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Chair: Mr. Joël Lightbound



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• (1535)

[English]

The Chair (Mr. Joël Lightbound (Louis-Hébert, Lib.)): Good afternoon, everyone. I call this meeting to order.

[Translation]

Welcome to meeting number 46 of the House of Commons Standing Committee on Industry and Technology.

[English]

Pursuant to Standing Order 108(2) and the motion adopted by the committee on Monday, September 26, 2022, the committee is meeting to study the current state of blockchain technology in Canada.

[Translation]

Today's meeting is taking place in a hybrid format, pursuant to the House Order of Thursday, June 23, 2022.

[English]

This afternoon, we have the pleasure of having with us, both virtually and in person, the following witnesses.

From Beatdapp Software, Inc., we have Pouria Assadipour, chief technology officer, Andrew Batey, co-chief executive officer, and Morgan Hayduk, also co-chief executive officer.

From the Canadian Blockchain Consortium, we have Koley Karringten, executive director.

From Mavennet Systems Inc., we have Patrick Mandic—correct me if I mispronounce your name; that goes for all witnesses—chief executive officer. Thanks for being here with us in Ottawa.

From the National Digital Asset Exchange Inc., we have Tanim Rasul, chief operating officer.

Finally, from Shakepay Inc., we have Jean Amiouny, co-founder and CEO.

[Translation]

Thank you to everyone for being here.

We have a lot of witnesses, so we're going to get right to it with the representatives from Beatdapp Software Inc. You have five minutes.

[English]

Mr. Morgan Hayduk (Co-Chief Executive Officer, Beatdapp Software Inc.): Thank you.

I want to start by saying a sincere thank you to Ben Lobb and the industry committee for having us today. Thank you to the members of the committee for the work they do and for taking up this important topic. It's a privilege to address the group and share a bit about our company, Beatdapp, and the technology we've developed.

My name is Morgan Hayduk, and I'm one of the co-founders and co-CEOs of Beatdapp. We're a venture-backed, technology-driven auditing and fraud detection company that does some interesting work with blockchain tech. I'm joined today by its two co-founders, Andrew Batey and Pouria Assadipour. We directly employ a team of about 20 of the most talented data scientists, product managers, UI and UX designers and engineers we've ever had the privilege of working with, right here in Canada. We've also had the tremendous support of prominent VCs and angel investors here in Canada.

I want to quickly acknowledge, at the start, another partner of ours: the team at Fasken and Will Shaw, who are leading their start-up practice. It's a compliance-intensive space, and Will and our team keep us on track, protected in our IP, and compliant. There are some great minds in Canada advising start-ups, and we're thankful for that.

It's not lost on us that it's been an interesting couple of weeks in this space. However, as you'll hear in our remarks today, we operate in a part of the industry that's largely insulated from the tectonic shifts befalling part of the financial sector. I hope we can tell you a slightly different story about blockchain, perhaps, than one you've previously heard or may have read in tech press.

At Beatdapp, blockchain is an enabling technology and a core part of our stack, for a few functional reasons. However, we will also call attention today to what we don't use blockchain for, because, to my mind, there is an emerging class of companies enabled by this technology that are probably not the first that come to mind when you think of businesses in this space. We are among a growing class of companies that leverage blockchain technology for non-financial or non-speculative reasons. We are part of a cohort of businesses that don't have tokens or a Web3 community associated with the business. That said, as part of the ecosystem of Canadian companies creating blockchain IP, we have a vested interest in the regulatory landscape shaped by the members of this committee and the government.

We started Beatdapp in 2018 to transform a fairly niche but important business: auditing the usage of streamed media, starting with music. My co-founder Andrew and I both have experience in music and technology, but neither of us is a professional accountant. The genesis story is one of being told about a problem by someone experiencing it first-hand, then having either the audacity or the naïveté to try to solve it ourselves.

The problem we set out to solve is this: When music is streamed on any one of the now hundreds of streaming services around the world, the rights holders—think music labels and independent artists—are paid a pro rata share of the subscription and advertising revenue for the period in which those streams occurred. In an industry that generated \$25.9 billion in streaming revenue last year, if records are off by basis or whole percentage points, mistakes may be worth tens and hundreds of millions of dollars in aggregate.

With digital distribution, we're now talking about trillions of individual events annually, across hundreds of services, with thousands of rights holders each having an audit right over that service for their catalogue. While audits have always been conducted on the basis of trusting but verifying reporting, the challenge with auditing in the new streaming economy is scale.

We learned that whenever audits are conducted, discrepancies are always found, many for benign reasons. Scripts break, data normalization processes occur, or servers don't sync with accounting. However, as we dug more deeply into this problem, we understood that the biggest single driver of discrepancies is actually manipulation of the services themselves, which calls into question what is and is not "reportable usage". We think it's safe to say that about 10% of all streams are originated by bots and human click farms seeking to steal royalties or change the perception of the success of an artist. This is a huge discrepancy, and one we're confronting head on.

How does blockchain, as an enabling technology, help solve these problems? When we started Beatdapp in 2018, we spent 18 months quietly developing the underlying algorithms and our proprietary blockchain. Our goal was to develop audit technology that allowed the licensor and licensee to sign off on every individual transaction in near real time. The first thing we knew was that blockchain was going to play a functional role in building trust among partners, but that our software was not a payments layer. It's a reporting tool, so there is no Beatdapp coin, and we don't offer financial utility.

We then had to decide whether we should build a public or private blockchain. At the time, private blockchains were still considered marginal innovations, with most investors and early adopters directing their enthusiasm towards public ledgers. Because a primary driver of our business case, though, is transactional throughput, we decided it was better served by a private, permissioned chain, with only known validators or participants. Our chain transaction speed is now north of 10 million transactions per second.

Finally, as we developed our core technology here in Canada, we also filed a suite of patents around the underlying innovations. To date, we have 11 patents issued, nine more pending and expected to be issued in the next four to eight weeks, and 10 filed and awaiting adjudication. It's remarkable for a company of our size to have one of the most robust IP portfolios in the blockchain space. Our patents cover not only the auditing of streamed music but also streamed video games, film and television works. We have yet to scratch the surface of the potential for this IP to transform accounting practices across these other sectors. As a company, we're in the early innings of what is a long game.

The opportunity to appear before you today is one we sincerely appreciate, and we look forward to answering your questions about our business. We'd be happy to meet with you and answer additional questions, or host you in our Canadian office to see the team in action. As you help Canadian entrepreneurs and talent grow this industry, create new jobs and locally develop IP that has global reach, we hope to be part of the ongoing conversations and act as a trusted partner to government.

Thank you for your questions. We look forward to them.

● (1540)

The Chair: Thank you very much.

We'll now move to Koleya Karrington from the Canadian Blockchain Consortium.

Ms. Koleya Karrington (Executive Director, Canadian Blockchain Consortium): Honourable members, thank you for having me here today. My name is Koleya Karrington and I am the executive director of the Canadian Blockchain Consortium.

The consortium is now the largest and most active industry association in Canada, representing over 70 corporate members that span from coast to coast. Our members include some of the largest crypto-asset businesses in the world and Canada's biggest and longest-running financial institutions, as well as many innovative start-ups and scale-up companies.

I want to share with you three real-world examples of how blockchain can improve the lives of everyday Canadians.

First is financial inclusion—

The Chair: I'm sorry to interrupt, Madam Karringten. Is it possible to lift your microphone a bit?

Thank you.

Ms. Koleya Karringten: I'm sorry. I apologize.

First would be financial inclusion. There are close to eight million Canadians whom the banking industry considers to be non-prime, meaning they cannot access credit via the larger institutions. Our members provide ways for the unbanked to save, access credit, and also send their money via remittances cheaply, securely and quickly. This is an excellent opportunity to export Canadian technology to the billions of underbanked across the world.

Second would be pharmaceutical provenance. It's estimated that four billion incorrectly labelled or fake drugs are administered each year, putting Canadian lives at risk because they are receiving wrong medication or improper doses due to lack of provenance with overseas manufacturers. By utilizing an immutable blockchain, pharmacies can verify the authenticity of the pharmaceuticals they administer and even get real-time alerts directly from manufacturers for when medications expire or become available. Given the recent children's ibuprofen shortage, as a single mother this could have a direct impact on my life personally.

Third would be food security. By allowing for public transparent records in the agriculture industry, we can have the entire value chain of livestock or produce on a tamper-proof blockchain. This improves the provenance of the livestock and produce going to market. This can cut food recall times down from days to seconds and improve supply chain efficiency. You can quickly verify what product was contaminated and where it was delivered, and quickly remove the items from stores, saving companies millions in food recalls and improving Canadian food security.

In order to realize the potential more broadly, our members believe we must collaborate with regulators and government to address key issues that virtual asset service providers, or VASPs, and blockchain technology companies have.

I would like to highlight four pressing issues around this.

First is fair and transparent regulation of crypto-assets. Canada needs to clearly delineate which digital assets qualify as securities, derivatives, commodities, data and currencies. We believe that the development of a digital asset taxonomy is critical to providing much-needed clarity for platforms and investors to determine which legislation applies. Despite this, many of our members are already collaborating with regulators to better define consumer protection standards, similar to that of current financial risk frameworks.

Second is improvement for combatting financial crime and terrorist financing. Many of our members regularly collaborate with law enforcement to identify and respond to criminal activity. Some of our members have helped to train law enforcement with respect to blockchain forensics tools, and I'm proud to say that a unit in Calgary is quickly becoming a global leader because of our members. While all VASPs are now required to be registered with FINTRAC and comply with the Proceeds of Crime (Money Laundering) and Terrorist Financing Act, which also covers virtual currencies, such rules are not yet harmonized across jurisdictions. This presents a challenge to VASPs that have a Canadian and international presence. We encourage the government to work with other countries to harmonize these regulations.

Third is investor protection against fraud and illegal securities. Many of our members regularly collaborate with law enforcement and Canadian securities regulators to identify fraud and provide better risk disclosures to users. Given the pace at which the technology evolves and that bad actors exploit it, admittedly there is more to do. We believe we should improve our consumer disclosures, both for VASPs and in traditional finance, so that they are easier to understand and Canadians can make informed decisions, instead of critical disclosures being buried in terms and conditions.

Fourth is strong standards for cybersecurity, crypto-custody, insurance and proof of solvency. Crypto-asset exchanges and custodians with poor storage policies are a major vector for cyber-attacks, misappropriation of funds, theft or fraud. This was very apparent with the recent FTX bankruptcy filing. Standardizing requirements and enabling adequate insurance coverage for cybersecurity and crypto-asset custody would be beneficial. Many exchanges are exploring a proof of reserves attestation model, such as Binance, which leverages cryptographic proofs and on-chain verification.

Finally is a word about the crypto-mining industry.

Many people criticize Bitcoin for having such a large energy footprint. However, because Bitcoin mining can happen anywhere, miners will find the lowest-cost power possible. A large portion of mining is currently run on hydro power that would otherwise go unused. Bitcoin mining also supports the development of new renewable energy projects, as miners can act as a buyer of last resort on variable power production like wind and solar. Because mining equipment can be shut off quickly without damage, Bitcoin mining operations can also sell their power back to the grid at peak times, making the grid more flexible and robust.

• (1545)

Thank you, Mr. Chair, for the opportunity to speak today. I look forward to your questions.

The Chair: Thank you very much.

We'll now turn to Mavennet Systems and Mr. Mandic.

Mr. Patrick Mandic (Chief Executive Officer, Mavennet Systems Inc.): Thank you, Mr. Chair.

I'm the CEO of Mavennet Systems Inc. We're a company that develops digital products in different industries—media, financial services—and also in the supply chain. I know some or most witnesses in previous sessions have talked about the applications of blockchain to financial services.

Today I'd like to talk about the applications of blockchain specifically to energy and resources. As we all know, this is a critical industry for Canada.

For about three years now, we've been working together in the oil and gas industry with the U.S. Department of Homeland Security and about 10 to 12 different organizations in the industry from Canada and the U.S. to support a customs clearance between the U.S. and Canada that would make it frictionless to help both the industry and the government. I can get into details through the questions later on.

When it comes to the steel industry, we just finished a pilot together with the Canadian government, ArcelorMittal Dofasco and Tenaris for the traceability of steel, meaning the proof of origin and proof of environmental footprint.

What is the problem with industries that rely on the supply chain today? The big problem is that we're still largely paper-based. Even though organizations here in Canada and abroad have spent millions of dollars digitalizing their companies, the moment I'm exchanging information with the next organization down the supply chain, I send an email or I send a PDF—or if I'm lucky I'm going to send an Excel file—so all that digitalization simply goes out of the window.

The reason is that we're trading products that live in a supply chain that spans different organizational boundaries. Essentially, we don't have a standard way today for these organizations to speak the same digital language with each other. That's why we revert to the minimum common denominator, which is paper or near-paper formats like PDFs or emails.

What can we do about it, and how can blockchain help in this situation? In 2015 a group called IIW, the Internet Identity Workshop,

started looking at how to use blockchain for the purposes of identity. They planted the seed for what is now a W3C standard called verifiable credentials and decentralized IDs, which essentially allow us to create cryptographically verifiable assertions about individuals, organizations and products. An assertion can be, for example, in my ID, what my age is. In this case, it would be an assertion by the government that issued that document. This is applied today for products in the supply chain in a way that I'm able to have real-time information about specific products that go through a supply chain, in a way that this information is interoperable, and that's the key word: "interoperability". That's interoperability between organizations, interoperability between technology providers and interoperability between data standards used at each of these separate organizations.

This is essentially a basis that can allow us to create what is called Industry 4.0. You might have heard about this work. Essentially, it allow us to create supply chains that can adapt to supply chain shocks in real time. It means the ability to automate contract settlement and payments, the ability to enable automatic trade finance, the ability to identify the origin of products in their composition, being able to prove the environmental footprint of a product to enable buyers' conscious decisions on what products they're buying.

• (1550)

This is where I think Canada can really benefit by having an ability to differentiate greener gas, or steel of Canadian origin that has incurred a smaller footprint in the environment when it comes to CO₂, and we're not alone on this path. There are many organizations and governments that are using the same types of technologies today.

We have the EBSI, the European Blockchain Services Infrastructure by the EU, which essentially has created a single sort of truth for transactions for public services across the member countries, also based on verifiable credentials.

Also in Europe, the European Commission is building the digital product passport, initially for batteries, to support the circular economy. It is also looking to expand this to textiles and other products. China is building its own blockchain for the traceability of steel, though we don't know a lot about what it's actually building.

We also have, as I mentioned, the U.S. CBP and the Department of Homeland Security. They are using verifiable credentials for traceability of steel, agriculture, e-commerce and oil and gas, which is our part of the job, as part of their 21st-century framework transformation. It's the biggest transformation in customs since 1993.

Also, USCIS and TSA are looking at verifiable credentials specifically now for people's identities, passports, driver's licences and so on.

Our economy has a bigger component of energy and resources and is strategically positioned to benefit from these technologies. Will we lead the charge and work with our allies to support standardization and the adoption of these technologies in government and industry, or will we take a back seat and wait for others to impose these technologies on us when no other option remains?

Thank you.

The Chair: Thank you very much.

We'll move now to Mr. Rasul from the National Digital Asset Exchange.

Mr. Tanim Rasul (Chief Operating Officer, National Digital Asset Exchange Inc.): Hello, everyone. My name is Tanim Rasul. I'm the chief operating officer and a member of the founding team at NDAX. I want to thank the committee for inviting me to speak today, and I commend everyone for taking the time to learn about this fast-growing and innovative industry.

NDAX is a leading Canadian crypto-asset trading platform that was founded in 2017. Our goal has always been, since day one, to give Canadians safe, simple and secure access to crypto-assets. We service Canadians in all provinces and territories, and to date have done over \$9 billion of trade volume. We have over 40 employees across Canada. Our head office is in Calgary, Alberta.

We created NDAX to resolve some of the challenges Canadian investors faced in this space, including how difficult and unsafe it was to purchase crypto-assets in the early days. Platforms like QuadrigaCX lacked regulation and had poor governance and internal controls. This resulted in Canadian users finding it extremely difficult to get their funds off these platforms.

NDAX has always emphasized robust compliance and operational systems. One of our first hires was a chief compliance officer with experience in the IIROC-regulated space, who helped create a set of comprehensive policies and procedures that mirrored those of traditional financial companies. Our first milestone was to obtain registration with FINTRAC as a money service business. This allowed us to be the first Canadian crypto-asset trading platform to obtain a stable operating bank account with a Crown corporation financial institution. In the first month of our operations, we proactively engaged with our principal regulator to ensure their full understanding of our business model and NDAX's offering.

I know this committee in the past days has spoken to other Canadian CTPs, so I will be brief on how our platform operates. Canadian residents can buy, sell, deposit and withdraw several different crypto-assets through our website or our mobile app. We do not offer margin or derivative trading, and we do not allow our clients to deposit funds via credit card.

We built our platform on the core principles of trust and transparency. Rather than have celebrity endorsements or sports arena deals, we felt the best way to build trust with our customers was to complete voluntary third party attestations. We're the only Canadian-based crypto asset trading platform to obtain their SOC 2 type II certification. This is an audit that focuses on and tests an organization's internal control framework. We have successfully completed IFRS financial statement audits by a reputable and recognized Canadian panel auditor, and we continue to do that on an annual ba-

sis. We also have an audited form 1 with a Canadian regulator. For the past 12 months we have filed monthly financial reports that include disclosing our risk-adjusted capital. We are obligated to disclose to regulators any early warning sign triggers that happen from our working capital. We must disclose to them within 24 hours of the trigger happening.

With everything that's been happening, I just want to reassure members of this committee that NDAX would never loan out customer assets. We never use customer assets for our own trading. We operate on a full reserve basis. We do not operate, nor are we affiliated with, any sort of proprietary trading.

I want to address FTX, Celsius and Voyager and the things that have happened. Their poor risk management, their internal control failures and their lack of governance have lost billions of dollars' worth of customer assets, including those in Canada who lost assets on FTX. It's important to note that what happened with FTX draws comparisons to QuadrigaCX, a first mover and a popular Canadian CTP that was founded in 2013 and became insolvent in 2019. The results of this insolvency of QuadrigaCX had regulators create a framework that encouraged Canadian CTPs to handle client assets in a more safeguarded manner. This is a clear example of how together we can proactively create frameworks to help Canadian investors and protect them.

A recent report from the OSC found that three of the top four platforms used by Canadians are foreign-based. Foreign-based platforms like FTX were not required to have the same requirements as Canadian-based platforms to safeguard customer assets. We should note that in the United States, FTX created a sub-entity called FTX US. When the parent company, the unregulated parent company of FTX, folded and became insolvent, so did the FTX US sub-entity. This should be an important warning for how Canadian policymakers treat foreign-based platforms as they enter the Canadian market.

We're at a pivotal moment in the crypto-asset industry. We have a chance right now to create smart policy, protect Canadian investors and encourage innovation for years to come.

Thank you for your time. I'm happy to answer any sorts of questions you may have.

• (1555)

The Chair: Thank you very much.

We'll move now to Mr. Amiouny from Shakepay.

Mr. Jean Amiouny (Co-founder and Chief Executive Officer, Shakepay Inc.): Thank you, members of the committee, for having me today. It's an honour to be here.

I'm Jean Amiouny and I'm the CEO of Shakepay. I'm an engineer and a graduate of McGill. I've been in the Bitcoin industry for just shy of 10 years, since 2013.

[Translation]

In 2015, I co-founded Shakepay, a Montreal-based technology company that employs over 100 employees and allows Canadians to buy, earn and interact with bitcoin. We offer a mobile app that makes it easy for Canadians of all ages to buy bitcoin in a matter of minutes. We service over 1 million Canadian customers, and we are exclusive to Canada. The majority of our customers are Canadians between the ages of 25 and 44, and have an average account balance in bitcoin under \$900.

Since our inception, we've been strong advocates for building safe, reliable and easy-to-use products that allow Canadians to adopt this new technology with a trusted, locally grown platform.

[English]

Shakepay takes a proactive approach to regulation, having secured a licence as a money-service business by FINTRAC and Revenu Québec to operate in all Canadian provinces and territories. We are in the advanced stages of becoming registered with all provincial security regulators as a restricted dealer. Once that designation is obtained, we will be pursuing IIROC membership.

We also invest heavily in building world-class security and finance teams. We take customer protection very seriously at Shakepay. We don't take risks with customer funds. We don't lend out customer funds. We don't do anything with them unless customers instruct us to. All customer funds are held 1:1 in trust with Canadian financial institutions and leading cryptocurrency custodians.

Since this committee is talking about blockchain today, I want to briefly discuss its pros and cons.

The blockchain is a shared database. It's a way to store data. In comparison to most databases, blockchains are slower, more expensive and more complex to use. They are not a panacea, therefore not everything should be built on them.

In what context, then, are blockchains useful?

Most importantly, they are useful as technology that provides a reliable, secure and verifiable way for two parties to transfer money without an intermediary. Blockchain can be thought of as a public good: It's always available, and it's available to everyone. For example, the Bitcoin blockchain has had a 100% operating uptime since 2014 and is available to use by anyone with an Internet connection.

Many blockchain projects are led by individuals or entities that are often venture-backed and profit-driven. In contrast, Bitcoin has no CEO, nor is it run by a company. By design, it has a fixed supply of 21 million coins, and no one can create more of them. That is why Bitcoin is unique.

• (1600)

[Translation]

My father is from Lebanon, a country where the banking system is not nearly as strong as it is here in Canada. If I were to send money to Lebanon through banking rails, it would take days to arrive, and the recipient would only be able to access a fraction of what was sent due to their bank's withdrawal limits. With bitcoin, I can send money directly to them, instantly, and without intermediary fees.

[English]

At this very moment, there are new Canadians who rely on Bitcoin to send money back to their families. For them, it's a cheaper and more reliable way to make sure that money lands in the hands that need it most. Once a Bitcoin is received, it can be used to purchase goods or services directly, or it can be exchanged for another currency like the U.S. dollar. This inclusivity and accessibility is what makes Bitcoin so powerful. It's a public good that exists on the Internet and is available for everyone.

At the start, any new technology is never well understood, and it takes time for society to experience its benefits. The Internet in the 1980s was an incredible innovation, but it took time for it to mature and develop into what it is today.

Because industry and government work hand in hand to create a framework to allow the Internet to grow and benefit all Canadians, it has now become a public good that provides a fast, reliable and cheap way to communicate remotely.

[Translation]

Bitcoin can bring about similar benefits. We need to be pro-innovation and encourage smart regulation so that homegrown companies like Shakepay can continue to innovate and educate Canadians on the benefits of adopting bitcoin. We have an exciting opportunity as a country to be a leader in determining how this technology can shape the future.

[English]

Thank you for your time today. I look forward to answering your questions.

[Translation]

The Chair: Thank you very much, Mr. Amiouny.

We are going to get right to the discussion.

Mr. Williams, you have the floor for six minutes.

[English]

Mr. Ryan Williams (Bay of Quinte, CPC): Thank you very much, Mr. Chair, and thank you to all our witnesses. This is a fascinating subject. I'm happy we're studying this here in committee. We have a lot to get into.

I'm going to start with Mr. Mandic. You talked about Canada being a leading nation in blockchain, with enormous future potential. What are other jurisdictions, like the U.S. and the European Union, doing that would allow them to usurp Canada's position as a leader?

Mr. Patrick Mandic: Blockchain is very wide. We're talking about different applications of blockchain. I believe Canada is a leader in the sense that we started Etheria and we started a lot of applicational blockchain.

However, when it comes to the supply chain, for example, we're laggards. The European Union is ahead of us. The U.S. is also ahead of us. I think they have already taken the lead in that respect.

• (1605)

Mr. Ryan Williams: Thank you.

Mr. Hayduk, we talk about the common misconception that blockchains tend to be slow and expensive. I was wondering if you could dispel this misconception and talk about the speeds blockchains are now capable of reaching.

Do these speeds make blockchain viable for financial and transaction applications, for instance?

Mr. Morgan Hayduk: It's a great question. I want to throw that one to my colleague Pouria, if that's okay. He is the man behind the speed of our blockchain and can speak pretty eloquently to the potential for speed in other applications.

Mr. Pouria Assadipour (Chief Technology Officer, Beatdapp Software Inc.): Thank you.

There are blockchains now that can do millions of transactions per second, so this could really handle almost any use case you throw at it. There are three main things you need to worry about when you are building or designing a blockchain system. There's speed, there's decentralization and, finally, there is also security.

With something like Bitcoin, you have great security and you have great decentralization, but you have low speed, like 10 transactions per second.

If your use case doesn't really care if decentralization is a huge thing, and if you need only two parties, for example, to look at every single transaction and to validate them, then you could start getting use speeds in the millions or even billions per second.

Mr. Ryan Williams: There are a lot of statistics showing how poor the royalties for artists are on streaming platforms, and how artists are denied the royalties they are rightfully owed.

Would the application of blockchain in music streaming help correct those scenarios?

Mr. Morgan Hayduk: I think there are two parts to that question.

First of all, it's getting the counts right, and that's what we're really focused on. What we have come to uncover over our last few

years working in this space is that a large percentage of misallocated royalties come from people intentionally defrauding streaming platforms, no different from the way folks used to defraud products like AdWords or e-commerce sites.

If we can rectify that first problem, which is ensuring that the counts are correct and the royalties are flowing through to the correct, rightful end owners, that will solve a considerable part of the problem in the music space.

The issue, then, is that music copyright is complex. It's a bad analogy, but it's a bit like a bowl of spaghetti. When you look at who needs to be paid for every underlying work—master rights holders, composers, the people who write the songs and the lyrics—there is, I think, a potential use case for blockchain as a payment layer, but I don't think we're there yet in any sort of meaningful way, because ownership is yet to be determined among a lot of the parties in musical works.

Mr. Ryan Williams: Is that the term of the ETFs, that kind of movement as well?

Mr. Morgan Hayduk: I'm not sure what the acronym—

Mr. Ryan Williams: I think I'm messing up the acronym. When we have ownership of art and music, it's FRT...no, not FRT. What's the acronym?

It's NFT. Thank you, Mr. Fillmore. There are so many acronyms.

Mr. Morgan Hayduk: Yes, there are some really interesting companies in this space doing NFTs from musical works. There's a company, not a Canadian company, but a company out of the U.S., Royal Markets Inc., that's doing this.

It's worth looking at just to see how they structured it, but one of the important things is that you have to start almost with a new work, so that you know ownership is correct at the beginning. Then, as you distribute those songs to streaming services and are paid back royalties for having people listen to them, they can be divided up and apportioned correctly among the underlying owners. It's a lot harder to do retroactively, when you think about it. I think the last Beyoncé album had 99 co-writers on it. Trying to make sure everyone's paid correctly for those royalties is really challenging.

Mr. Ryan Williams: Mr. Mandic, I'll go back to you.

We have Bill C-27 before Parliament. It's updating Canada's digital privacy protection. The bill is written to update our laws in the technology and business practices of Web2.

Due to this decentralized nature of Web3 in blockchain, will Bill C-27 be adequate to protect Canadians' digital privacy rights as Web3 becomes more mainstream over the coming years?

Mr. Patrick Mandic: I'm not familiar with the contents of the bill, but what I can tell you from the blockchain perspective is that it's all about the best practices you are using. You would never put PII, personal identifiable information, on a blockchain. You use it only for cryptographic proofs about that data.

In principle, if you use it correctly, there should not be any problem with respect to privacy.

Mr. Ryan Williams: You talked about identification. When there is data on the blockchain, is it de-identified, or is it anonymized?

Mr. Patrick Mandic: Data on the blockchain is never related to a specific individual or organization. We call it a hash. It's essentially just a proof.

That's how you should operate. You should never be able to know specifically to what piece of data that proof belongs, unless I provide it to you for verification.

• (1610)

Mr. Ryan Williams: This is my last question, Mr. Chair.

Would this be very secure? Is blockchain the most secure technology we could have, among all the other types of technology that are out there right now?

Mr. Patrick Mandic: This is the most secure that we know, right now.

Mr. Ryan Williams: Thank you very much.

[Translation]

The Chair: Thank you very much.

We'll now go to Mr. Fillmore for six minutes.

[English]

Mr. Andy Fillmore (Halifax, Lib.): Thank you very much, Mr. Chair, and thanks to the witnesses, present and virtual, for your time and thoughts today.

I thank you, Mr. Amiouny, for your reminder that it's a new technology and that it takes time for the world to come along. Even so—I want to focus on crypto—it appears that there are credibility and trust challenges that are significant.

John Ray, who was the CEO of Enron during its famous and dramatic liquidation, says that in the 40 years of his career, he's never seen anything as bad as FTX. He says he has never seen “such a complete failure of corporate controls and such a complete absence of trustworthy financial information as occurred here.”

In fact, people lost over \$2 trillion from crypto in the past year. Bitcoin went from \$68,000 to \$21,000. We have some colleagues in the House of Commons suggesting that Bitcoin could be used to opt out of inflation by putting savings into such a volatile currency. It seems very irresponsible.

I want to direct my questions, if I could, to the consortium and NDAX.

How is it that you think Canadians can trust cryptocurrency, when the second-largest exchange was essentially a fraud operation that collapsed within days?

What are your thoughts on the current state of the credibility of the industry?

Ms. Koleya Karringten: I would like to start by saying that FTX is fraudulent. They don't represent the Canadian cryptocurrency industry. They don't represent any of the exchanges we currently have in Canada. They had poor governance and were fraudulent from the get-go.

It would be good to separate that there are fraudulent entities such as Enron, as you stated, out there, and then there are good actors working towards clear regulation. The cryptocurrency industry, especially in Canada, has members like NDAX and others that have been working very closely with regulators.

There were failings of groups like Quadriga and the Einstein Exchange in Canada. This happened many years ago. Based on that, our Canadian regulators came in and we have been working very closely with them, law enforcement, IIROC and OSFI for years to not only make sure that Canada has the strongest regulations, but that we have safeguarded and made sure that consumers are protected.

While I cannot speak for other jurisdictions, I would say that Canada's very stringent and strict regulations are somewhat difficult for this industry to be able to navigate. However, because we had failings like that happen very early in the Canadian space, it would be extremely unlikely that an incident like FTX could happen in Canada again.

Mr. Andy Fillmore: I'm going to reserve two minutes at the end for another question.

Mr. Rasul, can you answer, please?

Mr. Tanim Rasul: I would echo everything that Koleya said.

Because of the QuadrigaCX debacle in 2019, regulators were forced to ensure that Canadian cryptocurrency trading platforms had safeguards for client assets.

That's why in my opening statement I mentioned that we're the only Canadian CTP that has its SOC 2 type II certification. This is an audit by an accounting firm on an organization's internal control framework and a test of those frameworks. We have a financial statement audit by a Canadian panel auditor. We also have to do monthly financial reports and form 1 reports to IIROC, disclosing our risk-adjusted capital and any working capital requirement triggers that happen.

Mr. Andy Fillmore: Thanks for that.

I'm going to switch gears a bit. Again, for the consortium and NDAX, I want to talk about the role of government here.

What's your sense of what Estonia has done, which is essentially develop that trust and that credibility from a central government body, like a digital currency backed by the Bank of Canada, for example, as opposed to the decentralized...what some might call the Wild West? I know it's coming together in a more coherent way, but what's your reaction to that?

• (1615)

Ms. Koleya Karrington: I would strongly encourage government and regulator engagement with our industry. I know that our industry is very eager to engage with our government for that one.

The reason companies or individuals will go towards the centralized exchanges is based on not being able to access the basic business needs that this industry requires. Banking is difficult for these businesses, and if you can't get access to something as simple as banking to be able to operate a compliant business, you're more likely to go offshore.

With companies that feel it's too difficult to navigate the regulatory environment, we've also seen that they'll go to offshore places like the Bahamas, like FTX did, to what I guess are more lax—for lack of a better word—regulatory jurisdictions, where they can operate decentralized exchanges and consumers aren't protected.

In Canada, with our members, we would like to see government get engaged. We would like to see government advocate for better access to banking and for very clear regulatory processes to allow for these companies to make sure they are registered with IIROC and FINTRAC and can serve Canadians in a safe and compliant manner.

Mr. Andy Fillmore: Thanks.

Go ahead, Mr. Rasul.

Mr. Tanim Rasul: For CBDCs, central banks around the world are understanding the benefits of how they can bring the dollar onto the blockchain. With the popularity of crypto and stable coins, they really see that money needs to evolve. CBDC transactions can speed up and secure payments between people and institutions, banks and businesses. It can be convertible, low-cost, secure, flexible and scalable.

This has to be done with participation between industry and Canadian citizens and the Bank of Canada. As early as 2018, we spoke to the Bank of Canada about CBDCs, and we continue to engage with the Bank of Canada to help in any way we can to understand the CBDC space.

Mr. Andy Fillmore: Thank you, all.

I'll end on a positive note, if there are 30 seconds left.

Maybe it's a question for Beatdapp. What are some of the success stories, where blockchain is bringing value, and the positive side of all this?

Mr. Morgan Hayduk: Andrew, do you want that one?

Mr. Andrew Batey (Co-Chief Executive Officer, Beatdapp Software Inc.): Well, on a personal note, I've managed crypto through three downturns, so this is my fourth experience. In 2018, my portfolio was down 90% and everyone was saying, "Sell, sell, sell—you've lost all this money." I didn't actually lose, because I

didn't sell, and when I rebalanced as the next bull run came, I was up 900%.

I know that wasn't your question, but I think part of the answer is knowing what the market does, just like anyone who's trading in a sophisticated way or investing, and knowing when you should pull and when you should double down. I'd say it's materially changed my life in a positive way, having managed Bitcoin since 2011.

On the practical application side, one of the most amazing things we see is how it affects drugs and pharmacies in making sure the authenticity of drugs is correct, or in the DoD context: Where is the supply coming from? Are the manufacturers actually delivering the correct parts and goods? If something malfunctions, where are all the other parts that need to be replaced immediately? That has no actual cryptocurrency impact and no consumer application, but it can transform an entire sector in a positive way and save lives.

The Chair: Thank you very much.

[*Translation*]

Mr. Trudel is next for six minutes.

Mr. Denis Trudel (Longueuil—Saint-Hubert, BQ): Thank you, Mr. Chair.

Ladies and gentlemen, thank you very much for being with us. The discussion is really very interesting.

Mr. Hayduk, I'd like to follow up on a question that was asked earlier about music streaming. I'm talking about Spotify, Apple Music and Amazon Music Prime.

We know that, for songwriters and artists who make music, it's a big challenge to get royalties commensurate with their work. Bill C-11 was passed in the House of Commons, which should help.

Practically speaking, how can blockchain technology help the system so that artists get all the royalties they're entitled to?

[*English*]

Mr. Morgan Hayduk: It's a great question.

From our perspective, the first step is just getting the accounting right and being correct about adjudicating what is and is not legitimate listening.

I talked to you in the opening statement about how a considerable percentage of streaming activity is subject to manipulation by fraud. Eliminating that from the system is the first step to making sure that every artist who is trying to earn a living with their music or through their art is getting paid correctly.

This is sort of a boring enterprise application of blockchain, but I think that might be a different story than is often told. It's something as simple as just getting the accounts right. Having both parties agree is a really critical part of making sure everyone downstream from the service itself is paid correctly. Then adjudicating for fraud is another really important, very boring part that's almost imperceptible to most consumers but affects the pocketbooks of the artists who are paid.

That's where I would start. I think the platforms themselves work really hard on this. The independent and major labels care deeply about it, obviously, as it's their business. Independent artists and all the folks who make a living in music but aren't the musicians themselves, care deeply about us getting this stuff right, too.

The animating ethos of our business is getting the foundational accounting right, so that everyone who's doing things the right way is paid correctly.

• (1620)

[Translation]

Mr. Denis Trudel: Thank you.

Are there any other applications?

We know that there's a lot of fraud on Twitter, Instagram and Facebook. It's a huge problem. Could blockchain and the technologies we're talking about today help to thwart fake accounts and fraud on these platforms?

[English]

Mr. Morgan Hayduk: It's a great question.

It's outside of the scope of our business to say if Twitter and Facebook could leverage blockchain technology.

I have heard anecdotally—I know the plural of anecdote isn't evidence, but I have heard enough anecdotally that I'll say it—that there are all kinds of interesting applications of blockchain for ID verification. That could be a space where, when you're at the account creation point, maybe there's an opportunity to integrate some form of secure ledger technology underlying the account verification step. This could ensure that people are using their real names, their proper IDs and things of that nature, so that there are fewer anonymous...or fewer accounts that are created specifically for the purpose of engaging in misinformation and the like.

[Translation]

Mr. Denis Trudel: Thank you, Mr. Hayduk.

Ms. Karrington, you didn't mention it in your opening remarks, but your website indicates that your consortium is developing innovative clean technology solutions for industries such as aerospace, oil and gas.

Does your consortium concretely help oil companies to reduce their fossil fuel energy production?

[English]

Ms. Koleya Karrington: The Canadian Blockchain Consortium is my volunteer role. I've been volunteering here since 2016.

My day job is designing combustion heating systems. I've partnered with the Edmonton International Airport to design for them new ground service heating equipment that reduces emissions by 72%. I've also partnered with oil and gas companies to develop out environmental heating systems that reduce their carbon dioxide emissions by up to 44%, eliminate their nitrous oxide and eliminate their carbon monoxide. I'm currently launching a new product line into the construction industry this winter that's going to radically reduce emissions as well.

My day job does not coincide with my volunteer role. We currently do not utilize blockchain within that business.

[Translation]

Mr. Denis Trudel: I had a follow-up question, but I don't know if it applies, given what you just said.

You talked about your work in the aerospace industry. We know that this industry accounts for 3.5% of greenhouse gases in the world. To what extent are you working to reduce emissions in the aerospace industry?

[English]

Ms. Koleya Karrington: When it comes directly to heating up an aircraft, yes.

Currently, anything above the 49th parallel gets quite cold, and it's very expensive and requires a fair bit of jet fuel as well as diesel fuel to heat an aircraft. The number one reason for heating is to make sure the water lines don't freeze and the pipes don't burst. The secondary consideration, which is also very important, is passenger comfort and safety.

Aircraft are almost as efficient as they can currently get, outside of moving over to electric, but in terms of heating up aircraft, we do dramatically reduce their emissions.

• (1625)

[Translation]

The Chair: Thank you, Mr. Trudel.

Go ahead, Mr. Cannings.

[English]

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you. This is all very interesting. I'm new on this committee, so I haven't heard the previous testimony. Blockchain, for an old guy like me, is all brand new.

I'm going to start with Mr. Mandic.

You talked about using blockchain to deal with natural resources tracking and provenance. At home in British Columbia, I pay extra to Fortis, my energy provider, to get renewable natural gas. I just have to assume that Fortis has enough of that natural gas.

Can you explain how blockchain could be, should be or is being used in that space to reassure me that I'm getting what I'm paying extra for?

Mr. Patrick Mandic: What we're doing with blockchain and blockchain-related technologies is to create a single sort of truth. As I mentioned at the beginning, each organization currently has its own balance of what it sold and what it bought, but each one is keeping that information in a completely separate system.

If you really want to know if someone is tricking the system, you have to go back one by one and make sure everyone is telling you the truth. If you have a single source of truth, then you automatically are going to know if the balances don't add up. If you're selling more renewable energy than has been produced, this is going to show.

We were working a couple years ago with a Chilean electricity regulator to solve exactly that problem, of their having more RECs than the actual renewable energy that was created.

Mr. Richard Cannings: Related to that, and to expand on what you just said, I was at the G20 meeting in Argentina in 2018, when they discussed the future of energy and how we can move to a clean energy future. Up on the screen, one of the positive things they were looking at just said "blockchain". They didn't discuss it much.

If companies are producing clean energy—say, clean electricity through hydro versus coal—is this the kind of thing customers, governments and industry can somehow track, in order to make sure they're getting...? I'm still kind of mystified as to how this—

Mr. Patrick Mandic: Absolutely. There are many layers when it comes to a solution for that. It's not just blockchain. You'll also add the verifiable credentials I mentioned before, but...essentially, yes. You're solving that problem, because you're essentially keeping an accounting record of what has been produced and consumed.

In the steel industry, for example, the concept is that you're creating a passport for a product. For everything that happens to that product across the value chain, you get a stamp. That stamp could be, "this product had a transformation" or, "this product incurred so much CO2 along the journey". At the end of the journey, you add all the CO2 stamps and have the actual CO2 emissions per product.

That is different from what we're measuring right now, which is per industrial facility. As a consumer, it doesn't tell me anything. I want to know that what I'm consuming.... What's the impact of that product for my business?

Mr. Richard Cannings: I'll turn to Ms. Karrington, continuing with the energy theme.

You mentioned some of the concerns many people have about blockchain technology, and certainly about Bitcoin—pardon me if I confuse some of these things. One is the amount of energy consumption. We know that cryptocurrency mining uses as much energy as a mid-sized country, whether it's Argentina, Finland or Greece. I've heard various examples. It's my understanding that because of the way cryptocurrency is produced, the amount of energy tends to increase...by law, almost.

I have cryptocurrency mining operations in my riding, because we have cheap electricity there. It's hydro, but it's electricity. We

are facing a future when we will need to have two or three times as much electricity available in British Columbia or Canada than we do now. I'm wondering how we can square that circle with a burgeoning blockchain or cryptocurrency industry.

• (1630)

Ms. Koleya Karrington: There is energy consumption required for Bitcoin mining. The importance of it is that Bitcoin is considered by many, in our group and others, as a form of sound money. It's considered potentially the soundest money the world has ever seen. Utilizing the energy to produce Bitcoin.... The blockchain there can also be used for multiple other uses, not just for mining cryptocurrency. People can also timestamp, confirm and validate transactions that are happening on chain.

Right now, 86% of Bitcoin is, I think, used on renewables. A lot of it uses hydroelectric—energy that wouldn't otherwise currently be used.

Bitcoin can be used to support load balancing. In Texas right now, they've grown a multi-billion dollar industry by allowing more miners to have access to the grid. These miners also participate in what is called "demand response". Miners are willing cut off and reduce the amount of profit they make in order to be able to support the grid system. Miners also do innovative things whereby they'll bring in infrastructure. They'll build infrastructure and bring high-speed Internet into rural communities. They'll bring in jobs by also building out their mining facility plants.

The way we describe Bitcoin mining to governments is that it's kind of supporting building the infrastructure for the Internet. A lot of data centres utilize similar functions as you would use for Bitcoin mining. It is considered that the metaverse will be a multi-trillion dollar industry by 2030, and a lot of companies are looking to be able to utilize more electricity or want to have more electric vehicles coming out, so we're going to have to start developing out the infrastructure for that energy grid. Bitcoin mining will help not just by bringing in the infrastructure, but by bringing in the high-speed Internet. It will help to train the different jobs. It will help support the oil and gas industry by utilizing their hydrocarbons and building out more generators.

The heat that's given off by Bitcoin mining can also be used to support greenhouses. The waste heat from that can support being able to grow produce.

There are a lot of valuable uses for Bitcoin mining.

The Chair: Thank you very much.

We will now turn to Mr. Perkins for six minutes.

Mr. Rick Perkins (South Shore—St. Margarets, CPC): Thank you, Mr. Chair, and thank you, witnesses.

My first question is for Ms. Karrington. It won't be about your day job, which is very impressive and important, but more about your volunteer work.

I agree with my friend and colleague, Mr. Fillmore, that Enron was one of the largest failures in the world of the traditional public exchange system and the auditing system. It was a fraud of a publicly traded company, not only in our stock exchanges, but also in the exchanges of energy contracts in California, which created artificial and unnecessary blackouts.

We've have homegrown examples of that too, which were obviously traded on the Toronto Stock Exchange. The most famous is probably Bre-X.

Investors, obviously, have to do some homework, but there is always room, unfortunately, for fraud to happen, even in things that are traditionally regulated.

Yesterday we had a vote in the House of Commons on a private member's bill to try to get some coordination between OSFI, the Bank of Canada and the provincial regulators in looking at creating a framework for moving forward with the industry on improving regulation in Canada. Unfortunately, the government voted against it.

A committee study of that here would have been very important. We don't get a chance to do that here, so I'll ask you about it.

What would that coordination do to help? You mentioned four areas where we need better regulation. Do we need better coordination between the federal and the provincial governments on this?

• (1635)

Ms. Koleya Karrington: Absolutely. We definitely need better coordination. It would have been highly valuable to many members of our organization and to the industry as a whole for a bill like that to have passed to enable us to start having that dialogue. Luckily, that dialogue is currently happening with regulators and industry. We would like to have government engage on that. Canada has an opportunity to be a leader in this space, not just on the financial services side but, as our other party members who were speaking here today said, in the enterprise-level blockchain space.

The value of having the government collaborate with this industry specifically would be to help engage with regulators and industry to develop frameworks that are going to not just protect consumers but allow for products to get tested on the market in a safe way, to allow for this industry and the innovation within this industry to expand exponentially.

This is a multi-trillion dollar industry. We would like to see more of these companies be able to export the valuable technology that they are building to other countries in the world. We would like Canada to be seen as a leader. We would like Canada to announce globally that we should be a hub for this technology and for our virtual asset service providers.

We just had our very first one, Coinsquare, be able to be the first IIROC-regulated or approved company in Canada. That was sub-

stantial. From the time of Quadriga to now, our regulators have made amazing advancement and strides, but regulation is not moving at the pace of innovation, and the innovation in this space is moving at an exponential rate.

We want to have government view this as a non-partisan industry, as a way we can bring our Liberal, NDP and Conservative governments together to see that this industry creates jobs. We pay our taxes. We want to support the digital innovation of this country. We have a lot of value to bring. We have trillions of dollars' worth of investment that we can bring into this country if our government shows support for this industry.

Mr. Rick Perkins: Thank you very much for that answer.

Mr. Rasul and perhaps Mr. Amiouny, could you answer a second question in short order?

I think both of you mentioned that you keep 100% of the client money segregated. You don't borrow, and you don't invest. You don't do anything with it. We heard testimony earlier this week that the current Canadian regulations or OSC regulations require only 80% to be held. Obviously you think there's a much higher threshold required for that in order to protect investors.

Mr. Rasul, then Mr. Amiouny, could you comment on that?

Mr. Tanim Rasul: Yes, I think the 80% you were speaking of was the other Canadian CTP speaking about the amount of crypto they have to off-load to qualified custodians. Right now, legislation in Canada requires Canadian CTPs to off-load a high percentage of their assets to custodians. Unfortunately, the only really qualified custodians are in the United States, which adds a bit of counterparty risk. We've seen everything that's happened in the past few years.

What we want to do is ensure that the custody of Canadians' assets stays here in Canada. At the same time, even though you're keeping it with a qualified custodian, you're still keeping 100% of customer assets safe and segregated away from your own assets, so they cannot be commingled. On a daily basis, you must do segregation reports and ensure that your assets are separate, both in fiat and in crypto for your customers, as well as operate on a full-reserve basis, unlike banks, which operate on a fractional reserve basis.

Mr. Jean Amiouny: As Mr. Rasul said, the 80% refers to the amount of cryptocurrency that's held in cold storage. Cold storage is where the private keys allow for the distribution of the Bitcoin. Cold storage means those keys are stored off-line. It's a more secure way of storing Bitcoin.

I'll echo what Mr. Rasul has said as well, that in Canada the security regulators require holding on a 1:1 full reserve basis, which means that for every dollar that's held at Shakepay, one dollar is held in a Canadian financial institution. Every Bitcoin that's held is also held 1:1 in our custodian.

• (1640)

Mr. Rick Perkins: I have a short question on the supply chain. I was fascinated by the supply chain issues. I worked 20 years in retail. The supply chain is everything in retail. I'm assuming there is a huge number, Mr. Mandic, of applications in various retail environments to make that quicker and more efficient: tracking, product knowledge, safety, all of that beyond the ones you mentioned.

Mr. Patrick Mandic: Absolutely. The space is very broad. Now the challenge—and this is where the government should step in—at the end of the day, is network effects. The first telephone.... If you have only one telephone, it has no value. Two telephones have more value, and then it increases exponentially, right? It's all about adoption, and that's why we're betting on open standards.

The important thing is not the applications we at Mavennet are seeing. It's the applications we're not seeing. When the Internet was created, no one was thinking about Google Maps. They were thinking about websites, right? This is the same thing. If we have this framework, this foundation, that's when things happen. However, it needs to be open. It needs to be interoperable, and there needs to be, at least, a leader.

The Internet was created thanks to DARPA. It inspired this adoption. It got the Internet to critical mass. That's why we're not operating Internets. That's why we have the Internet.

Mr. Rick Perkins: Even Bill Gates said we'd only need 256 KB.

[Translation]

The Chair: Thank you very much.

I'll now give the floor to Mr. Dong for five minutes.

[English]

Mr. Han Dong (Don Valley North, Lib.): Thank you very much, Mr. Chair, and thanks to all the witnesses. I've met with some of the witnesses previously, and I had very interesting discussions.

Before I start, I just want to share with you, Mr. Chair, that once in a while I will go and sit down with my accountant to assess the very limited amount of money I have in my RRSPs, and he will ask me to choose my level of tolerance when it comes to risk: low, medium or high.

I just want to do a quick survey of all the witnesses today. How would you categorize cryptocurrency in the current...? I'm all for better regulation to make sure that consumer protection is there, but how would you categorize, in terms of risk, cryptocurrency today: low, medium or high?

I'll start with Jean.

Mr. Jean Amiouny: Mr. Chair, there are a lot of different cryptocurrencies out there, and I think each of them has—

Mr. Han Dong: It's like how I'd say stocks, for me, are high risk and, maybe, bonds are low. In that sense, how would you characterize—

Mr. Jean Amiouny: That's correct. It's to further say that within stocks, some companies are, let's say, a bit riskier than others.

Mr. Han Dong: Okay. Let's make it easier for you. Take away Bitcoin. Now we have the rest, how would you categorize them?

Mr. Jean Amiouny: Everything but Bitcoin I would put as high.

Mr. Han Dong: Very well.

Go ahead, Patrick.

Mr. Patrick Mandic: It's the same answer.

Mr. Han Dong: Go ahead, Morgan.

Mr. Morgan Hayduk: It's the same answer.

Mr. Han Dong: Ms. Karringten.

Ms. Koleya Karringten: Everything outside of Bitcoin I would consider high risk.

Mr. Han Dong: Oh my God, I'm doing advertising for Bitcoin. I can't believe it.

Voices: Oh, oh!

Mr. Han Dong: To the rest of the panellists, please—

Mr. Andrew Batey: I have the same answer. Everything outside of Bitcoin is high.

Mr. Han Dong: Okay, since everyone agrees with that, how would you categorize Bitcoin? Is it low? You can't say it's low, because the value dropped quite a bit.

Jean, I won't put you on the spot.

Patrick, you're more on the blockchain.

Mr. Patrick Mandic: I'm not going to ask you to define either low—

Mr. Han Dong: You don't want to make enemies. Okay, fine. We'll switch gears.

My point is that it is a non-partisan issue, right? When the Conservative leader, during his leadership bid, advised Canadians to put their investments into cryptocurrency to protect them from inflation, he said that this inflation is homegrown. It became a topic of debate in Parliament, so your testimony here on record is very important.

Let's switch gears.

To Patrick and Morgan, I really appreciate your presence today, because you talked about applications of blockchain other than in cryptocurrency. I have to confess, before today, much like Mr. Cannings, I was unclear about the technology itself, because of the words “block” and “chain”. Now I have a better understanding.

Would you say that this technology could be helpful to all governments around the world in terms of solving emissions issues—addressing climate change—because you can track production from its origin? Do you think it's going to be a huge tool for all governments around the world?

• (1645)

Mr. Patrick Mandic: One hundred per cent. In order to know what your emissions are, first of all you need to measure them. The way we are measuring them is not by product. We're doing it by industrial facility. If I'm an organization that's consuming a large amount of product, I have to do a very deep study to find out how much impact I'm having on the environment.

Mr. Han Dong: That's a lot of money.

Mr. Patrick Mandic: It costs a lot of money and time. I can't be accurate, because I'll say, "Well, in buying this pen, I encourage so much CO2 in the environment," but I'm using a global factor for this pen. This pen could be coming from Asia, or it could be from a local factory—

Mr. Han Dong: In that case, the transportation would be different.

Mr. Patrick Mandic: Exactly. It's the same thing—

Mr. Han Dong: If the case is agriculture, it's the same thing.

Before the government actually sees blockchain, via regulation and legislation, as a very good tool to track emissions and therefore combat climate change, there's one question: What's the incentive for the business, manufacturer or farmer to participate in blockchain technology? What would that incentive be?

Mr. Patrick Mandic: This is where I think we need to be smart about it. We need to start in Canada, because we know we have production of steel that is less than half of CO2 emissions. Now, with the new ArcelorMittal factory in Hamilton, it's probably even more.

Mr. Han Dong: What do you need to do to adopt blockchain technology?

Mr. Patrick Mandic: Essentially, you need them to adopt standards that would allow them to—

Mr. Han Dong: Would pricing on carbon be helpful? They will save a lot of money on that, or cap and trade, when they can trade their emissions capital.

Mr. Patrick Mandic: It would help, certainly.

I think that things like, for example, driving by example.... In our procurement, looking for specific standards and looking for verification that products have a maximum amount of CO2 emissions, that's—

Mr. Han Dong: If I tell you that in conventional...like in traditional steel manufacturing, there is a blockchain technology that will reduce your emissions by 50% or maybe even 80%, because now you can track where the emissions are coming from—you look like you don't believe that—the incentive is that therefore you will pay a lower price on carbon without production. Do you think that will be a right incentive?

Mr. Patrick Mandic: Yes. I'm going to give you an example that is very real.

For a steel mill that uses gas, in order to calculate my emissions, I'm using a global factor for how much in CO2 emissions I'm incurring by burning this gas. Now, if you're in Canada, you might be using gas that's incurring a lot less CO2 because it's greener gas—it's a greener well.

Now, if I know it, if I can track where that gas is coming from, then I can go and say, "Well, actually, my company wasn't as bad to the environment as I thought it was." Now I have the door open to maybe sell this product at a premium to organizations that are environmentally conscious.

The value chain starts very, very early.

• (1650)

Mr. Han Dong: Yes, but my question remains. To change the status quo, to change their normal practice right now...the Canadian energy sector is one of the cleanest in the world, but to create an incentive for them to do better—because we have an emissions target to hit—do you think blockchain is a good tool? Do you think it would be especially useful in the system we have today, where there's a price on carbon?

Mr. Patrick Mandic: Absolutely. You need to measure, so that's the only way of doing it.

Mr. Han Dong: Yes. It makes a lot of sense.

Thank you, Chair.

The Chair: Mr. Dong, you're way over time. You conveniently forgot to look at me when you started with your line of questions, but it was interesting.

Before I turn it over to Mr. Trudel, I'll just play devil's advocate with your question regarding Bitcoin risks and remind you that a month ago the Financial Times reported that long-term, inflation-linked gilts in the U.K. had lost more value than Bitcoin on a yearly basis, which they couldn't even believe they were writing. Sometimes risk is where we don't expect it to be.

Monsieur Trudel, I'll turn it over to you.

[*Translation*]

Mr. Denis Trudel: Thank you, Mr. Chair.

The exchange has been very interesting. We understand that it seems pretty unanimous that this remains a high-risk industry. I've been hearing comments since the second meeting. I'm not sure how I feel about it, but I see some positives.

Mr. Amiouny, I'll start with you because I'll be really pleased to hear you speak French.

How can the public be better informed? What message could be sent today to explain the positive aspects of this industry? How can we trust this industry? After all, there's a lot of fear. There has been fraud. The bankruptcy of FTX didn't help. There's a lot of misinformation in the media.

How can you sell your industry? What message would you like to send? I hear what you're saying. You're saying that this is the Google of tomorrow, that it's inevitable and that this is where we're headed. What are the strengths of this industry? What can we hold onto to have confidence in this industry, to be convinced that this is important, and that it's the future?

Mr. Jean Amiouny: Thank you for your question.

Canadian platforms do a lot to reassure Canadians. Services like Shakepay and the platforms of the other witnesses are very different from platforms outside of Canada. We talked about that a little earlier.

Mr. Denis Trudel: What is different or better in Canada?

Mr. Jean Amiouny: In Canada, client funds must be held on a one-to-one ratio. That means that for every dollar a consumer has on our platform, we must have exactly one dollar in their account. For every bitcoin, there must be one bitcoin set aside for users.

The situations you see outside of Canada, such as that of FTX—

Mr. Denis Trudel: Couldn't that happen here?

Mr. Jean Amiouny: The measures that platforms are subject to here in Canada mean that the risks are much lower.

Mr. Denis Trudel: What could you tell me to convince me that this is something important and that I should invest in it? What major gain could I get from this investment?

Mr. Jean Amiouny: I don't give financial advice, but bitcoin technology isn't just about money or investment. Bitcoin is a public good. It allows anyone to use a phone to transfer money anywhere in the world.

Before the Internet, you had to send a message by mail, and it took weeks to cross the ocean. The Internet has made virtual communication possible—

Mr. Denis Trudel: There were also telegrams.

Mr. Jean Amiouny: That's right.

With email and social media, the Internet has made it possible for us to communicate instantly with anyone in the world, no matter what city or country they're in.

So bitcoin is a public good that allows anyone to always have access on their phone to a platform that allows them to transfer money to another person without intermediary fees or complications. The transfer is done directly, like an email.

• (1655)

Mr. Denis Trudel: Okay.

Mr. Mandic, I have the same question for you. How would you promote your industry to Canadians right now? What is the biggest difference from the current banking system?

[English]

Mr. Patrick Mandic: I think the most important thing to recognize here is that we're very focused on the word "blockchain" technology, and we should be focused on the use cases, the implications and the impacts, and what we have to gain.

In our case, with Neoflow, indeed with the oil and gas industry, just by implementing this for customs we're saving the industry north of \$100 million just in tariffs, because it's so hard to prove origination due simply to the amount of paperwork. That's not including back office work. If you think about digitalizing everything, it's billions of dollars.

If, instead of using paper, communication between organizations were digital, we would be saving millions of dollars. We would have supply chains that adapt automatically. We would have the ability to know for certain that a product is Canadian and is not being dumped from other countries, so it's very powerful.

In order to do that, we need to get to a critical mass of adoption. That's what we should be focusing on.

[Translation]

The Chair: Thank you very much, Mr. Trudel.

Unfortunately, you used twice your allotted time, but you may get another chance.

Mr. Denis Trudel: Thank you.

[English]

The Chair: Mr. Cannings.

Mr. Richard Cannings: Thank you.

I'm going to continue with Mr. Mandic, because I'm interested in this whole supply chain aspect, but I'm also still concerned about the energy costs of blockchain, at least from what I heard from cyp-tocurrency.

Again, it's my understanding that when you're mining Bitcoin, every new Bitcoin that is produced costs more energy and takes more computational time.

Is this the same for the verifiable credentials you're talking about? Did they have an energy cost associated with them as well?

Mr. Patrick Mandic: No. Everything in life has an energy cost. Building this table has an energy cost. It's all about thinking about whether or not this cost is worth what I'm doing.

In terms of verifiable credentials, the cost is many orders of magnitude lower than it would be with Bitcoin, for example, because most of the work is not happening in the blockchain itself.

Mr. Richard Cannings: I'm glad to hear that. You've described a system that sounds like it would be very beneficial for industry, commerce and trade. You talk about reaching that critical mass.

The question in my mind, because I know nothing about it, is this. It would save money, but what would the energy costs be if we reached that critical mass and our whole economy was running on this? Would it be a very minor addition?

Mr. Patrick Mandic: It would be lower than it is today.

Mr. Richard Cannings: Okay, well, that makes me feel good.

Mr. Patrick Mandic: It's a business case, so you're going to have some increments in energy utilization and you're going to have some savings. We're going to be better off with completely digital technology than we are today.

Mr. Richard Cannings: I feel a lot better about that.

Now I just need to try to understand how this tracking of the whole value chain happens. I think Ms. Karringten mentioned pharmacies and drugs, and you're talking about clean steel, green steel or greener steel.

How would someone in a retail store be able to look at a bottle of cold medicine or something that had to be recalled and know, through blockchain technology, quickly and truthfully where it came from and the path it went through? Would you try to explain to me how that works?

• (1700)

Mr. Patrick Mandic: Very simply put, the key is to have a universal identifier for a product, which is what we don't have today. Each company has its database, and it has an identifier for each of the products in its database, but you don't have a universal identifier for an individual product—not product type but an individual product. Once you have that, you've solved the problem.

In order to have that, what you need to do is to be able to have the digital history of the product and the composition of the product, and that's built with what I mentioned before, the digital assertions that you containerize into what are called verifiable credentials. They use other standards from DS-1, and now this has also been synchronized in other standardization bodies like IETF. Essentially, it's just that.

Depending on the type of product, you might want to have organizations report on these products, or you want to also have inspectors verify, certify and sign off on those products.

There are many layers, but the higher level is just universal identifiers and having a digital history of that product that is interoperable and that anyone can read, independently of the technology they use.

Mr. Richard Cannings: Okay, thank you.

[*Translation*]

The Chair: Thank you very much.

Mr. G n reux, you have the floor.

Mr. Bernard G n reux (Montmagny—L'Islet—Kamouraska—Rivi re-du-Loup, CPC): Thank you, Mr. Chair. I'd also like to thank the witnesses.

Since the meeting is public, I also want to say, without being partisan, that I know a party leader who said in the House of Commons—and even outside the House—that interest rates were going to stay so low for so long that we could borrow as much money as we wanted. Yet the Bank of Canada policy rate has gone from 0.5% to about 4%, the debt has doubled, and interest rates have doubled too.

That said, I'm very interested in what we're learning today.

Ms. Karringten, is your association able to provide the committee and all parliamentarians who will be studying these issues with the most essential elements that should be put in place in any future regulations or legislation regarding blockchain in Canada?

[*English*]

Ms. Koleya Karringten: I'm sorry. I may need slightly more clarification on that. Is it in terms of legislation around how blockchain supports...? Are we talking about inflation? Are we asking for that in the cryptocurrency space, or talking about the—

Mr. Bernard G n reux: It has nothing to do with inflation.

I'm talking about blockchain and what can happen with Bitcoin or whatever cryptocurrency, as well, and all the other applications. That's what we're actually doing here. We're trying to see what the government can put in place to secure everything that will eventually be done or used with blockchain.

Ms. Koleya Karringten: A good step would have possibly been Bill C-249, if that's what it was called. It's just being able to start opening up the dialogue around this industry, and these conversations and topics—to have better education, directly from our industry to government, so we can be part of supporting any legislation or bills coming into place for the industry.

It's important to note that this industry is not only non-partisan but also one of extreme innovation. We're innovating in the financial service, supply chain, agriculture and energy spaces. It's difficult for me to specifically state any legislation that would be able to go...in terms of supporting it, because.... Being on the enterprise, cryptocurrency mining, and decentralized finance or fintech sides, I wouldn't be able to state anything in particular without knowing exactly what industry you would like to focus on.

I would just say that the industry can bring trillions of dollars' worth of value to the Canadian ecosystem and create a lot of jobs, value for GDP, and technology exports going to other countries.

• (1705)

[*Translation*]

Mr. Bernard G n reux: If I understood correctly, your 70 members aren't just involved in cryptocurrency, but also in all industries.

[*English*]

Ms. Koleya Karringten: Yes.

[*Translation*]

Mr. Bernard G n reux: Okay, thank you.

Mr. Mandic, I'm showing you a pen that probably has 10 different parts to it. Yes, it's a product, but it's got ink, plastic, metal and all kinds of things in it.

When you were talking earlier about the breakdown of each product, I was looking at my pen and thinking.

[*English*]

We're going to look like stupid dummies in 30 years because we didn't....

[*Translation*]

Could blockchain technology one day be able to identify every element on the planet with a code?

[*English*]

Mr. Patrick Mandic: In the future, it could be. We could get there.

Now, we need to be practical. When it comes to implementation—

Mr. Bernard Généreux: Can you come closer to your mike, please?

Mr. Patrick Mandic: In the future, it could be. This is very realistic.

We need to be practical. We need to think about what the 80:20 rule is that's going to get us there with the minimum amount of effort.

That is different for every industry. It's different for the geographies across the world. There are a lot of processes that happen inside factories that compose different materials, and you wouldn't necessarily attack everything and report everything.

Mr. Bernard Généreux: What about a human being? Every human being can have a code, for everything from the way they move around to their medical—everything. We see that in the future.

[*Translation*]

We're already seeing it on TV and in movies set in 2100 or 2400, for instance.

We were making a comparison with the Internet earlier. We don't need to go back 100 years. Today, if we could look at ourselves 25 years ago, we would think we looked a little silly because we had no idea what the Internet would make possible today and tomorrow.

Will the 8 billion, or maybe 10 billion, human beings have their own code, so to speak?

[*English*]

The Chair: Give a brief answer to a very large question, please.

Mr. Bernard Généreux: I'm quite far away, but I'm a visionary.

Mr. Patrick Mandic: My answer is that technology is a tool and it depends on how you use that tool. I don't know if the world will take us there, but we will see in 100 years.

[*Translation*]

The Chair: I've been hearing lately that we've made great strides in scientific progress, but that our strides aren't always as great in ethical and philosophical advancement. What you're saying raises all kinds of questions.

Go ahead, Ms. Lapointe.

Ms. Viviane Lapointe (Sudbury, Lib.): Thank you, Mr. Chair.

[*English*]

Mr. Mandic, you mentioned in your opening remarks that one of the sectors you're working with is the Canadian steel industry, and that your service can track steel origins.

Can your service help address the steel dumping issue?

Mr. Patrick Mandic: Yes. The technology can, certainly. It's a matter of how you're applying that technology and who is part of that technology.

One piece of the puzzle is getting Canadian steel producers to use the technology and say, "Well, I can guarantee that our steel is coming from these factories and, therefore, is Canadian." There might be other steel coming to Canada in a way that is illicit, and that's where it would be interesting to have the CBSA follow the path of the U.S. CBP and use the same type of technology to get other industries outside Canada to also have to report on the origins of their product.

The technology is there. It's about how you use it. That goes well beyond the work we do as a technology organization.

● (1710)

Ms. Viviane Lapointe: Thank you.

My next question is for Ms. Karrington.

There have been some issues raised that because there's no mediator or oversight with the blockchain technology, there are concerns about exploitation.

Can you tell this committee about the risk of exploitation of vulnerable people and whether there is anything we can do to mitigate those risks?

Ms. Koleya Karrington: I would take that to the potential with cryptocurrency.

We did see, back in 2017, when lots of initial coin offerings were entering the market, that a lot of people were being unfortunately scammed, being given false ideals on what they were going to get for returns, and taking monies from a market they shouldn't have had access to—basically mostly illegal crowdfunding.

I would strongly state that in Canada, since we've seen the 2017 ICO boom as well as the Quadriga collapse, we can feel a lot more confident if they are working directly with our Canadian virtual asset service providers and crypto trading platforms, because they are very regulated and do engage very strongly with our regulators across the country, as well as with FINTRAC and IIROC. It would be very unlikely to see initial coin offerings continuing to come out of Canada. It would be very unlikely to see instances like EINSTein, Quadriga, FTX continuing to happen in Canada, based on how our regulators engage closely with this industry.

I would personally say that Canadian consumers can be confident if they are directly dealing with trusted Canadian exchanges. With any of the companies that our consortium currently deals with, we do a very strong vetting process. We don't deal or engage with companies that we don't personally trust or wouldn't personally use or endorse.

Ms. Viviane Lapointe: Are there other panel members who want to respond to that question as well?

Mr. Tanim Rasul: I would love to respond to that question.

I'm going to read a post on Reddit from the Canadian bitcoin forum. It's a post about my organization.

The title of the post is "Say what you want about the different exchanges, but NDAX called my mother and warned her that buying Bitcoin is risky."

"I was talking to my mom about buying Bitcoin and suggested using NDAX, as I found that exchange reasonable and easy for my uses.

"My mother created an account, and in less than a day she got a call from Julia at NDAX warning her about the risks and dangers of Bitcoin. Julia was mostly concerned that my mom was getting scammed or being manipulated. They had a good discussion and Julia re-iterated all the things I've been saying as well (It's a risk, there are no guarantees, you can lose your money, do not invest more than you want to, and definitely not more than you can afford, etc).

"I was pretty impressed that they took the time to call and have that personal discussion with my mom and do their best to ensure she knew what she was getting into."

I hope that is a window into how Canadian trading platforms such as NDAX treat more high-risk or highly vulnerable clients.

Ms. Viviane Lapointe: Thank you.

Ms. Karringten, I notice you're a co-founder of the Canadian Blockchain Association for Women. I'd be very interested in your telling the committee about your work on exploring the impacts of blockchain technology adoption on women and other unrepresented groups.

Ms. Koley Karringten: Thank you.

I'm co-founding the Canadian Blockchain Association for Women with Alexis Pappas, currently the chief innovation officer with GuildOne; with Janine Moir, who's the national blockchain assurance leader at Deloitte; and with Pamela Draper, who is the CEO of Bitvo.

Our goal was to make sure that we had gender parity within the space. We feel that blockchain has an amazing opportunity to create better inclusion, not just [*Technical difficulty—Editor*] but under-represented groups. I believe it was one of our federal ministers who believed we could actually open up billions of dollars in GDP if we could create gender parity in the workspace.

Our organization has produced lots of webinars and events trying to encourage women to explore the space, but we've also done fundraising to develop out bursary programs to help women get ed-

ucational training within the space and networking opportunities with organizations so they can explore the potential.

Our group is fairly active. We're currently merging with the Canadian Blockchain Consortium through an inclusion committee. We're bringing on about 20 members of diversified, under-represented groups within our inclusion committee, and are able to put the full resources of our consortium behind that to develop even more educational programs. We have a lead for this committee. Her name is Melissa Smith. She's a partner with BLG and is going to be chairing this to make sure we host even more events and support even greater fundraising, to make sure that women and under-represented groups get the educational training they need so they don't get left behind in this new wave of technology coming forward.

• (1715)

[*Translation*]

The Chair: Thank you very much.

Thank you, Ms. Lapointe.

Mr. Dreeschen, you have the floor.

[*English*]

Mr. Earl Dreeschen (Red Deer—Mountain View, CPC): Thank you very much, Mr. Chair.

I'm really happy to be back here at the industry committee. I think the people I recognize the best are the clerk and the analysts, but it's certainly nice to be able to discuss this.

In the meantime, I've been at the environment, natural resources and international trade committees, and I think some of the discussions that we have here certainly tie into what we've been looking at.

In the analysis that we were given by Mavennet, I noticed a digital passport for a barrel of oil that indicates where it comes from and all of that type of thing, and I think that's so critical in this discussion. Where do these things originate? What is the final use of that barrel, and when that product is used, where do those molecules go? I think that's the whole thing that we're trying to analyze here.

I think it's important, but here's the point that I want to delve into. There are the environmental impacts and human rights—if we just take a look at energy. All of these sorts of things are great. We talk about how we can then sell our product—if people would appreciate what we do—around the world, and people would see how we manage the environment, how we deal with greenhouse gases, all of the achievements that we have. We'd have something to sell. However, once it gets mixed into the big pot where all the oil is, how do we know that our oil is contributing what we want it to contribute? So, if you're taking oil out of some African country and you're mixing that in, how are you ever going to get them to commit to participation in this particular type of project?

Perhaps, Mr. Mandic, you could talk about that. We can say what we want about what we have and where we're going to sell it, but if the rest of the world sits back and says, “Well, we're not going to do that; we don't want to commit ourselves”, how are we going to make that work for us?

Mr. Patrick Mandic: I think there are a couple of layers to the answer to that question. First of all, as you said, there's a differentiator. We're the ones making the product. Therefore, if you appreciate it, then you'd rather buy product that you know than product you don't know. Just with that, we're already better off.

The second layer is that we're not the only ones; we're not the first ones. The EU is putting together the digital product passport as well. CBP is starting to create that digital platform for you to report automatically, so we're not the only ones. The key here is that, if we have enough critical mass—first within Canada, then within USMCA and then with our allies—then all the rest will start to be forced to use the system if they want to participate.

That's the journey. It's not tomorrow. We're starting small, but that's the journey.

Mr. Earl Dreeshen: Well, we say that. In Canada, we do some amazing things, and we can all go through how the lists of the products that we have and the things that we're going to sell around the world are great, but we somehow seem to demonize that. We're always fighting that. There's always this political to and fro. People are saying, “Well, environmentally, we want to ensure this”, so you go buy stuff from someplace else where they don't care.

That's the point I'm getting at. If we take a look at authoritarian governments, there's no help in human rights. They're protecting their oil and gas industries, which are then being sold off before any of that money is ever shared with their countrymen. These are the sorts of things they do, and I'm just asking how we ever get to that stage where that blockchain becomes a benefit. You know, I'm kind of talking about the same thing.

• (1720)

Mr. Patrick Mandic: Yes. In my mind, we need to do it because otherwise it doesn't make sense that we produce a greener product here in Canada when someone overseas produces a product—while we're imposing regulations here in Canada for companies—and produces it cheaper with a higher environmental footprint. So, we need harmonization of those CO2 emissions.

Mr. Earl Dreeshen: With that same thing, eventually our companies are going to go someplace else because they can't make it here. Everyone is looking at a pen, but just looking at the phone,

you look at battery production and all of the other things that are associated with this, and if you don't know where it's coming from...and then you say, that's okay, I just bought a phone, but where did you buy it from?

Mr. Patrick Mandic: Exactly.

Mr. Earl Dreeshen: I think this is the advantage that blockchain has and I think that's really a critical aspect of this.

Is my time just about over?

The Chair: It is, Mr. Dreeshen.

Now, if you don't mind, committee members, I will take the five minutes that the Liberals have for questions. I see consent.

Some hon. members: Agreed.

The Chair: Thank you very much.

Mr. Bernard Généreux: Chair, take as much time as you'd like.

The Chair: Okay, thank you, so I'll take the rest of the time. I have been very generous with everyone.

[*Translation*]

To begin, I'd like to give all of our witnesses today the opportunity to send their recommendations in writing to the committee, if they have any. We want to know whether they have specific recommendations, both to support innovation and growth in their sector and to protect consumers. So if they have any fairly specific suggestions, we would ask them to send them to the committee through the clerk.

[*English*]

The first question I have is for Mr. Rasul and Mr. Amiouny. It echoes a line of questioning that my colleague, Mr. Erskine-Smith, had last week in committee.

I gather that based on the regulatory framework we have for exchanges here in Canada, something like FTX wouldn't have happened here. However, how can we make it even better so that Canadian exchanges are renowned for their safety, their security, their consumer protection?

One of the questions he had was on the responsibility of exchanges when it comes to listing different tokens and what kind of due diligence they ought to do. He was highlighting LUNA, which is, I think, a good example.

To what degree do you think exchanges should be responsible for the tokens that they list, and what kind of due diligence should they do?

I would start with Mr. Rasul, and then Mr. Amiouny.

Mr. Tanim Rasul: All assets that are listed on NDAX have to go through product due diligence and our coin listing process.

With LUNA, it was difficult to see what happened with that token. At one point it was really one of the most popular tokens across the globe. If you look at Coinbase, which in my opinion has the most comprehensive due diligence process for listing tokens, they also passed LUNA to be able to be listed on that platform.

It is part of our responsibility to ensure that tokens that are listed on our platform are vetted enough that we're comfortable having them on the platform.

As far as the LUNA debacle is concerned, it was really tied to the UST stablecoin, the sister token of LUNA. The depegging of that algorithmic stablecoin had the foundation that runs LUNA and UST to sell massive amounts of Bitcoin and LUNA tokens, and then mint more LUNA tokens, thus devaluating that asset.

If we could look back and identify that relationship and if we could have foreseen that the foundation was going to take those steps to repeg the algorithmic stablecoin, we wouldn't have listed that asset, but like with most global platforms and Canadian platforms, the token was listed.

We need to learn from it and we need to take responsibility for any token that's listed.

• (1725)

The Chair: Thank you, Mr. Rasul.

Mr. Amiouny, go ahead.

Mr. Jean Amiouny: Chair, at Shakepay we never listed any of these cryptocurrencies. I think we've taken a more conservative approach as to what is listed on the platform.

There are maybe different ways to look at cryptocurrencies, and I think we talked a little bit about some of the use cases here today. I think in some way Bitcoin stands somewhat on its own in the product that it offers and the service that it offers to the worldwide community.

I think it very much depends on the exchange and what it is that the exchange is trying to do. I certainly think that at Shakepay our mission is to get Bitcoin into the hands of as many Canadians as possible, and hopefully we'll be able to do that.

The Chair: Thank you, Mr. Amiouny.

That allows me to segue beautifully into my next question.

Before I do so, if you have any insights—and I'm thinking of Mr. Rasul—in terms of how we could make it so that due diligence is better and tokens that are listed are legitimate projects going forward, please feel free to communicate that. That goes for the other witnesses as well.

My last question is more open-ended and more philosophical in a certain way.

When you look at the white paper by Satoshi Nakamoto in 2008, clearly it was a reaction to the 2008 financial crisis, the greed and excesses in the traditional financial sector and then the governments bailing out large institutions. Looking at where it originated, for instance, the cyberpunks' threads and chats on this, at how Bitcoin was used to fund WikiLeaks, how Anonymous used it, how Occupy Wall Street to some extent used it in other ways, 10 years

ago I would have thought that the left would be all over this. It turned out to be quite different.

Mr. Amiouny, you mentioned the case of Lebanon. I think it's a fascinating example. They have a currency that has lost, I believe, up to 95% of its value, and banks have prevented withdrawals in many instances. A lot of young Lebanese have turned to digital assets, Bitcoin and others.

I'd like to understand it from your perspective. As a progressive 10 years ago, I would have told you that the left would be completely on this technology and would have embraced it. Now we see this big divide, where it's become really partisan and more associated with the libertarian right.

My question is—and I'd like anyone who wants to chime in to go ahead—what would be your message to progressives when it comes to this technology? How do you see it as being potentially useful, for instance, to bank the unbanked? We know that there are two billion people in the world who don't have access to financial services. How can this be used?

Mr. Jean Amiouny: As I said in my opening statement, I see Bitcoin as this public good, in the sense that it is accessible to everyone and is always available, which means that anyone at any point would be able to access this network. It is very much like the Internet today, where it is essentially a public good. We have cheap, reliable Internet in Canada, and this is after decades of work in industry and in government.

I see Bitcoin as a similar public good that should be available to all Canadians, so that they would be able to transmit money across borders to families in Lebanon, Argentina and many other countries in the world where banking services are not as solid as they are here in Canada.

To me, I very much see this as a platform that allows anyone to have the ability to access some new technology that allows them to do things they couldn't do before.

Mr. Andrew Batey: I'd like to say that outside of the cryptocurrency side, the underlying blockchain, which was mentioned briefly earlier.... The best way to think about it is like a database, like in Excel, but one that you can trust. Think of all the places you use Excel, but it's not fast, it's not [*Technical difficulty—Editor*].

In our case, with fraud, the fraud exists in that database forever. Once we find it, we can backtrack to all the places where fraud existed until we find the root. In that context, thinking about blockchain as a database and not just as a cryptocurrency, what are all the amazing database applications that this underlying technology can be used for? You can use it for driver's licences, houses—for the deeds—wills. There are so many amazing places that a fast database that's immutable can be used, where maybe there isn't trust and now you don't need to trust the other partner to participate.

I think if you separate cryptocurrency from blockchain, there are some really powerful opportunities here to leverage the underlying technology and progress Canadians and the technology of blockchain further.

• (1730)

Ms. Koleya Karringten: I would like to add to Andrew's point there.

There was a country in Africa that ended up doing land titles on blockchain. Their current speed of doing it was maybe being able to produce 50 per year.

When you go into third world countries where people don't specifically have a paper deed or proof, but they've been sitting on that land for multiple generations, based on the fact that they don't have a deed or proof of ownership of that land outside of the fact that generations have been there, a lot of people are not able to get access to traditional banking, and they not able to get access to loans. They also don't have any security if somebody comes in and tries to remove them off their land. By utilizing blockchain technology, they were able to speed up being able to give people who had, I guess, potential squatters' rights or generational rights to their land a verified deed to that, and they were able to get about 200, so they were able to quadruple it within that year, giving more and more people in that country better access to banking, loans and security on that.

Another piece I'd like to mention is that, when Satoshi Nakamoto or that group came out and released that paper in response to that financial crisis, a big part of it was due to the fact that, when you see high levels of inflation and more and more dollars being produced, and we don't produce as many goods as we're currently producing dollars, it costs people around the world more of their dollars to be able to gain access to that same amount of goods.

We're seeing it right now in places like Argentina, which had a 198% rate of inflation. People in Argentina are now scrambling to get access to Bitcoin because, despite its volatility, it is still a scarce asset. There are only 21 million of these Bitcoins, and their value does continue to increase over a long period of time. It's not exactly a get-rich-quick scheme, but people there are starting to put the money that they're able to into Bitcoin because, for them, it is a hedge against inflation when their governments are producing such rampant amounts of their currency.

It also helps to give people access who are currently unbanked. The reason El Salvador was able to pick it up was that 60% of their population currently didn't have banking. Now family members in Canada are able, just through an app on their phone, to send them remittance payments that they could easily get access to at any time of day and be able to buy goods that they need, like food, medical supplies or anything like that. It is definitely for social good.

The Chair: And that's without going through MoneyGram or Western Union, which is certainly positive for them, I would say. Thank you.

[*Translation*]

That's all the time we have.

Committee members, thank you for giving me double my five minutes. I would like to thank the witnesses for making themselves available this afternoon. Lastly, I would like to thank the interpreters, the analysts, the clerk and all the support staff.

The meeting is adjourned.

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