FLORIDA BLOCKCHAIN TASK FORCE REPORT

Chapter 2019-140, Laws of Florida

TABLE OF CONTENTS

Introduction 1
- Task Force Members 2
- Context and Importance 6
- Requirements 6

A) Government Implementation 7
- Government Applications 7
- Current Implementations 8

B) Feasibility of Blockchain Implementation 10
- Blockchain Workforce Needs 10
- Blockchain Academic Programs 11
- Economic Opportunities and Risks in Blockchain 11
- Barriers to Economic Growth in Blockchain 11

C) Recommendations for Implementation 12
- Fintech 12
- Cryptocurrency 12
- Public and Private Blockchains 13
- Smart Contracts 13
- Distributed Ledger Technology 13
- Consensus Algorithms 14
  - Proof-of-Work 14
  - Proof-of-Stake 14

D) Blockchain Technology Legislation 15
- Future Implementation 15

E) Pilot Project Recommendation 16
- Department of Highway Safety & Motor Vehicles 16

F) Additional Information 17
- Industry Applications 17

G) Task Force Meeting Minutes 18
- Meeting 1 18
- Meeting 2 22
- Meeting 3 27
- Meeting 4 33

INTRODUCTION

On June 25, 2019, Florida Governor Ron DeSantis signed House Bill 1393 1 into law to establish the Florida Blockchain Task Force within the Florida Department of Financial Services. The Task Force represents a comprehensive effort to study how Florida's state, county, and municipal governments can benefit from a transition to blockchain-based systems for recordkeeping, data security, financial transactions, and service delivery. The blockchain task force also has a goal of identifying ways blockchain technology can be used to improve government interaction with both businesses and the citizens of Florida.

The enacting legislation recognizes that blockchain and distributed ledger technology allow the secure recording of transactions and that blockchain can facilitate more efficient government service delivery, including facilitating safe paperless transactions and recordkeeping protected from cyberattacks and data destruction. With the passing of this law, Florida has joined a growing list of states, including New York, New Jersey, Illinois and Wyoming, that have formed a task force to study the potential benefits of blockchain.

This report is intended to highlight the work of the task force and better understand blockchain technology and to consider its usage and adoption within the State of Florida.

[1] House Bill 1393 (2019) - The Florida House of Representatives

TASK FORCE MEMBERS

DAVID ALTMAIER
TALLAHASSEE, FL

David Altmaier was appointed as the Florida Insurance Commissioner in April 2016 by the Financial Services Commission. He leads the Office of Insurance Regulation (OIR) and has oversight of one of the largest insurance markets in the world. Under Altmaier's leadership, OIR has worked to cultivate a market in Florida in which insurance products are reliable, available, and affordable.

RONALD BRISE, CHAIR
ORLANDO, FL

Ronald Brisé leverages a wealth of experience in governmental, legislative, political and business arenas to represent the interests of clients in matters that include appropriations, business development, education, governmental and legislative affairs, public policy, and economic development.

CHARLES GHINI
TALLAHASSEE, FL

With over 33 years of service to the state, Charles oversees network and computer operations; application development; product development; and IT support to the Department, as well as the Office of Financial Regulation and Office of Insurance Regulation. He leads at DFS the development and implementation of policies and procedures for IT security, quality control, application development/maintenance and system availability.

JASON HOLLOWAY

ST. PETERSBURG, FL

Jason Holloway graduated from the University of Florida with his Bachelor's in Political Science and has been involved in numerous blockchain initiatives while completing his Master's in Digital Currencies from the University of Nicosia. He first entered the blockchain space in 2016. Soon after, he joined the Florida Blockchain Think Tank to serve, connect, and educate blockchain enthusiasts nationwide.

KEN LAWSON

TALLAHASSEE, FL

Ken Lawson is the Executive Director of the Florida Department of Economic Opportunity (DEO). Prior to DEO, he served as the CEO and President of Visit Florida and the Secretary of the Florida Department of Business and Professional Regulation (DBPR).

BRAD LEVINE

BOCA RATON, FL

Bradley M. Levine has enjoyed a successful 20+ year career building software technology companies. Tellus LLC, Mr. Levine's current company, is focused on healthcare technology specifically Electronic Visit Verification (EVV) & Digital Health. In addition to Tellus, Mr. Levine is also President of Tarpon Dreams, LLC, a luxury real estate and vacation rental company with properties in the Florida Keys, Big Sky Montana and Ft. Lauderdale FL.

WOODROW POLLACK

TAMPA, FL

Woodrow "Woody" Pollack is a partner in the Tampa office of Shutts & Bowen, where he is a member of the Intellectual Property practice group. Woody is Board Certified in Intellectual Property Law by The Florida Bar. He focuses his practice on litigating complex patent, trademark, copyright and trade secret disputes.

TERRY RHODES

TALLAHASSEE, FL

Terry L. Rhodes was appointed to the role of Executive Director of the Florida Department of Highway Safety and Motor Vehicles (FLHSMV) in May 2014. As Executive Director, she is responsible for the overall direction and management of one of the nation's largest safety and consumer-oriented agencies and leads law enforcement, public education, and service activities of more than 4,400 members throughout the state.

GARY RUDERMAN

POMPANO BEACH, FL

Gary S. Ruderman has over twenty-five years of tax and accounting experience in both public accounting and private industry. He is a co-founder of Ruderman and Company, PA, a CPA firm in Pompano Beach. Prior to starting his own company, Gary served as Vice President of Tax for companies in various industries. Gary is a Certified Public Accountant, licensed in Florida.

Jonathan Satter

TALLAHASSEE, FL

Jonathan R. Satter was appointed as Secretary of the Florida Department of Management Services (DMS) by Governor Ron DeSantis in 2019. DMS, through a team of 1,000+, and an $800 million budget, is the business and workforce arm of Florida government. Prior to his appointment as Secretary, Jonathan spent 28 years in the banking, commercial real estate and logistics industries. With his recent appointment by Governor DeSantis, he has served the State of Florida in various capacities under four governors.

Mayor Suarez

City of Miami

Prior to being elected with 86 percent support from Miami residents, Mayor Suarez served as Miami Commissioner for District 4 for eight years. Mayor Suarez had many legislative accomplishments as Commissioner, including implementing ShotSpotter technology in the City, a state-of-the-art gunshot detection system, setting up a transportation trust fund, which allocates funds for current and future transit projects, and passing the Reverse Redline legislation, authorizing lawsuits against several major banks for discriminatory mortgage lending practices.

Robin Wescott

TALLAHASSEE, FL

Robin S. Westcott, J.D. is Vice President of Government Affairs, Legal & Compliance (GLC) at AAIS (American Association of Insurance Services), a national not-for-profit, Member-focused advisory organization. Ms. Westcott is an attorney who spent more than 20 years in insurance-related regulatory positions in Florida, most recently as the state's appointed insurance consumer advocate.

CONTEXT AND IMPORTANCE

Florida represents one of the United States' economic centers and is responsible for the fourth largest economy of all 50 states. Globally, Florida's GDP would rank larger than all but 16 countries in the world. While Florida may be known more for tourism and warm weather, it is also home to a thriving technology industry. Florida-based companies are leaders in many highly advanced industries such as aerospace and aviation, financial technology, and biotechnology. Blockchain represents one of these burgeoning industries in the State, and Florida is home to some very innovative companies in financial technology (or Fintech) space. According to GoodFirms, a software research and review platform, there are at least 36 Florida-based firms which specialize in blockchain development.[2]

Blockchain technology has enormous potential to transform the labor force, economy, and productivity of Floridians across a variety of industries. The use of blockchain technology could be transformative across several key sectors in Florida, including healthcare, energy usage, education, and government services. The blockchain industry represents a growing and diverse group of companies who are making inroads into disrupting not only the financial services industry, but multiple industries, by applying this technology in innovative ways. These companies are, in some cases, hindered by regulatory uncertainty or burdensome regulatory overhead. In other cases, they may be well on their way to profitability and growth. Many blockchain companies saw tremendous growth during the 2017-2018 wave of excitement around blockchain but have since had to pivot or re-focus their efforts to finding a niche within the blockchain industry.

As these companies continue to emerge it is important for the State of Florida to observe these market changes and anticipate what these organizations will need to thrive and grow in Florida. The task force's mission is to understand the blockchain industry and companies, both large and small, and to determine what Florida lawmakers and policymakers can do to support this growing sector of the economy. Ideas and initiatives that have already been implemented in other states and jurisdictions, such as a blockchain regulatory sandbox, special tax incentives, or public-private blockchain pilot projects are all considered in-scope for this study.

REQUIREMENTS

According to HB 1393 passed in the 2019 Legislative Session, the task force must develop a master plan and submit a report to the Governor, the President of the Senate, and the Speaker of the House of Representatives. The task force must present its findings to the Legislature within 180 days after the initial meeting of the task force. The requirements for the report are as follows:

a) Provide a general description of the costs and benefits of state and local government agencies using blockchain technology.
b) Recommendations concerning the feasibility of implementing blockchain technology in the state and the best approach to finance the cost of implementation.
c) Recommendations for specific implementations to be developed by relevant state agencies.
d) Any draft legislation the task force deems appropriate to implement such blockchain technologies.
e) Identification of one pilot project that may be implemented in the state.
f) Any other information deemed relevant by the task force.

[2] https://www.goodfirms.co/directory/state/list-blockchain-technology-companies/florida

A) GOVERNMENT IMPLEMENTATION

Governments and industry both rely on an ever-increasing set of databases that support multiple applications. These databases often have conflicting data and it can be difficult to determine which data is correct. Blockchain technology has immense potential to alleviate some of the challenges with managing these data sets. In 2017, the National Association of State Chief Information Officers (NASCIO), a national non-profit organization that represents state chief information officers (CIO), surveyed state CIOs about the extent to which blockchain technology is part of each state's agenda. Of the CIO's who responded, a majority said that they were investigating blockchain use in state government through informal discussions.[3]

STATE CHIEF INFORMATION OFFICERS SURVEY

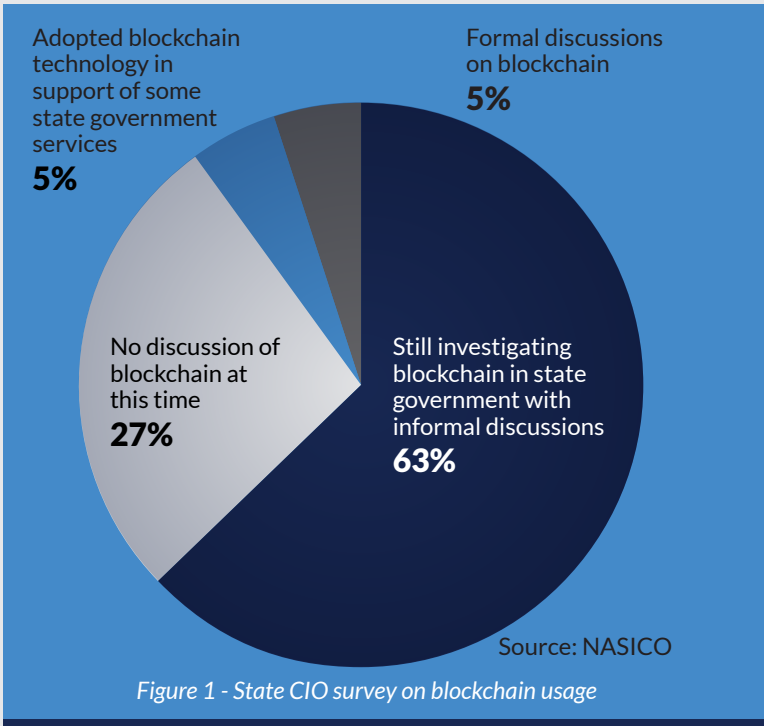

Figure 1 - State CIO survey on blockchain usage

GOVERNMENT APPLICATIONS

Blockchain adoption in government is seen as a promising method to improve transparency, prevent fraud, and establish trust in the public sector. The public sector's use of blockchain today is still very limited, and some of the barriers to adoption include technological aspects such as security, scalability, and flexibility. Additionally, there exists a lack of legal and regulatory support which contributes to the barriers in adoption. Despite these limitations, there are still many areas ripe for exploration for governments to adopt blockchain. The National Association of State CIOs issued a report titled "Blockchains: Moving Digital Government Forward in the States". The report discusses at

POTENTIAL USE CASES FOR STATE GOVERNMENT

Property	Encode and confirm transfer of property	
Financial	Transfer of currency, stocks, private equity, bonds, derivatives	Facilitate crowdfunding
Public Records	Managing the lineage of land titles, vehicle registries, business licenses, voter IDs, death certificates, proof of insurances	
Private Records	Managing and executing contracts, signatures, wills, trusts, escrows	
Physical Asset Key	Managing access to homes, hotel rooms, rental cars	

Source: NASICO

Figure 2 - Potential government use cases

[3] https://www.nascio.org/wp-content/uploads/2019/11/NASCIO20Blockchains20in20State20Government.pdf

least five potential areas where blockchain may assist governments, as shown in figure 4. NASCIO highlights that blockchain technology can assist with transactions, creating a necessary audit trail, authoring a decision, authenticating authority, and establishing a system of record. While these opportunities and use cases are promising, future research is needed to inform the best approach in blockchain adoption for government applications.

CURRENT IMPLEMENTATIONS

Blockchain technology has been applied to numerous government services and supply chains, but mostly in a proof-of-concept or pilot stage. Most of these early initiatives are implemented on a private blockchain, due to the need to have a restricted set of users which have rights to validate the transactions. Decisions regarding data and network size can be controlled through governance. The NASCIO study highlights a few of these pilots to integrate government services in a blockchain, and more of these projects are included in the following sections based on whether they exist at the Federal, State, or Local level.

Federal Government

At the Federal level, the U.S. Department of Treasury is piloting a blockchain-based letter of credit system to track federal grants more efficiently. The Treasury Department is working with the National Science Foundation (NSF) to tokenize the details and payments in federal letters of credit. By tokenizing letters of credit, the NSF can track the payments and ensure the recipients meet the terms of the grant. The department is leveraging a permissioned, enterprise version of Ethereum and has developed the platform in collaboration with San Diego State University, Duke University and the NSF.[4]

BLOCKCHAIN PILOTS FOR GOVERNMENT

Property Deed Recording	Cook County Recorder of Deeds will be the first land titling office in the US to record property transfer on the blockchain. The goal is to expand the scope of the program, the extensibility of the solution while also providing the solution to other Illinois county recorders.
Academic Credentialing	Partnering with the University of Illinois to issue academic credentials and transcripts on a distributed ledger. Initial MVP focuses on credential verification process with the eventual goal of recording the full transcript of all in-state institutions on a distributed ledger.
Health Provider Registries	Healthcare payers spend over $2.1b a year reconciling a few discrete health provider data issues by CMS, DEA and state boards. Povider data, starting with the state licensing board would be entered onto a distributed ledger acting as a single source of truth dataset for providers and payers.
Energy Credit Marketplace	Energy producers are issued credits when producing "green" energy. Pilot program would include standing up a marketplace where REC could be traded, and granularly divisible. Potential to improve traceability and liquidity for renewable energy, providing better "green" energy policy outcomes.
Vital Records	Vital records such as birth events to be placed on a distributed ledger. Birth records allow the state to issue a digital identity tied to a person's birth that could be managed on a distributed identity ledger, adding attributes to it as they interact with different agencies throughout their lifetime.

Source: NASICO

Figure 3 - Blockchain pilots in government today

The U.S. Food and Drug Administration (FDA) announced the start of a pilot project under the Drug Supply Chain Security Act (DSCSA) to assist the FDA and members of the pharmaceutical distribution supply chain in the development of a program to trace certain prescription drugs as they are distributed within the United States. Under this program, the FDA will work with stakeholders to explore and evaluate methods to enhance the safety and security of the pharmaceutical supply chain. Participation in the DSCSA Pilot Project is voluntary and will be open to supply chain members to apply to the program.[5]

State Government

The State of Wyoming in 2019 enacted a series of blockchain-enabling laws, 13 in total, to provide a legal framework that enables blockchain technology to grow in the state. Wyoming is positioning itself as the "Delaware of digital asset law" by passing these laws to promote the

[4] https://www.ledgerinsights.com/us-treasury-tokenizes-federal-grants-using-blockchain/

[5] https://www.federalregister.gov/documents/2019/02/08/2019-01561/pilot-project-program-under-the-drug-supply-chain-security-act-program-announcement

blockchain industry in the state. The Wyoming legislation creates a fintech sandbox to provide regulatory relief to companies from existing laws for up to 3 years. In addition, a new state-chartered depository institution was authorized to provide basic banking services to blockchain and other businesses. The laws also create a money transmitter classification which exempts crypto-to-crypto transactions, legally recognizes both uncertified and certified blockchain shares of stock, and exempts utility tokens from its state securities laws.[6]

The State of West Virginia incorporated blockchain voting in the election of 2018 with their absentee ballot process. The state partnered with Voatz, a Boston-based blockchain smartphone application, to allow 144 West Virginian voters to cast their ballots. The application uses multifactor authentication and facial recognition software to authenticate users, however it did receive scrutiny after it was reported that there was an attempt to hack the software. Although the hacking attempt on West Virginia's midterm elections was apparently unsuccessful, it demonstrates that electronic voting presents a substantial hacking target. [7]

The Illinois Blockchain Initiative was launched in early 2017. The goal of the initiative was to determine if blockchain technology can be leveraged to create more efficient, integrated and trusted state services. In collaboration with the State of Illinois, the Office of the Cook County Recorder of Deeds announced that it would conduct a Pilot Program to study how blockchain technology could be implemented into Illinois land records. The Cook County project designed a blockchain real estate conveyance software workflow that can be a framework for the first legal blockchain conveyance in Illinois. [8]

Local Government

The City of Dublin Ohio began a project in 2019 to provide digital identities for government services using blockchain technology. The project has the goal of allowing citizens to register for a secure online identity with the city to reward community volunteerism and to keep track of public sentiment using a blockchain-based polling system. Dublin Ohio has proposed a "simple ledger token" to be issued by the city to incentivize citizens to sign up for the digital identity and encourage community involvement.

Florida's Seminole County Tax Collector office is setting up a pilot program for a digital ID using blockchain technology. The goal of the project is to aggregate all identification forms that are housed in different state authorities and deliver them to the end-user in a digital format on a smartphone. The blockchain identity project will use biometric data for authentication and include data from driver's license, voter registration, property records, and motor vehicle systems.

[6] https://www.forbes.com/sites/caitlinlong/2019/03/04/what-do-wyomings-new-blockchain-laws-mean/#186a4e515fde
[7] https://qz.com/1574671/the-fbi-is-investigating-west-virginias-blockchain-based-midterm-elections/
[8] https://illinoisblockchain.tech/blockchain-cook-county-final-report-1f56ab3bf89

B) FEASIBILITY OF BLOCKCHAIN IMPLEMENTATION

The task force recognizes the importance of developing workforce and educational initiatives to support the blockchain industry. Developing a deep pool of talented blockchain practitioners will require collaboration between both industry and academia. In order to build blockchain-based solutions, individuals need to understand the technology, including its potential benefits and limitations, to provide reliable guidance. Developing this expertise should include technical training as well as ongoing collaboration between the development and technology communities.

Blockchain technology incorporates multiple concepts of computer science which requires a diverse set of skills for the workforce. Blockchain professionals remain in high demand, especially for staff and middle manager positions. Companies have found that blockchain professionals experience higher attrition rates and are actively recruiting IT professionals in those roles by offering higher salaries and benefits.[9] Blockchains rely heavily on advanced mathematical concepts such as cryptography, secure hashing algorithms, which not all computer programmers may have exposure to. In addition to advanced mathematics, blockchains incorporate concepts covered within the social sciences. Concepts such as game theory and incentive structures also underpin the mechanics of how a blockchain should operate. As a result of the multiple disciplines of understanding required by blockchain engineers, a shortage remains in the workplace of qualified candidates to fill these roles.

BLOCKCHAIN WORKFORCE NEEDS

Blockchain technology represents an interdisciplinary field which spans computer science, law, finance, and business. Blockchain databases require a new workforce of engineers, business analysts, and project managers who can architect, build, and deploy these systems.

As a financial technology, blockchain implementations require deep understanding of the business processes and policies related to the implementation. FinTech or Financial Technology is an important component for academic institutions to incorporate into their curriculums.

Currently there are several frameworks which are popular for developing blockchains. The first blockchain, bitcoin, was written the C++ programming language, a language which has been in use since the 1970's. C++ is preferred for some blockchains due to its properties as a strongly static typed, high-speed, compiled language. Another variant of the C programming language is C#, which is very similar to Java or C++, but is more accessible to entry level programmers. The Go programming language, also known as Golang, was developed by Google and has emerged as one of the most popular languages for building blockchains, including Hyperledger Fabric, the leading enterprise blockchain framework. JavaScript has also emerged as a popular framework for developing blockchains. JavaScript is an interpreted programming language and has a low difficulty level for programmers to

[9] https://www.computerworld.com/article/3387441/blockchain-jobs-remain-unfilled-while-skilled-workers-are-being-poached.html

learn. For developing smart contracts, the Solidity programming language was created for Ethereum and is the most popular framework for developing rules-based, executable code within a blockchain.

BLOCKCHAIN ACADEMIC PROGRAMS

Universities worldwide have recognized the importance of incorporating blockchain into their curriculum. The Florida Blockchain Task Force met with several representatives from universities in Florida to understand how these programs are evolving. The University of Central Florida has developed a FinTech program as a joint venture between the College of Business Administration and the College of Engineering and Computer Science. UCF is proposing a master's degree program in FinTech, a 2-year program which is split between 5 finance courses and 5 computer science courses. At the undergraduate level, the UCF FinTech program has a 2-week Blockchain fundamentals course which includes building a demo blockchain, and at the graduate level is a proposed course dedicated to Blockchains and Smart Distributed Contracts.[10] The task force also met with representatives from the University of South Florida. USF began their blockchain initiative in 2017 and has offered graduate level courses in both Cryptocurrencies and Fundamentals of Blockchain Technology since the beginning of 2018.

Collaboration between industry and academia is critical for educational institutions to develop blockchain curriculums. While there is growing demand for blockchain courses at universities, there remains a shortage of doctoral or graduate level teachers for these courses. Universities may need to work around this shortage by offering guest lecture sessions with blockchain experts who have industry experience but do not possess a doctorate level degree.

ECONOMIC OPPORTUNITIES AND RISKS IN BLOCKCHAIN

Technological innovations are often regarded as a primary driver of long-term economic growth, and the pace of innovation continues to grow faster. With the introduction of the Florida Blockchain Task Force, the state has acknowledged the potential of blockchain technology to provide longstanding growth and economic activity for Florida businesses. Blockchains have the potential to greatly expand opportunities for economic exchange and collaboration by reducing the need to rely on intermediaries and the friction caused by them. However, Blockchains protocols are hard to integrate and hard to include in projects. Blockchain implementations also lack a standardization and can be prone to software glitches and cyberattacks. The blockchain technology industry has seen notable growth in venture capital investments since the introduction of the first blockchain in 2009. Beginning in 2017, venture capital investments topped $1 billion into blockchain startups and companies. The year 2018 saw a large boost in investment with a 400% increase in venture funding or over $4 billion raised. Blockchain technology companies and startups have raised $783 million during the first half of 2019.[11] The blockchain market is expected to grow to $23.3 billion by 2023.[12]

BARRIERS TO ECONOMIC GROWTH IN BLOCKCHAIN

The current sets of laws which are applicable to blockchain companies vary based on jurisdiction. Within Florida, the Office of Financial Regulation within the Department of Financial Services treats some blockchain

[10] https://thefloridachannel.org/videos/12-13-19-florida-blockchain-task-force/
[11] Global Blockchain Startup Financing History - https://www.statista.com/statistics/621207/worldwide-blockchain-startup-financing-history/
[12] https://www.marketsandmarkets.com/Market-Reports/blockchain-technology-market-90100890.html

companies as money services businesses (MSB). At the Federal level, blockchain companies may fall under regulation from FINCEN, SEC, IRS, and other departments. While each business may be impacted by regulation in various ways, there exists an overall regulatory uncertainty within the blockchain industry due to some companies being classified as banks or traditional money institutions. The costs of compliance for Know-Your-Customer and Anti-Money-Laundering regulations have been cited as a barrier to the growth of blockchain companies, particularly cryptocurrency exchanges and other cryptocurrency focused businesses.

C) RECOMMENDATIONS FOR IMPLEMENTATION

Blockchain, as with most new and emerging technologies, can have many definitions. However, one may classify a blockchain as a chain of transactions linked by cryptographic signatures that are unchangeable over time. These transactions are stored in type of ledger which exists across multiple locations. The transactions are generally unchangeable across these locations and are decentralized in terms of ownership and control. Thus, a blockchain is a distributed ledger or a decentralized database that permanently records transactions between users without requiring a third-party for authorization. While blockchain technology is a type of financial technology, it does not represent the entire "Fintech" landscape of technologies, nor do blockchains require the involvement of cryptocurrencies. The following section seeks to define the commonly used terms in the blockchain industry.

FINTECH

Fintech, a portmanteau of 'financial technology' is used to describe new technology that seeks to improve and automate the delivery and use of financial services. When fintech emerged as a term, it was initially applied to the technology within back-end systems of established financial institutions. Since then, there has been a shift to more consumer-oriented services. Fintech now includes multiple industry sectors such as education, retail banking, fundraising and nonprofit, and investment management industries.[13] Fintech also includes the development and use of newer technologies such as blockchain and cryptocurrencies. The blockchain segment of fintech has taken lead as one of the more promising aspects of this technology.

CRYPTOCURRENCY

A cryptocurrency is a digital or virtual currency built with cryptographic protocols that make transactions secure and difficult to fake. Cryptocurrencies are built with blockchain technology, and are generally not issued by any central authority, rendering them immune to government interference or manipulation. Cryptocurrencies face criticism for several reasons, including their use for illegal activities, exchange rate volatility, and vulnerabilities of the infrastructure underlying them. However, they have also been praised for their portability, divisibility, inflation resistance, and transparency. Cryptocurrencies are often associated with public blockchains, as they provide the underlying economic incentives for public blockchains to exist securely.

[13] Financial Technology - https://www.investopedia.com/terms/f/fintech.asp

There is some debate whether a blockchain can exist securely without a cryptocurrency or token to provide an incentive for the network to be secured. Ultimately, the distinction into the difference between a blockchain and a cryptocurrency comes down to semantics.

PUBLIC AND PRIVATE BLOCKCHAINS

A public blockchain is a permission-less system in which anyone can join in the network. Participants can read, write, or participate with a public blockchain. Public blockchains are decentralized, which means no single entity has control over the network, and the data within transactions cannot be altered once validated on the blockchain. The two most popular public blockchains are Bitcoin and Ethereum.

A private blockchain is a permissioned blockchain. Permissioned blockchains place restrictions on who can participate in the network and how transactions may be processed. Private blockchains tend to be built with identity management tools and a modular architecture. Popular private blockchains examples would be Hyperledger, R3 Corda, and Hashgraph.

One factor that should be considered when discussing public and private blockchains is the idea of an open blockchain and closed blockchain. It is important to consider both parameters when discussing particular use cases.

SMART CONTRACTS

A smart contract is a self-executing contract with the terms of the agreement written into lines of code. The code and the agreement exist across distributed, decentralized blockchain network. The code in a smart contract controls the execution, and transactions are trackable and irreversible. Smart contracts allow trusted transactions and agreements to be carried out among disparate, anonymous parties without the need for a central authority

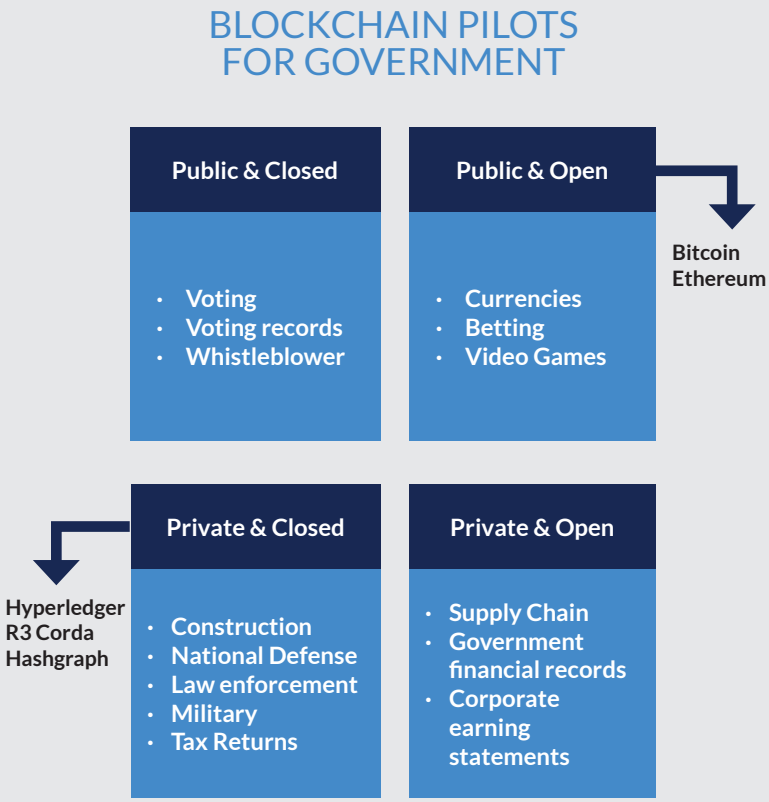

Figure 4 - Public and Private Blockchain Use Cases & Platforms

DISTRIBUTED LEDGER TECHNOLOGY

A distributed ledger is a broad term that is used to describe a type of database that is updated independently by nodes in a network. The terms 'blockchain' and 'distributed ledger' are synonyms and are often used interchangeably, however it may be helpful to classify blockchains as a specific type of distributed ledger. A distributed ledger of database is different from a centralized database and maintained by authorized administrators. Instead of the database or ledger getting updated through a central authority, each participant in the network processes each transaction independently. Distributed ledgers each have rules for verifying and approving transactions. These rules are called consensus rules, and they govern how the protocol operates.

CONSENSUS ALGORITHMS

A consensus algorithm is a procedure or protocol through which all the peers of a blockchain network agree on the present state of the distributed ledger. Blockchain consensus algorithms ensure each block added to the chain is agreed upon by all the nodes in the network. Consensus algorithms achieve reliability and establish trust between unknown peers in a distributed computing environment. There are several types of consensus algorithms used in blockchains, however the two most commonly used are Proof-of-Work (PoW) and Proof-of-Stake (PoS). In this way, consensus algorithms achieve reliability inThere are two main consensus algorithms used in blockchains: Proof of work and proof of stake.

PROOF-OF-WORK

Proof-of-Work (PoW) was the first consensus algorithm to be used in a blockchain and is employed by Bitcoin and many other cryptocurrencies. The Proof of Work algorithm is an essential part of the mining process.

PoW mining involves attempting to solve mathematical problems using a method called hashing, so more computational power means more attempts per second. Miners with a higher hash rate have better chances to find a valid solution for the next block added to a blockchain. The PoW consensus algorithm makes sure that miners are only able to validate a new block of transactions and add it to the blockchain if the distributed nodes of the network reach consensus and agree that the block hash provided by the miner is a valid proof of work.

PROOF-OF-STATE

The Proof-of-Stake consensus algorithm was developed in 2011 as an alternative to PoW. Although PoS and PoW share similar goals, they present some fundamental differences and particularities. Especially during the validation of new blocks.

Proof of Stake consensus algorithm uses a mechanism to validate blocks according to the stake of the participants. The validator of each block is determined by holding a cryptocurrency itself and not by the amount of computational power allocated. PoS blockchains are secured by a pseudo-random election process that considers a validator's stake and the coins age.

D) BLOCKCHAIN TECHNOLOGY LEGISLATION

The Task Force's fourth meeting was largely focused on legislative updates from the 2020 Florida Legislative Session. The task force provided a summary of HB 1391(2020), which outlines the Financial Technology Sandbox proposal, and SB 1870(2020), the Senate companion bill to this legislation.

The Financial Technology Sandbox allows Florida to follow in the footsteps of states like Wyoming and Arizona by including a special regulatory sandbox to attract blockchain businesses to be established within the state. The legislation created a special program to allow a person to make an innovative financial product or service available to consumers as a money transmitter or payment instrument seller, during a sandbox period through a waiver of general laws or rule requirements. The bill also established the Florida Digital Service within the Department of Management Services and promotes interoperability standards across State applications. The task force finds that the Financial Technology Sandbox bill is a positive step forward for encouraging the use of innovative financial products across Florida.

FUTURE IMPLEMENTATION

The Task Force understands that while there are many promising use cases for blockchain technology to be applied to government services, there needs to be a better understanding of the limitations of this technology. Like any database, a blockchain depends on quality data going in to achieve optimal results. The reliability of records stored in a blockchain depends on how they are originated. Applications seeking to use a blockchain solution must first address any underlying issues with the data quality and how those records are created from the source system.

The Task Force recommends taking proactive approach to organizing the next steps. There should be a push for new initiatives beyond the task force that continues to study how blockchain can be used in state agencies, and further develop the industry in the State of Florida. As a pilot project is selected, the criteria for determining the project should leverage both the latest technology and lessons learned from earlier examples. There also should be a focus on implementing a blockchain in a modular fashion, which can be extended and built upon later without relying on a single architecture.

E) PILOT PROJECT RECOMMENDATION

The blockchain task force has a goal of identifying a project or projects which may benefit from a blockchain implementation in the State. This project would include a use case for state agencies to improve services for citizens or businesses while leveraging blockchain technology. The Department of Financial Services may be an ideal candidate to host this project in collaboration with the Office of Information Technology and other key stakeholders, including other pilot agencies. The pilot can establish the groundwork for implementing the first live production blockchain in the State of Florida. The task force recognizes that the pilot may not necessarily serve to replace a mission-critical application within the state, but instead serve as a research and development project to demonstrate and prove the strengths of blockchain, rather than replace an existing State of Florida application.

DEPARTMENT OF HIGHWAY SAFETY & MOTOR VEHICLES

One of the more promising aspects of blockchain technology is in the use of digital identities and motor vehicle insurance coverage. Blockchain has the potential to underpin or supplement identity management systems such as DHSMV's mobile Driver License or Florida SmartID which will result in more accessible, secure, and reliable services to Floridians. Florida's DHSMV has over 17 million drivers licenses currently managed in centralized databases. A pilot project for DHSMV to explore the usage of blockchain technology may show a strong use case for incorporating this technology to address a variety of challenges. Centralized government databases supported by legacy software contain many single points of failure and presents a treasure trove for hackers to obtain personally identifiable information on millions of Floridians. A smartphone-based identity solution incorporating blockchain may provide additional accessibility to the poorest individuals across the state who lack the financial means to obtain proof of identity and insurance. Additionally, the current digital identity landscape is increasingly fragmented. Citizens must manage various identities associated with their usernames across different government websites and platforms, and there is no standardized way to use the data generated by one platform on another platform. The lack of a unified identity system contributes to fraud and makes it easier for criminals to create fake identities. Advances in cryptography and blockchain technology can allow new identity management systems to reduce fraud and identity theft.

F) ADDITIONAL INFORMATION

INDUSTRY APPLICATIONS

Blockchain can be applied to many challenges across multiple industries, including supply chain management, energy, and insurance. While many of these industry projects are in proof-of-concept phase, it is important to be aware of these efforts to incorporate blockchain into core business processes.

The supply chain industry has looked at blockchain to support tracking the movement of goods, services, and information as part of the supply chain management process. Walmart is currently using blockchain technology to create a food traceability system based on the Linux Foundation's Hyperledger Fabric. Along with IBM, the retail chain is testing two proof-of-concept projects to examine the applications for the proposed system. Through the blockchain, Walmart can trace the origins of over 25 products from five different suppliers.[14]

The energy sector has embraced blockchain to support the usage of clean energy. The Energy Web Foundation (EWF) launched its Energy Web Chain, a blockchain platform specifically created for the energy industry. EW Chain is intended to initially support applications associated with electric vehicles, renewable energy credits, and peer-to-peer energy trading. EWF also is preparing to migrate other applications into EW Chain that would allow customers to track the source of the energy they consume (i.e., energy from renewable sources) and better integrate distributed, small-scale energy and demand response resources into the grid. Currently, EW Chain comprises ten validator nodes hosted by companies including Centrica, Duke Energy, and E.ON. [15]

AAIS (American Association of Insurance Services), an insurance advisory organization, has developed the openIDL blockchain platform for addressing auto, homeowners, and flood insurance. AAIS partnered with IBM to build a platform on the open source Hyperledger Fabric solution. AAIS serves as the openIDL administrator to provide governance for the blockchain platform within existing insurance regulatory frameworks. [16]

[14] https://cointelegraph.com/news/walmarts-foray-into-blockchain-how-is-the-technology-used

[15] https://www.natlawreview.com/article/blockchain-continues-to-make-headway-energy-industry

[16] https://aaisonline.com/aais-collaborates-with-ibm-to-transform-insurance-regulatory-reporting-using-blockchain

G) TASK FORCE MEETING MINUTES

MEETING 1

Date: September 23, 2019

Agenda

I. Comments from Chief Financial Officer Jimmy Patronis
II. Member Introductions
III. Presentation: Overview of Chapter 2019-140, Laws of Florida
IV. Consideration and Adoption of Task Force Bylaws
V. Election of Task Force Chair and Vice Chair
VI. Presentation: Government in the Sunshine Training
VII. Review Proposed Schedule
VIII. Open Discussion
IX. Other Business & Public Testimony
X. Adjourn

Call to Order
Meeting called to order and welcome at 1:02 p.m. by Meredith Brock Stanfield

Roll Call
Roll was called at 1:04 p.m. by task force staff

Members present: All appointed members present
Ron Brisé
Charles Ghini
Director Ken Lawson
Woody Pollack
Director Terry Rhodes
Secretary Jonathan Satter (Arrived after roll call)
Mayor Francis Suarez (via telephone)
Robin Westcott (via telephone)

I. Comments from Chief Financial Officer Jimmy Patronis at 1:05 p.m.:

I'm proud of the task force that has been assembled. Governor DeSantis, President Galvano, and Speaker Oliva have tapped many talented stakeholders to serve our state.
I felt it was important to address this body at its first meeting so that I could share my hopes for what you can accomplish.

This is a great time for technology in this state. Florida's leaders, myself included, support technology growth and innovation, which ultimately grows our economy and increases our competitiveness. That's

why I worked to establish this task force within my agency. I want the next generation of entrepreneurs and technology leaders from around the world to come here, to study here, and to grow here. Blockchain proponents say this technology will be as transformational as the internet. If this is true – we need to make sure Florida is ready.

It's up to you to study how we can foster and expand blockchain to make Florida a leader. As Florida's CFO, I am especially interested in how blockchain can help fight fraud and scams. How can we use blockchain and automation to solve the complications that come from a technology-driven economy? That is, how do we fight fraud and abuse by using technology? Blockchain can serve as an objective, trustworthy, third-party mediator in almost any transaction. I see such potential to use technology to minimize the risks and costs of data breaches and fraudulent technology. My hope for the future of blockchain is that we'll see personalized, secure digital IDs become a real thing.

It will take a great deal of collaboration, innovation, and initiative across industries and technology providers to make any of this a reality. But with the establishment of this task force, Florida takes the important first step toward the future.

II. Member Introductions at 1:08 p.m.:

Members were asked to introduce themselves, comment on their professional background, their interest in blockchain technology, and what they hope to gain from the work of the task force. The following provides summary comments from members.

Ronald Brisé: Mr. Brisé discussed interest in using technology to better lives, commerce and to manage threats.

Charles Ghini: Charles Ghini illustrated the importance of a partnership between the public and private sectors, the necessity for a competent workforce, and to focus on solving the right problems.

Director Lawson: Director Lawson has interest based on transparency and to develop strategies to fight fraud, while educating the workforce and creating opportunities for them to grow. Director Lawson was present when the Governor and CFO just announced their joint Finn-tech legislation, which could build on findings from this task force.

Woody Pollack: Mr. Pollack would like to continue growing innovation in the state of Florida and to attract businesses and individuals from other states.

Director Rhodes: Director Rhodes is looking to continuing her focus of modernizing the Department of Highway Safety and Motor Vehicles. The idea of blockchain technology is one that provide consumer ease of access as well as security.

Secretary Satter: Secretary Satter described a focus on innovation and how it may help Department of Management Services and its responsibilities, as well as the Division of State Technology to support other agencies.

Mayor Suarez: Mayor Suarez seeks to understand the opportunities these new technologies present. Some areas of interest are: transparency, data security, decentralization and what regulation may look like in the future.

Robin Westcott: This technology presents the opportunity to both create new processes while also speeding up processes and provide safeguards to consumers. It is one that needs both the public and private sector to be successful.

III. Presentation: Overview of Chapter 2019-140, Laws of Florida at 1:22p.m.

This was provided by Meredith Stanfield, Director of Legislative and Cabinet Affairs for CFO Patronis. Members received an overview of the legislation that established this task force, its mission, duties, and goals.

Note: Blockchain E-Mail established for member communication and to receive questions regarding the task force – blockchain@myfloridacfo.gov

IV. Consideration and Adoption of Task Force Bylaws at 1:29 p.m.

Members were provided the bylaws in advance of the meeting to allow time for review

Motion by Director Ken Lawson, Second by Ron Brisé
Vote: All in favor, 0 opposed, 0 abstained
Resolved: Motion carried

V. Election of Task Force Chair and Vice Chair at 1:30 p.m.

Director Ken Lawson nominates Mr. Ron Brisé as Chair, who consented to the nomination
Vote: All in favor, 0 opposed, 0 abstained
Resolved: Motion carried, Ron Brisé is elected Chair of the task force.

There were no nominations for Vice Chair, but Director Ken Lawson offered to serve as Vice Chair
Vote: All in favor, 0 opposed, 0 abstained
Resolved: Director Lawson is elected Vice Chair of the task force.

VI. Presentation: Government in the Sunshine Training at 1:32 p.m.

Peter Penrod, Department of Financial Services General Counsel, provided the task force with a presentation on public records and public meetings requirements.

VII. Review Proposed Schedule at 1:40 p.m.

The task force plans to have monthly meetings in the upcoming 180 days for a total of 6 meetings. We anticipate that the next meeting may be a half-day meeting to allow for input from stakeholders.

VIII. Open Discussion at 1:41 p.m.

The floor was opened for additional comments from members. No additional comments were provided.

IX. Other Business & Public Testimony at 1:42 p.m.

The floor was opened for other business and public testimony. The following members of the public provided comment, which is summarized below.

Ms. Rosa Shores, Co-Founder and CEO of Blockspaces
- Advocated on behalf of blockchain technology for startups, as well as the potential uses at the state level
- Teaches blockchain courses and offered their resources to the task force

Mr. Samuel Armes, Executive Director of Florida Blockchain Business Association
- Working with Seminole County to create a digital ID
- Eager to see where the regulatory landscape surrounding blockchain will move

Mr. Jim St. Clair

- Focus on health care, social services, social welfare – as well as decentralized identity and data management
- Suggested that using blockchain for data management can be revolutionary, while adhering to the same standards that state agencies are used to

Mr. Paul Godfrey, Attorney at the Law Office of David Dougherty

- Studies and works on distributed consensus technology, and recommends that the task force works with the Florida Courts Technology Commission

X. Adjourn at 1:49 p.m.

MEETING 2
Date: October 28, 2019

Agenda

XI. Introduction
XII. Adoption of Minutes
XIII. Presentation: Different types of blockchains, both public and private, and different consensus algorithms
XIV. Sector Presentations on current industry, growth and development opportunities
XV. Open Discussion
XVI. Other Business & Public Testimony
XVII. Adjourn

Call to Order
Meeting called to order and welcome at 1:02 p.m. by Chair Ron Brisé

Roll Call
Roll was called at 1:04 p.m. by task force staff

Members present:
Ron Brisé
Charles Ghini
Director Ken Lawson
Woody Pollack
Director Terry Rhodes
Secretary Jonathan Satter
Robin Westcott

I. **Introduction** at 1:01 p.m.

The Chair speaks to his excitement for the full agenda and for the great presenters from around the world.

II. **Adoption of Minutes** at 1:03 p.m.

Members were provided the bylaws in advance of the meeting to allow time for review. There is a motion from Secretary Satter to adopt the minutes, and a second by Woody Pollack. The minutes are adopted.

Motion to adopt minutes by Secretary Jonathan Satter, Second by Woody Pollack
Vote: All in favor, 0 opposed, 0 abstained
Resolved: Motion carried

III. **Presentation: Different types of blockchains, both public and private, and different consensus algorithms** at 1:06 p.m.

Task force member **Robin Westcott** provides a presentation on the different types of blockchain and different consensus algorithms. The presentation is focused on providing basic information on blockchain technology, and how it can be used by consumers across the country.

IV. Sector Presentations

Dan Blaner – Amazon Web Services at 1:28 p.m.

- Dan delivered a presentation that focused on the importance of trust, different uses of blockchain, challenges with blockchain solutions, and the importance of education in this area.
- Dan discusses different use cases across various industries, such as banking, logistics, payroll and government uses. He also describes the challenges with blockchain solutions, including: setup, scalability, managing the data, and costs of using the technology. Many of these challenges are alleviated by educating

Elizabeth Escobar-Fernandes – Duke Energy at 1:45 p.m.

- Elizabeth presented the pros and cons of blockchain technology and how it is being used in the energy industry. The presentation also focused on how the industry is focusing on consumption levels of energy and how blockchain is utilized in this endeavor. Elizabeth related blockchains capabilities in this area to the energy industry's focus on renewable energy and electric solutions.

Questions after the presentation:
Q1: Robin Westcott asks how the use cases include regulators perspective and how the energy industry is working with the regulators.
Answer: Elizabeth discusses the importance of education and how that will help regulators – who will be more familiar with the technology.

Q2: Chair Ron Brisé discusses the storage potential of blockchain and the tracking capabilities as it relates to solar power and electricity and asks if Elizabeth has seen state commissions studying this.
Answer: Elizabeth mentions the Silicon Valley Power use case – a pilot, that is planning to release a production of scale that other utilities would be able to utilize.

Melanie Cutlan – Accenture Operations at 1:59 p.m.

- Melanie presents on how blockchain technology is being used, governed, and the focus of Accenture: Financial Services Infrastructure, Supply Chain, Digital ID
- Melanie highlights the data sharing goal of corporations, and how blockchain enables data sharing to the extent that both parties are comfortable with. Another highlight is the ability to fight fraud with blockchain by empowering individuals, who are able to consent to use of their data.
- Charles Ghini asks if Melanie sees a future of blockchain connectivity for validation purposes.
- Melanie says that if the information and service provided by the blockchain is quality, others will want to connect.
- Chair Brisé says that CFO spoke about digital identity and asks how close we are to a digital identity.
- Melanie suggests that it is already being used. Melanie says that the waiting is in order to develop and decide what the appropriate uses are.

Matthew Lahey and Paul Hasse – NGA Human Resources at 2:25 p.m.

- Unfortunately, there were connectivity issues to Paul – who was in London at the time. The presentation was difficult to understand because of this, and the Chair moved to attempt this at another time.

Ken Thomas and Chris Estes – Ernst & Young at 2:33 p.m.

- Ken Thomas discusses how blockchain for public finance will positively change how public resources are managed and how services are delivered. Ken introduces Chris, who has a unique perspective as a former CIO for a state government.
- Chris discusses the "ABC's" of blockchain – accelerate outcomes by focusing on old technology, balance security with risk, and to collaborate across the ecosystem within a chain.

- Ken goes on to suggest applications for blockchain such as: education, allocation of dollars – particularly for disaster response, and for communication between government agencies and entities.

Ockert and Michael Loubser – Core Group at 2:51 p.m.

- Ockert gave a presentation on blockchain technology, its potential, as well as the added value of the Core blockchain network. Accessibility to the network, and the ability to communicate with other networks are keys to the Core blockchain network.
- Ockert discussed the interest of governments and businesses to share data, and how blockchain networks enable this in the safest manner possible.

Rosa Shores and Gabe Higgins – BlockSpaces at 3:12 p.m.

- Rosa gave a presentation that illustrated the history of blockchain in Florida, which began with a focus on bitcoin and has expanded to a sector filled with collaboration. Rosa explained that the technology is growing rapidly and described some of the blockchain startups.
- At 3:19 p.m., Director Lawson asked Rosa what her recommendations would be to help enable blockchain growth.
- Rosa suggested that each industry is at a different technological stage, and that blockchain is entering their markets at different times. Rosa suggested that the best thing that Florida can do to help grow in this space is to educate developers to keep the talent here in the state. In Rosa's slide, she mentions that "there are now 14 job openings for every 1 blockchain developer" (Source: TechCrunch).
- At 3:22 p.m., Chair Brisé asked what our education system can do to facilitate this effort.
- Rosa suggested that universities across the state, such as University of Florida and Syracuse University have begun to offer classes for blockchain. Rosa also mentioned that because the technology is growing so rapidly, it is difficult to develop a curriculum that will be relevant for the coming years.

* At 3:29 p.m., Chair Brisé pauses the presentation to move to a time specific presentation from Rajesh Kandaswamy, a Chief of Research for Gartner.

Rajesh Kandaswamy – Gartner at 3:31 p.m.

- Rajesh discusses the current state of blockchain use in enterprises, the characteristics of early projects and the lessons from early adopters of blockchain.
- Rajesh shows data that illustrates enterprises from all industries investing in proof of concepts and pilots. He also describes what the purpose of the investments are – such as customer experience and cost efficiency projects.
- The final focus is on the lessons learned from early adopters of blockchain, with findings of blockchain being ready for production, but only for limited use. Rajesh said that some challenges are:
    - getting all parties to work together,
    - securing commitment and providing value, and
    - maturity, reliability, performance and scalability of technology solutions, as well as
    - skills availability, and
    - regulators working with innovators in this space to guide them in the right direction.

At 3:56 p.m., Chair Brisé reverts to Rosa Shores, Gabe Higgins and Samuel Armes – who were presenting prior to the Gartner presentation. Chair Brisé asks if the task force is amenable to having Samuel Armes present and then moving to a panel from the Florida based groups.

Samuel Armes – Florida Blockchain Business Association at 3:57 p.m.

- Samuel discusses who is taking the lead in the regulatory space (local, state, or federal governments) as well as the regulatory environment in Florida and other states.

- Sam suggests that there are mixed definitions of blockchain technology and currency, making it difficult for new businesses to move forward in this space. Sam describes other states that have created regulation around blockchain – and the pros and cons of this. He suggests that early regulators, such as New York, have created a landscape that makes it extremely expensive to enter the blockchain technology market and that many companies have fled to other states because of this.

John Cooney – FIS at 4:11 p.m.

- John described FIS' experience with use cases, how FIS was able to take in the vast amount of information on blockchain technology, and how to bring that education to the community. John also discussed FIS' experience with choosing use cases. He suggested to look at sectors that are being invested in already as well as areas with higher amounts of friction to progress. John said that these areas are ones that typically are held back by data exchange and may be good candidates for blockchain innovation. For agencies, John suggested that data sharing between agencies and transparency for consumers may be a good place to start.

Panel begins at 4:18 p.m. – The panel is intended to answer questions from the task force and includes Rosa Shores and Gabe Higgins from BlockSpaces, Samuel Armes from Florida Blockchain Business Association and John Cooney from FIS.

- Q1: Charles Ghini asks what the incentive is for a public blockchain network.
- Gabe Higgins responds, suggesting that parties that are incentivized by the same thing – data, transactions, information – are helped by a collaborative effort that blockchain networks offer.
- Samuel Armes responds offering up the idea that there are contrasting perspectives on whether the blockchain networks need currency to be decentralized.
- Task Force member Robin Westcott offers up an answer to Charles' question, suggesting that once a problem is identified, groups should gather together to collaborate and find a solution that benefits all of them.

- Q2: Charles Ghini follows up with another question – How can we ensure that the benefit of the blockchain network is enough to ensure that funding and maintenance of the network is available?
- John Cooney responds suggesting that the distinction between public and private blockchains is important, and that if a service or information is provided from the blockchain network, a subscription fee is used to fund the network.

- Q3: Woody Pollack asks what the worst thing Florida could do to stifle the innovation? Woody also asks what the best thing for the state to do to enable growth?
- Samuel Armes suggests that the market is growing without any intervention from government. However, clarity would improve the ability to navigate the obstacles that businesses may face.
- Rosa suggests that a statement from the regulators would be helpful and give confidence to investors in the state.

- Q4: Director Rhodes said that she is interested in what is being done in Seminole County regarding digital ID and credentials.
- Samuel Armes is working with Seminole County on this project of creating a digital ID and says that ease of use is the biggest benefit and focus of the project.

- Q5: Chair Brisé brings up the previously discussed potential barriers to entry and to growth that blockchain faces, such as banking, investing and education. He goes on to ask what other barriers may be in place that could be addressed from a regulatory or legislative change.
- John Cooney says that merchant acceptance is a current barrier.

- Q6: Chair Brisé asks for ideas to address the obstacles mentioned above.
- Samuel Armes says that collaboration is important, as well as rhetoric from regulators speaking to blockchain users' concerns.
- Rosa Shores suggests that supporting early blockchain adopters is important and would incentivize as well as give support to the future innovators.

- Q7: Woody Pollack brings up concerns that the industry has not come to an agreement on various definitions in the blockchain space. He asks what the panel thinks about legislators weighing in before the industry has come to a consensus.
- Gabe Higgins suggests that definitions are rapidly changing, and that the industry needs to come together to agree on structures, definitions, and industry standards.
- Samuel Armes says that blockchain's definitions should be broad and should not limit the technology as it progresses.

At 4:38 p.m., Chair Brisé concludes the presentation segment of the meeting by discussing interest in future recommendations, thanking the presenters, and leading to open discussion.

V. Open Discussion at 4:38 p.m.
There are no comments from the task force members

VI. Other Business and Public Testimony at 4:39 p.m.
Michael Loubser, from the Core Group, suggests that compliance from the banking industry is difficult, and has been in Europe. He discusses examples of regulation being put into place, without having commercial banks accepting of crypto currency. He also says that blockchain is meant to improve the world's systems, rather than create competition – asserting that many of the technological leaders that are already in place have value to bring to this emerging technology.

VII. Adjournment at 4:42 p.m.

MEETING 3

Date: December 13, 2019

Agenda

XVIII. Introduction
XIX. New Member Introductions
XX. Adoption of Minutes
XXI. Presentation: Industry Applications of Blockchain Technology
XXII. Presentation: Identifying the Technical Skills to Develop Blockchain Technology in Secondary and Post-secondary Institutions
XXIII. Presentation: Opportunities/Risks Presented by Blockchain Technology in Local and State Governments
XXIV. Open Discussion
XXV. Other Business & Public Testimony
XXVI. Adjourn

Call to Order at 1:01 p.m.
Meeting called to order and welcome by Chair Ron Brisé

Roll Call at 1:02 p.m.
Roll was called at 1:02 p.m. by task force staff

Members present:
Commissioner Altmaier
Ron Brisé
Charles Ghini
Jason Holloway
Director Ken Lawson
Brad Levine
Gary Ruderman
Robin Westcott

Members Excused:
Woody Pollack
Director Terry Rhodes
Secretary Jonathan Satter

VIII. Introduction at 1:02 p.m.

Chair Brisé introduced the content of the agenda, including: studying projects and cases from other state and local governments to improve the system in the state of Florida; identifying the technical skills to develop blockchain technology in secondary and post-secondary institutions; and opportunities/risks presented by blockchain technology.

IX. New Member Introductions at 1:03

New task force members were asked to introduce themselves, comment on their professional background, their interest in blockchain technology, and what they hope to gain from the work of the task force. The following provides summary comments from members.

- Commissioner Altmaier introduced himself and shared his excitement for being on The Florida Blockchain Task Force. The Commissioner spoke about the insurance industry's interest in this emerging technology. He said that he will keep that, as well as his regulatory perspective, in mind to add to the work of the task force.
- Mr. Jason Holloway introduced himself and shared his background with the Florida legislature. He described his experience in digital currencies and with a blockchain think-tank.
- Mr. Brad Levine introduced himself and shared his background as a technology entrepreneur. He described his experience with technology and how it progresses from ideas to implementation into society. He explained his excitement of being on this task force through different lenses, including his role with Florida Atlantic University, where he is on the Board of Trustees.
- Mr. Gary Ruderman described his 25 years of experience as a certified public accountant and how he hopes to use his background to help this task force.

X. Adoption of Minutes at 1:08 p.m.

Members were provided with the meeting minutes in advance of the meeting to allow time for review. There was a motion from Vice Chair Ken Lawson to adopt the minutes, and a second by Mr. Charles Ghini. The minutes were adopted.

Motion to Adopt Minutes by Vice Chair Ken Lawson, Second by Charles Ghini
Vote: All in favor, 0 opposed
Resolved: Motion carried

XI. Presentation: Industry Applications of Blockchain Technology

Pete Teigen – IBM Services at 1:09 p.m.

Teigen illustrated a world where blockchain technology has been implemented into the government sector and explained the net benefits from this system. He then described the three main questions with blockchain: whether blockchain technology is the best solution to the problem, addressing the nature of blockchain and how it is a "team sport" instead of a centralized authority, and describing the need for trust in reference to blockchain. Teigen showed IBM's involvement with the food industry using blockchain technology by explaining the improvements to the industry after implementing blockchain technology. He then described how North Carolina used the blockchain technology to improve an active shooter situation.

XII. Presentation: Identifying the Technical Skills to Develop Blockchain Technology in Secondary and Post-Secondary Institutions

Dr. Buvaneshwaran (Eshwar) Venugopal – University of Central Florida at 1:45 p.m.

Dr. Eshwar's presentation was a summary of the current and hopeful programs at UCF referring to FinTech and Blockchain. Various levels of degrees are available from undergraduate to masters in the FinTech field. He explained that UCF is dedicated to research and getting students involved with blockchain technology. He then answered a question task force member Gary Ruderman.

Q1: Gary Ruderman asked if getting approval for coursework was slowing down Dr. Eshwar and how he keeps the content relevant.

Answer: Dr. Eshwar stated that they update the course every year and it just means he must work harder.

Dr. Kaushik Dutta/ Dr. Shivendu Shivendu – University of South Florida at 1:59 p.m.

Dr. Dutta presented the background of himself and his colleague Dr. Shivendu. Dr. Dutta began by explaining how Blockchain at USF began. He then discussed the different Blockchain initiatives at USF currently. Dr. Dutta finished by describing the hopeful futures of Blockchain at USF.

Dr. Shivendu presented the key technology pillars of blockchain, the different opportunities it produces, and the need for collaborative efforts. Shivendu argued that the pillars of blockchain solves problems relating to consistency and validation of data. He began to explain the implementation of blockchain into the current and future workforces and how blockchain provides new opportunities to them. Finally, he introduced the topic of coordinated efforts in which he described the need for expansion of resources in the field as well as some governmental leverage to propel society into a more efficient future.

Ken Baldauf – Florida State University at 2:27 p.m.

Ken Baldauf presented the many different research projects going on at FSU. He described a trip that FSU takes to IBM's conference referring to blockchain. FSU sends students to this conference to spark interest and to expand their understanding of blockchain. He also referred to many of the student's research projects that relate to the effects of blockchain on different institutions.

Dr. Mark Jamison – University of Florida at 2:35 p.m.

Dr. Jamison began by emphasizing Florida's comparative advantages and how blockchain should be used to accelerate production in those areas. Dr. Jamison argued that the way to integrate blockchain effectively into these areas is to change the legal framework, governmental applications, and entrepreneurial climate. He then discussed the world leaders in use of blockchain. He listed countries such as Estonia, Bermuda, Catalonia, China, and more to describe the ways these countries are using blockchain effective. Dr. Jamison continued by addressing the university roles in blockchain use. He stated that research is UF's top priority regarding blockchain. Dr. Jamison predicted that blockchain will be an instrumental part of the next greatest innovate breakthrough.

Questions After the Presentations:

Q1: Vice-Chair Ken Lawson asked how the universities are collaborating and trying to leverage each other in terms of research on blockchain.

Answer: Dr. Jamison and Ken Baldauf described the relationship between universities in terms of research and innovation sharing.

Q2: Brad Levine asked if there is any way to collaborate and incorporate blockchain within the university system and used an example like the student ledger system.

Answer: Dr. Kaushik Dutta answered that blockchain can be used to ease the complications with students that come from many different institutions. He also explained how the screening process for hiring purposes could be improved using blockchain.

Q3: Brad Levine asked if there were people on the panel that could use their university and its resources to be the catalyst for a multi-university project.

Answer: Dr. Kaushik Dutta stated that with the proper incentives and resources it could be done. Dr. Eshwar added that there are collaborative efforts to keep track of student scores using blockchain. Jason Holloway added that perhaps diplomas could potentially be dispersed using blockchain. Dr.

Jamison stated that he could fully commit to a project, but the University would not endorse it. Brad Levine disagreed with Dr. Jamison's remarks and said that with his experience at FAU he could see it working.

Q4: Commissioner Altmaier asked what kind of career students who graduate from these blockchain programs could expect.

Answer: Dr. Shivendu answered that after the last three semesters he had two students working in the field with a couple more hoping to get into the field. Shivendu explained the complex and difficult nature of translating these degrees into careers because of the nature of blockchain technology in relation to business.

Q5: Robin Westcott asked if any on the panel had looked into colleges that are heavily dependent on data from both public and private sector to find consortiums or what consortiums would make good targets for those colleges.

Answer: Dr. Eshwar answered that the need to get data in the blockchains to talk to each other is important, which means buying information from both the public and private sector. Dr. Jamison added that Florida has data collection infrastructure for hurricanes that could use blockchain technology to help share that data. He added to say that UF is working with businesses and entrepreneurs to aid in the relationship of their student's hopeful future employers.

Q6: Chair Ron Brisé asked if the Academic panel had any recommendations for the task force panel.

Answer: Dr. Shivendu stated that having a department or task force to take initiative on this project would build confidence and kickstart the project in an effective way. Ken Baldauf answered that the vision of collaborative work between universities would be ideal. Dr. Jamison stated that governmental initiative and leadership using resources would be an effective way to insert blockchain in Florida.

Student Experience on Blockchain: at 3:08 p.m.

In a video, UCF student Cooper Skat described his interest in UCF's FinTech program and how it has allowed the blend of finance and technology. In his opinion, it is easier for an IT major to learn business than for a business major to learn IT. FinTech has improved the existing finance programs as well as building bridges between finance and computer science majors.

FSU students Mario and Sean shared their experience with blockchain and reasons for wanting to pursue the field of knowledge and careers. Mario is a self-taught blockchain programmer and is excited that blockchain is being discussed. Sean has experience in the engineering field and hopes to use blockchain to identify and prevent counterfeit and fault.

Questions for the Students:

Q1: Commissioner Altmaier asked what it was about blockchain that made the students decide to study blockchain and potentially pursue a career in the field.

Answer: Sean answered that the potential for this new technology is undiscovered and the amount of resources and time that is required on the research side is a challenge but, he does not regret it.

Mario then responded by suggesting that he thinks that in the next 5-10 years, all new industries will utilize blockchain. They believe that this is a good opportunity to get involved in an emerging technology.

Q2: Vice-Chair Ken Lawson asked if the students had any recommendations on how to set up future students for better understanding blockchain.

Answer: Sean answered that building bridges between different fields of study would be the best thing for the progression of blockchain in different fields.

Mario answered that skepticism in the media has been detrimental and that a base level of understanding is important to setting up the future students.

Q3: Jason Holloway asked if the students believe that more collaboration between businesses and the university would be beneficial to the progression of blockchain.

Answer: Sean answered yes and explained that this is a safer way for students to enter the field. If the students can see how blockchain is being applied in the different industries, then they can have confidence in trying to find a career.

XIII. Presentation: Looking at Opportunities/Risks Presented by Blockchain Technology

Charles Ghini – Florida Blockchain Task Force Member at 3:20 p.m.

Charles Ghini first tackled the question "Why is blockchain significant?" He explained the nature of blockchain and how it has a great track record of not crashing or being hacked. He then discussed that the social relevance will add to blockchain's significance. Ghini further described the similarities between blockchain and the internet, Linux, and Open source. He then began to relate the risks of Open source to the risks of blockchain. The responsibility of security is at question with blockchain Ghini stated as well as, society needs to be careful not to judge technology in its early forms. He transitioned to the duties of the State through blockchain's progression. The State should: be a good customer and active participant, be a consume rand provider, participate in private blockchain, determine what will be helpful for citizens, and strive for homogenous governance. Ghini concluded by briefly summarizing his opportunities and risks related to blockchain. His opportunities included openness to new technology, consolidation and coordination with the state, and participation in the development of blockchain. Ghini's believed some of the risks involved with blockchain include acting individually, failing to take risks, and if the state forgets its responsibilities then it could be detrimental.

Questions on Charles' Presentation at 3:35 p.m.

Q1: Brad Levine asked for the level of bureaucracy required for handling blockchain effectively.

Answer: Ghini responded that the State should be the catalyst and should light the fuse initially. He believed a good way to demonstrate and experiment would be to take an effective agency or department and apply blockchain technology to it and see the effects of blockchain on the production in the department.

Robin Westcott added that she thinks its is important that the state identify and study/implement blockchain technology into Florida's successful industries.

Ghini agreed with Westcott and then explained that the line on when and how the State should get involved is still undefined and needs to be addressed.

Q2: Jason Holloway asked if there were any system that Ghini sees that should implement blockchain technology in their field.

Answer: Ghini stated that he would pick a system that already produces effectively and apply blockchain to it because you eliminate risk in case it fails since the system's old mechanism is effective. He also argued that the State has an important issue with master data management. Choosing a system that can address that problem would be an ideal candidate to utilize the technology.

Presentation Looking at Opportunities/Risks Presented by Blockchain Technology at 3:40 p.m.

Dr. Shivendu began his presentation by addressing the idea that governments too can be customers of innovation and the State should explore blockchain as an investor, facilitator, and regulator.

XIV. Open Discussion at 3:45 p.m.

The floor was opened for additional comments from members.

Jason Holloway suggested that the next meeting address some different fields for application of blockchain.

Robin Westcott suggested that the task force assemble a design thinking exercise.

Brad Levine suggested having the meeting in South Florida as well because of the additional interests the southern counties have.

Charles Ghini suggested the importance of the government keeping the momentum in the long-term for the state being involved.

XV. Other Business and Public Testimony at 3:50 p.m.

Samuel Armes, who is the President of the Florida Blockchain Business Association, believed that in terms of education - Middle and High School students cannot be left out. Armes suggested that they are the ones who will be using the technology and that the best thing for universities to do is partner with the private industry. He also argued that educating investors is important. Armes also believed incubators are very important. Incubators need to be empowered and lead to implement blockchain.

Q1: Charles Ghini asked Armes to clarify what kind of investors he is talking about.

Answer: Samuel Armes said that it is mostly the businesses who are the investors. Investors who aren't educated on blockchain are less likely to invest in it, which creates a need to educate investors.

Vice-Chair Ken Lawson suggested that the task force have a presentation regarding this industry in terms of development. He also suggested universities to use some of the federal funding to invest in a regional project regarding blockchain.

Jason Holloway explained that the task force need not forget about FinTech, because Florida is losing FinTech investors too.

XVI. Adjourned at 3:58 p.m.

MEETING 4

Date: February 21, 2019

Agenda

XXVII. Introduction
XXVIII. Adoption of Minutes
XXIX. Presentation: Florida Institute of Certified Public Accountants
XXX. Legislative Update
XXXI. Discussion of Final Report
XXXII. Open Discussion
XXXIII. Other Business & Public Testimony
XXXIV. Adjourn

Call to Order at 9:01 a.m.
Meeting called to order and welcome by Chair Ron Brisé

Roll Call at 9:01 a.m.
Roll was called at 9:01 a.m. by Task Force staff

Members present:
Commissioner David Altmaier (via telephone)
Ron Brisé (Chairman)
Charles Ghini
Jason Holloway
Director Ken Lawson (Vice Chairman)
Brad Levine (via telephone)
Gary Ruderman
Robin Westcott
Secretary Jonathan Satter
Director Terry Rhodes
Woodrow "Woody" Pollack

XVII. Introduction at 9:01 a.m.

Chair Brisé introduced the content of the agenda, including: studying projects and cases from other state and local governments to improve the system in the state of Florida; identifying the technical skills to develop blockchain technology in secondary and post-secondary institutions; and opportunities/risks presented by blockchain technology.

XVIII. Adoption of Minutes at 9:04 a.m.

Members were provided with the meeting minutes in advance of the meeting to allow time for review. Director Rhodes observed an error in the attendance section of the document. Robin Westcott was present; however, she was marked absent. There was a motion from Vice-Chair Lawson to adopt the minutes, and a second by Director Rhodes. The minutes were adopted.

Motion to Adopt Minutes by Vice-Chair Lawson, Second by Director Rhodes

Vote: All in favor, 0 opposed
Resolved: Motion carried

XIX. Presentation: Florida Institute of Certified Public Accountants at 9:04 a.m.

Brendan Abbott – Senior Manager, Government and Public Services Deloitte Consulting

Brendan Abbott introduced by Justin Thames. Mr. Thames briefly summarized Mr. Abbott's background and excitement for Mr. Abbott to be helping the Florida Blockchain Task Force. Mr. Abbott began by giving additional information to his background and explained that he has been working in the blockchain sector since 2015. He illustrated the main points of his presentation, which are observations in the market, his experiences with clients, and lessons learned from his experience. Mr. Abbott explained that when he refers to blockchain, he is referencing permission blockchains, not public blockchains/cryptocurrencies. He described the multiple party nature of blockchain and how that is important in determining what the minimum viable ecosystem is. Mr. Abbott shared the different blockchain projects that have stalled because the community was not a priority during the construction. He discussed that the community is the biggest challenge when working with blockchain technology. Mr. Abbot continued his presentation by showing surveys relating to blockchain legislation, business implementation and funding. The surveys provided stats supporting the growth in the those relating fields. He then transitioned to the state's role with blockchain. Mr. Abbott argued that the state should focus on being the regulator, regulated, and a participant. He then provided some examples of use cases in relation to blockchain. Mr. Abbott continued to illustrate the growing trend in legislation that is being passed across the United States. The next topic introduced was a use case relating to state benefit recipients that collect aid from multiple states. The current approach uses an "after the fact" method that could be improved using blockchain. This upgrade would reduce time and costs for the state.

> Question 1: Vice-Chair Ken Lawson asked how much it would cost for the state to set up the blockchain method and how long it would take.
>
> Answer: Mr. Abbott explained the dependency nature of the question but went on to explain the recommended way to implement blockchain in an interstate system.

Mr. Abbott explained a second use case, business licensure, in which blockchain could improve the heavily paper based system that is used. He shared the different ways blockchain would increase efficiency and why blockchain is unique in the qualifications for this project. Mr. Abbott concluded by offering his final recommendations for the Florida Blockchain Task Force, which were: to understand that blockchain is not a passing fad, to focus on the community and not as much on the technology, and lastly – to understand that this technology is still emerging and to be willing to adapt to future technological changes.

> Question 2: Jason Holloway asked if it would be beneficial to have a digital identity system for the licensure process.
>
> Answer: Mr. Abbott explained the complex nature of the ID system in relation to the licensure process but thought it would be beneficial to have a digital ID system in the field.
>
> Question 3: Secretary Satter asked who was doing the best job of utilizing blockchain outside of a sandbox environment.
>
> Answer: Mr. Abbott described that he is most familiar with the federal level. However, he provided an example of the pilot program in Dublin, Ohio that is using blockchain effectively as well as the Department of Treasury. He also thought the voting systems being used in Colorado and West Virginia were interesting cases of states using blockchain.
>
> Question 4: Woody Pollack asked for examples of institutions that failed to use blockchain effectively.

Answer: Mr. Abbott explained that, those that failed, did so because they failed to prioritize the community aspect of the blockchain system.

Question 5: Charles Ghini asked if privacy regulations would impede any hopes for legislation to get passed.

Answer: Mr. Abbott discussed the way Deloitte handles privacy concerns. He said that it is important to not put personally identifiable information on any blockchain network. He stated that he sees privacy concerns as crucial design areas and not necessarily impediments. Robin Westcott added that data security is crucial – as is knowing what should or should not be on the blockchain. Mr. Holloway also added that blockchain will not be the only vehicle driving the system, so privacy will be safer then expected.

Question 6: Director Rhodes asked if Abbott could elaborate on the pilot program in Dublin, Ohio.

Answer: Mr. Abbott explained that the program was designed for digital IDs for municipalities. The idea was to start small, and from what he has heard – they are still going strong.

Question 7: Gary Ruderman asked if Mr. Abbott knew of any successful use cases in the land/property record fields?

Answer: Mr. Abbott explained that he knew of some unsuccessful attempts. The trend for these examples was that the different parties involved could not agree with the starting data.

Question 8: Robin Westcott asked for Mr. Abbott to elaborate more on the topic of data standards inside the blockchain community.

Answer: Mr. Abbott explained that in some industries, there are existing data standards and that the new blockchain system would not have to "reinvent the wheel" on those standards. There are other scenarios where Mr. Abbott would recommend an external validation system.

Question 9: Chair Ron Brisé asked what legislation is the most helpful/harmful for blockchain implementation.

Answer: Mr. Abbott discouraged heavy amounts of regulation and added that instead of writing new laws, adapting current laws to allow blockchain usage to flourish would be ideal.

XX. **Legislative Update** at 9:35 a.m.

Meredith Stanfield – Director of Legislative and Cabinet Affairs, Department of Financial Services

Meredith Stanfield provided the Florida Blockchain Task Force with legislative updates surrounding blockchain technology in Florida. She began by summarizing HB 1391 and SB 1870, which relate to financial technology and innovation. These bills, amongst other provisions, include the creation of a financial technology sandbox within the Office of Financial Regulation. Mrs. Stanfield continued to explain the positive intentions of the sandbox in terms of producers and consumers. She updated the Task Force on the bills' status; stating that they each have one committee of reference remaining. Mrs. Stanfield then discussed HB 1077 and SB 1404, which include language relating to the re-authorization of the Florida Blockchain Task Force. These bills would allow the Task Force to present its findings to

the legislature in January of 2021. Currently, the Task Force would be unable to present prior to the current session's end. HB 1077 is headed to the House floor and SB 1404 has one more committee of reference before it moves to the Senate floor.

XXI. Discussion of Final Report at 9:40 a.m.

Chair Ron Brisé introduced the topic of the final report, which is due on March 23. He explained the different topics that must be addressed in the final report. Chair Brisé stated that instead of assigning members to certain topics without considering preferences, he would entertain requests to self-select topics. Chair Brisé suggested that the information gathering process would need to be completed by March 12. The members then began to volunteer for areas of interest.

Report Requirements and Member's Interest:

Costs and benefits of government utilization of the technology: Ken Lawson, Woody Pollack, Charles Ghini

Practicality of state use and implementation of blockchain and fiscal plans of implementation suggestions: Charles Ghini

Recommendations for implementing blockchain technology in specific state agencies: Ken Lawson, Director Rhodes, Secretary Satter, Charles Ghini, Commissioner Altmaier

Draft legislation the Task Force has identified as necessary for implementation: Ken Lawson, Jason Holloway, Woody Pollack

Identification of one pilot project: Ken Lawson, Jason Holloway, Gary Ruderman, Charles Ghini, Director Rhodes

Any other information that the Task Force finds relevant or compelling: N/A

XXII. Open Discussion at 9:44 a.m.

The floor was opened for additional comments from members.

Robin Westcott suggested that the Task Force assemble for a design thinking session.

Vice-Chair Ken Lawson suggested an initiative to discover the responsibilities of funding.

Jason Holloway suggested that the Task Force investigate blockchain initiatives that have failed so that Florida would not make the same mistakes.

Charles Ghini suggested that prerequisites for pilot programs be identified and discover how to measure success within those projects.

Robin Westcott commented on the complex nature of identifying the cost of implementing blockchain technology. She shared from her personal experience and described how the Task Force should examine the costs of blockchain.

Woody Pollack suggested that the Task Force renew the idea of hosting meetings in Central and South Florida.

Brad Levine invited the Florida Blockchain Task Force to have the next meeting at Florida Atlantic University.

XXIII. Other Business and Public Testimony at 9:56 a.m.

Frank Bruno, with the QTUM Foundation, offered to help the Task Force in any way.

Pete Teigen with IBM shared his excitement after hearing the legislative update and tells the Task Force not to let potential legislation be a reason to stop innovating and implementing blockchain.

XXIV. Adjourned at 10:00 a.m.


BLOCKCHAIN
FL
TASK FORCE