



**BLACKCHAIN**  
CONSULTING

# 2019

# BLOCKCHAIN AND THE FIVE VECTORS OF PROGRESS

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BRING YOUR  
NEW IDEA INTO  
THE WORLD OF  
BLOCKCHAIN

**Giovanni Casagrande,**  
The Co - Founder

“Passion is the key essential force that drives our success. It determines everything that we think”

# OVERVIEW

*FOR MOST COMPANIES, THE VALUE OF BLOCKCHAIN IS STILL MORE POTENTIAL THAN ACTUAL*



BLOCKCHAIN IS HELPING LEADERS ACROSS INDUSTRIES TO STREAMLINE BUSINESS PROCESSES, POTENTIALLY RESHAPE BUSINESS STRUCTURES AND ENABLE NEW BUSINESS MODEL. HOWEVER, MOST ENTERPRISES ARE STILL NOT BEING ABLE TO LEVERAGE THIS TECHNOLOGY DUE TO SOME OBSTACLES COMING THEIR WAY, LEADING TO THE COMMERCIAL ADOPTION LIMITED. IN THIS DOCUMENT, WE WILL DISCUSS SOMEHOW CAN PROGRESS IN SOME VECTORS MAY TOPPLE EXISTING BARRIERS TO ADOPTION.



Some **developments** over the past years :

- 1** Active blockchain consortia across industries has rapidly increased from 28 in 2017 to more than 60.
- 2** Eight US states have already passed laws pertaining to blockchain and state legislatures have taken action on dozens of blockchain-related bills so far this year
- 3** The Enterprise Ethereum blockchain consortium unveiled an open-source, cross-platform, standards-based framework.
- 4** IBM researchers tested an application running on the Hyperledger Fabric blockchain platform that achieved a throughput of 3,500 transactions per second with sub-second latency
- 5** Major technology vendors—including five of the world's biggest cloud companies—have introduced blockchain-as-a-service

# BARRIERS

## MULTIPLE BARRIERS TO THE ADOPTION OF BLOCKCHAIN TECHNOLOGY



### FACT

In 2018, analysts predicted enterprise spending on blockchain to double year over year.

Source : <https://www.computerworld.com/article/3251505/spending-on-blockchain-networks-to-double-this-year-to-21b.html>

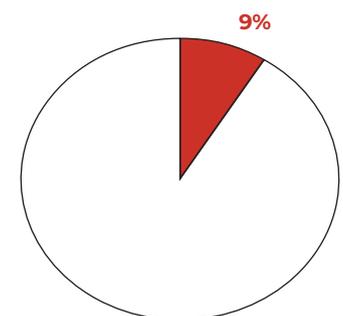
Analysts across industries believe that blockchain will have a wide impact on businesses one day. Cutting costs, improving efficiency and effectiveness and increasing revenue through different products, services and offerings are just some benefits of blockchain that the businesses will potentially witness. These beneficiary characteristics of blockchain have led many companies to invest time and resources to explore & research blockchain through their own pilot projects. In fact in 2018, analysts predicted enterprise spending on blockchain to double year over year.

There are some issues that are still unresolved leading to decrease the pace of adoption. For example, in a recent survey, the number of CIOs agreeing that their organization has either implemented blockchain-related projects or plans within a year was only 9 percent.

Scaling issues to be the major problem : Transaction processing is relatively slow in blockchain-based systems. Now the enterprises whose businesses are based on high-performing legacy transaction processing systems - the blockchain's sluggish transaction speed is a major concern.

Another challenge is the lack of interoperability and standards between blockchain platforms and solutions. Unless blockchain technology can be readily connected to existing enterprise systems, it will be of little utility in large programs and initiatives.

Other concerns that are inhibiting the technology's adoption are related to legal and regulations, such as: data privacy, intellectual property, choice of jurisdiction and enforceability of contracts.



*CIOs agreeing that their organization has either implemented blockchain-related projects or plans within a year was only 9 percent.*

# PROGRESSION

## ■ TOP 5 AREAS



BY **2021**,  
SPENDING ON  
BLOCKCHAIN  
IS **EXPECTED**  
TO REACH **\$9.2**  
**BILLION**

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### Progress in five areas can help overcome barriers to adoption

Despite these obstacles being an issue to enterprise adoption of blockchain, we can say that there is good news relating to solutions that address these problems. Five key vectors of progress were identified by the top consulting firm, Deloitte. These vectors may drive wider adoption of blockchain.

These vectors include: increase in transaction speeds, standard and interoperability, and ease of implementation—enhance technical feasibility.

The other two—regulatory advancements and expansion of consortia—help broaden the technology’s applicability to a greater number of use cases and industries.

# INCREASING THROUGHPUT AND PERFORMANCE



*The bitcoin blockchain can handle only 3 - 7 transactions per second and the ethereum blockchain can handle as low as 15 transactions per second*

The bitcoin blockchain can handle only 3 - 7 transactions per second and the ethereum blockchain can handle as low as 15 transactions per second, on the other side some legacy transaction processing systems can process 10,000 transactions per second on an average. This shows that blockchain can be slow and because of its relatively poor performance, the technology is yet criticised by many observers. However, some new consensus mechanisms are being developed by developers to address this low performance issue. Consensus is how participants in a blockchain network come to agree that the transactions recorded in the digital ledger are valid. The bitcoin blockchain first introduced the consensus mechanism - enabling participants to trust the validity of the transactions even if they do not trust each other. The trustless characteristic of the blockchain comes at a cost of slow performance and massive use of computational resources due to POW mechanism.

On the other side, these newer mechanisms that are being developed promises significantly higher performance compared to older blockchain technologies as bitcoin. This higher performance characteristic is possible because of inbuilt time reduction feature and less energy-intensive mining. In these consensus the required number of nodes that must validate a transaction is comparatively lower. Each of the emerging consensus mechanisms has advantages and disadvantages that make them better or worse for certain applications. Considering the diversity of applications for blockchain, this is actually a good thing: Applications can choose the tradeoffs in performance, functionality, and security that are appropriate for the application. Prominent blockchain figures such as Hyperledger, Stellar and Ripple are using exotic mechanisms namely Practical Byzantine Fault Tolerance, Federated Byzantine Agreement, and Delegated Proof of Stake.

Another example is the Ethereum platform. It is moving toward a hybrid consensus mechanism that includes both Proof-of-Stake and Proof-of-Work - with a focus to increase trust in the network. Proof of Stake (PoS) concept states that a person can mine or validate block transactions according to how many coins he or she holds. This means that the more Ethereum owned by a miner, the more mining power he or she has. Ethereum is also implementing Sharding - a means of accelerating the consensus process by allowing nodes to work in parallel.

**OTHER CONSENSUS MECHANISMS SUCH AS PROOF OF CAPACITY, PROOF OF BURN AND PROOF OF ELAPSED TIME ARE BEING EXPLORED BY BLOCKCHAIN DESIGNERS. WITH ALL THE DEVELOPMENTS STATED ABOVE, IT CAN BE IMPLIED THAT DEVELOPMENTS OF CONSENSUS MECHANISMS ARE IMPROVING THE PERFORMANCE BLOCKCHAIN THAT MAY COME AS A GOOD NEWS FOR A WIDE VARIETY OF INDUSTRIES.**

## ENHANCING STANDARDS AND INTEROPERABILITY

IT departments may face issues when they discover that platforms can't communicate without translation help - this is due to lack of standards granting blockchain coders and developers freedom. A study conducted by Deloitte stated that GitHub - a cloud-based code repository features more than 6,500 active blockchain projects that use diverse platforms with coding languages, protocols, consensus mechanisms, and privacy measures. Enterprises can collaborate with each other on application development if strict standards are implemented in the blockchain space. Enterprises may further have the freedom to validate proofs of concept and share blockchain solutions with each other as well. The main focus is given to cross-blockchain transactions, standardization and interconnectivity by industry participants.

- ENTERPRISE ETHEREUM ALLIANCE WAS FOUNDED TO CREATE A STANDARD VERSION OF ETHEREUM BLOCKCHAIN SOFTWARE FOR BUSINESS. AS OF JULY 2018, THE ALLIANCE HAD NEARLY 600 MEMBERS.
- HYPERLEDGER FOUNDATION, AN OPEN-SOURCE COLLABORATIVE EFFORT CREATED TO ADVANCE CROSS-INDUSTRY BLOCKCHAIN TECHNOLOGIES, HAS REACHED 250 ORGANIZATIONS. ONE OF THE PROJECTS SUPPORTED BY THE FOUNDATION IS THE INTERLEDGER PROTOCOL, A MEANS OF ROUTING PAYMENTS ACROSS DIFFERENT LEDGERS THAT MAY BE BASED ON DIVERSE TECHNOLOGIES.

Decentralized Identity Foundation can be said to be as another standardization effort. It is a consortium that promotes standards for blockchain-based identity systems. Approximately 60 organizations have joined the consortium. Data standards developed by GS1 are being implemented by IBM & Microsoft. "The nice thing about standards," quipped computer scientist Andrew Tanenbaum, "is that you have so many to choose from."

## REGULATORY SUPPORT

Another major barrier to blockchain adoption is regulatory issues. A survey conducted by a notable organization had blockchain-savvy executives as respondents. The survey revealed that nearly 40% of executives cited regulatory issues as a barrier to greater investment in blockchain technology. Existing regulation does not address concept and method of DLT technology such as cryptographic signatures and smart contracts.

Example - Some organizations are looking for ways to implement blockchain technology for securely sharing patient medical records, with access to the records under patient control. But under Health Insurance Portability and Accountability Act rules, many disclosures of personal health information require that the recipient enter into a business associate agreement, a process fundamentally at odds with a blockchain model. These issues that only addressed by officials. And it has already been started as dozens of bills have been considered and passed by 17 US state legislatures, these bills are pertaining to the adoption of blockchain technology. Some areas covered in the bills are directly related to smart contracts, cryptographic signatures, blockchain for maintaining business records. In another major development to blockchain adoption, the US Congress Joint Economic Report of 2018 endorsed blockchain and calls for a common and coordinated regulatory framework that creates clarity for developers.

Also, a working group have been formed by the regulators such as the US Financial Stability Oversight Council to examine the ways in which the technology will affect their objectives.

This is another vector of progress happening on the regulatory side. This building momentum will help to increase the adoption of blockchain technology.

## REDUCING COMPLEXITY AND COST

Another set of obstacles are costs incorporated with the building and deploying blockchain solutions. Amazon, IBM, Microsoft and some 9 more technology vendors are addressing these challenges by providing cloud based blockchain technology as a service. Barriers to developing and operating blockchain networks are being lowered by cloud based offerings - newly entering into the markets. Infact, blockchain templates are released by cloud providers in order to automate the setup of basic blockchain infrastructure, several vendors have claimed that this introduction can reduce app development from months to days. To ease development, cloud providers are partnering with developers of blockchain-building tools, for example - A partnership was announced between Google and Digital Asset.

# MULTIPLYING CONSORTIA



THE VALUE OF BLOCKCHAIN NETWORK INCREASES WITH THE NUMBER OF USERS, AS THE TECHNOLOGY FACILITATES TRANSACTIONS ACROSS A NETWORK. AND THIS IS THE REASON WHY GROWTH OF BLOCKCHAIN CONSORTIA IS A BULLISH SIGN. A BLOCKCHAIN CONSORTIA IS FORMED BY A GROUP OF COMPANIES THAT COLLABORATE TO ADVANCE SHARED OBJECTIVES FOR THE TECHNOLOGY. OBJECTIVES MAY INCLUDE : DEFINING USE CASES SETTING STANDARDS, DEVELOPING INFRASTRUC- TURE AND APPLICATIONS, AND OPERATING A BLOCKCHAIN NETWORK. SOME CONSORTIA EDUCATE, CONDUCT RESEARCH, OR PROVIDE ADVICE TO THEIR MEMBERS.

Not all consortia are building applications, and not all are equally effective. But growing participation by enterprises, technology providers, regulators, and governments is a vector of progress in the development of blockchain that will help increase adoption of the technology.

R3



R3, which is building blockchain technology for the financial industry, leads a consortium whose membership has grown from 42 in 2015 to over 200 in 2018.

30



30 companies so far have joined the Riskblock consortium to collaborate on blockchain applications to lower transaction costs while increasing the speed and security of data transfers among participants in the network.

## Conclusion

These five vectors that we outlined above may help enterprises on various levels, such as less risk of regulatory scrutiny, less costs relating to building & deploying blockchain etc.

As state above, many consensus mechanisms are coming into the markets that focus on improving blockchain speed and is scalable. The companies should keep an eye in these emerging mechanisms. Interoperability between ledgers and their connectivity with existing systems in the application landscape should be kept in mind while developing blockchains. Developers should intensify their efforts to address the interoperability issue.

Collaboration can also be made between firms and lawmakers to create a solid policy framework, with leveraging policymaker's experimental facilities. An ecosystem of partners should be formed to reap the maximum benefits of this technology.

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# MEET THE TEAM



**Giacomo Arcaro**  
Co-Founder & Growth Hacker

He has 15 years' experience in growth hacking, digital strategy, startup and business development. He has advised over 150 startups and has 50 managed employees into a XII Century Church in Italy for the European biggest growth hacking company. He holds the title of 'Amazon Best Seller Author' and is been known to be one of the 'Most Influential Blockchain Evangelist' with +200 conferences all over the world.



**Giovanni Casagrande**  
Co-Founder & ICO/IEO/STO Advisor

A known name in the world of cryptocurrency. He has been in the marketing industry for well over 20 years and have switched to the cryptocurrency industry in 2014. He's a writer, public speaker, investor and Marketing / Growth Hacking advisor in more than 100 successfully projects. His specialty was Economics in the University of Bologna and the knowledge, experience gathered from there has helped him to manage/help many businesses in the industry. 4 years ago he founded Black Marketing Guru, a successfully Growth Hacking startup in Italy.



**Eloisa Marchesoni**  
Token Architect

Known as the youngest and most influential Blockchain expert in the field. She is an Italian-American who first started out as a startupper in the AI and IT business, while still finishing her Economics and Management studies in Bocconi. Eloisa is a renowned author, public speaker, and biz-dev, catering startups and companies wanting to innovate. Currently being the Chapter Director of Bocconi University Startup Grind Chapter, she made valuable connections and became a part of some of the main blockchain associations around the world, namely The Blockchain Council and The NYC Women in Blockchain. She will be featured in the Forbes Italy 30 Under 30 most influential entrepreneurs in 2020.



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