



How financial institutions are becoming active players of the Crypto ecosystem.

A Canadian perspective

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Since 2009, the year marking the creation of the Bitcoin network, the cryptocurrency market capitalization has drastically increased, reaching a high of \$3 trillion as of November 8th, 2021¹, and is now at 1,8 trillion as of February 2022². Business cases for the use of digital assets and cryptocurrencies have multiplied such that financial institutions can no longer remain indifferent to the growing role and importance of cryptocurrencies and digital assets.

Since the beginning of the COVID-19 pandemic, and particularly over the past 10 months, trends that were set in motion over ten (10) years ago have certainly gained momentum, particularly those that pertain to monetary and financial applications. Since 2020, a total of seven (7) Central Bank Digital Currencies (CBDC) were launched and 87 countries (representing over 90% of global GDP) are now exploring CBDC opportunities³. Meanwhile, news of CBDC project announcements by developed economies continue to surface in the media, the Bank of France being one of the most recent ones as of the date of this paper. Financial institutions in the United States have been formalizing their recognition that cryptocurrency and digital assets are inevitably part of the new digital economy by creating dedicated desks, boosting their offering to certain client segments and the launch of bitcoin Futures ETF in October 2021 (see figure 1). While Canada was considered amongst the early movers in this field with the Jasper Project, and the launch of the first bitcoin ETF, Canadian financial institutions have thus far taken a more conservative approach, with very limited-service offerings, while internal expertise is being brought in to carefully evaluate the cryptocurrency and digital assets space and formulate a strategy to position themselves in this market when the right time comes.

Regardless, as we explore in this whitepaper, non-traditional players across the globe largely service clients in cryptocurrencies and digital assets, adding to the growing pressure for traditional financial institutions to deploy their strategy now. Amidst and because of the regulatory uncertainty surrounding cryptocurrency and digital assets, financial institutions in Canada should embrace cryptocurrencies and digital assets and move beyond the observation / study mode into the active participation mode to help build and be part of tomorrow's ecosystem.

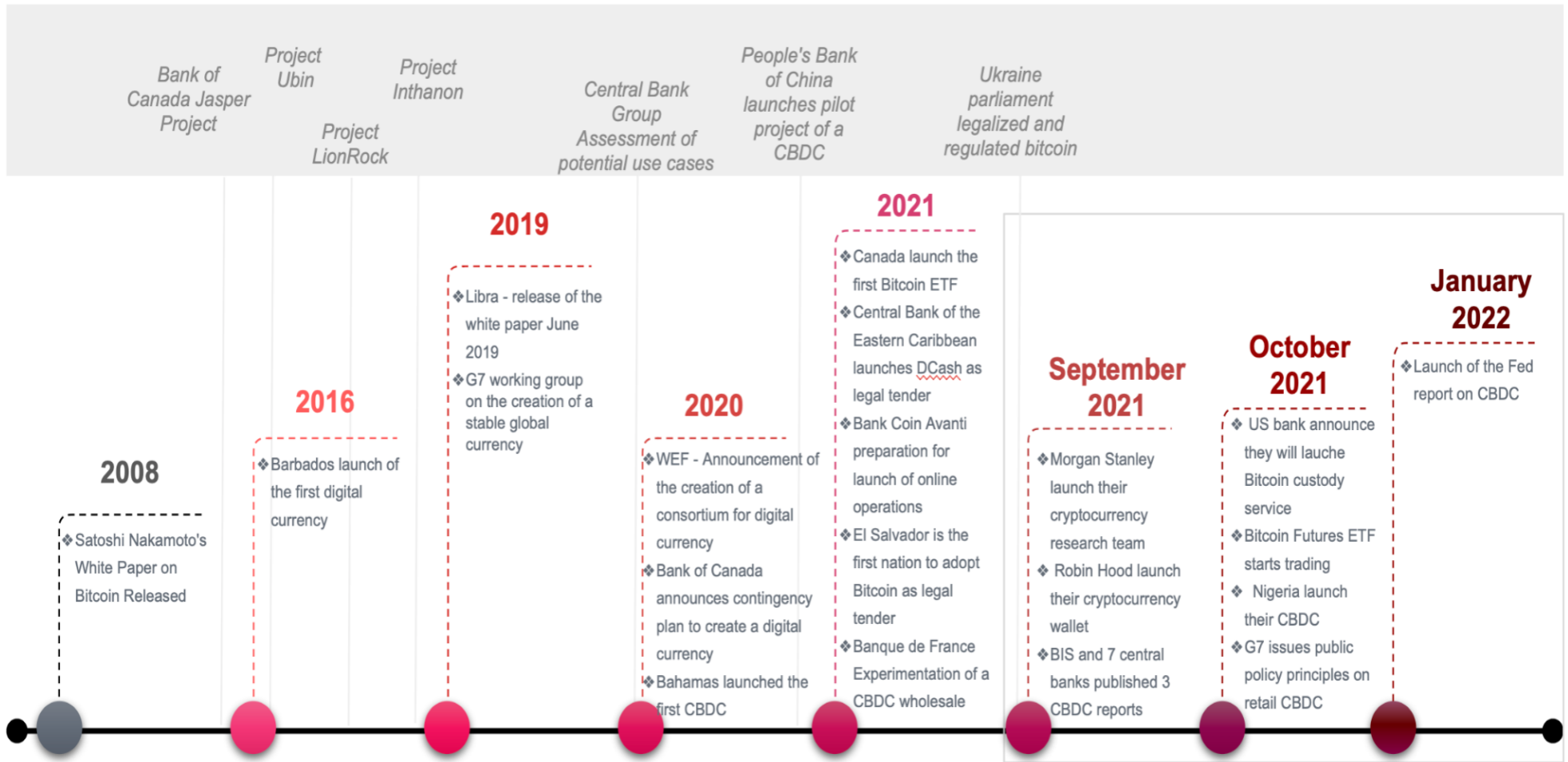
This whitepaper reviews some of the key market trends and developments in the cryptocurrency and digital assets ecosystem, globally and in the US and Canada and explores some of the reasons why and how financial institutions can strategically embrace cryptocurrency and digital assets today.

¹CoinDesk. (2021). Crypto News Roundup for Nov. 8, 2021. From <https://www.coindesk.com/podcasts/markets-daily/crypto-news-roundup-for-nov-8-2021/>

² CoinMarketCap. (2022). Total Cryptocurrency Market Cap. Recovered from <https://coinmarketcap.com/charts/>

³ Atlantic Council. (2021). Central Bank Digital Currency Tracker. From <https://www.atlanticcouncil.org/cbdctracker/>

Figure 1 - Accelerating interest of crypto-currencies and digital assets



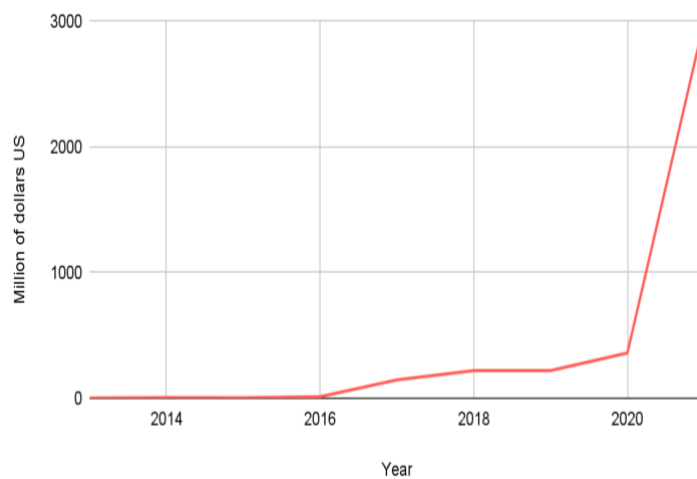
Source: BlockZero analysis, January 31, 2022

Source: BlockZero analysis, January 31, 2022

Innovations already adopted at scale

The market for cryptocurrencies and digital assets has matured significantly over the past few years. Several technologies are beyond the stage of development and have reached technological maturity level of “general public/industrialized” (see complementary Figure 10). Gartner, a leading research firm in the field, has estimated that within the next five years cryptocurrencies should reach the stage of widespread adoption meaning that adoption will be accepted by the general public⁴. Blockchain innovation has undeniably moved beyond the emerging stage in the field of financial services, with its ecosystem solving the challenges and limitations that current financial products face. And, as of December 2021, this growth in adoption has translated into a total cryptocurrency and digital assets market capitalization reaching \$2.7 trillion USD, which includes 10 464 coins, and 517 exchanges⁵.

Figure 2 - Total cryptocurrency market capitalization



Sources: BlockZero analysis (2022); CoinMarketCap, December, 2021

Yet, most of the market is still dominated by just a few cryptocurrencies, with bitcoin as the most important cryptocurrency in terms of market capitalization, accounting for 40% of the \$2.7 trillion USD, whereas Ethereum and Binance Coin account for 21% and 4% of the market share, respectively⁶. The fact that bitcoin was launched in 2009, and Ethereum and Binance Coin much later, in 2015 and 2017, explain, at least partly, the predominance of bitcoin amongst cryptocurrencies. However, bitcoin offers multiple characteristics that appeal to various types of investors (see BOX 1 – Elements of bitcoin’s value proposition), with an established global brand and an entire global ecosystem of custodians, liquidity providers, developers, Bitcoin miners and chip manufacturers⁷ that support and strengthen the Bitcoin network (see Figure 3 of the schematization of ecosystem landscape).

The price of Bitcoin alone is expected to reach \$340 thousands USD through the 2021-2024 cycle, and to cross \$1 million USD per BTC through the next cycle 2025-2026 according to the BTC S2FX Model⁸. More recently, Ark Invest published their Big Ideas 2022 report where they predict BTC price could exceed \$1million USD by 2030⁹. And even with a conservative 30% average annual growth rate in price, as estimated by several sources, such as the Buy Bitcoin Worldwide, Bitcoin is becoming increasingly more difficult to ignore by professional investors - that and its low correlation to non-crypto asset classes¹⁰.

⁴ Gartner. (2021). Hype Cycle for Blockchain 2021. Recovered from Gartner Inc

⁵ CoinGecko. (2021). Global Charts. Recovered from https://www.coingecko.com/en/global_charts

⁶ CoinMarketCap. (2021). Major Cryptoassets By Percentage of Total Market Capitalization. Recovered from <https://coinmarketcap.com/charts/>

⁷ Hougan, M. and Lawant, D. (2021). Cryptoassets: The Guide to Bitcoin, Blockchain, and Cryptocurrency for Investment Professionals. CFA institute Research Foundation.

⁸ Buy Bitcoin Worldwide. (2022). Bitcoin stock to flow model live chart. Recovered from <https://stats.buybitcoinworldwide.com/stock-to-flow/>

⁹ Ark Invest (2022). Big Ideas 2022. Recovered from https://research.ark-invest.com/hubfs/1_Download_Files_ARK-Invest/White_Papers/ARK_BigIdeas2022.pdf?hsCtaTracking=217bbc93-a71a-4c2b-9959-0842b6fe301c%7C2653a4d0-af35-42f0-853a-c5f90f002abb

¹⁰ Hougan, M. and Lawant, D. (2021). Cryptoassets: The Guide to Bitcoin, Blockchain, and Cryptocurrency for Investment Professionals. CFA institute Research Foundation.

BOX 1 - Elements of Bitcoin's Value Proposition

- **Commodity-like cryptocurrency:** Bitcoin and other cryptocurrencies like Ethereum or Litecoin, can be considered as commodity like gold or precious metals, since they can act as a form of payment or exchange¹¹. In the case of bitcoin, the fact that there is a fixed amount of bitcoin that will be ever minted can further contribute to that analogy. However, the analogy remains imperfect as the volatility of these assets impact their potential for store of value;
- **Solving the issues faced by Fiat Currencies**¹²: Issues seen by different past monetary instruments like difficulty to store in large quantities, lost value due to inflation, high transaction fees, lack of stable exchange rate, and others could be solved by virtual currencies commodities, at least in some instances;
- **Hedge against inflation**^{13,14}: Commodity-like cryptocurrencies could act as a hedge against inflation for investors, as they can be programmatically controlled to reduce the supply, which in turn could reduce the inflation rate. On the other hand, fiat currency inflation rate can fluctuate due to different factors, such as the monetary policies, macroeconomic and socioeconomic conditions, and government's policies. However, the correlation with other assets like gold has decreased since 2020, falling close to zero in 2021, which indicate that bitcoin is currently traded as a risk asset¹⁵;
- **Long term investment**^{16,17,18}: Commodity-like cryptocurrencies can be considered as long-term investment returns. If we compare the past performance of the annual rate of return of bitcoin with S&P 500, which has one of the highest historical returns for investors, as of 2022 bitcoin has an average annual return of 151% compared to 14% for S&P 500 over the last 10 years (Jan 2012 – Jan 2022). Apart from the S&P 500, since 2013, bitcoin has outperformed gold in investment return with a CAGR of 149% compared to gold which has a CAGR of 1% for the same amount of investment (Jan 2013 – Jan 2022). Although bitcoin can generate a greater capital return than the S&P 500 and gold, it has inherent high volatility risk that needs to be taken into consideration by investors.
- **Diversification amidst increasing correlations:** More recent data seems to suggest that bitcoin is becoming increasingly correlated with traditional asset classes^{15,19}. A recent report issued by the CFA Institute suggested that although the correlation is increasing, adding bitcoin to a portfolio could have a positive impact on long-term returns. In fact, adding 2.5% of a bitcoin to a traditional portfolio can improve the returns, while increasing the Sharpe ratio.

Stablecoin are also an important part of the market, currently estimated at \$142 billion²⁰. Gartner predicts that stablecoins should reach the stage of widespread adoption within two years, which is not surprising given that there are a total of 25 assets on the market. Tether is the largest stablecoin with a market capitalization of \$76 billion as of November 2021²¹. The rapid growth in stablecoins, numerous existing business cases, and the wide variety of them has captured the interest of the regulatory authorities in the United States²², who are investigating how to best regulate this class of assets, recognizing the importance of a country-level guidance (rather than state control) with the right balance of prudence vs allowing continued innovation. More indications from the President's working group are expected later this week. J.P. Morgan built a payments network leveraging blockchain technology to facilitate instantaneous and cross-border transfers between institutional clients and introduced a stablecoin called JPM Coin, redeemable for US dollars on a 1:1 basis. JPM Coin is a private coin only available to institutional clients and not available to the public, unlike the stablecoins in the table above²³. On another note, stablecoins have evolved from strictly liquidity to the crypto exchange to a broader set of more traditional financial products use cases.

¹¹ PwC. (2019). In depth a look at current financial reporting issues. Recovered from <https://www.pwc.com/gx/en/audit-services/ifrs/publications/ifrs-16/cryptographic-assets-related-transactions-accounting-considerations-ifrs-pwc-in-depth.pdf>

¹² Saifedean Ammous. (2018). The Bitcoin Standard.

¹³ Woobull. (2021). Bitcoin inflation. Recovered from <http://charts.woobull.com/bitcoin-inflation/>

¹⁴ CoinDesk. (2020). Crypto Long & Short: Bitcoin Is More Than a Hedge Against Inflation – It's a Hedge Against 'Crazy'. Recovered from <https://www.coindesk.com/markets/2020/12/20/crypto-long-short-bitcoin-is-more-than-a-hedge-against-inflation-its-a-hedge-against-crazy/>

¹⁵ BofA Global Research. (2022). Digital assets in the flow – February. Recovered directly from BofA.

¹⁶ Macrotrends. (2021). S&P 500 - 10 Year Daily Chart. Recovered from <https://www.macrotrends.net/2488/sp500-10-year-daily-chart>

¹⁷ GoldPrice. (2021). Gold price history. Recovered from: <https://goldprice.org/gold-price-history.html>

¹⁸ Investing. (2021). Historical data of Bitcoin. Recovered from <https://in.investing.com/crypto/bitcoin/historical-data>

¹⁹ CFA Montreal. (2021). Cryptoassets: the guide to bitcoin, blockchain, and cryptocurrency for investment professionals. Recovered from <https://www.cfainstitute.org/-/media/documents/article/rf-brief/rfr-cryptoassets.pdf>

²⁰ Messari. (2021). Everything Stablecoins. Recovered from <https://messari.io/screener/everything-stablecoins-87061DFA>

²¹ CoinMarketCap. (2021). Top Stablecoin Tokens by Market Capitalization. Recovered from <https://coinmarketcap.com/view/stablecoin/>

²² President's Working Group on Financial Markets, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency. Report on Stablecoins, November 2021. Recovered from https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf?utm_source=Sailthru&utm_medium=email&utm_campaign=SoC%2011.2&utm_term=State%20of%20Crypto

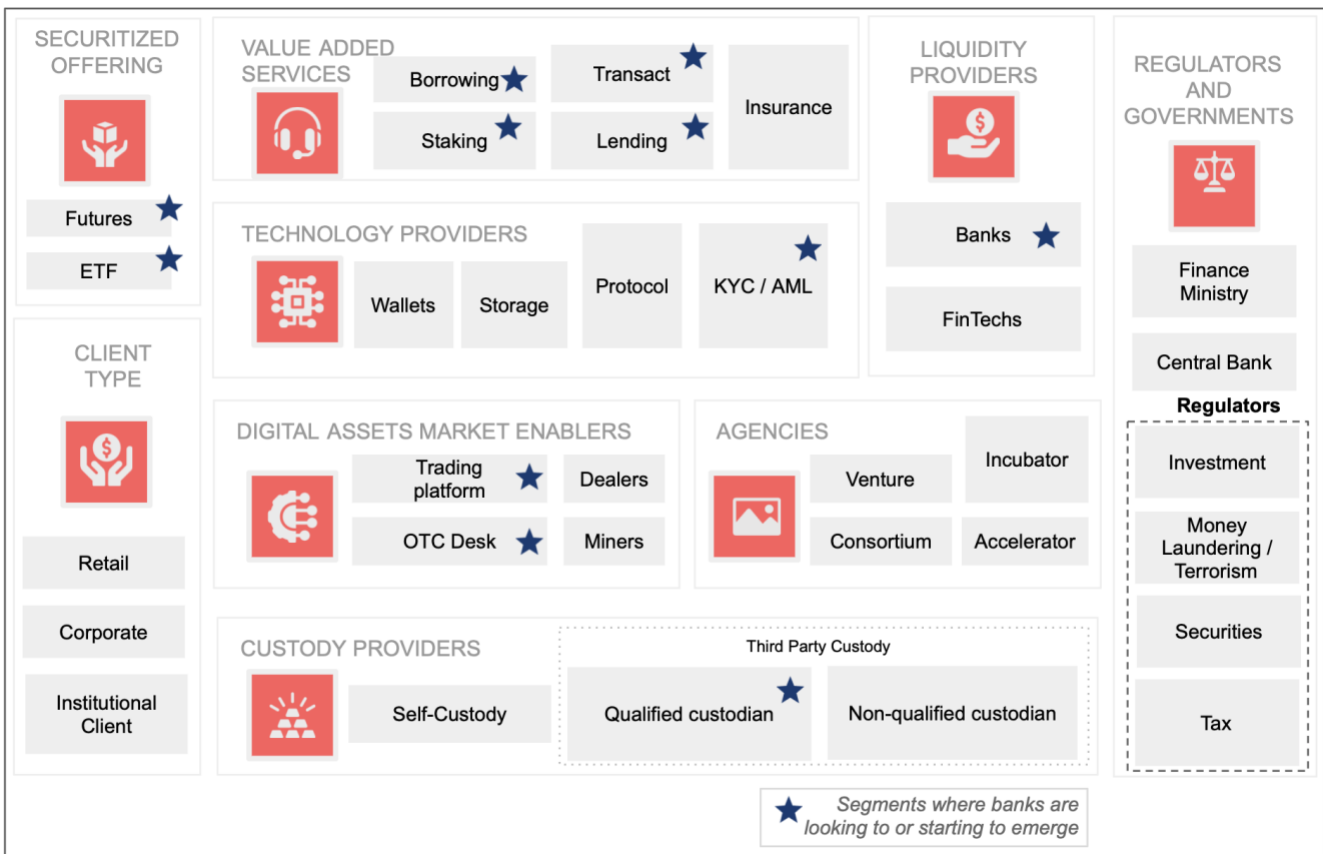
²³ Bank of America. (2021). Stablecoins: Law and order coming to the Wild West. Recovered directly from the Bank of America.

The observed market growth has also been propelled by the drastic rise in the crypto product and service offering over the past few years, particularly in 2021. As adoption continues to increase across all types of investors, like retail, corporate, and institutional, new services and products will continue to emerge to meet the growing demand and bridge the gaps caused by existing inefficiencies in the current financial infrastructure.

A market strongly dominated by non-traditional players

Cryptocurrency and digital assets have led to the creation of a new financial ecosystem surrounding this non-traditional class of assets. Brought about by the growing needs, interests and expectations of its holders, this ecosystem, which resembles at a macro level that of the traditional financial ecosystem, is in fact different in a number of respects, reflecting the intrinsic characteristics of the underlying technology and the fact that the industry is still maturing as a whole. Largely serviced by non-traditional players as opposed to large financial institutions, the particular products and services are typically fragmented across several players, as opposed to a one stop-shop financial institution. Figure 3 visualizes the different stakeholder groups that currently exist in the crypto / digital asset ecosystems.

Figure 3: Overview of the Cryptocurrency and Digital Assets Ecosystem Stakeholder Groups²⁴



Source: BlockZero analysis, 2022

Amongst these non-traditional players, we can find emerging players specialized in cryptocurrency and digital assets, startups, and major technological players, such as the GAFAM²⁵ (See figure 4). The market is mostly occupied by emerging players, such as Coinbase, Binance, and Kraken who are globally dominating several sub-sectors like crypto trading and staking.

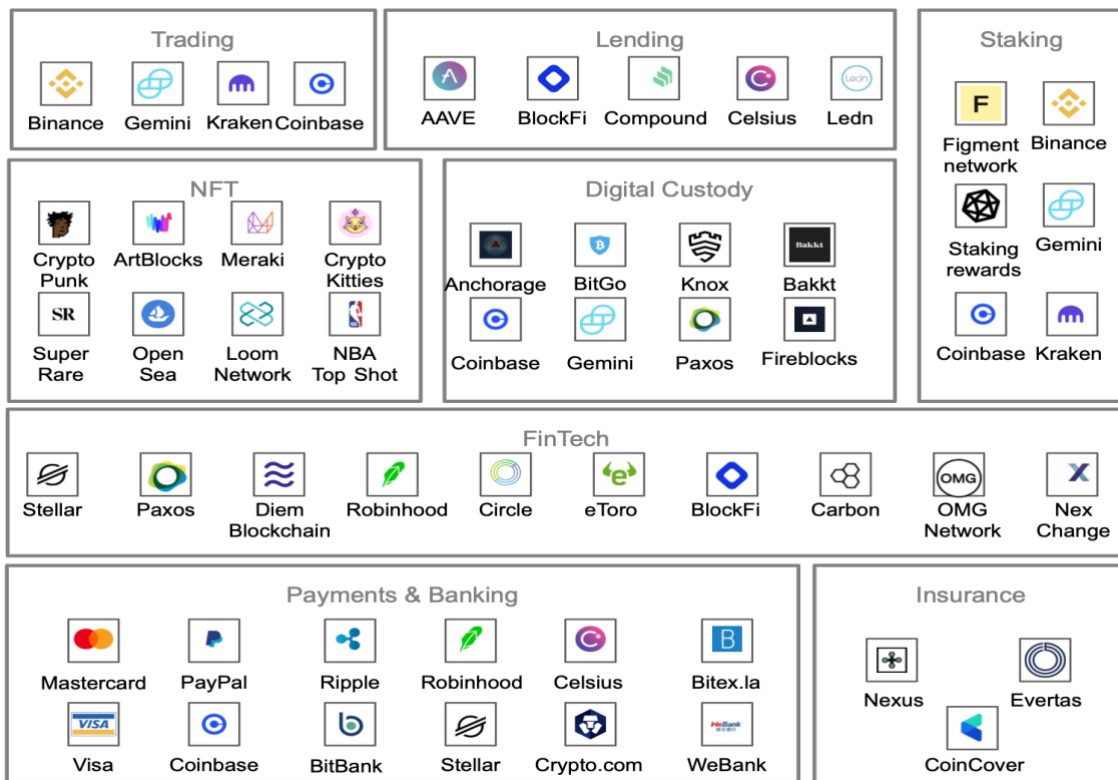
²⁴ Topio Network. (2021). Blockchain Landscape and Ecosystem. Recovered from <https://www.topionetworks.com/topics/blockchain-576bb34934f34fc68c000003/#media-61115ac1105eb548961e5489>

²⁵ Acronym for Google, Apple, Facebook, Amazon, and Microsoft

Notably, Coinbase reached a total volume traded of \$375 billion in Q3 of 2021, while Binance has \$70 billions of daily traded volume as of February 3rd 2022²⁶.

However, since 2019, technology players are also moving into the ecosystem, Facebook (Meta) being one of them. Created in 2019, Diem Association (formerly known as Libra) - a permissioned blockchain-based payment system - announced more recently the eminent launch of a new global digital currency which includes three main components: blockchain technological foundation, the Novi digital wallet, and the Diem coin, a stablecoin²⁷. As we were publishing this paper, Meta announced on January 31st that Silvergate Bank purchased the technology and other assets from Diem²⁸. Other than Facebook, Amazon is looking to expand into crypto and digital services by hiring specialist in the field²⁹, and last august, Microsoft has been awarded a US patent for a crypto-token creation service³⁰. Mastercard and Visa are also doing an extensive push in the space. They are currently trying to become the bridge between cryptocurrency financial products and the traditional system with the integration of some cryptocurrency like bitcoin into their services. In February 2022, The New York Stock Exchange has filed a trademark for an NFT marketplace. According to the Fast Company, the exchange doesn't have any immediate plan to launch an NFT marketplace, but is considering the impact of NFT on trademark and intellectual property³¹.

Figure 4: Key players in part of the global ecosystem^{32 33}



Source: BlockZero analysis, 2022

²⁶ CoinDesk. (2021). Coinbase's Q3 Crypto Trading Volumes to Be Key for Investors, Analysts Say. Recovered from <https://www.coindesk.com/business/2021/11/08/coinbases-q3-crypto-trading-volumes-to-be-key-for-investors-analysts-say/>

²⁷ CoinTelegraph. (2021). One currency to rule them all: Facebook's Diem has global ambitions. From <https://coindesk.com/news/one-currency-to-rule-them-all-facebook-s-diem-has-global-ambitions>

²⁸ Silvergate Bank. (2022). Silvergate Purchases Blockchain Payment Network Assets from Diem. Recovered from <https://ir.silvergate.com/news/news-details/2022/Silvergate-Purchases-Blockchain-Payment-Network-Assets-from-Diem/default.aspx>

²⁹ CoinDesk. (2021). Amazon Web Services Look to Drive Crypto Settlement and Custody to the Cloud. From <https://www.coindesk.com/business/2021/10/30/amazon-web-services-looks-to-drive-crypto-settlement-and-custody-to-the-cloud/>

³⁰ CoinDesk. (2021). Microsoft Is Awarded US Patent for Crypto Token-Creation Service. Recovered from <https://www.coindesk.com/tech/2021/08/26/microsoft-is-awarded-us-patent-for-crypto-token-creation-service/>

³¹ Fast Company. (2022). The New York Stock Exchange files trademark for an NFT marketplace. Recovered from <https://www.fastcompany.com/90722632/the-new-york-stock-exchange-files-trademark-for-an-nft-marketplace>

³² Topio Network. (2021). Blockchain Landscape and Ecosystem. Recovered from <https://www.topionetworks.com/topics/blockchain-576bb34934f34fc68c000003/#media-61115ac1105eb548961e5489>

³³ Arcane Research. (2021). The Bitcoin trading industry. Recovered from <https://www.research.arcane.no/the-bitcoin-trading-ecosystem>

Still, apart from the financial services payment organizations like Visa and Mastercard, traditional financial services organizations remain discreet contributors to the ecosystem globally.

Amidst this shy presence in the crypto and digital asset ecosystem, traditional financial institutions have their place and serve their purpose, as no emerging / non-traditional players have a reputation that can match bank's reputations, nor do they have a similar track record, or similar regulatory focus and competencies like the banks³⁴. Hence, as the ecosystem continues to evolve and regulatory guidelines begin to take shape, traditional financial services organizations part of the ecosystem could contribute in a meaningful way to the evolution of the sector, ensuring that risks and concerns are addressed in a way that promotes innovation, while protecting end users from these potential risks.

2021: A Pivotal Year for financial institutions in cryptocurrency and digital asset

Whereas cryptocurrency and digital assets have long been considered as a speculative asset or a fraud tool for criminals by financial institutions around the world³⁵, 2021 appears to have been a turning point for financial institutions and traditional actors of the financial services industry. The United States is definitely at the forefront of this transition. The first U.S. bitcoin Futures ETF debuted on the New York Stock Exchange (NYSE) last October, a key milestone for the crypto industry given that it represents the first bitcoin-linked investment product to be approved by the U.S. Securities and Exchange Commission (SEC) which, up to now, rather opposed progress in this field. Although this the first public investment crypto product to be approved by the SEC, there are private placement BTC funds that are also approved by the SEC, including Grayscale Bitcoin Trust³⁶. This new product will necessarily benefit holders of brokerage accounts and could open the path to the widening of cryptocurrency and digital assets based financial products.

Many U.S. banks have stated interest toward cryptocurrency, and some are even embracing the opportunity by creating their own cryptocurrency research team or by offering new services to their customers (see figure 5). Silvergate is one of the first banks to have embraced crypto firms as clients and offer unique solutions to digital currency and fintech institutions. For

Figure 5: Majors U.S. financial institutions actively working in this area



Source: BlockZero analysis, 2022

instance, at Q1 of 2021 \$166.5 billion of transactions were processed in the network with a growth of 857% YoY³⁷. Avanti Financial from Wyoming is another forerunner in its field with the launch of Avit, a tokenized and programmable U.S. dollar³⁸. The U.S. Bank is another cutting-edge financial institution in this field with its Blockchain and Cryptocurrency Practice established in 2015. To keep up with its previous initiatives, in April of this 2021, the bank added cryptocurrency custody product to its global funds' services for its customers with the engagement of a sub-custodian for fund servicing.

More recently, the U.S. Bank announced new cryptocurrency custody services for institutional investment managers. In August 2021, JP Morgan opened access to five crypto funds to all its clients, and in February 2022, JP Morgan became the first

³⁴ Boston Consulting Group. (2020). How Banks Can Succeed with Cryptocurrency. Recovered from <https://www.bcg.com/en-ca/publications/2020/how-banks-can-succeed-with-cryptocurrency>

³⁵ New York Times. (2021). *Banks Tried to Kill Crypto and Failed. Now They're Embracing It (Slowly)*. Recovered from <https://www.nytimes.com/2021/11/01/business/banks-crypto-bitcoin.html>

³⁶ Grayscale. (2021). UNITED STATES SECURITIES AND EXCHANGE COMMISSION. Recovered from <https://grayscale.com/wp-content/uploads/2021/02/form-8-k-1-24.pdf>

³⁷ Arcane Research. (2021). The Bitcoin Trading Ecosystem. Recovered from <https://www.research.arcane.no/the-bitcoin-trading-ecosystem>

³⁸ Avanti. (2021). Avanti product. Recovered from <https://avantibank.com/products>

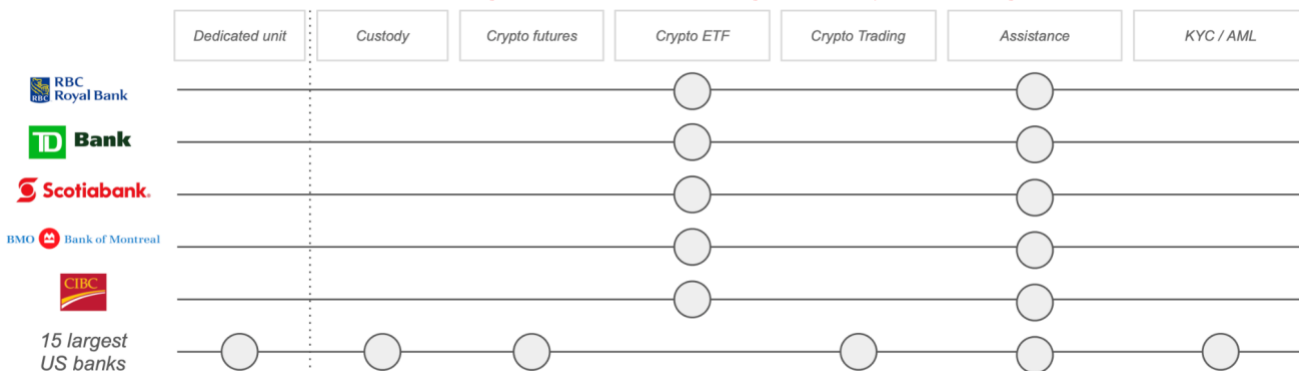
bank in the metaverse with their lounge in Decentraland. Morgan Stanley also started to offer access to bitcoin funds to its wealthy clients in 2021³⁹.

Other financial institutions in major global financial centers are showing interest in this area. In fact, some of the most important banks in Singapore are exploring or are already offering trading services of various digital assets, including cryptocurrencies. These include DBS Bank, Citibank, United Overseas Bank Limited, to name a few. Singapore is striving to become a global cryptocurrency hub. In addition, banks in the United Kingdom (UK) are also looking at cryptocurrencies and digital assets, such as Lloyds Banking Group, and Standard Chartered. In fact, the UK had major crypto transactions activities between June 2020 and July 2021 with \$170 billion worth of digital assets received, making it the leading country in Europe for processing digital currency transactions⁴⁰.

Yet, the representation of financial institutions remains marginal in the market, and many remain reluctant. In fact, according to a recent survey done by Nickel Digital Asset Management, more than six in ten institutional investors and wealth managers from different countries including the U.S. and the UK still don't have any exposure on cryptocurrencies and digital assets⁴¹.

In Canada, financial institutions continue to have a very conservative approach to the crypto phenomenon. Several banks, such as RBC, TD, CIBC, Scotia and BMO have backed away from allowing their customers to use their credit cards to make cryptocurrency related transactions. Even Canadian crypto companies have difficulties to access banking services from the Big Five^{42 43}. Even though there are currently 17 cryptocurrency ETF in Canada, only a small portion of financial institutions offer the possibility to invest in them⁴⁴. Clients must therefore deal with popular brokerage platforms, like Wealthsimple. Although TD Bank in the U.S have begun to start offering crypto services to its customers, such as trading bitcoin Futures ETF on its trading platform, in Canada TD bank is not there yet⁴⁵. At this moment, the only type of service that Canadian banks offer is some form of assistance, typically through a blog, providing insights on the market, unlike the 15 largest banks in the U.S., which, together, offer to some level custody, access to crypto futures, trading, KYC/AML services and support (see figure 6).

Figure 6: Market positioning of the big five canadian banks versus the 15 largest U.S. banks with regards to crypto offering



Sources: BlockZero analysis, 2022

It is not just a coincidence that several banks around the world are developing their crypto services. The market comes with impressive statistics that increasingly attract various groups of investors, particularly institutional ones, and threaten to disrupt

³⁹ JP Morgan. (2022). Opportunities in the metaverse. Recovered from <https://www.jpmorgan.com/content/dam/jpm/treasury-services/documents/opportunities-in-the-metaverse.pdf>

⁴⁰ City A.M. (2021). Europe becomes the world's largest crypto market as UK adoption surges. Recovered from <https://www.cityam.com/europe-becomes-the-worlds-largest-crypto-market-as-uk-adoption-surges/>

⁴¹ City A.M. (2021). Exclusive: Institutional investors and wealth managers increasingly 'test' crypto market. Recovered from <https://www.cityam.com/exclusive-institutional-investors-and-wealth-managers-increasingly-test-crypto-market/>

⁴² The Big Five banks in Canada are Bank of Montreal, Royal Bank of Canada, Canadian Imperial Bank of Commerce, Bank of Nova Scotia and Toronto-Dominion Bank

⁴³ The Globe and Mail. (2021). Canadian crypto companies struggling to access banking services from the Big Five. Recovered from <https://www.theglobeandmail.com/business/article-canadian-crypto-companies-say-they-are-struggling-to-access-basic/>

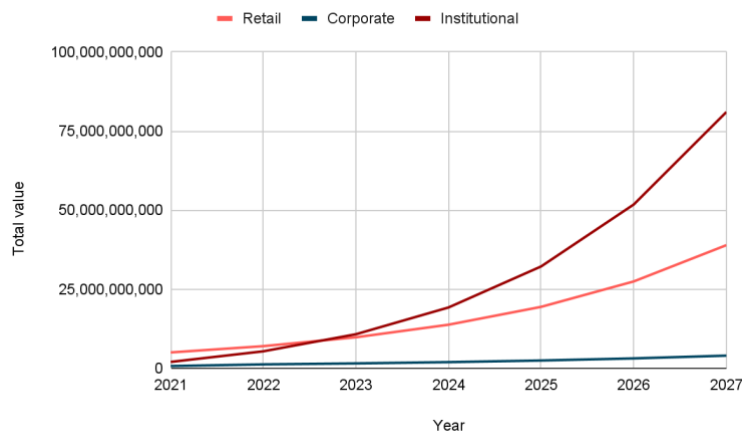
⁴⁴ Buy Bitcoin Worldwide. (2021). Bitcoin Treasuries. Recovered from <https://www.buybitcoinworldwide.com/treasuries/>

⁴⁵ TD Ameritrade. (n.d.). Announcing an investment in ErisX-a regulated exchange for cryptocurrency trading. Recovered from <https://www.tdameritrade.com/investment-products/cryptocurrency-trading.html>

incumbents' current market. For example, the popular exchange platform Coinbase has more than 73 million verified users across 100 countries, and has a quarterly volume traded of \$327 billion⁴⁶. Over the year of 2021, Binance had a volume of more than \$7.7 trillion in crypto exchange⁴⁷, with \$76 billion worth of trading a day⁴⁸. The number of users of these platforms continues to grow. In fact, according to a NORC study, 13% of Americans have bought or traded cryptocurrency over the past 12 months based on a survey of 1004 adult Americans⁴⁹. In Canada, this number was of 3.2% or 1.2 million of Canadians in 2020⁵⁰, a number that has more than likely grown since.

Demographic trends are also key to understanding better the opportunities for financial institutions. Millennials and Generation Z, who currently account for 40% of Canada's population⁵¹ will represent a big part of this financial transformation. According to a study conducted by Bank Rate⁵², nearly half of millennials are comfortable with investing in cryptocurrencies, compared to Generation X and Baby Boomers, of whom only 37% and 22% are respectively comfortable with investing in crypto. As these generations and younger ones represent the future core customer base of financial institutions, incumbents face the option to improve their service offering to satisfy existing and future demand or lose to other players their relative share of the market.

Figure 7: Total value of crypto market for each segment (CAD)



Source: BlockZero Analysis, February 2022.

Growth is expected in all segments of crypto consumers from retail to institutional segments, with a particularly growing interest from institutional investors as well as corporations (see figure 7). The crypto market capitalization in every crypto consumer market segment in Canada, either retail, corporate, or institutional, is expected to increase in the next six years. Within the retail clients, it is estimated that the High-Net-Worth (HNW) sub-segment of population in Canada will grow by 5.7% per year to 2030⁵³. The Canadian HNW population is expected to reach 1.2 million in 2027 and assuming only 9% of this population invests in crypto, the crypto market capitalization only within this sub-segment will be about CAD\$39 billion^{54 55}. On the corporate side, 12 Canadian listed

corporations own crypto as showcased in their balance sheet, but this number is expected to grow to 137 in the next 6 years. As of the 3rd of February 2022, there was over CAD\$900 million invested in crypto by those 12 companies⁵⁶. This number is expected to grow to CAD\$4 billion in the next 6 years. The institutional investors segment is the one with the biggest share and highest growth as compared to the other segments over the last years. The total value of Canadian institutional crypto market is expected to grow to CAD\$81 billion in the next 6 years, assuming an average asset under management (AuM) of \$200 million for each Exchange Traded Fund⁵⁷.

⁴⁶ Coinbase. (2021). About us. Recovered from <https://www.coinbase.com/about>

⁴⁷ Business of apps. (2021). Binance Revenue and Usage Statistics. Recovered from <https://www.businessofapps.com/data/binance-statistics/>

⁴⁸ Wall Street Journal. (2021). \$76 Billion a Day: How Binance Became the World's Biggest Crypto Exchange. Recovered from <https://www.wsj.com/articles/binance-became-the-biggest-cryptocurrency-exchange-without-licenses-or-headquarters-thats-coming-to-an-end-11636640029>

⁴⁹ NORC. (2021). More Than One in Ten Americans Surveyed Invest in Cryptocurrencies. Recovered from

<https://www.norc.org/NewsEventsPublications/PressReleases/Pages/more-than-one-in-ten-americans-surveyed-invest-in-cryptocurrencies.aspx>

⁵⁰ Triple A. (2020). Cryptocurrency information about Canada. Recovered from <https://triple-a.io/crypto-ownership-canada>

⁵¹ The Globe and Mail. (2021). As federal election looms, millennial and Gen Z Canadians will matter more than ever before: survey. From

<https://www.theglobeandmail.com/politics/article-as-federal-election-looms-millennial-and-gen-z-canadians-will-matter/>

⁵² Bank Rate. (2021). Survey: Nearly half of millennials comfortable owning cryptocurrencies. From <https://www.bankrate.com/investing/survey-millennials-cryptocurrency-investing-2021/>

⁵³ RBC Wealth Management. (2015). From past to future: The wealth landscape. Recovered from <https://www.rbcwealthmanagement.com/ca/en/global-wealth>

⁵⁴ Blockchain.news. (2020). Bitcoin's Adoption Rate Puts Price at \$100,000 by the end of 2021 and 30% of the World Owning BTC in 4 Years. Recovered from <https://blockchain.news/news/bitcoin-adoption-rate-price-100000-2021-30-world-owning-btc>

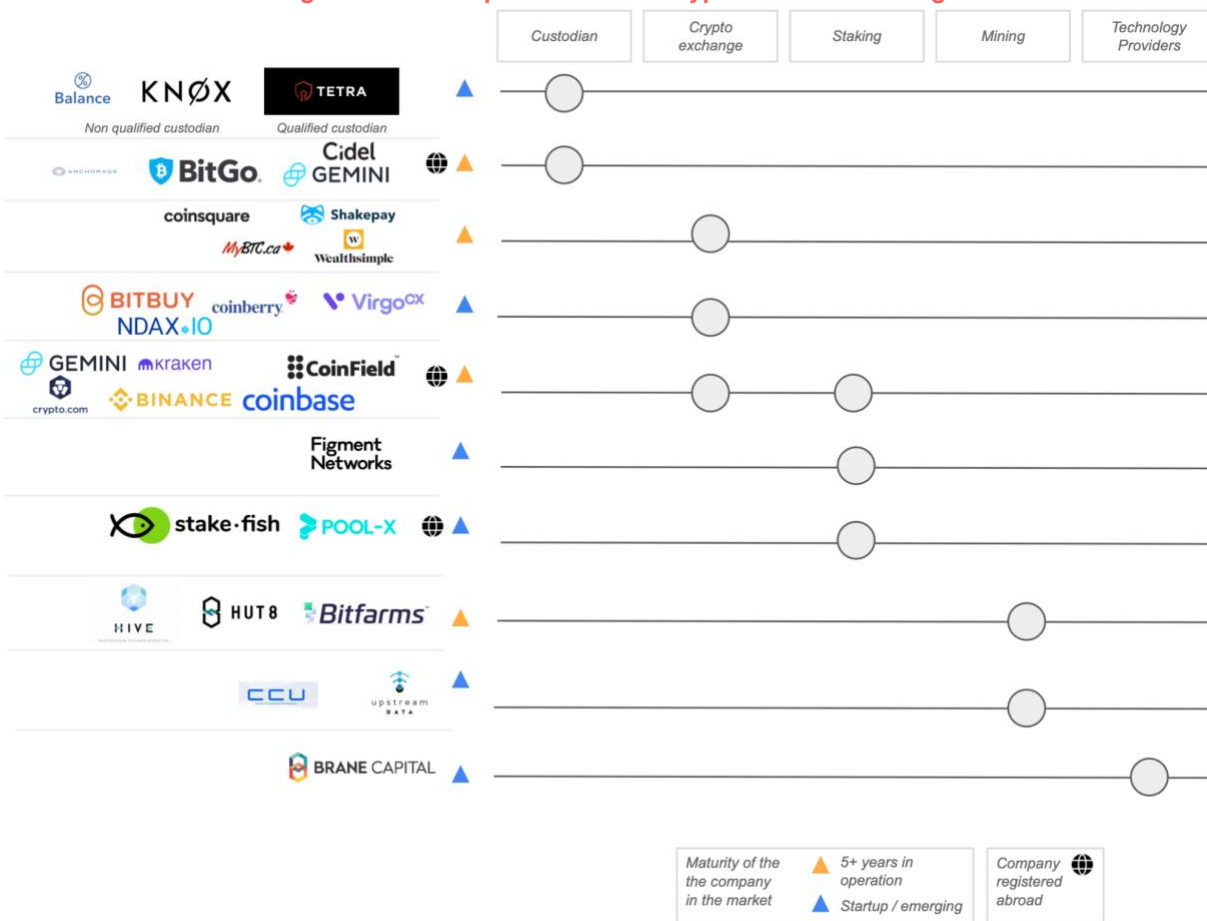
⁵⁵ Ark Invest. (2020). Bitcoin as an investment. Recovered from <https://ark-invest.com/white-papers/bitcoin-part-two/>

⁵⁶ Buy Bitcoin Worldwide. (2021). Bitcoin Treasuries. Recovered from <https://www.buybitcoinworldwide.com/treasuries/>

⁵⁷ Chainalysis. (2020). The 2020 Global Crypto Adoption Index: Cryptocurrency is a Global Phenomenon. Recovered from <https://blog.chainalysis.com/reports/2020-global-cryptocurrency-adoption-index-2020>

Yet, it is still time for Canadian financial institutions to act as first movers, strategically positioning themselves as an integral part of the ecosystem. While the Canadian cryptocurrency and digital assets value chain certainly includes important and large Canadian players, particularly in the mining market, other markets are mostly composed of non-Canadian players. Crypto exchange sector for one, with six key players, including three U.S. players with 13% of global market share^{58 59}. However, this is nothing compared to giant of the Cayman Islands, Binance, which has almost 23% of the global crypto market share. The digital assets custody space, particularly the qualified custody space, only has Tetra as a fully Canadian actor since July 2021. Previously, Canadian Institutions seeking a qualified digital asset custodian would turn to U.S. custodians like Gemini, or BitGo, others would engage Cidel Bank, a small custody bank out of Alberta that sub-custodies asset with Gemini. As for staking or technology providers either small Canadian emerging / non-traditional players or larger non-Canadian players occupy these markets. For instance, Figment and Tokens.com, are two major Canadian-based staking firms. As financial institutions in the United States, and in other countries like the UK and Singapore are entering these markets, similar opportunities exist for Canadian financial institutions to strategically enter this market.

Figure 8: Landscape of Canadian Crypto Services Offering



Source: BlockZero analysis, 2022

Notwithstanding this, cryptocurrency and digital assets are not without risks. As regulatory bodies in Canada (and elsewhere) are determining the best way to provide guidance and regulate the sector, drafting as we speak what will become, in time, the regulatory framework, much remains uncertain, which is contributing to the current limited presence of traditional financial institutions in the sector. If there is a lack of clarity in some of the existing regulations and that some standards will need to be adjusted to reflect the characteristics specific to cryptocurrency and digital assets, regulators have been gradually building their knowledge base of the industry, engaging in meaningful discussions with the sector to ensure that the right framework is

⁵⁸ Coinranking. (2021). Top crypto exchange. Recovered from <https://coinranking.com/exchanges>

⁵⁹ The MotleyFool. (2021). Why Coinbase's Slow Start Spells Opportunity. Recovered from <https://www.fool.com/investing/2021/05/13/why-coinbases-slow-start-spells-opportunity/>

being put in place - one that will ensure the proper levels and multiple layers of security and prudence, while enabling continued innovation. The Ontario Securities Commission (OSC) has been taking action on multiple international crypto-exchange, like Binance or FTX, which weren't properly registered, by not authorizing them to offer trading in derivatives or securities to any persons or companies located in Ontario⁶⁰. This highlights the importance of compliance with current regulations in Canada. On another hand, there are several risks that motivate banks to act slowly in Canada, which include the risk of ransomware hack, reputational risk regarding the environmental aspect and Anti-Money Laundering (AML risk). In fact, bitcoin is still used heavily in ransomware hacks, for instance bitcoin accounts were used for close of 98% of ransomware payments.⁶¹ Another risk is the environmental impact of bitcoin which could tarnish the reputations that the banks work hard to maintain. In fact, only one bitcoin transaction is equivalent to over 1,700 kWh of electricity, which is close of twice of the monthly amount an American household use in average⁶². Yet, the power used in bitcoin transaction serves to secure the network and is directly proportional to the level of transactions. Moreover, securing the bitcoin network accounts for only 0.2% of the 33 billion tonnes of carbon dioxide emissions globally each year, a relatively small portion compared to that of the transport industry which accounts for approximately 30% of that emission (or about 10 billion tonnes of CO₂) or even that of the ICT sector (about 2.0%).⁶³ As for the AML risk, the Financial Action Task Force (FATF) is still revisiting their guidelines regarding digital assets, and it is still not clear on how the Department of Treasury in the U.S. is going to treat digital assets regarding the tax evasion⁶⁴ ⁶⁵. In Canada, FINTRAC, the entity responsible of regulating the AML/CTF has released some guidance around suspect digital assets transactions, although some regulatory uncertainty remains⁶⁶.

How financial institutions embrace cryptocurrencies and digital assets.

Financial institutions are positioning themselves strategically and with prudence into the cryptocurrency and digital assets market. How they are doing so isn't much different than they have done in the past. Only a few years ago, financial institutions were investigating the use cases and relevance of artificial intelligence applications to the financial services sector. Financial institutions prepared themselves by gaining and building knowledge, internally, but also through relevant partnerships, investments and acquisitions. They identified areas that were strategic, and how they wanted to approach it: through a strategic partnership with a startup or emerging player, a consortium approach with different players from the ecosystem, or internally, by building capacity with talent and infrastructure investments. Today, some lines of business in banking have a dedicated research team; however, it rarely consists of a dedicated team to AI.

⁶⁰ OSC. (2021). Binance is not registered in Ontario. Recovered from <https://www.osc.ca/en/news-events/news/binance-not-registered-ontario>

⁶¹ Marsh. (2021). Ransomware: Paying Cyber Extortion Demands in Cryptocurrency. Recovered from <https://www.marsh.com/ca/en/services/cyber-risk/insights/ransomware-paying-cyber-extortion-demands-in-cryptocurrency.html>

⁶² Forbes. (2021). Is Bitcoin inherently bad for the environment? Recovered from <https://www.forbes.com/sites/joshuarhodes/2021/10/08/is-bitcoin-inherently-bad-for-the-environment/?sh=614faf783033>

⁶³ IEA (2021); Air Transport Action Group website (2020); Digiconomist (2021); Swiss Re Institute; Our world in data, Oxford University

⁶⁴ FATF. (2021). Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers. Recovered from <https://www.fatf-gafi.org/publications/fatfrecommendations/documents/guidance-rba-virtual-assets-2021.html>

⁶⁵ U.S. Department of the treasury. (2021). Publication of Sanctions Compliance Guidance for the Virtual Currency Industry and Updated Frequently Asked Questions. Recovered from <https://home.treasury.gov/policy-issues/financial-sanctions/recent-actions/20211015>

⁶⁶ FINTRAC. (2020). Money Laundering and terrorist financing indicators – Virtual currency transactions. Recovered from https://www.fintrac-canafe.gc.ca/guidance-directives/transaction-operation/indicators-indicateurs/vc_mltf-eng

Figure 9: Pillars to embracing cryptocurrency and digital assets



Source: BlockZero analysis, February 2022

Build Knowledge

Building an understanding of the cryptocurrency and digital assets sector, locally and abroad, across the different practices / business units of the organization is the necessary first step to eventually developing a strategic positioning. Careful understanding of the ecosystem, the global demand and supply, as well as the regulatory environment that has a direct influence on the local supply will provide the necessary background to inform internal reflections. Knowledge must be built at all levels, starting with members of the Board of Directors and senior leaderships, as well as across the organization so as to enable strategic and meaningful discussions. When deemed appropriate, and gradually, knowledge building is expanded to all employees. One can think for example of financial advisors who could see their role change in the future by giving advice on cryptocurrencies. In turn, given their proximity to clients, they are well positioned to contribute to knowledge of the firm with regards to their client.

Build a Dedicated Team

Financial institutions that are at the forefront of this transition have moved past the first level of knowledge building and have or are building a dedicated team on blockchain and / or cryptocurrency and digital assets. They are building internal capacity and market knowledge, engaging with market players and consultants specialized in the field to further their understanding of the current landscape that is constantly evolving, and identify where the opportunities lie for their institution. They are getting ready to enter the market, having prioritized strategic areas, determined where the market gaps and where risk areas are. If more advanced in the process, a detailed risk analysis, ambiguous areas and potential mitigation strategies in strategic areas have already been documented.

Build a Strategy

Leveraging the knowledge, they have acquired, leading financial institutions have or are in the process of defining their strategic positioning and longer-term objectives. While there are several avenues and segments that could be targeted, the strategy ought to be aligned with their broader mission, values, and corporate strategy (next 3-year and 5-year plan). Prioritization and categorization of opportunities will be key, along with clearly defined milestones and objectives.

Build Relationships

Financial institutions are distinguishing between competition and potential partners, recognizing that not every service needs to be offered by the institution itself; some can and should rather be offered through a trusted partner who has built the technology and capacity to deliver. Custody is one example. And partnership represents an opportunity to contribute to the evolution of the sector, by merging complementary perspectives and knowledge that can ensure risks are appropriately mitigated.

Make Strategic Investments & Acquisitions

Yet, strategic investments and acquisitions necessarily represent means to build internal capacity and position financial institutions in this market.

Contribute to the Regulatory Environment

Financial institutions that are active participants of the cryptocurrency and digital assets ecosystem are ideally positioned to contribute to ongoing reflections of regulatory bodies. Their deep understanding of the financial system and of the expectations in terms of security, privacy, and confidentiality allows them to not only raise concerns or potential issues but provide relevant alternatives or solutions to ensuring the regulatory environment is sound, while allowing for innovation to foster.

In the U.S. and Canada, the Chamber of Digital Commerce, whose members include start-ups, software companies, global IT consultancies, financial institutions, investment firms as well as law firms, represents one means of engaging and educating the government on the subject⁶⁷. They survey their members for their input and views of critical subjects, while submitting position papers and actively engaging with Congress in the U.S. and Department of Finance in Canada, along with the various levels of government.

Coulda, shoulda, woulda...?

Yet, the question of whether Canadian financial institutions should jump the fence is still an ongoing debate. If we only consider the use case of cryptocurrency as peer-to-peer payment infrastructure, the fact is, Canada's banking system remains robust and with the recent payment modernization, Canadians have the ability to execute money transfers within minutes to friends, without any extra cost, mostly. As such, the threat of Decentralized Finance (DeFi) is generally perceived as less pressing than in countries where the financial infrastructure is not as developed, and in some cases, near absent. In these instances, crypto and DeFi have the potential to remove banks from the equation.

Hence, there might be less compelling or pressing apparent reasons for Canadian financial institutions to feel threatened by cryptocurrencies, pressure to adopt a Central Bank Digital Currency (CBDC), and integrate DeFi into their offering, particularly if these technologies are then perceived as speculative assets that attract a certain type of investors only.

However, when considering the different sets of products that might arise from DeFi and the growing importance of customer experience (including growing demand for greater availability), as a digital first infrastructure with availabilities 24/7, DeFi increases pressures on all existing infrastructures, regardless of the incremental improvements made over the years. Moreover, the innovations behind crypto and DeFi are mostly technological in nature, and the longer financial institutions wait to acknowledge the relevance of these technological innovations, the harder it will be to then "catch up". Disruption would then be more likely.

One can speculate a long time on exactly how cryptocurrencies and digital assets will transform the financial sector in 5, 10, 15 years from now. However, the fact is the innovations brought about by blockchain technology have already begun to disrupt the sector and major players, globally, are embracing the innovations, strategically.

⁶⁷ Chamber of Digital Commerce websites: <https://digitalchamber.org/> and <https://digitalchamber.org/canada/>

Appendix

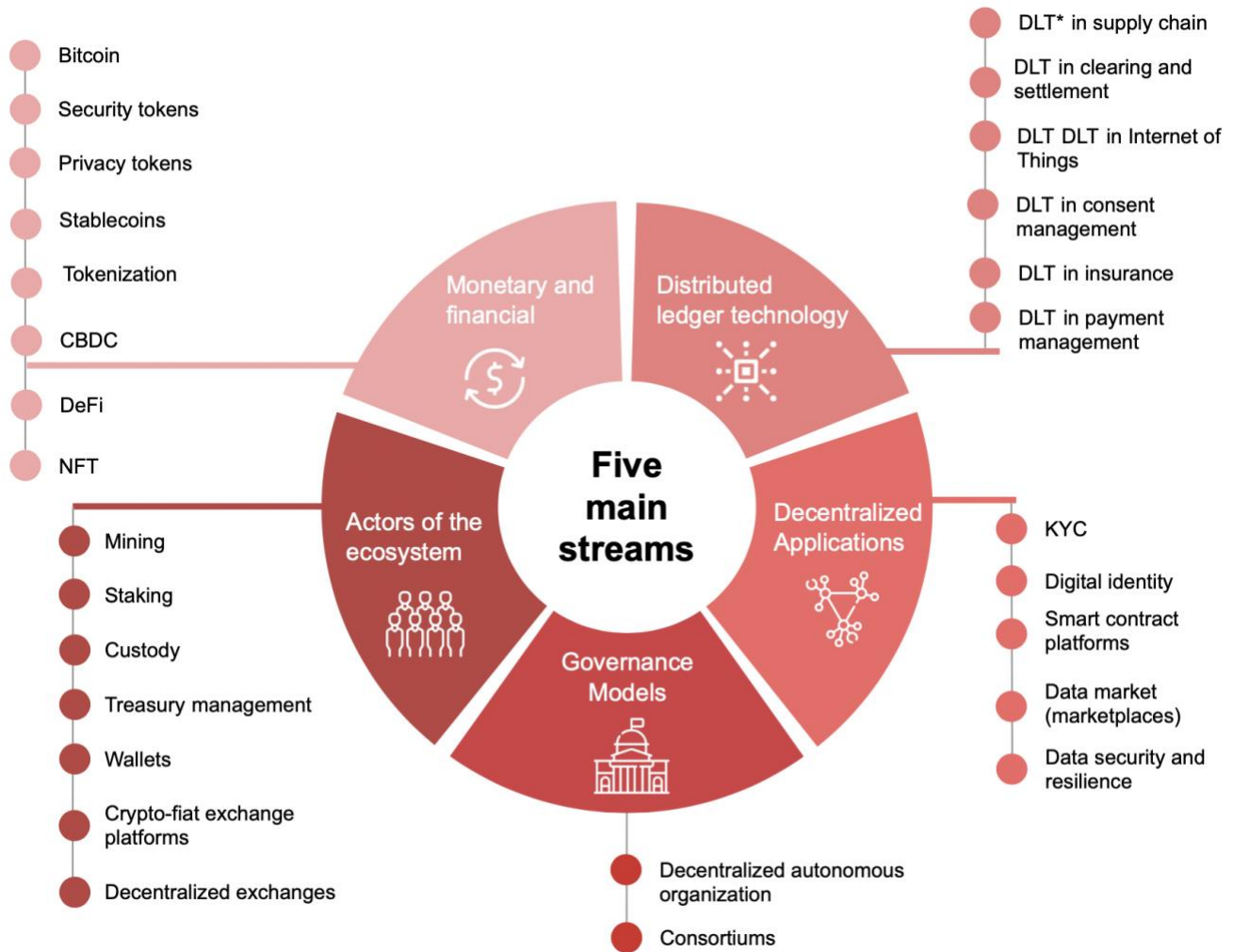
Glossary of Terms and Definitions

| Term | Definition ⁶⁸ |
|--------------------------------------|---|
| Bitcoin | The first decentralized cryptocurrency in the market. |
| Blockchain | A distributed ledger. |
| Central Bank Digital Currency | Digital currencies issued by the Central Bank of a country. |
| Consortium | An organization created by a group of individuals that works together in order to attain common objectives. |
| Cryptocurrency | A digital currency that uses technologies like cryptography to gain security. |
| Custody | Systems used to hold a large amount of cryptocurrencies. |
| Dealer | A firm or an individual which can act as an intermediary with a buyer of crypto and the crypto market. |
| ETF | A security that can be traded like a single stock on the stock exchange platform. |
| Ethereum | The first public blockchain that allows the development of smart contracts. |
| Futures | A Derivative product built on an existing ETF. |
| High-Net-Work | HNW are individuals / households holding >\$1M in liquid financial assets ⁶⁹ . |
| Liquidity | How to convert an asset into cash. |
| Miner | Contributor of the mining process of a blockchain. |
| Network | Refer to all nodes in the operations of a blockchain. |
| Non Fungible Token (NFT) | Digital assets that represent real world assets. |
| OTC Desk | A professional platform to buy or sell crypto directly with the buyer or seller. |
| Security | A type of financial instrument that carries monetary value. |
| Stablecoin | A cryptocurrency with low volatility. |
| Venture | A private equity which can fund startups with growth potential. |
| Wallet | A place to store, send, and receive digital assets. |

⁶⁸ CoinMarketCap. (2021). Crypto glossary. Recovered from <https://coinmarketcap.com/alexandria/glossary>

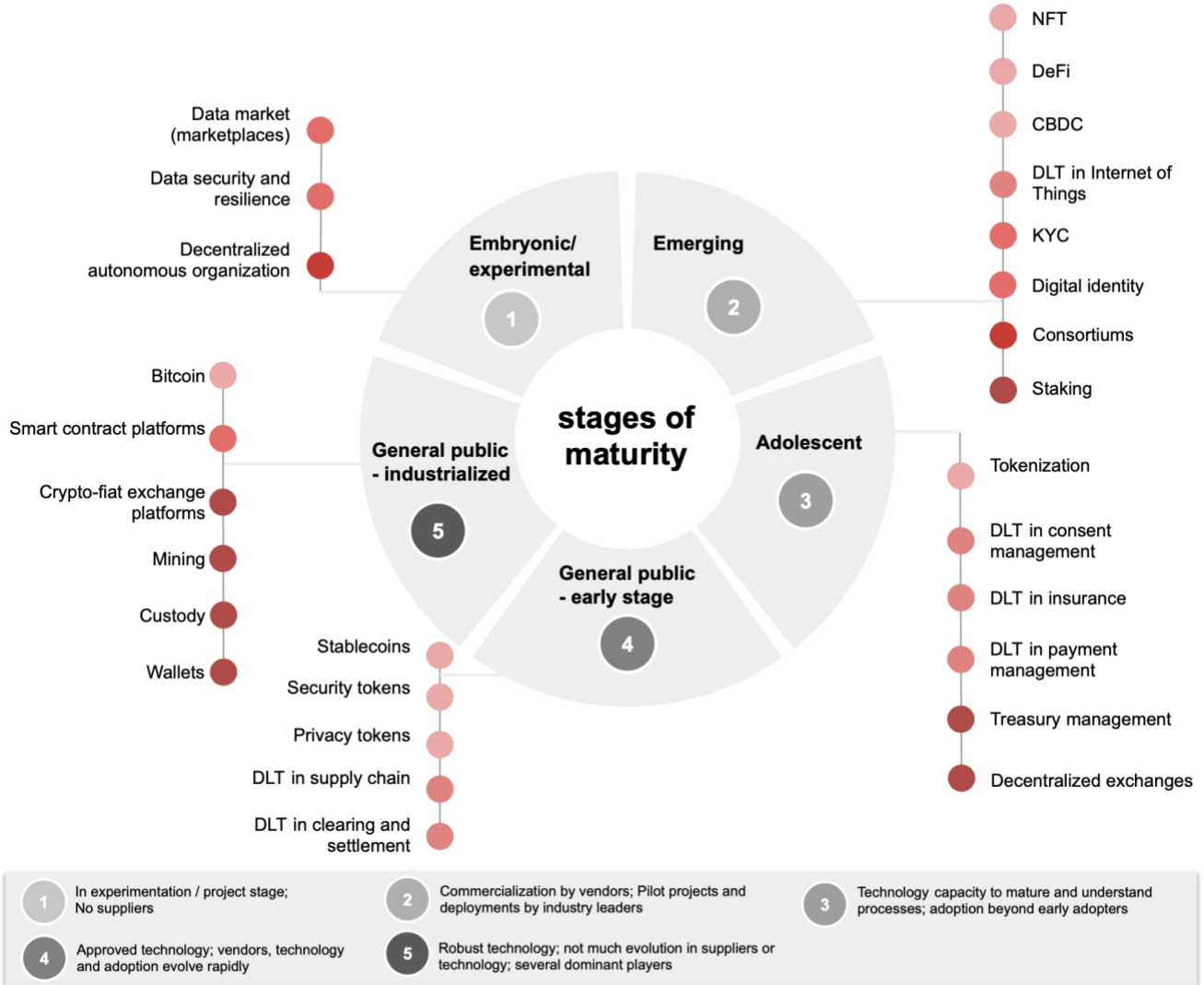
⁶⁹ Newport Private Wealth. (2018). How many high-net-worth investors in Canada?. Recovered from <https://www.newportprivatewealth.ca/featured/high-net-worth-investors-canada/>

Figure 10: Blockchain innovation has given rise to multiple streams



Source: BlockZero analysis, February 2022

Figure 11: These streams are at different stages of technological maturity



Source: BlockZero analysis, February 2022; Inspired of: Gartner (2021⁷⁰); CB-Insights (2019)⁷¹

⁷⁰ Gartner. (2021). Hype Cycle for Blockchain 2021.

⁷¹ CB-Insights. (2019). What's Next In Blockchain. Recovered of https://www.cbinsights.com/reports/CB-Insights_Whats-Next-In-Blockchain-2019.pdf

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How can BlockZero help?

BlockZero is a Montreal-based boutique professional services firm specializing in advising on the evolution of financial infrastructure through digital assets, digital currency, stablecoins and Central Bank Digital Currency (CBDC).

BlockZero is a small team of professionals and collaborators with a wealth of experience across multiple industries - management consulting, finance, marketing, information technology, and education - but united by a common passion and purpose: bridging between traditional financial infrastructure and the digital asset industry. BlockZero has over 100 years of combined expertise in enabling businesses and governments to succeed.



We are experienced consultants and are well equipped to deliver quality solutions in the digital asset space by leveraging our extensive experience, assets and relationships.

Our mandates with players in the Canadian and international ecosystems allow us to have an up-to-date perspective on the evolution of the market, the value chain and the ecosystem of cryptocurrencies and digital assets, as well as the issues and risks specific to them and the regulatory environment that is evolving daily. In addition, strategic coaching for some of our clients leads us to work closely with Canadian regulators. In addition, our daily technology watch and market intelligence service ensures that we stay on top of the latest developments in the field.

To learn more, visit our website at www.blockzero.ca.