Industry 4.0: Blockchain, the backbone for new synergies

Over the next decade, breakthroughs in AI, Robotics, IOT and Blockchain are poised to create some of the most transformative and dramatic impact in our industry. Dramatic changes in some of the sectors, like the proliferation of IoT/advanced sensors, distributed sources of power, prosumers, etc., have already begun to trigger discussions around previously unimagined use cases. The art of the possible is not just limited to AI controlling supply and demand in power, robots loading and unloading commodities while checking quality, drones refueling cars on the go, with everything being recorded on the blockchain. Rather, it is the convergence of these technologies leading us to push their limits even further.

A vision of the potential future ecosystem

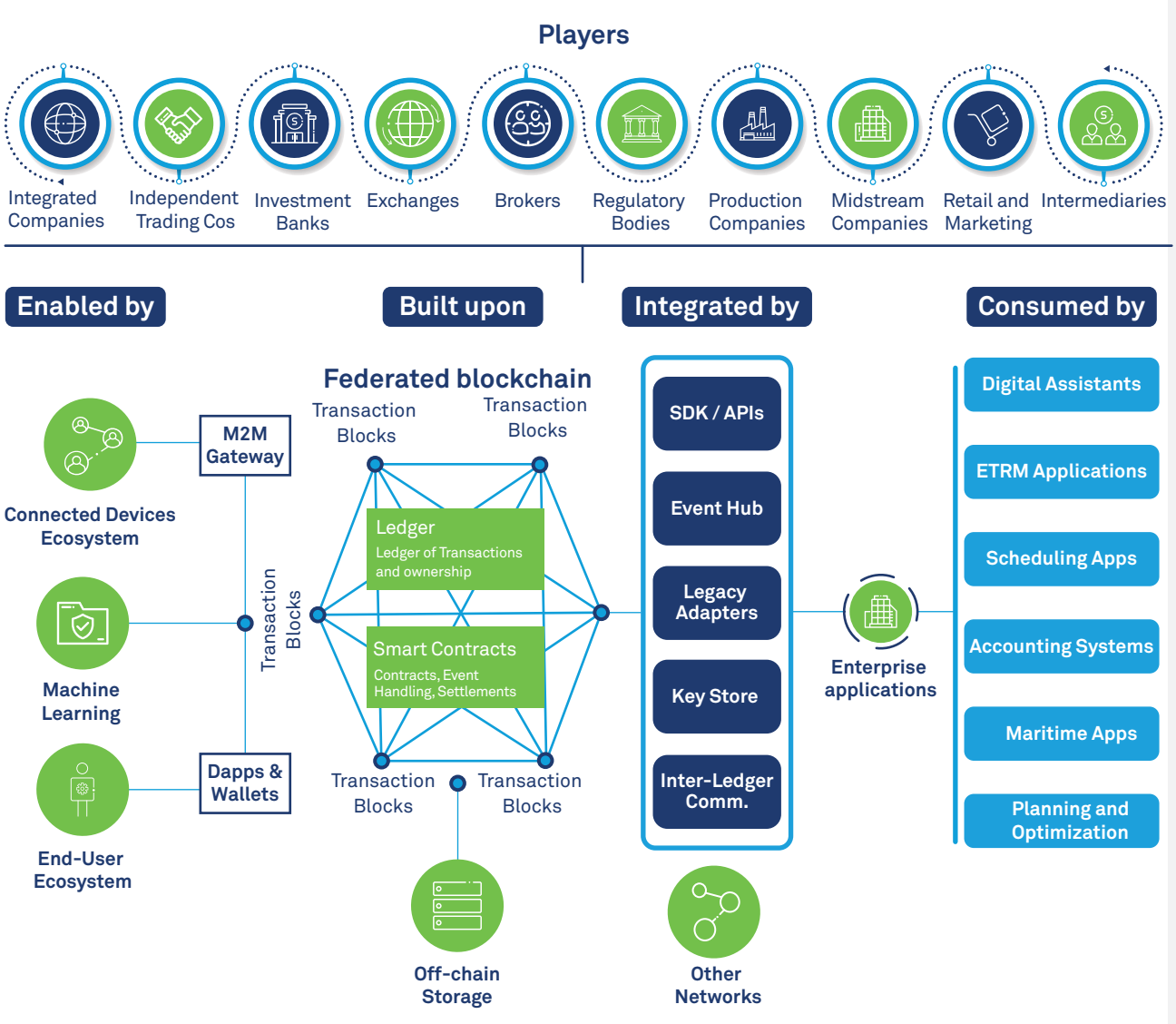

Figure 1: Energy & commodities industry transformation

These changes may not directly increase the commodity prices, but innovations in blockchain will offer more transparency and liquidity to commodity markets.

The industry is already investing to make this a reality.

There are over 40 global startups and consortia in blockchain for energy and utilities, all trying to realize the benefits of blockchain.

Commodity/Energy Trading product evolution

The early 90s was the dawn of Commodity/Energy Trading and Risk Management (C/ETRM) software solutions. Small software companies started providing client/server platforms commercially for trade capture, position management, risk reporting, scheduling and accounting.

As markets evolved, more sophisticated risk metrics (VaR, MC VaR, etc.) and credit risks, in addition to managing the particular physical characteristics of commodities from source through transport and storage till the final destination, became very important. C/ETRM products have also penetrated further into the supply chain, making process optimization, handling bulk orders, shipping and vessel management, core functionalities of the platform.

Technology advancements have impacted the C/ETRM product evolution as well, moving from 2-tier architecture to newer, more flexible architecture. Greater modularization, allowing clients to choose what they need, improved analytics and data visualization, mobile and web enabled systems, are some of the advances made over the years.

Big data and cloud ready ETRM products will most likely be taking the lion's share of the mid-tier C/ETRM market in the near term, as more mid-tier companies move away from excel spreadsheets in the face of increased regulations.

What comes next? It will start with blockchain enabled ETRM systems which are Cloud and Big Data ready, able to run analytics and provide crisp and insightful user experiences.

Where are we now?

There is significant experimentation across several industries, and a general acceptance of decentralization and distributed control which is central to blockchain. However, disruption usually comes from small risk-taking ventures rather than established risk averse organizations.

Energy, Oil and Gas are mission critical and their evolution is also governed by legislation and regulation, in addition to international agreements. Non-disruptive, evolutionary transformations, and transformations due to external factors, will thus be the norm, potentially leading to disruptive use cases in the future.

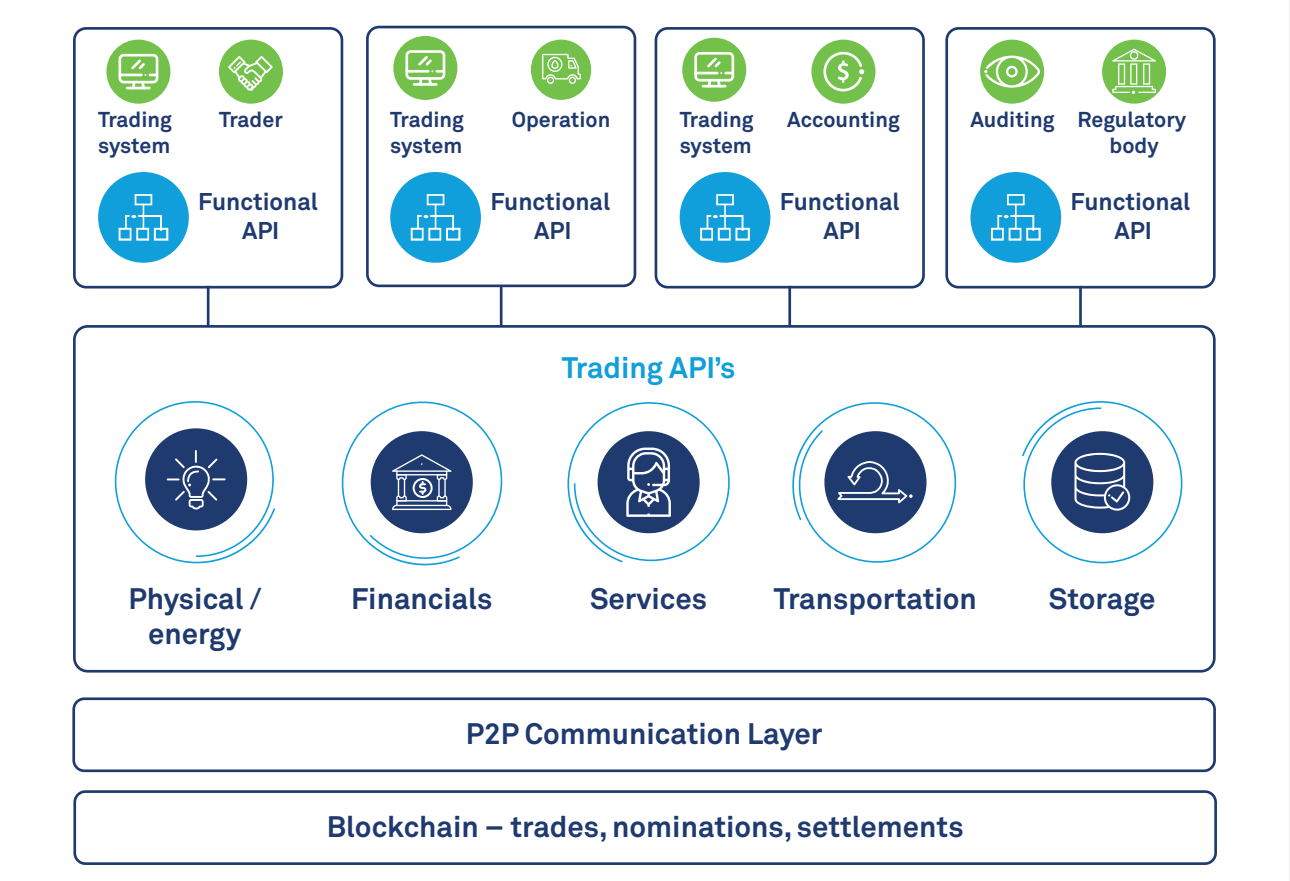

Figure 2: Near term blockchain enabled ecosystem

The major players presently in the system will manage the blockchain. These will be the traders, platform operators, financial services, IT service providers or other third parties.

Smart, self-executing load and discharge contracts on the blockchain can lower risks and costs for shippers and carriers. Trucks will be fitted with IoT devices that measure mileage and routes, thus creating transactions in the blockchain.

Business processes will no longer synchronize directly with each other, but rather via an adapter which maps process states and data onto the blockchain. Essentially, this likens the architecture, rather simplistically, to an "enterprise bus" using the blockchain as a conduit for communication and trading systems, interfaced through inbuilt chain adapters.

In the short-term, the current process will be supported rather than replaced by blockchain, with standardization of data formats being a very welcome byproduct.

What do we do now?

It is critical at this stage that the hype be recognized, and the nature and capability of blockchain is clearly explored and understood.

Intermediaries and service providers must also question their roles, keeping in mind that these roles will evolve. The intermediaries between crypto currencies and real currencies will be just as necessary, and if in the future hundreds of thousands of prosumers trade energy, a new platform requiring new services will emerge.

What is the right approach towards a blockchain endeavour?

- Being ready for exploration - value and returns may come up from previously unexplored areas
- Technical solutions may be transient, but the business transformation will be permanent
- Ensure regulators are on board early
- Invest in a partner who is making strides in the direction you see your organization heading towards
- Partners should have an understanding of the value of blockchain in addition to regulatory requirements and other obstacles
- Prepare for real-time digital marketplaces built on physical assets with new measures of credit and risk
- Design for meaningful user experiences, rather than build large ecosystems
- Do not fight for control of ecosystems and data
- Understand how to manage and protect off-chain data

A few pitfalls in blockchain projects include:

Misunderstanding the purpose of blockchain

Confusing future blockchain with the present generation

Viewing blockchain technology as a database or storage mechanism

Assuming interoperability between platforms

Assuming that smart contract technology problems have been resolved

Failing to sufficiently protect and "architect" for off chain data

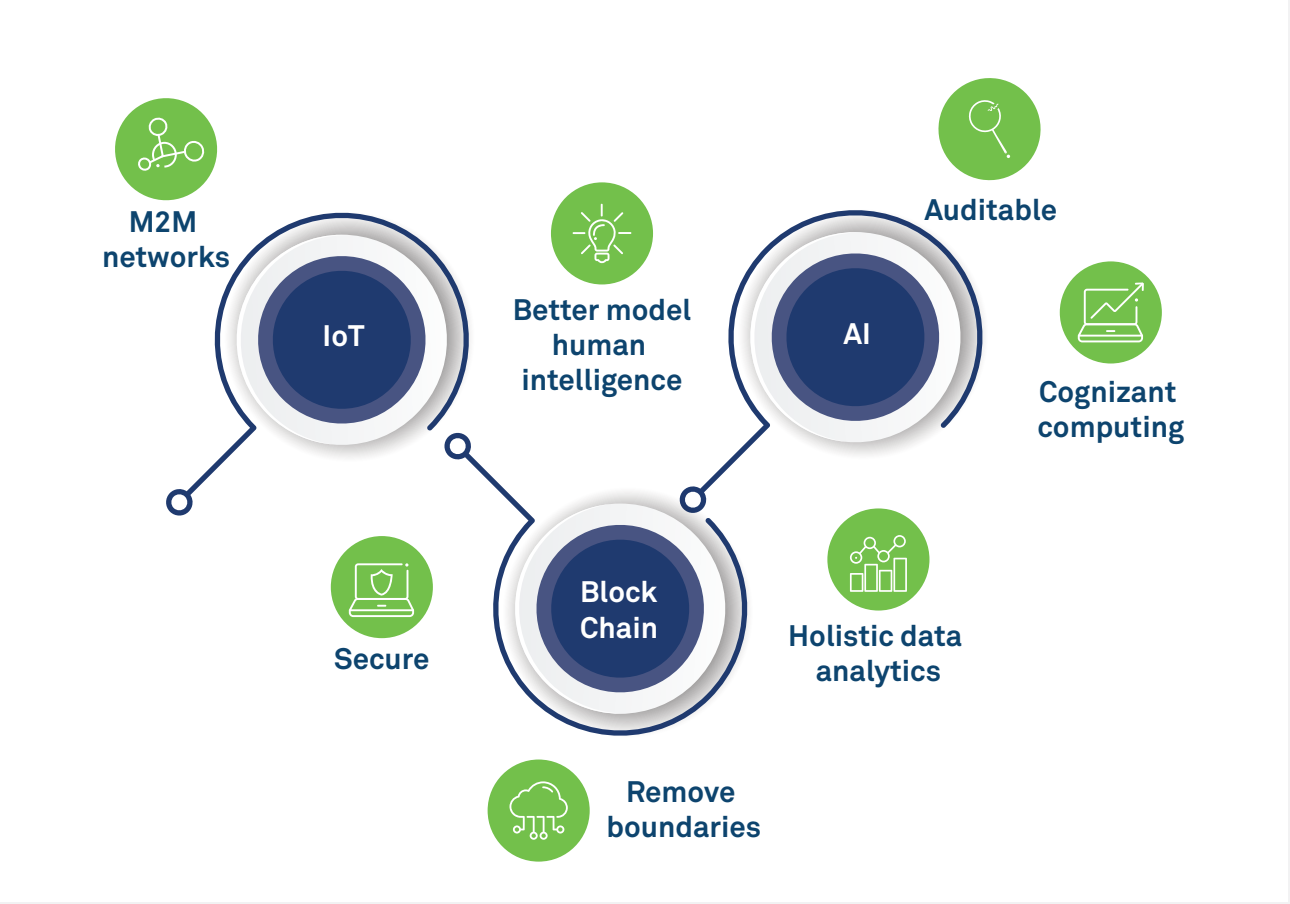

Figure 3: What does the future hold?

It did take around 15 years to go from a broadly available internet to Amazon. It took more than a decade until the old promises were made good on, and the innovative business models of the new economy could be implemented.

The same hype we heard for the internet is found today for blockchain. It will probably take another 10, maybe even 15 years, before we can utilize the full potential of blockchain as consumers or companies.

While cutting through the hype and navigating the missing pieces is going to be difficult, what lies ahead is genuine, global-scale transformation of economies and industries. The next decade promises to be very interesting, with the convergence of AI, Robotics, IoT and blockchain, to provide a seamless experience to the end user.

About the authors

Kapil Gupta
Global Head – Energy & Commodity Trading Business, Wipro Ltd.

Kapil has 17+ years of extensive international experience, complemented by sharp business acumen, hands-on management style and a strong foundation in on-time on-budget delivery within ETRM ecosystem. Talent for building and leading large, culturally diverse teams, globally.

At Wipro, as Global Head for Commodities & Energy Business, Kapil is responsible for growing the energy and commodities business globally. He is also responsible for building the global consulting organization and value added services for industry, both in traditional and transformational solutions, from Digital stand point. Kapil has done a masters in Business Information Technology from Middlesex University, London, and Post Graduate Diploma in Business Administration from the University of West London.

He can be reached at: **kapil.gupta11@wipro.com**

Sanjeev Gangadharan
Senior Consulting Manager – Energy and Commodities, Wipro Ltd.

More than 11 years of trouble shooting, innovating and delivering.

Sanjeev leads the C/ETRM innovation team at Wipro, identifying opportunities and enhancements using technologies like RPA, AI, blockchain and analytics.

He has in-depth understanding of the energy and commodity industry, augmented by his functional and technical expertise. He has extensive hands on experience in the trading ecosystem, implementing risk, credit and trading solutions.

He can be reached at: **sanjeev.gangadharan@wipro.com**

Wipro Limited
Doddakannelli, Sarjapur Road,
Bangalore-560 035, India

Tel: +91 (80) 2844 0011
Fax: +91 (80) 2844 0256
wipro.com

Wipro Limited (NYSE: WIT, BSE: 507685, NSE: WIPRO) is a leading global information technology, consulting and business process services company. We harness the power of cognitive computing, hyper-automation, robotics, cloud, analytics and emerging technologies to help our clients adapt to the digital world and make them successful. A company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, we have over 160,000 dedicated employees serving clients across six continents. Together, we discover ideas and connect the dots to build a better and a bold new future.

For more information, please write to us at **info@wipro.com**

IND/BRD/OCT 2018-SEP 2019