



## 2018 JCOTS Report

The Joint Commission on Technology and Science (JCOTS) held four meetings in the 2018 interim session. Senator John Cosgrove, chairman of JCOTS, instructed staff to set meeting locations around the state for inclusivity, and a broader area of study and discourse for the Commission. Meetings were held in Richmond, Hampton Roads, Northern Virginia, and Richmond respectively.

Topics of study included blockchain and related technologies, aerospace and aviation initiatives, data management, storage and analytics, and cryptocurrency mining.

The Joint Commission on Technology and Science (JCOTS) held its first meeting of the 2018 interim on Tuesday, April 10, in Richmond. Senator Cosgrove, then vice-chairman of JCOTS, called the meeting to order.

Senator Cosgrove opened the floor to nominations for chairman of JCOTS. Delegate Glenn Davis nominated Senator Cosgrove. The motion was seconded and unanimously approved. Delegate Kathy Byron nominated Delegate Davis to serve as vice-chair. The motion was seconded and unanimously approved.

Chairman Cosgrove began the meeting by proposing that JCOTS not meet solely in Richmond for the 2018 interim but instead move to various locations around the Commonwealth. He stated that this would promote equitable travel for JCOTS members and other interested parties and that it would afford members the opportunity to learn about ongoing technological and scientific developments in other areas of the Commonwealth. This idea gained general consensus among the members. Delegate Plum added that JCOTS held meetings in locations outside of Richmond frequently in the early days of the committee. Chairman Cosgrove suggested that Virginia Tech and the NASA Langley Research Center would be appropriate locations and asked that staff poll members to determine which locations would be most suitable and find appropriate times for these meetings.

Staff then began a discussion of the proposed topics for the 2018 interim. Because of the low volume of study requests from the 2018 Session of the General Assembly, staff requested that members suggest topics for study pursuant to § 30-85 of the Code of Virginia. Possible topics mentioned included (i) unmanned aerial vehicle projects to follow along with the aviation and aerospace work JCOTS conducted in 2016–2017, suggested by Chairman Cosgrove; (ii) a prohibition on electronic devices that can view pornographic material when such devices do not have the ability to block such content from view, suggested by Delegate LaRock; (iii) a study of how to ethically exchange data between government agencies, suggested by Senator Dunnavant; and (iv) a study of the productivity and efficiency effects of teleworking in the Commonwealth, suggested by Delegate LaRock. Vice-chairman Davis also stated that the Chair of the House Committee on Rules requested that JCOTS conduct further study on HJ 153 (Davis), which would have studied the potential use of blockchain technology in government agencies. Lastly, Chairman

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Cosgrove suggested that biotechnology is a growing and interesting field. He asked if Senator Dunnavant, as a medical doctor, would be willing to take the lead on such a study if JCOTS were to take up the topic. Senator Dunnavant gladly accepted and expressed interest in the topic. Staff committed to working with the chair to distill the proposed ideas into study topics and create a schedule for the 2018 interim based on the topics JCOTS takes up.

During the public comment period, Bob Matthias from the City of Virginia Beach addressed the committee about a number of topics related to the city. He mentioned that Hampton Roads is currently welcoming a new \$65 million facility to house servers that mine cryptocurrency. The new facility even allows individuals to purchase their own servers. On a related point, Mr. Matthias mentioned that these "server farms" look for areas that can provide high amounts of renewable energy when considering development locations. He also mentioned a new electromechanical energy storage facility in the area. Mr. Matthias also discussed the recently installed transatlantic cable that connects Virginia Beach to Bilbao, Spain. The cable has 1.5 times the capacity of the entire Eastern Seaboard, and many more cables are already planned or under construction.

Following the public comment period, the meeting was adjourned.

The Joint Commission on Technology and Science (JCOTS) held its second meeting of the 2018 interim on Tuesday, July 10, at the Virginia Air and Space Center in Hampton. Delegate Glenn Davis, vice-chairman of JCOTS, called the meeting to order.

The meeting began with a presentation by Tom Flake of Bcause, a company that owns server farms, or data centers, for the purpose of mining cryptocurrency. "Mining" is the term used to describe the validation of cryptocurrency transactions and their addition to the distributed blockchain ledger. Each time a computer on the cryptocurrency network mines a transaction, it earns the owner a small amount of cryptocurrency for the owner's effort. Mr. Flake said that the new facility his company is building will be the largest of its kind in North America and the fifth largest in the world; it will employ around 100 people. His presentation focused on how Virginia could capitalize on the emerging cryptocurrency mining industry.

Since the industry is transacted completely online, such data centers may locate in any state. One main factor in deciding where to locate data centers is the cost of electricity and the ability for owners to choose electricity providers. Mr. Flake asserted that electric utility rates in Pennsylvania are 30 percent cheaper than in Virginia and, moreover, that an individual user in Virginia may choose its electricity supplier or develop its own energy source only if it uses more than five megawatts annually. These factors pose problems if Virginia wants to attract new data centers.

Delegate Ken Plum asked why it has been portrayed to members of the General Assembly that Virginia has the cheapest energy rates in the Southeast. Mr. Flake's response was that while Virginia has relatively cheap rates, additional riders and fees on bills greatly increase the overall cost of electricity. Furthermore, while it may be a good thing to be the cheapest in a region, it does not matter when a data center is just as valuable in any other region or in Canada. Hence the next two data centers for Bcause will not be in Virginia. As a result, the committee expressed interest in bringing Dominion Energy to talk about the issue.

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Delegate Mark Sickles stated that it would be a bad precedent to exclude certain specific commercial companies from energy regulations. Mr. Flake responded that he believes Dominion agrees because the utility is suing Wal-Mart to prevent the company from contracting with a competing energy supplier.

In conclusion, Mr. Flake explained that the server farm and data center industry and the underlying blockchain technology is at a stage at which it is focusing on converting existing industries to use new technology. He compared the current status of the industry to that of the tech boom in 1996 and named transactors and middlemen, ports and shipping companies, the insurance industry, and any entity that keeps track of ownership as examples of industries that blockchain technology can improve.

Following Mr. Flake's presentation, Delegate Davis announced the creation of a new subcommittee based on HJR 53 and composed of JCOTS members that will attempt to find opportunities to use blockchain technology in government agencies. The subcommittee membership is Delegate Sickles, Delegate Filler-Corn, Senator Cosgrove, Senator Dunnivant, and Delegate Davis, who will serve as the chair. The first meeting will be held in late August.

As there were no further agenda items and no public comments, the meeting was adjourned.

The Joint Commission on Technology and Science (JCOTS) held its third meeting of the 2018 interim on Monday, October 22, at Dulles Airport. Delegate Glenn Davis, vice-chairman of JCOTS, called the meeting to order.

The meeting began with an introduction and welcome to two student groups from the University of Virginia (UVA). The Science Policy Initiative at UVA is a student organization formed to empower scientists and engineers to be more informed and involved in science policy at all levels of government. Women in Medical Sciences at UVA is an organization of graduate students and postdocs focused on supporting the inclusion and advancement of women in medical sciences.

Following the introduction, staff gave two brief announcements, the first involving information from a constituent regarding electromagnetic pulses and the second regarding Rocket Labs' recent announcement of its partnership with the Mid-Atlantic Regional Spaceport. Written material relating to both announcements was presented to the members and is available online at the JCOTS website.

Next, Mr. Jake Bittner, CEO of Qlarion, Inc., presented to JCOTS on Qlarion's role in assisting the Department of Criminal Justice Services (DCJS) in a pilot data analytics program to combat the opioid crisis. Mr. Bittner informed JCOTS that Qlarion's role was to apply data analytics techniques to existing data to help DCJS make better decisions and to address technical, governance, and cultural challenges that are barriers to the effective use of that data.

As a result, Qlarion has been developing a data-sharing platform as a way of bringing the data together effectively. Qlarion hopes that the platform will help (i) identify high-risk people and groups in advance, (ii) improve allocation of scarce resources for treatment and prevention, (iii) quickly detect and react to changes in opioid-related criminal activity, (iv) detect and address

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anomalies in opioid prescribing patterns, (v) transform response posture from reactive to proactive, and (vi) empower the future of opioid crisis-related research.

After this presentation, members asked Mr. Bittner what he believed the General Assembly should do to advance the use of data analytics. He recommended that the General Assembly continue funding pilot programs like the DCJS platform. Furthermore, he stated that agencies should be accountable for following through on pilot program recommendations. Mr. Bittner stated that often pilot programs identify ways Virginia can save time and money, but the Commonwealth fails to act on the recommendations.

Finally, Delegate Davis informed the committee that Delegate LaRock had an idea for a JCOTS study and that if Delegate LaRock could get four members of the Committee to agree to meet on the topic, it could be taken up by the Committee.

As there were no further agenda items and no public comments, the meeting was adjourned.

The Joint Commission on Technology and Science (JCOTS or "the Commission") held its fourth meeting of the 2018 interim on Monday, October 22, at Dulles Airport. Senator John Cosgrove, chairman of JCOTS, called the meeting to order.

Senator Cosgrove began the meeting by recognizing Delegate Eileen Filler-Corn for her recent election as minority leader of the House of Delegates. Various JCOTS members offered their congratulations.

Next, there was a brief presentation given by Mary Sandy, representing Old Dominion University and the Virginia Space Grant Consortium, and Bud Oakey, representing the Virginia Aviation Business Association. The presentation was focused on budget items to promote STEM education, workforce development, and research programs in the aviation and aerospace industry. The budget items included money totaling \$1,185,000 for four projects, including (i) an online Aviation and Aerospace Portal, (ii) the Virginia Aerospace Aviation Scholars Program, (iii) the Aviation and Aerospace Internship Program, and (iv) Building Leaders Advancing Science and Technology.

Following the presentation, the committee requested that Ms. Sandy and Mr. Oakey identify the one or two most important projects that JCOTS could endorse for the 2019 Session of the General Assembly. The two projects chosen are the online Aviation and Aerospace Portal and the Virginia Aerospace Aviation Scholars Program. Delegate Terry Austin made a motion that the Commission recommend that the General Assembly include these two budget items in the 2019 budget bill and Delegate Glenn Davis seconded the motion. The Commission recommended the budget items 7-0.

Delegate Davis was then asked to report on his work on blockchain technology during the 2018 interim. Delegate Davis reported that his subcommittee had met three times and had two pieces of legislation to present to the full Commission. The objective of these two pieces of legislation is to capture the "low-hanging fruit" that will allow Virginia to be a leader in the development of this technology.

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The first bill is a bill to create a rebuttable presumption that a business record electronically registered on a blockchain is a self-authenticating document for certain facts. Delegate Davis indicated that other states such as Vermont had enacted similar laws. Delegate Davis made a motion that the Commission recommend the bill to the General Assembly and Senator Siobhan Dunnivant seconded the motion. The Commission recommended the bill 7-0.

The second bill was a bill to establish the Health Care Provider Credentials Data Solution Fund for the purpose of soliciting proofs of concept to establish or improve a system for the storage and accessing of health care provider credentials data, utilizing blockchain or a similar technology, to be maintained by the Department of Health Professions. Senator Dunnivant made a motion that the Commission recommend the bill to the General Assembly and Delegate Davis seconded the motion. The Commission recommended the bill 7-0.

The next presentation was given by Stephen Moret, President and CEO of the Virginia Economic Development Partnership (VEDP). The presentation centered on the opportunities for growth in the aerospace and aviation industry identified by VEDP and their strategy to compete with other states in the sector. The presentation indicated that although aerospace is a relatively small portion of overall employment opportunities within targeted sectors, Virginia has done well both in employment and announced projects relative to other states and that VEDP is pursuing various opportunities in the next five years.

Mr. Moret indicated that the main factors that companies look at for new or expanding aerospace manufacturing projects are large incentives, ready sites, and a skilled workforce. However, in growth areas such as the unmanned systems industry, companies are more focused on a supportive business climate, like tailored state incentives for early stage firms and regulatory freedom and support from state leadership.

Senator Cosgrove asked what actions the General Assembly and VEDP would need to take in the future to be competitive in the industry. Mr. Moret answered that the main factor preventing Virginia from being more competitive is money. Virginia has many benefits such as infrastructure and a highly skilled workforce, but lags most other states in pure incentives. Delegate Davis asked whether taxes are a big issue for companies and Mr. Moret answered that, yes, taxes are a central issue. Delegate Austin asked whether the companies that are being discussed primarily provided products or services. Mr. Moret answered that there was a wide range in the industry and that both were included in VEDP's research and strategy.

At the conclusion of the presentation, JCOTS staff showed a brief slideshow of the various places the Commission had visited in 2018, including NASA Langley Research Center, the Virginia Air & Space Center, the Facebook Data Center, and Dulles Airport. Senator Cosgrove informed the Commission that he would like to hold a meeting in Blacksburg during the 2019 interim.

As there were no further agenda items and no public comments, the meeting was adjourned. This was the final meeting of the 2018 interim.

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Additional, detailed information about the work of JCOTS and its advisory committees, along with copies of meeting materials and proposed legislation, is available on the JCOTS website at <http://dls.virginia.gov/commission/jcots.htm>. No further 2018 report is forthcoming.

