



POC WHITEPAPER

**A Unified B2B2B Blockchain Smart Contract Order
Logistics Payment solution for SMEs**

*We take the chronic pain out of the last mile of a
Business Transaction*

Title: Invictus Procure2Pay Whitepaper 1.0
Date: 1 Mar 2018
Author: Jeffrey Lam, CEO

Executive Summary

INVICTUS's goal is to take the chronic pain out of the last mile of a business transaction by opening up access to financing for SMEs from 3rd Party Liquidity Providers, complementing banks, at the Purchase Order (PO) stage rather than wait for the invoice to be generated.

This is done by developing a unified platform for order, logistics and payment to keep both the supplier and customer connected. Being simplified, automated and mobilized, this ecosystem enables B2B2B collaborative transactions between the buyer and seller. The data driven information and operation system also allows Customization and Automation of various business process management.

By incorporating Blockchain technology into the platform, INVICTUS assures users of the platform that all transactions are genuine and securitized. Because of this, Financial Institutions (FIs) will be willing to participate in this ecosystem to provide funding to the transactions.

This funding helps free up SMEs' cash-flow. Blockchain Smart Contract helps to reduce the risk and securitize payment even at the PO stage. The outcome of this is the increase in productivity, improvement in efficiency and reduction in the dependency on low skilled labour.

In the next phase of proposed development, INVICTUS will be integrating Blockchain with Token Technologies and Machine Learning capabilities, making Blockchain real for business. The tokenization of the payment will facilitate the flow of funds from the ultimate customers to the end suppliers. This will ensure that funds will only be utilized for its designated contracts. Machine Learning will enable and facilitate the credit and risk rating of buyers and sellers and at the same time, provides help and solutions to businesses that needed the solution.

Table of Contents

1. Problem Statement	4
2. Proposed Solution	5
3. Scope of POC	8
4. Enhanced Processes	9
5. Observations	12
6. Challenges	13
7. Benefits	15
8. Lessons Learnt	20
9. Recommendation	21

1. Problem Statement

Small and Medium Enterprises (SMEs) play an essential role in Singapore's economy. They make up 99% of enterprises, employ 65% of the workforce, and account for almost half of Singapore's Gross Domestic Product (GDP).

But many SMEs are facing severe problems and experiencing deep pain points in cash-flow, manpower and resources. They have difficulty obtaining manufacturers' credit and bank financing due to weak financials, low bank balance and/or inadequate director's income. In addition, the payment cycles to SME, who are typically down the value chain are in excess of 45/60 days and sometimes stretching to 60/90 days. A difficult situation in the industry for SME is that while big companies have little or no cash-flow problems and can access to different credits and financing, they still pay SMEs late. SMEs are often strapped of cash at all stages of business transactions.

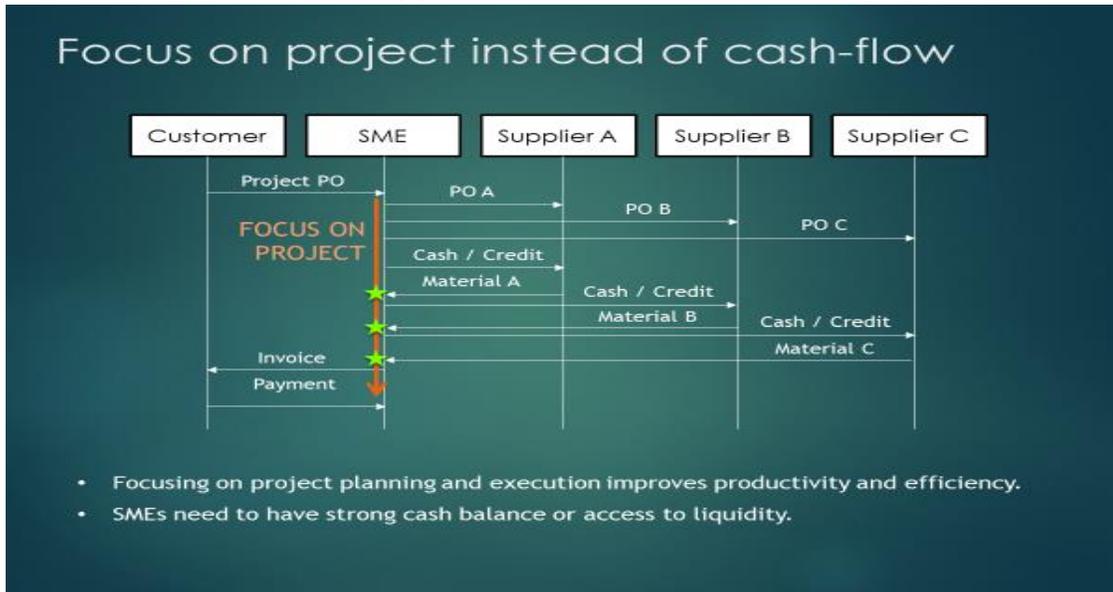
Cash-flow is the biggest pain point in the industry, especially for SMEs who often have difficulty accessing it at the right time. The pain point of cash-flow management and access to funds, is a recurring problem that is being faced by the SMEs from the point of purchase till the final payment.

In addition, there is also a number of industry specific problems that make the business operations of the SMEs difficult.

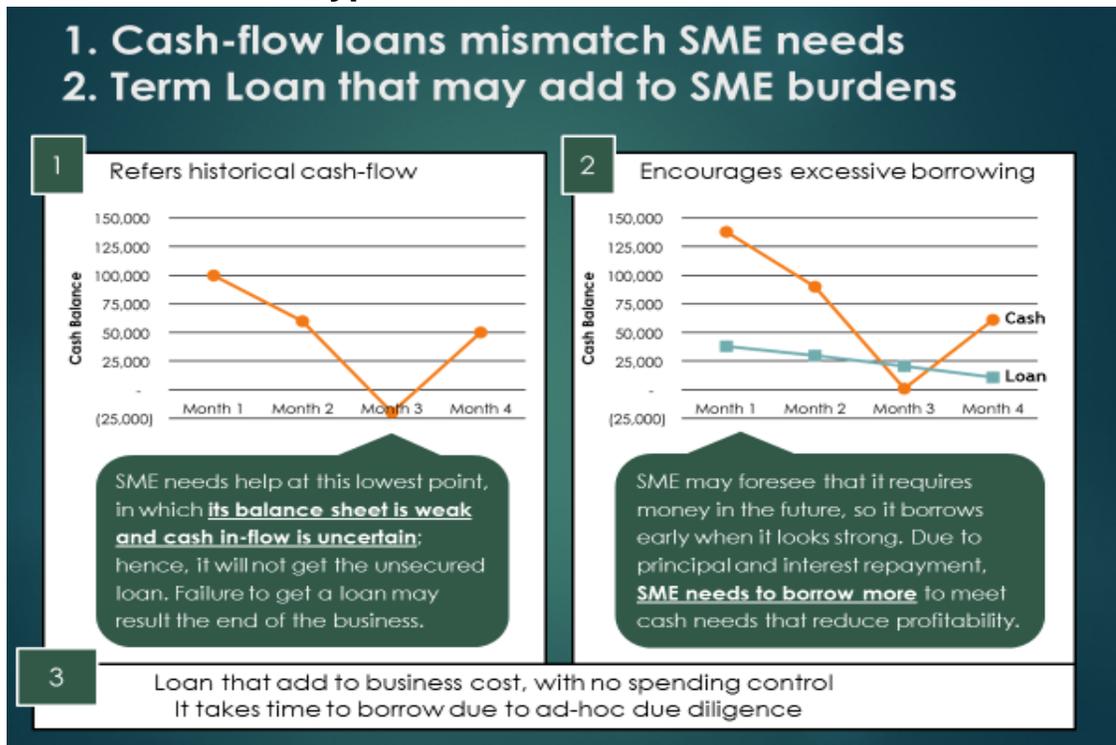
For example, in the M&E sector:

- The M&E industry which has a large number of SMEs, which are struggling with efficiency and inability to run lean operations.
- There is no facility that provides liquidity based on the project itself.
- There is no transparency of project and works which can act as a collateral for the liquidity provider.

Current Typical Business Transaction



Current Typical SME Cash Flow Mismatch



Refreshing old technology with new technology alone will not improve much the productivity of the SMEs.

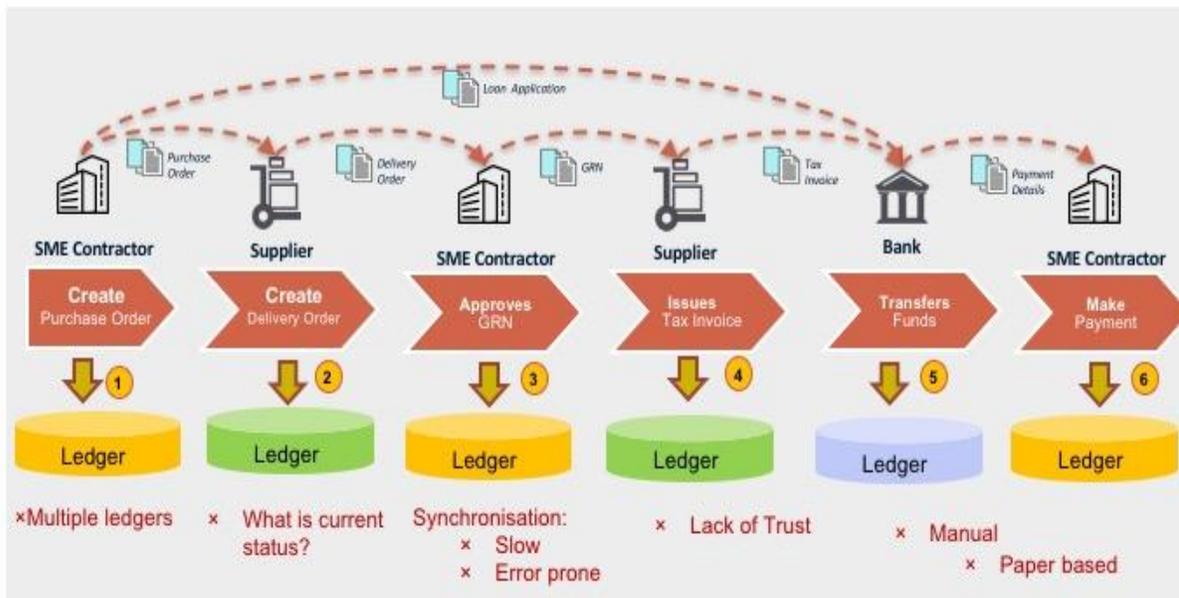
2. INVICTUS Solution

INVICTUS' proposal will transform the Current Process to a new Solution which will leverage on Blockchain technologies.

Current Process:

- Multiple Ledgers without real-time status because they are unable to synchronise with one another.
- Error prone resulting in lack of trust.
- Financing takes too long for verification.
- Does not allow financing at the PO level due to inability of SMEs to access funding.
- Not secured and documented.

Current Process

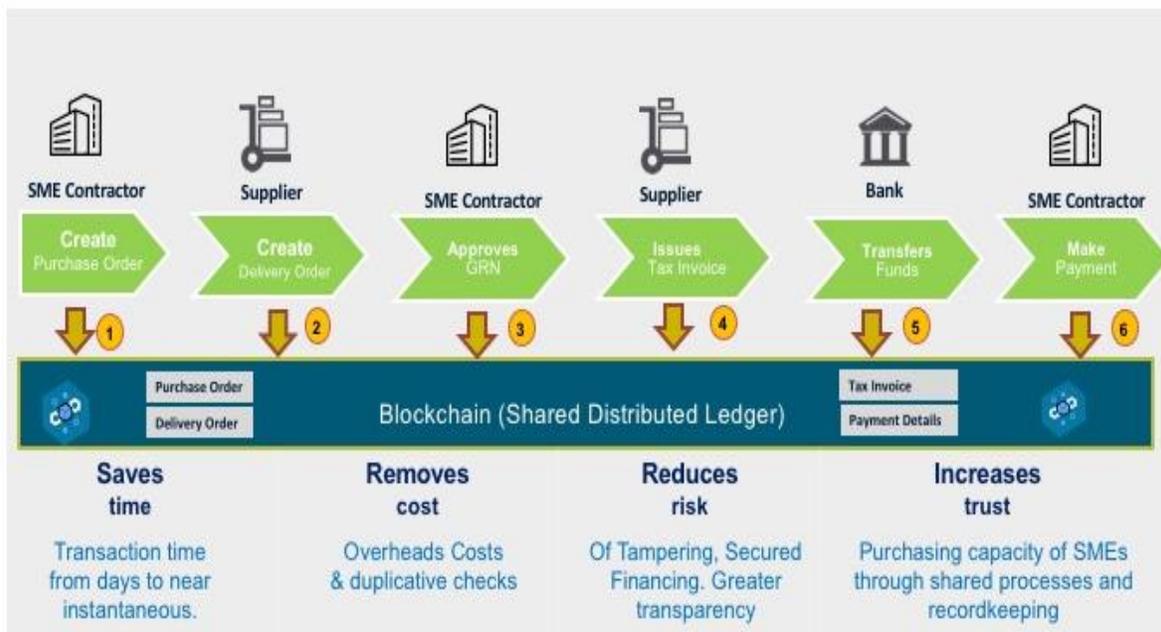


New Process:

- Distributed Ledgers with Blockchain enable secured and documented transactions that generate trust.

- Enable transactions to be processed and verified in near real time.
- Remove costly overheads and duplicated checks in the verification process.
- Reduce risk of error, tampering that allow more secure financing with greater transparency.
- Increased trust that allow funding and financing at all stages of a project.
- Expand the purchasing capacity of SMEs through shared process and record keeping.

Proposed Solution



3. Scope of Proof-of-Concept (POC)

For this POC, the Blockchain Smart Contract solution is being rolled out for business transactions in the M&E and F&B markets.

The scope covers:

- **ORDER**

- Replace Phone, Fax and Email.
- Connect customer to suppliers and enable B2B2B e-Procurement transactions from Procure to Payment.
- Secure with Blockchain Smart Contract.
- Integrate with various E-Procurement solutions.

- **LOGISTICS**

- Integrated 3rd Party Logistics and delivery services.

- **PAYMENT**

- Integrate with IBM Blockchain Smart Contract on Hyperledger Fabric.
- Secure with **Blockchain Smart Contract**. Enable Cashless Payment & Reduce need for Business outlets to make manual payment to Delivery driver to collect payment. Our Payment technology completes the last mile fulfilment cycle and ensures all services providers and suppliers get paid for their services and products delivery.
- The **Blockchain Smart Contract** technology platform forms the underlying process controller to oversee the project end to end lifecycle. The Smart Contract features in our Blockchain implementation provides transparency to all stakeholders throughout the project lifecycle. In future B2B2B implementation, payment and credit can be protected to ensure all service providers are paid based on the project milestones.

4. Enhanced Processes

While there are improvements made to the business processes in SME buyer and supplier areas, the most significant process improvement is seen in the credit financing area in the way credit financing is being processed.

INVICTUS has a unique payment solution which leverages on Blockchain technology to govern the disbursement of funds via a structured workflow and ensure all parties are paid on schedule according to the milestones. The Liquidity Provider will provide funding to facilitate the project kick off and ensure liquidity throughout the entire project.

INVICTUS Payment platform levels the playing field for all the members who subscribe to the adoption rules and procedures.

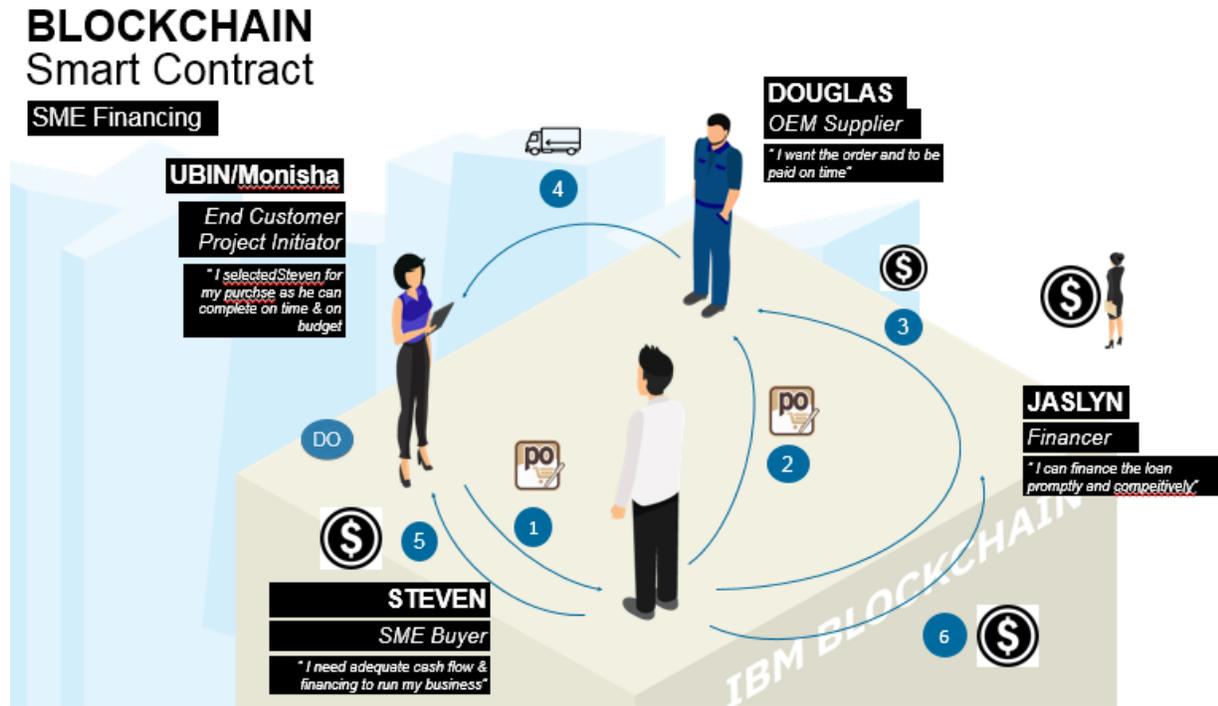
INVICTUS' answer to mitigate credit risk is to use Blockchain on the escrow platform. This will bind the SME buyers, suppliers, main contractors and clients to the escrow who will disburse the funds to various claimants according to the escrow instructions. This protects the client because payment will be made only when work is completed and duly signed off and accepted by the customer. If, in the unfortunate event that the main contractor business fails before completing the work, the payment due to the main contractor will be safe-guarded by the escrow. The client will then have the rights to appoint a new main contractor to complete the work. The money in the escrow is protected and still available to be used.

With this enhanced process, suppliers are able provide credit with little risk as the control of the payment is managed by the Smart Contract, not the buyers. This means that the SME buyers do not require to take indirect project funding/loan to start the project, while not knowing for sure when they will be paid after they finish their works satisfactorily.

This unique Blockchain process that will ensure a close knitted payment chain and payment process flow from Customer to Main Contractor to Sub-

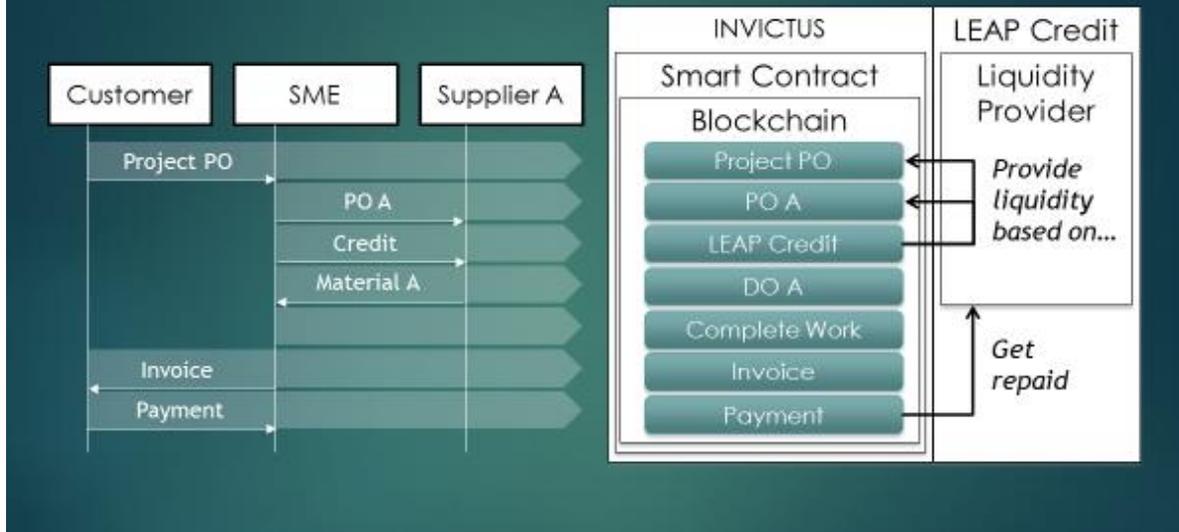
contractors to ensure no stakeholders are short-changed in the entire M&E contract landscape.

The picture below illustrates how New Ubin Seafood Restaurant, one of the early adopters of INVITUS Procure2Pay solution uses the system.



All parties involved in this solution will see a significant improvement to their process and workers' productivity as the platform eliminates activities that are wasteful.

Applicant Block Chain Smart Contract



This above diagram illustrates how after issuing the PO, the buyer receives the credit from a liquidity provider. The buyer may use the secure credit in the Blockchain. The buyer will be able to use the credit to secure goods or services and the credit will be reduced as it is being consumed.

The ability to track the credit usage in a Blockchain allows each participant to hold a ledger of the event. With a fulfiller module, claims can be settled and reconciled.

It allows the control of the credit being given to:

- The PO owner who based on the collateral pledged by the PO owner.
- The PO owner who can issue POs and receive invoices for the goods that have been purchased.
- When Credit = Receipt, the POs can be used to make purchases.
- When the invoices are settled by presenting the invoices to the redeemer who may make payment using a bank GIRO system to credit the ownings to the sellers' bank account.
- All transactions of the POs are in multi ledgers to all the participants.

5. Observations

With Blockchain Smart Contract, the financing cycle will be considerably shortened. In fact, this may be disrupted by arranging the financing upfront, rather than at the invoicing stage as with traditional business model.

As INVICTUS rolled out the solution to the SMEs, the following observations were noted:

- a) SMEs are more open to adopt technology when they understand the benefits it can bring to them. This was a common encounter experienced by the INVICTUS team in their interaction with the SME. Once the benefits were explained to them, the SMEs became more receptive.
- b) The increased access to financing is most welcome as it addressed their most critical business pain point. Cash-flow issue was often mentioned as the area of greatest concern especially with the smaller SMEs.
- c) Suppliers are willing to reduce their product prices when payments can be assured and made earlier in the supply chain. INVICTUS solution solves the biggest headache faced by Suppliers when dealing with SME customers. Payments are often delayed which make the payment collection process very painful and inefficient. Therefore, with a Liquidity Provider who can make the payment first, the Suppliers are extremely happy and are even willing to give a discount to the SMEs

6. Challenges

Clearly the incentive of a collaborative workplace must be strong. Most SMEs will respond well to workflow and transaction improvements. Another major benefit that will allure them is cost reduction.

Inadequate Document Digitization that lead to IT Silos:



Many documents such as PO and DO are still manual. Some are hand-written, resulting in software SILO with IT that cannot be integrated.

Onboarding SME Buyers and Suppliers:

Part of our challenges was also to convince potential Clients to adopt and receptive to our system, especially with Clients with older procurement staff. They are often resistant to changes and reluctant to try new system even if it was more efficient and would improve their productivity.

The adoption of technology for business transactions is not a natural process for many SMEs who are very used to doing business the traditional way. They are comfortable with the existing procurement processes despite that being unproductive, inefficient and error prone.

A lot of patience and time is needed to explain the benefits and how their business can improve by using the INVICTUS solution. Many follow-ups and training sessions with such Clients or their staff, are required to win them

over and assure them that their traditional procurement functions, processes, products (with prices), records, etc. are included in our system digitally. In fact, the software will provide them with ease of management and control over their business and internal operations.

Multiple procurement solutions

Suppliers face the challenge of dealing with many systems which different customers use for generating orders. Because of the desire to satisfy customers' wish, the supplier will also support the customers' choice of procurement solutions.

Customizations for Clients:

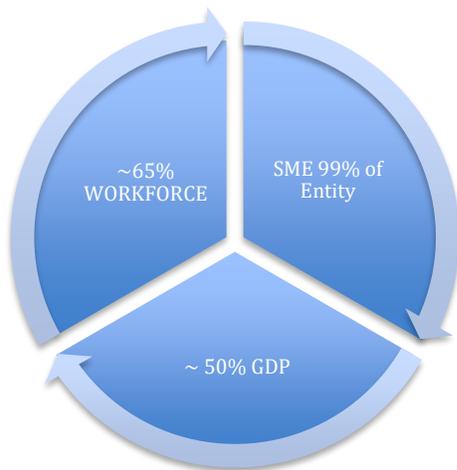
Customizations to some parts of our system were requested by certain Clients. For those customizations which we believe are good and beneficial, we have proceeded to incorporate them into the system. This will be made available to all our customers. For example, we have redesigned and provided a more robust and accommodative quantitative measurement solution for orders and deliveries to reflect the actual situation on the ground. This is especially useful for purchase of live stocks like crabs and chickens where the order quantities are often difficult to be matched during delivery. The system now allows the quantities delivered to be specified in actual weight in the Good Received Notes, which in turn will update the prices in the Invoices.

Credit Review for Buyers and Suppliers:

The Credit Assessment and KYC processes which the Banks or 3rd Party Liquidity Providers perform on the buyers or suppliers are done outside the INVICTUS system. These procedures are needed to comply with regulatory requirements. INVICTUS plans to enhance the current solution further, to include some Artificial Intelligence (AI) and automation tools, to help with this process in the next release.

Small Businesses Access to Credit:

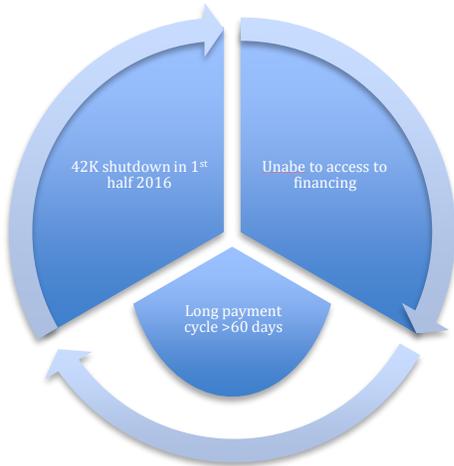
Business transactions of SMEs are generally inefficient, expensive and vulnerable. Projects and cashflows that drive businesses are a big source of problems for SMEs, as they have difficulty accessing financing at the right time. INVICTUS Blockchain Smart Contract solution will free up SME cashflow, reduces risk, securitizes payments and enables real and effective SME Financing.



SMEs makes up 99% of the enterprises in Singapore, contributes to nearly half of Singapore's GDP, while employing 65% of the workforce.

Long Payment Cycle experienced by SME:

In addition, many SMEs are not able to get manufacturers' credit nor are they able to secure bank financing due to weak financials, low bank balance, inadequate director's income and poor credit record. SMEs are also facing rather unreasonable long payment cycles, that are in excess of 45/60 days, sometimes stretching to 60/90 days.



Visibility of the Flow of Funds for its Intended Purpose:

One major challenge is to ensure that funds are utilized for its intended purpose. Blockchain can provide a secured and documented transaction. But once the funds are disbursed, customer can use it to fund another projects or programs. Unless the funds are tracked, SMEs will use them to pay for other more important and immediate requirements due to cash-flow constraints.

Hence, it will be difficult for FIs to ensure that funds will only be utilized for its designated purpose. Machine Learning will enable and facilitate the credit and risk rating of buyers and sellers and at the same time, provides help and solutions to businesses that needed the solution.

Lack of Understanding of Integrated Logistics:

Due to fear of competition and misunderstanding, it is difficult for buyers and seller to collaborate on logistics. Various agencies have rolled out offsite consolidation programme for delivery, but the adoption is rather slow and painful. With the rapid rate of urbanization, cities around the world are facing increasing strain on transportation, energy and cost. The current process is not consolidated which leads to a wastage of resources, driver shortages,

and un-timely deliveries. With secure platform and e-financing, buyers and suppliers will have less resistance to utilize consolidated logistics.

Confidentiality of Information & Data:

Internally, we have to work out our approaches and processes to further enhance and protect our Clients' and their Suppliers' confidential data like their special prices obtained or given due to their privileged long-term relationship, to maintain trust and confidence, not just relying on our secure Blockchain Smart Contract technology alone.

7. Benefits

There are many benefits that can be reaped when SME Buyers and Suppliers and Banks or 3rd Party Liquidity Providers use the INVICTUS solution.

For Buyers:

SME Buyers will have a full 3-way match of PO to DO to Invoice. This means that they can be sure that what they are paying are for what they have received, and that matches with what they have ordered.

With the automation of their procurement process, SMEs will be able to view the status of their POs, goods received and invoice payments anytime anywhere on any smart devices.

Most importantly, they can get access to procurement financing from Banks/3rd Party Liquidity Providers to help with their cash-flow management and problems.

The outcome of using INVICTUS solution will be a reduction in manpower and an improved deployment or redeployment of manpower resources to other areas of the business.

For Suppliers:

Suppliers will have a more organised way of managing orders (instead of faxed orders, emails, WhatsApp messages, etc.). There will be no need to answer telephone calls for taking orders from their customers. All orders are captured in the system and can be viewed anytime anywhere on any smart device.

The preparation of POs, DOs and Invoices are also much easier. There is no manual preparation process.

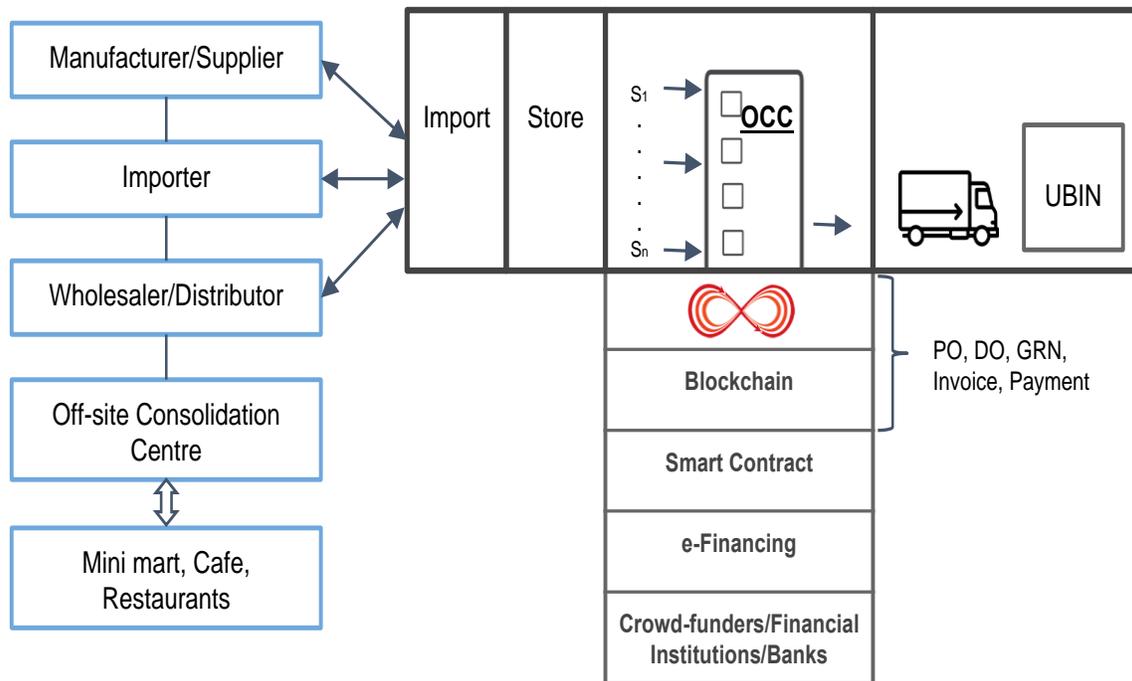
If the purchase is being funded by a Bank/3rd Party Liquidity Provider, the payment is assured and executed even earlier.

For Banks/3rd Party Liquidity Providers:

The incorporation of Blockchain in the system provides a trusted business network and ensures that the transactions are genuine. The Financial Institutions (Banks and 3rd Party Liquidity Providers) can see all relevant information related to the purchase. The full audit trails is visible anytime, thereby reducing the risks of credit, fraud and money laundering.

For Logistics Partners:

We are working with a few logistics partners to deploy appropriate technologies that achieves a collaborative distribution in the supply chain. This involves the sharing of logistics resource such as vehicles, drivers and warehouses to coordinate delivery schedule to selected zones, improving the overall effectiveness for mutual benefit.



Summary Benefits:

Procure2Pay reduces the conflicts and disputes in the transaction process, especially if the main contracting party fails or when there are disputes between parties. This brings efficiencies in transaction and financing, while decreasing the long lead-time and high cost of financing. The solution does not rely solely on the SMEs' financial health or SMEs' relationships with their suppliers and financial institution, that often limits the abilities of SMEs to secure financing.

8. Lessons Learnt

In the current digital age, businesses and companies must be e-relevant or risk being irrelevant.

While it might be alarming, it was not surprising to read the Straits Times report on June 14, 2017 which said that approximately 42,000 businesses closed down in Singapore during first half of 2016, compared to 49,000 during the entire year in 2015.

This POC shows that there is indeed a great demand for such an integrated solution. INVICTUS is happy to fill this gap, to help SMEs improve their cash-flow management and businesses.

There were some lessons learnt as we deploy this solution to our initial set of customers:

- a) The process by which the Banks or 3rd Party Liquidity Providers use to perform the credit assessment and KYC is slow and lengthy.
- b) Blockchain transactions provide trust and transparencies across the whole procure to pay cycle.
- c) The solution does not rely solely on the SMEs or SME Financial Health or relationship with their suppliers and FIs.
- d) The Blockchain is decentralized, secured and documented platform can provide actual and real-time transactions and financing at all stages of the projects and not just at the invoice stage.
- e) Further enhancement to speed up the approval process and manage the flow of fund from customers to suppliers for its intended purpose may be developed using tokens in the next release.

- f) Invictus will start the next design thinking with IBM, Financial Institutions, Buyers, Suppliers and Partners in early Q2 2018 by integration and enhancing Procure2Pay with Blockchain, Tokenization and Machine Learning tools, and methodologies.
- g) INVICTUS are also working closely with relevant agencies to identify and bring in various Queen Bees (lead and early adopter customers) to further expand the adoptions and transactions of the solution.

9. Recommendation

INVICTUS is very encouraged by the success of this POC. INVICTUS intends to continue the expansion in the deployment of this solution by reaching out to more SMEs and FIs.

In addition, INVICTUS is working on an enhanced version of the software to incorporate the credit assessment process by using AI and other tokenization tools.

The digital landscape is changing and this provides a lot of opportunities for unified platforms to improve marketplace efficiency.

INVICTUS hopes to become a one-stop integrated platform for Order Logistics Payment (OLP) system that connects Buyers and Suppliers with Liquidity Providers.

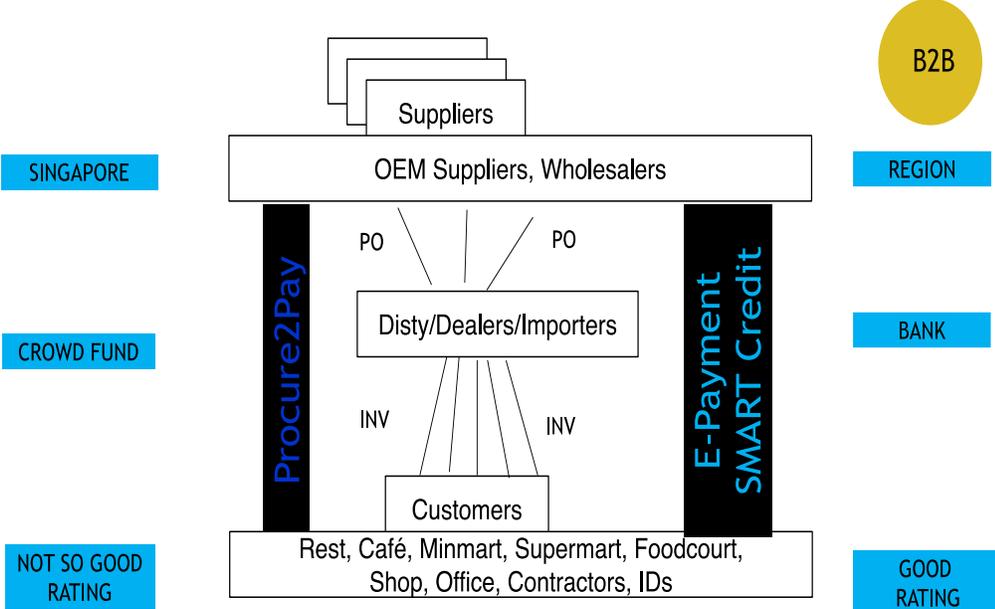
With the inherent potential to improve overall productivity, INVICTUS Procure2Pay platform aims to disrupt the M&E and F&B industries and be part of this potential billion-dollar opportunity as a key platform provider and fulfil a market niche with INVICTUS Blockchain Smart Contract Payment.

Singapore government has publicly stated its ambition to make Singapore a smart nation and Fintech is key to the realization of any such ambition. As

Singapore establishes itself as a center for finance and innovation, our government has said that it is opened to disruptive technologies, such as Uber and Grab services which have disrupted the taxi and car rental service industries.

INVICTUS believes that its Blockchain Smart Contract solution can make financial services more accessible and efficient for both the FIs and SMEs, especially the smaller and micro SMEs which some FIs may avoid due to high cost, compliance, reporting and higher NPL risk.

Focus on Sales & Service instead of cash-flow



- Poor Bank Balances - SMEs need to have strong cash balance &/or access to liquidity.
- Poor Financial - Manage Receivable (Long Collection Cycle) & Payable (Short Cycle)
- Poor Credit Rating
- Focusing on business, planning & service execution improves productivity and efficiency.

INVICTUS & IBM Bluemix Garage | 2018 Confidential

It should be noted that these small SMEs are the ones who need the most help as they dominate the industry for final delivery of goods and services.

Singapore is a favoured location for MNCs and FIs to set up regional operations and head offices due to its business-friendly tax system, highly skilled labour and sophisticated infrastructure. However, as Singapore strives to be the regional financial center and an innovative gateway, the proliferation of Blockchain implementations and adoption by a large number of businesses, will make Singapore even more attractive to the rest of the world.

This collaboration is reflective of Invictus' commitment to enable enterprises in Singapore to thrive in the digital economy through the use of digitization and Blockchain. The use of these technology serves as a shared replicated immutable ledger for organisations, that can facilitate a secure, tamper-proof system of record to provide, a single version of truth to all stakeholders and providing a secured and documented cash-flow solution for buyers and suppliers.

Invictus aspire to solve the last mile payments of SMEs, in particular for M&E and F&B businesses.

Invictus will expand the collaboration on Blockchain Smart Contract for real-time transactions between Buyers and Suppliers, working closely with banks, 3rd party liquidity providers, logistics partners, OEM suppliers and SME Customers.

Targeted regional countries that Invictus has started developments are Vietnam, Malaysia, Thailand and Indonesia.

Invictus goal will be to uberize such technology and digital advancement in Singapore and bring it to rest of the world.