

Smart Industry



*A perspective by Dr. Issame Outaleb,
PharmaTrace Founder and
Partner of the Healthcare Shapers*

What's Next in the Healthcare Ecosystem?

Why does this happen? Slow data transfer, little data comprehension or insight, costly standard solutions: it's not news to any of us that our current healthcare ecosystem is fragmented and inadequate, resulting in frustrated users and unsatisfied clients. Change is inevitable as the development of information technology (IT) and operations technology (OT) move forward. Meet: **SMART INDUSTRY**.

Industry 4.0 or Blockchain Industry?

A shift towards a fully automated environment, utilizing exponential technology such as artificial intelligence (AI), IoT (Internet of Things), along with blockchain technology, is the next definitive step into the futureⁱ. The term Industry 4.0, also known as Smart Industry, implies the application of Smart Manufacturing. Terminology differences aside, they both roughly describe fully integrated, collaborative manufacturing systems, which respond in real time to meet changing demands and conditions in the factory, in the supply network and in customer needsⁱⁱ.

An Example: Digital Supply Network (DSN)

Let's take a look at the supply chain sector. A lack of trust, insufficient information sharing and its inherent vulnerability cause inefficiencies, creating unnecessary costs and missed opportunities for everyone on the chain. This, the need for a radical overhaul has been diagnosed by industry analystsⁱⁱⁱ and the benefits and challenges of transparent information sharing has also been well documented^{iv}.

Powered by blockchain technology, the introduction of a digital supply network represents an interconnected, open system, allowing supply operation based on true Smart Manufacturing in contrast to the current linear, sequential supply chain. DSN stands to tackle most of the aforementioned issues of the current supply chain, by its intrinsic mechanism of blockchain technology.



Blockchain and AI/ML: Personalized Medicine

The interplay between blockchain and AI/ML will liberate medical data and unlock data silos. Prescribers will be able to leverage a semi or fully automated “medi-bot” to quickly support diagnosis and tailor treatment regimen with pre-trained models via AI/ML, based on symptoms, historical events and aggregated data. However, this will only be possible if we deploy blockchain as a data and/or ecosystem backbone, aligned with the newest compliance regulations (GDPR).

The result benefits patients in terms of quality and efficacy of treatment, saving time and lives. Physicians can focus more on patients’ needs and adopt cutting edge therapies on the market. With physicians’ treatment (Tx) success stories, payers will benefit from this process and be in the enviable position of rewarding higher per Tx performance while saving costs, allowing reinvestment for more acute matters.

Pharmaceutical companies will have more access time with prescribers to present their new innovations, targeting professionals accurately, conduct objective oriented market access conditions and reimbursement schemes with national payers along with efficacious planning. And the list goes on.

Smart Factories: Fully Automated Logistics and Supply Systems

Blockchain will play a major role as an economic growth driver, and is considered to be one of the key technologies along with AI, ML, automation, robotics and IoT. In fact, top tier names such as Amazon, IBM, Maersk, Walmart, Microsoft, SAP, Google and others are preparing to reap benefits from blockchain processing power. CNBC analysts predict blockchain ‘to replace reconciliation, which is expensive and requires back office and time and paper work with more instantaneous verification’.

Artificial Intelligence / Machine Learning will liberate medical data and unlock data silos if we deploy blockchain as a data and/or ecosystem backbone

This means, companies can enhance their supply chain efficiency and cut their back and middle office costs. The technology enhancement will result in more efficient business flow, allowing costs to be cut and net savings to be passed along.

AI/ML will liberate medical data and unlock data silos. A marriage of AI/ML, IoT and blockchain ensures a real-time record of business transactions, environmental conditions (temperature, humidity, time stamp), and enhances communication efficiency and raise transparency, which can be optimized over time and experience. IoT devices, robotic devices and AI/ML systems contribute fully automated scans and records into the blockchain, so the human interaction will be kept at a minimum. Hence “zero errors” status, full traceability and a high trust environment for agreements.

The Smart Industry transition leads to time and cost savings, trust building and reduced risks. Blockchain provides easy integration, an un-hackable ledger and faster data transfer. It enhances operational efficiency and payments. It also leads to better data quality, allowing the impactful access of big data, accurate performance measurement, predictive analytics and much more. In the end, this all means more security and comfort for patients. All these for easy and low cost of blockchain implementation that requires no software licensing updates or exhausting your IT department manpower. It may seem too good to be true, but that is what exponential technology can do for us. For real.

A marriage of AI/ML, IoT and blockchain enables “zero errors” status, full traceability and a high trust environment

The transition from current to future network models



Centralized

- ✓ Manual
- ✓ Redundant
- ✓ Low-trust
- ✓ Disparate
- ✓ Lack of integration
- ✓ Information latency
- ✓ Limited Automation
- ✓ Capital constrained



Decentralized



Distributed Network

- ✓ Open
- ✓ Outside-in
- ✓ Highly adaptive & Agile
- ✓ Learning machines/ AI
- ✓ Fast processing
- ✓ Scalable
- ✓ Instant liquidity

Open Data

Businesses used to be cautious about distributing their public data. Today with machine learning, open data is the main goal in many industries, especially in transportation and health. But it is still a huge challenge to deploy the transfer data to public data portals without being either non-compliant or requiring costly applications at a global level.

Blockchain can be leveraged to address complex data dissemination streams along with smart contracts to follow-up on the patient journey, standardize medical records, access records instantly and globally and measure market data performance, etc. The list goes on. It is evidently clear that on a global scale a single organization cannot handle it, hence a decentralized, or even, distributed environment, is essential.

Just Another Hype?

Currently, there are a number of start-ups working towards the realization of the Smart Industry in the healthcare field. Some are heavily backed by major pharmaceutical companies, telco companies and/or big private investors and already have rolled into a second-year phase, while others are still in their infancy.

Working as a consultant in healthcare, I founded PharmaTrace in order to combat the inefficiencies I face first hand. PharmaTrace was born out of the need I desperately felt and the hard-won knowledge of what would really work to facilitate decentralized, immutable and transparent ecosystems in healthcare.

The Smart Industry is not only the next big thing but “it represents an ongoing evolution”^v. This is the next step toward the necessary digital transformation.

The rise of AI and ML correlates with the exponential increase of big data. Gigantic US and Chinese companies e.g. Tencent, Alibaba, Amazon, Facebook, etc. have created large centralized data centers pushing AI and ML research in order to maximize data utility, which will improve personalized marketing tools and tailored offers to customers. The flood of data has been from the increased usage of connected applications that continuously record activity and sensor data via IoT. In fact, connecting AI and ML to this enormous blockchained data source where all business events are linked, will unlock hidden patterns and correlation in order to better predict future market developments.

Our Blockchain Based Solution: PharmaTrace

As a passionate consultant and Healthcare Shapers Partner, and founder and CEO of PharmaTrace, I quote: *"The trend, is not a trend anymore but a fact. A transition from a decentralized business ecosystem towards a distributed cognitive corporate model will be a crucial factor to persist and sustain business models. It will not be bad to overhaul the current healthcare landscape while learning from other industries and nations experiences to drive real and smart transformation toward a blockchained world. However, a tremendous stakeholder education effort and collective push from top tiers (CEOs and KOLs) will be crucial to succeed. Innovate or Die".*

No one of AI/ML, IoT, Big Data or blockchain can unleash their full potential unless they collaborate harmoniously with each other. Contact me for more information.



Dr. Issame Outaleb spent several years in management consulting and marketing for blockbuster brands and mid-tier biotech and pharma companies. He knows what truly drives conversions, market access, product launches, and successful strategic and operational planning within dynamic business landscapes — and it's not mastering the marketing flavor of the week. It's how passionate you connect with the heart-beating people you're trying to help and communicate your understanding back to them.



PharmaTrace, is a healthcare ecosystem based on blockchain, leveraged with Artificial Intelligence and Machine Learning to connect complex data and enforce true digital transformation. Besides providing an ecosystem, our mission consists of helping pharmaceuticals and healthcare entities to **A)** adopt blockchain technology **B)** secure available data **C)** deploy decentralized applications (Dapps) and smart contracting based on blockchain to enhance patients data usage and business performance in a fully compliant environment **D)** endorse supply chain to transition to a blockchained environment.



Healthcare Shapers is an international network of independent consultants, service providers, experts and decision makers with great breadth and depth of experience, covering all facets of healthcare.

Only those who have qualified themselves professionally and personally in a multi-stage selection process can become partners in the network. Given the many years of individual experience and reputation of each partner, Healthcare Shapers can usually access seasoned specialists within a few hours.

Contact:

i.outaleb@pharmatrace.io

www.pharmatrace.io

www.healthcareshapers.com

Credits: Heisun Kim; Helmut Hauschild

Sources:

- ⁱ Deloitte: *The Smart Factory: Responsive, adaptive, connected manufacturing* https://www2.deloitte.com/content/dam/insights/us/articles/4051_The-smart-factory/DUP_The-smart-factory.pdf
- ⁱⁱ i-scoop.eu: *Smart Industry and Smart Manufacturing-industrial transformation*, <https://www.i-scoop.eu/manufacturing-industry/>
- ⁱⁱⁱ PwC: *Pharma 2020: Supplying the future*, page 2 <https://www.pwc.com/pharma2020>
- ^{iv} Lee et al: *The Value of Information Sharing in a Two-Level Supply Chain*
- ^v Deloitte, *The Smart Factory: Responsive, adaptive, connected manufacturing*, 2017 https://www2.deloitte.com/content/dam/insights/us/articles/4051_The-smart-factory/DUP_The-smart-factory.pdf