A BILL FOR AN ACT

CONCERNING THE USE OF CYBER CODING CRYPTOLOGY FOR STATE RECORDS.

Bill Summary

(Note: This summary applies to this bill as introduced and does not reflect any amendments that may be subsequently adopted. If this bill passes third reading in the house of introduction, a bill summary that applies to the reengrossed version of this bill will be available at http://leg.colorado.gov.)

The chief information security officer in the governor's office of information technology (OIT), the director of OIT, the department of state, and the executive director of the department of regulatory agencies are required to take certain actions to protect state records containing trusted sensitive and confidential information from criminal, unauthorized, or inadvertent manipulation or theft.
The chief information security officer is required to:

- Identify, assess, and mitigate cyber threats to state government;
- Annually collect information from all public agencies to assess the nature of threats to data systems and the potential risks and civil liabilities from the theft or inadvertent release of such information;
- In coordination and partnership with specified agencies, boards, and councils, annually assess the data systems of each public agency for the benefits and costs of adopting and applying distributed ledger technologies such as blockchains;
- Develop and maintain a series of metrics to identify, assess, and monitor each public agency data system for its platform descriptions, vulnerabilities, risks, liabilities, appropriate employee access control, and the benefits and costs of adopting encryption and distributed ledger technologies.

The director of OIT is required to consider the annual metrics from the office of the chief information security officer to recommend programs, contracts, and upgrades of data systems that have good cost-benefit potential or return on investment. In addition, OIT and the office of the chief information security officer are required to consider developing public-private partnerships and contracts to allow capitalization of encryption technologies while protecting intellectual property rights.

The department of state is required to consider research, development, and implementation for encryption and data integrity techniques, including distributed ledger technologies such as blockchains. The department of state is required to consider using distributed ledger technologies when accepting business licensing records and when distributing department of state data to other departments and agencies.

The executive director of the department of regulatory agencies or the director's designee is required to consider secure encryption methods, including distributed ledger technologies, to protect against falsification, create visibility to identify external hacking threats, and to improve internal data security.

In addition, the bill specifies that institutions of higher education may include distributed ledger technologies within their curricula and research and development activities.

The bill also specifies that the university of Colorado at Colorado Springs and any nonprofit organization with which the university has a partnership may consider:

- Encouraging coordination with the United States department of commerce and the national institute of
standards and technologies to develop the capability to act as a Colorado in-state center of excellence on cybersecurity advice and national institute of standards and technologies standards;

! Studying efforts to protect privacy of personal identifying information maintained within distributed ledger programs, ensuring that programs make all attempts to follow best practices for privacy, and providing advice to all program stakeholders on the requirement to maintain privacy in accordance with required regulatory bodies and governing standards; and

! Encouraging the use of distributed ledger technologies, such as blockchains, within their proposed curricula for public sector education.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. In Colorado Revised Statutes, add 24-37.5-407 as follows:

24-37.5-407. Cyber coding cryptology for the transmission and storage of state records - legislative declaration - intent. (1) (a) The general assembly hereby finds, determines, and declares that:

(I) An important function of state government is to protect state records containing trusted information about individuals, organizations, assets, and activities from criminal, unauthorized, or inadvertent manipulation or theft;

(II) In 2017, the cyber threat to the Colorado government included six to eight million attempted attacks per day;

(III) Unsecured public records are valuable targets for identity thieves and hackers with the intent to steal or penetrate corporate records. In addition, there are increasing threats to the theft of personal privacy information within government data and a growing number of treats to networks,
CRITICAL INFRASTRUCTURE, AND PRIVATE DATA AND DEVICES.

(IV) It is crucial to design a framework to identify solutions to prevent unauthorized external disclosures, protect privacy and confidentiality, and prevent inadvertent releases of information;

(V) The expanded use of distributed ledger technologies, such as blockchains, may offer transformative improvements to data security, accountability, transparency, and safety across dispersed state departments and jurisdictions;

(VI) Local, regional, and national agencies are charged with maintaining records that include birth and death dates, information about marital status, business licensing, property transfers, or criminal activity. Managing and using these data can be complicated, even for advanced governments. Some records exist only in paper form, and if changes need to be made in official registries, citizens often must appear in person to do so. Individual agencies tend to build their own isolated repositories of data and information-management protocols, which preclude other parts of the government from using them.

(VII) Blockchain technology is rapidly evolving for every sector of the marketplace as it offers unique solutions to support connection of society, technology, and finances by supporting the mapping of human action to transactions performed on the internet;

(VIII) Blockchain distributed ledgers provide the capability of openly traceable transactions while maintaining the privacy of each person performing the transactions;
GOVERNMENT PROGRAMS USING BLOCKCHAIN TECHNOLOGIES CAN OFFER THE ABILITY TO CONTROL FUNCTIONALITY, TRACK TRANSACTIONS, VERIFY IDENTITIES, SUPPORT UNIFORMITY, RESIST TAMPERING, ENABLE LOGISTICAL CONTROL FOR LARGE NUMBERS OF PARTICIPANTS, PROTECT PRIVACY, AND SUPPORT ACCOUNTABILITY AND AUDITING;

BLOCKCHAIN TECHNOLOGIES CAN PROVIDE OR INCREASE THE FOLLOWING BENEFITS:

(A) ENABLE THE STATE TO REDUCE FRAUD AND MALICIOUS INFILTRATION OF STATE-CONTROLLED PROGRAMS BY CREATING AN AUDITABLE VISIBILITY FOR ALL TRANSACTIONS AND THE PEOPLE WHO PERFORM THEM;

(B) REDUCE FALSE COMMUNICATIONS FROM COMPUTING DEVICES, WHICH CAN PROVIDE DATA TO PURSUE APPROPRIATE ENFORCEMENT ACTIONS. DATA WITH PROOF OF ORIGIN WOULD BE ABLE TO BE USED TO TRACK FORENSIC CHAIN OF CUSTODY FOR USE IN COURTS OF LAW.

(C) SUPPORT VERIFICATION OF AUTHORIZED USERS, ORGANIZATIONS, DISTRIBUTED COMPUTING DEVICES, AND NONREPUDIATION OF THE ACTIONS OF PARTIES PARTICIPATING IN VIRTUAL TRANSACTIONS;

(D) REDUCE SPOOFING OF DEVICES, FALSIFICATION OF DATA RECEIVED FROM REGULATED OR CONTROL DEVICES, AND DRASTICALLY REDUCE OR ELIMINATE THE THREAT OF MALWARE INSTALLED ON DEVICES USED STATEWIDE;

(E) BETTER PROTECT PERSONAL PRIVACY INFORMATION;

(F) CREATE GLOBAL VISIBILITY WHILE MAINTAINING THE CONFIDENTIALITY AND PRIVACY OF INDIVIDUAL ORGANIZATIONS AND
(G) Reduce state government expenditures and costs as a result of the visibility of transactions gained from the open nature of blockchain-enabled programs;

(H) The ability to adopt blockchain-enabled platforms for computer-controlled programs, data transfer and storage, or regulation programs that would be needed or used by the state. These would also enable transaction-based revenue generation and return on investment for state programs.

(I) Provide quantifiable risk and quality rating capability for all organizations, agencies, and insurance providers, giving the ability to set premiums and reward or enforce punitive controls on organizations based on their quality performance over time. Positive action to mitigate risk should lower state civil liabilities, lower insurance costs, and lower state vulnerability to adverse litigation.

(J) When authorized, provide a revenue generation stream for the state by the sale of transactions, fees, and memberships to private organizations for use of operational blockchain platforms. A blockchain-enabled platform may allow the sale of trusted components and continued transaction-based returns on investment on an ongoing basis.

(K) Enforce Colorado governance requirements and laws, thereby protecting legal and legitimate distribution of controlled substances to protect state revenue streams received by taxation of controlled substances.

(b) The General Assembly further finds, determines, and
DECLARES THAT THE INTENT OF THIS SECTION IS TO ALLOW AND
ENCOURAGE THE OFFICE OF INFORMATION TECHNOLOGY, THE OFFICE OF
THE CHIEF INFORMATION SECURITY OFFICER, DEPARTMENTS, AND
AGENCIES TO IDENTIFY AND IMPLEMENT DISTRIBUTED LEDGER
TECHNOLOGIES, SUCH AS BLOCKCHAINS, WHENEVER APPROPRIATE,
RATHER THAN TO MANDATE SPECIFIC SOLUTIONS. IN ADDITION, THE
INTENT OF THIS SECTION IS TO ENCOURAGE THE OFFICE OF THE CHIEF
INFORMATION SECURITY OFFICER TO COORDINATE CROSS-JURISDICTIONAL
STANDARDS AND PROCEDURES, ESPECIALLY AMONG STATE DEPARTMENTS
AND AGENCIES AND AMONG COUNTIES AND MUNICIPALITIES WHEN
APPROPRIATE.

(2) THE OFFICE OF THE CHIEF INFORMATION SECURITY OFFICER
SHALL IDENTIFY, ASSESS, AND MITIGATE CYBER THREATS TO STATE
GOVERNMENT. IN FURTHERANCE OF THIS RESPONSIBILITY, THE CHIEF
INFORMATION SECURITY OFFICER SHALL, ON AN ANNUAL BASIS AND
THROUGH ANNUAL PUBLIC AGENCY ENTERPRISE CYBERSECURITY PLANS,
COLLECT INFORMATION FROM ALL PUBLIC AGENCIES AS DEFINED IN
SECTION 24-37.5-402 (9) TO ASSESS THE NATURE OF THREATS TO DATA
SYSTEMS AND THE POTENTIAL RISKS AND CIVIL LIABILITIES FROM THE
THEFT OR INADVERTENT RELEASE OF SUCH INFORMATION. INSTITUTIONS
OF HIGHER EDUCATION AND THE GENERAL ASSEMBLY MAY PROVIDE THE
INFORMATION SPECIFIED IN THIS SUBSECTION (2) TO THE CHIEF
INFORMATION SECURITY OFFICER.

(3) IN COORDINATION WITH THE COLORADO CYBERSECURITY
COUNCIL CREATED IN SECTION 24-33.5-1902, AND IN PARTNERSHIP WITH
THE OFFICE AND THE GOVERNMENT DATA ADVISORY BOARD CREATED IN
SECTION 24-37.5-703, THE OFFICE OF THE CHIEF INFORMATION SECURITY
OFFICER IS ENCOURAGED TO ASSESS THE DATA SYSTEMS OF EACH PUBLIC AGENCY FOR THE BENEFITS AND COSTS OF ADOPTING AND APPLYING DISTRIBUTED LEDGER TECHNOLOGIES SUCH AS BLOCKCHAINS. THE OFFICE OF THE CHIEF INFORMATION SECURITY OFFICER IS ENCOURAGED TO CONSIDER PROGRAM LOSSES DUE TO POTENTIAL MALICIOUS ATTACK, TRANSACTIONAL ERRORS, OR FRAUD AS POSSIBLE SAVINGS ACHIEVABLE FROM VISIBILITY GAINED THROUGH DISTRIBUTED LEDGER PLATFORMS. THE OFFICE OF THE CHIEF INFORMATION SECURITY OFFICER IS ENCOURAGED TO DEVELOP AND MAINTAIN A SERIES OF METRICS TO IDENTIFY, ASSESS, AND MONITOR EACH PUBLIC AGENCY DATA SYSTEM ON AN ONGOING BASIS FOR THEIR PLATFORM DESCRIPTIONS, VULNERABILITIES, RISKS, LIABILITIES, APPROPRIATE EMPLOYEE ACCESS CONTROL, AND THE BENEFITS AND COSTS OF ADOPTING ENCRYPTION AND DISTRIBUTED LEDGER TECHNOLOGIES. THE OFFICE OF THE CHIEF INFORMATION SECURITY OFFICER IS ALSO ENCOURAGED TO CONSIDER THE COST-AVOIDANCE BENEFITS AND THE POSITIVE BENEFITS OF REDUCING LITIGATION RISKS OR THE COSTS OF STATE INSURANCE AGAINST STATE LEGAL LIABILITIES.

(4) THE OFFICE AND THE OFFICE OF THE CHIEF INFORMATION SECURITY OFFICER SHALL CONSIDER DEVELOPING PUBLIC-PRIVATE PARTNERSHIPS AND CONTRACTS TO ALLOW CAPITALIZATION OF ENCRYPTION TECHNOLOGIES, WHILE PROTECTING INTELLECTUAL PROPERTY RIGHTS.

(5) IN COMMUNICATION BETWEEN MULTIPLE PARTIES, THE OFFICE AND THE OFFICE OF THE CHIEF INFORMATION SECURITY OFFICER ARE ENCOURAGED TO ENSURE THAT PLATFORMS INCORPORATE THE NONREPUDIATION OF PARTICIPATING ENTITIES IN VIRTUAL TRANSACTIONS. DUE TO THE INHERENT LACK OF POSITIVE IDENTIFICATION BETWEEN
PARTIES COMMUNICATING OVER THE INTERNET, SECURE COMMUNICATION SYSTEMS SHOULD BE DESIGNED TO ASSURE THAT EACH SENDER OF DATA IS PROVIDED WITH PROOF OF DELIVERY AND THAT THE RECIPIENT OF DATA IS PROVIDED WITH PROOF OF THE SENDER'S IDENTITY TO ENSURE THAT THE INTEGRITY OF THE COMMUNICATIONS CAN BE TRUSTED, THAT EACH COMMUNICATION IS ACCOUNTABLE AND AUDITABLE, AND THE COMMUNICATORS CANNOT DENY THAT THEIR COMMUNICATIONS TOOK PLACE. THIS IS TECHNICALLY CALLED NONREPUDIATION, IN COMPLIANCE WITH FEDERAL GUIDELINES AND INDUSTRY BEST PRACTICES.

SECTION 2. In Colorado Revised Statutes, add 24-21-117 as follows:

24-21-117. Encryption and data integrity techniques - research and development. IN CONJUNCTION WITH THE EFFORTS OF THE OFFICE OF INFORMATION TECHNOLOGY REGARDING CYBER CODING CRYPTOLOGY FOR STATE RECORDS PURSUANT TO SECTION 24-37.5-407, THE DEPARTMENT OF STATE, IN CONJUNCTION WITH UPGRADES TO THE DEPARTMENT OF STATE'S BUSINESS SUITE, SHALL CONSIDER RESEARCH, DEVELOPMENT, AND IMPLEMENTATION FOR APPROPRIATE ENCRYPTION AND DATA INTEGRITY TECHNIQUES, INCLUDING DISTRIBUTED LEDGER TECHNOLOGIES SUCH AS BLOCKCHAINS. AFTER ACCEPTING BUSINESS LICENSING RECORDS, THE DEPARTMENT OF STATE SHALL CONSIDER ENSURING THE INTEGRITY OF THOSE TRANSACTIONS BY SECURE METHODS, INCLUDING DISTRIBUTED LEDGER TECHNOLOGIES, TO PROTECT AGAINST FALSIFICATION, CREATE VISIBILITY TO IDENTIFY EXTERNAL HACKING THREATS, AND TO IMPROVE INTERNAL DATA SECURITY. WHEN DISTRIBUTING DEPARTMENT OF STATE DATA TO OTHER DEPARTMENTS AND AGENCIES, THE DEPARTMENT OF STATE SHALL CONSIDER USING
DISTRIBUTED LEDGER TECHNOLOGIES, INCLUDING BLOCKCHAINS, AS A MEANS OF PROTECTING DATA ACROSS JURISDICTIONS.

SECTION 3. In Colorado Revised Statutes, 24-33.5-1904, amend (2) introductory portion, (2)(f), and (2)(g); and add (2)(h) as follows:

24-33.5-1904. Education - training - workforce development.
(2) In furtherance of the provisions of subsection (1) of this section, the university of Colorado at Colorado Springs, in conjunction with other institutions of higher education and a nonprofit organization, may:

(f) Establish protocols for coordinating and sharing information with state and federal law enforcement and intelligence agencies responsible for investigating and collecting information related to cyber-based criminal and national security threats; and

(g) Support state and federal law enforcement agencies with their responsibilities to investigate and prosecute threats to and attacks against critical infrastructure; AND

(h) INCLUDE DISTRIBUTED LEDGER TECHNOLOGIES WITHIN ITS CURRICULA AND RESEARCH AND DEVELOPMENT ACTIVITIES.

SECTION 4. In Colorado Revised Statutes, 24-33.5-1905, amend (2) introductory portion, (2)(h), and (2)(i); and add (2)(j), (2)(k), and (2)(l) as follows:

24-33.5-1905. Research and development. (2) In furtherance of the provisions of subsection (1) of this section, the university of Colorado at Colorado Springs and any nonprofit organization with which the university has a partnership may consider the following:

(h) Establish ESTABLISHING protocols for coordinating and sharing information with state and federal law enforcement and
intelligence agencies responsible for investigating and collecting
information related to cyber-based criminal and national security threats;
and

(i) Support SUPPORTING state and federal law enforcement
agencies with their responsibilities to investigate and prosecute threats to
and attacks against critical infrastructure;

(j) Encouraging Coordination with the United States
Department of Commerce and the National Institute of
Standards and Technologies to develop the capability to act as
a Colorado in-state center of excellence on cybersecurity
advice and National Institute of Standards and Technologies
standards;

(k) Studying Efforts to Protect Privacy of Personal
Identifying Information Maintained within Distributed Ledger
Programs, Ensuring that Programs Make All Attempts to Follow
Best Practices for Privacy, and Providing Advice to All Program
Stakeholders on the Requirement to Maintain Privacy in
 Accordance with Required Regulatory Bodies and Governing
 Standards; and

(l) Encouraging the Use of Distributed Ledger
Technologies, or Blockchains, within their Proposed Curricula
for Public Sector Education.

SECTION 5. In Colorado Revised Statutes, 24-34-101, add (14)
as follows:

24-34-101. Department created - executive director. (14) In
Conjunction with the Efforts of the Office of Information
Technology Regarding Cyber Coding Cryptology for State
RECORDS PURSUANT TO SECTION 24-37.5-407, THE EXECUTIVE DIRECTOR
OF THE DEPARTMENT OF REGULATORY AGENCIES OR THE DIRECTOR'S
DESIGNEE SHALL CONSIDER SECURE ENCRYPTION METHODS, ESPECIALLY
DISTRIBUTED LEDGER TECHNOLOGIES, TO PROTECT AGAINST
FALSIFICATION, CREATE VISIBILITY TO IDENTIFY EXTERNAL HACKING
THREATS, AND TO IMPROVE INTERNAL DATA SECURITY, ESPECIALLY TO
SECURE BUSINESS OWNERSHIP AND STOCK LEDGER OWNERSHIP DATA THAT
MIGHT BE POTENTIAL HIGH-RISK TARGETS FOR CORPORATE CYBER THEFT
AND TRANSACTION FALSIFICATION. THE CONSIDERATIONS FOR
DISTRIBUTED LEDGER TECHNOLOGIES SHALL INCLUDE BEST PRACTICE
ATTEMPTS TO MAINTAIN PRIVACY OF PERSONALLY IDENTIFYING
INFORMATION OF THE DISTRIBUTED USER BASE WHILE UTILIZING THE
VISIBILITY OF DISTRIBUTED TRANSACTIONS.

SECTION 6. In Colorado Revised Statutes, 24-37.5-105, add
(12), (13), and (14) as follows:

24-37.5-105. Office - responsibilities - rules. (12) IN
CONJUNCTION WITH THE EFFORTS OF THE OFFICE OF THE CHIEF
INFORMATION SECURITY OFFICER REGARDING CYBER CODING CRYPTOLOGY
FOR STATE RECORDS PURSUANT TO SECTION 24-37.5-407, THE OFFICE
SHALL CONSIDER THE ANNUAL METRICS CREATED PURSUANT TO SECTION
24-37.5-407 (3) TO RECOMMEND PROGRAMS, CONTRACTS, AND UPGRADES
OF DATA SYSTEMS THAT HAVE GOOD COST-BENEFIT POTENTIAL OR RETURN
ON INVESTMENT.

(13) BEGINNING ON THE EFFECTIVE DATE OF THIS SUBSECTION
(13), IN THE ADMINISTRATION OF ANY NEW MAJOR INFORMATION
TECHNOLOGY PROJECT, THE OFFICE, IN CONJUNCTION WITH THE STATE
AGENCY WITH WHICH IT IS WORKING, SHALL EVALUATE THE POTENTIAL
USE OF BLOCKCHAIN AND DISTRIBUTED LEDGER TECHNOLOGIES AS PART OF THE PROJECT.

(14) The office shall conduct an assessment and bring recommendations for a blockchain implementation to the joint technology committee of the general assembly. The study must produce recommendations of potential use cases where blockchain or distributed ledger technologies can be implemented inside of state technology solutions.

SECTION 7. Safety clause. The general assembly hereby finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.