

► TBR EVENT PERSPECTIVE



EY MAINTAINS TRACK RECORD OF ACCURATELY FORECASTING AND THEN DELIVERING ON THE FUTURE OF BLOCKCHAIN

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▮ PAUL BRODY REITERATES PAST PREDICTIONS AND PAINTS THE PICTURE OF WHAT HE SEES ON THE HORIZON

It is difficult not to come away from a Paul Brody dissertation on blockchain more excited and optimistic about the transformative power of the technology than when you went in. Compounding the difficulty with taking a contrarian view of Brody's assertions is the simple fact that he has been right in his predictions from prior years much more often than he has been wrong. The EY partnership seemingly shares this view based on Brody announcing the firm had committed to investing \$100 million into his operation to facilitate making his vision a reality.

Highlights from his highly engaging 45-minute opening discussion at EY Global Blockchain Summit 2021:

- EY made the right bet on public blockchains, which explains why those who embraced private chains earlier on had more highly publicized use cases and why those use cases have seemingly led to the trough of disillusionment.
- Ecosystem business models are the future. Hub-and-spoke market actions to accelerate adoption do anything but that.
- Disruption is coming to finance and regulation, and it is coming hard.
- Programmable money, with Ethereum as the clearing mechanism, will enable the merging of supply chain blockchains with financial transaction chains.

EY GLOBAL BLOCKCHAIN SUMMIT 2021

Virtual; May 18-21, 2021

TBR has watched the EY Blockchain events blossom in five years from a small coterie of the curious to an army of the passionate. This year's event had the usual fascinating presentation by EY Blockchain Leader Paul Brody on the current and future state of blockchain's market maturity that was then reinforced with detailed, technically nuanced breakout sessions that were repurposing of the internal EY Blockchain education modules.



- Privacy remains a hot-button issue, particularly among the extreme advocates who are not necessarily considering the enterprise requirement for on-chain, permissioned information sharing.
- Progress will be made; cost optimizing innovations simply cannot be thwarted; they have to be embraced, and blockchain strips cost out of numerous elements of legacy commercial activities across the three pillars of consumers, businesses and governments.

➤ EY'S FUTURE-BACK APPROACH TO INNOVATION ALIGNS BETTER TO TECHNOLOGY ADOPTION THAN EXECUTING AGAINST THE INCREASINGLY ANACHRONISTIC ENTERPRISE-FIRST MENTALITY

Recent TBR research focusing on blockchain-based supply chain applications indicates blockchain in this context is in the middle of a trough of disillusionment. Brody outlined this idea by way of explaining what EY chose not to do in the past several years. The enterprise-first mentality was a legacy industry success factor when the cost of compute was the limiting factor on digitizing business activity. Continued commoditization and software abstraction increasingly tilts business purchase criteria from infrastructure to productivity gains that software adoption can bring.

Going for large enterprise operating cost improvements led early large-scale initiatives to bet on private chains such as Hyperledger. It followed, in many respects, the Electronic Document Interchange (EDI) playbook of the 1980s and 1990s, called hub-and-spoke, which netted out that the hub could set the standards and the spokes would have no recourse but to follow suit.

EY cited market survey data it believes indicates that private chain had 0.5 participants excluding the founding entity. Additional survey questions stated that 63% of respondents had concern about getting locked into private chains, while 54% believed their existing supplier and service networks were not sufficiently competitive.

Compare and contrast the rollout and now quiet periods for consortiums such as the IBM-Maersk joint venture called TradeLens that took on the monolithic set of interconnected processes that is global trade, and the EY and Microsoft Joint Venture around Royalty Payments that started small, hardened the technology layer, and now provides tangible reference points as they seek to apply this royalty payment shell to multiple use cases. EY states this tracking system for developer royalty payments for games sold through multiple channels has reduced administration costs by 40% and provided a 99% improvement in traceability, from 45 days to less than four minutes, which has enhanced overall community satisfaction.

By addressing gaming royalties, Microsoft applied emerging technology to the gaming software and services revenue segment, which TBR estimates was \$2.9 billion — or 6.8% — of the \$42.7 billion of revenue reported in 1Q21, ending March. Royalty payments against 6.8% of revenue is a far lower overall risk to the business than aggressively taking on the entire flow of goods for a global shipping company. Rather than disillusionment, EY and Microsoft have a proven adjacent use case to take this hardened technology and seek to extend it upward into royalty applications for media and entertainment as well as for oil and gas extraction.

*“Underneath the business value of blockchain, however, is a rather significant bet to be placed on either deploying public (Ethereum) or private (Hyperledger) blockchains. At the core of this debate rests two issues: the speed of innovation, and the level of security and trust that can be ensured. **Innovation, EY argues, happens faster on public networks even if that innovation ameliorates what bad actors inject into the network. In theory at least, even bad actors have a role to play in accelerating innovation by essentially forcing the issues and speeding the time to resolution.**” — **EY blockchain strategy: Betting on public chains with EY advisory for risk mitigation, April 2018***



Beyond the increasing validation of the EY bet on public chains over private chains, EY has also averted the emerging truth around digital transformation engagements that indicates the technology is virtually irrelevant, and the people and process changes are critical. Starting small with a team tracking developer royalties that can then illustrate 40% cost reduction and 99% improvement in time to insight trumps efforts that must entice multiple parties into a private blockchain network and execute chain management evangelism across multiple public and private entities, lest the whole initiative become mired due to an inability to gain sufficient consensus.

➤ DEFI IS ON THE VERGE OF DISRUPTING BUSINESS, INVESTORS AND GOVERNMENTS

Decentralized finance (DeFi) will have as far reaching an impact on all elements of society as has the internet since its commercialization ignited and took off in the 1990s. What needs to happen for DeFi to ignite on par with the internet is trust: trust in the privacy, trust in the accuracy, trust in the stable value of the assets converted to digital coins. In short, this is where the EY event pivoted from tracking the trajectory of past predictions to looking forward to make educated forecasts on what needs to happen for the promise of DeFi to become a reality (a topic point of TBR's Fall 2021 *Digital Transformation: Blockchain Market Landscape*).

Essential building blocks are coming into place in the form of:

- Trusting the technology, specifically as it relates to security, compliance and financial reporting accuracy. Here the biggest issue being worked through is the permissioned sharing of information necessary for transactions to occur that are shared on a need-to-know basis and are likewise able to be adjusted as needed to comply with evolving public policy in general and tax policy specifically.
- Fiat coins (central bank digital currency, or CBDC) and stablecoins will compete against one another for use within enterprises opting for blockchain commerce. Current cryptocurrency speculative instability exceeds the risk appetite for large enterprises seeking a line of sight into the capital cost structures for long-term deals. One need look no further than the 90-day discussions of foreign exchange on financial results to understand why dramatic swings in cryptocurrency values will give risk-averse enterprises pause.

*“... the now, next and beyond bets EY places on public chains as the preferred methodology for implementing blockchain networks. It represents the core of the EY OpsChain integration layer that EY believes sits between the historical general ledger accounting systems and protocols and **the emerging multibusiness networks that distributed ledger technology enables**. In partnering with Microsoft, EY has an established company with the technological competencies to translate the domain expertise at the core of EY’s company DNA as an audit and tax partner into the increasingly automated and ubiquitous compute backbone at the core of social and business interactions.” — **In its third annual blockchain summit, EY calls this ‘Year 0’ for blockchain, May 2019***

EY blockchain experts have a line of sight on the trust aspects and are hard at work on TaxGrid, a service that sits at the virtual intersection of business and the public sector in much the same way that tax and audit services have sat at the physical intersection of those domains for centuries.

An interesting segment of the DeFi presentations and discussions revolved around ways to value startup entities in the DeFi space. During the closing keynote, David Trainer, CEO of New Constructs, which provides “machine learning and AI for trustworthy research,” ran through a series of valuation techniques that individuals may use to value startups in the DeFi space. The net point of his keynote was to likewise present the argument that the disruption DeFi entities will unleash on the existing trust institution industry will not be a one-for-one exchange in asset value from centralized trust institutions to decentralized trust institutions. In this digital conversion of labor-based trust practices there will be a value



shift to individuals and, as such, the compression of the participant entities valuations befitting the adage “analog dollars to digital pennies” that has wreaked havoc with legacy enterprises across media, entertainment and news. One need look no further than the asset valuations of traditional brick-and-mortar newspapers over the past 30 years to comprehend the threat DeFi poses to legacy financial institutions.

Digitizing and distributing trust strips labor from the establishment of trust by third parties. It should therefore reduce the fees paid by entities to secure trust which, in turn, would decrease the revenue associated with establishing trust. And this is where the legacy credentials of the Big Four have profound value for establishing trust in the blockchain-based economy. These entities have permission to play in establishing trust; they have audited trust and compliance for centuries. They have the human talent with the domain knowledge, and they have, for at least the past two decades, been building out the technical talent to automate and curate that domain knowledge into automated workflows. EY discusses these automated workflows as ontologies, which sit atop the various sets of chain data flowing through an enterprise that are in need of curation. This is not to say other global systems integrators (GSIs) lack expertise in this space, but it does indicate to TBR that most GSIs would be well served to partner with the Big Four in general, and with EY specifically, for the creation, monitoring and adjustment (as public policies or the rules change).

▷ CRYPTOCURRENCY HAS TO STABILIZE TO THE POINT WHERE BUYERS AND SELLERS CAN TRUST THAT A ‘BUCK IS A BUCK’

It is all well and good to create decentralized financial products to compete against legacy alternatives, but until investors can trust that a “buck is a buck” or a “coin is a coin,” the only ones really interested in the digital currency will be speculators siphoning wealth creation from the early innovations in much the same way as we have seen railroad barons and, more recently, the FAANGs and the unicorns to whom they have given cover. Just as we experienced the dot-com bubble in the late 1990s, individual investors run the risk of being hurt by the current speculative bubble.

The potential to disrupt and harm the current geopolitical way of working for nations is likewise threatened. The U.S. government has been somewhat late to the party on establishing a fiat currency and the necessary policy innovations to mitigate against these emerging moral hazards, but is signaling engagement and increased attention. The European Union, sensitive to how the technology hubs consolidated into the U.S. and Asia, works intently as a form of community strategic interest to ensure it can create its own nerve centers that can stand the test of time better than its prior efforts in the technology space. Malta appears to be taking aim at Switzerland to become the new global finance hub.

*“EY’s Asia-Pacific Blockchain Summit started with the firm’s Global Blockchain leader, Paul Brody, making three clear points. First, EY is committed to China and to the region, seeing huge potential for blockchain growth. Second, EY is committed to public blockchain as the long-term solution for most business and governments. Third, Brody’s concept of blockchain as the bridge between enterprises — as the tool to tackle the previously uncrossable chasm between different enterprises’ data and business processes — remains a driving force behind how EY sees the future of blockchain, in Asia and the rest of the world.” — **EY Blockchain Asia: The revolution starts now, February 2021***

But more ominously looms China. It is widely expected that China will roll out its digital currency for the upcoming Summer Olympics. This deployment would provide useful intelligence on a global scale based on having the global cultures and personas in one containable proof-of-concept test, followed by the ability to see how the infection of this new technology cascades throughout the world when the Summer Olympics close. The potential impacts of China taking the lead on digital currency are vast, with many of the negative impacts aimed squarely at the U.S. and the U.S. dollar’s



standing in the world as the de facto trading currency. Similarly, that standing — or the loss of same — has far-reaching implications to U.S. foreign policy tactics, especially when seeking sanctions on nations deemed hostile to the strategic interests of the country and its allies.

▶ **WHEN IT COMES TO PRIVACY, CORPORATIONS ARE NOT AS CONCERNED AS PEOPLE**

Barry Whitehat, an advisor to EY on the issue of chain privacy, offered detailed explanations during the summit for the various ways that blockchain transactions can unmask privacy. These unmaskings came from the basic brute force methods of breaches as well as from anticipated analytics inferences entities can make if too much information is shared on-chain. EY and many others are working on the various technological provisions, most of which hinge on off-chain data and Zero Knowledge Proofs (ZKPs) to protect against data breaches.

There is also one fundamental premise that Brody successfully drove home in the follow-up Q&A. Corporations, by definition, have to share specific pieces of transaction information on-chain to conduct commerce. Sharing of that data is vital to decentralized commerce, which is at the heart of the multienterprise business network that essentially all chains, public or private, represent.

Without Brody's follow-ups, TBR would have been left questioning how blockchain would be able to take hold as a decentralized economic transaction engine. There are clearly stark differences between the more libertarian advocates for separating wealth from national provenance and the economic business actors seeking to find ways to strip nonvalue-added labor from their business process workflows to gain competitive cost advantages, improve customer experiences, develop new products and services, and stay in regulatory compliance even as the regulations evolve.

To this end, EY donated what it calls Nightfall to the Ethereum community. Nightfall consists of experimental research EY has created to formalize a set of standard protocols for private transactions on Ethereum based on ZK-SNARKs. These protocols are directly compatible with the fungible and nonfungible token protocols ERC-20 and ERC-21, respectively. The impetus behind Nightfall is to establish a trusted, secure and private methodology for putting smart contract data on the network from which supply chain transactions can be monitored to trigger the release of funds. This is the next big hurdle to overcome on the way to programmable money.

▶ **PROGRAMMABLE MONEY: MERGING SUPPLY CHAIN AND FINANCE CHAINS TO CREATE A TRUE DIGITAL TWIN OF LEGACY BUSINESS INTERACTIONS BETWEEN BUYERS AND SELLERS**

Programmable money is not here — yet. Brody sees it looming on the 2023 horizon, and from a layperson's perspective it will be the true beginning of the digital economy and all the disruption that entails. At the heart of digital disruption also sits the differences between fungible tokens and nonfungible tokens, or NFTs.

Fungible tokens can quickly be exchanged. They are commodity units of value much in the same way as paper and metal currencies. Nonfungible tokens can take on many different characteristics as unique stores of value. This implies the storing of discrete information on-chain through the use of the NFT. As such, NFT use cases can include:

- Smart contract terms and conditions that, when met, can automatically trigger the transferring of the funds between parties without the need for human intervention: In this case, it is not necessarily the NFT that is exchanged, but rather the NFT is the programmable aspect of the digital trust network both parties agree can be the gatekeeper for the flow of fungible digital currency tokens.



- Assignment of specific assets moving from one entity on the chain to another: In this way an NFT of a home and all the elements of the immutable record of that home can be transferred from one party to another, with ownership then being added to the NFT chain data. For anyone who has ever gone to a real estate closing and then addressed all the change of address forms for utility companies, registrars of deeds, assessors, among others, this use case strips untold amounts of established trust institution labor and expense from transaction flows.
- Creation of unique value to the digital identity represented by the NFT: Here is where the tracking of royalty payments to an individual as specified in a smart contract can be tracked and traced. This is the early use case that EY collaborated on with Microsoft, which was developed specifically around gaming. That technological programming layer can now be applied in myriad adjacent use cases.

The tethering of fungible tokens with nonfungible tokens, then, essentially fuses the chain layers of supply chain smart contract tracking and tracing to the financial transactions releasing funds between parties as milestones are met. It is technology convergence stripping yet more labor from the digital economy while likewise creating additional experiences/business value through additional loyalty rewards programs and designations being stored in the NFT marking an entity's on-chain participations.

▮ WHERE DO WE GO FROM HERE?

Blockchain will not be stopped. It is not a fad. It is as profound a shift in commercial engagement and record keeping as the invention of the general ledger was in the late 1400s in Italy that revolutionized the way we conduct and track business commerce.

That economic transformation took several hundred years to move around the globe and inject itself into near ubiquitous applicability. Blockchain has been in existence for several decades, but it certainly will not take centuries to go viral around the globe.

What continues to hold blockchain back from an enterprise perspective is value instability of the trading mechanism. Enterprises, unlike some of the more libertarian citizens among us as well as malicious actors, value sovereign policies and rules of engagement to foster stable working relationships. Blockchain can establish these decentralized trust networks such that individuals and businesses can select the network or collections of networks they choose to trust with or without sovereign participation.

Businesses will be more inclined to adopt blockchain if it includes networks with sovereign participation and backing. This therefore creates a compelling national security interest for all nations to determine how to translate their full faith and credit in paper currency into digital currency. And this transition will have profound disruptive implications to the trust institutions that have been deeply entrenched in our commercial flows since the first general ledgers were being established back when Italy was a commercial trading powerhouse.

*“EY estimates 90% of government spending happens outside of government’s direct control, resulting in compromised decision making, nonintegrated financial and nonfinancial data, and a lack of transparency. With a blockchain-enhanced Public Finance Manager solution, EY can address these issues while supporting core government functions such as transfer payments, regulation and taxation. Reinforcing the overall theme that blockchain has moved from talking about scenarios to detailing use cases, EY then walked through pilot programs underway, including with the city of Toronto.” — **With use cases built on public chains in production, attention turns to public and private sector interaction, June 2020***



There will be a rebalance of geopolitical power in the aftermath of this great transformation several decades from now. There will be winners and losers and failures in the government remit to mitigate the moral hazards of economic activity on their citizenry. These failures will not necessarily be unleashed by governments due to malice, but rather due to being slow to react to embrace the digital economy, most likely driven by a sclerotic bureaucracy and a lack of political will to acknowledge the current position of power governments hold in the old is going to vanish lest they embrace the new. Messaging uncertainty to voters has never been a winning proposition.

Blockchain adoption is far less about technology than it is about people and processes across the public and private sectors. The public sector has to establish new rules and new currency mediums. The private sector has to embrace new business practices, and the current private sector rules are neither aimed at blockchain and cryptocurrency practices nor provide sufficient risk mitigation for large enterprises to embrace. Private trust institutions have to become leaner and embrace new methods of securing and attesting to the accuracy and legality of economic activity as well or they will go the way of other legacy institutions in the newspaper, media and entertainment industries.

EY and its peers have long sat at this intersection as the referee auditing the rules of engagement between the public and private sector. EY has keen insight into legacy business workflows, as it has been fast at work automating ontologies that will ultimately sit atop chain data, and the firm has a detailed understanding of the policy impacts to those workflows.

Technology itself will increasingly become irrelevant as Moore's Law Economics marches on and makes the provisioning of compute a derived decision from the desire to automate the business outcome. Abstraction layer upon abstraction layer will be built for the seamless deployment of applications wherever and whenever they are needed. API connections to decentralized chains — something Microsoft is fast at work creating to the major application workloads now entrenched in business — will allow for more labor-free, frictionless commerce.

But trust, along with translating government intentions to trackable compliance checks, will remain the last bastion of business value in an otherwise commoditized state of the technology industry as we will come to know it as more legacy players fall victim to creative destruction and Moore's Law Economics. EY, and more specifically, Brody, has a more clear a line of sight on how public blockchain networks will evolve on par with the way the public internet evolved than anyone in the technology industry today. It would be foolish to bet against them and wise to partner with them.

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