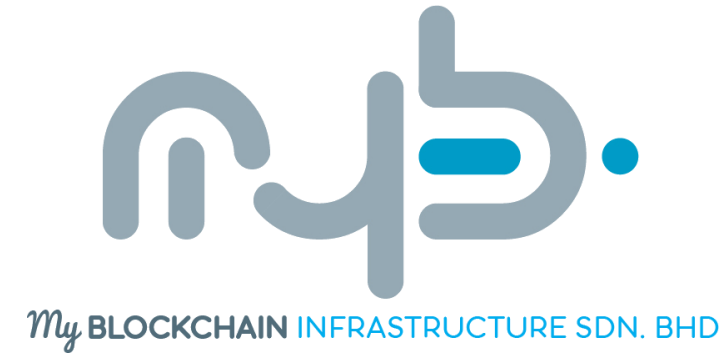# Unlocking Circular Supply Chain: Integrating GS1 & MBI for a Sustainable Future

Powering the circular economy with GS1 standards and Malaysia Blockchain Infrastructure (MBI)

National Applied R&D Centre

1985 – 1990

A Unit under the Prime Minister's Department to initiate R&D in Microelectronics

1991 – 1996

A Dept under MOSTE, with emphasis on R&D and began assuming role in IT Policy Development

1997- 2005

MIMOS Berhad was formed, MoF Inc. company

Mandates:

Business Development;

National ICT Policy Secretariat; and R&D in ICT & Microelectronics

2006 – 2017

New mandate under MOSTI
- To focus on R&D for national competitiveness
- Divest all businesses
- Formation of MTVi

2018 – 2020

Nov 2018 MIMOS moved under the purview of MITI to focus on industry development

2020 to present

Effective April 2020 moved under purview of MOSTI

Unlocking Circular Supply Chain: Integrating GS1 & MBI for a Sustainable Future

Powering the circular economy with GS1 standards and Malaysia Blockchain Infrastructure (MBI)

The Circular Economy: A Continuous Loop

The European Union's Circular Economy Action Plan aims to create a sustainable, low-carbon, resource-efficient, and competitive economy by transforming how products are designed, used, and managed.

Sustainable Design

Products are built for durability, reusability, repairability, and recyclability from the outset.

Extend Product Lifespan

Promoting reuse, repair, remanufacturing, and upgrading to keep products in use longer.

Responsible Consumption

Empowering consumers to make circular choices and encouraging new business models.

Efficient Resource Recovery

Ensuring high-quality recycling and recovery of valuable materials from waste streams.

This systemic approach minimizes waste and pollution, keeps products and materials in use, and regenerates natural systems.

Why This Matters

Evolving Requirements

Buyers & regulators now require verifiable lifecycle data, not PDFs.

Global Standards

GS1 = global language for IDs & events (GTIN/GLN/EPCIS/ Digital Link).

Malaysia's Advantage

MBI = Malaysia's multi-chain multi-provider government-backed trust fabric.

The Power of Integration

Together: standardized data + tamper-evident proofs → scalable circularity.

Sources: GS1 in Europe, Environment, Reuters, GS1, Mimos, BERNAMA, The Edge Malaysia, MyGovBC

Agenda

01 **Topic Snapshot**
Overview of digital trust requirements for Malaysian supply chains

02 **What is MBI?**
Malaysia's multi-chain infrastructure and services explained.

03 **GS1 Standards**
How global standards co-exist with blockchain infrastructure

04 **Enabling Circular Supply Chains**
From linear to circular: the MBI advantage

05 **Benefits & Success Stories**
Real-world implementations and outcomes

06 **Action Plan**
How to Join MBI and get started

Topic Snapshot: Malaysia & Global

Area	What's New	Why It Matters	What We Need
EU DPP	Digital Product Passport under ESPR (Ecodesign for Sustainable Products Regulation)	Exporters must share trusted lifecycle data	GS1 IDs + verifiable credentials
EUDR	Due diligence with geo & custody; risk-based checks	Commodities incl. palm, cocoa, wood	Field-to-port traceability + geo proofs
National	MITI Circular Economy Policy Framework; KPKT Solid Waste Circular Blueprint (2025–2035)	Compliance + competitiveness	SME-friendly onboarding, Digital Link + EPCIS

What is Malaysia Blockchain Infrastructure (MBI)?

Multi-Chain Multi-Provider Backbone

Malaysia Blockchain Infrastructure (MBI) = Neutral, multi-developer, multi-chain, and multi-provider backbone by MIMOS with industry partners.

It supports multi-chain selection from multiple Blockchain industry players and application developers and interoperates via one interface.
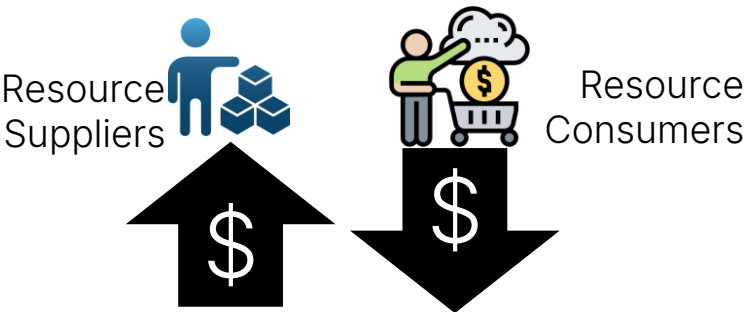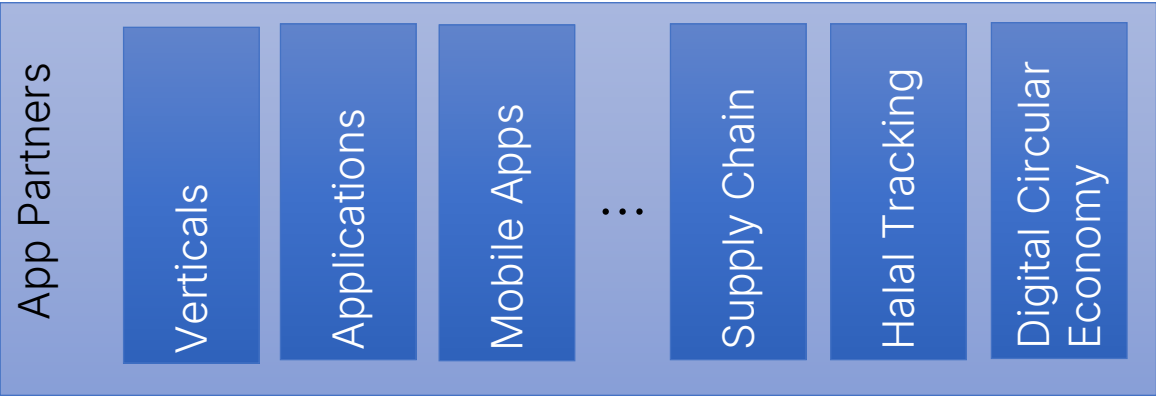
Core Services

- DID/VCs (Decentralized Identifiers/Verifiable Credentials)
- Proof anchoring for supply chain events
- Policy controls for governance (e.g.: data sovereignty)
- Encourage interoperability, avoid provider-lock
- SDKs for developer integration

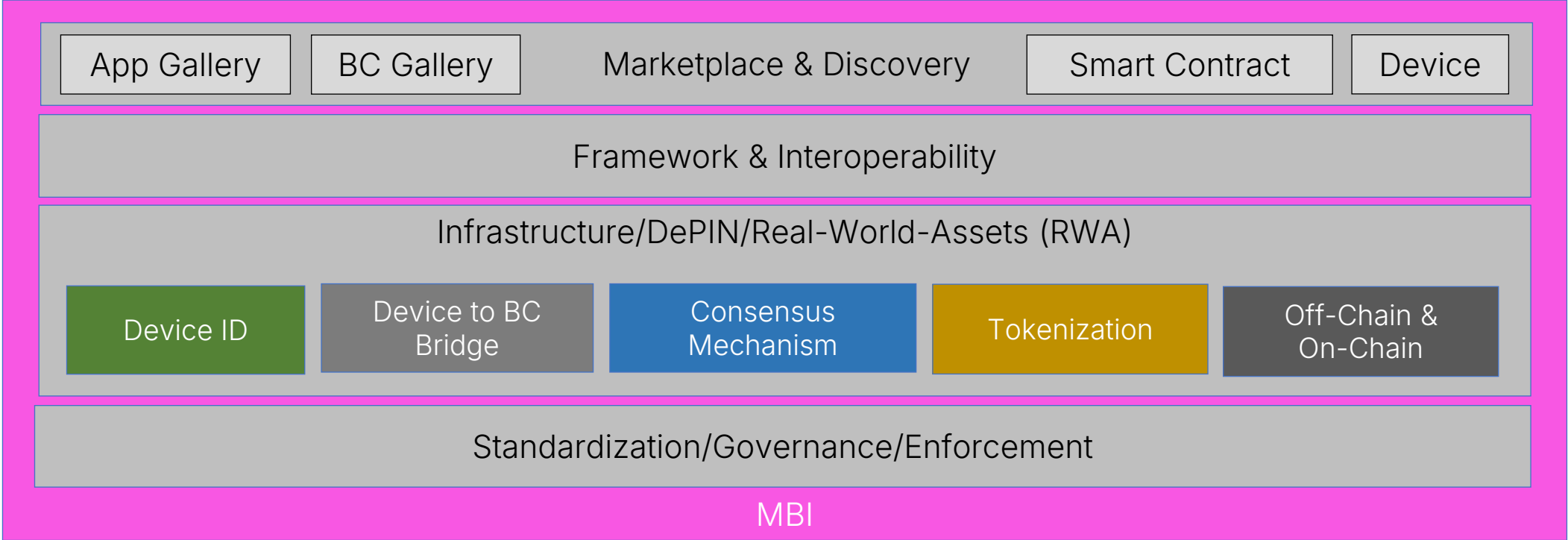Outcome: unified access → faster compliance, simpler integration.

Sources: Mimos, BERNAMA, The Edge Malaysia, MyGovBC

Bringing Everyone into the Ecosystem

Application as a Service

App Partners

| Verticals | Applications | Mobile Apps | ... | Supply Chain | Halal Tracking | Digital Circular Economy |

Resource Suppliers

Resource Consumers

Application Developers
Access to ready-to-use services and BaaS

Platform as a Service

| App Gallery | BC Gallery | Marketplace & Discovery | Smart Contract | Device |

Framework & Interoperability

Infrastructure/DePIN/Real-World-Assets (RWA)

| Device ID | Device to BC Bridge | Consensus Mechanism | Tokenization | Off-Chain & On-Chain |

Standardization/Governance/Enforcement

MBI

Blockchain Network Operators
New market access and collaboration opportunities

Blockchain as a Service

Blockchain Partners

| MyEG Zetrix | Masverse MasChain | JDN MyGovBC | ... | Blockchain XYZ |

BaaS Technology Providers
Government project opportunities and recognition

Infrastructure as a Service

Infrastructure Partners

| Azure | AWS | TM | PDSA | IPServerOne | ... | IaaS XYZ |

IaaS Providers
New revenue channels and national project involvement

GS1 + MBI: Co-existence by Design

Identify
GTIN/GLN/SSCC; identify with standard codes

Capture
1D/2D/RFID; capture data efficiently

Share
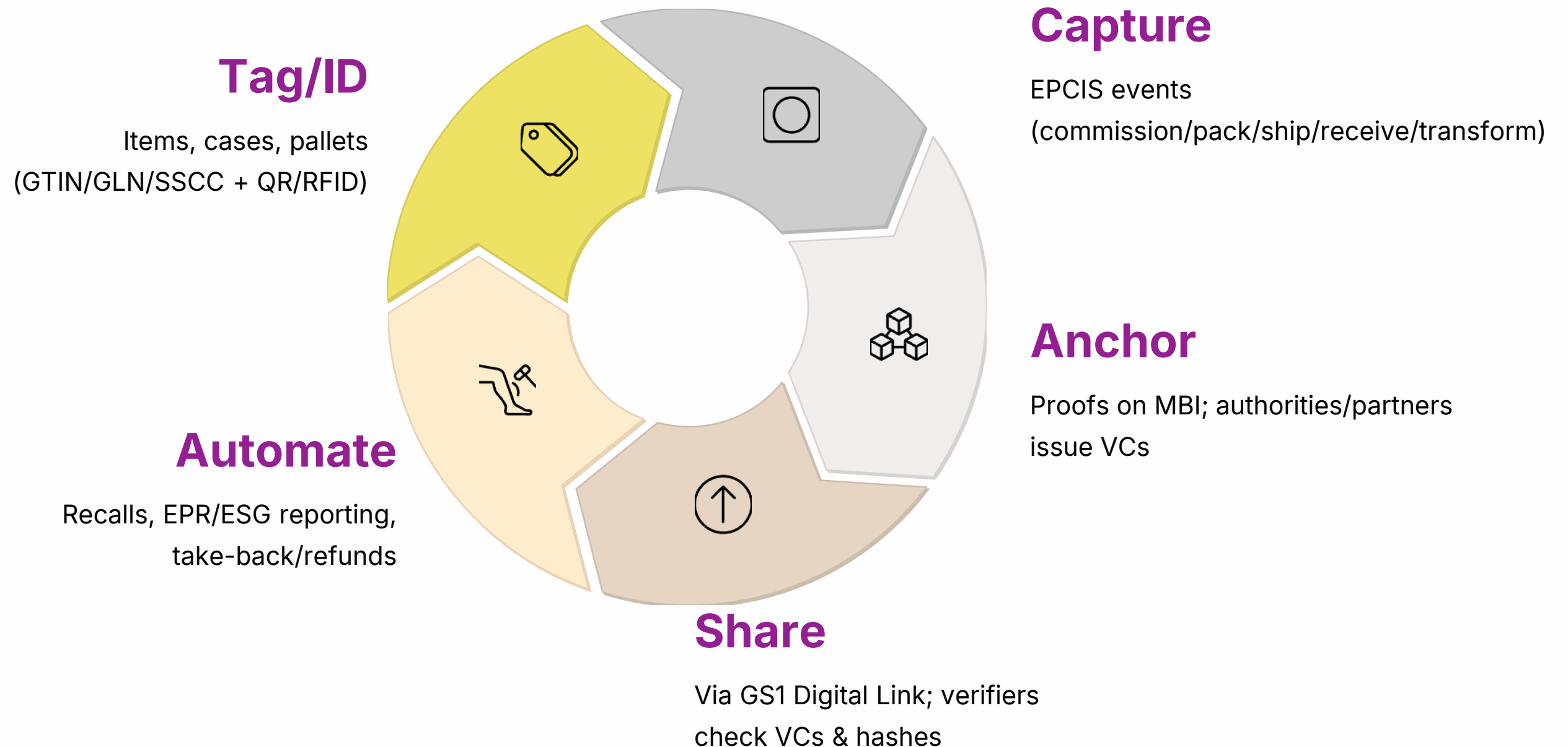Events via EPCIS; Digital Link for access

Verify
VbG validates GTIN meta; MBI anchors proofs and issues VCs

MBI enhances GS1 standards by creating tamper-evident claims for origin, recycled content, Halal certification, and carbon footprint.

Lifecycle at a Glance: From Linear → Circular

Tag/ID

Items, cases, pallets
(GTIN/GLN/SSCC + QR/RFID)

Capture

EPCIS events
(commission/pack/ship/receive/transform)

Anchor

Proofs on MBI; authorities/partners
issue VCs

Automate

Recalls, EPR/ESG reporting,
take-back/refunds

Share

Via GS1 Digital Link; verifiers
check VCs & hashes

Sources: GS1

Why MBI: What the Industry Needs

Proof, not PDFs
Meet DPP/EUDR/buyer scorecard requirements with verifiable data

Interoperability
Work across chains & ERPs through one unified fabric

SME-ready
Low-cost labels, mobile scanning, SaaS connectors for small businesses

Governance & Privacy
PDPA-aligned with selective disclosure through Verifiable Credentials

Benefits to Malaysian Industry

Market Access
Meet EU/US mandates with click-to-verify evidence

Premiums & Trust
Prove origin/quality → stronger brands and higher margins

Operational Wins
Faster targeted recalls, fewer disputes (EPCIS + proofs)

Financial Advantage
Better ESG reporting → green loans/insurance access

Sources: GS1 in Europe, Environment, Reuters, GS1

Success Signals: Global Exemplars

2.2s
Walmart Trace Time

Mango trace time cut from ~7 days to 2.2 seconds using Hyperledger Fabric

Millions
De Beers Tracr

Diamond tracking at industrial scale (multi-million stones)

4+
GS1 Interoperability

IBM Food Trust, SAP, FoodLogiQ, ripe.io interoperated via GS1 standards

10
Battery Alliances

Global Battery Alliance — 2024 pilots with 10 consortia for Battery Passports

Sources: Walmart Global Tech, British Blockchain Journal, GS1 US, debeersgroup.com, Ledger Insights, globalbattery.org
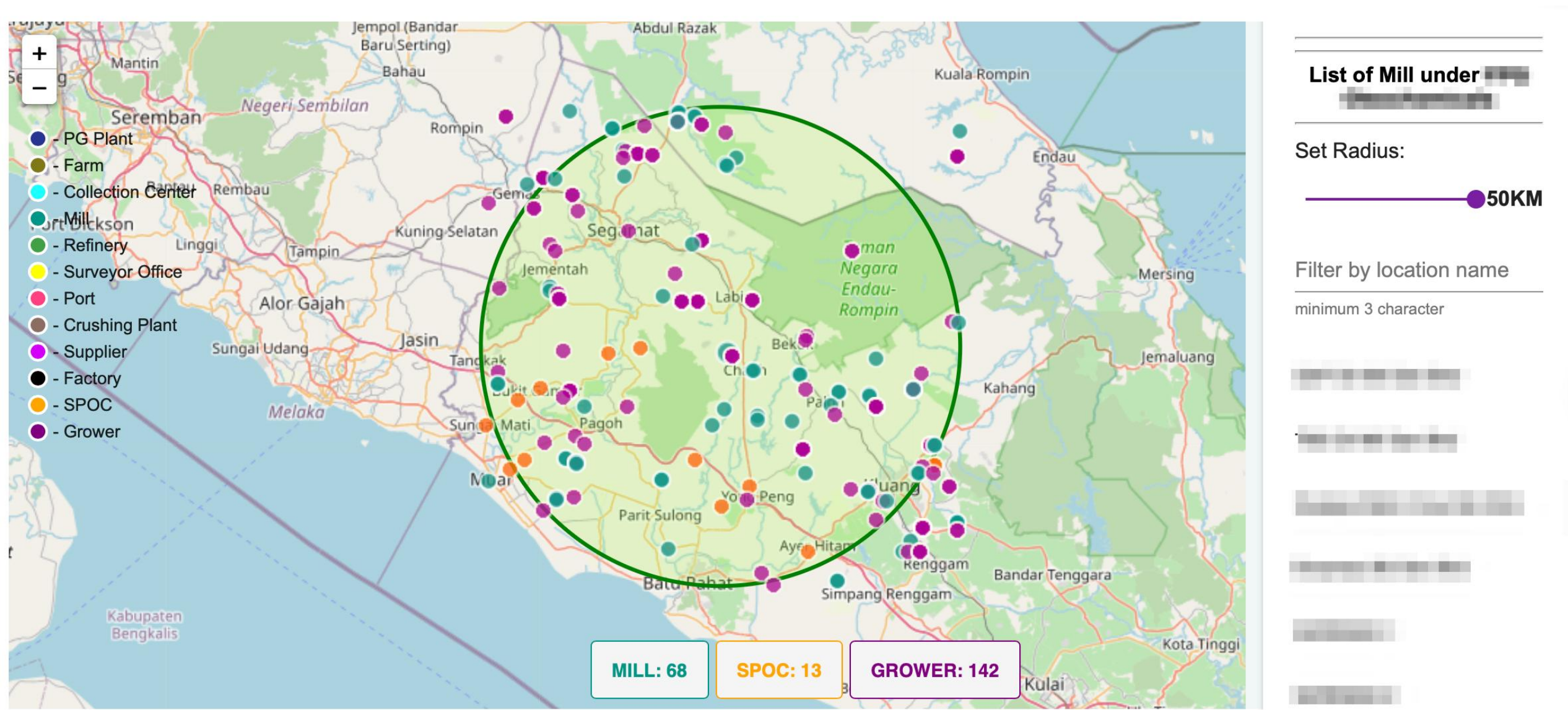
Past Project: Farm-to-Fork Traceability

Collaborative platform for data exchange & sharing across the supply chain. Responsive in authentication & product placement with 100% visibility.
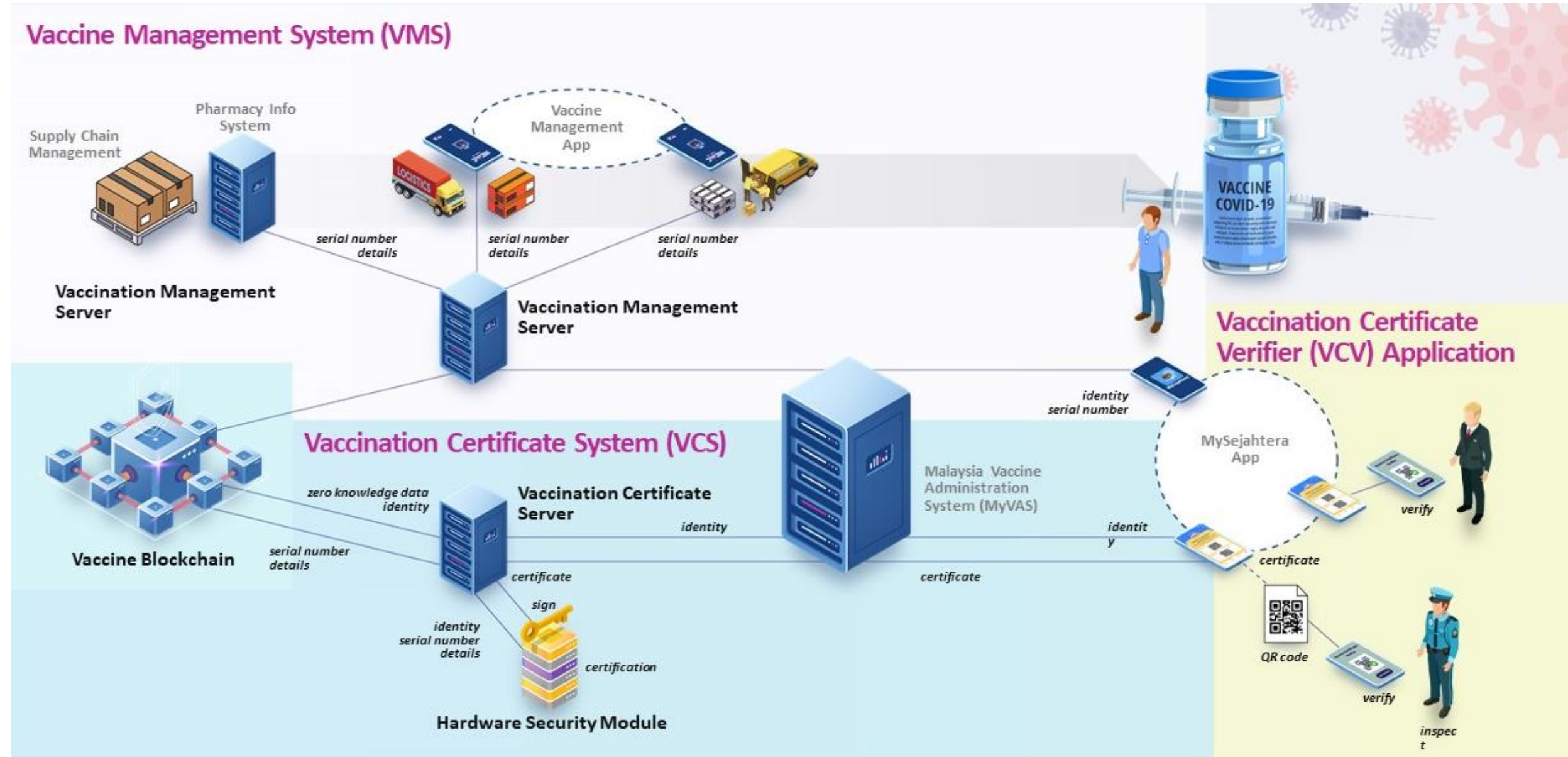
Past Project: Sustainable Palm Oil Sourcing

Enabling the supply chain sustainable team to ensure the raw materials sources are traced back to sustainable farms and rewarded accordingly.

Past Project: Vaccine Management Ecosystems

Blockchain technology enables pharmacists, medical professionals, and their respective officers to track and trace the vaccine supply chain from the manufacturers to the vaccine recipient.

Electronics & Batteries: Lifecycle & Take-back

Registry on MBI

- Unique IDs for battery packs/cells
- Service events recorded in EPCIS
- Second-life usage tracking
- Recycling events anchored on blockchain

Key Benefits

- Automated ESG reporting
- Fraud reduction in recycling claims
- Deposit/refund programs through smart rules
- Alignment with EU DPP for batteries
- Compatible with GBA (Global Battery Alliance) Battery Passport initiatives

Sources: GS1 in Europe, globalbattery.org

Technology Map

MBI Domain
Multi-chain & Multi-provider

GS1 Domain
GTIN/GLN/SSCC/GRAI, EPCIS, Digital Link

Bridge Layer
Map GS1-modeled data to MBI proofs and VCs

GS1 Domain

- GTIN/GLN/SSCC/GRAI identification standards
- EPCIS for event capture and sharing
- Digital Link for web-enabled identifiers

MBI Domain

- Multi-chain & Multi-providers
- DID/VCs for identity and credentials
- Proof anchoring and verification services
- Access/policy controls and developer SDKs

Bridge: GS1-modeled data → MBI proofs & verifiable credentials for tamper-evident supply chain records

What MBI Provides (So You Don't Build It All)

Onboarding Kits
Ready-to-use labels, EPCIS schemas, and sandbox environment for quick testing

SDKs & Connectors
Integration tools for ERP/WMS/MES systems and mobile scanning applications

VC Templates
Pre-configured verifiable credentials for origin, recycled content, Halal certification, and more

Multi-chain Routing
Seamless access to our Blockchain partners, such as Zetrix, Maschain, MyGovBC, and other potential blockchain networks

Quick Start for Manufacturers

1 — **Step 1**

- GS1 onboarding & clean master data
- Select 1-2 pilot SKUs
- Identify key stakeholders

2 — **Step 2**

- Apply QR/RFID identifiers
- Enable EPCIS event capture
- Connect to MBI sandbox
- Issue first Verifiable Credential

3 — **Step 3**

- Pilot with buyer/regulator
- Run mock recall exercise
- Generate compliance reports
- Measure performance metrics

4 — **Step 4**

- Evaluate pilot results
- Document ROI metrics
- Develop scale-up plan
- Begin full implementation

Business Value

Revenue

- Maintain access to export markets
- Command premium pricing
- Build stronger branding (DPP/EUDR-ready)
- Open new market opportunities

Cost

- Reduce chargebacks and disputes
- Minimize recall scope and impact
- Automate ESG reporting
- Streamline compliance processes

Risk

- Lower non-compliance penalties
- Reduce reputational exposure
- Mitigate supply chain disruptions
- Protect brand integrity

Capital

- Improve ESG scores
- Access green financing
- Qualify for sustainability incentives
- Lower insurance premiums

Call to Action: Join MBI

Register Interest
Complete company profile and submit expression of interest

Pick a Pilot
Select SKU/product line with export relevance for initial testing

Get GS1-ready
Implement proper IDs, labels, and EPCIS event capture

Connect to MBI
Begin with sandbox environment before moving to production

Issue VCs
Create verifiable credentials and publish Digital Link pages

Show the Win
Demonstrate value through buyer demos and audit fast-tracks → scale implementation

Thank You

Let's make Malaysia's supply chains trusted, circular, and competitive.

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Malaysia Blockchain Infrastructure (MBI)
A subsidiary of MIMOS Berhad