*Daniela Cambone:* Onto our next presenter. Alex Tapscott is an entrepreneur, writer, and seasoned capital markets professional focused on the impact of emerging technologies such as blockchain and cryptocurrencies on business, government and society. Alex oversees the digital assets group at Ninepoint Partners and AP Investment firm with 8 billion in assets. Ninepoint's Bitcoin ETF, ticker symbol BITC on the Toronto Stock Exchange is the only carbon neutral Bitcoin ETF in the world.  
  
Alex also chairs the Advisory Council of Prophecy at DeFi, one of the only publicly traded decentralized finance companies in the world. He's also the co-author of the critically acclaimed non-fiction bestseller, Blockchain Revolution, which has been translated into more than 15 languages and has sold more than half a million copies worldwide. He's also the editor and co-author of Financial Services Revolution, which offers readers a startling view of how decentralized finance is reimagining the financial industry.  
  
In 2017, Alex co-founded the Blockchain Research Institute, a global think tank investigating blockchain strategies, opportunities, and use cases. He is a graduate of Amherst College, \_\_\_\_\_, and is a CFA charter holder. He lives in Toronto. He's a fellow Canadian like myself. Alex, welcome to the stage.

*Alex Tapscott:* Well, thank you, Dany, for that wonderful introduction. And thank you to Stansberry Research for hosting me at this event. I'm very excited to be here with all of you today and that's because we are on the brink of a new era of technological progress, something that I like to think of as the second digital age.  
  
So the first digital age brought us the computer, the mini computer, the PC, the internet, the mobile web. And the second era is taking us to another level where technology is going to be deeply integrated into our daily lives, into the social fabric and into businesses in the economy. And there are many different new technologies that people point to as being the next killer thing.  
  
And these are all very interesting. Everything from drones and robotics, to virtual reality, machine learning and artificial intelligence. But it might surprise you to learn that the technology most likely to have the greatest impact on the future is the technology behind cryptocurrencies like Bitcoin, and it's called blockchain.  
  
So blockchain in my view represents not only the most important technology of this new era of digital progress, but also represents a second era of the internet. So let me explain what I mean by that. When you use the internet today to send and move information, you're not actually sending an original unique thing, you're sending a version.  
  
So if you send an email to one person, you can send the same email to another person and to another person, you can attach a PowerPoint and that person can receive it and so can someone else, it's a way to copy information. If you post something on the internet on Wikipedia or Twitter it's available for all to see. And this phenomenon, this ability to basically have a printing press for information is generally speaking a very positive thing and has led to I think a democratization of information, a way for everyone to get access to it.  
  
Except when it comes to things that have value, things that require scarcity, assets, like say money or stocks and bonds or titles and deeds, or even votes in an election, being able to copy those things is actually a terrible idea. So sir, if I owe you $20 for something and I send it to you, it's very important that you know when you get it, that it's the only version of that $20, that I can't copy that money the way I can copy an email.  
  
It's very important that if you vote an election, that your vote is well casted and counted for the person who you voted for, but that you can't vote for someone else. If you sell somebody a share of a stock, it's very important to the buyer that they know that they have the only version of it, that you can't sell the same share to someone else. Because if we had a printing press for assets, the way we have a printing press for information, then those assets become worthless.  
  
So even though the internet has had I think a broadly positive impact and there are some limitations, but a broadly positive impact on the world, we still basically rely on middle men, intermediaries who sit in the center of transactions and perform a bunch of important steps. Now, middle men that would be familiar to the folks in this room, banks and brokerages and other financial intermediaries, but increasingly large technology companies, digital conglomerates like Amazon or Apple, big social media companies like Facebook.  
  
These are the arbiters of commerce online. And overall they do an okay job, but they have some very specific limitations. The first is that they're centralized, and anything that is centralized is vulnerable to hacking or to attack or to corruption. And this is true not only in large companies, but in governments and other centralized institutions. Another big issue is that they add costs and slow things down.  
  
So in the case of sending money overseas, for example, it can take days for money to go between one person and another and cost ten percent, sometimes even more. We talk about the market for cross-border payments, it's a very big market. Remittances alone, the money that individuals send to each other is around $600 billion a year. But nobody ever talks about the market for cross-border email or cross-border text messaging.  
  
When it comes to information, it flows like water, it's instantaneous. That's what the internet of information enabled. But when it comes to value and assets, until recently everything moves basically the way it has for decades. So what if the internet were entering a second era from an internet of information to an internet of value? Well, in 2008, an anonymous person or persons developed this thing called Bitcoin.  
  
Bitcoin was designed to actually solve a very simple problem, the problem that I'm describing. It's called the double spend problem. How do you ensure that when you move something of value over the internet between two people that you aren't leaving behind a trail of digital breadcrumbs that you can't send it again, in other words. And it sounds like a simple problem but until Bitcoin came along, there wasn't actually a way to do this.  
  
So we relied on banks and PayPal and Visa and all these other intermediaries to sit in the center and establish trust and verify identity and perform all of the processing of transactions. So this was a pretty radical idea. But what was really radical about it was not what was written on the page, it's that it actually works and it works so well that Bitcoin today is a $1.2 trillion asset class. It is widely held by millions of people in places like the United States and Canada, where I come from.  
  
It's used as a store of value, a hedge against inflation, a hedge against government access. In many parts of the world, it's used as a financial lifeline, a way to protect against expropriation in parts of the world where the government has their fingers in the economy. And as a payment method, as a way to store and move value for people who are unbanked. And Bitcoin size is really quite striking and it's worth spending a moment on it.  
  
The value of Bitcoin today is about $1.2 trillion. That is greater than the value of every single Silicon Valley unicorn, so every big startup that has launched since Bitcoin launched, combined. So take every single \_\_\_\_\_ company, every single stock that you've seen that's gone public, Robinhood, Airbnb, Uber, all these things combine them much smaller than Bitcoin is. And it also set off a spark that captured people's imagination and got them thinking, well, if we can move Bitcoin peer-to-peer, maybe we can use this technology to move other kinds of assets.  
  
Now historically, every time you enter into a transaction, you're relying on banks, intermediaries as I mentioned. They usually or always have a thing called a ledger. It says who owns what and who owes what to whom? And they keep this ledger and that's their very special asset. What a blockchain is, is in effect a ledger, except instead of sitting inside of one single entity like say a bank or a government, it's decentralized, meaning it is spread across a network.  
  
And anybody can see what's in the ledger, but no single entity can alter it. What that means in effect is that it becomes a source of truth that everybody can trust, and it means that new entries can only happen from the consensus and consent of the network. So without explaining the technology, the point is that this is a way to create scarcity in digital goods. It works for Bitcoin, but as I'm going to explain in this talk, it's going to work for every single asset in the entire economy.  
  
In 2016 we released a book called Blockchain Revolution, in it we described the potential for this technology to impact many different industries. I would encourage you to check it out if you haven't already. We look at every single industry in the economy and the way in which they companies that you may be invested in. But today I wanna talk specifically about financial services.  
  
So this cartoon is a cartoon of an old parable, it's called the parable of the blind men and the elephant. And basically all these different people are standing around this elephant and they're all wearing blindfolds and they're all touching a different part. One person touches the leg of the elephant and says, "This feels like the bark of a tree." Another person touches the tail and says, "Oh, this feels like rope." One touches the ear and says, "It feels like a big palm frond."  
  
I think when it comes to new technologies, sometimes we feel like we're groping around in the dark a little bit. And depending on our perspective and where we're approaching it from, we see things a little bit differently. So my objective today is to help sort of lift the veil and help you see the entire picture and why this is so important.  
  
Financial services is more than just any one industry. It is the lifeblood of all industries and is foundational to the way the global economy functions. But today the financial services industry is not a well-oiled machine that moves value and assets around seamlessly using state of the art technology.  
  
It actually more resembles this, which is a Rube Goldberg machine. A device that performs a bunch of seemingly ridiculous and unnecessary steps, and in the end it solves a simple problem. Like it closes a door or I don't know, cracks an egg in a frying pan or something like that. And this is true in many different parts of financial services.  
  
So if we go down the lane here to the coffee shop and tap our card on the card reader, we might think like there's a digital transaction that's happening there, where money is moving in the air from my bank account to the merchants, but that's not actually what's happening. Involved in that transaction is my bank, the merchant's bank, but also the credit card company, a payment processor, usually a company that's doing a risk check. In my case because I'm Canadian, maybe some kind of foreign exchange. And it doesn't take seconds, it actually takes days for that transaction to settle in the account.  
  
And there's an interchange fee paid by the merchant that can run usually two or three percent, but sometimes as high as ten. If you think about the world of, I don't know, equity investing, something I think everybody here does fairly regularly. You go onto your discount brokerage and you buy a share and you think, okay, now it's in my account. And it's true the transaction clears in that second, but the settlement takes much longer.  
  
The settlement happens in T plus two days or T plus three days and involves a number of different intermediaries. So most of the innovation that we've seen in financial services over the last 15 years, what's commonly described as FinTech is really nothing more than digital wallpaper. It is a fresh coat of paint that makes the industry more appealing, more approachable, but underneath the surface, fundamentally the infrastructure, the foundations of the industry are older than I am and probably older than many people in this room.  
  
What I'm here to tell you is that crypto assets, these digital assets that are enabled by blockchain and the new financial services industry being built around them, commonly referred to as Decentralized Finance, is going to eclipse FinTech. Because rather than just a fresh coat of paint, a new user interface to access the old world of finance, DeFi is reimagining every single aspect of what the industry does.  
  
If Bitcoin enables one person to send money to another person in the form of this thing called Bitcoin, then DeFi basically enables peer-to-peer models for every single thing the industry does. Not just moving money, but storing money, getting access to credit, getting access to insurance, exchanging financial assets, getting access to growth capital if you're an entrepreneur. Organizing financial information, what accounting does, analyzing financial information, what banks and other large intermediaries do. All of these things are being reimagined by blockchain.  
  
DeFi, by the way, you'd be forgiven for not knowing what this is because it's basically less than 18 months old. I actually wrote this book Financial Services Revolution, where I looked at this metric right here, which is called total values. These are sort of like deposits, the amount of money that's involved in this industry. And at the time it was $400 million. So that would not be enough to, I think, pick anyone's interest in this room that there's a new industry that's worth $400 million.  
  
That wouldn't even be a small cap company by most measures. Today though, the value of the DeFi industry is $200 billion. So it's grown around 400 times in about two years. Here's where I'm going to just get a little technical for a moment and explain why this is so significant. So as I describe Bitcoin is a way to move value peer-to-peer, without the need for a bank or government or another intermediary. It's a way for individuals to be their own bank.  
  
DeFi builds on that concept by enabling peer-to-peer models for everything else the industry does. How does that work? Well, it works because of this innovation called a smart contract. So I think everyone's familiar with a contract, an agreement between two parties with a bunch of different sets of terms and instructions and so forth, enforced by courts and the law.  
  
A smart contract basically takes all of the business logic of a contract and puts it into a piece of software. It is a self-executing agreement between parties that run on top of blockchains. Now, if you think just for a moment, well, that sounds a little bit jumbled, think about, I don't know, shares in a company. When you own a share of a company, you basically have a contract.  
  
The contract says, I as the owner of this share of Majestic Silver or any business have a right to a piece of this common enterprise, I've got the right to cashflow if that company pays a dividend, and I have got the right to vote on certain matters, if there's a change of control, what have you, I have a vote as a shareholder. All of those different terms are basically parts of a contract that you can program into code so that every share and every other asset that has all that kind of complexity can be digitized is the point.  
  
So what does the industry do? Well, let's go through this really quickly. Storing value. Well, one way you can store value is to hold it in your bank account or to buy money market fund or maybe you, I don't know, have gold that you keep at home in your safe or in a safety deposit box. What digital assets enable is for individuals to be their own bank. So if you've ever custodied an asset like gold, this should be something that I think speaks to you.  
  
The idea that you can control and own the assets that you have, you don't have to rely on them being custody by a bank. Another innovation of blockchain is a thing called a multi signature wallet. So if anybody here has a safety deposit box, they may be used to going in and putting a key in while the banker does the same thing. Those are two keys.  
  
A multi signature wallet is a way for many individuals to be able to access money that's held in a digital wallet. One example of this is a thing called Gnosis Safe. Today over $100 billion is stored in multi signature wallets, not just by individuals, but by institutions, financial services companies and the like. Digital wallets for digital assets.  
  
Moving value. Bitcoin is a way to move value peer-to-peer. Bitcoin is also a little volatile, for a lot of people that is a feature, not a bug. Gold was very volatile in the 1970s after Nixon took the US off the gold standard. Sometimes volatility means something is going up. But when it comes to payments, let's say a merchant expects $1,000 for something, they may wanna have it in a more stable form of value.  
  
One of the most interesting forms of crypto assets is a thing called the Stablecoin, which is basically a digital asset that's pegged to the US dollar. And I'll explain how quickly that's growing in a moment. This is very important for a number of reasons, it would be great for us to have more convenient ways to make payments.  
  
But as I mentioned earlier, there is over 600 billion of money that flows from countries like the United States and Canada to countries like Mexico and the Philippines. People sending money home to their families in their ancestral land. And according to the World Bank, the average fees are around ten percent. So imagine you were able to send money peer-to-peer as easily as you can send a text message to someone, that's the promise of Stablecoins.  
  
Lending value. So one of the more interesting examples of innovation in this space is a thing called a lending pool. And basically it kind of works like a margin account in your brokerage. Something, again that you're probably familiar with. So you can put money, put your assets into this contract and then receive new money leverage in order to, I don't know, pay for your lifestyle or maybe to go and invest more on your behalf.  
  
The way that this works in practice, and I'll use this thing Aave as an example, is if you have a margin account and the value of your portfolio crashes, you might get a call from your broker saying, "You've got a margin call, you need to sell some assets to cover the margin call or bring some cash into your account." The way it works with a smart contract is that there is no person on the other end of the phone calling you up to tell you that.  
  
The contract automatically liquidates the assets to cover the shortfall. So that in other words, it's impossible for the lender to ever default because the borrower's over collateralized. And just to give you a sense of how quickly this is growing, the value of this one application called Aave has grown from around a billion dollars or so last year to around nine billion, sorry excuse me, 15 billion in nine months.  
  
Funding and investing. The way that we used to, or the way that I think we still do fund new and innovative companies is a company gets incorporated and then it goes and does an angel financing, then it goes and does a seed round, and then it does maybe a series A, and then sometimes it goes public on a venture exchange like the TSX venture. Or it remains private until it's big enough and then it goes public on the New York Stock Exchange or the NASDAQ or something like that.  
  
And this is a system that was created in the United States that works exceptionally well, but it's also something that is being disrupted right now. Because what you can do as an entrepreneur today is that instead of incorporating as a business, your business can be a piece of software. And I know that sounds a little crazy, but basically if you issue a token to people and your project becomes more useful, then the token value can go up.  
  
And this is something that has helped to finance the development of many, many major projects. And again, to give you a sense of just how large this is, one of these projects, Uniswap, a decentralized exchange, which I will get to in a moment, has a market value 18 billion US dollars for example.  
  
Another thing that's very interesting that you can do with crypto assets, and I'm not saying you folks, I'm just explaining what's happening at the very bleeding edge of this industry, is a thing called a yield aggregator. So a lot of really interesting projects in the space pay attractive yields to people who help them out build the project. But as an individual, it's very difficult to go out searching for every single great company or every single great project.  
  
So you might buy an ETF in your case, or you might buy a mutual fund which gives you a basket. That's basically what a yield aggregator does. You put money into the contract and then it goes out and seeks out the best returns and then pays you that return instantaneously as it is generated. And the biggest one YFI I put it phonetically because everyone pronounces it different, but this is how you pronounce it, again an example of a project and how quickly it's growing from $500 million to $5 billion in nine months.  
  
Probably the most exciting area of this space today is in how we exchange value, how we move assets between people. So everyone here has probably heard of Coinbase, it's the publicly listed cryptocurrency exchange. It's got a $60 billion market capitalization. It's got thousands of employees. It's domiciled in the United States, everyone knows it's founding team and employs very, very well.  
  
On some days, Coinbase is smaller, does less volume than a thing called a decentralized exchange. And there are a few versions of this, one of the largest is called Uniswap. And basically a decentralized exchange doesn't have a central order book, there is no centralized exchange. So certainly no trade, there's certainly no floor, but there's not even a central computer system. It's a way for individuals to trade assets peer-to-peer.  
  
Today, it's mostly being used for digital assets, but the underlying technology eventually will come to replace the infrastructure of centralized exchanges like the New York Stock Exchange and the NASDAQ. Insurance is another thing that's finding a lot of very interesting product market fit. And it's mostly in the form of credit derivatives, so basically ways to insure a portfolio. So if something goes down, maybe you're offset.  
  
In the future though, I think that what DeFi can enable is ways for people to get exposure to insurance peer-to-peer. Now, there are lots of places in the world where they've got pretty good insurance companies that provide pretty good insurance, but there are lots of places in the world that don't. So to me, DeFi is not only about decentralizing finance, it's also about democratizing it.  
  
This is a very interesting thing I wanna talk about for just a second. In the way the world works today, you've got shares in a company in your portfolio and every so often, usually every quarter, that company produces its financial results. And you go through the financial results and you see things like a balance sheet and income statement, and the company has put all this information together and you're supposed to trust that they've put it together accurately.  
  
Now, just in case they usually have an auditor, which makes sure that those financials have been reviewed by a third party. And it's all based on the trust that we have in both the company and the auditor to basically be doing the right thing. And that's a system that works okay, except for Enron and Andersen Accounting and a zillion other examples.  
  
What's unique about blockchains is that all of the transaction data is not inside of a bank account controlled by the company you own. It's out in the open, it's what's called on chain. In other words, it's available for all to see. So all of a sudden accounting and audit and how we analyze value is something that goes from every, I don't know, quarter or with the cycles of the moon or whatever, to a living breathing thing that we can see in real time.  
  
And that's very interesting because now all of a sudden, all of the cash accounting that happens inside companies, accounting for transactions is something that just anybody can see in real time. So the opportunity for innovators is to figure out ways to interpret that information. Double entry bookkeeping is the way we do things today.  
  
It's to some people, the most important innovation in human history. Maybe that's a bit of a stretch, there're probably accountants that think that. But basically the idea behind double entry bookkeeping is, sorry I'm doing an accounting talk now, is everyone still awake? Okay. So for every transaction there's a debit and a credit and at the end it has to balance, that's why we call it a balance sheet.  
  
So with a blockchain, we can still have companies and projects with their own balance sheets if they want, but we have a third entry. We have this thing called the blockchain, which actually allows us to see whether or not that information is in fact accurate. And the final part of this is identity.  
  
One of the problems with the way that the first era of the internet grew and matured was that we never actually get to own our digital identities. Our digital identities are owned by the companies that we interact with. So it turns out that there's a digital me out there just like there's a digital you sir or a digital you, except it's not owned by you.  
  
It's owned by Facebook, it's owned by Google, it's owned by your bank, it's owned by your government, it's owned by all of these intermediaries. And it turns out that they know you better than you know you, you might not know where you went, what you bought, what you said, what website you visited and for how long exactly two years ago today. Probably not, but the virtual you does.  
  
So a couple of reasons why that's a problem. Number one, could undermine your privacy. Number two, we don't get to capture any of the value. The value today in the US stock market is captured largely by data aggregators. 20 years ago, if you looked at the list of the biggest companies in the world, it would be General Electric, IBM, Exxon Mobil. These are industrial age companies.  
  
Today, it's Google and Facebook and it's Amazon and Apple. Some of those companies make stuff like Apple, but they also harvest your data. So what blockchain enables is for individuals to take back control of their information. In the same way that you can hold a digital good like say Bitcoin in a digital wallet, you can also hold information about yourself, who you are, where you're from, where you were born, what your transaction history is, what things you like, et cetera.  
  
And that becomes your central point of access to the services that are provided online. You don't need to go create a new identity every time you wanna buy something. So you don't have a PayPal and a Shopify and Visa and all these different identities, you can have one singular identity. And that is extremely important.  
  
So foundational to all of this is a new technology called blockchain. Blockchain is enabling new kinds of business models like DeFi. And it's also enabling new assets, a whole new asset taxonomy, if you will. Now, one of the things that I get asked about a lot is, well, I don't really get why there are 20,000 cryptocurrencies. Don't we have hundreds of Fiat currencies and isn't that a system that doesn't work particularly well? And it's true.  
  
And what's important to understand about this asset class is that many if not most of these new digital assets aren't currencies at all, in fact, they fit into one of these seven different categories. Let's start with cryptocurrency's personal favorite of mine, Bitcoin. The mother of all bigger than the total aggregate value of every unicorn, every major Silicon Valley startup since 2009.  
  
Bitcoin is the undisputed champ of internet money as far as I'm concerned. It is digital gold, it's held by savers, it's a lifeline for people who don't have access to financial services. It has many properties that are similar to gold. It has a finite supply, it is scarce. It's difficult, it takes time and energy to produce. It's not controlled by a government. And so it resembles gold in certain ways.  
  
In other ways, I think it improves upon gold. It's easier to move, it's easier to store. It's infinitely divisible, so it can be used for payments. And because it's a technology, there are things that we might not know Bitcoin can do. I think with gold, we know what gold can do. Gold is a very useful asset and it's been proven itself to be a very durable store of value, but I think Bitcoin maybe has a brighter future.  
  
One of the things that's helped to drive Bitcoin, I think value is corporate adoption. This kinda comes in three different forms. There are big technology companies, big financial technology companies that are integrating Bitcoin and other crypto assets into their business models, companies like PayPal and Visa. There are large corporations that are holding Bitcoin as a treasury asset like Tesla. And there are investment firms that see it as an essential part of a well-diversified portfolio.  
  
The second category are things called protocol tokens. The biggest of these is called Ethereum. Who's heard of Ethereum? That's good. Ethereum has a market cap as big as JP Morgan. So it's a very big and important thing, but it is not like Bitcoin in some very important respects. Whereas Bitcoin is simple and it's technology, and I mean that as a compliment, Ethereum is more complex. It allows you to develop applications on top of the network.  
  
A lot of DeFi applications for example, are built on Ethereum. Basically the idea is pretty simple. To run transactions in the applications that run on the network, you need the token in this case it's called Ether. So the more applications and the more transactions, the more demand there is for Ether, which is why the price of Ether has increased.  
  
At the beginning of this year, Ethereum accounted for 99 percent of DeFi transactions. Today it is 70 percent. Is that evidence that Ethereum is on the decline? Well, I think it's hard for anything to have 100 percent of any market for a long period. I think it's more evidence of the surging demand for these applications. And as you can see, the value of these assets in aggregate has exploded in value.  
  
The applications that run on platforms like Ethereum, things like Uniswap, the decentralized exchange, Aave, the decentralized lending platform, YFI, the decentralized investment aggregator. They have tokens as well and these are called the governance tokens. Governance tokens have some similarities to equity in the sense that if you hold tokens in these projects, you have the ability to vote, to have a say on the future direction of those projects.  
  
Except unlike companies they're not centralized with management teams and head offices and so forth. So they are very different in that respect. And what's very interesting is a lot of DeFi protocols basically have small transaction fees. So every time I sell an asset to someone or they sell it to me, a small fee goes to the wallet of the protocol of the software. But it's not a bank account, it is a wallet that belongs to a piece of software.  
  
And these treasuries, these digital treasuries have ballooned in size. So Unitswap's treasury, for example, has $9 billion of value. Now, a lot of that is their token, but a lot of it is not their token. And to put that into context, $9 billion is a greater sort of balance of liquid assets than most public companies, albeit the top 20 companies in the world.  
  
Non-fungible tokens or NFTs. So I know this is a little far out there, but this is a very fascinating area as well. NFTs are unique digital assets. So here's what I mean by that. Bitcoins are basically interchangeable, you can swap one Bitcoin for another. It doesn't really matter which Bitcoin I own. That's not totally true, but generally they're one for one sort of like dollars.  
  
It doesn't matter if you have this dollar bill or that dollar bill they're fungible, it means they can be changed between each other. NFTs are non-fungible, meaning that they're unique or they're rare or scarce. Art is non-fungible, lots of things are non-fungible, but art is a good example. There's only one Mona Lisa, you can't swap the Mona Lisa for another Mona Lisa.  
  
Now, not all of these pieces of digital art are Mona Lisas, very few things are. But they hold the same property. What NFTs enable is for scarcity of unique digital goods. Bitcoin enables scarcity of digital value. So NFTs are a way to represent art, collectibles, other cultural artifacts. They are a way to represent parts of our identity. You know what's non-fungible? Me, I'm non-fungible. I think I'm the only me out there.  
  
So things about who I am can be NFTs as well. And this is a way to create a much more rich and much more I think interactive online environment what's called web three basically. The idea that you can own digital goods and take them with you from app to app.  
  
Exchange tokens is another very interesting category. Exchange tokens are basically like loyalty points on steroids. You can use them inside of centralized applications, often cryptocurrency exchanges as a way to get access to certain benefits, maybe discounts on trading or access to greater liquidity or access to new issues of tokens that you want to invest in and so on and so forth.  
  
And the value of exchange tokens is growing significantly. Binance, which is the largest cryptocurrency exchange in the world has its own token, it's called BNB. Now it is a bit of a hybrid. They also have their own sort of Ethereum like thing called Binance smart chain, but Binance's native token BNB is still really widely used in the app. And it has a market value of $70 billion.  
  
So the market value of the loyalty point for a cryptocurrency exchange in other words, is twice the size of the market capitalization of the NASDAQ, which is kind of amazing if you think about it. Now, you might say, well, there were a lot of .com companies in the '90s that were worth a lot and then some of them ended up tanking. And this is not a call on whether or not these values should be durable or whether that's fair value. Personally, I think there's an enormous market demand for these kinds of things and I do see why they are worth something.  
  
As I mentioned earlier, a lot of these digital assets are fundamentally just contracts and a lot of assets are contracts. And it turns out that instead of being smart, most contracts out in the real world, the paper-based contracts, the titles and deeds to your house, the share certificates to the things you own in your portfolio are pretty dumb, they're not smart at all. But we can use this technology as a way to basically digitize all assets.  
  
And this is pretty significant because securities are kind of the mother of all asset classes. The value of the crypto asset industry today is $2.2 trillion. And that sounds like a big number, but that's smaller than the market capitalization of Apple. And if you look at the value of the US stock market, for example, it's in the tens of trillions of dollars. So if we can harness this technology to improve how we move and store and trade and record ownership of securities, the market can grow that much more.  
  
Stablecoins, I mentioned this earlier in my section on moving value. Stablecoins are a fascinating innovation. As I said, a lot of people like to use Bitcoin as a way to move money, but sometimes you want something that's gonna hold its value to a familiar thing, like a dollar. The value of US dollar stablecoins in circulation has grown significantly.  
  
Unsurprisingly there's a familiar arc to a lot of the charts that I'm showing you, from a billion or $2 billion a few years ago to around $125 billion today. They're so popular that stablecoins are the number one trading pair with every other crypto asset. So most people prefer to invest in other crypto assets using stablecoins rather than using, I don't know, Bitcoin as their base layer, that's how popular they've become.  
  
But the underlying technology of stablecoins is I think going to impact payments. Facebook, which tried to launch its own stablecoin called Libra later called Diem has finally thrown in the towel because everybody hates Facebook and the regulators were never gonna allow it. And they've partnered with a company called Paxos to integrate that stablecoin.  
  
MasterCard, Visa, PayPal, all of these companies have basically said that stablecoins are going to be foundational to their future growth. Because if you think about all the payment systems in the world, whether you're moving money between businesses across border, between individuals across border, it still relies on a banking system that really hasn't evolved since the 1970s.  
  
The system that we use for moving money around the world is called Swift. And it is basically an instant messaging service built in the 1970s. So stablecoins I think are going to wipe all that away. A couple more, natural asset tokens. So natural asset tokens are basically a way to express the value of a physical good using a digital good. So you can think about a futures contract for say oil or gold or natural gas as a way to basically enable peer-to-peer and instantaneous settlement of physical commodities.  
  
Another thing that's very useful about blockchains is that they act as records of ownership. One area where this is very important is in the carbon market. So carbon credits are growing industry, but they're still sort of siloed and not particularly streamlined. Having a decentralized registry that everyone could see and trust was accurate would give people I think a lot more competence in the value and the authenticity of a carbon credit. So when a company says we've offset the carbon footprint of our XYZ using these carbon offsets, you can go to the registry in the blockchain and confirm that that's true.  
  
The final digital asset that I wanna talk about is a central bank digital currency, the killer app, as central bankers will tell you of blockchain. The thing that's going to make Bitcoin worthless. I personally don't believe that, if anything, I think it could help to accelerate the adoption of Bitcoin as a lifeline from things like central bank digital currencies.  
  
In all seriousness, there is some value to a CBDC that you can use it to broaden access to financial services that people maybe could get a bank account directly with the central bank, perhaps that's better than having a middleman. But I think the risks probably outweigh the positives. The risks are that the central bank will use the CBDC as a way to increase surveillance, to increase oversight into how money is spent.  
  
And some of their concerns are very valid. One is that they could develop programmable money. So if you don't spend your money before Black Friday, the money expires, it goes away. The idea that money could be like a loyalty point that goes poof. That's something that frankly to me is very disturbing. Unsurprisingly, the country that's very keen on CBDCs is China, because I think it fits quite neatly into their political system.  
  
So where do the banks fit? Sort of people ask me, well, does this mean the banks are toast? What happens to traditional financial services companies? And I would say that there are ways that they can embrace this technology. Don't fight it, embrace it. And some examples are, I don't know, maybe introducing digital asset custody as a business line. US Bank and BNY Mellon have done that. Stablecoins, well, MasterCard, Visa as I mentioned. Digital wallets, well, Standard Bank in South Africa is developing a digital wallet pilot to help increase ownership of these assets. So there are things that can be done.  
  
A couple more thoughts. Regulations, in the 19th century when the automobile was invented, the government in London, England, said that in order to operate a motor vehicle, you needed two people, not just one. You needed a driver and you needed a red flag man. Someone who would walk in front of the car like this, waving a red flag. And the idea was to make sure that horses and pedestrians weren't spooked by this new contraption.  
  
Of course, if you think about a car and why it's useful, it's so that you can get around quickly and that you have freedom. And having a guy walk in front of your car with a red flag kind of takes that away. So what we need to ensure is that as we're looking at the development of a new technology, a new asset class, of course, regulations are important and finance is one of the most heavily regulated industries in the world. We have to be careful not to kill the opportunity to create a new innovation economy around this technology.  
  
I'm gonna end on just a couple of thoughts here. Mr. Diamond says he personally thinks Bitcoin is worthless, which is weird because it's worth like a trillion dollars. All you have to do is just look at it. So maybe he means some day. It's sort of unfortunate JP Morgan has a team of hundreds of people working on crypto assets, Bitcoin services and other really interesting stuff. And I know for a fact, they get pretty deflated when they hear their boss say these kinds of things.  
  
But it's not totally surprising of course. This is a new paradigm and when you have a new paradigm, you have a dislocation. You see leaders of the old paradigm having a hard time coming to grips with it, fighting it, being hostile towards it. It's very difficult for a company to decide that they're standing on a burning platform and that the risk of jumping to taking a leap into the unknown is actually less than staying put. And we've seen this throughout history with new technologies, new systems of government and everything else in between.  
  
There's an old parable about the invention of chess and I think it's a very fitting analogy to describe kind of where we're at here. And it goes something like this, "The king of the land is so pleased with this new invention that he offers the creator anything he wants as a reward." And the creator of chess who's in the court says, "Oh, sure,. I'm a humble man. I have humble wants and needs. All I want is some rice to feed my family. But I want you to give it to me in the following way if you don't mind. One grain on the first piece of the chess board, two grains on the second, four grains on the third," and so on and so forth. And the king maybe he's a great ruler, but he's not a very good math guy says, "Whatever. Sure."  
  
Humble request from a humble man, but four becomes eight, becomes 16, becomes 32, becomes 64 and so on. So by halfway through the chess board, it's more rice than the entire kingdom can produce an entire year. By the end of the chess board, it's enough rice to cover the whole planet in six feet of rice. Now there's a side of the story where the king gets very upset with this person and chops his head off. Let me assure you the opposite will happen to you.  
  
My point being by embracing and understanding exponential change, you're gonna prepare yourself much better for the future. You're not gonna be fooled. You're gonna have your eyes wide open. And I think that that's a really important thing because they say the future is not something to be predicted, it's something to be achieved. And I think it's gonna take everybody to achieve it. Thank you very much. It's been an absolute pleasure. You've been a great audience. Take care. Thank you.

*Daniela Cambone:* Thank you, Alex. Thank you.

*[End of Audio]*