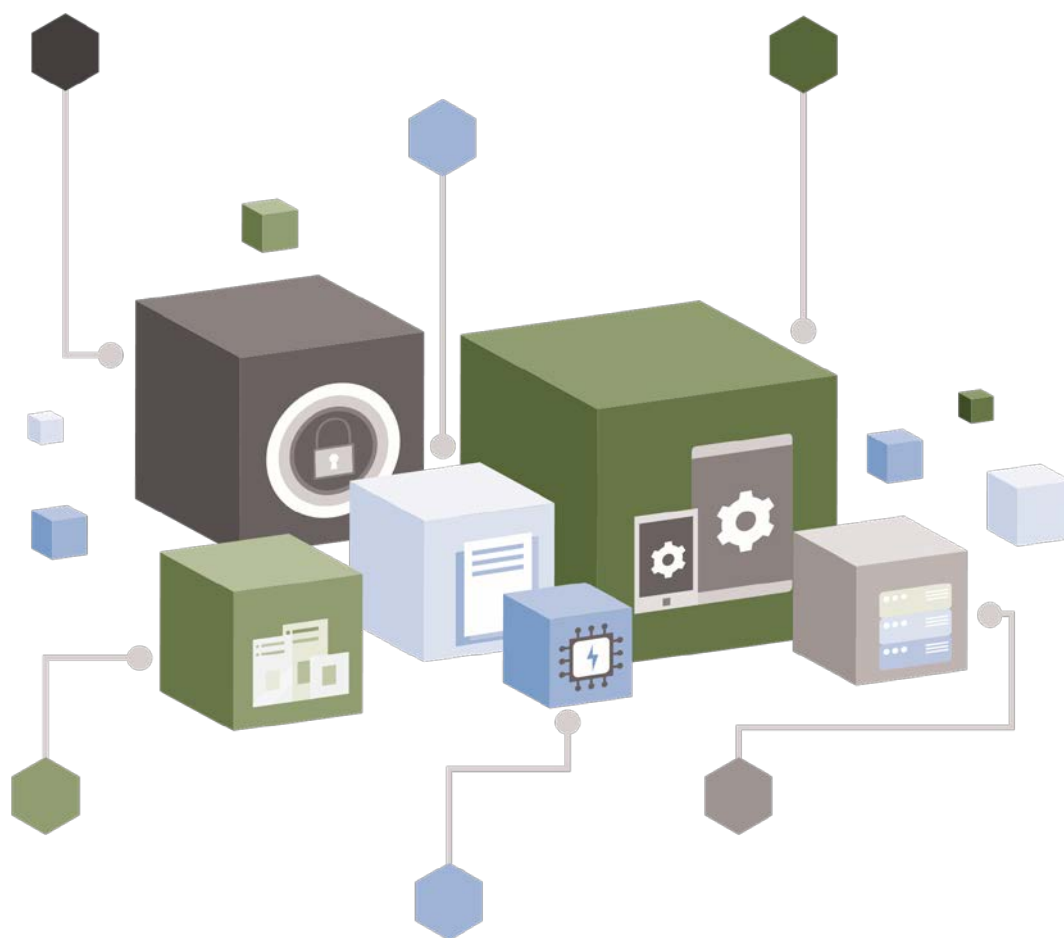




REPUBLIC OF CYPRUS

DISTRIBUTED LEDGER TECHNOLOGIES (B L O C K C H A I N) **A NATIONAL STRATEGY FOR CYPRUS**



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Foreword

We are now undergoing an era that speaks of enormous technological breakthroughs and innovative trends, one that is the subject of international debate and research. These new forms of technology can be aimed at process optimisation, decentralised and efficient data and information management, along with transaction transparency. Applying them can contribute to the digital transformation of modern societies, both in the private and the wider public sector.

The Republic of Cyprus, in line with the European and global trends of change and progress, strives to create the right environment for enterprises, companies, services and investments by adopting innovative practices and procedures.

The major challenges of the Fourth Industrial Revolution and its effects on Cyprus has been a matter of concern for the House of Representatives over the last two years, and thus has taken the correct initiatives in actively and effectively contributing towards the modernisation of society, in collaboration with other stakeholders.

Therefore, within the context of encouraging Cyprus to participate in this technological revolution, a National Strategy titled 'Decentralised Ledger Technologies (Blockchain)' will be implemented. This will enable the creation of a pro-innovation basis for the rapid adoption and smooth application of new technologies. It is expected that the complete application of Blockchain on the way the private and public services operate will radically change the Cypriot society's structure, organisation and way of functioning.

By promoting training and re-training strategies in digital skills, and by establishing the necessary infrastructure, our country's active and inclusive participation in this new order will be achieved. Perceptions, practices and processes will be transformed, complete with the reorganising of the Cypriot economy, industry and administration, as well as the daily life of Cypriot citizens.

Demetris Syllouris

President of the House of Parliament

Foreword

Technology investment and digital transformation are perhaps the most effective forms of reform and improvement of public sector productivity. Distributed global technologies along with other emerging technologies such as 5G networks, Artificial Intelligence and the Internet of Things are the future of our economy. As a government, we will help ensure that these technologies play a decisive role in digital transformation.

Distributed Ledger Technology is a very important tool in empowering citizens and being able to control their own data. In times of protectionist and populist tendencies both in Europe and worldwide, the use of these technologies is an essential exercise of democratization, offering safe and decentralized avenues, bypassing intermediaries to execute transactions through smart contracts. Undoubtedly, with the dynamics it develops it has the prospect of making bureaucratic procedures and regulators obsolete. This technology can contribute to the following: (a) democratization of the financial model, (b) transformation and simplification of public service delivery and reduction of administrative costs, (c) new models of public administration, (d) increased transparency, accountability and privacy; (e) better access to public information; and (f) reduction of corruption.

The national strategy aims to promote the development of this technology through innovation and pilot applications, through close cooperation between the private and public sectors for best results. Our aim is for Cyprus to be among the first countries to regulate aspects of this issue in order to create a real, attractive environment for the development of companies utilising business models based on this technology.

I find it particularly important that the National Strategy has been developed through close co-operation and co-ordination between the legislature and the executive branch of the Government. Joint initiatives should be our aim to make good and sound decisions and make our country truly competitive.

Important partners of the Government and the House of Representatives in this process, are the Securities and Exchange Commission, the Cyprus Central Bank, the Cyprus Bar Association, the Association of Chartered Accountants and many private experts who have contributed to the National Strategy preparation.

Thank you all for your cooperation and look forward to the implementation of the National Strategy.

Harris Georgiades
Minister of Finance

DISTRIBUTED LEDGER TECHNOLOGY & BLOCKCHAIN: A NATIONAL STRATEGY FOR CYPRUS

1. Introduction

The world is experiencing the Fourth Industrial Revolution (or Industry 4.0), which is characterised by the fusion of new technologies and trends such as the Internet of Things (IoT), robotics, virtual reality (VR), and artificial intelligence (AI). Distributed Ledger Technology (DLT) and blockchain, constitutes breakthrough technology allowing the decentralised keeping of records of transactions, data and other information. It is a fast moving technology in the international scene. The deployment of DLT offers endless possibilities in many different fields as well as new models of security for the information recorded, therefore it can become a driving force in growing the economy.

Distributed Ledger Technology or DLT is an umbrella term used to describe a technology that distributes records or information, either privately or publicly, creating thus a repeated digital copy of data available at multiple locations. By nature, DLT is a general-purpose technology able to provide cost reduction in transactions through the removal of intermediaries and, increase in transparency of transactions, while at the same time promoting organisational efficiency through decentralisation. The deployment of DLT can potentially enhance transparency, combat corruption, tax evasion, money laundering, and the detection of illegal transactions as well as enhance the safety and integrity of recorded data, while the tamper-proof transaction records allow the modernisation of public administration through the development of new administration methods.¹

Many countries worldwide invest in exploiting the potential of the aforementioned technologies. Also, the European Union has identified a number of areas of priority where action must be taken to enable the EU to harness the potential of DLT and blockchain.² These areas concern: (a) the determination of the legal and regulatory framework governing the said technology; (b) the prioritisation of actions focusing on education and research, which should extend to blockchain education in order to promote the appropriate level of knowledge concerning blockchain to promote the level of knowledge and to enable its use; (c) the promotion of the use of blockchain technology both by the public and private sector to provide real benefits to users and to illustrate the value added by the said technology which will enable its wider adoption by entrepreneurs; (d) enhance the collaboration between governments and companies in the blockchain sector, for instance in identity management, which will facilitate the wider use of the technology as well as (e) continue to study the

¹ European Parliament resolution of 3 October 2018 on distributed ledger technologies and blockchains: building trust with disintermediation (2017/2772(RSP)) available at: <https://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2018-0373+0+DOC+XML+V0//EN&language=EN>

² Tom Lyons, Blockchain Innovation in Europe - A Thematic report prepared by the European Union Blockchain Observatory & Forum.

development of the blockchain ecosystem in an effort to enhance its further development and deployment.

Moreover, given DLT/blockchain's potential impact on the economy, industry, public administration, as well as citizens' everyday life, the European Union is already in the process of taking measures to enhance innovation related to the aforementioned technology aiming to preserve its competitive advantage worldwide. In this respect, the European Blockchain Partnership was created on the 10th April 2018. Similarly, in the political arena, the European Parliament, recognising the potential and opportunities of DLT, adopted a resolution on DLT and blockchain on the 3rd October 2018. The resolution calls for an innovative legal framework that will be developed on the basis of the principle of technology neutrality while including the necessary safeguards to ensure consumer, investor and environmental protection, legal certainty and transparency, and facilitating the necessary actions in preventing and combating corruption, tax evasion, unlawful payments, anti-money laundering and the misappropriation of assets.

The Republic of Cyprus signed the European Blockchain Partnership on the 4th June 2018 and along with six other European member states (Malta, France, Greece, Italy, Portugal, and Spain) signed the joint '*Declaration of the Southern Mediterranean Countries on Distributed Ledger Technologies*' on the 4th December 2018, with the aim to enhance cooperation in the digital sector and to render Southern Europe a leader in emerging technologies such as DLT. The current strategy seeks to build upon these efforts, and aims to promote better understanding and proper implementation of DLT and blockchain technology both by the public and the private sector in Cyprus.

Furthermore the Strategy takes into consideration the European Securities and Markets Authority's ("ESMA") guidance³ on Initial Coin Offerings and Crypto-Assets. According to this guidance fraud, cyber-attacks, money laundering and market manipulation, are the most significant risks, emanating from crypto assets. Where the risks that the activities in crypto assets entail are adequately addressed to the extent possible, ICOs can serve as an alternative and less costly source of funding for innovative companies and start-ups. ICOs could also provide alternative investment opportunities to smaller investors, with higher risk appetite who may wish to invest in innovative companies, start-ups and/or in fractions of expensive assets, through assets tokenisation⁴, where they are able to make an informed decision. Similar merits are identified in the aforesaid ESMA's guidance.

The Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 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 2009/138/EC and 2013/36/EU ("AMLD5"), aims inter alia, to address AML risks. Taking into consideration the FATF recommendations, Cyprus is considering gold-plating AMLD5 in order to bring additional crypto-assets' activities under the AML/CFT obligations, in order to address the AML risks emanating from crypto assets in a more comprehensive manner.

In order to assess and proactively address the opportunities and challenges presented by DLT/blockchain for CY, an ad hoc Committee was formed in August 2018 by a Council of

³ ESMA, January 2019, "Advice on Initial Coin Offerings and Crypto-assets" (ESMA50-157-1391). Available at https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf

⁴ A method of rights' fragmentation through which the rights to a single unit of an asset are broken into smaller pieces (tokens), representing a fraction of the rights correspond to one unit of an asset.

Ministers decision, following an initiative of the President of the House of Representatives and the Minister of Finance. The Committee's primary objective is to support and advise on the appropriate framework required to enable the transition to DLT/blockchain technologies as well as identify the key initiatives to drive this transition within a 12-18-month period. The key objective is to detail the necessary operational planning, as well as the various scenarios and prerequisites, in order to ensure that the CY public sector will be able to utilise the potentials of DLT. The said ad hoc group operates under the supervision of the government of the Republic of Cyprus in close cooperation with the House of Representatives, and includes experts and stakeholders from the public and private sectors.

The current Strategy, sets out Cyprus' vision for DLT, which is part of the wider vision of Cyprus for digital transformation. Furthermore, the Strategy provides a framework and a high-level road map for examining the applications of DLT, across different sectors, in the context of process optimisation and cost efficiency, and addresses the risks arising from the emergence of new products utilising DLT.

In cooperation with other EU Member States and leading DLT/blockchain experts, Cyprus wishes to build upon the progress made to date in order to be in the forefront of innovation in the respective field. Through the development of DLT/blockchain technology, Cyprus aims to transform the economy, adopt new models in order to contribute to the improvement business environment.

Despite its potential to transform the economy and society, DLT/blockchain remains an evolving technology, hence its development and large-scale deployment is impeded by several obstacles such as issues pertaining to the scalability of permission less blockchains, energy consumption required to run proofing algorithms and security concerns where computer advances may render blockchains vulnerable to attacks.⁵

In view of the challenges posed by DLT/blockchain, the CY strategy on the development and deployment of such technologies should address a number of issues. It should focus on the creation of a proportionate regulatory framework which accommodates and fosters innovation, provides legal certainty and protection for consumers and investors alike, while preserving the technological neutrality. Such regulatory framework will enable the utilisation of the technology not confined to the use of crypto assets.

The said framework should also promote the utilisation of 'smart contracts' thereby encouraging the adoption of such contracts and related activities in Cyprus, maximising in this way the benefits of decentralisation. The regulatory framework adopted must take into account and be compatible with all relevant EU legislation, thereby ensuring conformity and adaptation to any future legislative developments at the EU level. Moreover, the framework should endeavour to increase the social value of the said technology and seek to promote the improvement of the digital skills of the citizens, thereby strengthening social inclusion in a way that preserves the individuality of the person. The framework, must also ensure that the development of such technologies takes into consideration its effects on the labour force of Cyprus, while at the same time addressing the ethical aspects of the use of DLT and blockchain technologies.

Particularly in the case of Crypto Assets, the framework should ensure that there are adequate AML and consumers/investors protection safeguards in place. This will enable

⁵ Tom Lyons, Blockchain Innovation in Europe - A Thematic report prepared by the European Union Blockchain Observatory & Forum.

alternative and innovative investments to be performed in a safer environment. To this end, crypto assets activities should be subject to authorisation and supervision.

2 . Market Overview and Challenges

2.1 Market Overview

Depending on segmentation and definition, various global DLT market forecasts range from \$7.68 billion by 2022 to \$60.7 billion in 2024. The current situation for DLT is fragmented, with no clear leader among Independent Software Vendors (ISVs) or implementations. The DLT platform market is undergoing rapid evolution and proliferation, attracting new entrants every month, while stakeholders in the ecosystem span research organizations, network and system integrators, distributed ledger technology solution providers, major cloud providers and tech companies, blockchain service providers and cryptocurrency vendors. Notwithstanding the number of vendors and platforms currently available, none is proven at scale and their long-term viability remains in question.

Even as regulatory conclusions remain nebulous, investors are deploying capital to the DLT sector, teams are building new use cases, and organizations are – once again – approaching the drawing table. The supporting tech around DLT is expected to evolve quickly, as will the potential for applications that rely on it. Its growth is expected to bring about an increase in consumer awareness of its benefits, as well as an equally supportive community.

DLT resembles the internet as a fundamental technology promising to reduce costs and generate wealth. However, it also has the potential to enable the development of an entirely new programmable economy which will transform every aspect of how society, industry, companies, and citizens operate and interact, DLT is as much a political, economic and social hypothesis as well as a technological one. The process of adoption is expected to be gradual and steady, not sudden, as waves of technological and institutional change gain momentum. Through 2022, it is estimates that only 10% of enterprises will achieve any radical transformation with the use of DLT.

Currently, Europe holds the second most significant share in the Blockchain technology market. The recently constituted European Blockchain Partnership, an effort by national governments in Europe to boost blockchain innovation and support the creation of blockchain applications for governmental and public services, underscores the importance of this technology for individual European governments as well.⁶ Europe has an extremely vibrant blockchain start-up scene, but established corporations are also actively examining the use of blockchain. In the financial services industry, the interest is such that the vast majority of European Supervisory Authorities in the banking, securities and insurance markets have introduced innovation facilitators (regulatory sandboxes and innovation hubs)⁷.

As documented by the European Union Blockchain Observatory and Forum, the academic community in Cyprus, has been active in the blockchain field. The University of Nicosia, in

⁶ Europe Blockchain Technology Market (2018-2023)

⁷ FinTech: Regulatory sandboxes and innovation hubs (Joint Report by the European Supervisory Authorities)

2015, became the first in the world to offer a Master's Degree in Digital Currency⁸ and a number of blockchain communities, initiatives and start-ups have been evolving over the last few years. More recently, the University of Nicosia has established the Institute for the Future (IFF), which looks at how blockchain will co-exist with other technologies of the 4th Industrial Revolution, especially artificial intelligence and the Internet of Things. Seminars and lectures on subjects related to blockchain are also hosted regularly by the Cyprus International Institute of Management.

Furthermore, the local industry is actively exploring applications of blockchain technology, with pilot projects currently being implemented in the financial services and other industries. The *Cyprus Blockchain Technologies Ltd*, is a non-profit organisation established as a collaboration among academic institutions, including the Cyprus International Institute of Management (CIIM), University College London Centre for Blockchain Technologies (UCL CBT) and University of Nicosia, local regulators, financial institutions and banks, as well as other technology associations and companies.

Cyprus' aim to become one of Europe's leaders in innovative technologies, is also reflected to the initiatives of the independent National Competed Authorities of the financial sector. The Cyprus Securities and Exchange Commission (CySEC) has launched an Innovation Hub focusing on Fintech and RegTech, including on the utilisation of Blockchain and other DLT technologies. The Innovation Hub is designed to address and explore the rise of FinTech and RegTech developments, and to foster a more effective relationship between FinTech companies.⁹ The Central Bank of Cyprus is planning to follow suit.

"Invest Cyprus" – the island's national investment agency signed a Memorandum of Understanding in October 2018 with the Singapore-registered public blockchain service creator VeChain Foundation, as well as the USA-registered blockchain project strategy advisory CREAM to further introduce and promote DLT in Cyprus. VeChain Foundation and CREAM will partner to advise Invest Cyprus on policy-making that will ensure blockchain's use in investments and economic reform of financial services, in order to improve economic development in Cyprus.¹⁰

2.2 Challenges

Emphasis should be given to the impact of the DLT/blockchain on the labour market as well as on the availability of training/education programmes which will furnish the labour force with the skills required for the new employment opportunities created by these technologies.

To this end, the House of Representatives, recognising the need to take preparatory steps towards the transition to the digital age, organised a Conference on the Fourth Industrial Revolution for the second year running on 14th June 2018, titled: "Action Plan for Implementation", during which key note speakers focused on the need to integrate robotics and artificial intelligence in the curriculum offered in schools, in order to educate students at an early stage and thus facilitate the smooth transition to the digital age.

Furthermore, an impact assessment on the effects of the deployment of DLT and Blockchain technologies on the labour market and the business environment in every sector of the

⁸ Blockchain Innovation in Europe, European Union Blockchain Observatory & Forum

⁹ <https://www.cysec.gov.cy/en-GB/cysec/innovation-hub>

¹⁰ <https://www.prnewswire.com/news-releases/cyprus-to-collaborate-with-vechain-foundation-and-cream-for-fintech-blockchain-development-in-cyprus-300737711.html>

economy must be undertaken in order to identify sectors where the benefits of the deployment of such technologies can be maximized.

Despite its potential to act as a game changer, DLT is still an often misconstrued and misunderstood concept, still lacking maturity and in many cases remaining undeployed. Issues related to scalability, privacy and confidentiality are slowing down technical advancement, whilst regulatory uncertainties and legal risks continue to exist. However, the promise of a more secure, trusted, efficient and fast way of data storing and sharing has led to significant investments by both institutions and individuals in understanding how the technology works and how its potential can be unlocked to deliver benefits across industries. Hence, the deployment of DLT/blockchain technologies requires not only a public awareness campaign undertaken by the government in collaboration with the relevant stakeholders and the academic community aimed at educating the citizens on the advantages and the risks that DLT and blockchain entail, in order to prevent instances of abuse, but also a reform of the country's education system in order to prepare future generations to engage with digital technologies. Other challenges that have been identified and relate to DLT concern the enforceability of smart contracts, the admissibility in Court information stored in DLT as well as GDPR implications.

3. European Initiatives

3.1 European Union Blockchain Partnership Initiative

In 2018, EU Member States and Norway signed a Joint Declaration creating the European Blockchain Partnership (EBP) and agreed to cooperate in the establishment of a European Blockchain Services Infrastructure (EBSI) that will support the delivery of cross-border digital public services, with the highest standards of security and privacy. At a first stage it will focus on the delivery of cross border digital public services while meeting the highest standards of security, privacy, sustainability and compliance with EU laws. It will, in a second stage, be open to local public authorities and the private sector. This will foster the development of an open, innovative, trustworthy, and successful European blockchain ecosystem.

In addition, the European Commission is working together with industry and stakeholders (through the EU Blockchain Observatory and Forum and through the soon to be established International Association of Trusted Blockchain Applications – IATBA). This cross-cutting approach is instrumental to overcome regulatory obstacles, increase legal predictability, lead international standardisation efforts and accelerate research and innovation to support innovative blockchain technologies.

The EBP Working Group has delivered on the Mandate of the Joint Declaration and has managed to reach agreement across stakeholders on the 3 deliverables: (1) Use-cases cross border digital public sector services (2) Technical Specifications for the EBSI and (3) Governance Model.

The initial development of the European Blockchain Services Infrastructure started in 2019-2020 (funded by the CEF) and will be co-developed with the European Blockchain Partnership (Member State Representatives). The envisaged role of the European Blockchain Partnership

in 2019-2020 throughout EBSI development under the Connecting Europe Facility Funding Programme and includes:

- Identifying barriers and solutions to overcome barriers that hinder the large-scale cross-border deployment of blockchain enabled solutions in the EU
- Providing the European Commission with input on the strategic priorities for deployment of additional cross border digital public services that can be supported by the EBSI
- Mobilising local economic actors (including industry, start-ups and SMEs) that can benefit from future deployment of innovative services through EBSI

In the first phase (2019-2020) the EBSI will allow public authorities to develop and implement a first set of [enhanced] cross-border digital public services. EBSI will then support new services and undertake progressive integration of new nodes (e.g. with new countries joining EBSI, or nodes at regional or local level). From 2021 it is envisaged that new types of organisations (including private companies, SMEs and start-ups) could make use of EBSI to deploy their own distributed applications and, consequently, assume a role in its governance model.

The governance would then need to be adjusted in a new form of partnership and/or new funding models that will be based on a multi-stakeholder model where the role of the International Association for Trusted Blockchain Applications – IATBA, could evolve into a co-ownership model of the infrastructure (with public authorities).

3.2 MED 7 Cooperation

Cyprus signed in December 2018 together with 6 other Mediterranean Countries (France, Italy, Portugal, Greece, Malta and Spain), in the framework of MED 7 cooperation, a Declaration on the utilisation of DLT. Signing of this declaration paves the way for cooperation in the Mediterranean basin for technology related companies that are based in Cyprus. The Declaration should be utilised in order to absorb available EU funds on DLT technology, especially in the next MFF 2021-2027.

4. Strategic Objective

The core advantage of DLT, which is the elimination of intermediaries thereby allowing industries to redefine or create new business models, necessitates taking action in order to adopt to these new technologies, thereby reinforcing Cyprus' economy. Therefore, the encouragement and adoption of a new business model is deemed to be the way forward for Cyprus, enabling it to preserve and improve its international competitiveness in the services sector, while at the same time addressing the risk posed by DLT and creating new opportunities for investments.

Cyprus has a well-deserved reputation for quality financial services. The said industry is currently undergoing rapid and far-reaching transformation, underpinned by new and emerging technologies and socio-economic drivers. This transformation is fundamentally changing market structures and opening opportunities for both incumbents & challengers to create innovative, game-changing alternative products and services. New technologies

present a unique opportunity in transforming the national product where in a decentralized world, Cyprus can be one of the leading centers for innovation and growth globally, by having a strong technology infrastructure and an innovative regulatory framework.

Cyprus can capitalize on its strengths such as the high- quality human capital and national infrastructure to digitize the economy, thereby fueling growth. In this way, existing International and cross-border transactions can be further leveraged for the implementation of DLT and focus should be geared towards the modernization and the transformation of leading sectors such as energy, shipping, finance, as well as the provision of Public Services.

Strategic Objective

To enable the government to assess and seize the DLT opportunity, to drive the right level of awareness and clarity concerning the technology, in the context of fostering and utilising innovation for the benefit of the economy.

This strategic objective is in line with Cyprus' vision to be one of the leading international centres for innovation and growth, where innovators abiding to the regulatory framework can flourish.

The Strategic Objective will need to be addressed from the perspective of the different key stakeholders and involve subject matter experts for the pilot implementation, both from a technology as well as a use case scenario perspective. In order to do that, the right framework and support will need to be provided to government organizations and business to accelerate blockchain's enterprise readiness.

5. Priorities and Actions

5. 1 Priority 1: Prepare an enabling legislative framework

5.1.1 Current Situation

Currently only a few countries have a dedicated Act on DLT/ Blockchain. Although a number of initiatives are undertaken by EU (European Commission, ESMA, Central Bank) and the development of these technologies is discussed in a number of fora, at the EU level there is currently no legislation specific on DLT technology.

5.1.2 Objective

Facilitate the application of DLT/blockchain in the Republic of Cyprus in a technology neutral manner, which is consistent with existing EU law and which achieves a balance between the need to promote and properly use new technologies and enhance innovation, on the one

hand, and the need to avoid money laundering and safeguard the rights of consumers on the other.

The legislative act needs to be balanced and proportionate, thereby allowing room for innovation and growth, while at the same time affording protection to investors as well as consumers. The framework must be based on the principle of technological neutrality while at the same time providing legal certainty, inter alia for purposes of encouraging the proper use of smart contracts in Cyprus. Furthermore, the potential legislative framework should be able to address the possible risks related to DLT, such as the use of DLT applications for criminal activities (e.g. money laundering, tax evasion, tax avoidance). Finally, the legislative framework must consider and align to legislative developments at the EU level.

An impact assessment on the implementation of DLT in Cyprus should be undertaken focusing on areas such as:

- Possible impact of DLT on the labour market
- The need for provision of training on DLT as well as retraining of the labour displaced by the implementation of DLT on new tasks and jobs (Job creation/transformation strategy)
- Securing personal data

DLT/Blockchain General Legislation

- A general DLT bill shall regulate, facilitate and support the successful implementation of applications relevant to DLT and Blockchain in the Republic of Cyprus. Whereas, the bill shall be technology neutral, it shall provide the framework for enabling the application of DLT/blockchain in the public and financial sector.
- A clear distinction will be drawn between “public” and “private” blockchains, due to the fact that private blockchains do not necessarily share the qualities of a distributed ledger. The law will also distinguish between permissionless and permissioned DLT systems, the former being open to the public in terms of effecting and verifying changes to the distributed ledger and the latter only allowing authorised participants to create records and verify changes to the ledger.
- The Law shall further consider the criteria under which DLT organizations can acquire legal personality.
- The bill shall further provide for the recognition of the legal effects of smart contracts in the Cypriot private law. This shall enhance legal certainty by providing for the recognition and binding effect of smart contracts, provided they are governed by Cypriot law. The bill may further provide for the jurisdiction of Cypriot courts over claims arising under or in connection to DLT systems, which would need to take into account private international law rules.
- Smart Contracts, in the sense of contracts concluded and executed via DLT systems with the terms of the agreement between buyer and seller directly written into lines of code, script or programming language have the possibility to permit and validate trusted transactions and agreements relating to a digital asset to be carried out among various anonymous parties without the need for a central authority, or external enforcement mechanism.

- The DLT bill could establish a small, agile commission/authority that can issue guidelines or opinions on the implementation of applicable legislation and can also develop proposals for further regulatory intervention (e.g. vis-à-vis the recognition or and regulation of Decentralised Autonomous Organisations).

Amendments to the Companies Law

- The Companies Law of Cyprus, needs to be amended accordingly in order to reflect all the changes that will be introduced by the DLT/Blockchain and the Virtual financial assets activities and virtual financial assets offerings Laws. The criteria under which a DLT system in the form of permissioned title ledger could be recognized as registry for members of a Cypriot company shall be addressed. This pre-supposes the recognition of representation of the certificate of shares by token and, by extension, the representation of title on shares by token as an on-chain asset, as well as the right of rectification of the registry by court order which would effectively constitute forking. Furthermore, the registry of shareholders of Cypriot companies may gradually be included in a DLT system in the form of permissioned record ledger under the auspices of the Registrar of Companies so as to enhance both transparency and credibility.

Virtual/Crypto Assets Services/Activities and Initial Virtual/Crypto Asset Offerings

- DLT's can be used as a registry and inventory system for the recording, monitoring, identifying, and transacting of any asset. Due to the various types of securities that can be acquired, sold and exchanged there is a pressing need to define a class of service providers and guidelines for each type. Tokens shall be classified into:
 - Security Tokens: Tokens that have security like characteristics and qualify as “transferable securities”, within the meaning of Article 2 of the Investment Services and Activities and Regulated Markets Law¹¹ of 2017.
 - Non-security Tokens such as:
 - Utility Tokens: This kind of Tokens will be considered to be a promise for the provision of a service or a product that is prepaid in advance with the token.
 - Payment Tokens or Cryptocurrencies: Tokens that are intended only as means of payment for acquiring goods or services.
- The bill will provide the initial and ongoing requirements in relation to the provision of services and the performance of activities, from or within Cyprus, in relation to virtual/crypto assets, including the operation of an exchange and the custodian or nominee services. Therefore, through the introduction of an appropriate regulatory environment and by authorising and supervising the providers of virtual/crypto assets, a safe, fair and transparent operating environment will be developed. In this way the risk of acting against consumers' best interests will be significantly reduced.

The bill should inter alia address the following:

¹¹ Transposing Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU Text with EEA relevance

- i The establishment of trading systems should be subject to regulatory authorization and oversight.
- ii There should be ongoing regulatory supervision of exchanges and trading systems aiming to ensure that the integrity of trading is maintained through fair and equitable rules that strike an appropriate balance between the demands of different market participants.
- iii The bill should promote transparency of trading.
- iv The bill should be designed to detect and deter manipulation and other unfair trading practices.
- v The bill should aim to ensure the proper management of large exposures, default risk and market disruption.

Depending on their structure (e.g. no intermediated access, custody of assets), Market Intermediaries may also be subject to the following:

- There should be minimum entry standards for market intermediaries.
- There should be initial and ongoing capital and other prudential requirements for market intermediaries that reflect the risks that the intermediaries undertake.

Market intermediaries should be required to establish a function that delivers compliance with standards for internal organization and operational conduct, with the aim of protecting the interests of clients and their assets and ensuring proper management of risk and conflict of interests, through which management of the intermediary accepts primary responsibility for these matters.

The suggested bill will also provide requirements in relation to the offering of virtual/crypto assets or tokens, including the preparation and publication of a whitepaper and management of conflict of interests.

- The Anti-Money Laundering Law should be amended to cover the abovementioned service providers, in line with FATF recommendations.
- CySEC shall act as the regulatory authority and its role will be to authorise and supervise the abovementioned service providers through the monitoring of the regulatory measures taken and by helping to develop a safe, fair and transparent operating environment.
- The Central Bank of Cyprus (CBC) has its own procedures for granting licenses to entities for which it is the competent authority. These are not covered here by reference to licenses granted by CySEC. The CBC shall supervise the provision of custodial services for digital assets to the extent that such digital assets fall within the definition of financial instruments pursuant to the Business of Credit Institutions Laws of 1997 to 2018. It shall be examined whether the scope of control powers by the CBC with regards to such instruments should be legislatively amended so as to include additional categories of digital assets. These services refer to digital assets that will be held in custody by the Banks, but would not be in any case depositary liabilities or assets of the bank.
- As a principle

- User-Controlled (non-custodian) Wallets.
- Mining.
- Running a node.
- Making or receiving payments in DLT/Blockchain/Cryptocurrency
- Buying and selling tokens as an individual
 - System tokens/coins, which are vital for blockchain (e.g. BTC, ETH)

will not be regulated, with the exception of the activity of running an exchange platform. However some of those activities may be affected by the amendment of the AML Law.

Taxation

- Activities related to DLT and Virtual Currencies create a series of questions, regarding the imposition of taxation. The Republic of Cyprus shall consider the introduction of a taxation friendly environment to the extent, however, that this is consistent with its international obligations and its obligations as a member state of the EU. As a general rule, tokens shall be treated as intangible assets due to their non-physical presence, therefore amortization over maximum 20 years will be allowable. Depending on the intentions of each buyer-contributor and their classification, tokens could be treated as pre-payments, investments, intangible assets or stock.
- As a principle payment tokens should be taxed on net profits, either by standard corporate tax, or lower taxation if incentives are to be given in accordance with tax policy. The same corporate tax on net profits would be applicable for utility tokens when the token will be used in exchange of the promised product or service, without any tax liability at issuance.
- With regards to investors, the tax treatment of transactions involving payment tokens should be identical to the tax treatment of transactions involving fiat currency as per the Income Tax Law. Payment tokens fall outside the scope of the taxation of capital gains (exempt). As far as security tokens are concerned, these should be taxed in the same way such as payments for dividends, premiums etc. according to the existing rules, so that the taxation of securities is broadened in order to include Security tokens. Profits from trading in Utility tokens should be taxed as trading income in terms of the ordinary income tax rules.
- The transaction fees and block rewards to the miners is to be considered as ordinary income. The operating expenses of miners can be set off against this operating income and that the basis of the tokens received is set by the price of the tokens at the time they are received. Similarly, the transaction fees of the operators to be considered as trading income. The operating expenses of operators can be set off against this operating income.

5.2 Priority: Enhancing the application of the technology by the government and the private sector

5.2.1 Existing Current Situation

DLT can potentially have extensive application in the public and the private sector, since its implementation carries many advantages in interactions between the government with businesses and citizens. For instance, cost can be eliminated from existing processes through the removal of intermediaries or the administrative burden of record keeping and transaction reconciliation. Furthermore, it can also have applications by the private sector with synergies to the public sector, especially in the financial sector. DLT has the potential to redefine the relationship between government and the citizen in terms of data sharing, transparency and trust and similar possibilities exist for the private sector.

Currently CY is at a very initial stage of implementing Blockchain in the public sector and the European Blockchain partnership (EBP) is expected to help jump-start a couple of applications in a controlled way.

Possible advantages of the promotion and use of DLT technology by the public sector are:

- Streamlining the value chain of production
- Reduced cost of operations, including reducing fraud and error in payments as well as incompliance and administrative costs
- Efficient provision of government services
- Spill over effects in the private sector, through the promotion of innovation and economic growth possibilities for SMEs
- Greater transparency of transactions between government agencies and citizens
- Reduced costs of protecting citizens' data while creating the possibility to share data between different entities, allowing for the creation of information marketplaces
- Protection of critical infrastructure such as bridges, tunnels etc
- Reduced market friction, making it easier for small and medium-sized enterprises (SMEs) to interact with local and national authorities

Focus is primarily on the technology and required infrastructure needs for both the use cases for cross-border digital public services that could be enhanced with blockchain identified by the EBP as well as additional ones identified at the national level

5.2.2 Opportunities and Challenges

- Collaborative Learning / sharing experiences
- Implications of off-chain / on-chain transactions
- Interoperability: Integration and architecture requirements for integration with EBSI as well as domestic Blockchain needs to be considered. Important to understand the interoperability with existing infrastructure.

- Selecting the appropriate frameworks: Since we might need in the future to apply Blockchain in other sectors we need to study which framework offers easier integration to other problems of interest. For example we might proceed with land registry and in the future we consider to apply Blockchain in tax authorities - we need to ensure integration and linkage is feasible.
- Compatibility with other niche technologies: Before we consider a possible design of a Blockchain solution for a particular domain we need to ensure that our design can facilitate other technologies to be applied such as Artificial Intelligence, Machine Learning etc. Since Blockchain is about data verification and agreement we need to make sure that our infrastructure design facilitates exploitation of data for other purposes such as automation, data analytics, machine learning etc. Better understand the suitability of the different frameworks to be applied (e.g., R3, Hyperledger etc.)

5.2.3 Objective

Implementation of the technology in public sector services business model, architecture and governance in full synergy with the private sector that will enable the efficient dissemination of the technology.

5.2.4 Use Cases

Land and Surveys Department

(a) Land Registry and Surveys Department is at a good level in terms of digitisation but the awareness regarding DLT is still under development. The framework to be selected needs to be advanced in terms of smart contracts (flexibility to develop and execute advanced logic involving several stakeholders), financial settlements and integration with external oracles. A public ledger needs to be created that is visible to any interested party who can view and initiate a contract, the rest stakeholders involve multiple departments (TAX) at both governmental and private sector (law firms, Financial Institutions such as Banks).

(b) Property Sale Agreement and Registration of Mortgage: The Authority will make sure that the agreement of sale (Contract of Sale) between the buyer and the seller will be implemented and approved through a smart contract. A blockchain network will validate ownership, property details and encumbrances with the DLS. Proof of Concept will only cover transactions without encumbrances. Buyer may register a mortgage on the property being bought as well as a different property. The following actions will be executed upon satisfaction of pre-conditions: (i) Land Registry transfers ownership to buyer, (i) Land Registry registers collateral as per the mortgage agreement. (c) BOC releases funds to the seller.

Customs and Taxation

Blockchain can be applied to improve upon customs' operations in terms of cargo/container tracking and tackling tax related issues on a global scale. Both the **Customs and the Tax authorities** have been participating in the relevant EU working groups, since these are areas where EBP is undertaking important initiatives (ECA Registry, SEED, One-Stop-Shop). It seems that applicability of such technology at national level is feasible. The framework to be selected needs to be advanced in terms of solving complex supply chain problems and integration with other technologies (certificate validation, integration with external oracles) that are used by other governments (at EU Level), national governmental departments (VAT, Stamps, Ministry of Agriculture, Rural Development and Environment etc) and private sector are needed.

Interoperability is something that needs to be extensively studied before proceeding with the implementation phase.

National Betting Authority

The authority issues specific licences for online and land-based betting services. The requirement is to enhance transparency with the use of a public Blockchain for recording and validating (self-verification) of licensed bookmakers, their authorised representatives, and holders of licenses for premises. We envision that this is a straightforward application of the technology, the proposal is to use a public Blockchain for redundancy and transparency reasons. The proposed solution complements existing infrastructure with additional functionality that enables NBA to initiate the process of creating, issuing, and revoking a specific licence. In addition, the issued license, published in a digital form could be published on the Authority's website for auditing and self-verification. NBA could also benefit from DLTs in terms of recording (anchoring) specific data generated from the various licensed betting services on a Blockchain. At a later stage these data could be analyzed and processed by a computational agent (Artificial Intelligence – AI agent) to uncover valuable data insights that could be used to cater crime prevention, and other illegal activities (e.g., biased odds, or Anti Money Laundering attempts)

Educational Qualifications/Digital Certification

The world of academia and any other institution or accreditation authority, dealing with certificates/credentials face the problems of fraud, lost certificates and modified certificates. These problems result in expensive and time-consuming issuance, verification, recovery of lost or modified certificates, while many times this is impossible. This use-case will highlight the impact that blockchain will have on providing an all-in-one-solution for the above challenges. At the same time, this use-case is well-aligned with the Smart Specialization Strategy of Cyprus (S3Cy). One of the horizontal priority sectors that Cyprus has identified in S3Cy is that of ICT, with an emphasis on future and emerging technologies. Moreover, this use-case aligns with the joint request for supporting the implementation phases of a common, cross-border diploma exchange network of trust for education, as this is envisioned by the European Blockchain Services Infrastructure (EBSI).

Thus, this use-case is set to explore and investigate how DLTs (including Blockchains) can be leveraged to enable tamper-proof, trusted credentials for the Education sector, that at the same time can facilitate student ownership, and use of academic records. Issuing authorities (e.g., Schools, Institutions, and Universities) are acting as the sole record keepers for personal student information, such as, high-school certificates, University diplomas, transcripts, certifications etc. This means that access to academic achievements is depended to third-parties that require complicated, time-consuming or even expensive processes to be followed. On another note, authenticity or validity of academic certificates is often obligatory for applying for a job offer (in public or private sector) or for pursuing further academic studies, and with increased demand, educational dishonesty is on the rise. The proposed use-case suggests that DLTs can provide the means to support educational proof, giving to potential employers (or the government), and academic institutions the information required to prevent fraud by issuing self-verifiable educational qualifications on an immutable ledger.

Know Your Client

The Know your Customer (KYC) blockchain use case enables a seamless exchange of customer information amongst financial institutions for near real time compliance processing, enabling digital customer onboarding while empowering customers with digital identity and document management in a secure manner. Currently there is a manual process to gather customer information and collect all the KYC documents. The sharing of this information with 3rd party validation agencies is also cumbersome. Each of the divisions perform KYC in a siloed manner and hence there is duplication of effort. With the implementation of a Blockchain platform customers will be able to share necessary documents in a secure manner. The KYC status is checked in a centralized manner in near real time which removes the need to duplicate the KYC effort for the same customer across institutions or departments. Only new customers (without KYC yet) or additional requirements go through the KYC process which should be notarized and entered into the national KYC platform. This will enable the ongoing monitoring of transactions and provide an up to date customer risk profile. The key benefits are:

- (a) Better customer experience, easy and controlled data sharing with high security: When a customer begins a registration process with an institution, he/she can share an identity token instead of the original documents
- (b) Cost and time savings: Reducing redundancy in the verification of registration requests coupled with reporting can reduce the costs of participating parties
- (c) Automated compliance : Increased transparency provides regulators the ability to easily and quickly validate KYC verification activity stored on the ledger.

5.2.5 Horizontal Activities

Standardization on DLT and Blockchain

Developing International and European standards for blockchain technologies, as a new field of technical activity will significantly benefit the economy as a whole, by providing significant advantages to the private sector, to government transactions and to the banking system.

ISO/TC 307, blockchain and distributed ledger technologies, has been set up to meet the growing need for standardization in this area by providing internationally agreed ways of working with it to improve security, privacy and facilitate worldwide use of the technology through better interoperability. This is especially relevant due to the number of SMEs, across various sectors, that are developing blockchain and distributed ledger technologies as a product. The ISO TC 307 is preparing International Standards through a number of Working Groups¹² :

The ITU-T Focus Group on Application of Distributed Ledger Technology (FG DLT) is established to:

- identify and analyze DLT-based applications and services;

¹² ISO/TC 307/Working Group 4 - Joint ISO/TC 307 - ISO/IEC JTC 1/SC 27 WG: Blockchain and distributed ledger technologies and IT Security techniques

ISO/TC 307/Study Group 2 - Use cases

ISO/TC 307/Study Group 7 - Interoperability of blockchain and distributed ledger technology systems

ISO/TC 307/Working Group 1 - Foundations

ISO/TC 307/Working Group 2 - Security, privacy and identity

ISO/TC 307/Working Group 3 - Smart contracts and their applications

ISO/TC 307/Working Group 5 - Governance

- draw up best practices and guidance which support the implementation of those applications and services on a global scale; and
- propose a way forward for related standardization work in ITU-T Study Groups.

Objectives of the **CEN-CLC Focus Group Blockchain and DLT** are:

- To prepare an overview for the stakeholder community on suitable standards already available or in preparation, to meet specific European needs in Blockchain and DLT;
- Where no suitable standards exist, to define best ways to provide them in preference internationally but if necessary at European level, and make recommendations accordingly;
- To identify and give due consideration to any relevant specific issues linked to European legislation or policy and/or innovation/research projects impacting the subject;
- To map these needs with the current work items of ISO/TC 307 and identify any European standardization needs that are not yet covered at international level.

The development of blockchain and electronic ledger standards through ISO, ITU, CEN/CENELEC and ETSI will assist this new emerging technology to be rolled out and deployed with greater clarity, certainty and market confidence.

It is important that Interest stakeholders from Cyprus could participate in ISO, ITU, CEN/CENELEC and ETSI standardization work. In this context they can play a part in the creation of International and European standards on blockchain and digital ledger technology as well as supporting the Economic and industry Interests of Cyprus in the Global Standardization competitive environment.

The Cyprus Organization for Standardization is planning to set up a National Mirror Committee with Technical Experts from the Public and the Private Sector with the following objectives:

- a) to observe and evaluate the standardization work of International and European Standardization on Blockchain and DLT's.
- b) to actively participate in International and European Committees so as to promote national interests and to widen their knowledge and gain experience in the implementation of Standards.

Create a pipeline of other applications

Areas that have been identified where there is a great potential according to international practice. For example, in the shipping area where already DLT applications are used in the private sector as well as stamp duties, where a major change in legislation is under way. Furthermore, identity management is an application of DLT technology which could be very important for Cyprus. Last but not least, DLT can be used to better protect critical civil infrastructure against cyberattacks.

Define the framework and governance for participation in the EBP use cases

Where there is already a specific time frame for follow-up and execution: evaluate the maturity of the above proposed use-cases in terms of DLT applications in Cyprus and proceed with the formation of smaller teams for driving the POCs for further implementation.

Proof of Concepts (POCs)

For each identified potentially applicable Blockchain business scenario, there is a need to develop a running prototype to crystallize the additional needs in terms of stakeholder approvals (including the resources and budget) and move forward to a Minimum Viable Product (MVP) pilot. The POC will include the following activities:

- A two-day business ideation workshop covering the scenario's business objectives, needs, and regulatory requirements. The workshop will consist of business process discussions driven by common Blockchain business scenarios and a technology walk-through of the selected business scenario
- The Prototype development
- A requirement backlog and estimates for an Minimum Viable Product (MVP) pilot
- Creation of a business use case and roadmap. Define the National Infrastructure and Nodes. The initial infrastructure could be hosted either in Min Transport/communications or where the Digital CY initiative will be hosted

Cooperation with MED -7 countries

Explore possibilities of cooperation on additional use cases and actions to be delivered as part of the MED -7 Declaration. Identify use cases of common interest for Med countries (e.g. migration).

5.2.6 Budgetary Considerations

- EBP use cases: In the context of the EU Programme *Connect Europe Facility* €4ml has been allocated at EU level. The budget will be split over the 4 cases and will be implemented to support the coordination still required to reach an agreement on technical specs on the 4 cases as well as their implementation centrally and for each one of the national nodes for the set-up and pilot period. Any additional national infrastructure needs or adjustments will have to be supported by the national budget.
- Advisory Work: Need for an advisory partner to help develop each of the use cases based on the dimensions already discussed and to translate these guiding principles into organizational and technical and specifications for enabling the development of DLT in Cyprus across both public and Private sector in a structured way.
- CY identified use cases: Budget may be allocated as part of the existing budget for government services. As general guidance for each PoC on Blockchain Prototyping Session of 3-week duration will be needed.
- Organizational needs: secretariat for BC initiative co-ordination and project management
- Support the initiatives of the National Competent Authorities of the financial sector

5.3 Priority 3: Promoting DLT in the financial sector

5.3.1 Existing Current Situation

Currently, there are initiatives in Cyprus that focus on the promotion of DLT in the financial sector, as well as some start-ups that are using or exploring the use of DLT. From the aspect of the financial services regulator, the Cyprus Securities and Exchange Commission (the “CySEC”) established an Innovation Hub in October 2018. The aim of the Innovation Hub is to provide a dedicated point of contact for firms to raise enquiries with competent authorities on FinTech-related issues and to seek non-binding guidance on the conformity of innovative financial products, financial services or business models with licensing or registration requirements and regulatory and supervisory expectations.¹³ To this end, CySEC aiming to foster a more effective relationship between both supervised and non-supervised entities operating in this area established its Innovation Hub as a place where innovative entities will have ongoing access to CySEC to best understand and implement their regulatory requirements. This initiative also encompasses firms which are launching or exploring new innovative investment products and platforms, using Distributed Ledger Technology (DLT). In order to support these innovative businesses, a specialized group of experts has been established within CySEC, which will support market participants that introduce innovative financial products or services using DLT, if they meet the eligibility criteria of the Innovation Hub.¹⁴

5.3.2. Opportunities and Challenges

The use of DLT in the financial services has been the topic of discussions in the last years at European and international level. The European Securities and Markets Authority (ESMA) after assessing this technology has stated that DLT could bring a number of benefits to financial markets, including more efficient post-trade services, enhanced reporting and supervisory functions, greater security and availability, reduced counterparty risk and enhanced collateral management.¹⁵

The International Organization of Securities Commissions (IOSCO) has also identified the benefits of DLT that could apply to the financial services sector.¹⁶ These refer to, among others, cost reduction in settlement by eliminating inefficiencies via less human intervention and lower regulatory capital charges due to the reduction in operational and settlement risks, whereas it can also be used to achieve real time settlement or make settlement faster. Another advantage is the reliability and traceability of records, as well as efficiency enhancement since DLT can replace multiple centralized ledgers to facilitate information and data flow.

At the same time, there are also considerable challenges in the implementation of DLT, from technological risks such as interoperability and cyber resilience, operational risks and business

¹³ The European Supervisory Authorities Joint Report on “FinTech: Regulatory sandboxes and innovation hubs” (January 2019)

¹⁴ CySEC Innovation Hub website - <https://www.cysec.gov.cy/en-GB/cysec/innovation-hub/eligibility-criteria/>

¹⁵ ESMA Report on The Distributed Ledger Technology Applied to Securities Markets, 7 February 2017 (ESMA50-1121423017-285)

¹⁶ IOSCO Research Report on Financial Technologies (Fintech) (February 2017)

and regulatory challenges. For instance, legal challenges relating to the implementation of DLT and smart contracts in the securities markets may raise many important legal questions including, the validity of tokens as a representation of ownership and legal finality of smart contracts.¹⁷

Depending on the type of DLT, the technological challenges, such as scalability and operational issues may pose less of a challenge. For instance, in the context of a permissioned DLT these can be addressed since the financial institutions involved will implement the technology prudently in order to control the process.¹⁸

ESMA also analyses important challenges for DLT in terms of interoperability, governance and privacy issues and risk creation, which should be addressed before any large-scale use of DLT across the financial services sector.¹⁹ Other related risks are connected to the novelty of the technology and the use of encryption, cyber risk and the risk of fraudulent activities, whereas operational risks should not be underestimated in a DLT context. ESMA also highlights the need for appropriate governance frameworks in relation to the liability of the respective parties, rules to approve/reject authorised participants, correction mechanisms, determination of the applicable law in case of disputes etc.

The potential of the application of DLT the area of payment, clearing and settlement has also been the focus of a report of the Committee on Payments and Market Infrastructures of the Bank for International Settlements, that sets out an analytical framework for central banks and other authorities to review and analyse the use of this technology for payment, clearing and settlement.²⁰ The report identifies both opportunities and challenges relating to the use of the DLT, such as the need to have safe, secure and scalable systems as well as the fact that work needs to be done in order to ensure that DLT arrangements are sound, governance structures are robust, technology solutions meet industry needs, and that appropriate data controls are in place and satisfy regulatory requirements.

Therefore, this strategy aims to examine the application of DLT in the Cypriot financial sector, always taking into account the work that has been conducted by other international and European organisations to explore its potential, while at the same time taking into account that the technology is still in an early stage of development.

5.3.3 Objective

The national strategy for promoting DLT in the financial sector serves several objectives. On the one hand, members of the executive and legislative branches of the Republic, in cooperation with the regulators will assess any needs for the development of this sector in a coordinated manner. To this end, any obstacles that will be identified will be collectively addressed, whereas at the same time, development and investment in this area which has the potential to streamline financial processes and to reduce costs will be promoted. In this way, it will be possible to determine national priorities and identify any need for government

¹⁷ IOSCO Research Report on Financial Technologies (Fintech) (February 2017)

¹⁸ IOSCO Research Report on Financial Technologies (Fintech) (February 2017)

¹⁹ ESMA Report on The Distributed Ledger Technology Applied to Securities Markets, 7 February 2017 (ESMA50-1121423017-285)

²⁰ Report of the Committee on Payments and Market Infrastructures of the Bank for International Settlements on Distributed ledger technology in payment, clearing and settlement, An analytical framework (February 2017)

reform, as well as any future risks to financial stability, without hindering the further development and potential benefits of DLT.

On the other hand, it aims to support and coordinate stakeholders from the private sector to implement specific use cases, in order to assess their effectiveness and feasibility. By including within the remit of the strategy specific initiatives that will engage the private sector and which will be implemented within specific timeframes, there will be concrete results and outcomes, which will further enable the development of DLT in Cyprus. These initiatives will focus on utilising permissioned DLT to optimise processes and thus benefit by cutting red-tape and streamlining existing practices. Permissioned DLT refers to privately shared systems between trusted parties that are permitted to access the system. The governing entities in the DLT (including shared ledgers) approve admission of new participants under certain predefined criteria, and specify nodes responsible for the verification process.²¹

5.3.4 Activities

Enhancement of the Innovation Hub of the Cyprus Securities and Exchange Commission

As mentioned above, the CySEC is already operating an Innovation Hub, whose scope also includes innovative business that may use DLT and its main objectives are to support such entities and also engage with providers of emerging financial technologies. The Innovation Hub has only been operational for a few months and the CySEC aims to evaluate the effectiveness of its operation, as well as whether there is a need to further enhance its mandate in the first semester of 2019, in particular relating to entities focusing on the use of DLT.

Explore the possibilities of an innovation hub within the Central Bank of Cyprus

explore the possibilities of operating an innovation hub, in line with some of the principles laid out in the ESAs' joint report²².

Enable Banking for DLT companies

Issuing guidance for the banking sector to demonstrate the difference between the types of companies in this space: (i) those who transfer value via block chain systems; (ii) those who provide software to industries that use block chains; (iii) those who provide block chain-based software to solve conventional business problems.

6. Governance Framework and Roadmap

²¹ IOSCO Research Report on Financial Technologies (Fintech) (February 2017)

²²The European Supervisory Authorities Joint Report on "FinTech: Regulatory sandboxes and innovation hubs" (January 2019)

6.1 Governance Framework

Following the Council of Ministers Decision in August 2018, three sub committees of the Ad Hoc Committee were formulated. The sub committees are: (a) legal framework, (b) application in public sector, (c) application in the financial industry. The tasks of the subcommittees were:

- The Identification of use cases for public or private sector services that could be enhanced with DLT. The first meetings of the sub committees in Nov were dedicated to an initial discussion amongst the participants on the parameters to identify the use-cases while the DLT Workshop met in Dec to further discuss challenges, opportunities and requirements.
- The development of guidelines and specifications that should be taken into account in the future development of the National DLT Services Infrastructure for it to support the deployment of the identified public sector use-cases, and
- Identifying the parameters that should be included in the proposed regulatory framework.

In the context of preparing the National Strategy, a Round Table Discussion was organised in December 2018 with more than 100 participants. The discussion focused on an exchange of views between participants on proposed use cases and also on the potential and challenges in the implementation of DLT in the Cyprus financial sector. The considerations of the participants were taken into account in the preparation of this Strategy.

Effective governance is key to the successful implementation of new technologies. The proposed governance model consists of bodies dealing with 3 distinct areas of governance

- **Policy Governance:** Ad hoc Committee on Blockchain, created through the Council of Ministers Decision. Responsible for preparing the National Strategy and the legislative framework. Also monitoring progress on the implementation of the Strategy.
- **Technology Governance:** Sub committee on the technology applications chaired by the Office of the Chief Scientist. Overseeing the implementation of the use cases. Implementation teams will be agreed for further exploration of use cases.
- **Stakeholder Involvement:** a committee with the involvement of private and public stakeholders. The stakeholders from the private sector to be selected through a call.

The **Secretariat** will be provided by the Ministry of Finance and will support and engage in the communication and drafting activities necessary to ensure the adequate development and functioning during its development and operational phases. The governance model seeks to avoid the setting up of new organisations but rather to fully exhaust the potential of existing structures (whenever possible) recognising that the particular characteristics of blockchain and distributed ledger technology may not always fit within the mandate of existing bodies and structures.

6.2 Roadmap 2019 – 2021

- Establishment of the DLT /Blockchain Project office (secretariat) – May 19
- Prioritized Use cases POCs –May – June 2019
 - Phase 1: Lab environment

- Phase 2: Minimal Viable product
- Phase 3: Production Pilot

In the case of cross-border use cases that are also supported by the EU, the implementation will follow the schedule and requirements posed by the EBP as well as the upcoming Horizon calls that will include DLT technologies.

- Definition of National Infrastructure specifications – June 2019
This will include both the specifications for having national Nodes for the cross-border government services as well as the National services.
- Develop a workbench (lab) for testing and piloting Use Cases - June - September 2019
- First deployment of EBSI components, through the Connecting Europe Facility programme (CEF) – Mar- June
- Identify projects for submission to Horizon 2020 actions for piloting more advanced use cases and for developing new infrastructure components.
- Future and larger deployment of services based on EBSI are planned to be supported under the proposed Digital Europe Programme from 2021.

7. Communication Strategy: Raising Awareness – Understanding DLT

7.1 Communication & Awareness Plan

Embracing Digital Transformation and technology adoption is instrumental for bringing out the benefits of DLT for economy and society. It is imperative to make visible how this technology can help the government in its interaction with business and citizens. The Government would need to ensure that there is the right level of awareness, support and integration with the overall Digital Agenda for the Country. The Main pillars for the DLT Communication Strategy are:

7.1.1 Awareness

- Develop flyer/information material that articulates in a concise manner the National Strategy and ensure that it is communicated across all official channels of communication of the key stakeholders. In this way there can be an ongoing information on progress and additions made. This action could be implemented through a media consultant.
- Present Strategy in key Business forums and industry-related organizations for the identified use cases. Stakeholders participate in industry conferences and events and promote the open dialogue with the private sector. (include here the list of known forums to target)
- Examine the possibility of hosting a European event, e.g. European Blockchain Observatory.

7.1.2 Organising contests

Develop 2-3 themed “hackathons” for startups to identify and promote DLT scenarios in innovation and entrepreneurship activities, i.e. start-up competition, or entrepreneurship weekends on transforming business models, digitization of processes and data integrity. The objective being to leverage DLT to solve society challenges in this way bringing innovative business models to the spotlight, enable and support disruptive scenarios for driving growth and addressing inefficiencies. This would be a great way of bringing together people from business world and IT to work on challenges, learn more on DLT, see in practice how the business model can work and to develop additional insights on market readiness and needs.

7.1.3 Readiness

- Introduce DLT scenarios in IT depts of use case stakeholders and integrate with Digital Cyprus initiative
- Organize together with leading education organizations a “DLT school” short program for both public and private sector. This can be done under the auspices of existing collaborations or professional organizations. The seminar will be available to all interested from private and public sector with the aim of Introduction to Blockchain & DLT Frameworks (Bitcoin, Ethereum, Corda, Hyperledger Fabric), go over Business Applications of Blockchain (Success Stories) as well as Legal & Regulatory Frameworks. The delivery will be done by WW leading academic institutions and supported by local experts as well. Estimated budget 50K assuming that there are no sponsors or tickets for the event. – 4 days in second half of 2019
- Focus on Diverse workforce and certification Ms AI

7.1.4 Partnerships

- EBP: Leverage the European Blockchain Partnership to drive additional use cases and nurture cross boarder partnerships
- IABTA: encourage CY companies to become members of the International Association of Trusted Blockchain Applications (IATBA). This is an association to be established under European law that will promote the transparent and inclusive governance of blockchain infrastructures, compliance with the EU acquis and develop specifications for different use cases (financial sector, logistics, aeronautics, consumer goods etc.). The IATBA will be a key partner for dialogue with the European institutions, national governments, regulators and of course with the European Blockchain Partnership as we work together in the establishment of the European Blockchain Services Infrastructure (EBSI). The official launch of the association is expected to take place at the end of January in Davos (World Economic Forum).
- Technology Providers: Develop non-exclusive or binding partnerships with the purpose of facilitating the collaboration among stakeholders to discuss and share best practices as well as guiding principles regarding the adoption of DLT. In addition, these partnership can also facilitate the coordination with, national and international regulators and cooperative bodies and associations on a global basis.
- Explore the possibility of signing MoU with platforms/partnerships (i.e. R3).

Annex 1: Glossary

Block: data structure comprising ordered ledger records and a block header

Blockchain: a distributed ledger system with confirmed blocks, organised in an sequential chain using cryptographic techniques for linkage

Consensus: agreement among nodes that a transaction is valid and that there is a consistent set and ordering of the transactions stored in the distributed ledger

Digital asset: asset that exists only in digital form or which is the digital representation of a physical asset (digital doppelgänger)

Distributed application: application that runs on a distributed system.

Distributed ledger: a ledger that is shared and synchronized, and distributed across a set of nodes. It is designed to be tamper evident, append only and immutable containing confirmed transaction records

Interoperability: ability of two or more systems or applications to exchange information and to mutually use the information that has been exchanged

Oracle (also referred to as distributed ledger technology (DLT) oracle): a service that updates a distributed ledger using data from outside of a distributed ledger system.

Permissioned: requiring an identity, authorization and access according to an access control policy to do a particular thing or things

Permissionless distributed ledger system: distributed ledger system wherein its nodes and DLT users do not need to be permissioned to do a particular thing or things.

Private distributed ledger system: distributed ledger system in which a controlled and limited set of nodes communicate with, and are discoverable only by, one another in the operation of the system.

Public distributed ledger system: distributed ledger system in which any node can participate in the operation of the system.

Smart contracts: contracts whose terms are recorded in a computer language instead of legal language. Smart contracts can be automatically executed by a computing system, such as a suitable distributed ledger system.

Time Stamp: time variant parameter which denotes a point in time with respect to a common time reference

Token: representation of a digital asset, held within a distributed ledger system