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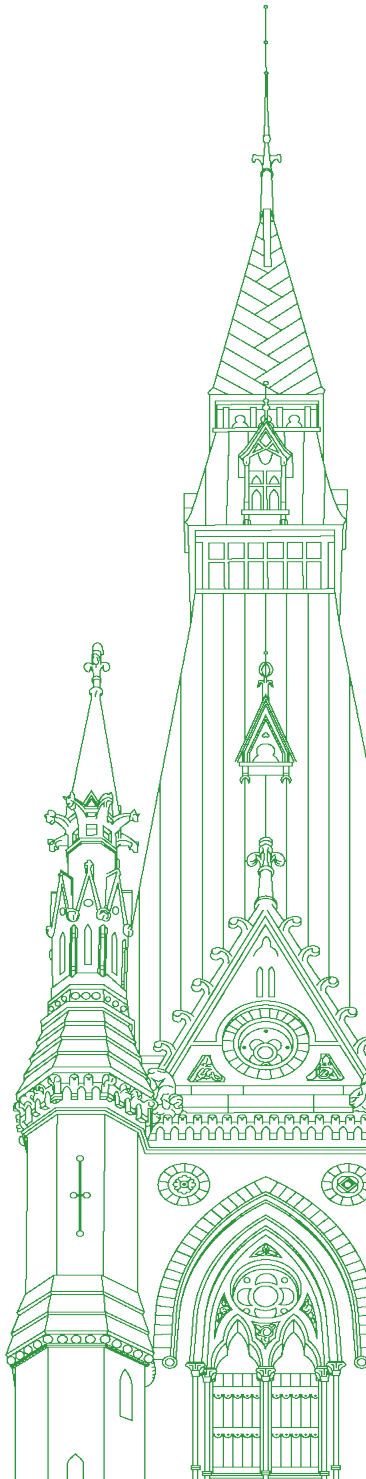

Chair: Mr. Joël Lightbound

Standing Committee on Industry and Technology

Thursday, October 27, 2022

● (1605)

[*English*]

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

[*Translation*]

I would like to point out that the sound tests were done with today's witnesses.

[*English*]

Thanks to everyone for joining us. We apologize to our witnesses for the delayed start to this committee meeting. We had three votes in the House, and that's the reason for this delay. Also, I want to extend, on behalf of the committee, my most sincere gratitude to all of you for making yourselves available on such short notice to start this study with us.

Welcome to meeting number 41 of the House of Commons Standing Committee on Industry and Technology. Pursuant to Standing Order 108(2) and a motion adopted by the committee on Monday, September 26, 2022, the committee is meeting to study the current state of blockchain technology in Canada and its potential for innovation.

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

[*Translation*]

Today, we are fortunate to have with us Laure Fouin and Matthew Burgoyne, co-chairs of the Digital Assets and Blockchain Group at Osler, Hoskin & Harcourt LLP.

We are also welcoming Pascal St-Jean, president of 3iQ Corporation, who is here with us in Ottawa.

Finally, we are welcoming Justyna Osowska, founder of Women in Blockchain Canada.

Thank you all for joining us. I would like to remind you that interpretation services are available and that you can speak in the language of your choice.

Without further ado, I give the floor to Mrs. Fouin for five minutes.

Mrs. Laure Fouin (Co-Chair Digital Assets and Blockchain, Osler, Hoskin & Harcourt LLP, As an Individual): Thank you, Mr. Chair.

I thank the committee for undertaking a study on the current state and potential applications of blockchain technology, as well as for inviting us to comment in this context.

As Mr. Chair mentioned, I am a partner at the law firm of Osler, Hoskin & Harcourt LLP, which has created a team specializing in digital assets and blockchain.

I will make my presentation in French,

[*English*]

but I will be happy to take and answer any questions in English if needed.

[*Translation*]

The existence of this team, which does not correspond to an area of law, but rather to a type of asset and technology, leads me to make a first observation about the scope of what needs to be covered when blockchain is studied.

We have a team of 50 lawyers covering multiple areas of law. It's not just me and Mr. Burgoyne, who have our own areas of law. Similarly, blockchain challenges our country's jurisdiction over commerce, currency exchange, coinage and paper money, as well as banking and criminal law, and I'm probably forgetting some.

In this context, in order to provide some food for thought, I propose to review the technology, the type of assets involved, and the various people involved.

First, let's talk about the technology. First and foremost, blockchain is the technology behind virtual currencies. In fact, the creation of virtual currencies, bitcoin being the first of those, required the development of blockchain technology. Over time, other applications have emerged and other digital assets have been created.

Then there are the assets involved. Digital assets using blockchain can be divided into three broad categories.

The first category is cryptocurrencies, which generally use their own blockchain.

The second category is cyber-indexed tokens, which include non-fungible tokens—in other words, digital assets that represent real objects such as art, music and videos—tokens that refer to currency or currencies, commodities or other digital assets, and the so-called tokens representing rights, such as investors' rights in a joint venture, which are then securities.

The third category is utility tokens, which have a specific purpose. For example, they may be used in the future on a platform in exchange for a special service or to receive preferential treatment for certain services on that platform.

As we have seen, there are assets that are tied to this technology. The people involved are issuers, holders and intermediaries of digital assets, or digital asset service "providers", as the European Union has decided to call them.

In Canada, FINTRAC and the securities regulators were the first to publish their views on the application of the laws and regulations under their purview in order to establish their jurisdiction over certain digital assets. It is worth noting that, in doing so, securities regulators have used some interpretive capacity in securities legislation.

They have introduced a novel concept of a cryptoasset contract, which is based on the idea of the immediate non-transfer of ownership, which they believe makes the agreement an investment contract and, therefore, a security. Thus, certain issuers, intermediaries or holders of certain digital assets are now subject to securities distribution regulation. Later, my colleague Mr. Burgoyne will elaborate on the resulting problems. Based on our observations, players in this market could benefit from more legal clarity, consultation and cooperation.

We are fortunate to be able to observe what is being done in other countries. Within the European Union, countries have chosen to have specific regulations for each category of cryptoassets, which I described earlier. These countries wanted to pay particular attention to stable cryptocurrency backed by the euro. They decided to exclude non-fungible tokens from this regulation and regulate them differently, and to create a regime for cryptoasset service "providers". Certainly, in doing so, they have provided some legal clarity, but it brings with it a lot of issues worth considering, given what is happening right now in the European Union.

In contrast, in the U.S., we are seeing a multitude of projects and initiatives being taken in a competitive climate as to the relevant jurisdiction, and there is a great deal of uncertainty among market players. This fosters the emergence of mega-competitors for our Canadian players.

As a final word, I would like to point out that, when looking at a blockchain, attention should be paid to the governance structure of the blockchain in question. This aspect is too rarely discussed and it would be relevant to pay attention to it.

Thank you for the opportunity to discuss this with you. I hope my presentation has been helpful to you.

● (1610)

I am now available for questions.

The Chair: Mrs. Fouin, it is a pleasure to see you again in this context, 10 years after the École du Barreau, in Montreal.

Thank you for your presentation and for starting this study off.

Mr. Burgoyne, you have the floor for five minutes.

Mr. Bernard Généreux (Montmagny—L'Islet—Kamouraska—Rivière-du-Loup, CPC): I have a point of order, Mr. Chair.

I see that some people on the panel don't have headsets. In case they want to ask any questions, I wanted to make sure they have headsets.

The Chair: That is an important reminder, Mr. Généreux. I see that it is indeed the case.

Of course, all parliamentarians present, as well as witnesses, are asked to have their headphones and microphones in good order.

Mr. Burgoyne, you have the floor.

[*English*]

Mr. Matthew Burgoyne (Co-Chair Digital Assets and Blockchain, Osler, Hoskin & Harcourt LLP, As an Individual): Thank you.

I'm Matthew Burgoyne, partner and co-chair of the digital assets and blockchain group at Osler, Hoskin & Harcourt. I'm in our Calgary office.

It's a pleasure to be here. Thank you very much, committee members, for asking me to come to be a witness today.

While blockchain has a wide application in many different industries—supply chain management, health care, oil and gas, manufacturing, real estate and other industries—cryptocurrency is also crucially important. To date, I believe that Bitcoin is the best example we have of a fully developed, decentralized and well-functioning blockchain network. Blockchain is important, but cryptocurrencies like bitcoin and ether are also important and are increasingly playing a more significant role in business transactions, investments and other digital financial transactions.

The following are some of the rationales behind why companies are testing and adopting cryptocurrencies in Canada.

First, crypto could enable access to a tech-savvy customer base that values transparency in transactions.

Payments in cross-border transactions—for example, the acquisition of goods and services, paying foreign contractors and paying foreign employees—could be made using crypto in a matter of seconds, versus waiting sometimes up to a week to settle cross-border transactions with bank wires. Crypto could enable access to new capital and liquidity pools via the tokenization of traditional investments.

Many of my clients—which include entrepreneurs, medium-sized businesses and some larger businesses—in the crypto and blockchain space face enormous challenges. These challenges include lack of access to basic banking services, lack of access to insurance products, a difficult labour market and high regulatory compliance costs, mainly in securities law compliance.

Access to banking is especially burdensome for Canadian entrepreneurs in the space. Canadian entrepreneurs who otherwise comply with regulation and raise significant investment from Canadian investors are being denied basic business banking and chequing accounts quite regularly. The reason being given by Canada's banks is that crypto is too risky and the compliance costs related to anti-money-laundering and counterterrorist financing regulations do not make it economically feasible to provide banking services to crypto companies, save only for the largest companies. This puts small business owners at a disadvantage and puts Canadian businesses in general at a disadvantage when compared to international and mainly U.S.-based crypto companies, which have easier access to banking.

Insurance is another difficult product to obtain. My clients are forced to obtain policies from offshore or foreign insurance providers, sometimes at astronomical premiums and rates. There is a perception that crypto is still high risk, when the reality is that most crypto companies in Canada are registered with multiple regulators and are arguably more regulated than businesses in other industries.

Compliance costs related to securities law, including the costs associated with complying with recent Canadian Securities Administrators staff notices, can run companies millions of dollars in legal fees per year. Also, compliance with Canadian securities legislation substantially limits the product offerings that Canadian crypto asset trading platforms can provide to Canadians, which puts the Canadian platforms at a competitive disadvantage when compared to foreign-based crypto asset trading platforms.

The Canadian Securities Administrators and IIROC have tried their best to protect the public, and they are operating under trying circumstances. However, there has been a lack of consultation by the regulators with industry when it comes to cryptocurrency law and policy, especially when it comes to securities legislation.

By some estimates, the global cryptocurrency market is worth almost $900 billion. In 2019, the Canadian Securities Administrators and IIROC published joint CSA/IIROC consultation paper 21-402, “Proposed Framework for Crypto-Asset Trading Platforms”. A lot has changed in the industry since 2019, including new technological developments and a lot of new industry participants. For an industry of this size, we should expect to see more than one consultation paper, which only had roughly 50 responses. When compared with other novel securities-like products, such as derivatives and contracts for difference—products that have substantially lower market popularity—there has been virtually no consultation with the Canadian crypto industry.

One concern I've heard from clients is that the law is effectively being made via private orders and terms and conditions imposed on private companies, with the terms and conditions unique to a particular crypto company and not applying to every single company in every circumstance.

● (1615)

This is not an appropriate way to legislate a fast-growing industry in Canada. There needs to be more consultation with the public on how proposed policies might affect Canadian businesses in the space in a burgeoning global industry with more transparency into how regulators are developing policy and what policy concerns are being addressed. There are instances where existing law isn't best suited to regulate certain crypto products, such as fiat-anchored stablecoins.

Finally, Canada is at risk of lagging behind other developed countries when it comes to digital finance. For example, for the second time in a row, Payments Canada has delayed the launch of the Real-Time Rail payment system, as it was first announced to be delivered in 2022 and was then rescheduled to launch in mid-2023. No revised timeline has been given by Payments Canada as part of its most recent delay announcement. Similarly, the open banking system has been delayed until 2023, putting Canada and Canadians at a disadvantage.

Thank you for your time.

That concludes my written submission.

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

We'll move to Pascal St.-Jean. The floor is yours for five minutes.

Mr. Pascal St-Jean (President, 3iQ Corporation): Thanks, everyone. I'll be happy to answer questions in English or French.

My name is Pascal St-Jean. I am the president of 3iQ Corporation. We are a digital asset manager. We were the first to bring a fully regulated crypto product, spot bitcoin, an Ethereum product, globally through the regulating process. We believe that this industry should be regulated in the right way to protect investors. Our mission is to make crypto safe and secure and easy for investors across Canada.

A lot of my colleagues at Osler—not colleagues, but friends—had talked about a lot of the challenges in the industry, which I will repeat in a little bit, but I'd like to frame this a little bit more in terms of stories of actual Canadian citizens, particularly friends and family, and how this industry is impacting them. I think, in the end, what we're trying to do here is not only help industry but help Canada and our citizens across the nation, as well as our businesses.

I'll share a story of my parents, who grew up in northern Ontario and started a very small business in the early 1980s. During that time, as small business owners they were out of reach of real estate and out of reach of accredited investors, solutions that today are mostly very sophisticated investment products available for individuals who meet certain standards. They had no access to necessary capital or to debt to scale their business, and at the same time were poorly advised personally on their investments.

Fast-forward 40-plus years. They were in a spot, and it didn't look like retirement was ever possible. Thanks to these new industries and our products, which were launched actually before I joined the company, my parents were able to invest in this new emerging asset class, which gave them the ability to take their retirement last year. It was quite an amazing piece of news from that perspective.

Why I'm sharing this story, though, is that Canadians need access and need clarity.

Fast-forward to today. I'm seeing more and more similar stories for our younger generations, people in their twenties and thirties asking us all the time how to gain access to assets and how to move forward in life in terms of being able to grow financially. We know for a fact that wage earners are behind in Canada, not keeping up with inflation, not keeping up with the cost of living. On the flip side, asset owners—people who own businesses and real estate and other types of asset classes—are getting richer. The reality is that we need to create technology that will simplify asset ownership and fractionalize asset ownership. That's the power blockchain could bring to multiple industries, not just cryptocurrencies, which I'll be happy to talk about moving forward.

From our perspective, we're seeing that the solution is less about distribution of wealth and more about empowerment of wealth. That comes through blockchain technology. We believe that blockchain is not going anywhere. It's here to stay. The question becomes one of which countries want to participate and utilize this new industry and this emerging asset class to help grow their economies.

We believe that Canada has seen a head start in certain areas. There are banking challenges. There are insurance challenges. From our industry, from the finance side, we were able to get a head start globally. We are seeing that becoming more and more difficult as regulation is not being clear. As my friends at Osler were saying, our compliance costs, our legal costs, are very high, because we are educating the regulators. We are educating everyone we work with. Again, we're doing so because we want to be fully regulated and bring safe, secure products to the market.

From our perspective, our analysis of the benefits for Canada are job creation and talent retention. Last year we saw billions of dollars globally, from a venture capital perspective, enter the space, the fastest-growing investment space globally, and a lot of talent—engineers, mathematicians, scientists, as well as marketers and many other types of roles—is going into the blockchain space. We either keep the talent here or it will go somewhere else. There will be a brain drain if we do not act.

Global investment is knocking at the door. It's holding off, though. It's waiting for clarity. With Canada's being a G7 nation, if regulation becomes clear and a clear road map becomes present, we will see billions of dollars entering the ecosystem, both as underlying asset investments and as new capital for industry.

I also believe we need diversification of our economy. Being able to take charge and take the lead globally on blockchain will allow us to do just that.

From that, if we have clarity in regulation and allow the economy or the industry to boom in Canada, the digital economy itself will give wage earners the ability to participate in the digital economy, whether as asset owners or as participants in this new space. Fractionalization of ownership, whether it is of cryptocurrency, real estate, fine art or other assets, will enable Canadians across the country to have a small piece of assets to help them grow their net worth as they try to build a life for themselves across Canada.

● (1620)

These are the opportunities we see, including access to debt and to capital and to financing through peer-to-peer networks and through decentralized finance. There are a lot of opportunities across the board for businesses, for citizens and for commerce coming here.

With that said, I look forward to talking about some of these stories and the technology behind this. I have tons of examples of companies we've invested in, such as Neoflow and Stablecorp, bringing cross-border payments for businesses, enabling blockchain for the oil and gas industry and saving hundreds of millions of dollars in that process.

I look forward to your questions.

[*Translation*]

The Chair: Thank you very much, Mr. St-Jean.

Finally, I will now turn the floor over to Ms. Osowska.

[*English*]

Ms. Justyna Osowska (Founder, Women in Blockchain Canada): Thank you, Mr. Chair.

Thank you to the committee members for having me here today to represent Women in Blockchain Canada.

The corporation has been federally incorporated since 2018. We have been doing workshops around blockchain education. Really, in order for us to move anywhere, people need to know what blockchain is, how it works and what the use cases are. Specifically, the mission of the organization is to inspire women to become involved in blockchain technology. There are various studies that confirm that women are under-represented in blockchain technology.

Furthermore, to add to what other people have said, 15% of Canadians are underbanked, so definitely the financial sector is a place where there could be regulation to help people have access, especially those who are under-represented.

Basically, I started with blockchain technology because I come from an immigrant background and I was having a conversation with another person who's an immigrant about sending money abroad. Using the current financial system is difficult and expensive, and the reality is that it takes a long time for things to be authenticated.

A lot of other people have also mentioned NFTs, insurance and the banking sector, so I will just add to that. One of the biggest industries in Canada is real estate. You can use blockchain to do title searches, for example, which makes it much cheaper and much less expensive, and you can authenticate on the blockchain. Another use case can be authentication of documents. That's just to add to what everybody else has already said.

What I would really like to focus on is the fact that in order to create regulation, there needs to be education around this space. People need to know what is really happening, and that's really the mission behind the organization.

In closing, I would like to suggest to committee members that they look at how we can include people at different economic levels in the space. Specifically, I offer accommodation for consultation strategies to be developed to reach the under-represented groups.

Thank you.

● (1625)

[*Translation*]

The Chair: Thank you very much.

I thank all of our witnesses.

We are ready to go to questions without further ado.

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

[*English*]

Mr. Ben Lobb (Huron—Bruce, CPC): Thank you, Mr. Chair. Congratulations on this important study for the committee.

The first question is for the group at Osler. I've heard many times through the last couple of years that we need to look at the regulatory burden around innovation around blockchain. My question to you is whether you have identified two or three pieces of low-hanging fruit the government could help with to deal with regulation or deal with clarity to allow this sector to continue to grow and create jobs in Canada.

Either Laure or Matthew, take it away.

Mrs. Laure Fouin (Co-Chair Digital Assets and Blockchain, Osler, Hoskin & Harcourt LLP, As an Individual): Okay, I'll begin and then I'll let Matthew develop it and further expand on this.

I think one of the issues you as the federal government will encounter is the fact that until now it's been regulated under securities laws and regulations, which I think Matthew explained quite properly during his presentation. To me, one thing we should be looking at is which products are currently under this purview that maybe eventually should not be, because we are talking about currencies and your jurisdiction of money.

Matthew, I know you have a lot to say about that, so I'll leave it to you.

Mr. Matthew Burgoyne: Thanks, Laure.

There are Canadian dollar-anchored stablecoins, just to use an example. It's a digital token that's anchored one for one with the Canadian dollar. In various discussions we've had with provincial securities regulators, they've expressed a concern, and they've taken a position that these Canadian dollar-anchored stablecoins, to use an example, are securities and should be regulated as securities.

The practical use and the intent is to use these tokens like currency, like the Canadian dollar. The question becomes whether it is appropriate to regulate these tokens under the regime of securities legislation and policy, when no one's really buying these Canadian dollar-anchored stablecoins with the expectation that they're going to increase in value. It's not like a traditional investment.

Slotting them into securities law has been a little awkward for at least one of my clients. It's caused a lot of legal fees and discussion back and forth with exactly how the stable token is going to be sold. The effect is that it's going to be very hard for clients to actually do business and to offer these types of products, because the securities law just doesn't quite fit. It's probably more appropriate that they be regulated like a currency, and perhaps be regulated under a different regulator like the Bank of Canada or another regulator, because they're more akin to a currency than a security. That's one example, the fiat-backed stablecoin.

● (1630)

Mr. Ben Lobb: Mr. St-Jean, in the research you've done at 3iQ, and just in your own personal research, what are some of the most promising areas that blockchain.... We've talked about digital assets and we've talked about the transfers of money, etc., but what are some other areas that you see as some of the most promising areas that blockchain technology will deliver for Canadians in innovation?

Mr. Pascal St-Jean: It's a very broad question to be answered, but I want to separate it. I always teach that blockchain, decentralization and cryptocurrency are three different things that together make use of a lot of what we're seeing today.

Blockchain technology is the database ecosystem. For example, there's a company that we've invested in called Neoflow. It does blockchain technology for oil and gas. There is no currency associated to it. It is not decentralized. It is not meant to be a global network; it is meant to be a very niche network. However, that blockchain technology itself, in the way that they studied the supply chain and how it works with oil and gas, saved hundreds of millions of dollars in efficiencies and thousands of hours. That's the blockchain technology. There are many applications in supply chain, forestry and oil and gas in traditional space.

Then there's the financialization, or the peer-to-peer aspect. For example, I've seen this. It's a very early-stage idea, but I thought very innovative, of enabling peer-to-peer financing for down payments on mortgages for new families. Many people can potentially get financing from the bank, but they need the down payment. They don't know where to get it. Mom and dad don't have it and family doesn't have it, so how do we pull together in a way that is regulated, that is fully tracked on the blockchain, and that is governed by smart contracts? That is one of the ways that we are also seeing some interesting ideas that can empower citizens.

Basically, there's a financing side and there's the blockchain technology application. They are two different things.

Then there's the distributed aspect, which is the ability to say that no one central organization or entity owns the rights to it, and that brings a lot of global innovation.

I could go on and on, but I wanted to give two clear examples. Blockchain, crypto, and decentralization are not the same, and we all need to understand that at a fundamental and technological level so that we can regulate things differently.

Mr. Ben Lobb: Can I ask one last question, or am I out of time?

The Chair: You can have a very brief question and a very brief answer.

Mr. Ben Lobb: Justyna, we were at a similar conference in Toronto this summer, and I watched the segment you spoke at. What struck me was the number of young people. I hate to say it, but I think I was one of the oldest guys there.

Can you just talk about the youth and the intelligence that's entering this sector, and how important it is going to be for the future of Canada?

Ms. Justyna Osowska: I absolutely think that it's going to be a transformative technology across various sectors, so it's imperative for Canada to be a first mover.

I would like to acknowledge that Canada's work has already happened. We were the country that issued the first Bitcoin ETF, followed by an Ethereum ETF. Canada has regulated exchanges. It's just amazing the work that has already been done, but we have to continue that, because this is a very fast-paced industry. We were talking about how it's across so many sectors. It really comes down to innovation.

Blockchain is a ledger, but what it's doing is allowing for better transparency, authentication and all these things. As you said, all those young people.... They did a survey in the U.S., and 43% of youth would like to invest their retirement funds in this, so people are looking for the future. The young are looking into the future, into this technology, and all the things that it can do.

My recommendation is that Canada as a nation should do more research on what can be done and how we can move forward to have regulations that also allow business to work very well.

The Chair: Thank you very much.

We'll move to MP Lapointe.

[*Translation*]

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

[*English*]

Ms. Osowska, it sounds like your not-for-profit does a lot of really good work in supporting women in science and technology, engineering and mathematics.

I come from Sudbury, which is a global mining centre, and we have done a lot to promote engineering and science careers for young women. I'd be interested in knowing from you what diversity and inclusion looks like in this area. What kind of support are you seeing available to encourage that?

● (1635)

Ms. Justyna Osowska: Thank you for the question.

I think there is currently support in the area, whether it's private or public. I personally have worked at accelerators in both Ottawa and Montreal. I've worked with InvestOttawa to host workshops, and they provided me with the space, and also in Montreal with Bonjour Montréal.

I think currently there could be more of that done, especially when it comes to financial education inclusion. I think there could be more research done on that as well, because women are underrepresented in that space, and we need to find out more about how to get them in.

I know Ontario did a study on women in STEM, and I think things could be looked at in that study and taken into blockchain and used to bring more women in, especially in advertising, for example. Women are more interested in social impact than they are in just making money.

As I was saying, the government could look at implementing different strategies to make the space more inclusive and equitable.

Ms. Viviane Lapointe: We know we've seen a big increase in promoting STEM to women and girls, minorities, and those who have traditionally not been represented in these fields. Can you tell us what the industry and the different levels of government can do, and keep doing, to promote and support the blockchain industry, tech and STEM more generally to ensure that we have an industry that represents the diversity of our country?

Ms. Justyna Osowska: I mentioned the research, but also in addition to that there's education. I think women and girls need to see this—she has “to see it to be it”—so we need role models. It's not good enough to say we need to have this done; people need to see women who are actually succeeding in the field and are being shown that these are potential careers for them, that there's potential work for them. There are potential mentorship programs. I think that could be another thing to use to encourage women to get into the space.

Ms. Viviane Lapointe: Thank you.

Mr. St-Jean, in your opening comments you talked about how there are global investors who are waiting and very interested in investing in blockchain technology in Canada, but they're waiting for greater clarity. Can you expand on that?

Mr. Pascal St-Jean: Yes. We're seeing, basically, clarity in terms of regulation. We're seeing that in the U.S. and in other areas as well. Right now, if you look at the number of venture capital dollars.... Usually when you want to see the next emerging trend, you look at venture capital dollars.

For me, in my background of engineering, I've skilled multiple businesses over the past 20 years in disruptive innovation, starting with the web in the late nineties and then moving forward to open-source technology in the mid-2000s. I'm seeing the same playbook here over again.

If we look at the numbers of dollars that went into blockchain technology and crypto, we see the most ever. I think it was $60 billion just last year, in one fiscal year. Most of those dollars are happening in jurisdictions that basically are allowing things to be a little loose, whether it's the islands or other areas like that. Basically, they actually do want to bring capital into areas that have more stable governments, that have more clarity, like a G7 country like Canada.

Right now we're not seeing anyone looking to take the lead from a G7 country. Canada does have the lead, in my opinion. It's starting to maybe slow down, so in my opinion they are waiting for that to be able to invest not only in new businesses but also in the underlying assets and in the talent locally.

I have lots of examples coming back from Calgary from the blockchain summit. There were lots of foreign investors starting to explore how to invest in mining in Canada, how to invest in equity in companies that are developing blockchain technology, and how to invest in the underlying asset that we can provide access to.

The Chair: You have two minutes, more or less.

Ms. Viviane Lapointe: What is the role of government, then, when it comes to blockchain technology? If it is regulation, what kind of regulation would enable the growth of the blockchain technology?

Mr. Pascal St-Jean: We could debate this. I will separate the words. Blockchain technology is the ledger technology. I don't think that needs to be regulated at all; it's just another form of database. Like I was telling you with the examples of using it for supply chain management or for anything like that, it's just another form of database, and we don't need to regulate databases. That's been already done for years.

Where we do need regulation is when that applies to, for example, securities, finance, and things of that nature, where we are entering areas where we do want consumer protection to make sure that we do bring.... If it's tokenization of assets, it should be regulated to make sure that there is actually an underlying asset. If we were to tokenize real estate, it should be regulated to make sure that the real estate is real, that the companies are not taking advantage of end users, that those are fully tradable. Things of that nature, I think, unlock again.... We talked about inclusion and diversity earlier. There is no greater inclusion than to enable every citizen, no matter where they come from, no matter how much money they have, to participate in asset ownership. That to me is the clarity that brings a flood of capital and actually empowers Canadian citizens.

Regulation is needed on the financial side, but in my opinion blockchain technology as a database does not require regulation.

● (1640)

The Chair: Thank you very much.

We'll now turn to Monsieur Lemire for six minutes.

[*Translation*]

Mr. Sébastien Lemire (Abitibi—Témiscamingue, BQ): Thank you, Mr. Chair.

I also thank you for your leadership on this issue.

Mr. St-Jean, blockchain is a technology with many applications. Other than cryptocurrency, which sector is using blockchain technology more, and which sectors are not?

Next, what barriers are preventing new sectors from using blockchain?

Mr. Pascal St-Jean: I really believe that this is the first technology in history that not only creates a new industry, but also influences and expands existing industries. I gave the example of Neoflow, which works on the oil and gas supply chain side.

We also talked about stablecoin. Stablecorp, a company we know well, has made an initial use of it for cross-border payments, and they want to find several hundred use cases.

As an entrepreneur, I know several entrepreneurs in my area. When we do business with other companies elsewhere in the world, the issue of payments is extremely difficult. I'm thinking of electronic funds transfers, for example. You'd think it would be easy these days with the digital currency of banks, but it's still extremely complicated. Transfers take a long time and are very expensive, which slows down international business.

So it's a very simple use case, and you can find it in any industry, whether it's mining or real estate. There's always a use case for growth. By the way, I want to make it clear that blockchain technology — I'm not talking about cryptocurrency — does not cause the kind of disruption that makes anything disappear. Rather, it increases the efficiency of any industry in which it is used, whether in terms of access to information or diversification of information, for example. Not all use cases are obvious yet, but we are seeing more and more.

It's really on the cryptocurrency side that the government can play a big role in determining how blockchain technology can be used, especially for peer-to-peer lending, shared ownership, and access to the underlying technologies, such as Ethereum, Bitcoin, etc. This allows citizens to invest in the foundations of the technology, which was not possible before.

So there are two elements: first, there are the use cases to drive industry growth; second, there is access to investment in this new blockchain and cryptocurrency industry.

Mr. Sébastien Lemire: There is indeed some loss of confidence in the cryptocurrency, which saw a collapse last May and June.

Do you believe that the instability of cryptocurrency is a phenomenon that applies only to it, or can it manifest itself in other uses, for example, in health care, in commerce, in logistics and perhaps even in governments?

Could these dangers even affect data protection?

Mr. Pascal St-Jean: Can you clarify your question? You talked about instability, and then you asked if there could be effects on health care.

Mr. Sébastien Lemire: It was two questions in one, but...

Mr. Pascal St-Jean: All right. I'll start with the first one.

On the subject of instability, the best example I can give is Shopify, which is down 80%. There's real estate as well. Today, interest rates are high. This obviously has an effect on all investments. I started my first business 22 years ago. If there had been a way at that time to see the value of my business every second, I would have found it very unstable, because I would have seen the number of clients change constantly. If I gain one customer, then another two days later, and then lose one after that, that means I'm seeing the value of my business increase by 100%, then decrease by 50% per day.

What happens, when you use blockchain technology or cryptocurrency exchange, is that you see the fluctuation, in real time, of something that has just been created. Previously, when a company went public, it had already been doing business for 5 or 10 years. So when Shopify or even Microsoft went public, obviously you didn't see any instability, even if there were positive or negative fluctuations of 50% or 60%. In the case of cryptocurrencies, their value is displayed from the moment they are created, so it's normal that there is instability.

As for the dangers related to other use cases, as I was telling you, in terms of blockchains or databases — I'm thinking of Neoflow and even health care, for example — a cryptocurrency doesn't necessarily have to be associated with it. So blockchains are extremely secure. It's probably the most secure database in the world. You only have to look at the Bitcoin network, which has a global value of trillions of dollars. If the blockchain could be hacked, you can imagine that this would have happened already. So it's the most secure database in the world, similar to a decentralized accounting ledger.

So, in terms of using blockchain technology in cases where there is no cryptocurrency, in my opinion, no regulation is needed. Moreover, it is one of the most secure technologies at the moment.

● (1645)

Mr. Sébastien Lemire: Is there a danger that blockchains will also be used by organized crime, for example?

Mr. Pascal St-Jean: On this subject, I could send the committee an extremely interesting report.

In that report, the FBI said that if it had been able to create a way to track down criminals, it would have used cryptocurrency. Indeed, it's ideal, because you can see every possible transaction.

The risks are not necessarily related to blockchains, but rather to third-party applications. For example, we can talk about an application or exchange that is not regulated and does not use the same technology as blockchains.

I can have cryptocurrency, but, since it's not secure, I can definitely get hacked. That's where the danger comes from, not the blockchain.

As my colleague mentioned, security and public education become extremely important. The reason we are here is to make it safe and simple. Every time there has been a theft or a hack, the FBI or the investigators have recovered the funds. It's impossible to get the money out anonymously. So it's extremely inefficient for criminals.

The Chair: Thank you very much, Mr. St-Jean and Mr. Lemire.

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

[*English*]

Mr. Brian Masse (Windsor West, NDP): Thank you, Mr. Chair, and thank you for suggesting the study.

I'm going to follow up and invite anybody to chime in.

We've done some work on fraud prevention. I'm wondering what work needs to be done there. The last part was a good segue. I'd like to hear more about what types of industries might be more prone to fraud or illicit activity versus that of proper investment.

How can we improve those elements, and do we also need to seek some international agreements?

That's what I'm thinking about for the future.

Mr. Matthew Burgoyne: That's a great question.

It varies, but I'd say that roughly once every two weeks I get a call from a Canadian who has been the victim of fraud. They've discovered that they've been defrauded. They're desperate to get their funds back, and there's little I can do, because it's too late. The crypto has been transferred to someone out of the country, and nobody knows where. In limited cases, law enforcement is successful in retrieving the funds and bringing them back to the victim, but that doesn't happen in the majority of cases.

I've had probably 30 or 40 calls or more in the last few years from victims, so I see patterns. It's always an investment company. People are being duped by so-called asset managers or investment funds. They've given their cryptocurrency to a fraudulent fund that's going to manage their crypto on their behalf. That's almost always the case.

Greater education was mentioned by one of the other witnesses. There needs to be almost an education program devoted just to cryptocurrency and investment fund fraud. If it's initiated by the federal government, that's great, but there needs to be something that specifically targets cryptocurrency and investment fund fraud, because a lot of people want to get into cryptocurrency. They've heard about it and they want to invest in Bitcoin, but they don't understand the difference between a regulated Canadian exchange—we have great regulated crypto exchanges, including many in Alberta and Ontario—and the fraudulent crypto investment funds.

I think an education campaign would promote awareness across Canada of investing in a fraudulent fund and not letting just anyone manage your cryptocurrency. Education on who the good operators are and the risks would be great, I think.

● (1650)

Mr. Brian Masse: I'd like to get a couple more people in on this.

Kevin Cosgrove was one of our witnesses for fraud. He's from my area. He's done a lot of anti-fraud stuff. He actually presented me with a Bitcoin that was made. They were being sold originally because people thought there was a real Bitcoin. He actually bought some online because they shut down the plant in England, but you could collect them. I don't have it in front of me because I'm in Ottawa; I have it in Windsor.

How much more complicated is it to convince people in blockchain technology that fraud is somewhat associated with it or makes it vulnerable, as we've heard? How seriously should this be part of our repertoire of public education to make sure it doesn't get caught in the crossfire of fraud, because fraud is one of those things we're still struggling with?

Does anybody else have any comments on that? I'd love to hear from them.

Mrs. Laure Fouin: If I may, I just wanted to add—

Oh, I'm sorry.

Mr. Pascal St-Jean: No, go ahead, please.

Mrs. Laure Fouin: I just wanted to add something about what Matthew said.

He mentioned fraudulent players, but because you mentioned the possibility of considering international agreements, I would also like to emphasize the fact that they are mostly foreign players. It's not always a purely fraudulent player, but just a foreign player. He has the funds of a Canadian and then goes bankrupt in the U.S. or something like this. There is no way of getting the funds back, only because it's foreign, so yes, I do believe that there is an opportunity here for international coordination and potential agreements between Canada and other countries in order to make sure that Canadians can retrieve their funds in these circumstances.

Mr. Pascal St-Jean: I fully agree with all the statements that were made.

I just want to make sure the message is clear that it's not blockchain or cryptocurrencies that are fraudulent but basically sometimes the means of entering into the space, whether it's a bad player and you enable investors to come in and potentially purchase something that's not real, or, to the gentleman's point earlier, someone utilizing the crypto to make a payment into something that is not real.

It's not the crypto or blockchain. I want to be very clear. At the blockchain level is not where the fraud is happening. It's happening because it's an easy means of payment and it's a bearer asset. It's a bit like giving cash. Once you give cash to someone, it's a bearer instrument. If they disappear, you lose that cash, whereas some digital payment systems, through banks and through international parties, sometimes can reverse transactions, although it's very rare. We see fraud in all aspects.

I just want to be very clear that we get the definitions right, because words and definitions matter in how we will regulate things moving forward.

Mr. Brian Masse: I do appreciate that.

I know my time is up, but I will say this is why I'm concerned. People are trying to understand what blockchains and all these things are. It's all confusing, and it's bad enough with fraud on our regular payment stuff.

That's why I wanted to highlight those points, because I think you made the point earlier that it wasn't the blockchain itself and the products, but the actors or players in between who are using that. I'm just concerned about the lack of education.

Thank you, Mr. Chair.

The Chair: Thank you, Mr. Masse.

We'll move to MP Williams for five minutes.

Mr. Ryan Williams (Bay of Quinte, CPC): Thank you, Mr. Chair.

I'm going to split my time with my colleague Mr. Généreux.

I'll start with you, Mr. St-Jean. What is blockchain worth in Canada? How many industries and how many jobs do we have at this point? Do you have any idea?

Mr. Pascal St-Jean: If I gave you numbers, they would be created, although I just came back from an amazing event, a conference in Calgary, by a great organization called the Canadian Blockchain Consortium. They are the closest thing to our network here in Canada. I would gladly put you in touch with the head of that, Koleya Karrington. She's an amazing ambassador for this space across Canada, and they do this type of analysis and data.

I would say that it's in the billions of dollars right now. Just the presence that I'm aware of and just looking at our market capital and at other companies in different spaces, it's already in the billions and in the hundreds of thousands of jobs, if not more.

● (1655)

Mr. Ryan Williams: You did mention that you think Canada is a leader or could be a leader. What makes Canada a leader? Why do you see that we have the most potential?

Mr. Pascal St-Jean: Look, there are a lot of different areas, and again, it depends on the province. We see a lot of mining in Quebec, and in Alberta there is innovation on the utilization of energy for better productivity, energy that would have been wasted. We are seen as a leader from that perspective.

I don't want to tout our name, but my friend here did say that we were the first in Canada to launch an ETF. That was us. We took on the challenge with the regulators and were able to launch the first fully regulated spot Bitcoin and Ethereum ETF products globally. Still to this day, we're one of the only ones who do it. Others use futures or others don't use proper underlying.

Canada's regulators were very favourable to trying to explore what this could be. It seemed that all of a sudden it stalled because there was uncertainty. We're seeing a lot of poaching in the regulatory space. We're seeing a lot of uncertainties in terms of what's next. I feel like there's this kind of lull, this stall, which is allowing other countries to catch up, but I'm glad to hear that we are seeing these types of panels and others to make sure we stay in the lead.

Mr. Ryan Williams: Laure, you talked earlier about recommendations for a governance structure. Can you expand on the governance structure you'd like to see?

Mrs. Laure Fouin: To make it clear, I was talking about the different governance structures that a blockchain itself may have. It may be entirely decentralized or it may be centralized.

I think that if and when you're looking at either regulating or doing anything about a certain blockchain, you need to look at what type it is. Is it entirely decentralized or is it centralized? When it is, it's in clear ledger, so if a bank decides to keep a ledger on a blockchain to issue bonds, it's in clear ledger, and that's all there is. If it's entirely decentralized, and you have, for example, the necessity of 51% of the network to vote on any block for it to be invalidated, that's a completely different governance structure.

I wouldn't advise the government to direct any type of governance structure, of course, because blockchain by definition can have either of these, but be mindful of the structure that a blockchain is following before thinking about regulating it or anything like that.

If I may, I will take this opportunity to mention the central bank digital currency that we are seeing as a pilot in certain countries, such as Australia. That is a blockchain that would be established by the Bank of Canada to issue Canadian dollars on the blockchain. There you will have to think about the governance structure that you do want on that blockchain.

[*Translation*]

Mr. Bernard Généreux: Mr. St-Jean, I would like to ask you two questions.

Not long ago, we did a study on quantum computing, and a follow-up will be done soon.

Please excuse my ignorance, but I would like to know if there is a connection between blockchain and anything to do with the energy needed to run potential quantum computers. We know that they consume a lot of energy, both in Quebec, where it is in the form of electricity, and elsewhere in the world.

You said that, thanks to blockchain technology, a company you knew well had managed to save hundreds of millions of dollars in the oil and gas sector. I don't know how it managed to save that much money, but come on!

Could there be a link between the computing speed of quantum computers and blockchain technology?

Mr. Pascal St-Jean: That's an excellent question.

I'd be happy to send you a report on how the costs associated with hydrocarbons were calculated.

People often think solely in the present and forget Moore's Law, which still applies today. The efficiency of computers and energy use will continue to improve, and we can see that already.

Quantum computing will definitely benefit blockchain technology and improve efficiency. People say quantum computing will destroy security, but algorithms are already available that can protect against that in the blockchain field and in all industries. If quantum computing could hack blockchains, we'd have more problems because the data of the banks and all other industries would be affected.

In short, quantum computing is the next generation in the efficient use of computer energy and processing speed. It will have a positive impact on blockchains. Consequently, there's definitely a connection between the two.

● (1700)

Mr. Bernard Généreux: So they don't compete with each other.

Mr. Pascal St-Jean: No, not at all.

Mr. Bernard Généreux: They're ultimately more complementary. You compared blockchains to decentralized general ledgers in accounting. Quantum computing, on the other hand, isn't a database.

Mr. Pascal St-Jean: No.

Mr. Bernard Généreux: We agree that they're two distinct and complementary technologies.

Mr. Pascal St-Jean: Absolutely.

Mr. Bernard Généreux: We know that Canada is quite advanced and evolved in this sector. A lot of research and development are currently being conducted in this field.

Do you think it's important that we also invest in knowledge associated with blockchains in Canada?

The Chair: A brief answer, please.

Mr. Pascal St-Jean: Yes.

The Chair: That was predictable.

Thank you, Mr. Généreux and Mr. St-Jean.

Mr. Gaheer, you have five minutes.

[*English*]

Mr. Iqwinder Gaheer (Mississauga—Malton, Lib.): Thank you, Chair.

Thank you to the witnesses for making time for the committee.

My questions are generally open to all the witnesses.

Are there risks of harm associated with blockchain technology? Proponents obviously make big claims regarding security and privacy, but we know that blockchains are only as secure as their weakest link. For example, if someone wanted to access data shared within an exclusive blockchain, they need access to only one node. That means that the threat to the entire blockchain is the weakest link.

Does anyone want to comment on that?

Ms. Justyna Osowska: What the government really needs to look into is also APIs. It's the technology between the blockchain and how it interacts with the real world.

You have to look at whether the data that's put on the blockchain can be encrypted. The blockchain could just store a transaction and the hash. You could actually have security if you hash both sides. For example, you can take a piece of data, hash it, throw it onto blockchain and have the other hash on the other side, so you need two sides of it to unencrypt the information.

You can actually store any kind of data on the blockchain. That's where I think the government really needs to do research. How can we look at the layer that's between the blockchain and the real world? It's like two systems. It's like a highway., and you have different cars running on the highway. They're going to be running at different speeds, and I think that industries have to collaborate.

As we were mentioning previously, financial instruments can't be invested in if there's no financial regulation. How do the regulators look at the blockchain? How can they make it secure for themselves? There's this middle layer that could be explored.

Mr. Pascal St-Jean: All data on nodes are encrypted. We don't have access to raw data.

I participate in multiple blockchains through mining and through node creation. I do not have visibility into the data. I have visibility into the transactions, but not the data stored in those transactions. Those are encrypted with SHA-256, which is the strongest encryption right now.

The statement, if you want it to be clear, is that just because you have access to the nodes does not mean you have access to the raw data.

Mr. Iqwinder Gaheer: Okay. Thank you.

The other problem that blockchain technology presents is a sluggish transaction speed. Because of the decentralized nature of the blockchain, each transaction has to be verified by the node before it's accepted by the block. It's hard to scale and it's a little bit sluggish.

Do you have any comments on that?

Ms. Justyna Osowska: Another thing to add to this is that there are different kinds of blockchains. There are proof of work, proof of stake, proof of history and other types. Proof of work is the oldest. It's the slowest and it's the most energy-inefficient. Proof of stake is quick and energy-efficient. Proof of history is even faster; it's like having an atomic clock on the blockchain.

Visa does 65,000 transactions per second; blockchain does 65,000 transactions per second.

Mr. Pascal St-Jean: I'll just to add to that by going back to what I've said earlier. I will hammer these three points over and over again. Blockchain is the database. The network is decentralized, but not all networks need to be. Cryptocurrency is the asset to help fuel or power the decentralized part of the network.

You can have a blockchain database that is not decentralized and is extremely efficient and fast because it doesn't have to validate, cross-validate and collaborate with all the other decentralized servers.

Decentralization is the network architecture and blockchain is the database, and then the cryptocurrency is the asset on that. As my colleague here was mentioning, there are multiple new technological efficiencies that are demonstrating the ability to create a decentralized network while increasing speed.

Like anything else, technology evolves. If we look back 10 years at autonomous vehicles and AI, etc., we can't say that blockchain is slow and it stays slow forever. Humans and technology evolve.

● (1705)

Mr. Iqwinder Gaheer: That's great. Thank you.

I think that plays into my third question very well.

Blockchain technology consumes more energy than any centralized system would because of the redundancy and because of the other points I've brought up. What are your thoughts on the energy consumption?

Ms. Justyna Osowska: It relates to what I mentioned previously, which is the type of blockchain you're using. As a proof-of-work blockchain, Bitcoin uses the same amount of energy as Switzerland. If you're using a proof-of-stake blockchain, you are not using that level of energy. If you're using a proof-of-history blockchain, you are not using that level. Not all blockchains are created equal. It depends on the working mechanism behind the blockchain and how you're proving the transactions are true.

In proof-of-stake blockchains, you have to bond the money in order for you to be a validator. I can send more information to the committee after regarding this, but essentially that means they have different security issues. There are different ways they can be attacked.

For proof of work, you would have to buy half the miners to take over the network. Proof of stake is different; you would have to own over half the value of the currency to control the network.

Both disincentivize cheating. Both work, but the energy efficiency behind them is different. Proof of stake and proof of history consume...I don't know what the statistics are compared to the banking sector, but it's not what it was 10 years ago, as my colleague mentioned. The technology has advanced.

Mr. Pascal St-Jean: I'd be happy to have a two-hour discussion just on all these different questions, so I won't try to answer them all in a few minutes. Technological efficiencies resolve problems over time, so we are seeing all these problems getting resolved. There are things that existed multiple years ago that are getting faster and better. Understanding consensus mechanisms matters, because they are based on what you are trying to secure on the blockchain. Proof of work matters if you are trying to secure billions of dollars of monetary value; proof of history is much faster if you are trying to create a competitor to Visa, for example.

Understanding these.... They are not all built the same, nor are they all trying to solve the same problem, but I always go back to the root answer. We are seeing an asymptotic evolution in the technology that is making all of these better, faster and more efficient. All these problems will be resolved within the next five years, if not sooner.

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

If I may, Mr. Lemire, I have one question.

Ms. Osowska, you mentioned certain statistics in terms of the number of transactions per second that proof of history allows us to do. Can you repeat that?

Ms. Justyna Osowska: I believe that statistic is 65,000 transactions per second.

The Chair: By way of comparison, how many transactions are done by, for instance, Visa or Mastercard?

Ms. Justyna Osowska: It's basically the same.

The Chair: It's basically the same.

Ms. Justyna Osowska: Yes.

The Chair: Thank you.

Go ahead, Mr. Lemire.

[*Translation*]

Mr. Sébastien Lemire: I'd just like to say that we couldn't hear the number of transactions in French.

Ms. Osowska, would you please repeat that to ensure we also understood in French.

How many transactions can potentially be done per second?

[*English*]

Ms. Justyna Osowska: It's 65,000.

[*Translation*]

Mr. Sébastien Lemire: Great, thank you.

Mr. Chair, do you want to speak?

Were you thinking about managing your time for asking questions?

This is your study.

The Chair: Out of my considerable generosity, I prefer to let the members ask their questions, and, if any time remains at the end, don't worry, I'll nab it.

Mr. Sébastien Lemire: I think it might be interesting for you, as the chair, to have a separate round of questions. I could second that request.

I'll continue with Mr. St-Jean. The representatives of Osler, Hoskin & Harcourt LLP could also add to your remarks.

Getting back to the energy-consuming aspect associated with cryptocurrencies and thus perhaps with blockchains, according to Hydro-Québec, there are 80 cryptocurrency mining businesses in Quebec, including Bitfarms. Those businesses apparently consumed 1.1 terawatt-hours in 2020. That's nearly twice what they used in 2018, and we can expect their consumption will keep increasing. This is equivalent to the amount of energy used by 100,000 homes, or 0.5% of all the energy Hydro-Québec sold in 2020.

Can we expect this upward trend to continue?

Why is this technology so energy-intensive, and could we derive greater benefits from it, in particular by heating the basements of village churches, for example?

Mr. Pascal St-Jean: That's exactly where it goes, literally.

Mr. Sébastien Lemire: Is that so? All right.

Mr. Pascal St-Jean: Here are two examples.

We're going to go back to the technological aspect. Technology improves and things become more efficient.

The energy sold by Hydro-Québec and many other companies in Alberta and elsewhere is surplus energy that's negotiated with consumer businesses. Whether the customer is a cryptocurrency miner or any other business, it's up to a supplier such as Hydro-Québec to negotiate rates and energy consumed. A large amount of energy has already been negotiated, and certain businesses have managed to draw more.

I can give you an example of a company that I know very well, SATO Technologies Corp. It's a Quebec company that mines cryptocurrency and has established itself in the communities where it operates and offers waste heat turbines, for example.

Cryptocurrency mining uses energy and produces heat, which is redistributed to feed heating systems that serve the city. This is true. The business works with the city to create an ecosystem.

This very efficient reutilization of energy creates value for the business and the cryptocurrency mining system, which in turn creates new businesses and, at the same time, helps establish a modern infrastructure that the city otherwise would not have.

● (1710)

Mr. Sébastien Lemire: What city is it?

Mr. Pascal St-Jean: I can send you the name of the city…

Mr. Sébastien Lemire: That's fine.

Mr. Pascal St-Jean: I heard about that during supper the other day and I was very impressed. I can put you in touch with the head of that business.

Mr. Sébastien Lemire: This underscores the importance of ensuring that high-speed Internet is available everywhere, in every city and town.

Thank you, Mr. St-Jean.

The Chair: Very well done, Mr. Lemire.

I now give the floor to Mr. Masse for a final round of questions.

You have two and a half minutes.

[*English*]

Mr. Brian Masse: Thank you, Mr. Chair. I'll cede my time to you. You can have my time. I want you to get in there. It's your study, and I respect that.

The Chair: It's the committee's study, but of course I appreciate the committee's willingness to go along. I know there is a lot of interest.

However, I don't have that many questions. For the benefit of members and the public, you mentioned, Mr. St-Jean, smart contracts. It's not necessarily clear in most people's minds what that means and what the use cases are for smart contracts.

Mr. Pascal St-Jean: I'd absolutely be happy to elaborate a little bit on that.

When we were talking about decentralized finance, I was giving you the example of this peer-to-peer network that is enabling people to participate in loan generation for a down payment towards a mortgage. Certain terms need to be there. If we work with a bank or a centralized organization, there's a decision-maker. That tends to be a human being who evaluates your creditworthiness, my ability to lend, your ability to repay and so on. They make a decision on that ability to happen.

A smart contract is essentially a programmatical way of entering all this information into a contract that is basically observed and triggered based on data that gets provided. Let's say we were to go online and generate a contract together: I'll loan you *x* amount for *x* percentage, and you will give me *x* amount in collateral, and if you pay it back by a certain date, you'll get your collateral back. This is all triggered by computer code, which is a smart contract. That enables a lot of innovation of peer-to-peer finance, which is decentralized finance.

That's one of multiple examples. For example, if we were to do tokenized real estate and there was to be a yield generated from the rent, we would distribute that automatically, based on the rules of ownership, through smart contracts. It a way of using software and information to trigger specific actions.

The Chair: Thank you. From my perspective, that's definitely part of the appeal to millennials, who face a harder time gaining access to property. I see the attraction. In fact, I think the statistics are clear that among millennials, the adoption is growing.

The last question I have goes back to the topic of Monsieur Lemire on energy.

[*Translation*]

For example, we produce hydroelectricity in Quebec. Since it's hard to store hydroelectricity, production is determined on the basis of peak demand.

Do you know of any examples where energy generated and lost is used to mine cryptocurrencies?

Mr. Pascal St-Jean: There are some involving gas, the energy that comes from burning and isn't resold. There are a number of ways.

What is energy? It can be stored in a battery and can also take the form of money or value. There are examples where people wonder if they can take unused or waste energy to create value and then potentially reuse that value to purchase more energy or to use it for something else. Energy generally has a value, which helps in purchasing something else or creating things and so on.

So we use cryptocurrency, other proofs of work or other blockchains to reuse the energy that would normally be wasted to create value. Then we reuse that value in the economy. That creates considerable potential for the economy and the government. We can see that certain governments are involved in mining to create value using energy for the benefit of their citizens.

● (1715)

The Chair: That energy would otherwise be lost.

Mr. Pascal St-Jean: Yes, absolutely.

The Chair: Thank you very much, Mr. St-Jean.

Thanks to you as well, Mr. Masse, for so graciously offering me your speaking time. I was as generous with my time with you as I was with myself.

I see that Mr. Généreux would perhaps like to ask a final question.

Mr. Bernard Généreux: Talking about being "généreux", you're talking about me today. That's nice.

I'd like to suggest to the committee that, if possible, we take an exploratory trip to a blockchain farm. I don't know whether there is one in Ottawa, Montreal, Quebec City or Toronto. That would help the committee get a clear idea of how those farms work.

That's what I'm proposing to the committee.

The Chair: I'll take note of that. Perhaps we could discuss it in camera.

We will now go in camera to conduct committee business, but, first, we will allow our witnesses, who have been very generous with their time, to leave.

[*English*]

I'd like to thank you all very much. Thank you for starting this study with the industry committee. I wish you a good evening.

Again, many thanks.

This meeting is suspended.

[*Proceedings continue in camera*]