

# New Value:

## Crypto Trends in Business & Beyond

2022





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## About Ripple

Ripple is a crypto solutions company that transforms how the world moves, manages and tokenizes value. Ripple's financial solutions are faster, more transparent, and more cost effective - solving inefficiencies that have long defined the status quo. And together with partners and the larger developer community, we identify use cases where crypto technology will inspire new business models and create opportunity for more people. With every solution, we're realizing a more sustainable global economy and planet - increasing access to inclusive and scalable financial systems while leveraging carbon neutral technology and a green digital asset, XRP. This is how we deliver on our mission to build crypto solutions for a world without economic borders.

Learn more about Ripple at [ripple.com](https://ripple.com).



## 00 — INTRODUCTION

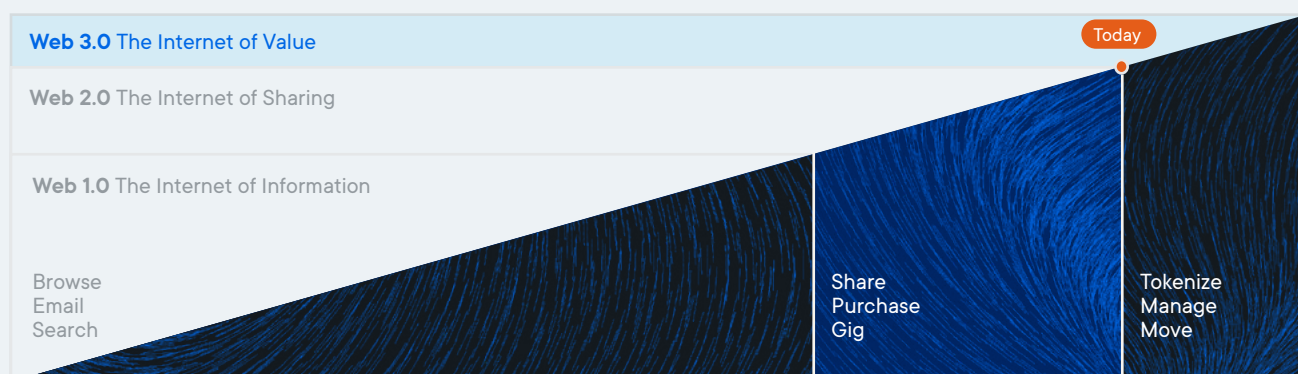
When we look out across today's finance landscape, we see a tremendous amount of change. This isn't potential change, or projected change — it's actual change. There are many factors driving that change, but this report focuses on the role of key blockchain use cases like payments and DeFi, and the token types — often referred to as “digital assets” — for those use cases, including cryptocurrencies, central bank digital currencies (CBDCs), non-fungible-tokens (NFTs), and more.

We have called this emerging, blockchain-driven landscape the Internet of Value, because it is doing for value what the internet did for information: creating a vast, decentralized network that is driving incredible new efficiencies, powering amazing new capabilities, and spawning whole new industries. It's a network that involves many different blockchains and tokens. It's a network that transcends national borders, but is still regulated by nations. And it's a network that is often working alongside existing ways of doing business, but also plugging into and enhancing those ways of doing business, or, in some cases, replacing them.

FIGURE 01

## The Evolving Internet

Each phase of the internet has been marked by key technologies supporting a set of key activities. And each phase carries forward and improves the technologies and activities from the previous phase.



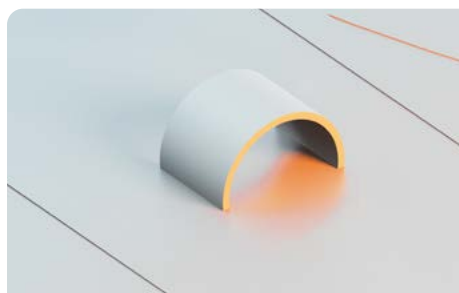


## A Broadened Investigation

Terms are evolving along with the technology and its use cases. The Internet of Value, Web 3.0, the metaverse — these are related and overlapping names for the new, decentralized approach to managing value, and for the uses and experiences that this approach can help power.

We are still in the early stages of this transformation and it's fascinating to see it take place. Innovation in payments has been central to the Internet of Value, and it is central to Ripple's contribution to it. And our innovation in payments continues. However, as institutional blockchain adoption has broadened, its benefits have deepened and its use cases have multiplied. So, though we have focused exclusively on payments in the past, this year we wanted to offer a broader look at the Internet of Value, covering payments and beyond. And we did so with an emphasis on the way institutions — both financial institutions and business enterprises — perceive the benefits, the blockers, and the future of blockchain and its tokens for their industry and organization.

Accordingly, the report is organized into sections that touch on the main activities that occur within the Internet of Value, and in relation to businesses in particular.



### **Tokenize**

establishes the digital representation of value on the blockchain



### **Manage**

wields tokenized value through actions such as holding, hedging, staking, lending, borrowing and more



### **Move**

sends value from one place, person or organization to another ("payments")



Given the importance of compliance to enterprise use cases, we've also added a section devoted to that topic.

This landscape is vast and it is changing rapidly. Of course this report can't offer an exhaustive view of everything that's happening on the Internet of Value vis-à-vis business. So, within the areas of activity outlined above — tokenizing, managing, moving — we are focusing on one or two key topics that are of particular importance at this time.

#### A Note on Methodology

The findings in this report are based on a number of inputs. More details on primary research methodologies can be found in the endnotes.

- Primary research conducted globally surveying 800+ finance leaders in Financial Institutions and 800 finance leaders in Enterprises across 22 countries<sup>1</sup>
- Primary research conducted globally surveying 800+ individuals with a mix of crypto experience across 22 countries<sup>2</sup>
- Primary research conducted globally surveying 700+ blockchain developers across nine countries<sup>3</sup>
- Secondary research gathering published insights from industry experts
- Our own daily, global experience working with institutions and governments that are leveraging blockchain and/or blockchain-driven digital assets

#### A Note on Terminology

Throughout this study we will use the term “enterprise” to distinguish businesses of all sizes from financial institutions such as banks, fintechs, payments providers, and others. We will use the term “consumer” as a way of identifying individuals, as opposed to organizations such as enterprises, financial institutions, governments, etc.



# Findings

## Big Picture

- There are high expectations within institutions for wide scale adoption and impact of blockchain technology, cryptocurrencies, and Central Bank Digital Currencies (CBDCs)
- The technologies and assets are maturing, with more enterprises leveraging them in various ways, and more consumers understanding and owning both crypto and NFTs (Non-fungible tokens)
- Blockchain-based use cases and their related benefits continue to multiply at a rapid rate for institutions, governments and consumers
- As would be expected for what is still a relatively new technology, lack of understanding and the slow evolution of regulations in some jurisdictions are acting as key barriers to greater adoption

## Specific Tokens

- NFTs are rapidly introducing consumers to blockchains and cryptocurrencies, with exploding NFT volume growth and usage creativity
- However, the NFT consumer experience has not yet been made as easy and rich as the consumer experience of key Web 2.0 scenarios for reasons related to both infrastructure and design
- CBDCs have gone from design to reality, and while only a few countries have already launched their digital currency, over 80 at the time of this writing are actively exploring the technology
- For blockchain and payments in particular, CBDCs will add to the work already being done by crypto and stablecoins to drive the blockchain flywheel, as NFTs are helping drive that flywheel now for consumers
- There are hints that finance leaders across both Financial Institutions and Enterprises are again seeing tokens, including crypto, as an even more powerful force than the foundational blockchain technology which drives them
- Tokens on the blockchain appear to follow a usage pattern, with exchanging, holding, and sending (payments) being the first wave of activities, followed and accompanied by more sophisticated scenarios supported by enhanced programmability — this has been true of crypto, and is now unfolding relative to NFTs and CBDCs



## Portfolios, Payments and Capital

- Institutions see the most value in crypto for two primary uses: 1) for portfolio management (including hedging against inflation, hedging against other asset types, asset appreciation, etc.) and, 2) for payments, at nearly the same rate of response
- Advanced use cases related to capital management around DeFi, tokenization of assets, and more are still new to the vast majority of businesses and, though of high interest, not yet widely pursued

## Player Perspectives

- Generally speaking, Asia Pacific (APAC) and Latin America (LATAM) are more optimistic about the value of blockchain and its tokens, with the Middle East and Africa (MEA) and North America somewhat less so, and Europe the most conservative
- Enterprises tend to be slightly more optimistic than their Financial Institution counterparts, and within Financial Institutions specific role types — such as the Capital Markets Leader and the Payments Leader — tend to be the most optimistic segments
- For businesses, speed benefits are often seen as more important and/or more likely to be achieved using these technologies than cost benefits
- In the case of payments specifically this could be due to a lack of recognition related to the full costs of pre-funding (which respondents didn't rank highly as a pain point, but which we know from talking to customers is in fact a massive pain point, in fact often the most important pain point from their perspective)
- APAC consumers are more drawn to the emotional benefits of NFTs than their counterparts in other parts of the world, in particular LATAM and Europe
- Consumers — despite the ascendancy of specialized crypto exchanges in today's market — are very willing to purchase crypto from banks should banks offer it

## Sustainability

- Few people — even among the most technical stakeholders — recognize the vast differences in energy consumption between blockchains, which likely contributes to sustainability not being a major consideration for most when selecting a blockchain
- However, as understanding grows (as we are seeing in the world of NFTs, particularly among creators and their fans), so does the pressure to leverage more sustainable options
- Green blockchains such as the XRP Ledger do exist, and they often also provide significant performance advantages (on speed, throughput and cost) relative to less sustainable proof-of-work driven blockchains

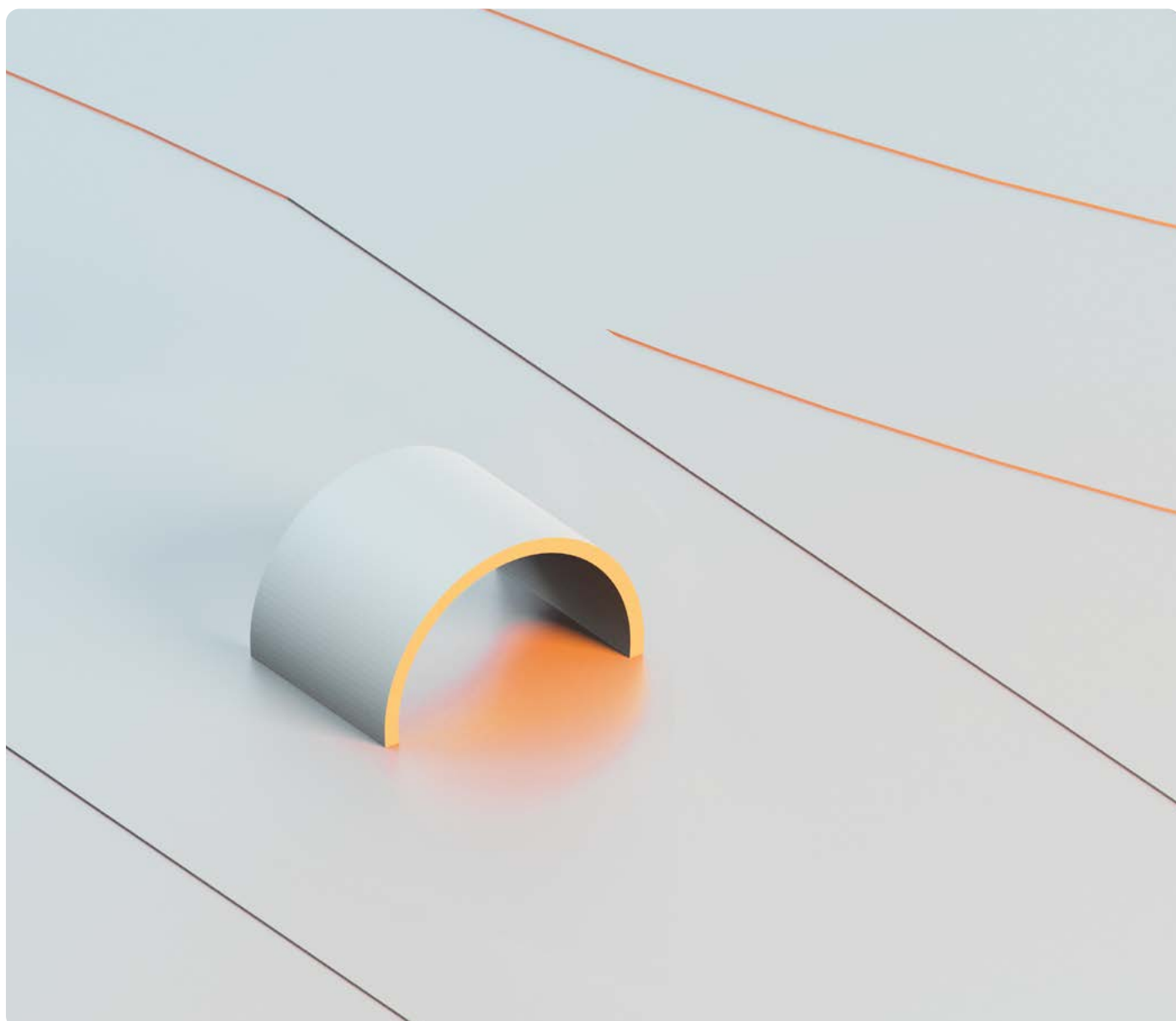




## 01 — SECTION

# Tokenize

Tokens, otherwise known as digital assets, are the avatars of value on the Internet of Value. When you represent value in a token — meaning in a digital form that is managed on a blockchain — you give that value new capabilities, including a rare combination of transparency and privacy, combined with astonishing agility, and decentralized security.







Now, depending on the capabilities of the token, you can: send it, exchange it, lend it, borrow it, leverage it for collateral, fractionalize it, aggregate it, track it, validate it, activate it, share it, reward it, vote with it, and more. And you can do so almost instantly, almost anywhere in the world, manually or programmatically, 24/7/365. So the act of tokenizing is transformative, working like a gateway through which value passes, before assuming its secure digital shape on the Internet of Value.

We anticipate tremendous growth in tokenization<sup>4</sup>, and we're not alone in making that prediction. The World Economic Forum, for example, projects that 10% of the world's GDP will be tokenized by 2027.<sup>5</sup> It is a trend that will impact businesses, governments, and individuals profoundly, but in different ways.

This year we focused on two significant trends related to tokenization. For consumers, the token type known as a "non-fungible token", or NFT, has introduced mass markets to both blockchain and to cryptocurrencies. For governments, the Central Bank Digital Currency, or CBDC, has introduced blockchain technology to the management of national fiat currencies, and shows potential as a gamechanger for financial efficiency and monetary policy management. The dichotomy between emergent consumer use cases for NFTs (such as owning virtual land or earning rewards through gaming), and those being assessed by governments (such as driving financial inclusion and national competitiveness) highlights the diversity and breadth of change being brought about by blockchain-based tokens.

## NFTs

An NFT is a token that is verifiably unique, allowing it to represent one-of-a-kind items in the real or virtual world. It can be exchanged for other tokens or forms of value, but it is not identical to any other token. In contrast, a fungible token, like a token representing an ounce of gold, or a Japanese Yen, represents a unit of value that is identical to the units of value represented by other tokens for an ounce of gold or the Japanese Yen.

### Growing Interest

Interest in NFTs exploded this year, with an incredible 38,000% increase in trading volume between 2020 and 2021, and with over \$10B worth of NFTs traded in Q3 of 2021 alone.<sup>6</sup> Artists, musicians, movie stars, athletes, brands, and more are seeing



NFTs as a new way of engaging their audiences with something that's innovative, unique, and valuable. And the scenarios that NFTs enable are expanding rapidly: these metamorphic tokens now represent anything from simple digital artifacts, to gaming skins that can be ported from one player or game to another, to generative art pieces that change in response to outside conditions, to exclusive event tickets, and even physical goods like record albums or Rolex watches.

## Value in the Metaverse

NFTs are now being widely touted as the key technology for powering ownership in what is called the metaverse: an immersive, virtual world where people create, game, work, socialize and more. Whether it's a piece of virtual land, a virtual car, or the virtual sneakers of an NBA star, NFTs represent ownership of unique forms of value in the metaverse. And people can do things with this value, like trade, game, showcase, collateralize, lend and more.

## What Drives Consumer Interest Now?

Interest has skyrocketed, but it's still very early days, and despite rapid growth in use cases and adoption, there is a way to go before NFTs are fully mainstream. Many consumers still don't understand NFTs, while others are skeptical about them. The future is fast-approaching, but the industry today also needs to meet consumers where they are, so it's both interesting and useful to get insight into how consumers around the world see NFTs now, and, as a starting point, why they are interested in NFTs in the first place.

Looked at globally, consumers say they are more interested in what we might call the functional benefits of NFTs as opposed to the more emotional benefits. More frequently selected responses to the question "why would you want to buy an NFT" were functional reasons such as to trade with others, to access unique features or experiences, or for appreciation. **In fact 79% of respondents said they would buy an NFT for a functional reason**, and 50% said they would only buy an NFT for a functional reason. This is **compared with 45% of respondents saying they would buy an NFT for an emotional reason**, such as to show my appreciation for my favorite artists, pop culture figure, or brand, or to commemorate an important moment, or to show to others.

There are interesting regional differences, with more people in APAC in particular showing greater interest in the emotional benefits, and much fewer people in LATAM expressing interest in those emotional benefits.

up to

more APAC consumers say they would buy an NFT to commemorate an important moment than their peers in other regions



FIGURE 02

## Functional vs Emotional NFT Benefits

● Emotional ● Functional



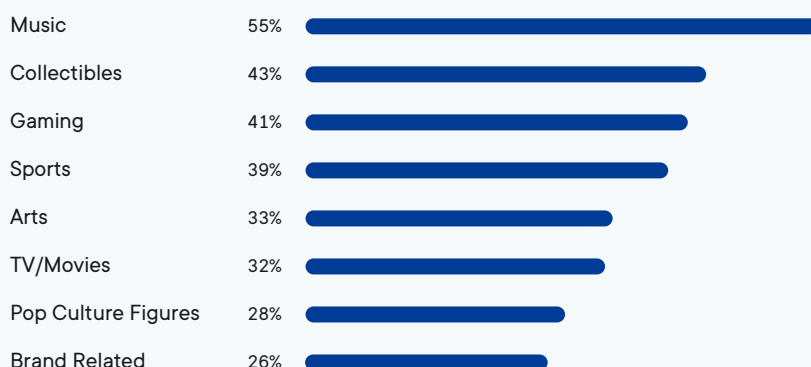
More specifically, respondents in APAC were up to three times more likely than respondents in other regions to say they would want to buy an NFT to commemorate an important moment. And they were twice as likely to say they would buy an NFT to show their appreciation for an artist, pop figure, or brand. This suggests that the emotional attachment to creators and/or moments will be an even bigger driver of NFT interest in APAC than in other parts of the world.

We also asked consumers about the themes that interested them most when it comes to NFTs. Despite some minor differences, by and large the number of consumers interested in NFTs related to one area or another was fairly steady across regions, with music being the area of highest interest, collectibles second, and gaming third. It will be interesting to see in the coming years if and how the metaverse changes consumers' interest levels across these categories, and perhaps introduces new categories.



FIGURE 03

## NFT Genre Interest



Please select the three NFT areas you are most interested in.

## Physical, Digital and Experiential

Many people think primarily of an NFT as a token representing ownership of something digital, like a graphic, or a photo, or video clip. But in fact NFTs can represent ownership of something physical, like a case of wine, or a pair of sneakers, or a plot of land. The opportunity here is massive as the vast majority of “things” in the world are non-fungible, including everything in the room you are in, for example. An NFT can also represent something experiential, like front row seats at a concert, or voting rights in a community. Or it can even represent a combination of digital, physical and experiential assets.

When consumers globally were asked about their preferences between digital, physical and experiential NFTs, about 25% globally said they were extremely interested in all three types, and just over 50% said either extremely interested or very interested. Response rates were similar across regions, with just slightly less being interested in NFTs representing experiences than those representing digital or physical assets, though in Europe they are comparatively more interested in experiences than in digital and physical assets. Given this response, in addition to the powerful use cases that physical and experiential NFTs open up, while NFT creation has been largely focused on tokens representing digital goods, we also see huge upside potential for NFTs representing physical goods and experiences as people move more and more fluidly across the physical world and the metaverse. Having said that, NFTs for digital goods will continue to be important — particularly those that combine aspects of community, access and credentialing.<sup>7</sup>

While NFT creation has been largely focused on tokens representing digital goods, we see huge upside potential for NFTs representing physical goods and experiences as well.



## What's holding consumers back from purchasing NFTs?

**Barriers to purchase** were also identified in consistent ways globally. In almost every region, the idea that NFTs are too complicated was selected most often as the biggest barrier to purchase, with too expensive being the second most selected barrier. When “too complicated” is paired with the third most selected option — “I don’t understand them” — the picture of a technology that is not yet fully mainstream emerges, with opportunities to improve understanding, simplify access, and expand use cases. With the rapid increase in engineering talent and the growing adoption of NFTs in more and more consumer scenarios, we expect to see complexity drop and understanding grow significantly in the coming year to two years.

## The Sustainable NFT

As with all human activities, there is an environmental cost associated with NFTs. This is particularly true for NFTs that are minted on a proof-of-work blockchain, such as Ethereum (until its upcoming transition to proof-of-stake), where the majority of NFTs are currently minted. It's been estimated that minting a single NFT on the Ethereum blockchain uses 231.31 kWh of energy, which is equivalent to more than the average U.S. household consumes in a week.<sup>8</sup>

But not all NFTs drive huge carbon emissions. The carbon footprint is related to the type of consensus mechanism that drives validation on the blockchain on which the NFT is minted and traded. There are other blockchains with much, much lower energy usage like **Solana, Flow and the XRP Ledger**. **The XRP Ledger, for example, uses federated consensus** instead of proof of work, and is in fact carbon-neutral, so it provides a carbon-neutral means of minting and managing NFTs. Through our conversations with creators, we know that the sustainability of NFTs is a very important issue for them. But is sustainability important to consumers? And to developers? We asked, and this is what we learned:

### Consumers<sup>9</sup>

- ¾ of consumers globally prefer sustainable NFTs
- more than ¼ say they would strongly prefer to buy sustainable NFTs
- almost ⅓ say they would only buy a sustainable NFT

### Developers<sup>10</sup>

- ⅔ say their organization is more likely to choose a sustainable blockchain
- ⅔ say their consumers want them to select a more sustainable blockchain
- ⅓ select sustainability as a top 5 attribute for a cryptocurrency they would use in their application



Of course indicating what they prefer in a survey is a far cry from actually building, minting and buying, and there are some barriers to consumers and developers alike acting on their eco-friendly intentions. This includes, at a fundamental level, simply understanding which chains operate in a sustainable way and which don't. For example, in a global survey of blockchain developers<sup>10</sup>, we found that an astonishing 46% believe that Bitcoin is a sustainable blockchain, when in fact Bitcoin mining consumed more energy than some entire countries last year (e.g. Argentina).<sup>11</sup> The industry as a whole understands the issue, and is working toward more sustainable approaches to blockchain usage in general.<sup>12</sup> We believe when it comes to NFTs the creators themselves can and will drive the greatest pressure toward the usage of sustainable technology. Developers will also be a driver, but they will continue to need to consider a wide range of other technical requirements, and consumers will have a harder time assessing the sustainability of a specific NFT, and will often follow their cultural passions more closely than their environmental concerns. That being said, as shown by the recent fan protests against proposed NFTs for the K-Pop band BTS, consumers are already making their voices heard on the issue, and this will in turn increase creator motivation to select a sustainable approach.

### Will Consumer NFTs Endure?

So are NFTs a fad without substance, or will they be an enduring and important part of our day-to-day lives? We believe that the current complexity and confusion that surrounds NFTs will give way to **greater simplicity and understanding**, and this will clear the way for more individuals to feel more directly the emotional value of NFTs. As more creators join the rapidly growing pool of those minting NFTs, and as NFTs get used in more and more innovative ways by more and more well-known creators, the trendiness of NFTs will solidify and expand into a long-term way for consumers to engage with their passions, and for creators and consumers both to realize and manage economic value from those engagements.

Consumers themselves are roughly equally split when asked if NFTs are a temporary fad, a medium-term trend, or going to be around for a long time.<sup>13</sup> We believe in the next two years the number who say they will be around for a long time will rise dramatically. Meanwhile, on the business side, the advantages that NFTs offer will be understood more widely, and adoption will rise in parallel with that understanding and the ease with which businesses can implement NFT solutions.

### NFTs and Business

The utility of NFTs will continue to rise, not just for consumers, but also in a variety of business applications. Though this year we focused more on individuals and NFTs, there are massive NFT business opportunities. To give just a couple examples out of the hundreds that already exist, one such opportunity is related to tokenizing unique and often illiquid assets, like property, or carbon credits that can

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help businesses wield the value they own with much greater agility and sophistication. Similar agility benefits would accrue from another example — tokenized securities — where tokenization would enable scenarios such as being able to pay out dividends via smart contracts. Additionally, settlement times associated with trading tokenized securities could be reduced, and markets could operate 24/7.

## CBDCs

It's been estimated that 80% of central banks around the world are actively exploring the use of what is known as a Central Bank Digital Currency, or CBDC.<sup>14</sup> This is a token issued on a blockchain that represents a country's national — otherwise known as fiat — currency.

There are many reasons that central banks are not just exploring, but in fact beginning to adopt this technology, with countries as diverse as the **Bahamas and China leading the way**. Because CBDCs could be distributed to any citizen that has internet access through a computer, tablet or smartphone, they provide a way of significantly increasing financial inclusion, for example making stimulus payments not only speedier but also more widely distributed. Because they can be managed on a government run blockchain, they can provide new, previously unavailable security features that can be extremely helpful. Because they can be programmed, they can support innovative scenarios such as micropayments for utility bills that pay on a per-use basis. Because they leverage the same underlying technology that drives efficient, new digital assets like crypto, they can be used for cross-border payments with less friction and cost compared to traditional solutions. And finally, because they can be easily managed, they can support strong and swift implementations of various monetary policies.





FIGURE 04

## CBDCs Can Support Many and Varied Policy Goals<sup>15</sup>

### Objectives

#### Monetary Policy

- Increase control
- Support economic growth
- Lower counterparty risk

#### Fiscal Policy

- Increase financial inclusion
- Facilitate government disbursements
- Support economic growth
- Lower counterparty risk

#### Cost Savings

- Reduce cost of cash
- Realize payments system efficiently and resiliency gains
- Lower fraud/theft losses
- Lower compliance costs

### Design Considerations

#### Overarching

- User-centered design
- Risk-based security design
- Flexibility

#### Design Options

- Access (retail or wholesale)
- Anonymity (account or token)
- Identity management

#### Implementation

- Process, roles, responsibilities
- Project management
- Cybersecurity

### Foundational Issues

- Legal framework, regulation, supervision

- Governance, organization, risk management

- Infrastructure, technology

We believe the CBDC token type will have a powerful and lasting impact in nations around the world — alongside other token types including cryptocurrencies, stablecoins and NFTs — because the CBDC represents national currencies in the Internet of Value, with all of the trust and utility that those currencies have traditionally provided, coupled with the new capabilities described above. But we wanted to learn more about how global financial institutions, and global enterprises, see CBDCs today, so we asked them a series of related questions.

### Expected Adoption and Impact

The vast majority of respondents around the world currently believe that CBDCs are on the horizon, with 85% saying they believe CBDCs will be adopted in their country within the next four years.<sup>16</sup>

And the vast majority of respondents believe that CBDCs will have a significant or massive impact on business, on finance, and on society.



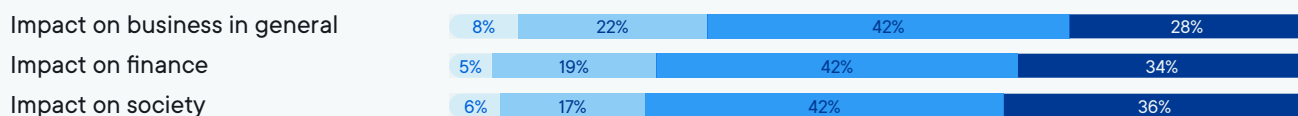
Though in general enterprises are more optimistic about the value and impact of blockchain-driven technologies and token types, in the case of CBDCs, this trend is reversed, with financial institutions being actually more optimistic than their enterprise counterparts. Perhaps this is because they are more conservative and therefore put more trust in government backed currencies than in other token types, due to either the traditional standing of those currencies or the regulatory power that governments wield to help drive the adoption of those currencies.

FIGURE 05

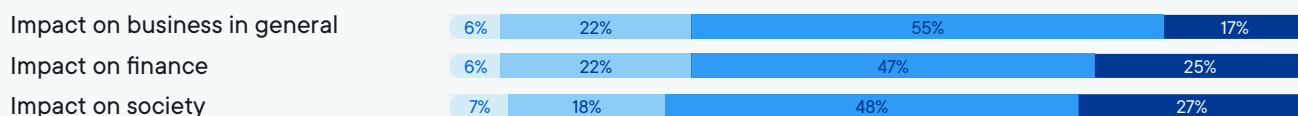
## Expected Impact of CBDCs

Non-existent Insignificant Significant Massive

### FI



### Enterprise



What do you believe the impact of CBDCs will be on the following in five years time?

Note that more respondents from financial institutions and enterprises see greater impact from CBDCs on finance and on society than they do on business in general.

When breaking the anticipated impact down by region, we see the reemergence of the pattern showing more people in APAC and LATAM to be more optimistic about blockchain token impacts than other regions.<sup>17</sup> And when broken down by role type, we see the Capital Markets Leader and the Payments Leader being much more optimistic, while the Compliance Leader and, somewhat surprisingly, the Innovation/Blockchain Leader, are more conservative.<sup>18</sup>

## Main Benefits

As mentioned in the introduction to this section, there are many potential benefits of CBDCs, and it will likely be some time before they are adopted and used long enough to truly assess the relative value of each of these benefits for different countries and constituents. But by asking respondents today about which benefits they believe will be most important, we gain insight not only into their predictions, but also potentially into what they see as the most important areas for improvement in the use of fiat currencies.

# 30%

of respondents believe the impact of CBDCs on finance will be massive in the next five years



FIGURE 06

● FI ● Enterprise

## Expected Impact of CBDCs



What benefits would your organization expect from a digital form of your country's national currency — generally referred to as a Central Bank Digital Currency (CBDC)?

Here too, and again contrary to overall patterns, financial institutions were slightly more optimistic than their enterprise counterparts. But in this case there was also a difference of opinion on the top benefits. The top two most selected benefits for financial institutions were 1) enhanced national competitiveness in the global economy, and 2) payments system efficiency<sup>19</sup>, whereas the enterprises more frequently selected payments system efficiency first, and strengthened monetary policy second.<sup>20</sup>

## Interest Across All Use Cases

We named five potential use cases for CBDCs and asked financial institutions about their level of interest in them. Interest was evenly distributed, with approximately  $\frac{1}{5}$  indicating interest in using CBDCs for each of the five: intrabank/branch transfers, interbank payments, customer payments, providing CBDCs to consumers, and providing CBDCs to businesses.

But when you look at interest in these use cases across different financial institution types, an interesting pattern emerges: the number of digital banking/fintechs who expressed interest in each use case was significantly lower than the number expressing interest from other institution types such as retail and commercial banking, money transmitter or payment provider, payment aggregator, and



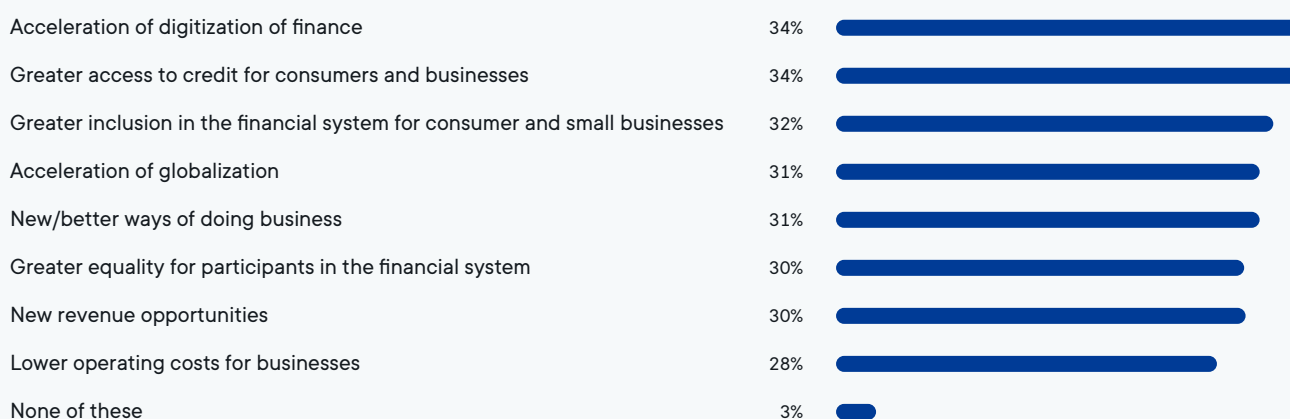
investment banker/broker. This is counterintuitive as one might expect the digital innovators to show greater interest in a new form of currency. However, we think the most innovative segments of the financial industry believe they have less need than the other segments for one of two reasons: either because they have a more modern infrastructure and therefore can already run more efficiently without new token types such as CBDCs, or because they've built a business model on top of the old infrastructure that stands to be disrupted by CBDCs or crypto, and therefore are cynical about new alternatives that could bring advantage to competitors. Having said that, we believe digital innovators will become much more interested as they learn more about what CBDCs can enable, for example in relation to the intersection of CBDCs and DeFi.

### Anticipated Breakthroughs

When asked about the breakthroughs that CBDCs will drive, approximately one third of respondents were optimistic that CBDCs would drive a breakthrough across the board of the presented options. Interestingly, the response was approximately the same for cryptocurrencies. This likely indicates that respondents don't yet really know where the impacts will be, but do generally believe that these new token types are going to have a powerful influence in a variety of ways.

FIGURE 07

### CBDCs Breakthroughs



What breakthroughs do you believe the following will likely drive: CBDCs

If there is one trend to note here, because it is consistent with responses to other questions in the survey, it is that respondents are generally less likely to say that a blockchain-driven token or use case will lower costs than to provide other benefits such as new revenue opportunities, expanded financial inclusion, or the acceleration of digital finance.



## A Note on Sustainable Currencies

Governments around the world are responding to the growing effects of climate change, so it comes as no surprise that when considering launching a CBDC, energy usage is important in their decision-making. Though some blockchains that could be used to power CBDCs are in fact quite energy intensive — in particular proof-of-work blockchains — there are options that are much less energy intensive than these blockchain options, and even less energy intensive than, for example, credit card transactions.<sup>21</sup> One such blockchain option that Ripple is leveraging with Central Bank partners now to pilot CBDCs is a private sidechain of the public, and carbon-neutral, XRP Ledger.<sup>22</sup> Other blockchains being used for CBDCs include Ethereum, Hyperledger Fabric and Corda. These have varied energy usage profiles.



## Close

This year's report focused on the NFT and CBDC token types. We see NFTs pushing beyond trendy hype to become an enduring feature of our increasingly digital lifestyles. It's early days, and there is so much more innovation to come, but at its heart the consumer NFT isn't about a new technology, but rather the age-old human desire to own things that connect us to our interests, passions, and memories. The core technology is proven, now the industry needs to make it easier for consumers to participate. We believe new approaches, including decentralized identity, will help solve some key issues around trust, security and privacy for consumers, while making it easier to verify, buy, sell, store, transfer, show and use their NFTs.<sup>23</sup> And we believe that 2022 will show continued innovation in the use of NFTs by businesses to enable more agile management of the value they own.

When it comes to CBDCs, paper assessments globally are turning into meaningful pilots — as in our work with the Kingdom of Bhutan — and live widespread trials, as in China, or full roll-outs, as in the Bahamas. There is of course a lot at stake when it comes to CBDCs, and central banks will be thoughtful and deliberate in their approach to this technology. But we also know that the vast range of benefits and breakthroughs CBDCs can drive — as foreseen by financial institutions and enterprises — are foreseen by central banks as well. Greater inclusion, greater equity, new opportunity, new efficiency, enhanced competitiveness and more are all potential outcomes. For that reason we believe the adoption curve will slope upwards much more rapidly in the coming two years as secure, agile, and sustainable approaches to CBDCs are tested and proven more widely across the globe.

As we saw with cryptocurrencies, NFTs and CBDCs are following a familiar usage pattern. At first the use cases are focused around exchanging, holding and sending (payments). Those activities continue, but others are added as more sophisticated scenarios rise with greater programmability into a vast range of possibilities including DeFi, GameFi, NFT communities, programmable finance policy, DAOs, and more.



## 02 — SECTION

# Manage

The management of tokenized assets is the widest ranging category of activity we're examining. Tokenized asset liquidity and functionality drive the efficiency of the Internet of Value. From holding to exchanging, borrowing to lending, collateralizing to rewarding, fractionalizing to bundling, staking to voting, gaming to farming, the possibilities for what to do with a token are myriad. And of course there are so many token types being used in these ways, including cryptocurrencies and private stablecoins, NFTs and CBDCs, tokenized real estate and commodities, and more.







In terms of value management in the Internet of Value this year, DeFi in its many forms has clearly played a dominant role in many crypto communities. And there's been continued experimentation with, and growth in, the tokenization of various traditional asset types such as stocks, bonds, and real estate to enable enhanced management of those assets and the value they represent.

But when it comes to business use cases, the trend we will focus on this year is the institutional use of crypto as a relatively new tool in its toolbox for managing value, and a tool that is being more and more widely adopted. For example, more companies are holding crypto as a hedge against inflation or other asset classes, or as an alternative to bonds.<sup>24</sup> There are also institutions beyond crypto exchanges that want to provide crypto to their (business or consumer) customers and so they have a need to manage it. Payments is a key use case as well: In the US alone, 2,300 organizations like PayPal, Microsoft, Whole Foods, and UNICEF have begun accepting cryptocurrency as a form of payment, and so of course these organizations need to manage cryptocurrency as a support for payments (whether they hold it themselves, as some do, or custody through a third party).<sup>25</sup> Some organizations are also now paying employees in crypto. Finally, beyond crypto, and beyond today, as the number of tokenized assets multiplies in the coming years, so will the benefits of holding and managing those assets in the form of tokens.

## Cryptocurrency and Value Management

So, are Financial Institutions and Enterprises interested in crypto now, and if so, why? What benefits do they expect, what are the barriers to adoption? What do they believe are the signs that adoption will broaden?

The patterns we have noted throughout this report express themselves even more definitively here. There is again widespread interest, a general consensus that crypto will drive tremendous change resulting in multiple benefits, with optimism greatest in LATAM, though not far behind in other regions. And the largest barrier that financial institutions and enterprises see to increasing adoption and achieving those benefits is unclear regulation.



## Financial Institution and Enterprise Use of Crypto

Our study shows that across global financial institutions, 76% expect to use crypto in the next three years, assuming regulation allows for it. In a deviation from the pattern of the enterprises being more favorable to digital assets of all types and more optimistic about their benefits, here slightly fewer enterprises, at 71%, say they will use crypto in the next three years.

Contrary to the narrative that crypto is only used for speculative purposes, studies show there are a variety of reasons why players in the space choose to hold crypto.<sup>26</sup> In our study, for both financial institutions and enterprises, the number one event that would lead their organization to seriously consider including cryptocurrency in their portfolio is widespread use for payments, with the related use as a bridge currency coming in third, and the value of crypto as a hedge of one sort or another coming in the middle of the pack. When asked more directly why they would hold crypto, 50% included use as a hedge against inflation, a currency for making payments, or as an asset to lend or collateral for borrowing in their top three reasons.

Trying to understand adoption in more depth, we also asked about accelerants for the adoption of cryptocurrency among Financial Institutions and Enterprises. Consistent with the chart above related to triggering events, again respondents ranked use of crypto by their peers, evidence that it is an effective hedge, and use as a payment method at the top. Taken together, this suggests a tipping point scenario where institutional adoption begets broader institutional adoption, the speed of which can be fueled by a variety of factors including use for hedging and payments.

## Crypto and Sustainability

We were disappointed to see that for both Financial Institutions and Enterprises, sustainability ranked relatively low as an attribute they would consider when selecting a specific cryptocurrency. Given the patterns of purchase, with some proof-of-work cryptocurrencies being both the least sustainable and the most widely held, it's safe to say that other factors currently outweigh sustainability when it comes to actually buying crypto. As noted earlier with regard to NFTs, we also believe there is a lack of real understanding related to the sustainability of different cryptocurrencies, with many people simply not knowing how energy intensive some are, and others believing that all cryptocurrencies are the same. But all cryptocurrencies are not the same when it comes to sustainability. For example, blockchains that leverage proof-of-stake consensus mechanisms, or federated consensus mechanisms, feature very low energy usage. Crypto is not inherently energy intensive: it depends on the consensus mechanism and the community's commitment to sustainability.

# 76%

of Financial Institutions expect to use crypto in the next three years

A tipping point scenario where institutional adoption begets broader institutional adoption, the speed of which can be fueled by a variety of factors including use for hedging and payments



As institutions move forward with crypto adoption, we hope they consider sustainability as a factor in their decision-making. Our study indicates that consumers would share that hope. As the chart below shows, over 75% of consumers say they would prefer to buy a cryptocurrency that is sustainable. And more than 20% of global consumers say they would only buy sustainable cryptocurrencies.

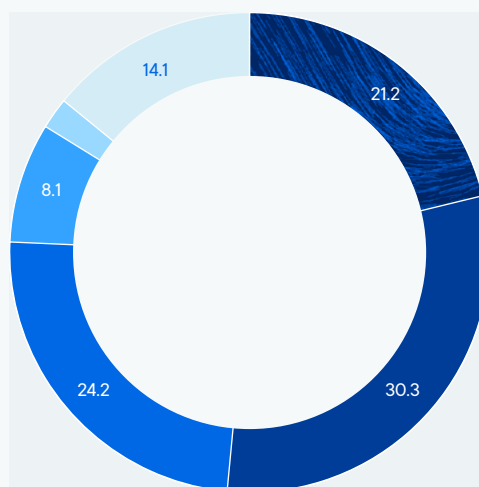
FIGURE 08

### Consumer Attitude to Crypto and Sustainability

by percentage

- Would only buy sustainable cryptocurrencies
- Would strongly prefer to buy sustainable cryptocurrencies
- Would prefer to buy sustainable cryptocurrencies
- Sustainability is not something I consider when buying cryptocurrency
- Would prefer to buy cryptocurrencies that are not sustainable
- I don't care

Which of the following best describes your attitude toward cryptocurrency and sustainability (defined here as low energy usage)?



### The Anticipated Impacts of Crypto

As we saw with CBDCs, the vast majority of respondents believe that crypto will have a significant or even massive impact. In fact, among both Financial Institutions and Enterprises, slightly more people believe crypto will have a massive impact than believe CBDCs will have a massive impact.

On a regional level there is a fair amount of similarity, with 40% of respondents across three different regions believing crypto will have a massive impact on finance and on society. There are however two outliers: Europe being more conservative, at ~35% of respondents, and LATAM being more aggressive, with ~50% of respondents seeing massive impact.

But what exactly do people believe these impacts will be? Interestingly, both financial institutions and enterprises see supporting inclusion and equity as the key benefits crypto can offer to their organization. These come in slightly higher than business opportunities related to new revenue sources and competitive advantage. Again, we see lower costs coming at the bottom of the list of anticipated benefits.

more than

# 20%

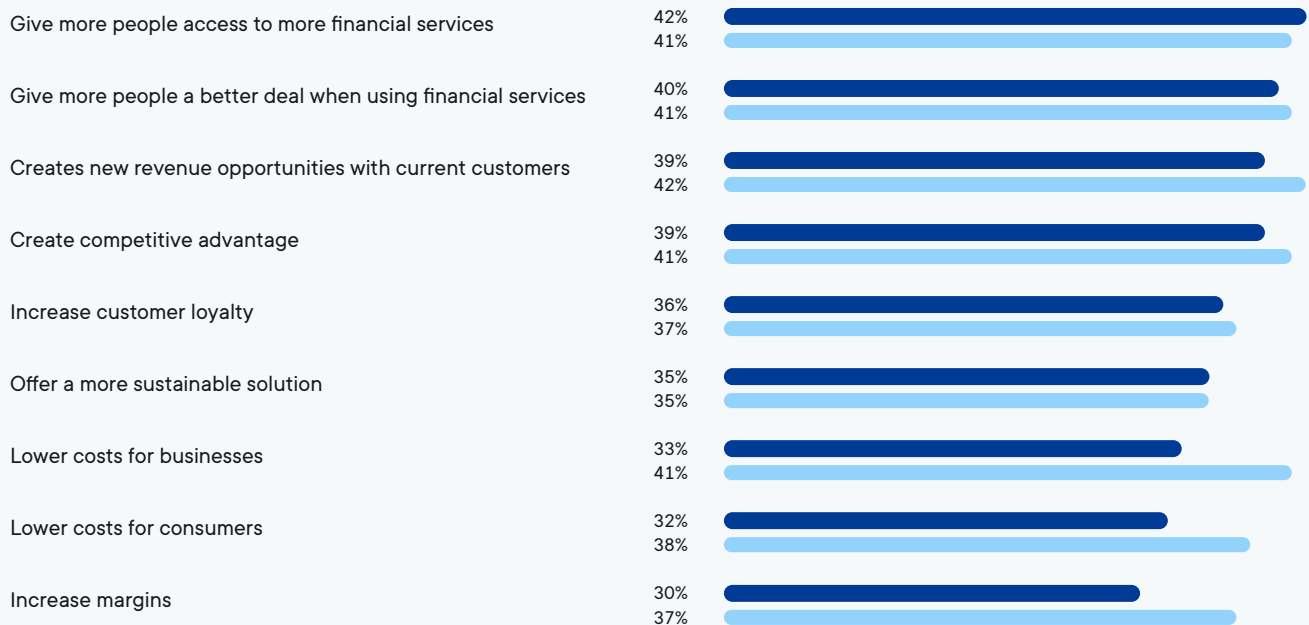
of global consumers say they would only buy sustainable cryptocurrencies



FIGURE 09

## Benefits of Using Crypto for Your Organization

FI Enterprise



What do you think cryptocurrency can offer your organization?

When split out by role type within the Financial Institution, an interesting trend emerges that reinforces the bigger picture of institutional interest in crypto being centered around two different forces: portfolio management and payments. Generally speaking, the Capital Markets Leaders and the Payments Leaders selected benefits of crypto at the highest frequencies compared to other segments including the Innovations Leaders, the Blockchain Leaders, and the Digital Transformation Leaders.

### Barriers to Adoption

Given the perceived size of impact and range of benefits, what is stopping Financial Institutions and Enterprises from adopting cryptocurrencies? Respondents for both cited fraud and scams, unclear regulation, and price volatility as the three biggest challenges slowing adoption. It should be noted that at least two of these three hurdles are related. Clear regulation supported by strong enforcement should reduce fraud and scams. In terms of volatility, based on patterns identified with other asset types in the past, we believe that as crypto markets and usage matures, liquidity will increase and volatility will lessen, but that remains to be seen.



## Sourcing Crypto

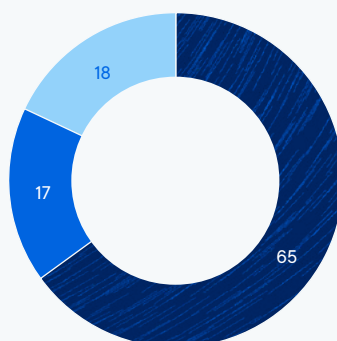
Of note to banks, whether it is due to the trust consumers have in banks, or the established relationship they have with them, or some other factors, the majority of consumers surveyed globally say that they would buy crypto through their bank if the bank offered it. MEA respondents were most likely to want to purchase from a bank (at 79% of respondents).

FIGURE 10

### Interest in Buying Crypto From Your Bank

by percentage

- Yes
- No
- Don't know



Would you buy cryptocurrencies through your bank if they offered them?

Furthermore, among the consumers who have more experience with crypto and crypto-related offerings like NFTs, an even higher percentage (81%) say they would buy crypto from their bank than those consumers who are curious about crypto or don't know anything about crypto. This might simply be because this segment is the most likely to buy crypto from any trusted provider, but it could suggest that they prefer buying from a bank, and it at least confirms that, despite the competition from crypto-native exchanges, even the more crypto-savvy players are very open to purchasing crypto from their banks, perhaps due to a history of trusting banks as a holder of their assets.

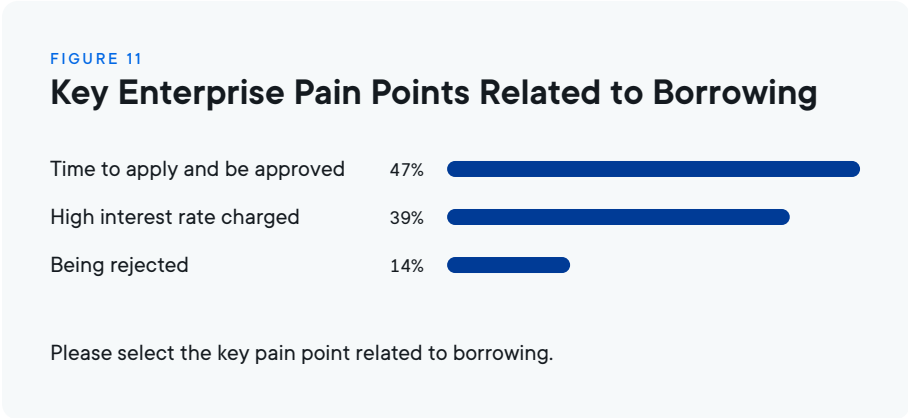
## Managing Liquidity Among Financial Institutions and Enterprises

While the focus of our Managing section this year is squarely on the business use of crypto, it's been such an important year for DeFi that we wanted to at least touch on topics related to DeFi and institutions (though to date clearly the majority of DeFi activity has not been institution led). As these institutions are starting to explore other means of managing capital liquidity, including the use of tokenization for this purpose, we asked a few questions to gain insight into this topic as well.



Pain Points

So why might Enterprises turn to DeFi? What are the pain points that DeFi might alleviate? In terms of borrowing, our study shows that time and effort to apply for debt and be approved is actually a bigger barrier than cost, reinforcing the overall pattern we see that when it comes to the Internet of Value, benefits related to cost are outweighed in more respondents' minds by benefits related to speed, competitive advantage, new revenue opportunities, inclusion, and others.



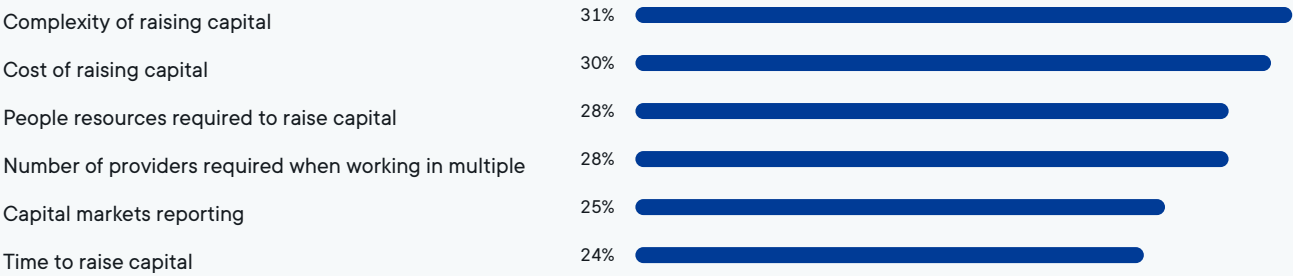
The value enterprises place on the benefit of speed when it comes to borrowing tracks well with the rise of lending fintech. Leaders in this emerging industry leverage deeper data and new digitally-native ways of working to speed the lending process, and they are being rewarded with business growth.

However, when it comes to raising capital, the pain points for enterprises are reversed, with slightly more seeing the cost of raising capital as the biggest pain point than the time required to raise capital, though here the spread among respondents was fairly narrow.



FIGURE 12

### Key Enterprise Pain Points Related to Raising Capital



Please select the top two pain points related to raising capital.

### Tokenizing Assets to Manage Value

It is still clearly early days for the tokenization of assets to enhance the management of value within institutions. But we've already seen tokenization of assets provide greater opportunity for institutions to reach new constituents, thus bolstering value management for the institution by enabling it to overcome physical and logistical barriers. So the promise that tokenization holds is significant. For example, of more than one thousand global senior executives surveyed in Deloitte's 2021 Blockchain Survey, 32% said the tokenization of assets would play a significant role at their organization in the future.<sup>27</sup> Through tokenization, assets can be broken into a fraction of their traditional form, thus broadening the potential ownership base. We've seen this emerge in illiquid markets like fine art, precious metals, and real estate. Selling and purchasing these assets using tokens has proven even more secure given the inherent transparency and immutability of blockchain ledgers.<sup>28</sup>

Given the low adoption to date of this still just-emerging use case, we focused this year on interest in the use of tokenization to help manage capital liquidity. And we found that the majority of respondents are interested or very interested in using tokenization for different purposes.





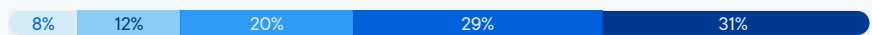
Among Financial Institutions, interest levels were fairly evenly distributed across these use cases we identified:

FIGURE 13

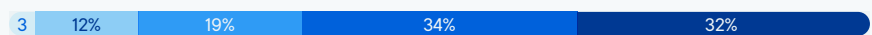
### Financial Institution Interest in Some Tokenization Scenarios

Not at all interested Not Interested Neutral Interested Very Interested

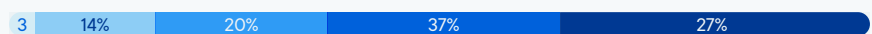
Using tokenization to enhance existing credit/lending products or to develop new credit/lending offerings



Issuing securities or derivatives on a blockchain



Using tokenization to generate liquidity for your clients for relatively illiquid and highly illiquid assets



Hypothetically, how interested would your business be in: (asked of the Innovations, Blockchain, Digital Transformation, and Capital Markets Leaders only)

And we saw similar response rates when asking Enterprises about their interest in tokenization use cases, if with slightly fewer respondents saying Very Interested, but slightly more in the combined Very Interested and Interested categories than their Financial Institution counterparts.

FIGURE 14

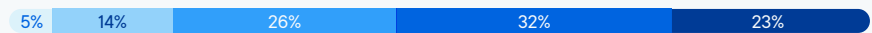
### Enterprise Interest in Some Tokenization Scenarios

Not at all interested Not Interested Neutral Interested Very Interested

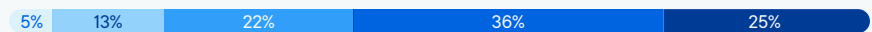
You could efficiently finance your receivables through tokenization



Your bank could efficiently issue a security on your behalf on a blockchain



You could tokenize your assets that are currently illiquid or relatively hard to sell and have a new source of funding



Hypothetically, how interested would your organization be if:

2022 will be a critical proving ground year for applying blockchain technology to the management of capital liquidity in the institution. Whether via DeFi (which will require KYC/Compliance features before wide adoption), or tokenization, early experimentation will transition into early adoption, with the benefits of decentralization providing powerful impetus for both wider usage and new scenario development.



## Close

Managing value on the Internet of Value is a vast topic, but this year's focus on crypto specifically yielded results that echo findings in other sections of this report. There is general consensus that crypto, like other tokenized assets, will have a significant or even massive impact in the coming five years, with LATAM being particularly bullish on this, and Europe a bit more conservative. Many see portfolio-related uses as important, but — contrary to the narrative that crypto is only for speculation on growth — a number of uses are seen as very important, including in particular the use of crypto as a hedge because it is uncorrelated with other asset types, and the use of crypto for payments. Beyond crypto, Financial Institutions and Enterprises alike see eventual value in blockchain approaches to managing capital liquidity, whether via DeFi, tokenization of assets, or a combination of the two. We believe institutional DeFi will take off in the next few years — pending clear and supportive regulation — with the benefit of zero knowledge proofs to help solve for decentralized compliance.<sup>29</sup> Overall, this year will be an important one for proving these use cases out on a greater scale among a larger number of participants while continuing to enhance the underlying technology.



## 03 — SECTION

# Move

The ability to move value — in other words to make what the industry calls a payment — with little friction, great speed and high transparency, is a key driver of the efficiency and agility of the Internet of Value. And though we are only a handful of years into using tokens for payments and transfers of all kinds, businesses, NGOs, governments and consumers are already seeing the benefits of using tokens on a blockchain to move value.





In fact, many of the major trends we see in payments — including accelerated digitization, expanded inclusion, greater equity, and the dramatic rise in instant payments — are all supported by blockchain and token types, such as cryptocurrency and CBDCs that the blockchain drives. So it isn't surprising that many pioneering financial services companies believe that payments will be a key driver of digital asset adoption in the coming years, and that many think digital assets will be a strong alternative to fiat in the next five to ten years.<sup>30</sup>

### Financial Institutions and Enterprises

Whether for intra-bank/intra-branch transfers, inter-bank payments, or customer payments, almost 70% of financial institutions surveyed for this report say they are interested in using blockchain for payments.<sup>31</sup>

Surprisingly, as noted earlier, for each of these use cases the digital banking / fintech segment reported significantly lower levels of interest (~15% fewer) than the other segments which included retail and commercial banking, money transmitter / payment provider, payment aggregator, and investment banking / brokerage. One hypothesis as to why this is the case, as mentioned earlier, is that fewer of the digital banking / fintech segments feel the pain points that the other segments feel as strongly, perhaps because they have papered over the cracks in the existing system. Or perhaps this segment is more pessimistic about new solutions that will compete with their offerings.

This widespread interest holds true not just for blockchain generally, but, with some variations, for each of the key token types including cryptocurrencies, CBDCs, and stablecoins, with roughly 70% of financial institution respondents saying they are interested in using these tokens for various payments use cases. And, as we noted in the section on Managing, making payments was listed by Enterprises as the most important reason to hold crypto with use as an inflation hedge second, while for Financial Institutions hedging came first with payments second. Both put payments ahead of a number of other portfolio uses such as a hedge against economic downturns or a hedge against foreign exchange risks. And both agreed that the number one event that would lead them to seriously consider holding crypto was its widespread use for payments.

When financial institutions were asked what they see as the key benefits of using blockchain and crypto for payments, there was a relatively even spread across a number of benefits, with data security and quality coming out slightly ahead of growth opportunities in more markets or within market, and real-time settlement.

# 70%

of global financial institutions are interested in using blockchain for payments



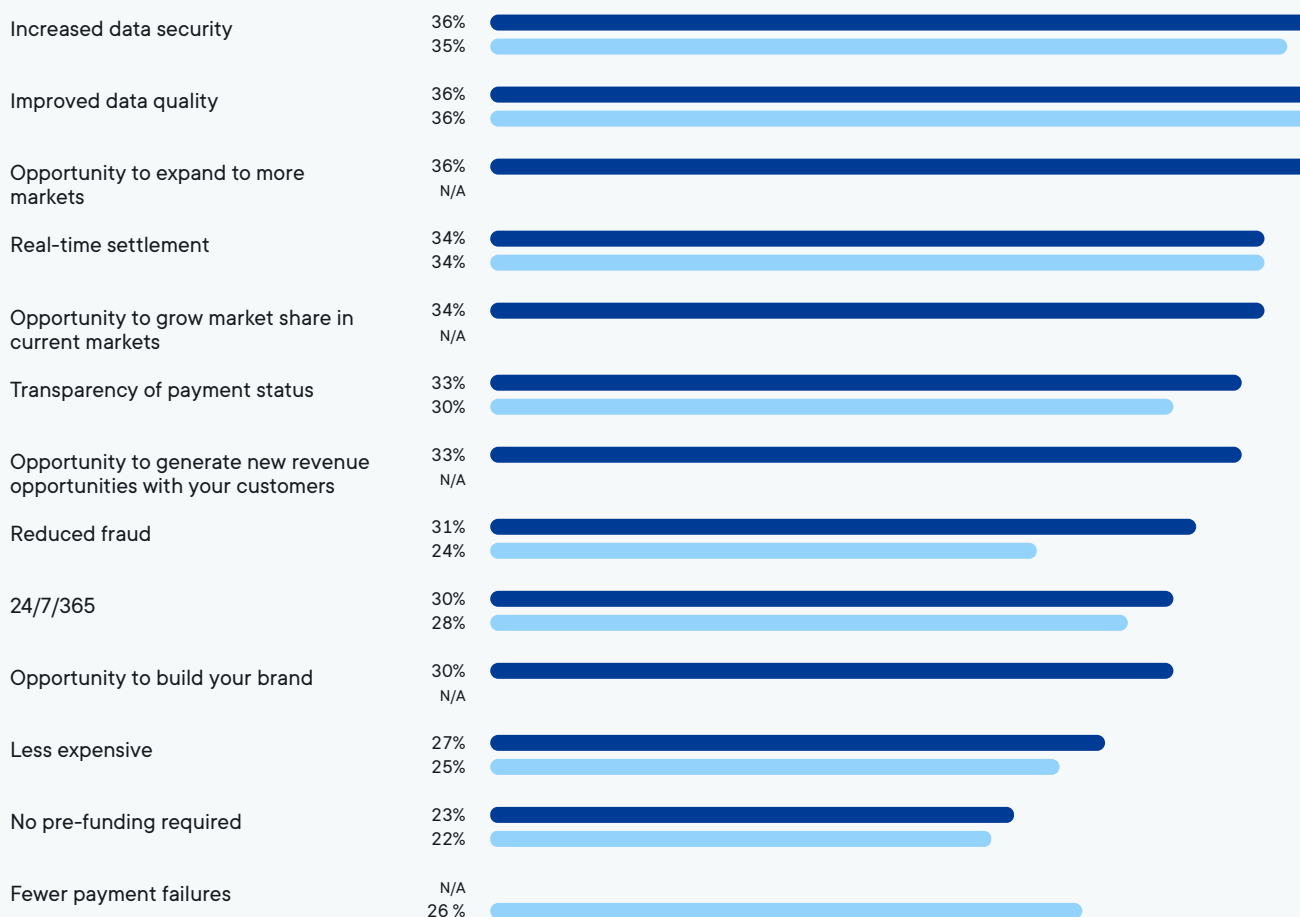
The Enterprise respondents agree that increased data security is the key benefit. But they place real-time settlement second, and 24/7/365 payments availability third. So while Financial Institutions see blockchain and crypto as a path to growth in payments, more in the Enterprise are looking for faster payments all year round. This suggests that even as Financial Institutions leverage blockchain and crypto to drive their growth, they should foreground the speed and availability that the technology provides when messaging to their customers.

Enterprises say that the most important reason to hold crypto is for use in making payments.

FIGURE 15

● FI ● Enterprise

### Key Benefits of Using Blockchain and Crypto for Payments



What do you see as the key benefits of using blockchain and cryptocurrency for payments? (Note Financial Institution and Enterprise respondents were given slightly different lists of options).



We were particularly surprised to see that the “no pre-funding required” benefit tested lower than the others for both Financial Institutions and for Enterprises. This surprised us because in our daily conversations with banks, payments providers, fintechs, and others, we hear quite consistently that prefunding is a major pain point that drives up costs, reduces working capital, slows investment and expansion, and complicates accounting. It’s possible that compared to the many other powerful benefits provided by blockchain for payments, the prefunding benefit just is not perceived to be as important. Based on our experience we believe it is more likely that many Financial Institutions have just come to accept prefunding as a way of doing business, and therefore don’t really stop to calculate the full costs of prefunding. Innovators in the space have however done the calculation, and are turning to solutions like On Demand Liquidity from Ripple to reduce their need for prefunded accounts.

## Consumers and Payments

Payments is clearly a prominent potential use case for consumers and crypto. This is supported by key consumer trends including the growth of globalized e-commerce, and the (pre-COVID) growth in global remittances, which has slowed slightly due to COVID, but not as much as many anticipated.<sup>32</sup> Now nearly one third of respondents in our survey say they would consider using crypto to make a domestic or international purchase, and one quarter say they would consider using it to send money to a domestic or international friend or family member.

As is the case throughout the survey responses, LATAM, MEA and APAC respondents were more positive about the use of blockchain and its various token types than their peers in North America and Europe.

When it comes to the benefits of using crypto for payments, the consumers we surveyed see greater importance in the foundational trust and safety attributes, followed quickly by ease of payment and speed of payment. Like the Financial Institutions and Enterprises, consumers see less importance in the value of crypto to lower costs, ranking “lower transactional fees” near the bottom of benefits that would motivate them to use cryptocurrency for payments (perhaps because domestic payments are free or low cost and most payments are domestic as opposed to cross-border).

However, there’s reason to believe that among emerging markets that face currency devaluation, cryptocurrencies are highly valued for their ability to make remittance payments and business transactions more affordable.<sup>33</sup> Therefore, we believe that as crypto usage grows so will its reputation as a payments cost saver.

of global consumers would consider using crypto for purchases

of global consumers would consider using crypto to send money to friends or family



These rankings were fairly consistent across regions, though with some subtle regional differences. LATAM was significantly more interested in trust and safety, and in increased purchasing power, and less interested in speed than the others. Europe again generally expressed lower interest than the other regions, but showed generally consistent levels of interest across the benefits, with the exception being more interest in trust and safety.

Crypto Payments as Retail Differentiator

As retailers work to stand out from the competition, it is becoming increasingly clear that they should consider acceptance of crypto as a payment method. Innovators such as Microsoft, Subway, Red Cross, BMW, Expedia, PayPal, Twitch and more have been accepting crypto as payment. And according to one study, up to 40% of customers paying with crypto are new to the merchant, suggesting that crypto acceptance is a desirable value proposition that attracts new customers. The same study reports that accepting crypto as payments drove an average ROI of 327% (among merchants leveraging a particular crypto wallet), while creating an exclusive experience for their consumer (such as limited edition items that could only be purchased with crypto).<sup>34</sup>

In our study, more than half of consumers surveyed said they are more likely to transact with a goods or services provider who accepts crypto as payment. Again LATAM, MEA and APAC lead the way here, but in North America and Europe there is strong interest as well, with 49% and 41% of consumers respectively saying they are more likely to transact with companies accepting crypto.

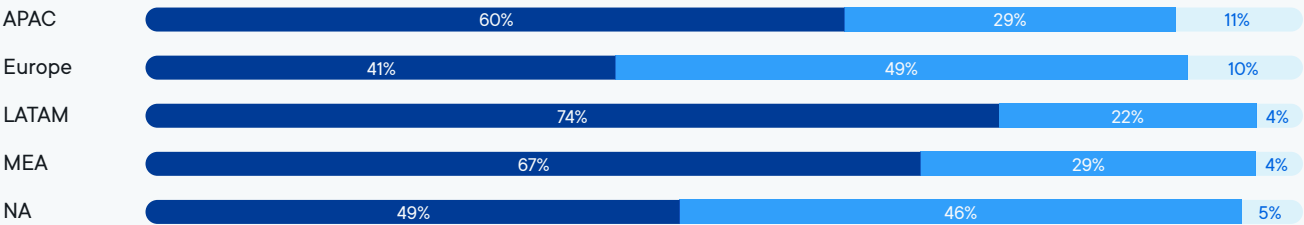
56%

of global consumers say they are more likely to transact with a merchant that accepts crypto

FIGURE 16

Likelihood of Transacting With a Business That Accepts Crypto Payments

More Likely It would have no impact Less Likely



Are you more likely to transact with a goods or services provider if they accept cryptocurrency in addition to other payment methods?

Whether it's convenience, speed, or simply a different way to pay, consumers around the world are interested in making payments with crypto.





## Close

Blockchain and the tokens it supports are driving rapid change in payments, and in the process, are helping fuel key trends around payment speed, transparency, inclusion, and more. We are seeing the businesses that are using blockchain and crypto for payments derive additional benefits, including the ability to make a payment 24/7/365, the ability to make payments with reduced or eliminated pre-funding accounts (using Ripple's solution), and the ability to enter new payment corridors more quickly and more efficiently.

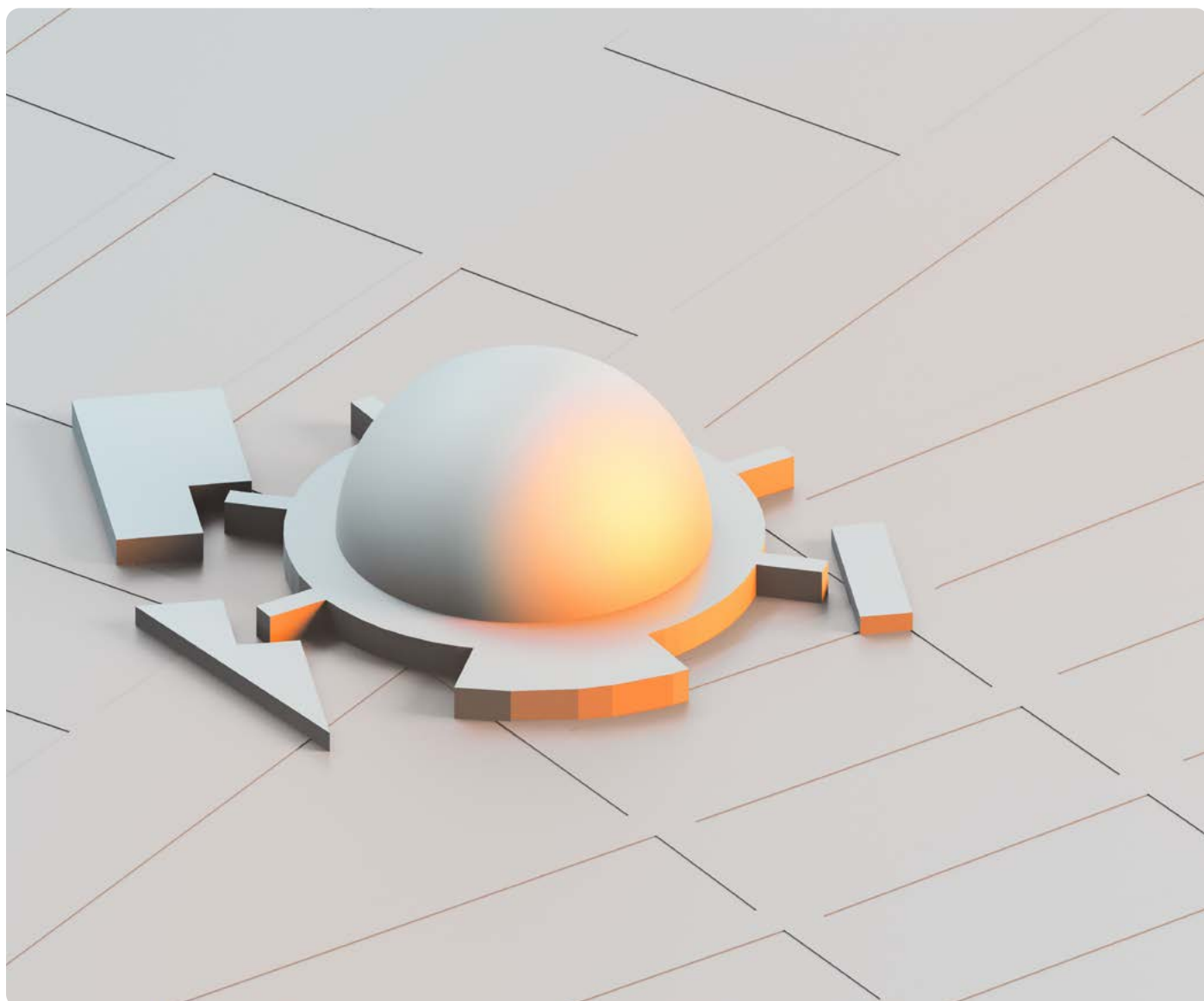
But the adoption curve is still rising, and there is still plenty of opportunity for both financial institutions and enterprises alike to leverage new payment methods to deliver a better experience, drive new revenue streams, and lower operational complexity and cost. For their part, consumers are signaling a readiness to use crypto (among other token types) for payments. And so, as more consumers hold crypto, and as more crypto payment use cases emerge (e.g. around making NFT purchases in the metaverse), and finally as more companies make it easier to pay with crypto, we believe the industry will see expanding and accelerating adoption of crypto for payments of all kinds through 2022 and beyond. Assuming, that is, global regulators understand the real and powerful benefits that blockchain and crypto deliver in the realm of payments, and provide clear guidance that enables innovation while supporting efforts to prevent abuses.



## 04 — SECTION

# Compliance

In the context of Financial Institutions and Enterprises, compliance is a key issue when considering technology that supports the management and movement of value. So the perspective of these stakeholders on topics such as compliance needs, the value of blockchain for compliance, barriers to adoption and more is an important one that impacts solution design and adoption.





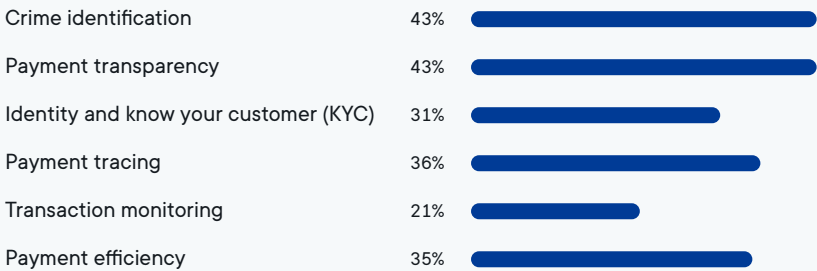
25%

of Compliance Leaders surveyed believe that blockchain will offer better solutions compared to traditional methods for Identity/ Know Your Customer, and for Payment Efficiency, in the next three years.

Our study indicates that, from the perspective of the Compliance Leader within Financial Institutions, there is a lot of promise in blockchain for compliance. In fact, Compliance Leaders believe that blockchain is best suited to solve the most important compliance issues.

FIGURE 17

### Compliance and Blockchain



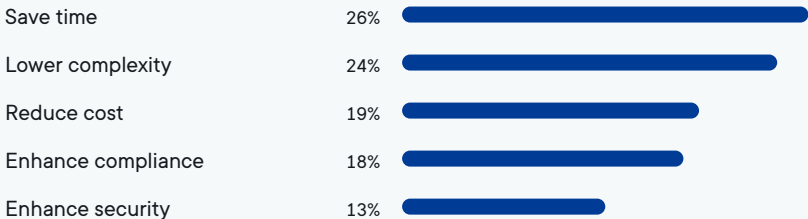
What compliance issues do you believe blockchain is best suited to solve?

Could blockchain even improve compliance? 25% of Compliance Leaders surveyed believe that blockchain will offer better solutions compared to traditional methods for performing Know Your Customer (“KYC”) processes (e.g. customer identification and verification), and for payment efficiency, in the next three years. This perception is supported by expert analysis, finding that blockchain can, for example, safeguard personal data, curb fraud and identity theft, and enhance data sharing trust between individuals and institutions.<sup>35</sup>

In what sense will blockchain improve compliance? It seems the answer is not stricter or more accurate compliance, but rather more efficient compliance. When forced to select a single benefit, Compliance Leaders tend to select performance benefits:

FIGURE 18

### Benefits Blockchain Can Provide for Compliance



What benefits do you believe blockchain can provide for compliance?



This benefits ranking corresponds well with the belief cited above that blockchain will provide better solutions for compliant payments efficiency in the coming few years.

## Barriers to Adoption

So why not — from the perspective of the compliance professional — adopt blockchain? The most frequently cited answer, at 29% of respondents, was a lack of understanding. And yet, it seems, though their knowledge isn't deep, their perception is overall positive: the least frequently cited answer was that blockchain is “not good for compliance needs” as selected by a mere 7% of respondents.<sup>36</sup>

There are also specific hurdles to achieving compliance when using blockchain. 39% of these same compliance leaders list “insufficient technical tools” as the greatest barrier to achieving compliance, but the next three highest ranked options were all related to regulations, including “patchwork of regulations” selected by 26% and “complex regulations” or “unclear regulations” each selected by 16%. However, among many in the industry, there is optimism that 2022 will bring regulatory clarity from global financial centers that will in turn accelerate adoption and impact.

## Compliance and Crypto

When it comes to crypto specifically, Compliance Leaders are most concerned about “Identity and Know Your Customer” (43%), “payment transparency” (41%), and payment efficiency (39%). Given our work with payments providers around the world leveraging crypto to send real-time payments while supporting their compliance efforts, including in particular those around Anti-Money Laundering/ KYC and sanctions, we believe crypto adoption in the institution might be slowed by misconceptions related to crypto and compliance. Because the data related to crypto transactions is stored on public blockchains allowing for traceability, compliance-enabled crypto services can actually streamline and improve regulatory processes for Financial Institutions and regulators alike.<sup>37</sup>









# Conclusion

2021 was a very difficult year in many respects and for many people around the world. But it was a productive year for the use of blockchain and blockchain driven tokens (“digital assets”) across Financial Institutions, Enterprises, governments, and consumers. What we at Ripple have conceptualized for nearly a decade as the Internet of Value — aspects of which are now termed Web 3.0 and the metaverse — is being realized in some ways which we predicted, and in many ways which we did not. This emergent quality of innovation and its impacts is true for all technology, but perhaps even more true for technology that is at its core decentralized.

Though so much is happening so quickly, it is still early days. In tokenization, NFTs just took off, but only a tiny fraction of their potential has been realized for consumers. And while many governments are researching or testing CBDCs, only a few have actually launched them. In management, Financial Institutions and Enterprises both have heard of new approaches to maximizing the agility and performance of the value they own. But very, very few have leveraged DeFi or the tokenization of illiquid assets, for example, to drive new business advantages. More, however, have discovered the benefits of leveraging crypto in various ways, from hedging, to payments and beyond, and that trend is expanding rapidly. Finally, the increased digitization of finance has been in part fueled by, and has helped fuel, the use of blockchain and its tokens for payments. Instant, 24/7/365, transparent and compliant payments both within countries and across borders are being driven by the use of blockchain, and, as through our solution RippleNet, are doing so without the need to lock up precious working capital in hard to manage pre-funding accounts.

The true value in these new solutions and scenarios has become increasingly clear in the last year, and the fast movers are taking advantage to achieve real and measurable impact on processes and industries that everyone recognizes have not kept pace with innovation in other arenas. We believe, as do many of the respondents to our survey globally, that the impact of blockchain and its tokens will be massive in the coming years, though easier paths to using the technologies, and expanded integration with compliance needs, are still needed. Having said that, now that enterprise solutions have matured and have been proven around the world, and regulators have clarified — in many jurisdictions at any rate — the relevant guidance, we believe the competitive advantage that these new technologies deliver will drive accelerating adoption, and accelerating growth for those who adopt. And while we know some of the ways that blockchain and crypto will be used, it will be just as fascinating to see the creative approaches that developers, communities, and entrepreneurs launch turn into the trends that we can discuss in next year’s report.



## Endnotes

1. Ripple 2021 Internet of Value Business Survey fielded in the fall of 2021. Online survey among 1688 participants from North America, Europe & Middle East, South America, and Asia Pacific representing two segments: leaders within financial institutions and financial technology companies (N=844), and leaders within businesses outside of financial services that make cross-border payments (N=844).
  2. Ripple 2021 Internet of Value Individual Survey fielded in the fall of 2021. Online survey among 800+ total respondents across North America, Europe & Middle East, South America, and Asia Pacific. Respondents were adults aged 18+ with a mix of crypto and/or NFT experience, some having already adopted, some being curious, and some being currently uninterested.
  3. Ripple 2021 Blockchain Developer Study fielded during summer 2021. Online survey among 700+ total respondents across the US, Germany, China, Brazil, UK, Japan, Singapore, India and Australia. Respondents were all developers with a mix of blockchain experience, including those who have actively explored or used blockchain technology, and those open to using blockchain technology in the future.
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  15. Alenka Grealish. "Mapping the Crypto Galaxy Part 2: Trends in Cryptocurrencies, Stablecoins/CBDCs, and DeFi". Celent. September 2021. <https://www.celent.com/insights/104909621>
  16. Ripple 2021 Internet of Value Business Survey. In response to the question: "Do you expect your country's central bank to issue a digital form of the national currency - generally referred to as a Central Bank Digital Currency: in the next two years, in the next three to four years, in the next five plus years, I don't know?" 85% selected either in the next two years or in the next three to four years.
  17. Ripple 2021 Internet of Value Business Survey. While in North America and Europe 26% and 30% respectively anticipate CBDCs will have a massive impact on finance, those numbers are 44% in LATAM and 42% in APAC. When asked specifically about the impact of CBDCs on society, 26% of respondents in MEA believe the impact will be massive, whereas 43% in LATAM and 41% in APAC see a massive impact on society.
  18. Ripple 2021 Internet of Value Business Survey. 44% of Capital Markets Leaders and 47% of payments leaders see the impact of CBDCs as massive in the next five years, compared to only 13% of Compliance Leaders and 28% of Innovation/Blockchain Leaders.
  19. Ripple 2021 Internet of Value Business Survey. Note: The importance of efficiency (and its related attributes such as speed, cost, transparency) was also underlined in a 2020 PwC study exploring the impact of blockchain technology on the global economy. <https://image.uk.info.pwc.com/lib/fe31117075640475701c74/m/2/434c46d2-a889-4fed-a030-c52964c71a64.pdf>
  20. Ripple 2021 Internet of Value Business Survey.
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  28. Garratt Hasenstab. "The Transformation Of An Industry: Blockchain-Based Real Estate Assets" April 2020. <https://bit.ly/3mWqVhk>
  29. Team Ripple. "Crypto 2022: The New Normal in Finance" January 2022. <https://ripple.com/insights/crypto-2022-the-new-normal-in-finance>
  30. Deloitte's 2021 Global Blockchain Survey. "A new age of digital assets" 2021, pg. 5. <https://bit.ly/32XzFge>
  31. Ripple 2021 Internet of Value Business Survey. Responses to the question "How interested is your organization in using blockchain as a ledger supporting messaging and clearing for: intra-bank/intra-branch transfers, inter-bank payments, customer payments?"
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