



Supply Chain Traceability

- ◆ Real-time supply chain tracking for transparency and visibility towards enhanced decision making through Blockchain-enabled data integrity

MIMOS in Sustainability

MIMOS is Malaysia's national applied research and development centre focusing on generating technology solutions that enable the government to provide better services, and industry to achieve continued growth.

MIMOS espouses sustainability-led innovation. In supporting the national science, technology and innovation agenda, MIMOS endeavours to make meaningful innovation accessible to all communities and every level of society towards creating a connected, digitalised government and nation.

Backed by strong capabilities in advanced and emerging technologies, MIMOS is at the forefront of driving sustainable and inclusive innovation for Malaysia.

MIMOS Supply Chain Traceability solution promotes best sustainability practices in agriculture and other industries through advanced technologies such as Blockchain, Big Data Analytics, Machine Learning and web crawler. The technologies allow end-to-end product tracing to ensure transparency and visibility; integrity and sustainability.



VALUE

Upon development of the supply chain traceability, convergence of technologies such as Big Data Analytics and Artificial Intelligence can be utilised to understand the environmental landscape within a predefined radius of the supply chain network, enabling companies to prioritise key business areas and better manage industry participations while maintaining good sustainable practices.

MIMOS' traceability solution can provide manufacturers with substantial information visibility throughout the supply chain for better management of products, operational processes and customer satisfaction.

The platform is able to support supply chains in agro-based products, and also offers risk mitigation management framework to identify high-risk areas in the supply chain. It integrates with environmental protection agencies e.g. WWF and Global Forest Watch to ensure responsible sourcing of agro-based products.

TECHNOLOGY BENEFITS



Real-time tracking: Able to perform real-time supply chain tracking due to integration with various tracking mechanism e.g, bar code, sensor data, environment data, weather data etc

Interoperability: The platform complies with GS1 standard which is easily integrated with various traceability system across the globe

Preserved data integrity: The incorporated blockchain technology enables the establishment of data provenance and immutability through stakeholder consensus and finality for the transactions

Data integration: The platform is able to collect and consolidate the information from various sources e.g. smallholders, factories, environmental data, weather etc. to ensure responsible sourcing of agro-based products

Supply chain simulation: The supply chain network can be simulated based on various parameters e.g. environment, weather conditions, market prices, the performance of factory and field yield etc.

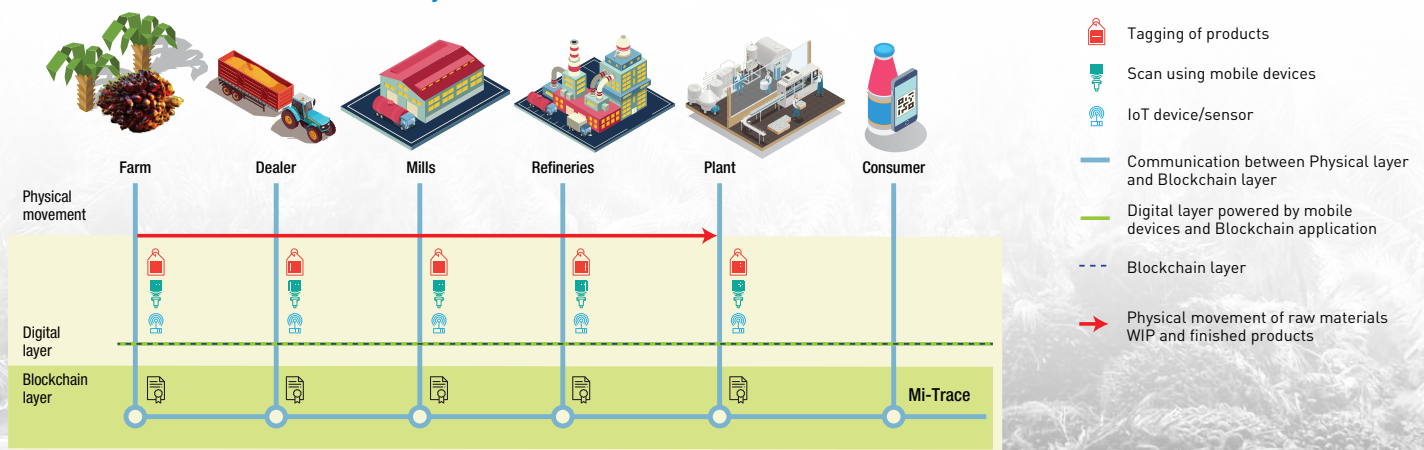
FEATURES

- **Full upstream-to-downstream traceability** based on physical tracking and tracing of information flow and monetary flow
- **Analytical hierarchy process** for performing risk-ranking generation based on risk assessment collected from public domain data
- **Simulation capability** includes data simulation and visualisation for exploring interrelated 'what-if' scenarios of supply chain network when certain parameters are taken out or added
- **Sentiment analysis** for identifying customer sentiment toward products, services or brands.

INDUSTRIAL USE CASE: PALM OIL SUSTAINABILITY

In a sustainability programme for palm oil supply chain, geospatial technology is utilised to understand the environmental landscape within a 10-30 km radius of the palm kernel oil supply network. This enables manufacturers of palm oil-based products to prioritise key collection centres for their sustainability and citizenship programmes. Employing the MIMOS Supply Chain Traceability solution in such programmes can help palm oil industry players see the entire picture of their supply ecosystem, and in turn uphold their sustainability policies.

Traceability from farm to consumer





TECHNICAL NOTES

MIMOS Supply Chain Traceability solution incorporates the following technologies:

1. **Mi-Trace** for product tracking and tracing
2. **Mi-Clip** for collecting information available on the supply chain, including risks, grievances and suppliers' information
3. **MIMOS Blockchain** for governing Data Integrity by enabling traceability of items that are registered in the system and gathered from multiple read-points or parties
4. The solution can also integrate with other MIMOS technologies such as **Authorised Resource Management Component (Mi-ARMC)** to manage data access control.

FUTURE PLAN

MIMOS Supply Chain Traceability solution will provide digital technology support to end-to-end supply chain for visibility and transparency.

The solution will facilitate industry participation in complying with international standards to generate higher income and bring better value for stakeholders while keeping sustainability best practices at the core of company ethos. Ultimately, the solution leads towards digital inclusion for all stakeholders of the supply chain ecosystem.



Supply Chain Traceability



INTELLECTUAL PROPERTY

1. Method to Recommend the Most Reliable Alternative Suppliers within a Given Commodity Supply Chain, PI 2015702136
2. Method and System to Detect and Alert Potential Temperature and Delivery Excursions in a Cold Chain, PI 2015001667
3. Method and System to Manage Servers Resources based with Automatically Generate Virtual Machines, PI 2016000839
4. Method and System to Detect Potential Counterfeits using Single QR-Code, IPMS: 20160001885
5. System and Method to Enable Seamless Installation and Deployment for Private Blockchain Network, IPMS: 20190002122.



PUBLICATIONS

1. Case Study: Malaysian Frozen Durian Traceability Project
May 9, 2014, Asia Pacific Economic Cooperation (APEC) Second Senior Official Meeting (SOM 2): Capacity Building Workshop on Global Data Standards (GDS), Qingdao, China
2. Mi-Trace Traceability Innovation - Food Traceability, Product Authenticity, Product Recall, Anti-Counterfeiting and Trusted Data Source
Apr 21, 2014, GS1 Seminar on Food Safety - Building a Safer and Healthier Food Supply Chain
3. Implementing Peer Group Analysis within a Track and Trace System to Detect Potential Fraud(s)
Mar 2014, International Journal of Supply Chain Management (IJSCM)
4. The Design and Implementation of Trade Finance Application based on Hyperledger Fabric Permissioned Blockchain
ISRITI 2019, International Seminar on Research of Information Technology and Intelligence System

