From the paper chase
to open interoperability

CGI considers where supply chains may stand after being reshaped by the wave of fintech disruption.

Today, a large majority of global trade is conducted on open account – that is, the importer agrees on terms, the exporter ships the goods and invoices the importer, and the importer then pays when it is satisfied that the order has been properly filled.

Due to the length of typical global supply chains today, payment can often take 60 to 90 days or more before it is received by the exporter. This delay in payments creates financial stress on exporters, which in turn weakens the importer’s supply chain.

More recently, banks have introduced numerous new products to financially engineer and support the chain of events known as the financial supply chain. Most have sought a similar goal: to free the working capital trapped in the financial supply chain and create liquidity. To do so, banks have taken a fresh approach and have become much more involved in the inner workings of their customer’s financial supply chains. However, there is still a heavy reliance on the financial documents, which flow through the financial supply chain, especially invoices.

“‘The primary flow of documents and data in the financial supply chain is between the importer, exporter and other service providers like forwarders, transportation providers, customs, and the like,” explains Kitt Carswell, vice-president and senior offering manager of trade and supply chain solutions at CGI, pointing out that this has, traditionally, been a paper-intensive and inefficient process.

“Original paper documents must make their way from one party to the next, with the potential for information getting out of sync. Parties to such transactions have never been sure that the documents they have are, in fact, representative of the actual state of the transaction, leading to uncertainty and added delays, which further erode efficiency.”

An issue for banks too
Banks also face this problem. For instance, when a bank is relying on invoice data provided by the exporter for financing, it does not know if the invoice is genuine, or if another bank has already been asked to finance it, or if a subsequent change has taken place.

“In effect, there are ‘pockets of documents’ and data that the various financial supply chain parties rely on. However, there is no assurance that what they have is genuine and accurate,” says Carswell.

“For banks, there is a tremendous benefit in having visibility into the financial supply chain’s digital documents.”

Kitt Carswell, CGI

Enter e-documentation

Digitisation (the use of electronic documents) has been envisioned as a way to solve this problem. The idea is to make customer documents such as purchase orders, invoices, bills of lading, inspection certificates, insurance certificates and customer documents, electronic – and then to store the “true” electronic documents centrally. Permitted parties can then access them and update them as needed.

Bolero, essDOCS and other companies already provide centralised solutions to support the digital financial supply chain. To varying degrees, banks can integrate into these systems through proprietary interfaces to provide banking services. Although adoption has been slow, there have been successes.

In order to build on this concept of a digital financial supply chain, the industry is now exploring the use of distributed ledgers (also known as blockchain.)

As opposed to having a centralised database controlled by a central authority (service provider), distributed ledgers utilise crypto-technologies to give each party in the financial supply chain a copy of the database that is always kept in sync.

This structure provides all parties with a new level of trust and assurance that once a transaction (event in the financial supply chain) has been accepted and updated to all the distributed ledgers, it cannot be changed. It is also very difficult to hack, since all the copies of the distributed ledger would have to be hacked simultaneously to achieve this.

“As the actions of one party can be seen by all the others, the entire process is accelerated. Today, for example, payments can be cleared bilaterally on a private blockchain in less than five seconds,” says Carswell. “Also, besides the fast transaction settlement, regulatory reporting, compliance and collateral management can be handled through the blockchain, thus reducing back-office costs.”

The ownership of an “asset” stored on the blockchain, like a negotiable bill of lading, can be transferred when the right criteria has been met using smart contracts. Such contracts contain the logic that determines what action should be taken based on the agreed conditions for the transaction.

“The smart contract can include the invoice to purchase order matching criteria, or the action that should be taken once the invoice has arrived in port, or been accepted by the importer,” says Carswell. “It can control the workflow through the financial supply chain as events take place in real-time, including triggering the request for bank services at the right time.”

He explains that if this vision can be accomplished, huge benefits will be provided to all the financial supply chain parties, such as the elimination of sending, receiving and processing paper documents; real-time visibility into transactions; reduced processing time, and higher degree of automation. Even
the regulator or tax authority benefits by having real-time visibility into trade flows and the underlying transactions.

Internet of Things
According to Carswell, even more can be achieved. “If you bring the quickly evolving technologies of the Internet of Things (IoT) into the picture, there is a whole new dimension that will allow the financial supply chain to be overlaid with information from the physical supply chain.

He points out that IoT can track and report the location, condition and environment of the goods through the internet, making it possible to add that information to the data already on the distributed ledgers and utilised by the smart contract.

For instance, the arrival of goods in port could be automatically updated in the distributed ledger, enabling a notification to be sent to the importer or the detection of high temperatures in a frozen food container could set insurance claims in motion. The possibilities, he believes, are enormous, as illustrated in Diagram 1 which shows the convergence of the IoT-enabled physical supply chain and the distributed ledger financial supply chain.

A bank will need to inter-operate with the digital financial supply chain to know when its services are required, and can then seamlessly invoke those services on its own platforms and return the results to the distributed ledger. This next level of innovation will require a layer of integration so that the bank can directly engage with the distributed ledger solution and, in turn, invoke its legacy solutions to perform the banking function.

“For example, when the exporter places its invoices onto the distributed ledger and, assuming that the exporter’s bank is providing the receivables financing, then the smart contract will alert the bank that there are new invoices, which are ready to be financed,” he says. “That event then triggers the bank’s software to retrieve the invoice data and pass it into its receivables finance systems for processing. If accepted, the ‘approved’

What CGI is doing
- Has worked with a Singapore-based consortium that included two banks, a government agency and Ripple in order to design, develop and operate the first-ever trade finance blockchain proof of concept (POC), which was touted as a great success;
- Is actively participating in North American, Asia Pacific and European banking industry initiatives for blockchain in trade;
- Providing thought-leadership through public-speaking and client engagements;
- Establishing the Trade Innovation Lab to be a sand-box for proving, piloting and commercialising distributed ledger trade solutions;
- Extending CGI’s Intelligent Gateway to Trade: this currently integrates payment systems to Ripple Connect and will soon provide a new level of inter-operability between legacy trade platforms and distributed ledger trade solutions.

status is passed back to the distributed ledger, and when the invoices are actually financed, the ‘funded’ status change causes an additional update.”

He explains that the integration layer looks to the distributed ledger for the alert, and when received, captures the invoice data from the distributed ledger, transforms it into the format needed by the bank’s receivables systems and hands it over to the bank’s system with an interface it understands (Diagram 2).

“The bank will need to have the right systems capabilities to provide the banking services needed to support open account transactions, such as, receivables financing, approved payables financing, trade loans and payment guarantees,” adds Carswell.

“For banks, there is a tremendous benefit in having visibility into the financial supply chain’s digital documents, which are the documents of record.”

The bank can see if the invoice has been financed by another bank; be assured that it is genuine; know when it has been approved for payment and when it has been paid.

He points out that by being plugged into the distributed ledger financial supply chain, the bank has direct visibility into and access to the true facts of the transactions as they unfold in real-time.

“This is a great vision, and one that is getting closer to realisation by the day, but there are still challenges such as scalability, performance, compliance and the handling of private data,” he says.