ANALYSIS OF CURRENT EUROPEAN BLOCKCHAIN REGULATION

AN ANALYSIS OF EU LEGAL FRAMEWORK, INCLUDING STANDARDS, POLICIES AND DIRECTIVES, SPECIFICALLY GOVERNING OR RELATED TO DLT / BLOCKCHAIN SOLUTIONS AND APPLICATIONS

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ABBREVIATIONS

AFM:	Dutch authority for financial markets
AI:	Artificial intelligence
AML:	Anti-Money-Laundering
AMLD V:	Anti-Money-Laundering Directive (EU) 2018/843
CNIL:	Commission Nationale de l'Informatique et des Libertés (French Data Protection Authority)
CONSOB:	Commissione Nazionale per le Società e la Borsa (Italian Companies and Exchange Commission)
DLT:	Distributed Ledger Technology
DNB:	Dutch National Bank
EBA:	European Banking Authority
EBP:	European Blockchain Partnership
FinTech:	Financial Technology
FIU:	Financial Intelligence Unit
FSA:	Financial Supervisory Authority in Lithuania
FSMA:	Belgian Financial Services and Markets Authority
GDPR:	General Data Protection Regulation (EU) 2016/679
GPSD:	General Product Safety Directive 2001/95/EC
GTCN:	Global Trade Connectivity Network
ICO:	Initial Coin Offering
ICT:	Information and Communication Technology
ID:	Identification Data
ILNAS:	Institut Luxembourgeois de la Normalisation (Luxembourg Institute of Standardisation, Accreditation, Safety and Quality of Products and Services)
INPI:	Institut National de la Propriété Industrielle (French Institute of Intellectual Property)
IP:	Intellectual Property
KDPW:	Krajowy Depozyt Papierów Wartościo-wych (Polish Central Securities Depository)
KNF:	Komisja Nadzoru Finansowego (Polish Financial Supervisory Authority)
KSI:	Keyless Signature Infrastructure
KYC:	Know Your Customer
MAS:	Monetary Authority of Singapore
MFSA	Malta Financial Service Authority
MiFID II:	Markets in Financial Instruments Directive 2014/65/EU
NTP:	Networked Trade Platform
SFA:	Securities and Futures Act of Singapore
SFC:	Hong Kong Securities and Futures Commission
SME:	Small and Medium-Sized Enterprises
SPDI:	Special Purpose Depository Institutions
SSID:	Service Set Identifier
VFA:	Virtual Financial Asset
WIPO:	World Intellectual Property Organization

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DEFINITIONS

Administrative Area:	"Administrative Area" means any area in which an official authority of the government is operating, which is neither legislation nor jurisdiction.
Administrative Tasks:	"Administrative Tasks" means the decisive tasks in the Administrative Area. For example the keeping of registers, e.g. the register of births and marriages.
Anti-Money-Laundering Law/AML:	"Anti-Money-Laundering Law" or "AML" means all Laws and regulations primarily intended to prevent the conversion of illegally raised funds into official legal funds (including virtual currencies).
Capital Markets Law:	"Capital Markets Law" means all Laws and regulations that regulate the issue and trading of investment instruments.
Data Protection Law:	"Data Protection Law" means all Laws and regulations that deal with the collection, storage, transmission or other processing of personal data.
Governmental use cases:	DLT / Blockchain based solutions officially authorized by a national or EU government and used for the performance of an official, governmental task or officially approved by the government for a process required by national or European legislation.
Intellectual Property Law:	"Intellectual Property Law" means all Laws and regulations in order to protect intellectual property.
Law / Laws:	"Law / Laws" means legally binding acts and regulations set out by the government of the respective EU Member State.
Legal Field:	"Legal Field" means a "sub-area" of a Law. This memorandum is limited to the following Legal Fields: - Intellectual Property Law - Property Law and Registries - Data Protection Law - Capital Markets Law - Anti-Money-Laundering Law

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Legal Framework:	"Legal Framework" means Laws, official statements and stipulations by offices and authorities, position papers of the government or other authorities and other legal acts comparable to ordinances at administrative level.
Legislative Gap:	"Legislative Gaps" are constellations in which the existing Legal Framework does not cover all "use cases" of DLT / Blockchain solutions and / or applications.
Property Law and Registries:	"Property Law" means Laws with regard to legal relationships relating to property. "Registries" means governmental legal records of legal transactions.
Regulatory Needs:	"Regulatory Needs" means particular Legal Fields, where the government of the respective EU Member State has to enact additional Laws to enable the application of DLT / Blockchain solutions and / or applications.

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1. SCOPE OF WORK AND DESCTRIPTION OF THE PROCEDURE

1.1 INSTRUCTIONS AND SCOPE OF WORK DEFINED BY THE EUROPEAN COMMISSION

Dentons Europe has been subcontracted by the European Crowdfunding Network with regard to the regulatory analysis (M03-M10) of the current European regulation as stated in the Proposal "Pooling SME adoption and deployment of Blockchain and other DLTs".

In particular, Dentons Europe was asked to undertake a dedicated analysis of EU Legal Framework, including standards, policies and directives, specifically governing or related to DLT / Blockchain solutions and applications.

In particular, the task required an overview of the Legal Framework specifically governing or related to DLT / Blockchain solutions and applications regarding the following areas:

- Interoperability
- Intellectual property
- Data protection
- Algorithmic accountability and reliability of DLT / Blockchain systems as moving towards a European Data Economy

The overview should contain information about:

- The status quo of the existing Legal Framework specifically governing or related to DLT / Blockchain solutions and applications.
- Information about any planned Legal Framework specifically governing or related to DLT / Blockchain solutions and applications.
- Identification of Legislative Gaps and Regulatory Needs as well as regulatory challenges, which SMEs and DLT / Blockchain adopters are currently facing.
- Identification of national regulatory limitations regarding DLT / Blockchain solutions and applications of the EU Member States as well as some selected third country economies.

After the first analysis of the feedback of the respective jurisdictions, Dentons Europe decided to implement Anti-Money-Laundering and Capital Markets as additional area, due to the significant importance for SMEs.

1.2 DESCRIPTION OF THE PROCEDURE

Dentons Europe conducted this analysis as follows:

In a first step, we approached our colleagues in (at this point of time) 28 EU Member States, asking them to analyse the regulatory situation in their jurisdiction and provide us with a comprehensive summary with regard to:

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- The status quo of the existing Legal Framework specifically governing or related to DLT / Blockchain solutions and applications.
- Information about any planned Legal Framework specifically governing or related to DLT / Blockchain solutions and applications.
- Regulatory limitations for DLT / Blockchain solutions and applications, whereas "limitations" does not refer to regulatory stipulations imposing certain requirements for licensing, transparency, documentation or further compliance obligations, but rather means general prohibitions of the use of DLT / Blockchain for certain business purposes.
- Legislative Gaps and Regulatory Needs with regard to DLT / Blockchain solutions and applications.

To ensure an efficient working process and a scalable work product, we asked our colleagues to focus on the following legal areas for the respective national analysis:

- Capital Markets Law
- Anti-Money-Laundering Law
- Intellectual Property Law
- Property Law and Registries
- Data Protection Law

This focus was the result of our preliminary analysis with regard to the current market situation and the regulatory challenges mainly being faced by SMEs, FinTechs and other DLT / Blockchain adopters. The particular focus on Capital Markets Law and Anti-Money-Laundering Law was inserted, as DLT / Blockchain solutions are significantly used by the financial industry, including, but not limited to FinTechs, alternative finance industry etc.

Further, we as Dentons Europe identified Singapore, Hong Kong, Switzerland and the USA as potentially competitive economies, requesting the same analysis and summary from these jurisdictions.

1.3 COUNTRY CONTRIBUTIONS

We as Dentons Europe have been able to cover most jurisdictions of the EU Member States and the jurisdictions of the competitive economies of Singapore, Hong Kong, Switzerland and the USA with the expertise of colleagues from our own offices. Where this was not possible, qualified colleagues from several partner Law firms have assisted us. The individual country contributions have been as follows:

Austria	Wolf Theiss
Belgium	Dentons
Bulgaria	Wolf Theiss
Croatia	Wolf Theiss
Cyprus	Harneys
Czech Republic	Dentons

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Denmark	Lundgrens
Estonia	Sorainen
Finland	Krogerus
France	Dentons
Germany	Dentons
Greece	Kyriakides Georgopoulos
Hong Kong	Dentons
Hungary	Dentons
Ireland	William Fry
Italy	Dentons
Latvia	Sorainen
Lithuania	Sorainen
Luxemburg	Dentons
Malta	Fenech Farrugia Fiott
Netherlands	Dentons
Poland	Dentons
Portugal	RSA LP
Romania	Dentons
Singapore	Dentons
Slovakia	Dentons
Slovenia	Wolf Theiss
Sweden	Walthon Advokater
Switzerland	Wenger Vieli
Spain	Dentons
United Kingdom	Dentons
USA	Dentons

2. SUMMARY EUROPEAN LEVEL

2.1 INTEROPERABILITY

2.1.1 Existing Legal Framework with regard to DLT / Blockchain solutions and / or applications

There is no Legal Framework regarding interoperability between EU Member States specifically with regard to DLT / Blockchain solutions and applications on an EU level.

It is widely assumed that interoperability in view of DLT / Blockchain solutions and applications is subject to the existing Legal Framework of the EU and the EU Member States.

However, on 10 April 2018, some EU Member States agreed to sign a declaration creating the European Blockchain Partnership (EBP) and to establish a European Blockchain Services Infrastructure (EBSI) that is aimed to support cross-border digital public services with the highest standards of security and privacy.

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Additionally, the European Commission has launched the EU Blockchain Observatory and Forum, an initiative to accelerate Blockchain innovation and the development of the Blockchain ecosystem within the EU.

2.1.2 Governmental use cases with regard to DLT / Blockchain solutions and / or applications

Dentons Europe is not aware of any governmental use cases on EU level implementing DLT / Blockchain with regard to Interoperability.

2.1.3 Planned Legal Framework with regard to DLT / Blockchain solutions and / or applications

Currently, there is no Legal Framework planned regarding interoperability between EU Member States specifically with regard to DLT / Blockchain solutions and applications.

However, the EU Commission published a study on Blockchains Legal, governance and interoperability aspects (SMART 2018/0038). The study also refers to cross-border transactions regarding DLT / Blockchain applications and the interoperability between the EU Member States.

2.1.4 Regulatory Limitations with regard to DLT / Blockchain solutions and / or applications

Currently, there are no limitations for the use of DLT / Blockchain on the EU level.

2.1.5 Legislative Gaps and Regulatory Needs

There are no severe Legislative Gaps and Regulatory Needs within the existing Legal Framework of the EU regarding interoperability within the European Union in view of DLT / Blockchain solutions and applications. This is mainly because the existing Legal Framework of the EU does not specifically address DLT / Blockchain use cases or this technique as such. Accordingly, there is no strong need for regulation and no gaps.

However, given the fact that DLT / Blockchain use cases will gain a larger market share, there will be a Regulatory Need for harmonization. The new technology is developing fast, but there is also a need to balance the innovation with interoperability, security and scalability of DLT / Blockchain use cases and solutions. Interoperability will be required above all with regard to a technical feasibility of DLT / Blockchain solutions and applications with regard to exchange and interaction with other networks, applications and technical systems. Also with regard to their compliance with EU-wide technological standard and legal requirements. Different innovative solutions will have to fit the same legal framework and fulfil the same teleological requirements of existing provisions (e.g. Directive 2011/83/EU (consumer rights), Directive 2000/31/EC (e-commerce), Commission Implementing Decision (EU) 2015/1506 (formats of advanced electronic signatures and advanced seals), Commission Implementing Decision (EU) 2015/296 (electronic identification), Commission Implementing Regulation (EU)

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2015/1501 (interoperability framework on electronic identification and trust services for electronic transactions) etc.).

2.2 INTELLECTUAL PROPERTY

2.2.1 Existing Legal Framework with regard to DLT / Blockchain solutions and / or applications

The European Union did not implement any Legal Framework specific to DLT / Blockchain Governmental use cases with regard to DLT / Blockchain solutions and / or applications.

2.2.2 Governmental use cases with regard to DLT / Blockchain solutions and / or applications

The European Union so far does not use any DLT / Blockchain solutions and / or applications for several of its Administrative Tasks with regard to Intellectual Property Law.

2.2.3 Planned Legal Framework with regard to DLT / Blockchain solutions and / or applications

To date, the European Union does not plan to implement any Legal Framework regarding DLT / Blockchain solutions and / or applications.

2.2.4 Regulatory Limitations with regard to DLT / Blockchain solutions and / or applications

The European Union does not limit DLT / Blockchain solutions and / or applications.

2.2.5 Legislative Gaps and Regulatory Needs

We as Dentons Europe do not see any Legal Gaps within the European Union Intellectual Property Law, as all DLT / Blockchain based use cases and applications are sufficiently covered by the existing Laws and regulations.

If any, Regulatory Needs within the European Union Intellectual Property Law Legal Framework with regard to DLT / Blockchain solutions and / or applications could be:

- Regulations for the use of DLT / Blockchain to operate the official intellectual property registers, including rules on the value of contents of such registers as evidence, and technical rules on the interoperability with other (electronic) register systems (WIPO, national IP Offices, non-EU IP Offices).
- Regulations for the use of DLT / Blockchain to fight counterfeiting / piracy by tracking IP transactions or identifying original goods, including rules on the value of related information as evidence, and technical rules on the interoperability with other (electronic) register systems in use by customs authorities.

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2.3 DATA PROTECTION

2.3.1 Existing Legal Framework with regard to DLT / Blockchain solutions and / or applications

There is no Legal Framework on Data Protection dealing specifically with DLT / Blockchain solutions and applications. It is widely assumed in the market that data processing (in particular personal data processing) with DLT / Blockchain is subject to the General Data Protection Regulation (EU) 2016/679 (GDPR) and any underlying or concretizing legal provisions. The processing of non-personal data in the European Union is in general subject to Regulation (EU) 2018/1807, however, this and other possibly concerned legal provisions did not specifically regulated DLT / Blockchain or addressed the DLT / Blockchain specificities (such as Directive (EU) 2019/1024, Directive 2002/58/EC).

Nevertheless, the European Parliament issued the paper "Blockchain and the General Data Protection Regulation" (July 2019) clarifying some questions with regard to the interaction between the GDPR and DLT / Blockchain solutions and applications, but also identifying lot of questions, which cannot be solved easily with the existing Legal Framework on Data Protection. This paper is a first step to legal certainty, but cannot be considered as a sufficiently reliable Legal Framework.

2.3.2 Governmental use cases with regard to DLT / Blockchain solutions and / or applications

Currently, there are no governmental use cases on EU level implementing DLT / Blockchain. The EU Commission funded several non-governmental projects under the EU Horizon 2020 scheme that used Blockchain technology for purposes and projects closely connected with the processing of personal data, including special categories of personal data. In particular, such projects investigated the use of Blockchain in such sectors, as healthcare and education, privacy, cybersecurity etc. An overview over the respective projects can be found here: https://ec.europa.eu/digital-single-market/en/news/eu-funded-projects-blockchain-technology.

Other projects, which will require processing of personal and non-personal data on DLT and accordingly can serve as a practical and legal directory are not yet officially implemented and are rather in their development and test phase (e.g. European self-sovereign identity framework (eSSIF) is part of the European Blockchain service infrastructure etc.).

2.3.3 Planned Legal Framework with regard to DLT / Blockchain solutions and / or applications

Currently, there is no specific Legal Framework for Data Protection planned specifically with regard to DLT / Blockchain solutions and applications.

However, the European Parliament further issued "the resolution of 13 December 2018 on Blockchain: a forward-looking trade policy (2018/2085(INI))", discussing Blockchain in the

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context of a forward-looking trade policy (2018/2085(INI). The resolution identified – inter alia – various challenges and Legislative Gaps in connection with the use of Blockchain technology and the GDPR. This was made particularly in connection with international trade aspects, but discussed significant Data Protection issues in connection with the use of DLT / Blockchain and made a call on the EU Commission to take the lead in the assessment and further development of Blockchain technologies, including in specific sectors, including Data Protection.

2.3.4 Regulatory Limitations with regard to DLT / Blockchain solutions and / or applications

Currently, there are no limitations for the use of DLT / Blockchain on the EU level.

2.3.5 Legislative Gaps and Regulatory Needs

There is an overall gap with regard to the compatibility of DLT / Blockchain solutions and applications involving the processing of personal data and the requirements of the GDPR. Please see below.

There is a strong need to clarify the specific questions arising with regard to the processing of personal data on DLT / Blockchain and the applicable GDPR requirements. In particular, the legislator and the supervisory authorities should answer the following questions to ensure legal certainty for data controllers and data processors, working with DLT / Blockchain solutions and applications:

- Compliance with the right to be forgotten
- Compliance with the data minimization principle
- Definition of the roles of the various participants in terms of the GDPR
- Guidelines for a sufficient compliance with privacy by design and by default
- Data sovereignty
- Guidelines on sufficient anonymization techniques as opposite to pseudonymization techniques (which parameters must apply to a technique so that it can be considered sufficiently strong to be accepted as anonymization? Can pseudonymized data be stored on DLT / Blockchain and if yes, under which requirements?)
- Regulatory assessment with regard to solutions, where personal data are stored on a local or non-DLT / Blockchain based database and “hashed” or otherwise encrypted on DLT / Blockchain, with the possibility of a reverse acknowledgement.
- Regulatory assessment as to when the use of DLT / Blockchain can guarantee compliance with the GDPR (minimum parameter, which have to be met, case studies etc.).
- Further, the Article 29 Working Party issued Opinion 05/2014 on Anonymization Techniques, adopted on 10 April 2014. There is a need for clarification, to which extent this Opinion 05/204 can and should be taken into account with regard to (personal) data processed on DLT / Blockchain, considering the currently available hashing techniques and other anonymization measures.

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With regard to the European Data Strategy and the European Digital Strategy, it will be crucial to understand the technical anonymization threshold, which will be considered as sufficient in order to differentiate between personal and non-personal data and accordingly determine the respectively applicable Legal Framework for data processing.

2.4 ALGORITHMIC ACCOUNTABILITY AND RELIABILITY

2.4.1 Existing Legal Framework with regard to DLT / Blockchain solutions and / or applications

The EU did not implement any Legal Framework with regard to algorithmic accountability and reliability of Blockchain and DLT systems.

2.4.2 Governmental use cases with regard to DLT / Blockchain solutions and / or applications

There are no Governmental use cases with regard to DLT / Blockchain solutions and / or applications.

2.4.3 Planned Legal Framework with regard to DLT / Blockchain solutions and / or applications

The European Union does not plan to implement any Legal Framework with regard to algorithmic accountability and reliability of Blockchain and DLT systems.

2.4.4 Regulatory Limitations with regard to DLT / Blockchain solutions and / or applications

There are no regulatory limitations with regard to DLT / Blockchain solutions and / or applications.

2.4.5 Legislative Gaps and Regulatory Needs

We as Dentons Europe do not see Legislative Gaps in the existing EU Legal Framework. With regard to algorithmic accountability and reliability, technological neutrality is preferable to a rigid Legal Framework. Creating a technology-based Legal Framework could likely result in barriers to innovation than opportunities.

With regard to “accountability”, we do see a need for clarification within the existing Legal Framework, as described below (2.4.5.1). With regard to “algorithmic reliability”, we do not see any Regulatory Needs within the existing Legal Framework yet (please see below, 2.4.5.3).

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2.4.5.1 Algorithmic accountability

Algorithmic accountability usually comes with algorithmic transparency in terms of artificial intelligence (AI) and the future of algorithmic decision-making. With regard to Blockchain and DLT systems, the risk scheme is different, since decisions are rather based on incentives and therefore, economic-psychological effects than automated decision making (see for example bitcoins as a reward, transaction fees as incentive, and so-called block rewards). The consensus algorithm itself does not "decide" on individual transactions and (smart contract) contents; it merely helps randomly selecting the decision maker, which is a computer in the first place.

In DLT and expressly in Blockchain systems, however, algorithms are involved that (co-) process data, especially personal data. In the event of problems and damage, someone has to be held liable. The problem is that this person cannot be easily identified.

A dedicated analysis has to address two basic problems first:

2.4.5.2 Two problems to solve first

Firstly, given the various initiatives at EU level for the progress of AI or DLT/Blockchain regulation, there appears to be a shift from (necessary) technologically neutral rules to technologically specified rules, which will likely result in hindering innovation or reducing protection.

Secondly, the understanding and application of the concept of accountability is not uniform at EU level. Key terms need clarification first, because otherwise they remain unclear and create further confusion:

The terms accountability and responsibility are often used synonymously. However, they must be distinguished when it comes to legal conditions, legal obligations and legal consequences. Responsibility is more task-oriented and can be shared, for example, by delegation. In contrast, accountability depends on an individual characteristic and therefore cannot be delegated. This means that when assessing the EU Legal Framework on algorithmic accountability, we need to focus on a role with tasks that cannot be delegated.

2.4.5.2.1No consensus on the term accountability in Europe

The European Legal Framework lacks guidance on definitions and accountability mechanisms. The study shows how little consensus exists on the concept of accountability in Europe. Namely, none at all:

2.4.5.2.2GDPR

The GDPR includes a (technologically neutral) accountability principle, in recital No. 85 and Art. 5 (2) GDPR, which addresses the controller who is “responsible” for and able to demonstrate compliance with the principles named in Art. 5 (1) GDPR. According to Art. 4 (7)

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GDPR, the controller is a natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data. Where the purposes and means of such processing are determined by the Law of the EU Member States, the controller or the specific criteria for its nomination may be provided for by the Law of the EU Member State. The role is, thus, defined by delegable tasks, i.e. determination of the purposes and means which is confusing and could lead to misunderstandings in the interpretation of articles and recitals, which discuss responsibilities of controllers and processors.

2.4.5.2.3Resolution of the European Parliament dated 16 February 2017 (2015/2103(INL))

According to the resolution of the European Parliament dated 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)) and the included Code of Ethical Conduct for Robotic Engineers, accountability should remain with the robotics engineers for the social, environmental and human health impacts that robotics impose on present and future generations.

2.4.5.2.4Legal uncertainties

Consequently, legal practitioners must resolve the legal uncertainties by interpreting what "accountability" means on a case-by-case basis, particularly with regard to accountability for algorithms and technical procedures that humans inherently do not understand. Does accountability, therefore, depend on the education of a natural person, as, in terms of learned programming, they are the primary determiners of purpose and means? If yes, how can accountability be transferred to a (solvent) legal person similar to the transfer of responsibility, especially the employer? How could the employer take over the ability to demonstrate compliance although, as a legal person and through its representatives, it does not understand the programming language and technical procedures? Leaving accountability with the engineers and programmers conflicts with national labour Law that has to be solved.

Art. 82 (3) GDPR shifts the burden of proof to both controllers and processors in cases of damage to a data subject. Art. 82 (4) GDPR treats both of them equal in terms of liability towards the data subject – thus, (at least at first sight) aligning accountability, responsibility and liability: Both controller or processor shall be held liable for the entire damage in order to ensure effective compensation of the data subject.

If either of the responsible figures named above pays compensation it is entitled to claim compensation from the other in correspondence with the respective responsibility as set out in Art. 82 (2) GDPR. A processor whose duties derive from the controller shall be liable for the damage caused by the processing only if he has failed to comply with the obligations of the GDPR specifically addressed to processors or if he has acted outside or contrary to the Lawful instructions of the controller. Again, there is no clarification what accountability means. The only thing that can be digested from this is the Law and contract-based allocation of responsibility.
In addition, Art. 83 GDPR equates controller and processor. Art. 83 (5) lit. a GDPR does not differentiate between Art. 5 (1) and Art. 5 (2) GDPR. There is no greater burden on the

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controller, which might result "naturally" from his role. Responsibility can be shifted. However, accountability remains unclear.

Last but not least, the Protocol amending the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (Council of Europe Treaty Series (ETS) – No. 223) adopted by the Committee of Ministers on 18 May 2018 and opened for signature on 10 October 2018 points out responsible authorities which shall promote the controllers' and processors' awareness of their responsibilities under this convention. However, there is no reference to the accountability of controllers (or else). Although the role is understood to be decisive and not the tasks there is no reason to believe that the Council of Europe has forgotten or simply not regulated the "accountability" of controllers (or others). On the contrary, it seems that European regulators understand "responsibility" and "accountability" interchangeably.

2.4.5.3 Algorithmic reliability

"Reliability" is not a legal term in the EU. In general, product or service reliability describes the status of full or best-possible control, availability and safety. The same applies to products or services involving software or software itself. In unpermitted DLT and Blockchain networks, algorithmic reliability has to be understood differently. In those networks, the lack of control equals safety – as long as no network participant gains control over the network (and abuses his power), assets are safe. However, users, both consumers and non-consumers, have to rely on a certain group of people, who are (financially) incentivised or otherwise interested in keeping the network and its reliability intact. As long as these people are incentivised to not abuse their position, algorithmic reliability is possible. In addition, all network participants have to trust each other to not misuse any knowledge of possibilities of gaining power over the network. So, algorithmic reliability is rather a theoretical ideal situation which can be described as a Nash equilibrium, a stable state of a system of different interacting participants, in which no participant is incentivised to change his strategy while the strategies of the others remain unchanged.

Unpermitted, i.e. unlimitedly accessible DLT and Blockchain networks are known for terms of use (if any) that shift all responsibility to the user: "The user utilizes the software at his own risk." Permissioned, i.e. controlled networks can be treated as a service and will most likely be paid for. Hence, at least on a contractual basis, the provider (and controller) will be responsible for reliable services.

Unpermitted DLT or Blockchain networks are no products in the sense of Art. 2 (a) General Product Safety Directive (GPSD, Directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety): Such 'product' shall mean any product — including in the context of providing a service — which is intended for consumers or likely, under reasonably foreseeable conditions, to be used by consumers even if not intended for them, and is supplied or made available, whether for consideration or not, in the course of a commercial activity, and whether new, used or reconditioned.
A computer itself is a product in this sense, but not the network of computers (nodes) involving only software. A Blockchain or other DLT network is no Blockchain or other DLT

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network if there is no other node to form a network. In unpermitted networks, there usually is no commercial offer involving a technical device that consumers need to use the network. In contrast to that, a permissioned DLT or Blockchain network service could fall under the GPSD if the consumer has to get hold of a technical device that is necessary to join the network.

For the users of an unpermitted Blockchain or DLT network it will rarely be possible to identify only one controller among the node operators who could be accountable for the reliability of the functioning of the network software. As described above, the GDPR per se is imprecise with regard to the term accountability (Art. 5 (2) GDPR). Art. 5 (1) lit. d (accuracy of data) and lit. f (integrity and confidentiality of data) of the GDPR do describe the controllers' and processors' obligations involving the reliability of algorithms processing data. However, due to the unknown identities of controlling nodes it is highly questionable if a user could ever enforce reliability. In addition, the network's algorithmic reliability will always be distributed across several "shoulders" since a network needs at least two functioning nodes and, last but not least, specialists who take care of the algorithms' accuracy. With regard to the consensus algorithm, the reliability could demand a minimum of at least 51 %of all nodes in the network. With regard to the idea of shared knowledge and reliability of a functioning network, in the absence of regulation, users will depend on the individual interest of network participants in a functioning and reliable network based on shared power. As mentioned above, network participants, users and enthusiasts believe that financial and other economic incentives ensure the reliability of the network, which includes the reliability of all algorithms involved. However, these incentives are algorithmically controlled and thus can be manipulated. A discussion of algorithmic reliability with regard to DLT and Blockchain networks therefore appears necessary.

2.5 ANTI-MONEY-LAUNDERING AND CAPITAL MARKETS

2.5.1 Existing Legal Framework with regard to DLT / Blockchain solutions and / or applications

There is Legal Framework on Anti-Money-Laundering Law dealing specifically with DLT / Blockchain solutions and / or applications.

The Anti-Money-Laundering Directive (EU) 2018/843 (AMLD V) amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money-laundering or terrorist financing, and amending Directives (EC) 2009/138 and (EU) 2013/36, is the first legal act from the EU that provides a definition of "virtual currencies".

Pursuant to Article 1(2)(d) of AMLD V "virtual currencies" are "a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically"
The same article also provides a legal definition of the term "custodian wallet provider" which is defined as "an entity that provides services to safeguard private cryptographic keys on

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behalf of its customers, to hold, store and transfer virtual currencies." Pursuant to recital 8 of the 5th AML Directive, exchange services between virtual currencies and fiat currencies as well as custodian wallet providers will, therefore, fall under the scope of the AML Directive. Custodian Wallet providers and crypto-currency exchange platforms between virtual currencies and fiat currencies will, thus, have to comply with the same KYC requirements as the classic financial institutions, including inter alia the verification of the identity of their clients. According to Article 47(1) of the 4th AML Directive – as amended by AMLD V – the Member States shall also ensure that these intermediaries are registered.

All those regulations and directives can be seen as minimum requirements set by the European Union. Therefore, some Member States might have other rules in place that will apply to crypto-assets or to activities dealing with crypto-assets. As such, each Member States has for example its own definition on what constitutes a transferable security pursuant to their national Law and their transposition of MiFID II.

There is no existing specific Legal Framework for DLT / Blockchain solutions and / or applications with regard to Capital Markets on the European Union level.

2.5.2 Governmental use cases with regard to DLT / Blockchain solutions and / or applications

Dentons Europe is not aware of any governmental use cases on EU level implementing DLT / Blockchain with regard to Anti-Money-Laundering Law or Capital Markets Law.

Projects, which are in the development phase with regard to the simplification or performance of certain compliance requirements related to capital markets (e.g. European Financial Transparency Gateway Project) are not yet officially authorized.

2.5.3 Planned Legal Framework with regard to DLT / Blockchain solutions and / or applications

Currently, there is no further specific Legal Framework for Anti-Money-Laundering Law or Capital Markets Law planned specifically with regard to DLT / Blockchain solutions and / or applications.

The European Banking Authority (EBA) has launched in February 2020 a consultation on proposed revisions to the Risk Factor Guidelines for financial institutions to assess money laundering and terrorist financing risks. The proposed changes aim to take into account the revisions of AMLD V and newly identified risks.

2.5.4 Regulatory Limitations with regard to DLT / Blockchain solutions and / or applications

Currently, there are no limitations for the use of DLT / Blockchain on the EU level with regard to Anti-Money-Laundering Law or Capital Markets Law.

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2.5.5 Regulatory Gaps and Needs

There is a strong need of a fast implementation of the provisions of AMLD V by all EU Member States.

Some EU Member States like Cyprus, Hungary, the Netherlands, Portugal, Romania, Slovakia, Slovenia and Spain did not implement AMLD V into national Law yet. The EU Commission has sent letters of formal notice to these countries.

The EU Member States have to act together to mitigate the risks of money laundering and terrorist financing inter alia with regard to Blockchain solutions and applications. Legislative Gaps occurring in one EU Member State have an impact on the EU as a whole, as these countries can become "hotspots" of money laundering and terrorist financing. Consequently, these threats can spread throughout the entire EU territory.

With regard to Capital Markets Law, there is a need for clarification whether and if DLT / Blockchain based financial products are transferable securities in terms of Section C of Annex I of the Directive 2014/65/EU. There is a discrepancy between the term "financial instruments" of the Directive 2014/65/EU and the respective national capital markets regulations, leading to different treatment of services and products in connection with DLT / Blockchain.

3. SUMMARY EUROPE – MEMBER STATE LEVEL

3.1 EXISTING OR PLANNED LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND OR APPLICATIONS

From 28 analyzed EU Member States none EU Member State implemented or currently intends to implement specific, national Legal Framework with regard to DLT / Blockchain solutions and / or applications in relation to Intellectual Property Law, Property Law and Registers and Data Protection.

With regard to Capital Markets Law, six EU Member States state that there is a Legal Framework consisting of official statements and stipulations by offices and authorities, position papers of the government or legal acts comparable to ordinances at administrative level regarding the classification and regulatory treatment of DLT / Blockchain based financial products and services. Further, the German Federal Ministry of Justice and Consumer Protection and the Federal Ministry of Finance issued a draft bill with regard to implementation of electronic securities, specifically including securities, which are issued via DLT/Blockchain solutions. The draft bill is now in the consultation process.
With regard to Anti-Money-Laundering Law, fifteen EU Member States have passed national Legal Framework implementing AMLD V. The UK states that the current Legal Framework is compliant with AMLD V. Twelve EU Member States did not yet implement AMLD V.

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In total, the analysis reveals that currently the EU Member States only see a need in regulating DLT / Blockchain based solutions and applications with regard to the financial industry, rather than with regard to other industries and / or legal spheres.

3.2 GOVERNMENTAL USE CASES WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

Currently, there are no officially authorized governmental use cases of DLT / Blockchain. Although there are several initiatives on national and especially European Union level with regard to several use cases (e.g. transparency requirements of the Transparency Directive 2013/50/EU, Notarization for Auditing Purposes, Certification of Diplomas, SSID, Trusted Data Sharing, Immigration & Asylum coordination, e-Health Digital Service Infrastructure).

3.3 REGULATORY LIMITATIONS WITHIN THE EXISTING NATIONAL LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

Non-EU Member States have no explicit regulatory limitations for DLT / Blockchain solutions and / or applications.

3.4 REGULATORY GAPS AND NEEDS WITHIN THE EXISTING NATIONAL LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

All EU Member States identified regulatory needs with regard to DLT / Blockchain solutions and / or applications.

4. SUMMARY THIRD COUNTRIES

4.1 EXISTING OR PLANNED LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

There is no existing Legal Framework with regard to DLT / Blockchain solutions within the analyzed third countries. However, the United States and Singapore plan regulations in the sphere of Capital Markets.

4.2 GOVERNMENTAL USE CASES WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

There are no governmental use cases with regard to DLT / Blockchain solutions within the analyzed third countries.

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4.3 REGULATORY LIMITATIONS WITHIN THE EXISTING NATIONAL LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

There are no limitations with regard to DLT / Blockchain solutions within the analyzed third countries.

4.4 LEGISLATIVE GAPS AND REGULATORY NEEDS WITHIN THE EXISTING NATIONAL LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

All third countries identified various needs with regard to regulations or at least governmental clarifications with regard to the use of DLT / Blockchain solutions in several legal areas.

5. DETAILED ASSESSMENT: EXISTING LEGAL FRAMEWORK WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

5.1 CAPITAL MARKETS

	Existing Legal Framework national level	Comments
Austria	The existing AML regulation complies with the requirements under AMLD V (and actually exceeds these), also having effect on Capital Markets Law: Certain providers of services in relation to crypto-assets have become subject to (i) AML / KYC and customer due diligence requirements; (ii) reporting obligations; and (iii) the requirement to register with the Austrian Financial Markets Authority. This is relevant for providers offering one, or more, of the following services: - Services to safeguard private cryptographic keys to hold, store and transfer virtual currencies on behalf of a customer (custodian wallets)	

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	- Services to exchange virtual currencies into fiat currencies and vice versa - Services to exchange one or more virtual currencies into each another - Services to transfer virtual currencies; and - Financial services for the issuing and selling of virtual currencies	
Belgium	No existing specific Legal Framework for DLT / Blockchain solutions and / or applications.	The respective Belgian authority (Financial Services and Markets Authority – FSMA) published a communication on ICOs. It provides an overview of the legislation and regulations that may apply to the respective providers.
Bulgaria	No existing specific Legal Framework for DLT / Blockchain solutions and / or applications.	The current Legal Framework applies to virtual currency exchanges and custodian wallet providers, which are required to register at the Bulgarian National Revenue Agency.
Croatia	No existing Legal Framework for DLT / Blockchain solutions and / or applications.	
Cyprus	According to the Regulated Markets Law of Cyprus, virtual currencies are classified as financial instruments.	
Czech Republic	No existing specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Czech National Bank published a non-binding position paper stating that virtual tokens are generally out of scope of the Capital Markets Law. However, derivatives based on virtual tokens are likely to meet the definition of investment instrument under MiFID II.
Denmark	No existing specific Legal Framework for DLT / Blockchain solutions and / or applications.	

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Estonia	No existing specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Financial Supervisory Authority of Estonia has issued a short guidance notice on how to classify different tokens under the existing Legal Framework.
Finland	No existing specific Legal Framework for DLT / Blockchain solutions and / or applications.	
France	Article 86 of the Action Plan for Business Growth and Transformation Act regulates crypto-asset services, which are based on Blockchain technology. Article 86 implements a mandatory registration process and sets up some license requirements for several crypto-asset service provider types. The government can grant Visa to persons willing to issue digital tokens – via an ICO – on the French market to finance a project or an activity in France as long as they respect certain rules (L. 552-1 to L. 552-7 of the French Monetary & Financial Code).	
Germany	German Federal Financial Supervisory Authority issued several statements regarding the classification and regulatory treatment of DLT / Blockchain based financial products. The overall understanding is that the currently existing regulatory regime applies to such financial products. The actual regulatory regime is defined by a closer look at the terms and conditions of the respective DLT / Blockchain based financial product and the rights and obligations of the token holders (investors). The respective position papers of the German Federal Financial Supervisory Authority contain more detailed assessment with regard to various regulations, which may possibly be	The German Federal Ministry of Justice and Consumer Protection and the Federal Ministry of Finance issued a draft bill with regard to implementation of electronic securities, specifically including securities, which are issued via DLT/Blockchain solutions. The draft bill is now in the consultation process.

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	applicable to DLT / Blockchain based financial products. Further, in the course of the implementation of AMLD V the German legislator took the opportunity to amend the German Banking Act (*Kreditwesengesetz*), by defining crypto-assets as financial instruments including a broader definition of crypto-assets than provided by AMLD V. Moreover, trading with crypto-assets and the custody of crypto-assets as a service for others require a license from the German Federal Financial Supervisory Authority as a bank or as an investment firm and entities that provide no other financial services than custody are exempted from certain rules that apply to other investment firms.	
Greece	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The respective authority has issued official statements in relation to the applicability of existing legal regimes to DLT / Blockchain solutions and / or applications. - In November 2019, the Securities and Futures Commission (SFC) published a position paper setting out the regulatory framework of virtual asset trading platforms - Platforms which operate in Hong Kong and offer trading of at least one security token may now apply to be licensed by the SFC - Key licensing conditions involve requirements that the platform operator may only

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		offer its services to professional investors, must have stringent criteria for the inclusion of virtual assets to be traded on its platform, must only provide services to clients who have sufficient knowledge of virtual assets and must comply with the terms and conditions for virtual asset trading platform operators attached to the position paper
Hungary	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	In 2017, the Hungarian Government launched the FinTech Strategy of Hungary initiating the development of the financial sector of Hungary and the application of innovative FinTech solutions such as Blockchain solutions. In 2019, the National Bank of Hungary also published its own FinTech strategy on the same topic.
Ireland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Irish Department of Finance has issued a Discussion Paper on Virtual Currencies and Blockchain Technology in March 2018, but the Discussion Paper does not specify whether the existing Legal Framework is applicable to DLT / Blockchain solutions and / or applications.
Italy	Italy partially implemented Legal Framework consisting in Laws and regulations that regulate the issue and trading of investment instruments referring to the definition provided by EU regulation (i.e. Directive 2014/65/EU and EU regulation n. 600/2014).	The Italian authority (CONSOB) communicated that such European Union legislation on financial instruments is not likely to be integrated at national level, even indirectly, with additional defining criteria which could be represented by those additional distinguishing elements (between financial instruments and crypto-activity).

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Latvia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Latvian Financial Services Authority issued an opinion that the existing Legal Framework is in particular applicable to DLT / Blockchain solutions and / or applications.
Lithuania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Bank of Lithuania (Financial Supervisory Authority in Lithuania, FSA) has issued a position on virtual assets and ICOs, and guidelines on security token offers. The FSA has also launched a Regulatory Sandbox regarding DLT / Blockchain solutions and / or applications.
Luxemburg	2019, Luxembourg passed a Law permitting the use of DLT for the circulation of securities, facilitating the use of Blockchain technology in financial services.	
Malta	The Virtual Financial Assets Act, ("**VFA Act**") introduces a mandatory regime that regulates DLT assets and related service providers. The principal scope of the VFA Act is to regulate the field of ICOs and Virtual Financial Assets. Under Maltese Law DLT assets are classified into four mutually exclusive categories, namely: - a virtual token; - a virtual financial asset (VFA); - electronic money; or - a financial instrument that is intrinsically dependent on, or utilises, DLT. The respective Maltese authority has introduced a specific test (namely, the Financial Instrument Test), which aims at providing the industry with a degree of legal certainty regarding the nature of a DLT asset. The ultimate objective	

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	is to determine whether a DLT asset, based on its specific features, falls within the ambit of either the applicable financial services Laws and regulations governed by the Laws of Malta or specifically by the VFA Act or is otherwise exempt from regulation. Further guidelines set out whether a DLT asset qualifies as Electronic Money or a Financial Instrument according to Maltese Law. The VFA Act defines ICOs and prohibits the offering of a virtual financial asset to the public in and from Malta or the admission of a virtual financial asset to trading on a DLT exchange, unless a whitepaper is duly drawn up and registered in compliance with the requirements set out under the VFA Act.	
Netherlands	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	There is an existing practice of the Dutch supervisory authorities and publications and statements issued by the Dutch supervisory authorities, pursuant to which DLT / Blockchain based financial assets may be subject to existing Capital Markets Law.
Poland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Polish Financial Supervisory Authority (KNF) has issued several official statements / warnings. KNF pointed out risks related to virtual currencies and ICOs / ITOs. According to KNF, virtual currencies shall not be considered money or e-money. KNF also stated that due to particular characteristics of a virtual currency / and activities related thereto (e.g. ICOs, trading services), existing Laws may be applicable. KNF does not however provide detailed interpretation or classification criteria.

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		Further, the KNF maintains the "List of public warnings". Several entities engaged in DLT / Blockchain-related businesses have been included on this List due to the KNF's suspicion of unlicensed provision of payment services.
Portugal	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Romania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	Some crypto-currencies may fall under the concept of "securities", which triggers as main consequences the applicability of public offers rules (and exemptions), Market Abuse Regulation and MIFID related restrictions.
Singapore	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	With many DLT / Blockchain protocols or applications involving the use of digital representations of rights (most commonly in the form of digital tokens), the Monetary Authority of Singapore (MAS) has clarified that offers or issuances of digital tokens will be regulated if they constitute capital markets products under the existing Securities and Futures Act of Singapore (SFA). MAS has also clarified that a digital token exchange operating a market or facility for the exchange of digital tokens, which are capital markets products, will generally have to be approved as an approved exchange or recognized as a recognized market operator pursuant to the SFA. Apart from the SFA, issuers of digital tokens would also have to comply with other applicable Laws, such as the Commodities Trading

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		Act of Singapore, if the digital token falls within the ambit of such Laws.
Slovakia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovenia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Sweden	Virtual currencies are explicitly subject to the Law of Currency Exchange and other Financial Activities.	Sweden regulated explicitly virtual currencies and also Equity-based crowdfunding platforms (not limited to provision of services related to Blockchain / DLT).
Spain	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The existing Legal Framework is applicable to DLT / Blockchain solutions and / or applications.
United States	All instruments issued on DLT / Blockchain are likely to be considered securities, except for Bitcoin and Ether – which are commodities – and in each case subject to existing Law.	Certain types of Bitcoin futures and options are subject to self-certified rules of the major commodities exchanges.

5.2 ANTI-MONEY-LAUNDERING

	Implementation AMLD V	Specific Legal Framework national level	Comments
Austria	Yes	The existing AML regulation implementing AMLD V exceeds the AMLD V requirements: Certain providers of services in relation to crypto-assets have become subject to (i) AML / KYC and customer due diligence requirements; (ii) reporting obligations; and (iii) the requirement	

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		to register with the Austrian Financial Markets Authority. This is relevant for providers offering one, or more, of the following services: (i) services to safeguard private cryptographic keys to hold, store and transfer virtual currencies on behalf of a customer (custodian wallets); (ii) services to exchange virtual currencies into fiat currencies and vice versa; (iii) services to exchange one or more virtual currencies into each another; (iv) services to transfer virtual currencies; and (v) the provision of financial services for the issuing and selling of virtual currencies.	
Belgium	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Bulgaria	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Croatia	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Cyprus	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Czech Republic	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Ministry of Finance of the Czech Republic has introduced a bill aiming for implementation of AMLD V. However, it has not yet been submitted to the Parliament of the Czech Republic. In

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			particular, it includes persons providing services related to virtual assets among AML obliged entities and declares such provision of services as a trade activity that requires a general trade license.
Denmark	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Estonia	Yes	Estonia established stricter AML legislation in March 2020 in the form of stricter regulations for the providers of virtual currency services – including wallet and crypto (to crypto) – exchange services.	
Finland	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
France	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Germany	Yes	In the course of the implementation of the definition of "virtual currencies" Germany took a broader approach and included the wording "… but is accepted by natural or legal persons as a means of exchange, *payment or investment* and which can be transferred, stored and traded electronically". This can have an impact on the scope of application of the German Anti-Money-Laundering Act, as the broader definition can extend the group of persons being	

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		subject to this act and covers wider range of activities.	
Greece	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hong Kong	Not applicable	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	There are official statements regarding the applicability of the existing Legal Framework to DLT / Blockchain solutions and / or applications.
Hungary	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Ireland	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Italy	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Latvia	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Lithuania	Yes	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Luxemburg	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Malta	Yes	The VFA Act provides that all "license holders" are bound to adhere to applicable rules relating to the prevention of money laundering. Consequently, the definition of "subject persons" under the Maltese	

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		Prevention of Money Laundering and Funding of Terrorism Regulation was extended to include agents and issuers of publicly offered virtual financial assets, including also exchanges and service providers, which are likewise bound to adhere to AML obligations. Thus, Maltese Law covers a wider range of activities in comparison to that under EU Law.	
Netherlands	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	By now, both chambers of the Dutch parliament adopted the act implementing AMLD V in the Netherlands. After publication of that act in the Bulletin of Acts and Decrees (*Staatsblad*), the Netherlands also implemented AMLD V. Publication can occur any moment now. This will also affect paragraph 5.2**Fehler! Verweisquelle konnte nicht gefunden werden.** for the Netherlands and will require an update.
Poland	Yes	The existing Anti-Money-Laundering regulation implementing AMLD V complies with the AMLD V requirements: - "Virtual currency" is explicitly defined in AML Law and included	

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		into the scope of or connected with other, key definitions of AML Law (such as "property value", "transaction", "account"), which results in the overall applicability of AML obligations to virtual currencies. - "Virtual currency" is defined as a digital representation of value that is not the following: o legal means of payment issued by the National Bank of Poland, foreign central banks or other public administration bodies, o an international unit of account established by an international organization and accepted by individual countries belonging to or cooperating with that organization, o electronic money, o a financial instrument, o a bill of exchange or cheque. And is exchangeable in the course of business for legal means of payment and accepted as a means of exchange, and may be stored, transferred or traded electronically. - The catalogue of "obliged institutions" includes entities undertaking commercial activity consisting in the provision of services in the area of: o exchange between virtual currencies and means of payment, o exchange between virtual currencies,	

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		○ intermediation in those exchanges, ○ maintaining the respective accounts / custodian wallets.	
Portugal	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Romania	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Singapore	Not applicable	Regulation of service providers in various sectors pursuant to the Payment Services Act. (No 2 of 2019) of Singapore ("**Payment Services Act**"), including service providers utilizing DLT / Blockchain technology. Of particular relevance are the activities of providing digital payment token services and e-money issuance services.	
Slovakia	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovenia	No	According to the Slovenian Prevention of Money Laundering and Terrorist Financing Act ("**AML Act**"), subjects to the obligation under the AML Act are also legal and natural persons engaged in the business of issuing and managing virtual currencies, including the services of exchange of virtual currencies to fiat currencies and vice versa, which among others includes crypto-currencies (also according to the opinions of the Slovenian Office for Money Laundering Prevention ("**AML Office**") and the Slovenian Court of Audit).	

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		Further, there are opinions issued by AML Office and the Slovenian Ministry of Finance with regard to specific treatment of miners and the providers of goods and services that accept payment for goods and services in virtual currencies and have opened electronic wallets for this purpose (not subject to the AML Act).	
Sweden	Yes.	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Spain	No	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United Kingdom	No / Not applicable	The existing Legal Framework complies with AMLD V. No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United States	Not applicable	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

5.3 INTELLECTUAL PROPERTY LAW

	Specific Legal Framework national level	Comments
Austria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Belgium	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Bulgaria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Croatia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

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Cyprus	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Czech Republic	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Denmark	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Finland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
France	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The National Institute of Intellectual Property (INPI) stated that "if a computer program is capable of producing, when implemented on a computer, a technical effect beyond these normal technical effects of operating the system in a way that is technically impossible, it is not excluded from patentability".
Germany	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Greece	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hungary	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

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Ireland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Italy	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Latvia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Luxemburg	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Malta	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Netherlands	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Poland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Portugal	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Romania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Singapore	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovakia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovenia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Sweden	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	DLT / Blockchain solutions and / or applications are likely protected by Swedish Copyright Law.

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Spain	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United States	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

5.4 PROPERTY LAW AND REGISTRIES

	Specific Legal Framework national level	Comments
Austria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Belgium	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Bulgaria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Croatia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Cyprus	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Czech Republic	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Denmark	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Finland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
France	France enabled the use of DLT for the registration of “minibonds”, which is a type of promissory note, constituting an acknowledgement of debt resulting from a crowdfunding loan. This applies up to a maximum amount of EUR 2.5 million.	

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	France stated the possibility of using DLT for the issuance, registration and transfer of certain securities, instead of traditional securities accounts. France specified the conditions with regard to the use of Blockchain solutions and / or applications for the purpose of the representing and transferring of securities and the issuing and selling of "minibonds"	
Germany	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Greece	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hungary	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Ireland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Italy	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Latvia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Luxemburg	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Malta	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Netherlands	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Poland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Portugal	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

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Romania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Singapore	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovakia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovenia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Sweden	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Spain	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United States	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

5.5 DATA PROTECTION

	Specific Legal Framework national level	Comments
Austria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Belgium	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Bulgaria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Croatia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Cyprus	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Czech Republic	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Denmark	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Finland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

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France	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The French Data Protection Authority (CNIL), published guidelines with the title: "Blockchain: Solutions for a responsible use of the Blockchain in the context of personal data"
Germany	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Greece	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Hungary	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Ireland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Italy	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Latvia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Luxemburg	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Malta	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Netherlands	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Poland	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Portugal	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Romania	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Singapore	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovakia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Slovenia	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

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Sweden	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
Spain	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	
United States	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	

6. DETAILED ASSESSMENT: PLANNED LEGAL FRAMEWORK FOR DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

6.1 CAPITAL MARKETS

	Specific Legal Framework national level	Comments
Austria	The Austrian Ministry of Finance has set up a working group dealing with the further dematerialization of securities, which should eventually be recorded on a Blockchain. The activities of such group have stalled somewhat due to a change in government, but the new coalition government has committed to a forward-looking Blockchain strategy.	
Belgium	Planned implementation of AMLD V.	
Bulgaria	No specific Legal Framework for DLT / Blockchain solutions and / or applications.	The Bulgarian Financial Supervision Commission is currently monitoring financial technologies – including virtual currencies – to assess the possible risks and potentials regarding these technologies.
Croatia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Cyprus	Planned implementation of AMLD V.	Plan of the establishment of an innovation hub for the FinTech industry.
Czech Republic	Planned implementation of AMLD V. In the course of the implementation of AMLD V, persons providing services related to virtual assets among AML obliged entities, will be regulated as such provision of services will be declared as a trade activity that requires a general trade license.	The Ministry of Finance of the Czech Republic has published results of public consultation regarding virtual currencies, Blockchain and other virtual assets. This public discussion, however, has not yet lead to any specific legal steps.
Denmark	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	The Estonian government has published a legislative intent for regulation of crypto-assets.
Finland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
France	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Germany	Planned introduction of electronic securities (starting with electronic bonds).	
Greece	Planned implementation of AMLD V.	
Hong Kong	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hungary	Planned implementation of AMLD V. Planned implementation of Legal Framework regarding DLT / Blockchain solutions and / or applications.	

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Ireland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	Establishment of an intra-departmental working group in 2018 to coordinate the implications of virtual currencies and develop holistic policy measures.
Italy	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	The Italian authority (CONSOB) published a document for discussion on "Initial bids and exchanges of crypto-assets" in 2019 and the relevant final report in 2020.
Latvia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Luxemburg	Planned implementation of AMLD V.	
Malta	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	An initiative of the Malta Financial Service Authority (MFSA) is currently open for consultation with the primary aim to implement a regulatory framework, to ensure that the Legal Framework currently in place can be developed to its full potential. The sandbox will evaluate various sectors for improvement and is not simply limited to the financial services industry.
Netherlands	Planned implementation of AMLD V. In the course of the implementation of AMLD V, firms offering services for the exchange between crypto-currencies and regular money, and crypto-wallet providers must register with Dutch Central Bank (DNB) and fulfil further compliance requirements.	

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Poland	Currently, there are being proceeded amendments to the Polish Commercial Companies Code. According to the draft bill, it will be possible to maintain the register of shareholders of a simple joint-stock company in a distributed and decentralized database (using DLT / Blockchain technology). The legislative procedure is at final stage and the (draft) effective date of those amendments is set on March 2021. It is likely that further Laws on DLT / Blockchain solutions and / or applications will be introduced within the current initiative of the Polish Financial Supervisory Authority and the Ministry of Finance (Financial Innovation Development Working Group – FinTech).	
Portugal	Planned implementation of AMLD V.	
Romania	Planned implementation of AMLD V.	
Singapore	Planned regulation of payment token derivatives offered by approved exchanges and protection for retail investors who trade in payment tokens derivatives.	
Slovakia	Planned implementation of AMLD V. In addition to the planned implementation of AMLD V, a trade license (registration of which will require proving of the capacity / education at least at the level of high school diploma) will be required for provision of the services relating to the virtual assets.	
Slovenia	Planned implementation of AMLD V.	

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	The Slovenian Ministry of Economic Development and Technology has publicly announced to create a regulatory solution for specific industry verticals using Blockchain. In particular, it intends to include a definition of smart contracts into Slovenian corporate Law, with the prospect of regulating digital entities and regulatory sandboxes for different fields of industry and the public sector. The activities, however, face delays due to the recent changes in government.	
Sweden	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Spain	There is a public consultation in relation to the implementation of AMLD V in Spain. Notwithstanding this, please note that no formal bill (*proyecto de ley*) or prebill (*anteproyecto de ley*) have been filed with the House of Representatives as of the date hereof.	
United Kingdom	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United States	Planned safe harbour framework for non-securities DLT / Blockchain based instruments. Planned regulation in connection with custody and margin trade regarding Bitcoin, Ether and other digital commodities.	Certain of the 50 states have passed various Laws including the formation of crypto and token-based banking entities (so-called SPDIs), modifying various acts to allow for Blockchain-based records storage, shareholder management, and shareholder votes, exempting crypto-currency from state property taxes, and defining the meaning of a “utility token” and a “security token”.

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6.2 ANTI-MONEY-LAUNDERING

	Implementation AMLD V	Specific Legal Framework national level	Comments
Austria	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Belgium	Planned	Planned implementation of AMLD V.	
Bulgaria	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Croatia	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Cyprus	Planned	Planned implementation of AMLD V.	
Czech Republic	Planned	Planned implementation of AMLD V.	
Denmark	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Estonia	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Finland	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
France	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Germany	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Greece	Planned	Planned implementation of AMLD V.	

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Hong Kong	Not applicable	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hungary	Planned	Planned implementation of AMLD V.	
Ireland	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Italy	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Latvia	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Lithuania	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Luxemburg	Planned	Planned implementation of AMLD V.	
Malta	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Netherlands	Planned	Planned implementation of AMLD V.	
Poland	Already implemented.	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Portugal	Planned.	Planned implementation of AMLD V.	
Romania	Planned.	Planned implementation of AMLD V.	
Singapore	Not applicable	Planned extension of the Payment Services Act regarding the scope of regulating digital payment tokens services beyond dealing with digital payment tokens and facilitating the exchange of digital payment tokens, including the transfer of digital payment tokens, provision of custodian wallets for or on behalf of	

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		customers, brokering of digital payment token transactions and brokering of cross-border money transfer services.	
Slovakia	Planned	Planned implementation of AMLD V. Under the actual proposal of the amendment of the Slovak AML Act, the list of the obliged entities will include the providers of services related to the virtual currencies (providers engaged in exchange services between virtual currencies and fiat currencies and custodian wallet providers). The definition of the providers engaged in exchange services is broader under the actual wording of the Slovak legislative proposal than under AMLD V. The proposed definition covers also the exchanges of the virtual assets.	
Slovenia	Planned	Planned implementation of AMLD V. The Slovenian government has published a draft act on the amendments to the Slovenian AML Act, by which AMLD V will be implemented into the existing Legal Framework and whereby some uncertainty regarding the services providers of crypto-assets should be resolved. However, the process of the adoption of the amendments to the AML Act has stalled somewhat due to the recent and unexpected changes in government.	
Sweden	Already implemented	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Spain	Planned	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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United Kingdom	Not planned	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United States	Not applicable	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

6.3 INTELLECTUAL PROPERTY LAW

	Specific Legal Framework national level	Comments
Austria	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Belgium	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Bulgaria	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Croatia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Cyprus	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Czech Republic	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Denmark	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Finland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
France	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Germany	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Greece	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hungary	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Ireland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Italy	The Italian Ministry of Economic Development launched a project for using Blockchain and DLT to trace the hallmark "Made in Italy" with the aim of fighting counterfeiting.	
Latvia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Luxemburg	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Malta	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Netherlands	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Poland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Portugal	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Romania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Singapore	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Slovakia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Slovenia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Sweden	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Spain	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United States	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

6.4 PROPERTY LAW AND REGISTRIES

	Specific Legal Framework national level	Comments
Austria	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	If the planned dematerialization of securities will take place, this will require the creation of a securities register on DLT / Blockchain.
Belgium	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Bulgaria	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Croatia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Cyprus	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Czech Republic	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Denmark	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Finland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
France	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Germany	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Greece	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hungary	Planned implementation of Legal Framework regarding DLT / Blockchain solutions and / or applications.	
Ireland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Italy	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	The National Council of Notaries together with IBM Italia launched a project called “Notarchain” to develop a private Blockchain in which a selected number of notaries will be directly in charge to guarantee the certainty and accuracy of the data introduced. The purpose of this project is to create the first Italian secure Blockchain system provided

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		with a preventive control on the information and identities handled in the process – without compromising the distinctive speed and efficiency of the Blockchain instrument – whose use could be extended to other market fields.
Latvia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Luxemburg	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Malta	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Netherlands	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Poland	Currently, there are being proceeded amendments to the Polish Commercial Companies Code. According to the draft of the bill, it will be possible to maintain the register of shareholders of a simple joint-stock company in a distributed and decentralized database (using DLT / Blockchain technology).	
Portugal	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Romania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Singapore	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Slovakia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Slovenia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Sweden	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Spain	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United States	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

6.5 DATA PROTECTION

	Specific Legal Framework national level	Comments
Austria	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Belgium	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Bulgaria	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Croatia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Cyprus	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Czech Republic	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Denmark	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Estonia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Finland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
France	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Germany	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Greece	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hong Kong	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Hungary	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Ireland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Italy	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Latvia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Lithuania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Luxemburg	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Malta	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Netherlands	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

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Poland	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Portugal	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Romania	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Singapore	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Slovakia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Slovenia	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Sweden	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
Spain	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United Kingdom	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	
United States	No specific Legal Framework planned for DLT / Blockchain solutions and / or applications.	

7. DETAILED ASSESSMENT: GOVERNMENTAL USE CASES WITH REGARD TO DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

Austria	Austria does use DLT / Blockchain solutions and / or applications for its Administrative Tasks: - The Austrian Treasury has started using the Blockchain in connection with the auctioneering of public bonds. - The City of Vienna has experimented with Blockchain technology in connection with (i) lunch checks issued to its more than 20,000 employees; (ii) securing the integrity of open government data; and (iii) a "culture token" which rewards climate-friendly behaviour.

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Belgium	Belgium does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, Belgium is considering to use DLT / Blockchain solutions and / or applications regarding: - Notarization; - Authentication of diplomas; - Personal identification; - Trusted data sharing.
Bulgaria	Bulgaria does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Croatia	Croatia does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Cyprus	Cyprus does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Czech Republic	Czech Republic does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Denmark	Denmark does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Estonia	Estonia uses DLT / Blockchain solutions and / or applications for several Administrative Tasks. Some of these are: - The Estonian Centre of Registers and Information Systems and the Estonian Information System authority have been using DLT solutions as a base solution for Estonian E-Government-Systems; - DLT is used for providing time-stamping services (KSI Blockchain) on a X-tee data exchange layer for information systems; - DLT is used for maintaining the State Gazette Database where all the legislative acts of Estonia are officially published; - The Health and Welfare Information Systems Centre is using DLT technology (the centre is responsible for developing IT solutions for health, social welfare and employment related questions).
Finland	Finland does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
France	France does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, a report published by the Parliamentary office on 20 June 2018 regarding the evaluation of scientific and technological choices, considered

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	that DLT could be used by the government for civil status, ID and passport issuance and marriage and residence Registries.
Germany	Germany does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, Germany is considering to use DLT / Blockchain solutions and / or applications regarding: - Blockchain applications regarding consumer protection; - Verification of documents; - Personal identification; - Trusted data sharing.
Greece	Greece does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Hong Kong	Hong Kong does not use comprehensive DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, there are some pilot projects in Hong Kong regarding: - The transfer of trademark ownership; - Changes in company Registries; - The streamlining of environmental impact assessments; - The traceability of pharmaceutical products.
Hungary	Hungary does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Ireland	Ireland does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Italy	Italy has been exploring DLT / Blockchain solutions and / or applications for several Administrative Tasks. Some of these are: - The Lombardy Region has chosen the municipality of Cinisello Balsamo to apply the Blockchain to the "Free Nursery" project. The aim is to simplify and speed up access to the call for tenders, through a platform that automatically verifies that all the requirements are met; - The Municipality of Bari has experimented Blockchain technology in a project for the digitization of the management process of guarantee policies; - The Ministry of Economy and Finance has already started to use the Blockchain for two projects: PoSeID-on, an innovative platform for management and protection of personal data, and for SUNFISH, a secure federation solution for secure data sharing between different online cloud systems;

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	- Several universities are gearing up to certify degrees with a notarization on Blockchain.
Latvia	Latvia does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Lithuania	Lithuania does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Luxemburg	Luxemburg has been exploring DLT / Blockchain solutions and / or applications for several Administrative Tasks. Some of these are: - The Luxembourg Stock Exchange uses Ethereum for digital signature purposes; - Fundsquare, a subsidiary of the Luxembourg Stock Exchange, uses Blockchain for the distribution of investment funds; - The Institut Luxembourgeois de la Normalisation (ILNAS) is actively following the standardization developments of Blockchain and DLT, building on the national Policy for ICT Technical Standardization (2015-2020) - White Paper published in 2018; - Launch of " Smart ICT for Business Innovation" certification at the University of Luxembourg in 2018; - The government announced that within the next national Policy for ICT Technical Standardization (2020-2030) Blockchain and DLT will be an integral part.
Malta	Malta does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, the use of Blockchain solutions and / or applications has been recommended in various public and administrative sectors in Malta, as mentioned hereunder: - Registration of Leases; - Education Certificates; - Healthcare and Pharmaceutical Sector – discussions and consultations amongst the industry's stakeholders regarding the possibility of hosting patients' medical records and pharmaceutical information on Blockchain have been undertaken; - Malta Business Registry, which is an independent government agency responsible for the registration of new corporate entities and the registration and issuance of documents related to the same, is expected to shift to and run its operations on a Blockchain-based system.
Netherlands	The Netherlands uses / tests DLT / Blockchain solutions and / or applications for several Administrative Tasks. Some of these are:

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	- Sharing of (privacy-)sensitive information by the government (regarding health data and requests within the Social Support Act); - Handling data-sharing and permit requests within the EU Waste Shipment Regulation; - Banking activities by the State Treasury where parties can request a loan (in particular collecting and sharing data); - DNB experimented with and tested Blockchain to assess if it can provide a financial market infrastructure. If the Euro system should decide tor experiment with specific forms of central bank digital currency, DNB indicated that it is prepared to play a leading role. According to DNB, the Netherlands provides a suitable testing ground for such an experiment, because in the Netherlands people use cash for payments less often compared to residents of other European countries.
Poland	The Polish Central Securities Depository (KDPW) has launched the „eVoting" application based on DLT / Blockchain technology (the "eVoting" application is the first service enabled within the KDPW's "Blockchain Platform for Capital Market").The "eVoting" application provides services related to handling of general meetings of shareholders of listed companies.
Portugal	Portugal does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Romania	Romania does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
Singapore	Singapore has been exploring DLT / Blockchain solutions and / or applications for several Administrative Tasks. Some of these are: - Trade data: Networked Trade Platform (NTP) is a government-owned trade information management platform that connects industry players digitally. Blockchain technology is used to facilitate secure and efficient cross-border trade data flows; - Trade and trade finance: Global Trade Connectivity Network (GTCN) is a cross-border infrastructure based on DLT, to digitize trade and trade finance between Singapore and Hong Kong and employs Blockchain as a solution to remove the inefficiency and risks of fraud inherent in the existing paper-based system in trade finance; - Payments and settlements: Project Ubin explored the use of Blockchain and DLT for clearing and settlement of inter-bank payments and securities, including cross-border and cross-currency payments using digital currencies; - Education certificates: OpenCerts is a Blockchain-based platform jointly developed by the governmental organizations in Singapore with Ngee Ann Polytechnic to enable education institutions to issue digital certificates. The platform uses Blockchain technology to issue and validate tamper-resistant certificates.

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Slovakia	Slovakia does not use any DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, the Slovak government supports and fosters the platforms and pilot projects oriented on the research and development of Blockchain technologies and testing of their use in the fields such as public registers (land registry, register of cars, trade register and business register), public procurement, control of originality of the products, publication of the contracts, elections and referendums.
Slovenia	Slovenia does not use any DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, Slovenia has launched in December 2019 a national test Blockchain infrastructure named SI-Chain, for purposes of testing of existing and new Blockchain applications for the public and private sector.
Sweden	Sweden does not use any DLT / Blockchain solutions and / or applications for any of its Administrative Tasks. However, this matter is still under investigation / trial based on the governments "Mission to Test New Technology within Public Administration".
Spain	Spain does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
United Kingdom	The UK does not use DLT / Blockchain solutions and / or applications for its Administrative Tasks.
United States	The US does not currently use DLT / Blockchain solutions and / or applications for its Administrative Tasks. However, there are considerations and / or authorized pilot programs in connection with DLT / Blockchain solutions and / or applications regarding: - Insurance benefits - Energy grids - Land title Registries - Others

8. DETAILED ASSESSMENT: REGULATORY LIMITATIONS FOR DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

8.1 CAPITAL MARKETS

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	Specific Legal Framework national level	Comments
Austria	No limitation of DLT / Blockchain solutions and / or applications.	
Belgium	No limitation of DLT / Blockchain solutions and / or applications.	
Bulgaria	No limitation of DLT / Blockchain solutions and / or applications.	
Croatia	No limitation of DLT / Blockchain solutions and / or applications.	
Cyprus	No limitation of DLT / Blockchain solutions and / or applications.	
Czech Republic	No limitation of DLT / Blockchain solutions and / or applications.	
Denmark	No limitation of DLT / Blockchain solutions and / or applications.	
Estonia	No limitation of DLT / Blockchain solutions and / or applications.	
Finland	No limitation of DLT / Blockchain solutions and / or applications.	
France	No limitation of DLT / Blockchain solutions and / or applications.	
Germany	No limitation of DLT / Blockchain solutions and / or applications.	
Greece	No limitation of DLT / Blockchain solutions and / or applications.	
Hong Kong	No limitation of DLT / Blockchain solutions and / or applications.	
Hungary	No limitation of DLT / Blockchain solutions and / or applications.	
Ireland	No limitation of DLT / Blockchain solutions and / or applications.	

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Italy	No limitation of DLT / Blockchain solutions and / or applications.	
Latvia	No limitation of DLT / Blockchain solutions and / or applications.	
Lithuania	It is required to separate the activities associated with virtual assets from financial services activities.	
Luxemburg	No limitation of DLT / Blockchain solutions and / or applications.	
Malta	No limitation of DLT / Blockchain solutions and / or applications.	
Netherlands	No limitation of DLT / Blockchain solutions and / or applications.	
Poland	No limitation of DLT / Blockchain solutions and / or applications.	
Portugal	No limitation of DLT / Blockchain solutions and / or applications.	
Romania	No limitation of DLT / Blockchain solutions and / or applications.	
Singapore	No limitation of DLT / Blockchain solutions and / or applications.	
Slovakia	No limitation of DLT / Blockchain solutions and / or applications.	
Slovenia	No limitation of DLT / Blockchain solutions and / or applications.	
Sweden	No limitation of DLT / Blockchain solutions and / or applications.	
Spain	No limitation of DLT / Blockchain solutions and / or applications.	
United Kingdom	No limitation of DLT / Blockchain solutions and / or applications.	
United States	No limitation of DLT / Blockchain solutions and / or applications.	

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8.2 ANTI-MONEY-LAUNDERING

	Specific Legal Framework national level	Comments
Austria	No limitation of DLT / Blockchain solutions and / or applications.	
Belgium	No limitation of DLT / Blockchain solutions and / or applications.	
Bulgaria	No limitation of DLT / Blockchain solutions and / or applications.	
Croatia	No limitation of DLT / Blockchain solutions and / or applications.	
Cyprus	No limitation of DLT / Blockchain solutions and / or applications.	
Czech Republic	No limitation of DLT / Blockchain solutions and / or applications.	
Denmark	No limitation of DLT / Blockchain solutions and / or applications.	
Estonia	No limitation of DLT / Blockchain solutions and / or applications.	
Finland	No limitation of DLT / Blockchain solutions and / or applications.	
France	No limitation of DLT / Blockchain solutions and / or applications.	
Germany	No limitation of DLT / Blockchain solutions and / or applications.	
Greece	No limitation of DLT / Blockchain solutions and / or applications.	
Hong Kong	No limitation of DLT / Blockchain solutions and / or applications.	
Hungary	No limitation of DLT / Blockchain solutions and / or applications.	

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Ireland	No limitation of DLT / Blockchain solutions and / or applications.	
Italy	No limitation of DLT / Blockchain solutions and / or applications.	
Latvia	No limitation of DLT / Blockchain solutions and / or applications.	
Lithuania	No limitation of DLT / Blockchain solutions and / or applications.	
Luxemburg	No limitation of DLT / Blockchain solutions and / or applications.	
Malta	No limitation of DLT / Blockchain solutions and / or applications.	
Netherlands	No limitation of DLT / Blockchain solutions and / or applications.	
Poland	No limitation of DLT / Blockchain solutions and / or applications.	
Portugal	No limitation of DLT / Blockchain solutions and / or applications.	
Romania	No limitation of DLT / Blockchain solutions and / or applications.	
Singapore	No limitation of DLT / Blockchain solutions and / or applications.	
Slovakia	No limitation of DLT / Blockchain solutions and / or applications.	
Slovenia	No limitation of DLT / Blockchain solutions and / or applications.	
Sweden	No limitation of DLT / Blockchain solutions and / or applications.	
Spain	No limitation of DLT / Blockchain solutions and / or applications.	
United Kingdom	No limitation of DLT / Blockchain solutions and / or applications.	

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United States	No limitation of DLT / Blockchain solutions and / or applications.	

8.3 INTELLECTUAL PROPERTY LAW

	Specific Legal Framework national level	Comments
Austria	No limitation of DLT / Blockchain solutions and / or applications.	
Belgium	No limitation of DLT / Blockchain solutions and / or applications.	
Bulgaria	No limitation of DLT / Blockchain solutions and / or applications.	
Croatia	No limitation of DLT / Blockchain solutions and / or applications.	
Cyprus	No limitation of DLT / Blockchain solutions and / or applications.	
Czech Republic	No limitation of DLT / Blockchain solutions and / or applications.	
Denmark	No limitation of DLT / Blockchain solutions and / or applications.	
Estonia	No limitation of DLT / Blockchain solutions and / or applications.	
Finland	No limitation of DLT / Blockchain solutions and / or applications.	
France	No limitation of DLT / Blockchain solutions and / or applications.	
Germany	No limitation of DLT / Blockchain solutions and / or applications.	
Greece	No limitation of DLT / Blockchain solutions and / or applications.	
Hong Kong	No limitation of DLT / Blockchain solutions and / or applications.	

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Hungary	No limitation of DLT / Blockchain solutions and / or applications.	
Ireland	No limitation of DLT / Blockchain solutions and / or applications.	
Italy	No limitation of DLT / Blockchain solutions and / or applications.	
Latvia	No limitation of DLT / Blockchain solutions and / or applications.	
Lithuania	No limitation of DLT / Blockchain solutions and / or applications.	
Luxemburg	No limitation of DLT / Blockchain solutions and / or applications.	
Malta	No limitation of DLT / Blockchain solutions and / or applications.	
Netherlands	No limitation of DLT / Blockchain solutions and / or applications.	
Poland	No limitation of DLT / Blockchain solutions and / or applications.	
Portugal	No limitation of DLT / Blockchain solutions and / or applications.	
Romania	No limitation of DLT / Blockchain solutions and / or applications.	
Singapore	No limitation of DLT / Blockchain solutions and / or applications.	
Slovakia	No limitation of DLT / Blockchain solutions and / or applications.	
Slovenia	No limitation of DLT / Blockchain solutions and / or applications.	
Sweden	No limitation of DLT / Blockchain solutions and / or applications.	
Spain	No limitation of DLT / Blockchain solutions and / or applications.	

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United Kingdom	No limitation of DLT / Blockchain solutions and / or applications.	
United States	No limitation of DLT / Blockchain solutions and / or applications.	

8.4 PROPERTY LAW AND REGISTRIES

	Specific Legal Framework national level	Comments
Austria	No limitation of DLT / Blockchain solutions and / or applications.	
Belgium	No limitation of DLT / Blockchain solutions and / or applications.	
Bulgaria	No limitation of DLT / Blockchain solutions and / or applications.	
Croatia	No limitation of DLT / Blockchain solutions and / or applications.	
Cyprus	No limitation of DLT / Blockchain solutions and / or applications.	
Czech Republic	No limitation of DLT / Blockchain solutions and / or applications.	
Denmark	No limitation of DLT / Blockchain solutions and / or applications.	
Estonia	No limitation of DLT / Blockchain solutions and / or applications.	
Finland	No limitation of DLT / Blockchain solutions and / or applications.	
France	No limitation of DLT / Blockchain solutions and / or applications.	
Germany	No limitation of DLT / Blockchain solutions and / or applications.	
Greece	No limitation of DLT / Blockchain solutions and / or applications.	

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Hong Kong	No limitation of DLT / Blockchain solutions and / or applications.	
Hungary	No limitation of DLT / Blockchain solutions and / or applications.	
Ireland	No limitation of DLT / Blockchain solutions and / or applications.	
Italy	No limitation of DLT / Blockchain solutions and / or applications.	
Latvia	No limitation of DLT / Blockchain solutions and / or applications.	
Lithuania	No limitation of DLT / Blockchain solutions and / or applications.	
Luxemburg	No limitation of DLT / Blockchain solutions and / or applications.	
Malta	No limitation of DLT / Blockchain solutions and / or applications.	
Netherlands	No limitation of DLT / Blockchain solutions and / or applications.	
Poland	No limitation of DLT / Blockchain solutions and / or applications.	
Portugal	No limitation of DLT / Blockchain solutions and / or applications.	
Romania	No limitation of DLT / Blockchain solutions and / or applications.	
Singapore	No limitation of DLT / Blockchain solutions and / or applications.	
Slovakia	No limitation of DLT / Blockchain solutions and / or applications.	
Slovenia	No limitation of DLT / Blockchain solutions and / or applications.	
Sweden	No limitation of DLT / Blockchain solutions and / or applications.	

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Spain	No limitation of DLT / Blockchain solutions and / or applications.	
United Kingdom	No limitation of DLT / Blockchain solutions and / or applications.	
United States	No limitation of DLT / Blockchain solutions and / or applications.	

8.5 DATA PROTECTION

	Specific Legal Framework national level	Comments
Austria	No limitation of DLT / Blockchain solutions and / or applications.	
Belgium	No limitation of DLT / Blockchain solutions and / or applications.	
Bulgaria	No limitation of DLT / Blockchain solutions and / or applications.	
Croatia	No limitation of DLT / Blockchain solutions and / or applications.	
Cyprus	No limitation of DLT / Blockchain solutions and / or applications.	
Czech Republic	No limitation of DLT / Blockchain solutions and / or applications.	
Denmark	No limitation of DLT / Blockchain solutions and / or applications.	
Estonia	No limitation of DLT / Blockchain solutions and / or applications.	
Finland	No limitation of DLT / Blockchain solutions and / or applications.	
France	No limitation of DLT / Blockchain solutions and / or applications.	
Germany	No limitation of DLT / Blockchain solutions and / or applications.	

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Greece	No limitation of DLT / Blockchain solutions and / or applications.	
Hong Kong	No limitation of DLT / Blockchain solutions and / or applications.	
Hungary	No limitation of DLT / Blockchain solutions and / or applications.	
Ireland	No limitation of DLT / Blockchain solutions and / or applications.	
Italy	No limitation of DLT / Blockchain solutions and / or applications.	
Latvia	No limitation of DLT / Blockchain solutions and / or applications.	
Lithuania	No limitation of DLT / Blockchain solutions and / or applications.	
Luxemburg	No limitation of DLT / Blockchain solutions and / or applications.	
Malta	No limitation of DLT / Blockchain solutions and / or applications.	
Netherlands	No limitation of DLT / Blockchain solutions and / or applications.	
Poland	No limitation of DLT / Blockchain solutions and / or applications.	
Portugal	No limitation of DLT / Blockchain solutions and / or applications.	
Romania	No limitation of DLT / Blockchain solutions and / or applications.	
Singapore	No limitation of DLT / Blockchain solutions and / or applications.	
Slovakia	No limitation of DLT / Blockchain solutions and / or applications.	
Slovenia	No limitation of DLT / Blockchain solutions and / or applications.	

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Sweden	No limitation of DLT / Blockchain solutions and / or applications.	
Spain	No limitation of DLT / Blockchain solutions and / or applications.	
United Kingdom	No limitation of DLT / Blockchain solutions and / or applications.	
United States	No limitation of DLT / Blockchain solutions and / or applications.	

9. DETAILED ASSESSMENT: REGULATORY GAPS AND NEEDS FOR DLT / BLOCKCHAIN SOLUTIONS AND / OR APPLICATIONS

9.1 CAPITAL MARKETS

	Specific Legal Framework national level	Comments
Austria	Implementation of clear-cut rules defining various categories of Blockchain based assets (e.g., security tokens, utility tokens and payment tokens), in order to help issuers better understand in advance the regulatory consequences of issuances.	
Belgium	Clarification how the existing Legal Framework will apply to DLT / Blockchain based instruments, e.g. MiFID II and its implementation into Belgian Law. Guidance from the respective Belgian authorities is required.	
Bulgaria	When implementing MiFID II Bulgaria has limited the scope of "transferable securities" by setting forth that only those instruments, which are registered under accounts with a central depository of securities fall within this definition. While most EU Members States rely on the broad MiFID II definition to qualify the DLT / Blockchain based instruments as financial instruments, this narrower local implementation restricts such interpretation. Unless the instrument falls within the other classes of "financial instruments" its local classification as a "financial instrument" will require legislative changes.	

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	Implementation of Legal Framework for DLT / Blockchain solution and / or applications, especially regarding DLT based financial instruments, e-money and crypto-trading platforms.	
Croatia	No specific gaps and needs.	
Cyprus	Need to implement Legal Framework regarding virtual currencies. The current legislation does not refer to DLT/ Blockchain solutions and / or applications.	
Czech Republic	No specific gaps and needs.	
Denmark	Denmark has no legislation in place that identifies how DLT / Blockchain instruments are categorized from a regulatory perspective. This creates uncertainty when implementing DLT / Blockchain based solutions and applications and may ultimately limit the development hereof. It is also necessary to introduce Legal Framework, which could provide financial market participants with legal certainty for issuing securities using Blockchain technology.	
Estonia	No specific gaps and needs.	
Finland	No specific gaps and needs.	
France	- More detailed classifications of the different technology solutions are necessary - The French government has not clearly understood yet the use case of Security Token Offerings.	
Germany	There is no specific regulation regarding the issuance, the transfer, the registration, the settlement and the administration of electronic securities. Even though the German Federal Financial Supervisory Authority made clear that the existing Legal Framework may cover certain crypto tokens, since some of these may already be categorized as securities or bonds, a clear and extensive regulation is required.	
Greece	- Requirements under which an institute or a legal entity is deemed to be specialized in DLT / Blockchain technology.	

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	- A Greek authority, which approves the application of DLT / Blockchain technology. - Conditions and products for which the DLT / Blockchain technology is applicable. - Implementation of Laws regarding the required information of the DLT / Blockchain technology application in order to ensure security and transparency of the application. - Implementation of Laws regarding reporting requirements for trading platforms. - Implementation of Laws regarding the protection of the users of DLT / Blockchain platforms.	
Hong Kong	No specific gaps and needs.	
Hungary	No specific gaps and needs.	
Ireland	- Crypto-assets do not have legal tender status. - Relevant guidance on the characteristics of crypto-assets to aid entities to determine whether a particular crypto-asset may fall within the meaning of "transferable securities" or "financial instruments" and are thereby subject to MiFID II.	The Central Bank of Ireland has stated that "virtual currencies are unregulated under Irish and EU Law. Accordingly, there are no protections, such as market abuse rules, afforded to investors that would otherwise be afforded protections if they were dealing with fiat currencies or other regulated financial instruments.
Italy	No specific gaps and needs.	
Latvia	Implementation of Legal Framework regarding the confiscation of DLT / Blockchain based assets.	
Lithuania	No specific gaps and needs.	
Luxemburg	- There is yet no legislation that guarantees the issuance of financial instruments and / or	

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	securities via DLT / Blockchain as the 7363 Law only facilitates the circulation of securities via DLT / Blockchain. - Clear guidance on the treatment of the different token types and other DLT / Blockchain based instruments under current securities Laws needed. - Clear guidance on the handling of crypto-currencies compared to FIAT money needed.	
Malta	Further guidance from the Maltese government with respect to Security Token Offerings is required.	
Netherlands	- The present Legal Framework regarding consumer protection is incomplete. - For consumer protection purposes, a distinction has to be made between investment crypto-token and pure utility or payment crypto-token. - Need for proper Legal Framework for the investment of crypto-token: o Rules are not proportionate and do not take into account the benefits of Blockchain technology. Once crypto-assets meet the definition of security (which are financial instruments), the full set of legislation for financial instruments will apply. This is the case, for example, if a crypto-asset is equivalent to a transferable share or bond. - It is easy to attract non-regulated funding. Due to the limited scope of the Legal Framework, providers can easily circumvent the Legal Framework because new forms of financing such as ICOs are not adequately covered under its present scope. In the Netherlands, the definition of security is form-based (i.e., as a debt certificate or ownership right) rather than activity-based (i.e., attracting risk-bearing capital). - Legal Framework regarding crypto-assets without a funding purpose is absent.	
Poland	Although the Financial Supervisory Authority (KNF) issued several statements on DLT / Blockchain-related topics, it does not provide legal clarity / certainty. These statements do not constitute Legal Framework sensu stricte and are of a general (high-level) nature.	

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	There is a need for the implementation of Laws that provide a clear legal classification of DLT / Blockchain solutions and / or applications, including: - a distinction of various types of DLT / Blockchain-based instruments, e.g. utility token, payment / currency token, security / asset token; - whether and / or which of the DLT / Blockchain-based instruments fall within the definition of financial instruments, security etc.; - prospectus-related obligations; - whether and / or which DLT / Blockchain solutions and / or applications should be classified as investment services / ancillary investment services, payment services etc.	
Portugal	There is a need for regulation of DLT / Blockchain solutions and applications in the area of capital markets.	There are already some national (non-governmental) entities, whose objective is to inform and promote Blockchain technology in all its aspects.
Romania	There is a general need for regulation of DLT / Blockchain solutions and applications in all analyzed areas or at least a regulatory clarification to which extent the current Legal Framework applies to DLT / Blockchain solutions and applications and addresses the respective differences.	
Singapore	Need for the regulation of the ability to fractionalize the ownership of tokenized assets, such as shares. While the creation of fractional shares is not expressly prohibited under Singapore Law, it is unclear how the regulators will recognize fractional shareholders of Singapore-incorporated companies.	
Slovakia	There is a need for Laws defining the legal nature, basic terms and rules relating to DLT / Blockchain solutions to terminate the legal uncertainty on both sides, the investors / consumers as well as the providers of services. This may foster the use / implementation of	

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	existing and the development of new DLT / Blockchain solutions in various fields. Moreover, the implementation of adequate Legal Framework might eliminate or at least reduce the missing protection of investors / consumers.	
Slovenia	- Implementing clear-cut rules defining various categories of Blockchain based tokens (e.g., investments tokens, utility tokens and payment tokens), in order to help issuers better understand in advance the regulatory consequences of issuances. - Introducing rules delineating the various types of Blockchain assets.	
Sweden	Sweden has not implemented any Laws as to the qualification of DLT / Blockchain based financial products, and therefore there is no specific protective provisions in favour of consumers. There is no specific legislation in this respect and one could consider implementing specific legislation. Further, to enable crowdfunding platforms using DLT / Blockchain solutions and / or applications, an exception from the prohibition for private limited companies to publicly offer shares is needed.	
Spain	Given the lack of regulation in Spain, the implementation of regulation would be advisable in all the above-mentioned areas. Particularly, there would be very sensitive fields of Law in which DLT / Blockchain should be regulated including, by way of example, without limitation, AML Law and Capital Markets Law, given the serious economic consequences that a lack of regulation could entail.	
United Kingdom	The United Kingdom House of Commons Treasury Committee identified the following gaps and needs: - Market abuse rules do not cover crypto-asset markets, which are vulnerable to manipulation; - The issuance of ICOs and the provision of crypto-exchange services are not, as such, covered by financial regulation; - The protection of inexperienced retail investors in crypto-assets does not exist, as such.	

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United States	- A clear and achievable safe harbour to exempt utility tokens from the securities regime. - Permission of issuing of securities tokens by start-up enterprises with less onerous administrative requirements than the existing regulations. - Permission for the creation of crypto-currency and other DLT / Blockchain-based ETF and other investment instruments. - Permission for the creation of Alternate Trading Systems available for US investors to trade securities.	

9.2 ANTI-MONEY-LAUNDERING

	Specific Legal Framework national level	Comments
Austria	No specific gaps and needs.	
Belgium	Implementation of AMLD V.	
Bulgaria	No specific gaps and needs.	
Croatia	Croatia has implemented AMLD V into the existing Legal Framework, but the existing framework imposes security mechanisms that could be incompatible in some cases with regard to the nature of crypto-currency transactions, namely: - the obligation to temporarily stop suspicious transactions for a period of 72 hours; and - the obligation to conduct deep screening analysis for high risk transactions (while all crypto-currency transactions are considered to be of a high risk because of the underlying anonymity). In this view, it should be considered replacing existing security mechanisms that could be inapplicable with the nature of crypto-currency transactions.	
Cyprus	Implementation of AMLD V.	

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Czech Republic	Implementation of AMLD V.	
Denmark	No specific gaps and needs.	
Estonia	No specific gaps and needs.	
Finland	No specific gaps and needs.	
France	No specific gaps and needs.	
Germany	Implementation of Laws that enable to safeguard DLT / Blockchain based instruments in a similar way FIAT money is handled right now by the respective authorities with regard to safeguard crypto-assets.	
Greece	Implementation of AMLD V.	
Hong Kong	Implementation of an appropriate AML Law that includes provisions regarding DLT / Blockchain solutions and / or applications.	
Hungary	Implementation of AMLD V.	
Ireland	Relevant guidance to aid entities to determine if a particular crypto-asset is within the scope of the Irish Money Laundering and Terrorist Financing Act and thereby subject to Irish Anti-Money-Laundering and counter terrorist financing Laws.	
Italy	No specific gaps and needs.	The Italian Financial Intelligence Unit (FIU) has represented that the legislation must take into account the new conformation of threats to prevent the ability to intercept suspicious operations from being compromised. In order to achieve this objective, the prevention system should involve, according to criteria of proportionality, all the subjects

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		who hold information useful to identify suspicions concerning Italy, without prejudice to the need to combine an open attitude to innovation with attention to the monitoring of the risks of money laundering and terrorist financing.
Latvia	No specific gaps and needs.	
Lithuania	Implementation of Legal Framework regarding the confiscation of DLT / Blockchain based assets.	
Luxemburg	Implementation of AMLD V.	
Malta	Need for further regulatory steps that strengthen Malta's Anti-Money-Laundering vigilance with respect to DLT / Blockchain solutions and / or applications, particularly with respect to decentralized exchanges. Need to improve the governance framework, to ensure the effective implementation of Laws combating money laundering and terrorist financing.	
Netherlands	- Implementation of AMLD V. - Providers of crypto-currency wallets and providers of crypto-currency exchanges will soon be subject to the Dutch Anti-Money-Laundering and Terrorist Financing (Prevention) Act and must register with the DNB. However, the respective Dutch authority for financial markets (AFM) and DNB recommend subjecting these parties to a license regime rather than a registration regime for the purpose of selection at the gate. - The AFM and the DNB recommend the introduction of a licensing regime aimed at restricting market access to those parties that demonstrably satisfy the AMLD V requirements. Compared to a	

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	registration regime (as will be introduced under the current proposal), the key benefit of a licensing regime is that it allows pre-market entry assessment to establish whether parties satisfy or will be able to satisfy the AMLD V requirements.	
Poland	Through the inclusion of "virtual currencies" into the definition of "property values", "transaction" etc., AML obligations are generally applicable to virtual currencies. Consequently, the standard AML requirements / processes applying to property values, transactions etc. apply to virtual currencies as well. However, there is a lack of requirements / processes designed specifically for virtual currencies under AML Law. Therefore, there is a need for the introduction of specific AML requirements / processes with regard to DLT / Blockchain instruments taking into account the specifics of such instruments (AML Law uses the term "virtual currencies), with regard to e.g.: - investigating the origin of property values being virtual currencies, - analysis of suspicious transactions in virtual currencies, - blocking of accounts (custodian wallets).	
Portugal	Implementation of AMLD V.	
Romania	Implementation of AMLD V.	
Singapore	Stablecoins do not fall neatly into existing definitions of payment instruments. Specifically, stablecoins challenge the regulators in the way they distinguish between e-money and digital payment tokens – this is significant because digital payment tokens services and e-money	

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	based payment services are regulated differently under the Law of Singapore.	
Slovakia	Setting of clear rules applicable for the Slovak entities as the proposal of the Slovak legislation goes further than the European directive in some aspects as described above.	
Slovenia	- Implementation of AMLD V. - There is a need on more detailed and clear definitions and terms with regard to the crypto-industry. - As the definition contained in the AML Act in respect of the providers offering services in relation to virtual currencies is quite vague, it's not quite clear which providers are bound by the AML Act (in respect of, inter alia, AML / KYC and customer due diligence requirements, reporting obligations and the requirement to appoint an officer). - In general, the obligations of the AML Act apply to providers offering one or more of the following services: (i) services to safeguard private cryptographic keys to hold, store and transfer virtual currencies on behalf of a customer (custodian wallets); (ii) services to exchange virtual currencies into fiat currencies and vice versa; (iii) services to exchange one or more virtual currencies into each another; (iv) services to transfer virtual currencies. As mentioned above, the definition contained in the AML Act is vague. For example, it is not completely clear if miners and initial coin issuers are also bound by the AML Act. As to the miners, the AML Office has issued an opinion, that they are not bound by the AML Act (please see above "Existing Legal Framework").	

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	- Further, in addition to the need of replacing the existing vague definition of services providers of crypto-assets, there is a need to replace (or amend) the broad security mechanisms under the AML Act, as they are sometimes considered as incompatible with the DLT / Blockchain business. The foreseen amendments to the AML Act (as described above) will eliminate some uncertainty in relation to crypto-assets providers that are bound by the AML Act. However, the effects of the amendments are uncertain - i.e. creating a more transparent financial system, while on the other side keeping and safeguarding the anonymity and decentralization traits of crypto-currencies – traits because of which people use and have started using crypto-currencies in the first place.	
Sweden	No specific gaps and needs.	
Spain	Implementation of AMLD V.	
United Kingdom	No specific gaps and needs.	
United States	No specific gaps and needs.	

9.3 INTELLECTUAL PROPERTY LAW

	Specific Legal Framework national level	Comments
Austria	No specific gaps and needs.	
Belgium	Need to implement Laws and regulations that enable to secure DLT / Blockchain based instruments, e.g. for patents, trademarks and / or designs.	

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Bulgaria	Bulgarian Intellectual Property Law does not clearly regulate whether and to what extend DLT / Blockchain solutions and / or applications could be protected with copyrights or patents.	
Croatia	No specific gaps and needs.	
Cyprus	No specific gaps and needs.	
Czech Republic	No specific gaps and needs.	
Denmark	No specific gaps and needs.	
Estonia	No specific gaps and needs.	
Finland	No specific gaps and needs.	
France	Some members of the French parliament plead for the implementation of Blockchain stamp solutions regarding the status of ownership and the transfer of Intellectual Property rights.	
Germany	There is no specific regulation regarding the IP-treatment of smart contracts and other specifically DLT / Blockchain based intellectual property. Even given the fact that such intellectual property is covered by the existing Legal Framework, a clarification or statement of the legislator in this regard or at least an assessment would be helpful.	
Greece	No specific gaps and needs.	
Hong Kong	No specific gaps and needs.	
Hungary	No specific gaps and needs.	
Ireland	No specific gaps and needs.	
Italy	No specific gaps and needs.	
Latvia	No specific gaps and needs.	
Lithuania	No specific gaps and needs.	
Luxemburg	No specific gaps and needs.	
Malta	No specific gaps and needs.	

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Netherlands	No specific gaps and needs.	
Poland	There is a need for an implementation of new Laws on DLT / Blockchain solutions or an explicit extension of the scope of existing Laws onto DLT / Blockchain solutions, including the following: - data administration and processing, - the right to be forgotten vs. not removable Blockchain-recorded data, - Blockchain software and licensing, - cybersecurity and privacy.	
Portugal	No specific gaps and needs.	
Romania	No specific gaps and needs.	
Singapore	No specific gaps and needs.	
Slovakia	No specific gaps and needs.	
Slovenia	No specific gaps and needs.	
Sweden	No specific gaps and needs.	
Spain	Legislative Gaps in relation with the software that supports a Blockchain network and the algorithms of the network and in relation with copyright trade secrets.	
United Kingdom	No specific gaps and needs.	
United States	No specific gaps and needs.	

9.4 PROPERTY LAW AND REGISTRIES

	Specific Legal Framework national level	Comments
Austria	No specific gaps and needs.	
Belgium	Need to implement Laws that enable to secure DLT / Blockchain based instruments, e.g. a mortgage Blockchain register.	
Bulgaria	No specific gaps and needs.	

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Croatia	No specific gaps and needs.	
Cyprus	No specific gaps and needs.	
Czech Republic	No specific gaps and needs.	
Denmark	No specific gaps and needs.	
Estonia	No specific gaps and needs.	
Finland	No specific gaps and needs.	
France	No specific gaps and needs.	
Germany	The transfer of property via DLT / Blockchain solutions is unclear. The German legislator should implement Laws providing legal certainty on property rights especially with regard to the real estate sector.	
Greece	Approval of respective DLT / Blockchain technology applications with regard to Registries by the Greek government and the establishment of an official authority that determines which information should be shared in a Blockchain system.	
Hong Kong	No specific gaps and needs.	
Hungary	No specific gaps and needs.	
Ireland	It is not clear whether crypto-assets fall within the meaning of 'real estate' contained in the Succession Act 1965, which would enable crypto-assets to devolve upon death. It is not clear whether crypto-assets fall within the meaning of 'non-cash assets' contained in the Companies Act 2014. That Act, for example, imposes certain restriction and notification requirements in relation to the acquisition of non-cash assets from a company to its director(s).	
Italy	No specific gaps and needs.	
Latvia	No specific gaps and needs.	

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Lithuania	No specific gaps and needs.	
Luxemburg	No specific gaps and needs.	
Malta	No specific gaps and needs.	
Netherlands	No specific gaps and needs.	
Poland	There is a need for legal clarity with respect to the classification of Blockchain-related values under Property Law, including whether such values fall within the definitions of “property”, “other property rights”, “value measure other than money” in terms of the Polish Civil Code.	
Portugal	No specific gaps and needs.	
Romania	No specific gaps and needs.	
Singapore	- Crypto-currencies have been recognized as property in a case in Singapore. However, the precise nature of the property right was not discussed. Given that crypto-currencies are now capable of being recognized as property, it is possible that security can be granted over tokens and virtual assets - It is unclear whether crypto-currencies can be part of an insolvent or bankrupt’s estate in the event of an insolvency under the Laws of Singapore. - While it is now possible that security can be granted over tokens and virtual assets, the practicalities of enforcement remains unclear	
Slovakia	No specific gaps and needs.	
Slovenia	No specific gaps and needs.	
Sweden	Swedish Property Law does not allow any digital purchase agreements for real property transfers. DLT / Blockchain solutions are therefore not usable when transferring real properties. Therefore, there is a need for legal amendment enabling digital real property transactions by DLT / Blockchain solutions and / or applications.	
Spain	No specific gaps and needs.	

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United Kingdom	Need for a regulation of crypto-based intangible assets.	
United States	No specific gaps and needs.	

9.5 DATA PROTECTION

	Specific Legal Framework national level	Comments
Austria	No specific gaps and needs.	
Belgium	There is a need to clarify how data storage on DLT / Blockchain can occur in compliance with the GDPR.	
Bulgaria	No specific gaps and needs.	
Croatia	No specific gaps and needs.	
Cyprus	No specific gaps and needs.	
Czech Republic	No specific gaps and needs.	
Denmark	No specific gaps and needs.	
Estonia	No specific gaps and needs.	
Finland	Need to develop a Legal Framework compliant with both the GDPR and DLT / Blockchain solutions and / or applications.	
France	No specific gaps and needs.	
Germany	Implementation of Laws on DLT / Blockchain solutions or explicitly extend the scope of existing Laws onto DLT / Blockchain solutions that provide legal clarification and certainty with regard to the processing of personal data (especially special categories of personal data) and administration on DLT / Blockchain and GDPR. Considering the missing removability of Blockchain-recorded data, one off the difficulties here is the collision with 'the right to be forgotten' according to Art. 17 GDPR.	

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Greece	No specific gaps and needs.	
Hong Kong	Implementation of Legal Framework regarding the accessibility of DLT / Blockchain platforms, the immutability of stored data and the cross border nature of DLT / Blockchain solutions and / or applications.	
Hungary	No specific gaps and needs.	
Ireland	Need to develop a Legal Framework compliant with both the GDPR and DLT / Blockchain solutions and / or applications.	
Italy	No specific gaps and needs.	
Latvia	No specific gaps and needs.	
Lithuania	No specific gaps and needs.	
Luxemburg	No specific gaps and needs	
Malta	Need of respective Legal Framework regarding central points of friction between Data Protection Law and DLT / Blockchain solutions and / or applications, namely (1) the concept of a data controller defied by the decentralized nature of DLT / Blockchain applications; (2) the immutability of personal data stored on DLT / Blockchain solutions and / or applications which does not correlate with the GDPR; and (3) data minimization which is challenged by the distributor ledger principles and replication on different machines.	
Netherlands	No specific gaps and needs.	
Poland	No specific gaps and needs.	
Portugal	No specific gaps and needs.	
Romania	No specific gaps and needs.	
Singapore	There is a need of guidance with regard to data storage on DLT / Blockchain, concerning not only personal data, but also data in general.	
Slovakia	No specific gaps and needs.	

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Slovenia	No specific gaps and needs.	
Sweden	No specific gaps and needs.	
Spain	No specific gaps and needs.	
United Kingdom	No specific gaps and needs.	
United States	No specific gaps and needs.	

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