Healthcare supply chain security in the Asia-Pacific

Time for evolution

The concept of supply chain security is by no means new in the healthcare industry, one of the most sensitive to ensuring the right products are delivered to the right recipients at the right time. Yet to date many of the anti-counterfeiting and anti-diversion programs have been largely regulatory-driven – the Drug Supply Chain Security Act in the US, the Falsified Medicines Directive in Europe, as well as numerous other similar programs in countries like China and Korea. Unfortunately such efforts, while admirable, tend to end in delay or ineffectiveness. And the reality in the Asia-Pacific context is that we need a better balance of low- and high-tech capabilities.

So the question is: has supply chain security technology kept pace with the evolution of the healthcare industry itself? A wave of new medical and biotechnology therapeutics are coming to market, and via more advanced channels (e-commerce, drone delivery, 3D printing, etc.). There is as well a high unmet health need in the Asia-Pacific, a region that represents 60% of the total global population. The pressure to ensure protection of brand reputation for healthcare products has never been higher.

"Our company is nearly 100 years old, so we are not just pushing boxes anymore," said Daniel Laverick, Head of SAP & IT Solutions at Zuellig Pharma. "In an upgraded and cloud-based ERP world, we must seek to better open the data doors and insights, to move quickly and fail fast, and to improve our interactions with the wider ecosystem. Instead of talking in lead time terms of months and weeks, we must now react within days and hours."

Speaking from a perspective of the recent COVID-19 pandemic, Chris Humphrey, Executive Director of the EU-ASEAN Business Council, said: "It is key that supply chains for medicines, medical equipment, and other essentials such as nutritional and personal care products are allowed to continue to operate as much as possible. These supply chains are complex, and rely on many parts and layers to function. From production and transportation of raw ingredients and components, through to packaging and logistical operations."

This article is a spotlight on blockchain as an enabling solution for the next generation of supply chain security in the Asia-Pacific healthcare industry. We highlight KPMG in Singapore's experience in the matter, both in terms of our own case studies as well as incorporating input from industry colleagues who are driving common initiatives.

The challenge remains sizeable for healthcare supply chain security in the Asia-Pacific

According to KPMG research, companies in the Asia-Pacific lose 7% or more of annual turnover due to supply chain security issues. Sub-themes therein pertain to lack of a unique identifier across products, limited visibility down the chain, risk and compliance, and overall customer experience demands. Below is a sample set of feedback we received during a recent supply chain security effort in the region:

Sample key insights

> ***"Every month there are several claim disputes that we have to clarify with (the retailers). It takes significant time."***
> **Distributor**

1. Distributors don't have time or resources for detailed authenticity checks, and run varying processes when handling different products
2. Retailers have a hard time claiming for rebates, especially with the many disputes that usually happen

> ***"There can be significant paperwork.... Distributors pay the rebate up to two months later, it may not be correct, which requires a dispute, and then one more month to resolve."***
> **Retailer**

While much progress has been made with healthcare supply chain security, the majority of the efforts are in line with regulatory compliance. So the processes and technologies deployed may "check the box", yet the reality is that companies, countries, and patients, require more advanced thinking.

According to Zuellig Pharma, up to 3-in-10 medical products in the APAC markets remain sub-standard, hence the unmet need for better traceability. Zuellig Pharma's efforts, outlined in more detail below, started with recalls, which typically take 2-3 months to sort out. Members of the supply chain ecosystem desired a "click-of-the-button" to triage the problem and send out alerts. "Everyone knows there is a counterfeiting problem in the region, and the malicious actors are coming at us from various angles," said Laverick. "Traceability by batch is no longer sufficient, and serialization regulation is not yet mandated in most parts of APAC. So stakeholders must align on a solution for the protection of our products and our patients."

For one thing, the data landscape is evolving rapidly. High adoption of clinical recordkeeping like electronic health records, coupled with an increasing scale of unstructured insights from wearables, show great potential. But forces to restrict use of Protected Health Information (PHI) are also growing. By 2025, the world will generate more data than the 5,000 years prior, yet less than 1% of the information is being utilized. Frameworks such as General Data Protection Regulation (GDPR) are attempting to find a way forward, while also causing limitations.

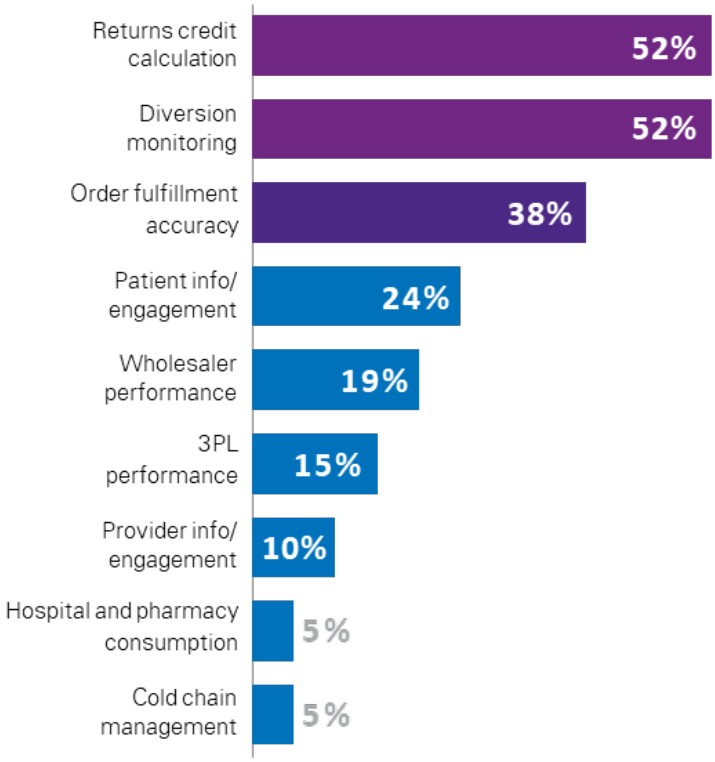
The interoperability across healthcare trading partners in the Asia-Pacific is moreover still an issue. Interoperability is a key tenet of supply chain security regulation, such as the exchange of serialized product data and allowing various stakeholders (including patients) to check real-time on the authenticity of products. But the myriad of systems, frameworks, policies, and reporting often cause more confusion than good. And more often than not, the data is far from real-time nor reflecting the true transparency of the product ownership chain. According to KPMG research, only 1-in-5 healthcare supply chain leaders consider their processes, systems, and reporting to be effective. And only 1-in-10 leaders have complete visibility of supply and capacity information.

"We tried our own data extraction and lakes, though ultimately now are working together with industry consortia, which has been key," said Laverick. "The approach is open-source, a co-existence model; something that will speak to potentially any hyper-ledger system. We are miles ahead of where we used to be, though still a lot of work is needed to get all the stakeholders onboard in order to enrich the robustness of the data. Competitors must become collaborators, including those in tangential areas like IoT and automated payment processing. Otherwise the ultimate vision of patient scanning and complete traceability may not happen."

Perhaps most important of all, supply chain security and enabling concepts like track & trace were meant to power the future for healthcare products companies. According to KPMG research, nearly 50% of healthcare companies have invested US$50mn or more on their security capabilities. But has the ROI been effectively realized?

There are proven new solutions available, so now it's a matter of having the bold vision to get going

According to KPMG research, more than 70% of healthcare companies intend to use data from supply chain security technologies in order to enhance business processes. The following were the main opportunity areas identified:



Source: KPMG's 2017 Serialization & Traceability Survey

Another way to think about it: value chain

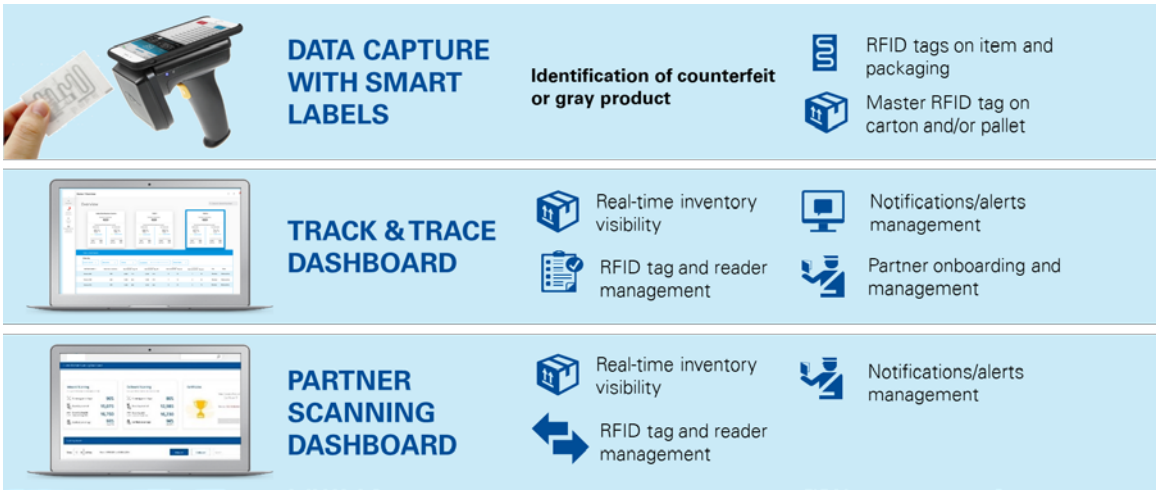
The G20 has asked the Organization for Economic Co-operation and Development (OECD) to develop an Action Plan based on Base Erosion and Profit Sharing (BEPS). The Action Plan is designed to address the arbitrage between different tax rates and interpretations of tax principles that arise as a result of sovereignty. The objective is to produce a revised set of guidelines to increase transparency to tax authorities, in terms company structures and profit centers.

In other words, healthcare products companies should look at their supply chain structure to not only ensure compliance under the increased scrutiny, but to also take the opportunity to rebuild the network. Inter-company arrangements, partner transactions, and product flows are all in scope.

When many of the healthcare supply chain security solutions were being implemented in order to comply with the slew of global regulations on the matter, the technology looked much different than it does today. The remainder of this article focuses on one new enablement player to strongly consider: blockchain.

The idea is to treat healthcare products like digital assets, from point of manufacture to point of dispensation and all of the steps in between. Product information, geolocation, and other potential attributes like temperature are logged onto the blockchain and accessed by authorized parties through a common dashboard. In the event of a chain issue like a recall scenario, the affected products are traced back through the relevant distribution and manufacturing stakeholders. The original supply chain security dream is then within sight – complete visibility across manufacturing, distribution, retail, and even into customer behaviors.

On the next page is an example from a recent supply chain security effort completed in the Asia-Pacific, using blockchain as the next-gen enabler. Note that RFID could be substituted with other common data carriers such as 3D barcodes, which are also quite common in the healthcare industry.



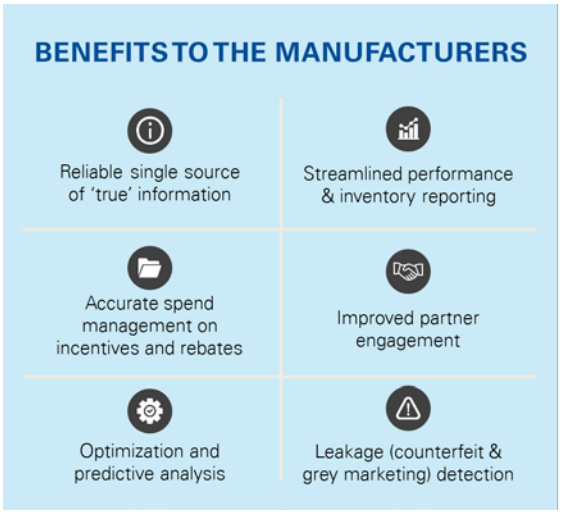
And we've moved past the conceptual stage with the blockchain solution thinking. Last year, as part of the healthcare supply chain security requirements in the US, IBM, KPMG, MSD, and Wal-Mart announced their selection by the FDA to be part of the first programs for a new form of medication and vaccine distribution. The objective is to finally align all supply chain stakeholders, including the FDA, in developing an electronic, interoperable system for traceability. The proposed blockchain network will reduce inventory tracking time, allow real-time retrieval of distribution information, increase the accuracy of data shared in the supply network, and, ultimately, determine the integrity of healthcare products that are being dispensed.

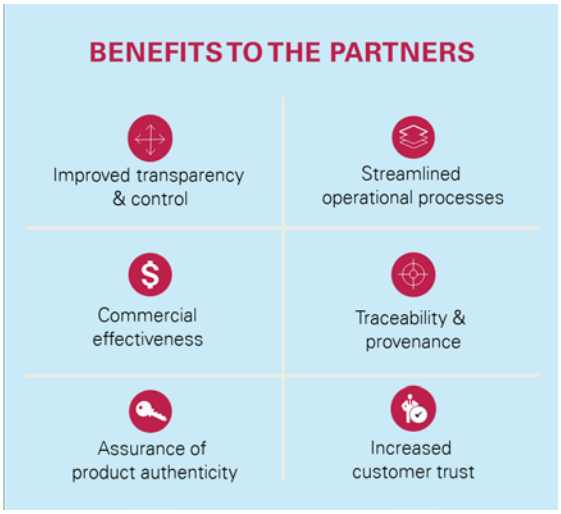
The aforementioned Zuellig Pharma solution is a blockchain-based platform tool, known as eZTracker, which enables product scanning to identify provenance within seconds. Following the success of the recalls use case proof-of-concept, Zuellig Pharma then scaled into other areas. The platform successfully intervened during the HPV vaccine counterfeiting crisis in Hong Kong in order to uncover the supply chain root causes. eZTracker is capable of handling data matrix scanning, tamper-proof packaging validation, connectivity between shipping and invoicing paperwork, and is evolving into next-gen tech such as digital fingerprinting. Even the United Nations are now involved in seeing the initiative through to scalable adoption. "It's a constant battle out there to stay ahead, but the supply chain ecosystem is coming together to make a difference," said Laverick. "We need to close some product flow loops by getting the pharmacies on board and involving patients in iterative traceability designs. For example, we imagine a future whereby everyone's vaccine record is on a blockchain and integrated in the medication regimen along with the authenticity of the products therein."

So what are you waiting for?

Designed years ago to support centralized, high-volume production of blockbuster products, healthcare supply models now require a more agile, demand-driven value chain. With the direction of travel of medical and biotechnologies, we believe the future lies in distributed manufacturing across a wider range of products and niche volumes, and markets.

Similarly, the obvious signals are there for us to move beyond supply chain security of the prior decades: country health systems under pressure; companies losing revenue; and patient lives at risk in the Asia-Pacific. Based on our experience, there are a number of prospective benefits in grasping a blockchain-style solution:





We recommend the serious stakeholders to consider the following four immediate actions:

1. Consider whether your supply chain security strategy is seen as of value to the overall business model.
2. Move quickly and fail fast, in order to quickly prove the potential for new value creation.
3. Put the necessary architecture in place so as to understand all on-chain, off-chain blockchain impacts.
4. Map out the adjuvant enablers, such as mobility, smart devices, automation, and cognitive analytics.

"It's been an up-and-down journey, but a fun one with new tech and a new culture," said Laverick. "Our 'digital transformation' took less than a year, big thanks to the top-down organizational commitment in defining a new future for supply chain and patient health, beyond just operational efficiencies."

"It is important that public and private sectors alike take a broad view on what is necessary to support the entire supply chain, including implementation of policies aimed as containing crises like the COVID-19 pandemic," said Humphrey. "Access to critical supplies and transportation systems enables the industry to continue to produce and deliver essential products."

We invite healthcare supply chain leaders in the Asia-Pacific to join us at any of our Digital Ignition Centers, to leverage best practices in bringing the healthcare security topic to the strategic vantage point it deserves.

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With thanks

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