macedonia without additional requirements which the trust service providers, established in the EU, must meet, so that they should be legally recognised at economy level.[12]

With regards to bilateral treaties on mutual recognition of trust services, North Macedonia has signed bilateral treaties with Serbia and Montenegro. To date, there are no practical implementation based on those bilateral agreements, but North Macedonia is looking forward to finding those use-cases.

National Interoperability Platform (IOP) Framework was adopted in 2015, and new IOP platform was launched in 2016. It is mandatory for all government entities to interconnect their information system via IOP, and from 2019 private companies are allowed to be connected to the IOP when defined security requirements are met. This in fact facilitates economy level interoperability and forms solid ground for fast digitalisation of services, both public and private.

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11   The Principles of Public Administration. Kosovo*. Monitoring Report. May 2019. Available: http:// www.sigmaweb.org/publications/Monitoring-Report-2019-Kosovo.pdf

12   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and Interoperability Readiness. Law and Internet Foundation. 2019. Reference Number 032-019.

The findings lead to a conclusion that from the legal perspective, there are no barriers to interoperable cross-border/boundary services including use of electronic identification and trust services.

4.4.2. Implementing Practice - State of Play

The designated supervisory body for electronic identification and trust services in North Macedonia is the Ministry of Information Society and Administration and has been operational since June 2020. Trusteid website[13] provides a good overview of eID and Trust Services regulation related documentation. Actual information is available for:

- Register of Electronic Identification Service Providers and Electronic Identification Schemes;
- Register of Qualified Trust Service Providers (Register of QTSP);
- Register of Trust Service Providers (Register of TSP);
- Register of Qualified Means for Creating Electronic Signatures and Electronic Seal.

Currently, some links do not open correctly and will be fixed in the nearest future. To support practical interoperability it is recommended to publish information in English on the above website.

There is only one registered eID scheme provided by (Bulgarian) private entity Evrotrust and the registered scheme corresponds to the level high. Government has issued two eID schemes, one by the Public Revenue Office corresponding to the level low, and the second based on qualified electronic signature corresponding to the level high. Neither eID scheme is registered with the official Register of Electronic Identification Service Providers and Electronic Identification Schemes.

The national legal framework requires high level of assurance for eID scheme to access public services. Currently, no existing eID schemes are used by the government, but integration activities to allow for government service environment to be accessed via Evrotrust eID scheme are ongoing.

National ID card does not have any eID scheme or electronic signature related capabilities and there are no plans to add those. Mobile based national level issued eID scheme with high assurance can be considered as a potential solution.

Currently, there is no national node for linking eID schemes used on national level given no needs for such a node.

There are 3 QTSP in the Register of QTSP:

- KIBS AD Skopje, offering qualified certificates for private and professional use available for HDD of the PC and PKI tokens;
- Makedonski Telekom AD offering 5 qualified services for various use-cases;
- Inbox DOOEL offering qualified electronic archiving of signed documents. This is additional qualified trust services introduced by national legislative beyond eIDAS scope.

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13   Republic of North Macedonia, Ministry of Information Society and Administration, the list of trusted service providers - https://trusteid.mioa.gov.mk/registar_listi/

Government services portal has built in signing functionality, but in general the End User Software and API solutions for service providers to authenticate and create/validate electronic signatures are not well developed. User software of one QTSP is not able to validate QES created by means of other QTSP. Lack of easy-to-get and easy-to-use User Software and API solution components can be considered as serious obstacle to e-services take-off and eID schemes and electronic signature usage in service offering processes. Creation of economy level eID and Trust Services interoperability is a prerequisite for corresponding cross-border/boundary implementation.

National Interoperability Platform (IOP) is well designed and ensures end-to-end encryption and central logging of all messages. Implemented IOP forms a solid ground for government to push forward e-services development. Currently, close to total of 800 services are available, out of which over 150 are electronic and there are several roadmaps to continue with intensive digitalisation. All new public e-services on the National e-services portal are interconnected with IOP, while there are still many government information systems not interconnected via IOP.

In summary, there are several key components necessary for cross-border/boundary eID, Trust Services and service level interoperability in place, practically implemented and operational. Lack of government issued and recognised eID scheme might constitute an obstacle to full-scale cross-border/boundary eID and Trust Services interoperability implementation as there is no such eID scheme that North Macedonia can present for notification with full confidence. Notification of the eID scheme issued by third party may raise some trust issues.

Adjustments necessary to improve the interoperability readiness and to launch practical cross-border/boundary interoperability use-cases are described in section Action Plans and Timelines of the current report.

4.5. Montenegro

4.5.1. Legal Perspective

The economy of Montenegro has undertaken serious effort to reach compliance with technical standards for provision of eID and trust services, the level of technical interoperability readiness is good and most of the rules on eID schemes and trust services are harmonised with eIDAS. All types of electronic signatures recognised at the EU level (e.g. electronic signatures, advanced electronic signatures and qualified electronic signatures) are legally recognised under the national legal framework and treated by the law in the same manner as by eIDAS[14]. Currently, neither notified nor non-notified eID schemes established in the EU are recognised at national level for public services, but the Law on Electronic Identification and Electronic Signature stipulates that recognition and acceptability of electronic identification systems established in the EU apply after the entry of Montenegro in the EU. This creates a good basis for cross-border/boundary acceptance of EU eID schemes if practical needs apply.

The Ministry of Public Administration, Digital Society and Media (the Ministry) is working to establish a national node for eID schemes, with the adopted Law on Electronic Identification and Electronic Signature and the Rulebook on the Framework for Interoperability of Electronic Iden-

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14 Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and interoperability Readiness. Law and Internet Foundation. 2020. Reference Number 032-019.

tification System in 2020[15]. This facilitates the interoperability with respect to accessing public services by different national eID schemes.

In terms of bilateral treaties, Montenegro has signed mutual recognition treaties with North Macedonia and Serbia[16].

First version of the National Interoperability Framework (NIF) was enacted in 2011, the current version, fully in line with EIF[17], was enforced in 2018. NIF is not set as mandatory for all public entities, but rather highly recommended, what is not in favour of the public e-services development.

However, from the legal perspective, there are no barriers to develop interoperable cross-border/boundary services including use of electronic identification and trust services.

4.5.2. Implementing Practice - State of Play

Administrative supervision over the implementation of the Law on Electronic Identification and Electronic Signature is performed by the Ministry, and inspection supervision over the work of electronic trust service providers and qualified electronic trust service providers and fulfilment of electronic identification system is performed by the Information Society Services Inspection.

Register of Electronic Identification Service Providers and Electronic Identification Schemes, Register of Qualified Trust Service Providers (Register of QTSP), Register of Qualified Means for Creating Electronic Signatures and Electronic Seal and Trust List are available to public on the Ministry's website. Also, the Ministry is working on publishing the Register of QTSP in accordance with the ETSI TS 119 612, which will be available soon, including in English.

From June 2020, new National ID cards are issued by the Ministry of Interior. New ID cards have contact chip and include Qualified Electronic Certificates for authentication and for Qualified Electronic Signatures (QES). Certificates are not active when issued, but people are expected to activate those certificates themselves by following the instructions. Unfortunately most people do not have enough computer literacy to understand and perform those operations without assistance.

Validity time of the certificates on ID card is set for ten years, but considering the cryptography technology development speed, it would be better to reduce the validity time to five years for security reasons.

Ministry of Interior is the only registered provider in the Register of Electronic Identification Service Providers and Electronic Identification Schemes offering eID with high assurance level for the national ID cards. In accordance with Law on Personal ID Card, all citizens of Montenegro will have a new ID card from June 2025.

There are several QTSP registered in the Register of QTSP:

- Ministry of Interior (MoI);
- Montenegro Post;

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15   The Rulebook is published in the Official Gazette of Montenegro, No. 20/2020 of 20 March 2020 and entered into force on 28 March 2020.

16   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and interoperability Readiness. Law and Internet Foundation. 2020. Reference Number 032-019.

17   The New European Interoperability Framework - https://ec.europa.eu/isa2/eif_en

- Montenegro Telekom;

- Ministry of Public Administration, Digital Society and Media.

They are offering QES on various types of Qualified Electronic Signatures Creation Devices (QSCD) and end users have to pay for QES except in case of MoI where certificates on ID cards are free of charge. Relatively high price level is also one of the obstacles for e-services take-off.

The signing environment for public servants is integrated into electronic document management system (EDMS), but in general the End User Software and API solutions for service providers to authenticate and create/validate electronic signatures are fragmented and not well developed. If exist, they are rather complicated to install and use. Also, User Software of one QTSP is not able to validate QES created by means of other QTSP. Lack of easy-to-get and easy-to-use User Software and API solution components can be considered as serious obstacle to e-services take-off and eID schemes and electronic signature usage in service offering processes. Creation of economy level eID and Trust Services interoperability is a prerequisite for corresponding cross-border/boundary implementation.

Legal basis to create a national node for linking eID schemes has been set and it is expected that the node will be operational by the end of 2021.

National Interoperability Platform (IOP) or Government Service Bus (GSB) is well designed and ensures end-to-end encryption and central logging of all messages. Currently 6 key registers are connected and millions of transactions are performed annually. Implemented GSB forms a solid ground for government to push forward e-services development. Currently, more than 180 e-services are available via e-Government portal and under the Digital by Default strategy there are several roadmaps to continue with intensive digitalisation. The new e-Government portal was launched recently.

As summary of the current state, most of the key components necessary for cross-border/boundary eID, Trust Services and service level interoperability are practically implemented and operational. Currently the national ID card based eID scheme is the main eID scheme option for cross-border/boundary acceptance based on eIDAS notification model.

Adjustments and improvements required to improve the interoperability readiness and recommendations to launch practical interoperability use-cases are described in section Action Plans and Timelines of the current report.

4.6. Serbia

4.6.1. Legal Perspective

According to the Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS Interoperability Readiness[18] from early 2020, Serbian legal framework is almost fully harmonised with eIDAS. The Law on Electronic Document, Electronic Identification and Trust Services in Electronic Business has strengthened the process of harmonisation with eIDAS and would boost the digitisation process in Serbia by creating favourable business

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18   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and Interoperability Readiness. Law and Internet Foundation. 2019. Reference Number 032-019.

environment when it comes to wide use of electronic services and competitiveness. In terms of primary legislation, the Serbian legal framework is fully harmonised with eIDAS. All main principles are correctly transposed and recognised, relevant EN/ETSI/CEN technical standards are adopted.

Serbia has signed bilateral treaties on recognition of eID and Trust Services with Montenegro (April 2019) and North Macedonia (August 2019). Both mutual recognition treaties have been ratified by the Serbian parliament. Negotiations with Albania are ongoing.

National Operability Framework was adopted in 2014, and it is mandatory for all government entities to interconnect their information system via Government Service Bus (corresponding interoperability platform). In addition, in 2018 the Law on e-Government was adopted, stating that all government ICT systems should be interoperable.

The above said leads to a conclusion that from the legal perspective, there are no barriers to establish interoperable cross-border/boundary services, including the use of electronic identification and trust services.

4.6.2. Implementing Practice - State of Play

Department under the Ministry of Trade, Tourism and Telecommunications is acting as a Supervisory Body. EPOTPIS website provides a comprehensive overview on eID and Trust Services regulation and procedures related documentation. Also, the following information is published according to the legislative requirements:

- Register of Electronic Identification Service Providers and Electronic Identification Schemes;
- Register of Qualified Trust Service Providers (Register of QTSP);
- Register of Qualified Means for Creating Electronic Signatures and Electronic Seal;
- Trusted Service List of Serbia.

National ID card, mandatory from the age of 16, consists of Qualified Electronic Certificates for authentication and for Qualified Electronic Signatures (QES). Authentication certificate is active by-default when the card is issued and the QES certificate, both provided by Ministry of Interior, can be activated free of charge at any time upon persons' request. The Office for IT and eGovernment has registered basic and medium assurance level eID schemes government and private entities can use for access to their services. Each provider can choose the assurance level.

Besides the Ministry of Interior, there are six other Trusted Qualified Service Providers in the Register of QTSP offering Qualified Trust Services. People and businesses are free to use their services on market conditions.

End User Software and API solutions for service providers to authenticate and create/validate electronic signatures are fragmented and not well developed. If exist, they are rather complicated to install and use. Also, User Software of one QTSP is not able to validate QES created by means of other QTSP. Lack of easy-to-get and easy-to-use User Software and API solution components can be considered as serious obstacle to e-services take-off and eID schemes and electronic signature usage in service offering processes. Creation of economy level eID and Trust Services interoperability is a prerequisite for corresponding cross-border/boundary implementation.

Currently, there is no operational national node for linking eID schemes used at national level.

National Operability Framework is operational, but according to the World Bank's Enabling Digital Governance Project,[19] there are dozens of registries in use by various government departments and ministries that operate in silos and hinder data exchange. Information and data collected electronically is not used to improve service delivery but as a backup to the paper files or reference. Lack of clarity in mandates to collect data results in inefficiencies and inconsistencies and undermines effective service delivery. To overcome the above described interoperability issues, the e-Paper initiative has been launched. The aim of this initiative is to redesign/optimise and digitise government service offering processes.

In summary, most of the key components necessary for cross-border/boundary eID, Trust Services and service level interoperability are practically implemented and operational. The national ID-card based eID scheme is the main eID scheme option for cross-border/boundary acceptance, based on eIDAS notification model.

Adjustments and improvements required to improve the interoperability readiness and recommendations to launch practical interoperability use-cases are described in section Action Plans and Timelines of the current report.

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19   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS Interoperability Readiness - http://documents1.worldbank.org/curated/en/147451554736280651/pdf/Serbia-Enabling-Digital-Governance-Project.pdf
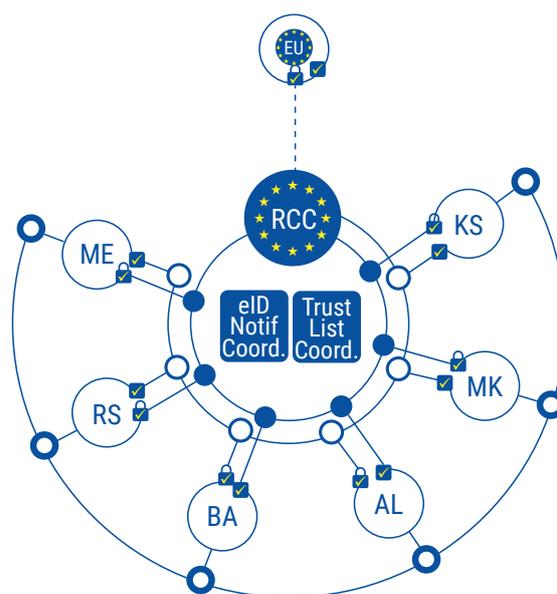
5. VISION AND KEY PRINCIPLES

5.1. Vision

Considering the efforts that WB economies have taken to implement the European Union frameworks, and the availability of robust, well-proven, highly secure, open source interoperability platforms, the vision of the implementation concept that can be developed in a mid-term horizon can be described as an **Interoperable Western Balkans - the first fully interoperable region.**

The vision of Interoperable Western Balkans is characterised by the following criteria:

- eIDs and trust services are mutually recognised;

- Public (and private) services are accessible via recognised eID schemes;

- All public entities accept eIDAS qualified electronic signatures;

- Public and private entities as well as natural persons can easily sign and validate electronic signatures on documents, including on cross-border/boundary documents;

- Economy level implemented Interoperability Platforms are operational and interconnected.

Figure 1. Vision - Interoperable Western Balkans

eIDs and trust services are mutually recognised

Western Balkan economies have established nationally recognised eID schemes. Given that the eID notification presumes a government level responsibility to ensure that the electronic identification means can be trusted, governments should arrange at least one eID scheme they can bear the responsibility for.

Trust services are implemented in full compliance with the eIDAS regulation. To ensure mutual recognition of trust services, there is at least one fully operational and economy level recognised qualified trust service provider (QTSP) offering qualified trust services (QTSs). Trust services are

offered under the supervision of the national competent Supervisory Body (SB) following the eIDAS compliant procedures.

There are practical implementation use-cases of eID and trust services mutual recognition between all Western Balkan economies.

Public (and private) services are accessible via recognised eID schemes

Public sector has set economy level targets for e-transformation and making all services available via electronic channels. Economy level recognised eID schemes are mandatory for all public entities.

There are well-defined and easy-to-implement interfaces public and private entities can use to integrate economy level recognised eID schemes into their service environments.

Financial sector, specially banks, are using national level recognised eID schemes and have been gearing the massive eID usage take off.

All public entities accept eIDAS qualified electronic signatures

The eIDAS qualified electronic signatures are legally considered equal to the handwritten signatures and all public entities accept electronic documents with qualified electronic signatures.

Public entities have set incentives to encourage people and businesses to use electronic channels.

Public and private entities, and natural persons can easily sign and validate electronic signatures on documents, including cross-border/boundary **documents**

There are easy-to-get and easy-to-use user environments where users can create and validate electronic signatures. User environments are available in desktop, mobile and web environments and there is no need for special technical skills to get and use those user environments.

Business entities have revised their business processes and benefit from electronic document exchange - most of the business-to-consumer and business-to-business agreements are signed electronically.

Economy level implemented Interoperability Platforms are operational and interconnected

Western Balkan economies have implemented economy level Interoperability Platforms and information exchange between public entities is mainly in electronic form.

Once-only principle is widely introduced

Economy level implemented Interoperability Platforms are interconnected for cross-border/boundary services offering processes. Cross-border/boundary services are easy-to-create and operate, there is no need for complicated technical integrations to launch services.

6. KEY COMPONENTS

To implement the vision of Interoperable Western Balkans - the first fully interoperable region, several components have to be implemented, as prerequisites. Well-established eIDAS and EIF frameworks including through the support of RCC lay down a solid ground to set up those components in harmonised and coordinated manner. Higher level harmonisation makes it less complicated to interconnect eID and Trust Services and reach practical service level interoperability encouraging the WB region's economic development.

Main components to implement the Vision are presented in Figure 2 as follows:

- eIDAS compliant regulation;
- Technical standards covering eID and Trust Services;
- Supervisory Body;
- National level issued eID;
- eIDAS certified Trust Service Provider;
- eID and Trust Services usage environments/APIs;
- Trust List;
- eIDAS Node;
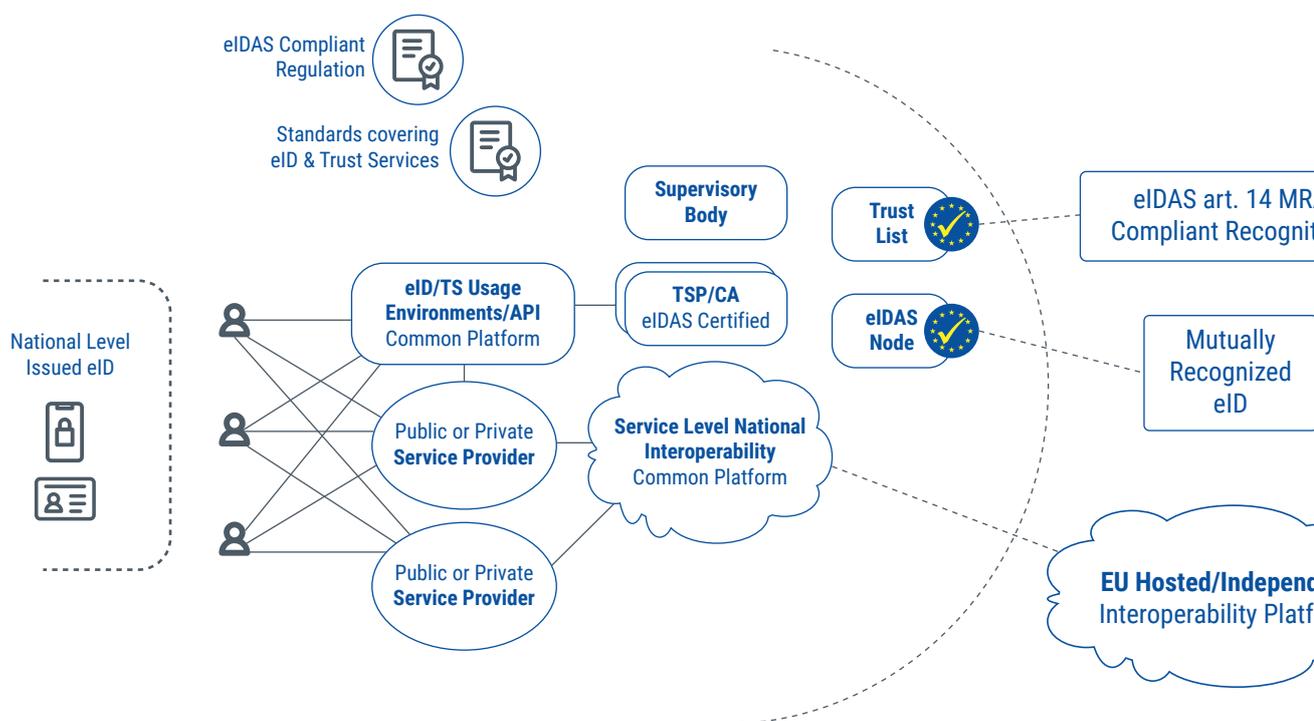- Service Level National Interoperability Platform.

Figure 2. Economy level components to be implemented

6.1. eIDAS Compliant Regulation

eIDAS is an EU regulation on electronic identification and trust services for electronic transactions in the European Single Market. It entered into force on 17 September 2014 and applies from 1 July 2016 except for certain articles, which are listed in its Article 52.[20] All organisations delivering public digital services in an EU member state must recognise electronic identification from all EU member states from 29 September 2018.

To achieve an eIDAS compliant regulation all requirements set in eIDAS and its implementing acts should be transposed into economy level legislation and enforced.

The full implementation of eIDAS in WB would be a key milestone in fulfilling the Digital Agenda for the WB, which demonstrates economies' commitment towards digital transformation by improving digital connectivity, providing more opportunities for citizens, enhancing regional co-operation and active participation in initiatives related to digital economy, digital skills, trust and security. This will certainly increase the attractiveness of the region for potential investors and will boost the overall economic development within the area.[21]

20 eIDAS Regulation, Chapter VI, Final Provisions - https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX-:32014R0910&from=EN#d1e3131-73-1

21 Western Balkans Digital Summit 2019, Belgrade Concluding Statement - https://www.premier.gov.pl/files/files/digital_summit_conclusions_03.04.2019.pdf
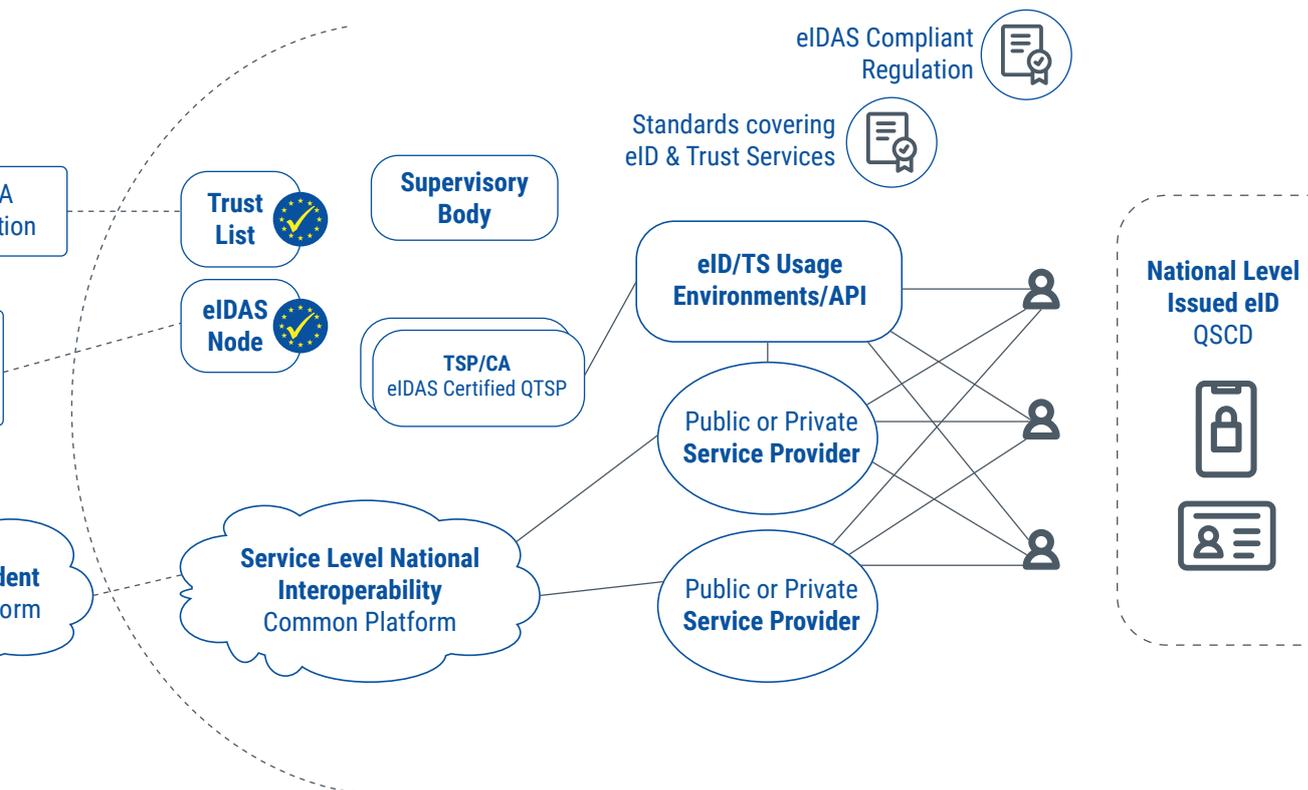
6.2. Technical standards covering eID and Trust Services

eIDAS implementing acts define EU standards and electronic identification and trust services related procedures and components should correspond. To achieve an eIDAS compliance regulation environment it is important to transform or overtake all relevant EU standards into economy level regulatory environment. Solutions and procedures not in compliance with eIDAS framework will lead to impossibility or significant difficulties of interoperability.

6.3. Supervisory Body

Supervision and conformity assessment regime form a crucial part of building the chain of trust on economy level. In line with eIDAS, designated supervisory body responsible for supervisory tasks in the economy's territory should be established. Supervisory body (SB) shall supervise qualified trust service providers established in the territory of the economy to ensure, through ex ante and ex post supervisory activities, that those qualified trust service providers and the qualified trust services that they provide meet the requirements laid down in economy level regulation. Also, take action, if necessary, in relation to non-qualified trust service providers established in the territory of the economy, through ex post supervisory activities, when informed that those non-qualified trust service providers or the trust services they provide allegedly do not meet the requirements laid down in economy level regulation.

It is important to understand that according to eIDAS, SB should be established before economy level eID schemes can be registered and trust services offered.

SB is responsible for establishment and maintenance of valid economy level registers of registered eID schemes, trust service providers and offered trust services, qualified signature creation devices and trust lists. They play a key role in cross-border/boundary recognition of eID and Trust Services.

6.4. National Level Issued eID

Nationally issued and accepted eID can be considered one of the main building blocks of a contemporary e-Governance, and by-default element for simplifying the use of e-services. It should enable the trustful identification of persons in electronic environments and facilitate legally accepted digital signatures. Economy level issued eID is expected to facilitate public and private entities to transfer their services to e-channels, and minimise physical visits to the service centres.

Economy level issued eID with high assurance level serves as an appropriate, high-level trust foundation, and is deemed to be a solid ground for eID usage, since issued certificates have government-level warranties. In other words, if someone accesses a service via electronic channel and presents corresponding certificate, the third party can rely on that as an electronic document that has been issued by the government. It is exactly similar to conventional world where a

person is required to present a government-issued primary ID document - passport or ID card - to prove his or her identity.

As seen from best practices, easy-to-use and secure government level issued eID with high assurance level would be attractive for banking sector and via increasing usage intensity will significantly support both public and private e-services development.

eID schemes issued by private entities can also be accepted by government or other private entities in service offering processes according to their assurance level, but for government level cross-border/boundary acceptance those eID schemes cannot be notified in line with eIDAS principles. As the notification in principle means taking responsibility the eID mean is issued to a certain physical person, the government cannot take such a responsibility for eID means issued by third parties in front of other governments.

6.5. eIDAS Certified QTSP

The trust service provider has the responsibility to assure the integrity of electronic identification for signatories and services through strong mechanisms for authentication, electronic signatures and digital certificates. eIDAS defines the standards for how trust service providers are to perform their services of authentication and non-repudiation. The regulation provides guidance on how trust service providers shall be regulated and recognised.

The qualified trust service provider plays an important role in the process of qualified electronic signing. The trust service providers must be given qualified status and permission for a supervisory body to provide qualified digital certificates which can be used to create qualified electronic signatures. eIDAS requires existence of the Trust List that lists the providers and services that have received qualified status. A trust service provider is not entitled to provide qualified trust services if they are not on the Trust List.

Existence of the eIDAS certified QTSP is one of the key components for cross-border/boundary recognition of eID and Trust Services, and also for service level interoperability.

6.6. Usage Environments/APIs

End User Software and API solutions for service providers to authenticate and create/validate electronic signatures form a critical but often underestimated part of the eID and Trust Services technological infrastructure and are fragmented and not well developed. If exist, they are rather complicated to install and use. Also, User software of one QTSP is not able to validate QES created by means of other QTSP. Lack of easy-to-get and easy-to-use User Software and API solution components can be considered as serious obstacle to e-services take-off and eID schemes and electronic signature usage in service offering processes.

Creation of economy level eID and Trust Services interoperability is a prerequisite for corresponding cross-border/boundary implementation. eID and Trust Services user environments should:

a. Support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

c. Correspond to the following criteria:

c1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

c2. Supporting digital signing and encryption/decryption of all file formats;

c3. Multiple files regardless of the file type can be signed simultaneously;

c4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

6.7. Trust List

In line with eIDAS requirements each economy shall establish, maintain and publish trusted lists, including information related to the qualified trust service providers for which it is responsible, together with information related to the qualified trust services provided by them.[22] The lists are to be published in a secured manner, electronically signed or sealed in a form suitable for automated processing.

Economy level legislation should clearly define the body responsible for establishing, maintaining and publishing national Trust List, and details of where such lists are published, the certificates used to sign or seal the Trust List and any changes thereto. Trust service provider and the trust services it provides will be qualified only if it appears in the Trust List. Consequently, the users (citizens, businesses or public administrations) will benefit from the legal effect associated with a given qualified trust service only if the latter is listed as qualified in the Trust List.

Trusted Lists are essential in ensuring certainty and building trust among market operators as they indicate the status of the service provider and of the service at the moment of supervision. They aim at fostering the interoperability of qualified trust services by facilitating the validation of, inter alia, eSignatures and eSeals.[23]

eIDAS allows to add trust services other than the qualified ones in the Trust List, on a voluntary basis, at economy level, provided that it is clearly indicated that they are not qualified according to eIDAS compliant economy level legislation.

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22   eIDAS Regulation, Chapter VI, Final Provisions - https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX-:32014R0910&from=EN#d1e3131-73-1

23   EU Trusted Lists - https://digital-strategy.ec.europa.eu/en/policies/eu-trusted-lists

In order to allow access to the Trust List, the economy should make it available to the public, through a secure channel to an authenticated web server, in a signed or sealed form suitable for automated processing.

Trust List should be fully eIDAS compliant and is one of the key components for cross-border/boundary eID and Trust Services interoperability.

6.8. eIDAS Node

The eIDAS Node is a project that enables mutual recognition of eIDs in Europe. Specifically, it facilitates the acceptance of the eIDs issued by foreign countries, especially by other WB economies or European governments as well as the authentication of European citizens in economy's public services using an electronic identifier of the country/economy of origin.

This node is the component of interoperability that connects with electronic services and the national authentication systems, and with the corresponding nodes of other WB economies and EU member states, and allows the recognition of electronic identities issued by other countries/economies in agreement with the eIDAS regulation.

The eIDAS Node is an interface which communicates with other nodes to request or provide cross-border/boundary identification and authentication. It is based on the reference implementation the European Commission has developed, and technical specifications marking the rules, and uses a system of exchange of messages according to the SAML 2.0 standard. This project is supported by the block of construction of eID promoted by the European mechanism CEF (Connecting Europe Facility)[24] and the experience gained in EUROPEAN STORK[25] and STORK 2.0 to facilitate a single area of electronic identification and authentication for Europe.

Setting up an eIDAS Node and implementing eID schemes mutual recognition via those nodes is an essential part of the eID and Trust Services mutual recognition between WB economies.

6.9. Service Level National Interoperability Platform

National Interoperability Framework (NIF) is one of the fundamental pillars for successful e-Transformation. NIF as a data exchange layer is a legal, organisational and technical environment that enables secure Internet-based data exchange between the public and also private information systems. It allows institutions/people to securely exchange data as well as to ensure people's access to the data is maintained and processed in public databases.

Well-designed Interoperability Platform (IOP), as a technical part of the NIF, should allow information systems based on different platforms to successfully communicate with each other without any changes in individual characteristics. This approach gives service providers and data owners full control over their data and free hands to design and implement new services while relying on the existing secure infrastructure.

24   The Connecting Europe Facility (CEF) - https://ec.europa.eu/inea/en/connecting-europe-facility

25   STORK - https://ec.europa.eu/digital-single-market/en/content/stork-take-your-e-identity-you-everywhere-eu

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Successfully implemented NIF facilitates e-services development on economy level and also makes it significantly easier to introduce cross-border/boundary services. Once service is published in economy level IOP, it can be used for cross-border/boundary services as well if security and organisational measures are agreed. There will be no need for time and resource-consuming point-to-point technical integrations.

7. ACTION PLANS AND TIMELINES

Traditionally, endeavours towards implementing digital transformation in the area of interoperability and trust services focus on legislative and policy frameworks. Although those aspects represent important factors, these should not prevail over the practical needs and use-cases because without practical approach, the results will be most likely measured only in document bunches and nice slide-shows without having actual positive impact and benefits to economies.

Thus, to achieve the goals stated in a vision of Interoperable Western Balkans - the first fully interoperable region, it is highly recommended to follow a practical approach, where priority has been given to cross-border/boundary perceived needs and corresponding practical use-cases to drive interoperability related activities. Legislative, policy and other framework related activities are to be considered only in cases when they are mandatory for practical implementations.

Further, it is assumed that there is a strong political will in the Western Balkan economies to push forward practical cross-border/boundary services use-cases that support economic development of every economy and of the whole region.

To foster practical implementation, it is suggested to divide recommended activities between the WB regional and economy levels. All activities are presented on estimated timelines, and described in more detail under the corresponding sections.

The WB regional level activities mainly consist of coordination and facilitating activities so that eID and Trust Services of WB economies can be mutually recognised in a way the recognition can be extended towards the EU in a longer horizon. As mentioned earlier, service level interoperability coordination activities are put into focus. It is recommended that the RCC coordinates the identification of useful cross-border/boundary use-cases, supports decision makers involvement, provides support by financing arrangements, if needed, and facilitating setting up easy-to-use and trusted interoperability platform.

Economy level activities are divided into two sections. First, based on the desktop research and semi-structured interviews with all six economies, the current maturity level of Key Components are identified and respective interoperability readiness related recommendations are proposed. Second part is related to the identification, piloting and development of the useful mutual cross-border/boundary services, and is synchronised with the RCC's coordination activities.

7.1. Regional Level Action Plan and Timeline

The RCC is seen as a leading coordinator in all necessary trans-economy level activities to achieve the vision of Interoperable Western Balkans - the first fully interoperable region.

In particular, the RCC can coordinate Competency Management and knowledge transfer related to eID and Trust Services cross-border/boundary recognition, easy-to-use and open-source interoperability platform for cross-border/boundary services interoperability. Further, the RCC could be empowered to seek financial support from donor organisations to support economic and social development of the WB region.

Figure 3 presents the proposed regional level Action Plan and Timeline to develop fully eIDAS compliant Key Components for economies and to ensure cross-border/boundary interoperability to implement the vision of Interoperable Western Balkans - the first fully interoperable region.

To implement the proposed regional level Action Plan it is recommended that the RCC coordinates establishment of the project-based Central Coordinating Body with clear mandates from WB economies.
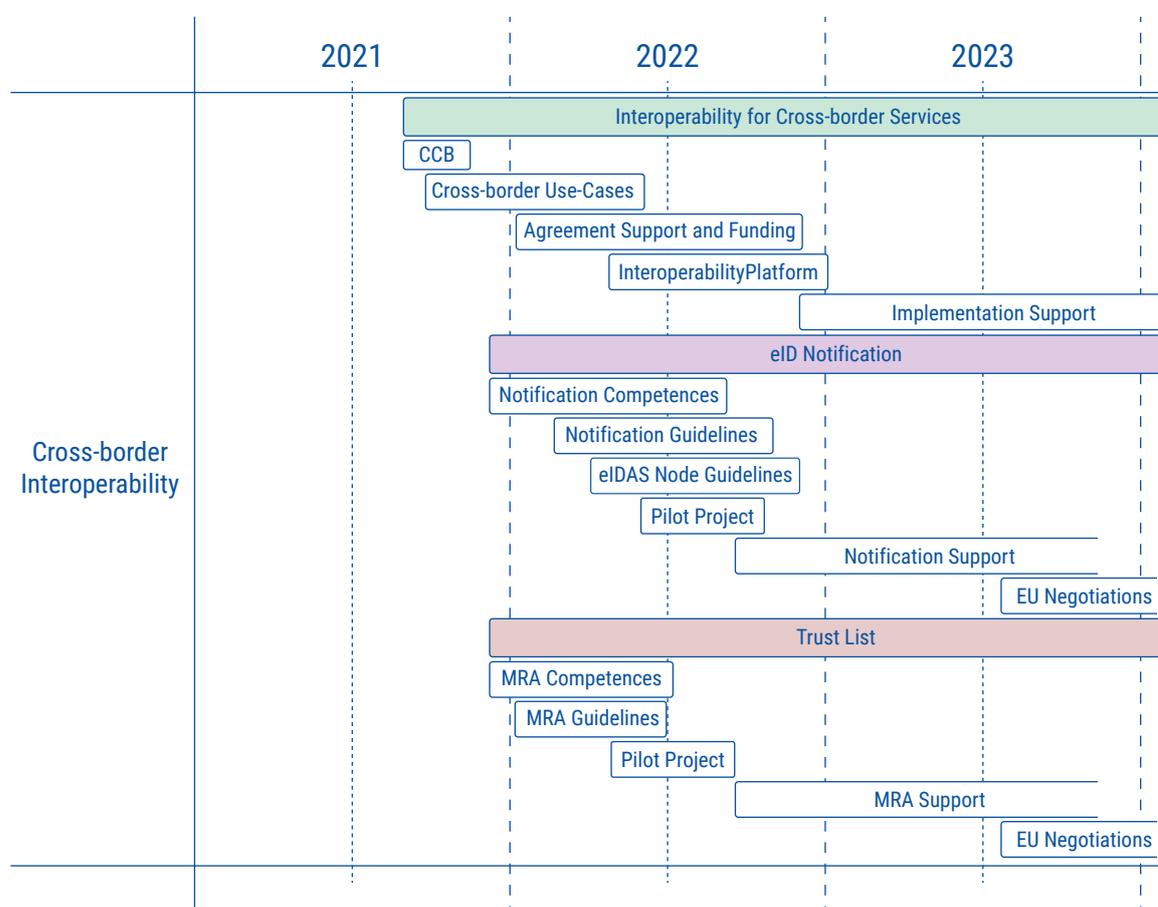
Figure 3. Action Plan and Timeline, Regional Level

7.1.1. Interoperability

All economies in WB have enforced their Interoperability Frameworks and implemented government Interoperability Platforms (IOP). In some cases, private entities can connect their information systems for secure and convenient data exchange. Well-functioning IOP is one of the cornerstones of e-services development and e-Transformation in a broader perspective.

Mutually beneficial cross-border/boundary services have an important role to play in facilitating economic and social development of the WB region and wellbeing of its citizens. It is essential to understand that mutual recognition of eID schemes and Trust Services without practical

cross-border/boundary use-cases does not add actual value neither to economies nor citizens. Real benefit can be achieved only via implemented useful service level use-case. That is the reason why it is highly recommended that the identified practical use-cases should drive interoperability related activities including eID schemes and Trust Services mutual recognition.

RCC can support opening a dialogue between WB economies to identify mutually useful cross-border/boundary services and to find easy-to-use and open-source interoperability platform for cross-border/boundary services interoperability.

7.1.1.1. Central Coordinating Body

To implement the proposed regional level Action Plan it is recommended that the RCC coordinates establishment of the project-based Central Coordinating Body (CCB) with clear mandates from WB economies. CCB can be in a form of working group consisting of representative with decision-making power from each economy.

CCB is responsible for setting regional interoperability related priorities, forming specialised working groups, approving plans and results prepared by those specialised working groups and handling all questions that require economy level decisions. Also, it can act as regional level initiative towards the donor organisations in cases where interoperability implementation activities require additional funding.

7.1.1.2. Cross-border/boundary Use-Cases

It is recommended to establish a working group by involving representatives from each economy to identify mutually useful cross-border/boundary use-cases. It is strongly advised to engage external expert with practical hands-on experiences to take coordinative role in the working group, and provide support with methodology and best practices from other regions. It is reasonable to identify 2-3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

7.1.1.3. Agreement Support and Funding

Service level interoperability requires interaction between information systems of different economies. Beside the technical and security related issues, political interest and acceptance should be achieved first. It is expected that the CCB can support working group members to get decision makers on each economy level interested if selected proposals are well motivated.

Also, as the cross-border/boundary services facilitating development of the whole region, funding support of the donor organisations might be needed in some cases.

7.1.1.4. Interoperability Platform

Interoperability Platform for cross-border/boundary services should be easy and effective to use and correspond to the highest security requirements. To be trusted by all economies it should be transparent in operations and correspond to security requirements of all economies.

As there are several practical implementations on EU level, transformation or extension of corresponding solutions can be considered. If applicable, the IOP operation and maintenance can be supported by the EU.

Also, usage of operational in EU interoperability solution can facilitate launch of cross-border/ boundary services with EU MS.

7.1.1.5. Implementation Support

Implementation projects of the cross-border/boundary services might need domain specific procedural, technical or even legal expertise. It is recommended to use a pool of external experts with proven track record to support implementation projects approved by CCB when needed by economies.

7.1.2. eID eIDAS Notification

The eIDAS and its relevant implementing acts define a comprehensive ruleset on how the eID schemes are notified and mutually recognised. Western Balkan economies have already adopted, or are currently in a process of adopting the eIDAS framework into economy level legislation and some have declared unilateral recognition of notified (or even non-notified) EU member states' eID schemes. In turn, WB economy level issued eID schemes would be also recognised by the EU or at least by some of the Member States in a mid-term horizon.

Given that the EU Notification process is quite complicated, it would be more effective to have a coordinating institution that can represent the perspective and interests of the whole region in further negotiations with the EU.

7.1.2.1. Notification Competence

It is recommend to establish project-based eIDAS eID schemes Notification Competences that would assist and guide WB economies through the learning curve.Learning curve means implementation of the eID schemes notification procedures similar to the EU.

It is advised to use external experts with practical hands-on expertise on eID scheme EU level notification.

7.1.2.2. Notification Guidelines

It might not be practical to follow all eIDAS requirements established in terms of the eID schemes notification, such as deadlines and communication formats, while establishing the mutual eID recognition between WB economies. Still, it is important to ensure that the main principles are followed. Therefore, it is recommended to develop a set of regional Notification Guidelines WB economies can follow.

7.1.2.3. eIDAS Node Guidelines

To be ready for mutual recognition of eID schemes with the EU or selected Member States, it is recommended to set up an eIDAS Node. It is recommended to develop regional Node Guidelines for the eIDAS-Node setup and operations. Using Notification Competences (see sec 7.2.1 above), eIDAS Nodes in WB economies can be set up in a more rapid, cost-efficient and harmonised manner.

7.1.2.4. Pilot Project

To reduce the learning curve, it is advised to arrange a centrally coordinated eID scheme notification Pilot Project supported by Notification Competence. For these purposes, a Notification working group that would consist of representatives from each economy should be put in place to select an eID scheme from one economy for the Pilot Project. All procedural steps based on the Notification Guidelines will be carried out by the Notification working group ensuring common understanding of the notification process. The Notification Guidelines could be complemented, if needed.

7.1.2.5. Notification Support

Following the Pilot Project, WB economies can initiate eID schemes notification among the WB economies. Also, according to readiness, eIDAS Nodes can be set up by economies. Notification Competence can be used to support those activities, if needed.

7.1.2.6. Negotiations with the EU

When all WB economies have gone through the eID scheme notification processes and have notified their eID schemes, CCB can initiate discussions with the Commission on behalf of all WB economies to arrange WB eID schemes' recognition by EC and EU Member States.

7.1.3. Trust List

The eIDAS Regulation mandates the EU Member States to set up their national trusted list, at least under an XML machine processable format, compliant to the specifications established by CID (EU) 2015/1505[26] laying down technical specifications and formats relating to trusted lists pursuant to Article 22(5) of eIDAS.

In order to allow access to the trusted lists of all Member States in an easy manner, EC publishes a central (XML) list, called the list of trusted lists (LOTL), with links to the locations where the trusted lists are published as notified by Member States.

The eIDAS Regulation enables trust services provided by trust service providers established in a third country to be recognised as legally equivalent to QTSs provided by QTSPs established in the Union. This mutual recognition is foreseen in Article 14 and may only occur under an agreement concluded between the Union and the interested third countries in accordance with Article 218 TFEU[27].

To achieve compliance with Article 14 of the eIDAS in terms of Mutual Recognition Agreement (MRA), sophisticated processes with various requirements should be prepared. It would be more effective to use the central coordination to go through the learning curve and later negotiate with the EU from the perspective of the whole region.

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26   Laying down technical specifications and formats relating to trusted lists, OJ L 235, 9.9.2015, p. 26–36. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015D1505

27   Consolidated version of the Treaty on the Functioning of the European Union - Part Five: External Action by the Union - Title Iv: Restrictive Measures - Article 218 (ex Article 300 TEC) - https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12008E218&from=EN

7.1.3.1. MRA Competences

It is advised to create a project based on eIDAS Article 14 MRA achievement related competences (MRA Competences), which will assist and guide WB economies through the learning curve. The learning curve refers to the usage of procedures similar to those set by eIDAS Article 14 MRA during the Trust Lists mutual recognition between WB economies.

It is advised to use external experts with practical hands-on expertise on EU level Trust List recognition.

7.1.3.2. MRA Guidelines

As eIDAS Article 14 MRA preparation and life-cycle management is sophisticated processes with various requirements, it is recommended to develop a set of regional MRA Guidelines describing step-by-step actions applicable for WB economies. Prepared MRA Guidelines form a basis for all WB economies to go through to mutually recognise the Trust Lists.

7.1.3.3.Pilot Project

To reduce the learning curve it is advised to arrange a centrally coordinated MRA preparation and monitoring Pilot Project supported by the MRA Competences. MRA working group consisted of representatives from each economy will choose the Trust List of one economy for the Pilot Project, where other economies are imitating the EC role. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the MRA preparation and life-cycle management process. If needed, MRA Guidelines will be complemented.

7.1.3.4. MRA Support

Following the Pilot Project, and depending on their readiness, WB economies could initiate their Trust List recognition procedures among other WB economies in line with the MRA Guidelines. MRA Competence can be used to support those activities, if needed. Exercising MRA preparation procedures among WB economies will ensure economies' readiness to reach an MRA with the EU.

7.1.3.5. EU Negotiations

If all or most of WB economies have gone through their Trust List recognition procedures according to the MRA Guidelines, CCB can initiate negotiations with the EC on behalf of WB economies to start MRA preparation process between WB economies and EU MS. When acting in a coordinated and well prepared manner, the probability of reaching an agreement is much higher compared to fragmented activities.

Even if some economies feel readiness to start negotiations with the EU before others, experience from exercising the MRA preparation procedures among WB economies will ensure their better preparation to reach an MRA with the EU.

8. ECONOMY LEVEL ACTION PLANS AND TIMELINES

8.1. Albania

Most of the key components necessary for cross-border/boundary eID, Trust Services and service level interoperability are in place, practically implemented and operational. Government issued and recognised eID schemes are in place but are not practically used in service offering processes, and easy-to-use user environments for QES creation and validation are not available. Those might have negative impact on full-scale cross-border/boundary eID and Trust Services interoperability implementation.

From the legal perspective, there are no significant barriers to interoperable cross-border/boundary services including use of electronic identification and trust services, but some adjustments
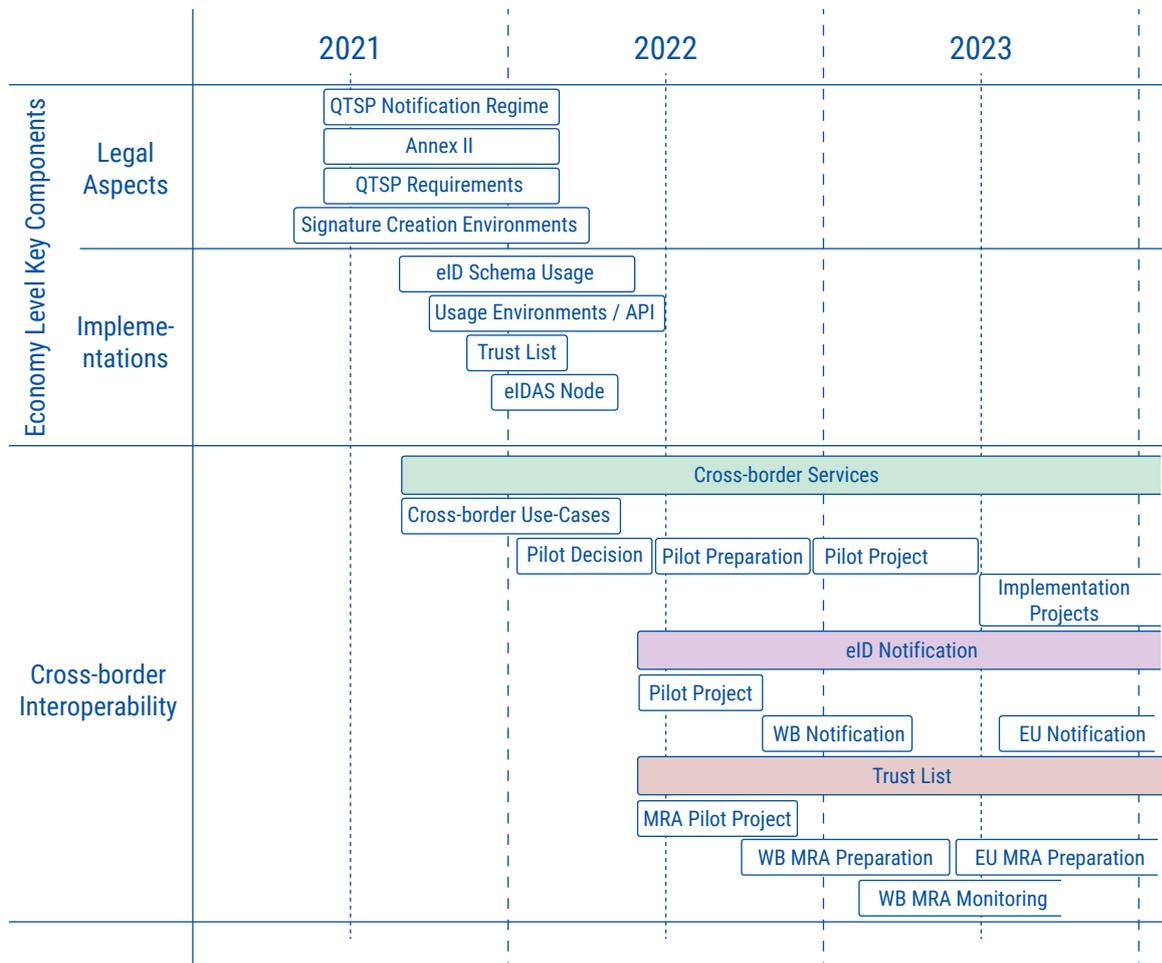

Figure 4. Action Plan and Timeline, Albania

should be made to achieve full compliance with eIDAS and mitigate the risks to interoperability readiness. It especially concerns the requirements for QTSP, QTSP notification requirements and requirements of Annex II of the eIDAS.

Figure 4 presents the proposed Action Plan and Timeline to fully develop eIDAS compliant Key Components to implement the vision of Interoperable Western Balkans - the first fully interoperable region.

8.1.1. Economy Level Key Components

8.1.1.1. Legal Aspects

8.1.1.1.1. QTSP Notification Regime

The regime for commencing activities differs from the eIDAS rules. eIDAS requires prior registration by national supervisory body before commencing activity for provision of qualified trust services which makes ex ante supervision by the government possible. Notification is required for provision of advanced trust services, where the supervision is ex post. The Albanian law introduces ex post regime for both qualified and advanced trust services – the provider is required to register after having commenced the activity[28]. This is a serious deviation from eIDAS regime and could affect implementation of Article 14 of the eIDAS Regulation[29].

8.1.1.1.2. Annex II

National legislation is not fully aligned with Article 30 and Annex II of the eIDAS, laying down the requirements for certification of qualified electronic signature creation devices. Also, the electronic signature creation environment is not fully harmonised with eIDAS and does not meet the EU standards. These might lead to cross-border/boundary interoperability issues.

8.1.1.1.3. QTSP Requirements

Article 24 of eIDAS states that when issuing a qualified certificate for a trust service, a qualified trust service provider shall verify, by appropriate means and in accordance with national law, the identity and, if applicable, any specific attributes of the natural or legal person to whom the qualified certificate is issued. It is highly recommended the requirements for qualified trust service providers set in Article 24 would be fully transposed to the economy level legislation.

8.1.1.1.4. Signature Creation Environments

To be considered at a qualified level, the electronic signature must meet three requirements:

- The signature must be uniquely identified and linked to its signatory.
- The data that is used to create that signature must be under the signatory's sole control and no one else.
- Tamper-proof protections must be in place to identify if tampering has taken place with the data that accompanies the signature since the signing of the message.

28   Assessment of the Level of Approximation of the Legislation of the Western Balkans Economies with eIDAS and Interoperability Readiness. Law and Internet Foundation. 2019. Reference Number 032-019.

29   https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014R0910&from=EN

It is recommended that the electronic signature creation environment requirements should be fully harmonised with eIDAS and corresponding EU standards. Non-compliance might hamper the cross-border/boundary interoperable use of the qualified signatures[30].

8.1.1.2. Implementation Aspects

8.1.1.2.1. eID Scheme Usage

Currently all eligible residents (over 2.2 million) have ID card with valid eID mean, but the practical usage of the ID card in electronic transactions is rather low or non-existing. To access public services via Government Portal first the registration is required using SMS based 2F authentication. After registration, services are accessed using the username (national ID/NIPT) and password. For electronic signing another SMS based code is used. This means ID card based eID scheme is not practically used in electronic service offering processes. Also, lack of ID card readers and corresponding end-user software can be considered as ID card usage limiting factors.

It is recommended to find solutions for ID card based eID scheme practical usage, or to issue mobile based eID solution with equivalent assurance level, but more convenient for everyday usage.

8.1.1.2.2. Usage Environments/APIs

eID and Trust Services user environments form a critical but often underestimated part of the eID and trust services technological infrastructure and:

a. Should support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Should cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

c. Should correspond to the following criteria:

   c.1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

   c.2. Supporting digital signing and encryption/decryption of all file formats;

   c.3. Multiple files regardless of the file type can be signed simultaneously;

   c.4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

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30 Ibid.

8.1.1.2.3. Trust List

Establish, maintain and publish the trusted list according to the requirements defined in Article 22 of eIDAS.

8.1.1.2.4. eIDAS Node

Establish an economy level eIDAS Node according to the requirement set in the Commission Implementing Regulation (EU) 2015/1501 of 8 September 2015 on the interoperability framework. First, economy level interoperability of eID schemas should be implemented, followed by interoperability between eID schemes of WB economies. It is highly recommended that the eID schemes notification between WB economies follow unified principles as similar as possible to those defined by EC. For that purpose RCC will develop corresponding guidelines and coordinate the Pilot Project all WB economies can participate in.

8.1.1.3. Cross-border/boundary Interoperability

8.1.1.3.1. Cross-border/boundary Services

8.1.1.3.1.1. Cross-border/boundary Use-Cases

Identification of mutually beneficiary cross-border/boundary use-cases with other WB economies. It is recommended to carry out the activity in a form of centrally coordinated working group supported by external expert as proposed in section 7.4.2. It is reasonable to choose 2 to 3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

8.1.1.3.1.2. Pilot Decision

After identification of possible pilot areas, interest should be generated on the part of decision makers in each economy. Cross-border/boundary services require involvement of decision makers and functional responsible managers from both sides. Well-prepared motivation arguments that clearly indicate benefits for both sides should be prepared and communicated. CCB is expected to support with cross-border/boundary communication and also with possible funding solutions, if needed, for implementation.

8.1.1.3.1.3. Pilot Preparation

Cross-border/boundary services require secure information exchange between several specific information systems of both economies. This requires careful mapping of existing capabilities to design easy-to-use and secure service offering process. Involvement of functional and technical competences from both sides is required. As a result of the Pilot Preparation phase mutually agreed detailed service offering process descriptions and technical specifications for implementation will be prepared.

8.1.1.3.1.4. Pilot Project

Setting up dedicated project teams for each Pilot Project with clearly defined goals and timelines. It is recommended to prepare and execute pilot agreements to get better administrative support. CCB is expected to support all cross-border/boundary interoperability platform related arrangements. Also, CCB can coordinate Pilot Projects related information exchange between WB economies.

8.1.1.3.1.5. Implementation Projects

After successful Pilot Project Implementation, Projects of other identified cross-border/boundary use-cases can be initiated. After implementation of several cross-border/boundary use-cases between WB economies, cross-border/boundary use-cases with the EU or other countries or economies could be initiated.

8.1.1.3.2. eID Notification

8.1.1.3.2.1. Pilot Project

Participation in centrally coordinated eID scheme notification Pilot Project. Notification Working Group will be consisted of representatives of each economy, and eID scheme of one economy will be chosen for the Pilot Project. All procedural steps based on Notification Guidelines will be carried out by the Notification Working Group ensuring common understanding of the notification process. If needed, Notification Guidelines will be complemented.

8.1.1.3.2.2. WB Notification

Based on the knowledge and experience from the Pilot Project, Albania can initiate notification of their eID schemes within WB. As a result of notification, mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for eID schemes recognition can be implemented via eIDAS Nodes.

8.1.1.3.3. Trust List

8.1.1.3.3.1. MRA Pilot Project

Participation in centrally coordinated eIDAS Art.14 MRA compliant Pilot Project. MRA working group will be consisted of representatives of each economy, and the Trust List of one economy will be chosen for the Pilot Project. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the eIDAS compliant MRA preparation. If needed, MRA Guidelines will be complemented.

8.1.1.3.3.2. MRA Preparation

Based on the knowledge and experience from the Pilot Project Albania can initiate its eIDAS compliant TL recognition agreements within the WB. As a result of preparation of MRAs mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for TL recognition with other WB economies can be implemented.

8.1.1.3.3.3. MRA Monitoring

Throughout the lifecycle of the MRA execution it is necessary to ensure monitoring of its correct execution by parties. This includes monitoring of the implementation of the QTSP/QTS framework as it was assessed and agreed in MRA.

8.2. Bosnia and Herzegovina

As summary of the current state of play, from the Vision perspective, the Interoperability Framework and corresponding platform is the only Key Component necessary for cross-border/boundary eID, Trust Services and service level interoperability that is practically implemented and oper-

ational. ID card with eID and digital signature capabilities has been issued for all eligible residents, but the price level and personal usability of the RFID card readers can be considered as serious obstacle for practical everyday usage. Easy-to-get, easy-to-use and secure mobile based solution connected to the identity management on economy level can be considered as an alternative.

At the Republika Srpska level, the CA of the MNRVOID has plans to introduce mobile based eID and digital signature solution during the next development stage.

From the legal perspective, to develop interoperable cross-border/boundary services including use of electronic identification and trust services, Bosnia and Herzegovina needs to develop and ratify the draft Law on Electronic Identification and Trust Services for Electronic Transactions (Law) as soon as possible to lay down the legal ground for development of other eIDAS compliant components and in parallel start arranging preparation of all relevant implementing acts. Considering the governmental structure of the economy this Law has also to meet Constitutional competences of each government level.
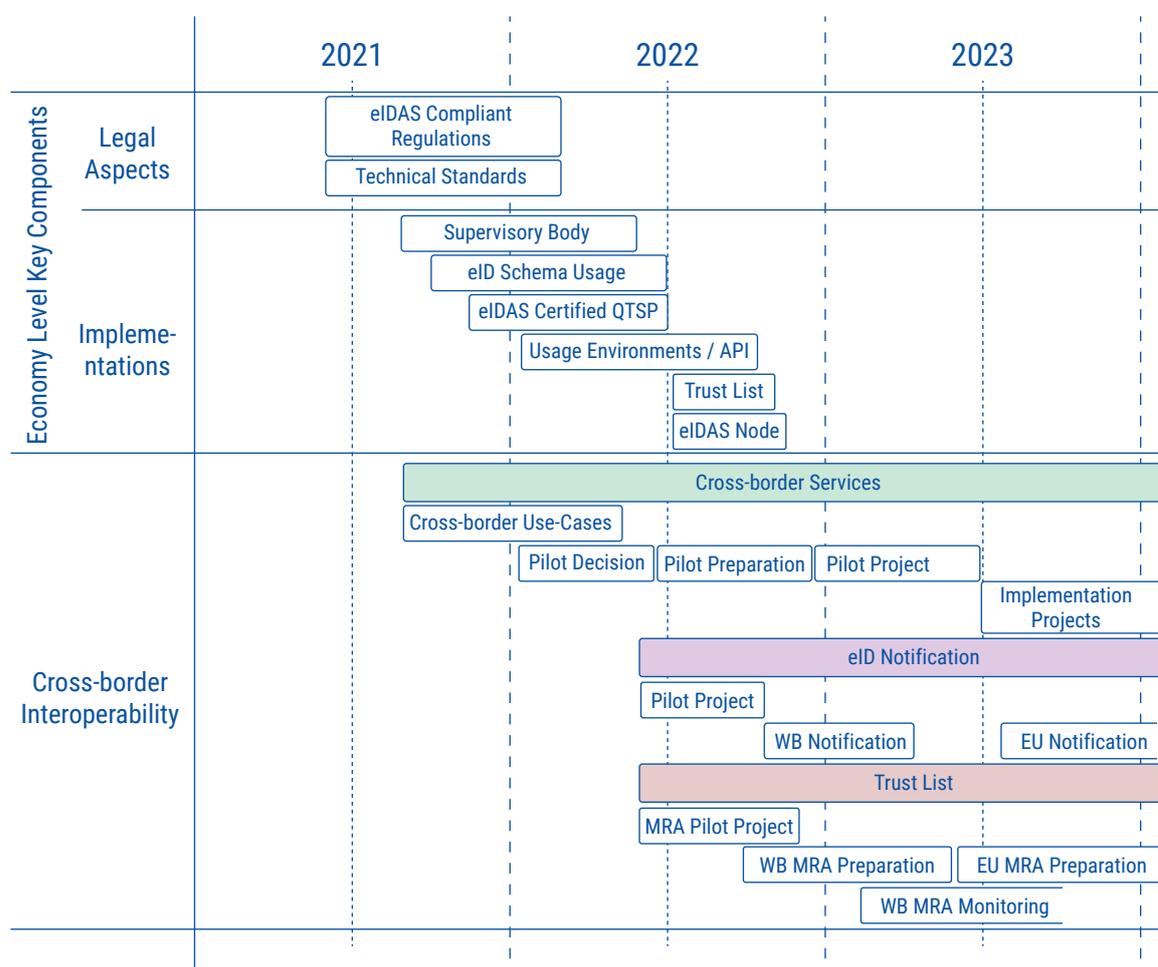
Figure 5. Action Plan and Timeline, Bosnia and Herzegovina

Figure 5 presents the proposed Action Plan and Timeline to develop eIDAS compliant Key Components, currently not in place yet, to implement the vision of Interoperable Western Balkans - the first fully interoperable region.

8.2.1. Economy Level Key Components

8.2.1.1. Legal Aspects

8.2.1.1.1. eIDAS Compliant Regulation

Coordinate the ratification of the draft Law on Electronic Identification and Trust Services for Electronic Transactions (Law) as soon as possible to lay down the legal ground for development of other eIDAS compliant components.

As the Law has been recognised by the Directorate for European Integration of Bosnia and Herzegovina as fully aligned with the eIDAS Regulation, start arranging preparation of all relevant implementing acts.

It is recommended to involve experts with proven track record into preparation of implementing acts.

8.2.1.1.2. Technical Standards

As the Law has been recognised by the Directorate for European Integration of Bosnia and Herzegovina as fully aligned with the eIDAS Regulation it is recommended to start arranging adoption of all relevant EU technical standards relevant to eID and Trust Services via implementing acts or other economy level technical guidelines.

8.2.1.2. Implementation Aspects

8.2.1.2.1. Supervisory Body

Currently, Office for Supervision and Accreditation is a supervisory body at the Ministry of Communications and Transport of Bosnia and Herzegovina and is acting according to the Law on Electronic Signature, which has been in force since 2006.

As the Law has been recognised by the Directorate for European Integration of Bosnia and Herzegovina as fully aligned with the eIDAS Regulation it is recommended to establish a task force/working group to prepare an action plan on how the existing Supervisory Body should be rearranged after the ratification of the Law. Entity level participation should be ensured.

Also, to facilitate the cross-border/boundary interoperability it is recommended to make supervision activities related information available also in English.

8.2.1.2.2. eID Scheme Usage

ID card with eID and digital signature capabilities has been issued for all eligible residents, but the certificates for authentication and digital signature creation are not active on issuance. Users should activate those certificates themselves using software (middleware) and corresponding transport key provided during the ID card issuance. Unfortunately most people do not have enough computer literacy to understand and perform those operations without assistance. That can be a serious obstacle for the issued eID mean take-off.

Smart cards issued at the Republika Srpska level have simplified instructions for installing the required software and using the certificate. All user manuals are available online.

49

As the ID card contains RFID chip for electronic usage, the price level and personal usability of the RFID card readers can be considered as serious obstacle for practical everyday usage.

It is recommended to establish a working group to analyse possibilities to increase ID card/smart card usage based eID usage in public and private services, especially in banking sector, which usually generates over 80% of all eID electronic transactions. It is also recommended that the working group proposes a solution on how the entity level issued eID schemes can be mutually recognised and how the economy level eID scheme or schemes can be built up. To achieve the high assurance level of the eID scheme(s) it is advised to tie the eID scheme(s) to the identity management on the level it is currently implemented on.

Also, taking into account the best practices, potential for convenient, secure and high-intensity usage and economic factors, it is recommended to consider issuance of mobile based eID scheme with equivalent assurance level in addition to the current ID card based scheme.

Government issued mobile based eID with high assurance level would be attractive for banking sector and via increasing usage intensity will significantly support both public and private e-services development.

8.2.1.2.3. eIDAS Certified QTSP

Currently there are no eIDAS certified QTSP or TSP in Bosnia and Herzegovina. Halcom Root Certificate Authority (HRCA) is the only trust service provider registered as QTSP in terms of the Law from 2006. Agency for Identification Documents, Registers and Data Exchange of Bosnia and Herzegovina (IDDEEA) providing certificates to economy level ID cards is not registered as QTSP/TSP and digital signature certificates issued on ID cards are currently only for internal use in IDDEEA. On entity level, Ministry of Scientific and Technological Development, Higher Education and Information Society of Republika Srpska has initiated a smart-card based eID and digital signature initiative to be considered as an eIDAS compliant eID scheme at level high and QSCD for qualified electronic signatures.

All three initiatives mentioned above could be eIDAS certified in one or two year horizon. Currently the IDDEEA has the biggest potential user base, but as described in previous chapter the RFID technology used in ID cards sets serious limits for everyday usage. Therefore, it is highly recommended to handle creation of eIDAS certified QTSP in connection with potential issuance of mobile based eID solution.

8.2.1.2.4. Usage Environments/APIs

eID and Trust Services user environments form a critical but often underestimated part of the eID and trust services technological infrastructure and:

a. Should support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Should cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

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c. Should correspond to the following criteria:

c.1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

c.2. Supporting digital signing and encryption/decryption of all file formats;

c.3. Multiple files regardless of the file type can be signed simultaneously;

c.4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

8.2.1.2.5. Trust List

Current Trust List is published in accordance with the Law on Electronic Signature in force from 2006.

As the Law has been recognised by the Directorate for European Integration of Bosnia and Herzegovina as fully aligned with the eIDAS Regulation, it is recommended to establish a task force/working group to prepare an action plan on how to establish, maintain and publish the trusted list according to the requirements defined in Article 22 of eIDAS and the Law.

8.2.1.2.6. eIDAS Node

As the Law has been recognised by the Directorate for European Integration of Bosnia and Herzegovina as fully aligned with the eIDAS Regulation, it is recommended to establish a task force/working group to prepare an action plan on how to establish an economy level eIDAS Node according to the requirement set in the Commission Implementing Regulation (EU) 2015/1501 of 8 September 2015 on the interoperability framework.

It is highly recommended the eID schemes notification between WB economies follows unified principles as similar as possible to those defined by EC. For that purpose RCC will develop corresponding guidelines and coordinate the Pilot Project in which all WB economies can participate in.

8.2.1.3. Cross-border/boundary Interoperability

8.2.1.3.1.   Cross-border/boundary Services

8.2.1.3.1.1. Cross-border/boundary Use-Cases

Identification of mutually beneficiary cross-border/boundary use-cases with other WB economies. It is recommended to carry out the activity in a form of centrally coordinated working group supported by external expert as proposed in section 7.4.2. It is reasonable to choose 2 to 3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

8.2.1.3.1.2. Pilot Decision

After identification of possible pilot areas, interest should be generated on the part of decision makers in each economy. Cross-border/boundary services require involvement of decision makers and functional responsible managers from both sides. Well-prepared motivation arguments clearly indicating benefits for both sides should be prepared and communicated. CCB is expected to support with cross-border/boundary communication and also with possible funding solutions, if needed, for implementation.

8.2.1.3.1.3. Pilot Preparation

Cross-border/boundary services require secure information exchange between several specific information systems of both economies. This requires careful mapping of existing capabilities to design easy-to-use and secure service offering process. Involvement of functional and technical competences from both sides is required. As a result of the Pilot Preparation phase mutually agreed detailed service offering process descriptions and technical specifications for implementation will be prepared.

8.2.1.3.1.4. Pilot Project

Setting up dedicated project teams for each Pilot Project with clearly defined goals and timelines. It is recommended to prepare and execute pilot agreements to get better administrative support. CCB is expected to support all cross-border/boundary interoperability platform related arrangements. Also, CCB can coordinate Pilot Projects related information exchange between WB economies.

8.2.1.3.1.5. Implementation Projects

After successful Pilot Project Implementation, Projects of other identified cross-border/boundary use-cases can be initiated. After implementation of several cross-border/boundary use-cases between WB economies, cross-border/boundary use-cases with the EU or other countries or economies could be initiated.

8.2.1.3.2. eID Notification

8.2.1.3.2.1. Pilot Project

Participation in centrally coordinated eID scheme notification Pilot Project. Notification Working Group will be consisted of representatives of each economy, and eID scheme of one economy will be chosen for the Pilot Project. All procedural steps based on Notification Guidelines will be carried out by the Notification Working Group ensuring common understanding of the notification process. If needed, Notification Guidelines will be complemented.

8.2.1.3.2.2. WB Notification

Based on the knowledge and experience from the Pilot Project, Bosnia and Herzegovina can initiate notification of their eID schemes within WB. As a result of notification, mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for eID schemes recognition can be implemented via eIDAS Nodes.

8.2.1.3.3. Trust List

8.2.1.3.3.1. MRA Pilot Project

Participation in centrally coordinated eIDAS Art.14 MRA compliant Pilot Project. MRA working group will be consisted of representatives of each economy, and the Trust List of one economy will be chosen for the Pilot Project. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the eIDAS compliant MRA preparation. If needed, MRA Guidelines will be complemented.

8.2.1.3.3.2. MRA Preparation

Based on the knowledge and experience from the Pilot Project Bosnia and Herzegovina can initiate its eIDAS compliant TL recognition agreements within the WB. As a result of preparation of MRAs mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for TL recognition with other WB economies can be implemented.

8.2.1.3.3.3. MRA Monitoring

Throughout the lifecycle of the MRA execution it is necessary to ensure monitoring of its correct execution by parties. This includes monitoring of the implementation of the QTSP/QTS framework as it was assessed and agreed in MRA.

8.3. Kosovo*

As summary of the current state of play, there are not many Key Components necessary for cross-border/boundary eID, Trust Services and service level interoperability in place, practically implemented and operational. All eligible residents of Kosovo* have valid government issued ID card based eID means with digital signature capability, but due to the various reasons ID cards are practically not used for authentication and digital signature creation. Government Gateway (GG) is operational, but usage by public entities is less than modest. Hence, lack of government issued and practically usable eID scheme, digital signature and GG usage might become the main obstacles for full-scale cross-border/boundary eID and Trust Services interoperability implementation.

The National ID card based eID scheme is the only option for cross-border/boundary acceptance based on eIDAS notification model.

From the legal perspective, the Draft Law on Electronic Identification and Trust Services in Electronic Transactions will be adopted (Draft Law) and corresponding implementing acts should be enforced to remove barriers to interoperable cross-border/boundary services, including use of electronic identification and trust services.

Figure 6 presents the proposed Action Plan and Timeline to develop eIDAS compliant Key Components, currently not in place yet, to implement the vision of Interoperable Western Balkans - the first fully interoperable region.
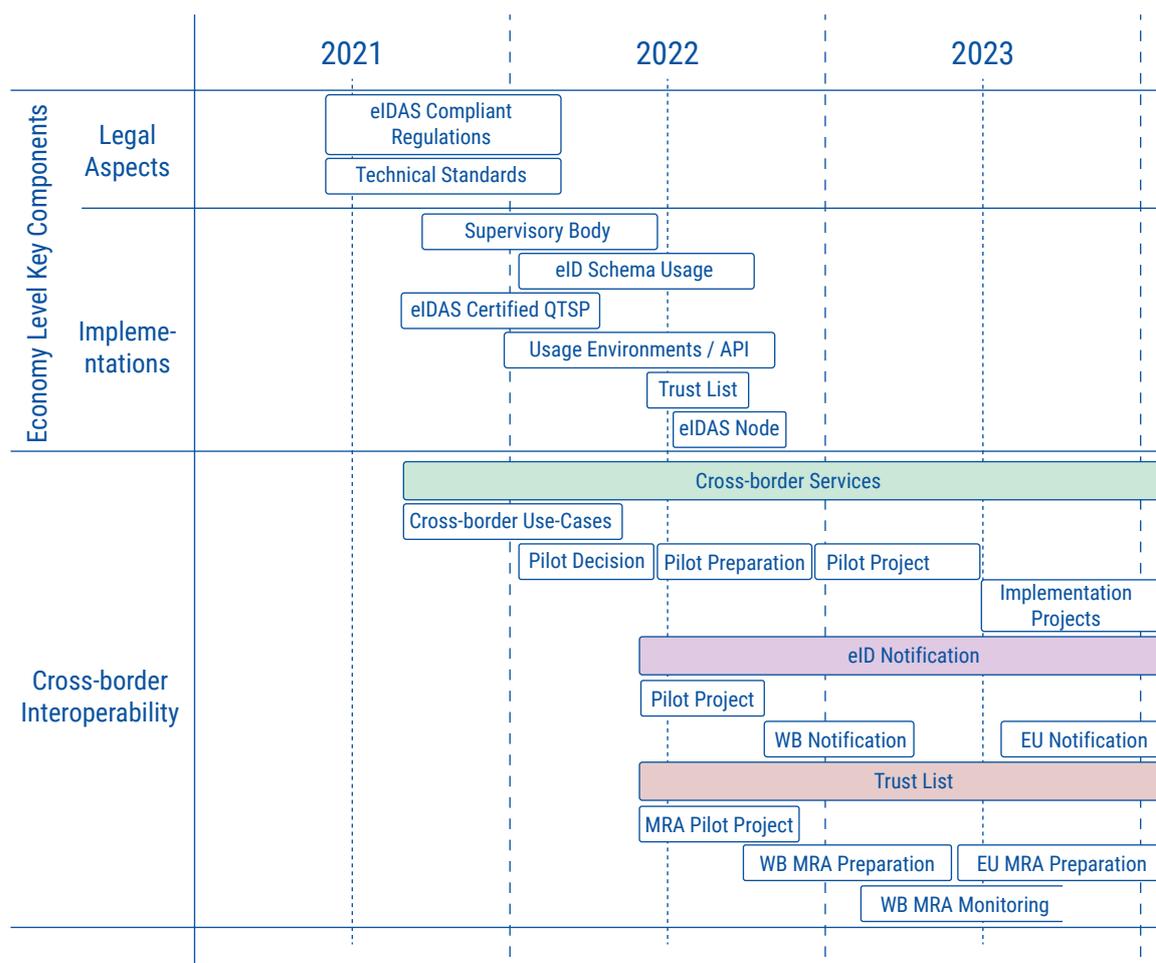
Figure 6. Action Plan and Timeline, Kosovo*

8.3.1. Economy Level Key Components

8.3.1.1. Legal Aspects

8.3.1.1.1. eIDAS Compliant Regulation

Coordinate the ratification of the Draft Law as soon as possible to lay down the legal ground for development of other eIDAS compliant components.

As the Draft Law has been prepared to ensure an advanced level of interoperability readiness in view of electronic identification and trust services, it is recommended to speed up preparation of all relevant implementing acts.

It is recommended to involve experts with proven track record into preparation of implementing acts.

8.3.1.1.2. Technical Standards

As the Draft Law complies with an advanced level of interoperability readiness in view of electronic identification and trust services, it is recommended to start preparations to adopt all relevant EU technical standards related to eID and Trust Services via implementing acts or other economy level technical guidelines.

8.3.1.2. Implementation aspects

8.3.1.2.1. Supervisory Body

Currently there is no Supervisory Authority in eIDAS terms.

As the Draft Law has been prepared to ensure an advanced level of interoperability readiness in view of electronic identification and trust services, it is recommended to establish a task force/working group to prepare an action plan to establish the Supervisory Body and to draft required organisational routines.

It is recommended to involve experts with proven track record into preparation of implementing acts.

8.3.1.2.2. eID scheme usage

ID card with eID and digital signature capabilities has been issued for all eligible residents, but they are not practically used for authentication and digital signature creation. As the ID card contains RFID chip for electronic usage, the price level and personal usability of the RFID card readers can be considered as serious obstacle for practical everyday usage.

Kosovo* has analysed the perspective of massive usage of the existing ID card based eID and came to conclusion that instead of reanimation of the existing eID it is much more reasonable to issue a mobile based eID solution with equivalent assurance level in addition to the current ID card based scheme. It is recommended to position the mobile based eID as an integral part of the identity management on national level. Also, it is recommended that the mobile based eID should correspond to the assurance level high, and comply with the eIDAS QSCD requirements.

Government issued mobile based eID with high assurance level would be attractive for banking sector and via increasing usage intensity will significantly support both public and private e-services development.

8.3.1.2.3. eIDAS Certified QTSP

Current CA issuing certificates to the National ID cards is not certified QTSP nor TSP. It has not published documents like Certification Hierarchy, Trust Services Practice Statement, Certification Practice Statement, Certificate Policies, etc. to demonstrate how the chain of trust is built up and how the trust services are offered.

In connection with the preparation of issuance of mobile based eID solution Kosovo* is considering setting up a new eIDAS certified CA. To avoid competition and duplication between the government entities, and to use resources in an effective manner, it is recommended to use existing CA and corresponding competences to set up an eIDAS certified QTSP. Learning from past eIDAS defined organisational and procedural requirements should be paid more attention to compared to the technical setup.

8.3.1.2.4. Usage Environments/APIs

eID and Trust Services user environments form a critical but often underestimated part of the eID and trust services technological infrastructure and:

55

a. Should support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Should cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

c. Should correspond to the following criteria:

   c.1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

   c.2. Supporting digital signing and encryption/decryption of all file formats;

   c.3. Multiple files regardless of the file type can be signed simultaneously;

   c.4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

8.3.1.2.5. Trust List

As the Draft Law has been prepared to ensure an advanced level of interoperability readiness in view of electronic identification and trust services, it is recommended to establish a task force/working group to prepare an action plan on how to establish, maintain and publish the trusted list according to the requirements defined in Article 22 of eIDAS and the Law.

8.3.1.2.6. eIDAS Node

As the Draft Law has been prepared to ensure an advanced level of interoperability readiness in view of electronic identification and trust services, it is recommended to establish a task force/working group to prepare an action plan on how to establish an economy level eIDAS Node according to the requirement set in the Commission Implementing Regulation (EU) 2015/1501 of 8 September 2015 on the interoperability framework.

It is highly recommended the eID schemes notification between WB economies follows unified principles as similar as possible to those defined by EC. For that purpose RCC will develop corresponding guidelines and coordinate the Pilot Project in which all WB economies can participate in.

8.3.1.3. Cross-border/boundary Interoperability

8.3.1.3.1. Cross-border/boundary Services

8.3.1.3.1.1. Cross-border/boundary Use-Cases

Identification of mutually beneficiary cross-border/boundary use-cases with other WB economies. It is recommended to carry out the activity in a form of centrally coordinated working group supported by external expert as proposed in section 7.4.2. It is reasonable to choose 2-3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

8.3.1.3.1.2. Pilot Decision

After identification of possible pilot areas, interest should be generated on the part of decision makers in each economy. Cross-border/boundary services require involvement of decision makers and functional responsible managers from both sides. Well-prepared motivation arguments clearly indicating benefits for both sides should be prepared and communicated. CCB is expected to support with cross-border/boundary communication and also with possible funding solutions, if needed, for implementation.

8.3.1.3.1.3. Pilot Preparation

Cross-border/boundary services require secure information exchange between several specific information systems of both economies. This requires careful mapping of existing capabilities to design easy-to-use and secure service offering process. Involvement of functional and technical competences from both sides is required. As a result of the Pilot Preparation phase mutually agreed detailed service offering process descriptions and technical specifications for implementation will be prepared.

8.3.1.3.1.4. Pilot Project

Setting up dedicated project teams for each Pilot Project with clearly defined goals and timelines. It is recommended to prepare and execute pilot agreements to get better administrative support. CCB is expected to support all cross-border/boundary interoperability platform related arrangements. Also, CCB can coordinate Pilot Projects related information exchange between WB economies.

8.3.1.3.1.5. Implementation Projects

After successful Pilot Project Implementation, Projects of other identified cross-border/boundary use-cases can be initiated. After implementation of several cross-border/boundary use-cases between WB economies, cross-border/boundary use-cases with the EU or other countries or economies could be initiated.

8.3.1.3.2. eID Notification

8.3.1.3.2.1. Pilot Project

Participation in centrally coordinated eID scheme notification Pilot Project. Notification Working Group will be consisted of representatives of each economy, and eID scheme of one economy will be chosen for the Pilot Project. All procedural steps based on Notification Guidelines will be carried out by the Notification Working Group ensuring common understanding of the notification process. If needed, Notification Guidelines will be complemented.

57

8.3.1.3.2.2. WB Notification

Based on the knowledge and experience from the Pilot Project, Kosovo* can initiate notification of their eID schemes within WB. As a result of notification, mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for eID schemes recognition can be implemented via eIDAS Nodes.

8.3.1.3.3. Trust List

8.3.1.3.3.1. MRA Pilot Project

Participation in centrally coordinated eIDAS Art.14 MRA compliant Pilot Project. MRA working group will be consisted of representatives of economy, and the Trust List of one economy will be chosen for the Pilot Project. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the eIDAS compliant MRA preparation. If needed, MRA Guidelines will be complemented.

8.3.1.3.3.2. MRA Preparation

Based on the knowledge and experience from the Pilot Project Kosovo* can initiate its eIDAS compliant TL recognition agreements within the WB. As a result of preparation of MRAs mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for TL recognition with other WB economies can be implemented.

8.3.1.3.3.3. MRA Monitoring

Throughout the lifecycle of the MRA execution it is necessary to ensure monitoring of its correct execution by parties. This includes monitoring of the implementation of the QTSP/QTS framework as it was assessed and agreed in MRA.

8.4. Montenegro

As summary of the current state of play, most of the key components necessary for cross-border/boundary eID, Trust Services and service level interoperability are practically implemented and operational. From June 2020 new National ID cards are issued by the Ministry of Interior and it is a significant step towards the creation of economy level accepted eID scheme with high assurance level. However, serious efforts should be made to have the eID scheme widely used to access public and private services.

The National ID card based eID scheme is the only option for cross-border/boundary acceptance based on eIDAS notification model.

From the legal perspective there are no barriers to develop interoperable cross-border/boundary services including use of electronic identification and trust services. Economy level legislation is fully aligned with eIDAS framework requirements.

Figure 7 presents the proposed Action Plan and Timeline to develop eIDAS compliant Key Components, currently not in place yet, to implement the vision of Interoperable Western Balkans - the first fully interoperable region.
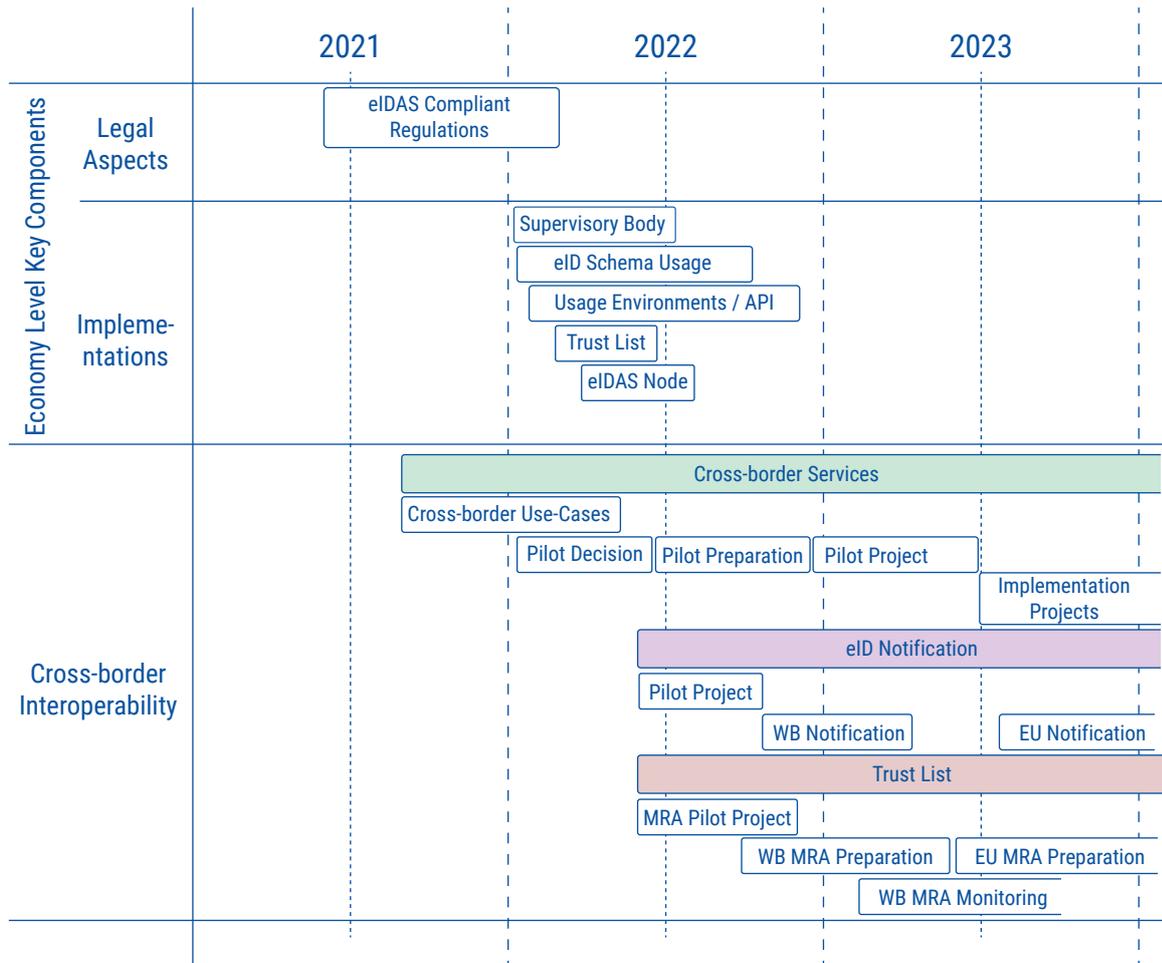
Figure 7. Action Plan and Timeline, Montenegro

8.4.1. Economy Level Key Components

8.4.1.1. Legal Aspects

Montenegro has fully eIDAS compliant economy level regulation and all relevant EU standards related to eID and Trust Services have been transposed.

Currently, notified and non-notified eID schemes established in the EU are not unilaterally recognised on national level for public services; according to the Law on Electronic Identification and Electronic Signature recognition and acceptance of electronic identification systems established in the EU apply after the entry of Montenegro in the EU. This is fully in line with EU principles and might be even in favour to reach mutual recognition.

8.4.1.2. Implementation Aspects

8.4.1.2.1. Supervisory Body

Administrative supervision over the implementation of the Law on Electronic Identification and Electronic Signature is performed by the Ministry of Public Administration, Digital Society and Media (Ministry), and inspection supervision over the work of electronic trust service providers and qualified electronic trust service providers and fulfilment of electronic identification system is performed by the Information Society Services Inspection.

59

Register of Electronic Identification Service Providers and Electronic Identification Schemes, Register of Qualified Trust Service Providers (Register of QTSP), Register of Qualified Means for Creating Electronic Signatures and Electronic Seal and Trust List are available to public on the website of the Ministry.

To facilitate the cross-border/boundary interoperability the Ministry is currently working on publishing the Register of QTSP in accordance with the ETSI TS 119 612, which will be available soon, including in English.

8.4.1.2.2. eID Scheme Usage

New national ID cards are issued by the Ministry of Interior and it is significant step towards the creation of economy level accepted eID scheme with high assurance level. Certificates are not active when issued, but by following the instructions people are expected to activate those certificates themselves. Unfortunately most people do not have enough computer literacy to understand and perform those operations without assistance. That can be a serious obstacle for the issued eID mean take-off. Also lack of ID card readers and corresponding end-user software can be considered as ID card usage limiting factors.

Taking into account the best practices, potential for convenient, secure and high-intensity usage and economic factors, it is recommended to consider issuing mobile based eID scheme with equivalent assurance level in addition to the current ID card based scheme.

Government issued mobile based eID with high assurance level would be attractive for banking sector and via increasing usage intensity will significantly support both public and private e-services development.

8.4.1.2.3. Usage Environments/APIs

eID and Trust Services user environments form a critical but often underestimated part of the eID and trust services technological infrastructure and:

a. Should support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Should cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

c. Should correspond to the following criteria:

    c.1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

    c.2. Supporting digital signing and encryption/decryption of all file formats;

    c.3. Multiple files regardless of the file type can be signed simultaneously;

    c.4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

8.4.1.2.4. Trust List

Publish and maintain the Trust List in accordance with the ETSI TS 119 612.

Considering the perspective to get economy level Trust List recognised by the EU it is highly recommended to publish and maintain the Trusted List according to the requirements defined in Article 22 of eIDAS.

8.4.1.2.5. eIDAS Node

Legal basis to create a national node for linking eID schemes has been set, and it is expected the node will be operational by the end of 2021.

Establish an economy level eIDAS Node according to the requirement set in the Commission Implementing Regulation (EU) 2015/1501 of 8 September 2015 on the interoperability framework. It is highly recommended the eID schemes notification between WB economies follows unified principles as similar as possible to those defined by EC. For that purpose RCC will develop corresponding guidelines and coordinate the Pilot Project in which all WB economies can participate in.

8.4.1.3. Cross-border/boundary Interoperability

8.4.1.3.1. Cross-border/boundary Services

8.4.1.3.1.1. Cross-border/boundary Use-Cases

Identification of mutually beneficiary cross-border/boundary use-cases with other WB economies. It is recommended to carry out the activity in a form of centrally coordinated working group supported by external expert as proposed in section 7.4.2. It is reasonable to choose 2-3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

8.4.1.3.1.2. Pilot Decision

After identification of possible pilot areas, interest should be generated on the part of decision makers in each economy. Cross-border/boundary services require involvement of decision makers and functional responsible managers from both sides. Well-prepared motivation arguments clearly indicating benefits for both sides should be prepared and communicated. CCB is expected to support with cross-border/boundary communication and also with possible funding solutions, if needed, for implementation.

8.4.1.3.1.3. Pilot Preparation

Cross-border/boundary services require secure information exchange between several specific information systems of both economies. This requires careful mapping of existing capabilities to design easy-to-use and secure service offering process. Involvement of functional and technical competences from both sides is required. As a result of the Pilot Preparation phase mutually agreed detailed service offering process descriptions and technical specifications for implementation will be prepared.

8.4.1.3.1.4. Pilot Project

Setting up dedicated project teams for each Pilot Project with clearly defined goals and timelines. It is recommended to prepare and execute pilot agreements to get better administrative support. CCB is expected to support all cross-border/boundary interoperability platform related arrangements. Also, CCB can coordinate Pilot Projects related information exchange between WB economies.

8.4.1.3.1.5. Implementation Projects

After successful Pilot Project Implementation, Projects of other identified cross-border/boundary use-cases can be initiated. Afte implementation of several cross-border/boundary use-cases between WB economies, cross-border/boundary use-cases with the EU or other countries or economies could be initiated.

8.4.1.3.2. eID Notification

8.4.1.3.2.1. Pilot Project

Participation in centrally coordinated eID scheme notification Pilot Project. Notification Working Group will be consisted of representatives of each economy, and eID scheme of one economy will be chosen for the Pilot Project. All procedural steps based on Notification Guidelines will be carried out by the Notification Working Group ensuring common understanding of the notification process. If needed, Notification Guidelines will be complemented.

8.4.1.3.2.2. WB Notification

Based on the knowledge and experience from the Pilot Project Montenegro can initiate notification of their eID schemes within WB. As a result of notification, mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for eID schemes recognition can be implemented via eIDAS Nodes.

8.4.1.3.3. Trust List

8.4.1.3.3.1. MRA Pilot Project

Participation in centrally coordinated eIDAS Art.14 MRA compliant Pilot Project. MRA working group will be consisted of representatives of each economy, and the Trust List of one economy will be chosen for the Pilot Project. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the eIDAS compliant MRA preparation. If needed, MRA Guidelines will be complemented.

8.4.1.3.3.2. MRA Preparation

Based on the knowledge and experience from the Pilot Project Montenegro can initiate its eIDAS compliant TL recognition agreements within the WB. As a result of preparation of MRAs mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for TL recognition with other WB economies can be implemented.

8.4.1.3.3.3. MRA Monitoring

Throughout the lifecycle of the MRA execution it is necessary to ensure monitoring of its correct execution by parties. This includes monitoring of the implementation of the QTSP/QTS framework as it was assessed and agreed in MRA.

8.5. North Macedonia

As summary of the current state of play, there are several Key Components necessary for cross-border/boundary eID, Trust Services and service level interoperability in place, practically implemented and operational. Lack of government issued and recognised eID scheme might come as one of the main obstacles for full-scale cross-border/boundary eID and Trust Services interoperability implementation as there is no such eID scheme North Macedonia can present for notification with full confidence. Notification of the eID scheme issued by third party may raise trust issues.

From the legal perspective, after the Law on Electronic Documents, Electronic Identification and Trust Services (LeDEIDTS) and relevant bylaws came into force in the second half of 2020 North Macedonia has been fully compliant with eIDAS framework requirements. The analysis demonstrates that all definitions laid down in eIDAS are correctly transposed into the national legislation, so there are no linguistic or semantic barriers for the use and recognition of trust services and/ or implementation of eID and there are no barriers to interoperable cross-border/boundary services, including use of electronic identification and trust services.

Figure 8 presents the proposed Action Plan and Timeline to develop eIDAS compliant Key Components, currently not in place yet, to implement the vision of Interoperable Western Balkans - the first fully interoperable region.
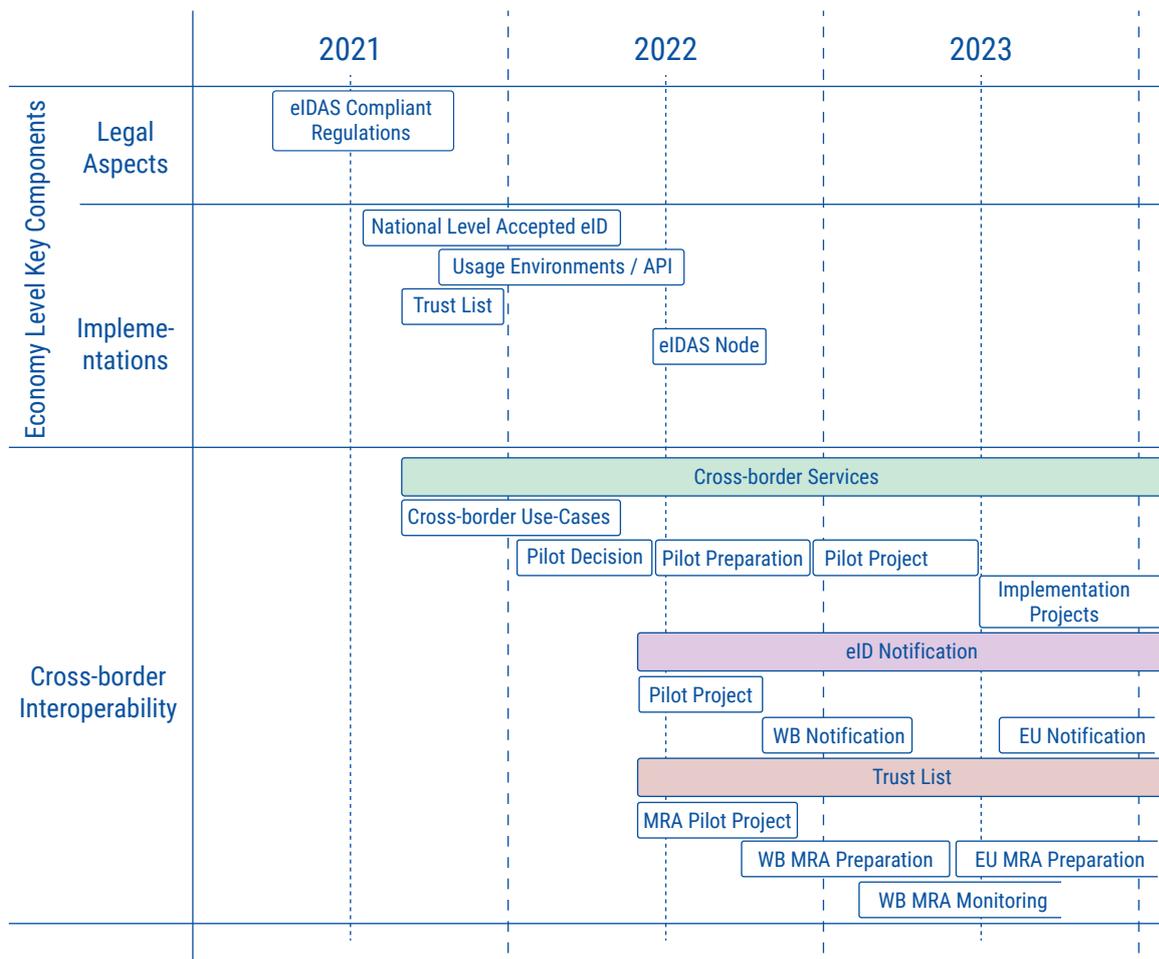

Figure 8. Action Plan and Timeline, North Macedonia

8.5.1. Economy Level Key Components

8.5.1.1. Legal Aspects

North Macedonia has fully eIDAS compliant economy level regulation and all relevant EU standards related to eID and Trust Services have been transposed.

8.5.1.2. Implementation Aspects

8.5.1.2.1. National level accepted eID

Government issued national level accepted eID is one of the cornerstones of e-Transformation and e-services development. It should not be handled as profitable commercial initiative, but as national level critical infrastructure necessary for economy level e-Transformation. It is highly recommended to:

- Issue eID with assurance level high;
- Use QSCD qualified carrier with qualified electronic signature capabilities; and
- Tie the issued eID with identity management on economy level.

Taking into account the best practices, potential for convenient, secure and high-intensity usage and economic factors, it is recommended to consider mobile based eID scheme instead of chip card or other physical token based solution.

Government issued mobile based eID with high assurance level would be attractive for banking sector and via increasing usage intensity will significantly support both public and private e-services development.

8.5.1.2.2. Usage Environments/APIs

eID and Trust Services user environments form a critical but often underestimated part of the eID and trust services technological infrastructure and:

a. Should support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Should cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

c. Should correspond to the following criteria:

  c.1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

  c.2. Supporting digital signing and encryption/decryption of all file formats;

  c.3. Multiple files regardless of the file type can be signed simultaneously;

  c.4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

8.5.1.2.3. Trust List

Establish, maintain and publish the trusted list according to the requirements defined in Article 22 of eIDAS.

8.5.1.2.4. eIDAS Node

Establish an economy level eIDAS Node according to the requirement set in the Commission Implementing Regulation (EU) 2015/1501 of 8 September 2015 on the interoperability framework. It is highly recommended the eID schemes notification between WB economies follows unified principles as similar as possible to those defined by EC. For that purpose RCC will develop corresponding guidelines and coordinate the Pilot Project in which all WB economies can participate in.

8.5.1.3. Cross-border/boundary Interoperability

8.5.1.3.1. Cross-border/boundary Services

8.5.1.3.1.1. Cross-border/boundary Use-Cases

Identification of mutually beneficiary cross-border/boundary use-cases with other WB economies. It is recommended to carry out the activity in a form of centrally coordinated working group supported by external expert as proposed in section 7.4.2. It is reasonable to choose 2 to 3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

8.5.1.3.1.2. Pilot Decision

After identification of possible pilot areas, interest should be generated on the part of decision makers in each economy. Cross-border/boundary services require involvement of decision makers and functional responsible managers from both sides. Well-prepared motivation arguments clearly indicating benefits for both sides should be prepared and communicated. CCB is expected to support with cross-border/boundary communication and also with possible funding solutions, if needed, for implementation.

8.5.1.3.1.3. Pilot Preparation

Cross-border/boundary services require secure information exchange between several specific information systems of both economies. This requires careful mapping of existing capabilities to design easy-to-use and secure service offering process. Involvement of functional and technical competences from both sides is required. As a result of the Pilot Preparation phase mutually agreed detailed service offering process descriptions and technical specifications for implementation will be prepared.

8.5.1.3.1.4. Pilot Project

Setting up dedicated project teams for each Pilot Project with clearly defined goals and time-lines. It is recommended to prepare and execute pilot agreements to get better administrative support. CCB is expected to support all cross-border/boundary interoperability platform related arrangements. Also, CCB can coordinate Pilot Projects related information exchange between WB economies.

8.5.1.3.1.5. Implementation Projects

After successful Pilot Project Implementation, Projects of other identified cross-border/boundary use-cases can be initiated. After implementation of several cross-border/boundary use-cases between WB economies, cross-border/boundary use-cases with the EU or other countries or economies could be initiated.

8.5.1.3.2. eID Notification

8.5.1.3.2.1. Pilot Project

Participation in centrally coordinated eID scheme notification Pilot Project. Notification Working Group will be consisted of representatives of each economy, and eID scheme of one economy will be chosen for the Pilot Project. All procedural steps based on Notification Guidelines will be carried out by the Notification Working Group ensuring common understanding of the notification process. If needed, Notification Guidelines will be complemented.

8.5.1.3.2.2. WB Notification

Based on the knowledge and experience from the Pilot Project North Macedonia can initiate notification of their eID schemes within WB. As a result of notification, mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for eID schemes recognition can be implemented via eIDAS Nodes.

8.5.1.3.3. Trust List

8.5.1.3.3.1. MRA Pilot Project

Participation in centrally coordinated eIDAS Art.14 MRA compliant Pilot Project. MRA working group will be consisted of representatives of each economy, and the Trust List of one economy will be chosen for the Pilot Project. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the eIDAS compliant MRA preparation. If needed, MRA Guidelines will be complemented.

8.5.1.3.3.2. MRA Preparation

Based on the knowledge and experience from the Pilot Project North-Macedonia can initiate its eIDAS compliant TL recognition agreements within the WB. As a result of preparation of MRAs mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for TL recognition with other WB economies can be implemented.

8.5.1.3.3.3. MRA Monitoring

Throughout the lifecycle of the MRA execution it is necessary to ensure monitoring of its correct execution by parties. This includes monitoring of the implementation of the QTSP/QTS framework as it was assessed and agreed in MRA.

8.6. Serbia

As summary of the current state of play, most of the Key Components necessary for cross-border/boundary eID, Trust Services and service level interoperability are practically implemented and operational. Currently, the national ID card based eID scheme is the main eID scheme option for cross-border/boundary acceptance based on eIDAS notification model. As the chip based ID card requires a card reader to be connected to computer or mobile device, it might be inconvenient for everyday usage, and so unattractive for financial sector, like banks, to use as one of the main options to access financial services. On the other hand, considering the PSD2 requirements, banks are usually very interested in strong eID and digital signature means provided by national governments. Having that in mind, we would like to encourage Serbia to consider possibilities to issue eIDAS compliant mobile based eID and digital signature means tied to the identity management on economy level.

From the legal perspective there are no barriers to interoperable cross-border/boundary services including use of electronic identification and trust services. Economy level legislation is fully aligned with eIDAS framework requirements.

Figure 9 presents the proposed Action Plan and Timeline to develop eIDAS compliant Key Components, currently not in place yet, to implement the vision of Interoperable Western Balkans - the first fully interoperable region.
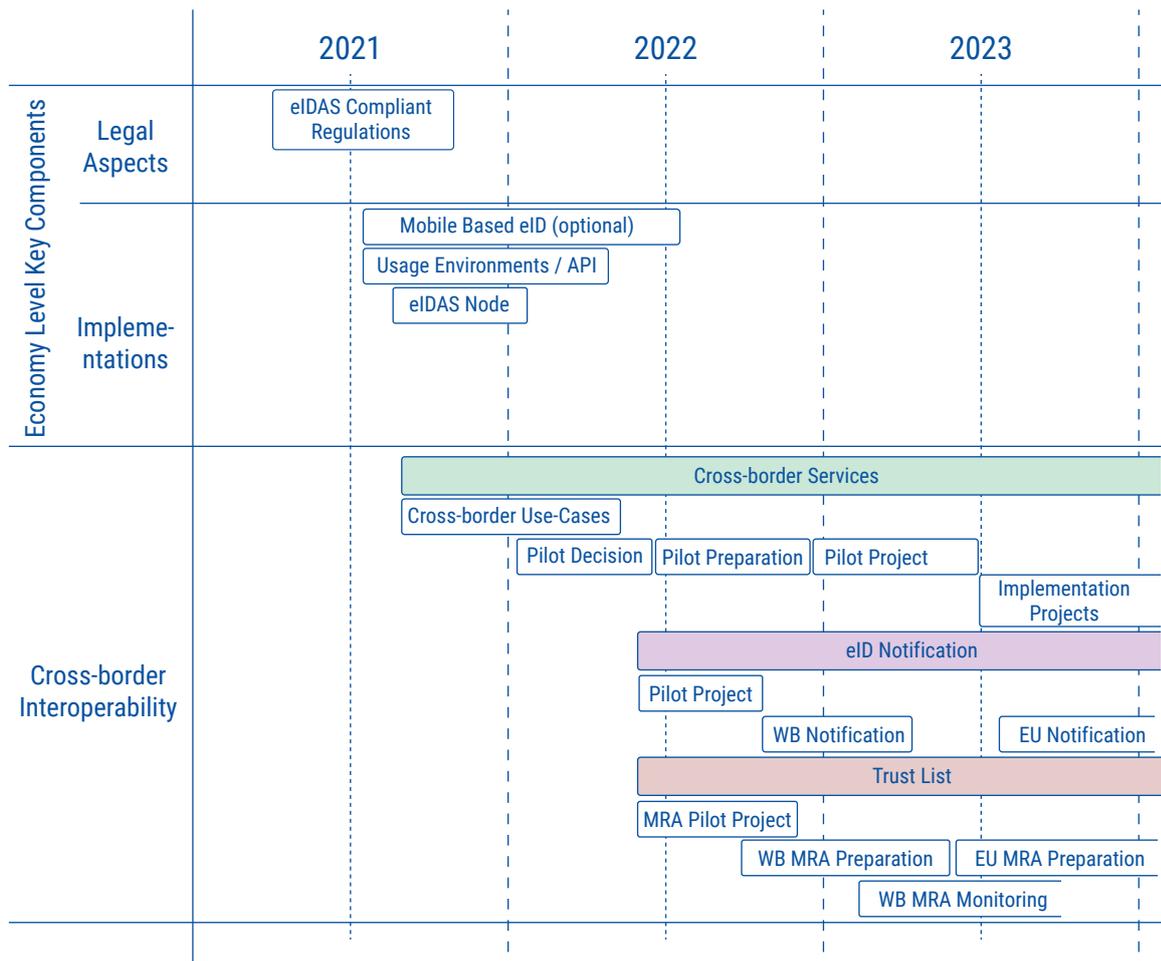

Figure 9. Action Plan and Timeline, Serbia

8.6.1. Economy Level Key Components

8.6.1.1. Legal Aspects

Serbia has fully eIDAS compliant economy level regulation, and all relevant EU standards related to eID and Trust Services have been transposed.

Currently, notified eID schemes established in the EU are unilaterally recognised on national level for public services. Trust Services provided by trust service providers established within the EU are not legally recognised in the economy. The Serbian national legal framework requires the adoption of international treaty with the EU in order for the mutual recognition to be possible. This is fully in line with EU principles and might be even in favour to reach mutual recognition.

8.6.1.2. Implementation Aspects

8.6.1.2.1. Mobile based eID (optional)

To offer secure and easy-to-use national level accepted eID it is recommended to consider possibilities to issue eIDAS compliant mobile based eID and digital signature means tied to the identity management on economy level. Currently, there are highly-secure and cost-effective solutions with solid track-records on the market.

Government issued mobile based eID with high assurance level would be attractive for banking sector and via increasing usage intensity will support both public and private e-services development.

8.6.1.2.2. Usage Environments/APIs

eID and Trust Services user environments form a critical but often underestimated part of the eID and trust services technological infrastructure and:

a. Should support electronic authentication, digital signature creation and digital signature verification use-cases. Data encryption/decryption can be considered as optional;

b. Should cover desktop, web and mobile environments. Desktop and mobile environments are fully controlled by the user and can be used for digital signing/signature verification of sensitive and confidential documents as those do not leave the perimeter controlled by the user. Web environment is suitable for non-sensitive documents. Implementation priorities can be set according to practical needs;

c. Should correspond to the following criteria:

    c.1. Easy-to-get and easy-to-use. No special technical skills should be required to install and use the eID software;

    c.2. Supporting digital signing and encryption/decryption of all file formats;

    c.3. Multiple files regardless of the file type can be signed simultaneously;

    c.4. No limits for the number of signatories.

To support innovation and ensure vendor and technology neutrality, open source based user environments are highly recommended.

There should be well-documented and ready-to-use components for service providers in order to integrate national eID means into the service environments for authentication and digital signature creation.

8.6.1.2.3. eIDAS Node

Establish an economy level eIDAS Node according to the requirement set in the Commission Implementing Regulation (EU) 2015/1501 of 8 September 2015 on the interoperability framework. It is highly recommended the eID schemes notification between WB economies follows unified principles as similar as possible to those defined by EC. For that purpose RCC will develop corresponding guidelines and coordinate the Pilot Project in which all WB economies can participate in.

8.6.1.3. Cross-border/boundary Interoperability

8.6.1.3.1. Cross-border/boundary Services

8.6.1.3.1.1. Cross-border/boundary Use-Cases

Identification of mutually beneficiary cross-border/boundary use-cases with other WB economies. It is recommended to carry out the activity in a form of centrally coordinated working group supported by external expert as proposed in section 7.4.2. It is reasonable to choose 2 to 3 priority areas per economy, motivate usefulness of those cross-border/boundary services, and propose possible areas for pilot projects to the CCB to decide on.

8.6.1.3.1.2. Pilot Decision

After identification of possible pilot areas, interest should be generated on the part of decision makers in each economy. Cross-border/boundary services require involvement of decision makers and functional responsible managers from both sides. Well-prepared motivation arguments clearly indicating benefits for both sides should be prepared and communicated. CCB is expected to support with cross-border/boundary communication and also with possible funding solutions, if needed, for implementation.

8.6.1.3.1.3. Pilot Preparation

Cross-border/boundary services require secure information exchange between several specific information systems of both economies. This requires careful mapping of existing capabilities to design easy-to-use and secure service offering process. Involvement of functional and technical competences from both sides is required. As a result of the Pilot Preparation phase mutually agreed detailed service offering process descriptions and technical specifications for implementation will be prepared.

8.6.1.3.1.4. Pilot Project

Setting up dedicated project teams for each Pilot Project with clearly defined goals and timelines. It is recommended to prepare and execute pilot agreements to get better administrative support. CCB is expected to support all cross-border/boundary interoperability platform related arrangements. Also, CCB can coordinate Pilot Projects related information exchange between WB economies.

8.6.1.3.1.5. Implementation Projects

After successful Pilot Project Implementation, Projects of other identified cross-border/boundary use-cases can be initiated. After implementation of several cross-border/boundary use-cases between WB economies, cross-border/boundary use-cases with the EU or other countries or economies could be initiated.

8.6.1.3.2. eID Notification

8.6.1.3.2.1. Pilot Project

Participation in centrally coordinated eID scheme notification Pilot Project. Notification Working Group will be consisted of representatives of each economy, and eID scheme of one economy will be chosen for the Pilot Project. All procedural steps based on Notification Guidelines will be carried out by the Notification Working Group ensuring common understanding of the notification process. If needed, Notification Guidelines will be complemented.

8.6.1.3.2.2. WB Notification

Based on the knowledge and experience from the Pilot Project Serbia can initiate notification of their eID schemes within WB. As a result of notification, mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for eID schemes recognition can be implemented via eIDAS Nodes.

8.6.1.3.3. Trust List

8.6.1.3.3.1.   MRA Pilot Project

Participation in centrally coordinated eIDAS Art.14 MRA compliant Pilot Project. MRA working group will be consisted of representatives of each economy, and the Trust List of one economy will be chosen for the Pilot Project. All procedural steps based on MRA Guidelines will be carried out by the MRA working group ensuring common understanding of the eIDAS compliant MRA preparation. If needed, MRA Guidelines will be complemented.

8.6.1.3.3.2. MRA Preparation

Based on the knowledge and experience from the Pilot Project Serbia can initiate its eIDAS compliant TL recognition agreements within the WB. As a result of preparation of MRAs mutual eID and Trust Services recognition agreements can be made or modified and practical procedures for TL recognition with other WB economies can be implemented.

8.6.1.3.3.3. MRA Monitoring

Throughout the lifecycle of the MRA execution it is necessary to ensure monitoring of its correct execution by parties. This includes monitoring of the implementation of the QTSP/QTS framework as it was assessed and agreed in MRA.

APPENDIX A - ECONOMY LEVEL QUESTIONNAIRE

This appendix covers the questionnaire used during the interviews with the economies.

A. <Economy Template>

A.1. Questionnaire A

Questionnaire A is prepared by RCC Participants taking into account information available to the experts. The overall objective of the consultancy is to support the Western Balkan (WB) region to achieve greater alignment with the European Union (EU) in the area of interoperability and trust services.

A.1.1. Legal Perspective

A.1.1.1. Adoption of the eIDAS framework

1. What is the current status of transposing the eIDAS Regulation into economy level legislation?

2. What is the current status of transposing eIDAS Implementing Acts and eID and Trust Services related EU standards into economy level legislation and technical standards?

   2.1. Are there any areas RCC can help?

3. Are there bilateral treaties with other economies from the Western Balkan region for cross-border/boundary recognition of trust services in place? If not, then are there any initiatives taken thus far? Is there political willingness to conclude such treaties?

   3.1. Are there any practical use-cases for cross-border/boundary recognition of eID and trust services implemented or identified?

4. Is there a treaty with the EU on mutual recognition of eID and trust services? If not, then are there any initiatives taken thus far? Is there political willingness to conclude such treaty or similar legal instruments?

A.1.1.2. National Interoperability Framework

1. Is the National Interoperability Framework or similar regulation that consists of a set of policies, standards and guidelines that the government uses to specify the preferred way in which its agencies, citizens and partners interact with each other in place?

2. If it exists, is it mandatory for government entities to use/to be connected?

A.1.2. Implementing Practice - State of Play

A.1.2.1. Existing Supervisory and Certification Authority

1. Please provide information on Supervisory Authority.

2. Please provide information where the valid Supervisory Authority related information is available.

A.1.2.2. Existing eID Schemes

1. If the economy level certified eID schemes are not available on the corresponding authority website, please provide the list of certified eID schemes and their level of assurance.

2. What are the most popular eID carriers?

3. Please provide any eID usage statistics.

4. What are the most popular services available via certified eID schemes? Can you provide any statistics?

A.1.2.3. Trust Service Providers

1. If the economy level certified QTSP list is not available on the corresponding authority website, please provide the list of certified TSP and their registered certified services.

2. What are the most popular electronic signature carriers?

3. Please provide any electronic signature usage statistics.

4. What are the most popular services electronic signatures are required? Can you provide any statistics?

A.1.2.4. User Software and APIs

User Software and APIs for service providers to authenticate and create/validate electronic signatures

1. Please provide examples (or links) to corresponding service environments.

2. What is the general opinion on the usability of provided user software?

3. How does the authentication process look like? Please demonstrate.

4. How does the electronic signature creation/verification process look like? Please demonstrate.

5. How do you see the eID and electronic signature should work in practice?

A.1.2.5. Trust Services' Interoperability

1. Is the national node connecting certified eID schemes operational? Please provide any information.

2. Can parties using electronic signature creation devices from different trust service providers validate other parties' electronic signature during the electronic signature creation process? Could you please provide examples.

3. What are the current business models related to eID and Trust Services?

4. Where could you find practical use cases for cross-border/boundary Trust Services interoperability?

A.1.2.6. National Interoperability Framework Implementation

1. Is the economy level Interoperability Platform operational? Please provide any examples of practical implementation.

2. Are there any perceived urgent needs for electronic interoperability between government entities?

3. What kind of practical use-cases do you see for cross-border/boundary service level interoperability?

A.2. Questionnaire B

Questionnaire B focuses on political, organisational and technical readiness aspects to implement a Vision of fully interoperable Western Balkan region and becoming a leading example for other regions to follow.

Vision of Interoperable Western Balkans is characterised by the following criteria:

- eIDs and trust services are mutually recognised;

- Public (and private) services are accessible via recognised eID schemes;

- All public entities accept eIDAS qualified/mutually agreed electronic signatures;

- Public and private entities, and natural persons can easily sign and validate electronic signatures on documents, including on cross-border/boundary documents;

- Economy level implemented Interoperability Platforms are operational and interconnected.

A.2.1. Political or General Readiness to Implement the Vision

1. Are there any strategic goals for e-Transformation?

2. Are there any deadlines when all or most of the public end-to-end services should be available via electronic channels in electronic form? (Explanation of end-to-end service - service is initiated via electronic channel, there is no need for physical interaction during the service offering process and the result is delivered in electronic form).

3. If high-level strategic goals and deadlines are set for e-Transformation, then please explain your understanding on the current government initiatives to improve service offering processes.

4. How the electronic records in public institutions' databases are positioned? Do the electronic records prevail over paper documents?

5. Are eID and electronic signature obligatory to accept for all government entities?

6. How is the data exchange between government entities arranged? Is there any roadmap or guideline to use electronic data exchange between government entities? Is it mandatory for government entities to exchange information in electronic form?

A.2.2. Organisational Readiness

1. How is the public e-services development coordinated currently?

2. Is there a central government institution responsible for coordination of e-services development?

3. If yes, what are the mandates of this organisation?

4. Is there a government entity responsible for National Interoperability Framework (NIF) implementation?

A.2.3. Technical Implementation Readiness

1. Do you think common eID and trust services formats and corresponding easy-to-use and interoperable (open source based) user environments in all WB economies are reasonable to implement?

2. What would be the main obstacles to use/implement common formats?

3. Do you think the same technical platform for National Interoperability Framework (NIF) implementation in all WB economies is reasonable to use?

4. Where can you see the main obstacles in implementing common NIF platform? What can be done to overcome those obstacles?

APPENDIX B - REFERENCES

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