Innovation….

Tokenizing assets....

Provenance
Solution

Blockchain

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Liability with no visibility

Greater complexity and a lack of visibility across modern supply chains have made it increasingly challenging for brands to protect their reputations and uphold quality and authenticity standards.

Consumer expectations for transparency is rising.

More than ever, consumers increasingly want to know the story behind the goods that they purchase – the source of products and their journey to the counter, whether the supply chain supports the local economy or harms it, and more. Providing reassurance is critical to build and maintain brand loyalty.

65%
of Gen Z's try to learn the origins of anything they buy[1]

59%
of women 35+ say buying eco-friendly beauty products is important to them[2]

71%
of consumers believe traceability is very important & are willing to pay a premium for brands that provide it[3]

Increased visibility will address current pain points

Gaps in visibility compound supply chain challenges and risks, and force parties to be reactive rather than proactive in mitigating risks that impact your brand's **reputation** and **bottom line**.

*"Our customers demand an authentic, well produced product. We need visibility into the supply chains to **curtail counterfeits.** If not, **we risk loosing our customers and damaging our brand."***

Brand Management & Risk Officer

(Risk Management)

*"I often have payments outstanding to my suppliers and am owed payment from my buyers. **Disputes can delay payment further and negatively impact my cash flow**."*

Finance Officer

(Payments & Liquidity Concerns)

*"Savvy consumers want their purchases to align with their values and are willing to disassociate from brands that break their trust. I need to reassure them they are buying from sustainable and ethical sources, but **I don't have full oversight of my suppliers**."*

Ethics and Sustainability Officer

(Ethic & Sustainability Risks)

*"I need to be able to closely monitor inventory and shipments so I can identify and mitigate disruptions immediately. **I only told of an issue once an order is already delayed**"*
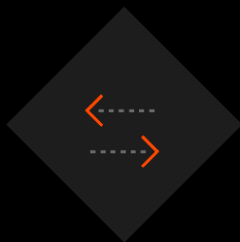
Suppliers

(Stock Management)

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Mastercard Blockchain

Designed to protect privacy and drive transaction throughput

Performance   **Trust**   **Scalability**

Faster Consensus

A proof-of
audit consensus
mechanism
that is able to support
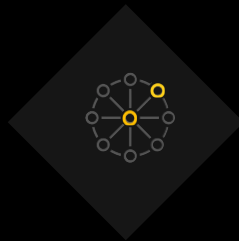transaction processing
speed of commercial
network > 20k TPS

Privacy

A hash-based key value
store that separates
transaction data from
the shared audit data,
support auditability
without disclosing
privacy

Partitioned Chain

Enables multiple
applications to run
side-by-side on a single
Blockchain. Customers
only need to support
own use case data

Generic Protocol

Data-agnostic protocol
that accommodates any use
cases and programming
languages. Tokens accepted
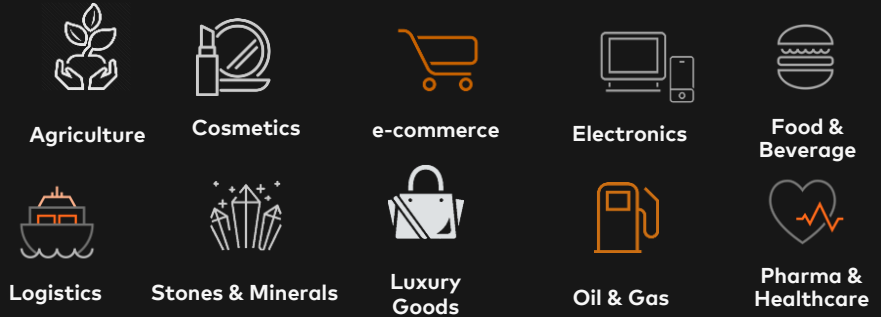but not required for any
entities to join the network
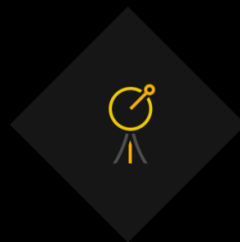
Future Proof

Developing a quantum
resistant platform and
self-healing network
capabilities to future-
proof business
operations

Enterprise Solution: Mastercard Provenance on Blockchain
Industry agnostic and applicable to many use cases

Leveraging Mastercard's secure Blockchain with traceability capabilities and value-added services to achieve visibility and gain efficiencies in complex supply chains

Agriculture   **Cosmetics**   **e-commerce**   **Electronics**   **Food & Beverage**

Logistics   **Stones & Minerals**   **Luxury Goods**   **Oil & Gas**   **Pharma & Healthcare**

Platform may be used to address many different industry use cases, for example:

Product Storytelling	Self-billing	Reconciliation & Dispute Management	Sustainability Tracking	Trade Finance	Regulatory Compliance	Secondary/ Resale Market
Product Authenticity Certificate	Provenance	Risk Management	Parametric Insurance	Supply Chain Financing	Recall & Return Management	Asset Lifecycle Management

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How It Works

BUILD YOUR SUPPLY CHAIN FROM MULTIPLE DATA STREAMS

ORGANIZATIONS

Data about companies and their products and locations

SUPPLY CHAIN EVENTS

Events happening to items as they move through the supply chain

IOT SENSOR DATA

Data from IoT sensors such as temperature, geolocation, humidity, etc.

DOCUMENTS

Key data about documents throughout their lifecycle

PAYMENT TRANSACTIONS

Data about payment transactions between supply chain parties

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Provenance Solution

Blockchain

THEN LEVERAGE TOOLS TO PROCESS DATA TO AUTOMATE & OPTIMIZE SUPPLY CHAINS

SMART LOGIC & TRIGGERS

Use tools like smart contracts to build self-executing conditional logic to automate workflows, such as payments

NOTIFICATIONS

Leverage webhooks to connect and automate workflows

AI/ANALYTICS

Identify actionable insights. Advanced techniques like AI or machine learning can also help flag anomalies
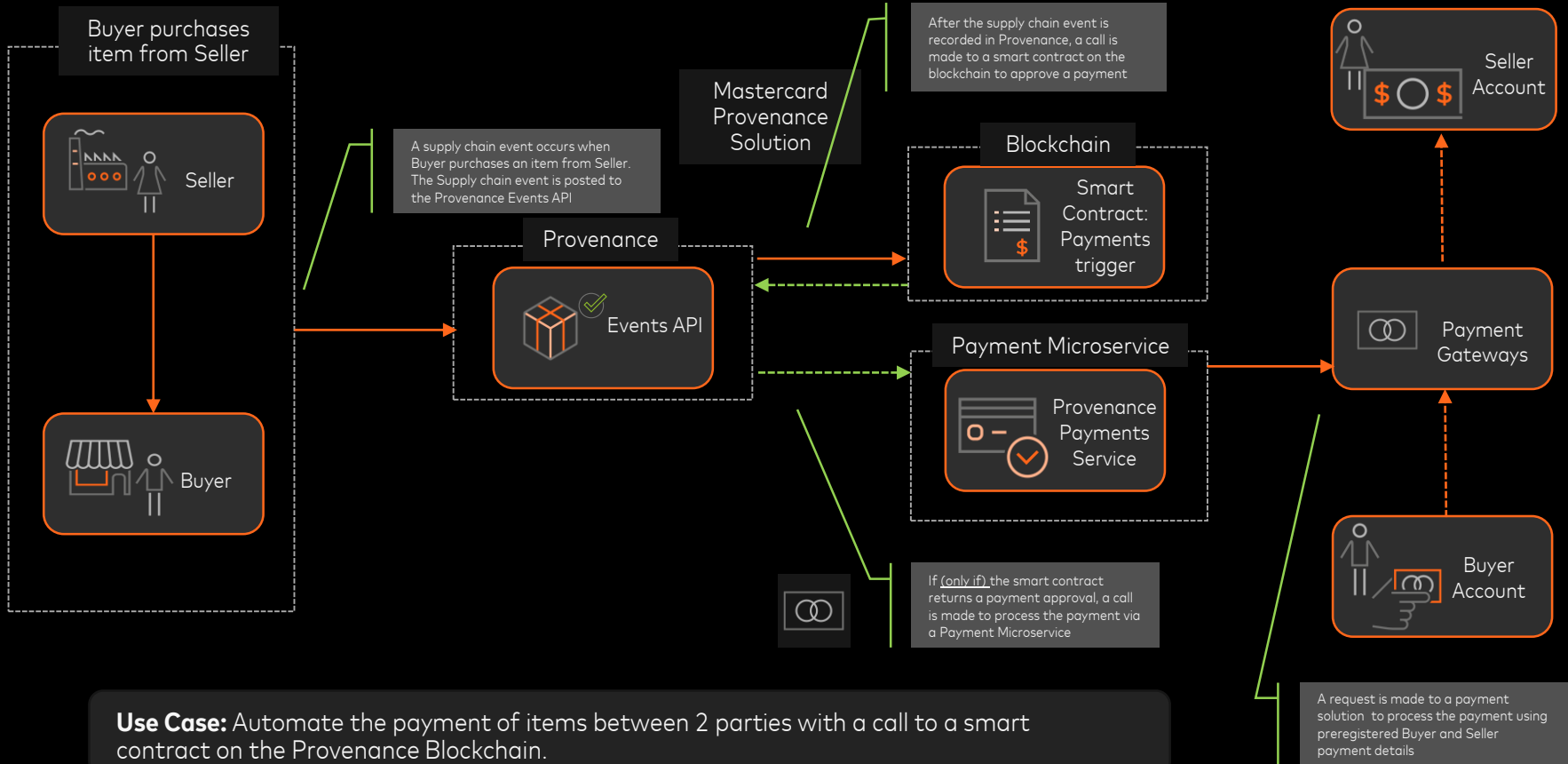
MASTERCARD PORTFOLIO

Leverage integrations to existing products & services in Mastercard's portfolio such as payments, analytics, etc.

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Payment Triggers with Smart Contracts

Buyer purchases item from Seller

Seller

Buyer

A supply chain event occurs when Buyer purchases an item from Seller. The Supply chain event is posted to the Provenance Events API

Mastercard Provenance Solution

After the supply chain event is recorded in Provenance, a call is made to a smart contract on the blockchain to approve a payment

Provenance

Events API

Blockchain

Smart Contract: Payments trigger

Payment Microservice

Provenance Payments Service

If (only if) the smart contract returns a payment approval, a call is made to process the payment via a Payment Microservice

Seller Account

Payment Gateways

Buyer Account

A request is made to a payment solution to process the payment using preregistered Buyer and Seller payment details

Use Case: Automate the payment of items between 2 parties with a call to a smart contract on the Provenance Blockchain.

Case Study: IoT & Logistics

Industry leaders converged, each bringing their expertise and proven infrastructures, to provide a seamless, technology-enabled supply chain transformation solution that addresses inefficiencies.

The solution enabled:

- **Visibility—Granular visibility into the location and condition of goods all along the transportation chain.**
- **Trust—Immutability of provenance, change of custody, transactions, and all other data activities.**
- **Scalability—A scalable infrastructure that can be adopted over time and is interoperable with customers' existing infrastructures.**
- **Protection/Security—Risk management and insurance to reduce costs and losses for suppliers, processors, warehouses, and transporters.**
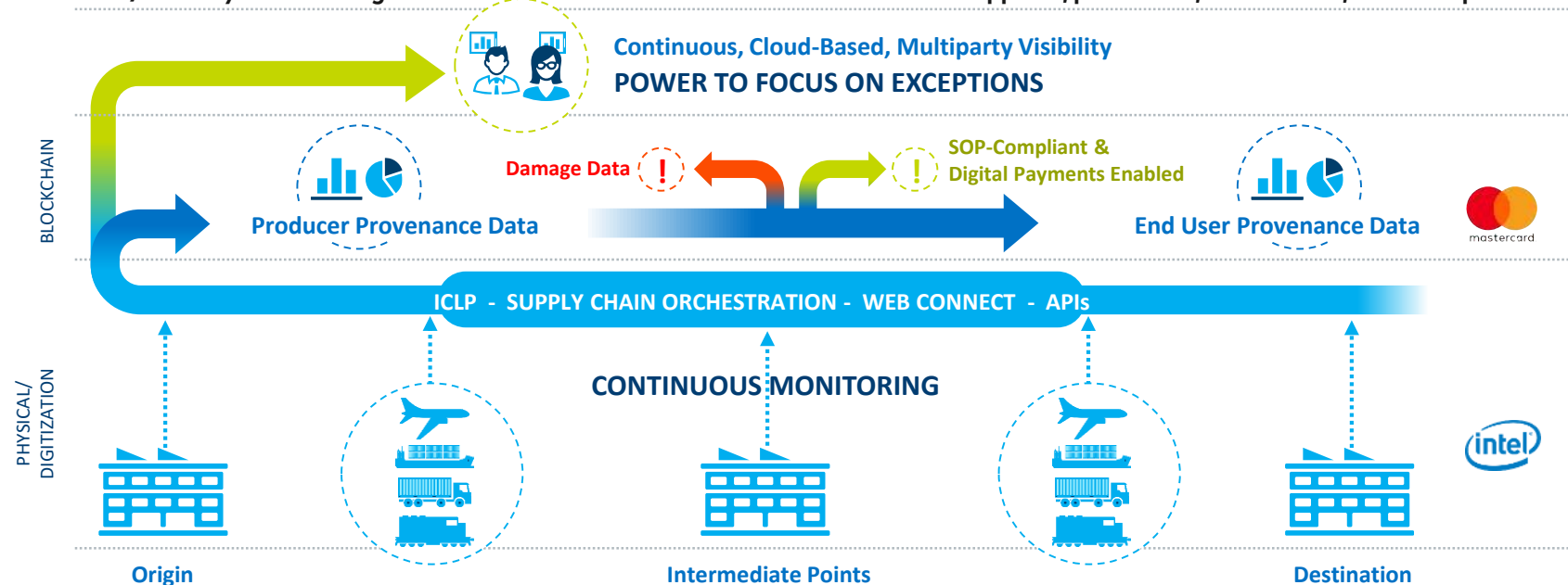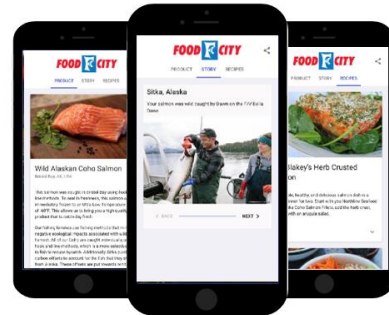
Case Study: Seafood Traceability

Envisible's Wholechain traceability system is powered by Mastercard's blockchain-based Provenance Solution and used by Topco Associates, LLC, a leading United States food cooperative, to help its member-owners' supermarkets trace and highlight the origin of seafood. This provides consumers with better line of sight into ethical sourcing and environmental compliance of the seafood selection sold at their stores.
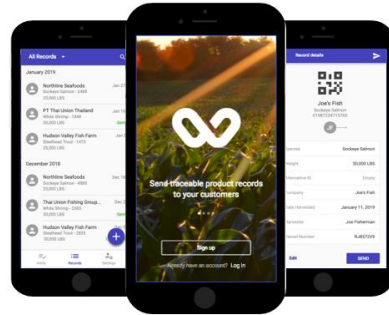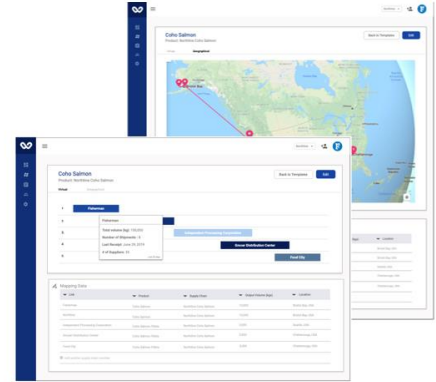

SUPPLY CHAIN TRACEABILITY APPLICATION

PRODUCERS, PROCESSORS, TRANSPORTERS CREATE, CONNECT AND SHARE RECORDS WITH PRODUCTS

CONSUMER STORYTELLING APPLICATION

DIGITAL CONTENT FOR CONSUMERS

ENTERPRISE TOOLS AND TRACEABILITY

VIRTUAL MAP AND DATA

GEOGRAPHIC MAP AND DATA

Case Study: Avocado Traceability

Mastercard partnered with Fresh Supply Co., a supply chain digitization company based in Australia, to deliver end-to-end visibility of journey of avocados from Australia to Southeast Asia. Consumers were able to trace each step of the product journey.

Trust in the supply chain:
Tracking the farm-to-table journey

Queensland, Australia avocado farmers say the pebbled fruits grown in their rich red volcanic soil are the best in the world. Now supermarket shoppers across Asia who reach for Aussie avocados can learn why.

Mastercard's partnership with Fresh Supply Co., a supply chain digitization company based in Australia, **harnesses blockchain to deliver end-to-end visibility of the avocados' journey**, from plant to pulp.

Mastercard Provenance Solution

Using our established global network capabilities to digitize any industry's supply chain, we enable real-time traceability and bridge the gap between data silos to build trust between parties and enable actionable insights. The solution is powered by blockchain, a transformative shared ledger technology which uses cryptography to immutably record transactions in a decentralized manner, increasing trust and security.

Data Stored:
ORIGIN   DATES   GRADING   TRACKING

Grower:
The farmers grow, pick and pack avocados and ship them to the processing facility.

Processor:
The processor sorts, grades, and prepares the avocados for shipment to retailers. Profile and production records are linked to the individual avocados immutably on Mastercard's permissioned blockchain. When the processor ships the pallets of avocados to supermarkets, the change of custody is also recorded on the blockchain.

Retailer:
Supermarkets receive the avocados, which are labeled with QR codes that link to the information stored on the blockchain, boosting consumer confidence and food safety and recall capability.

Shopper:
Shoppers scan the QR codes to learn more about the people behind the produce, pinpoint the farm on a map, receive recipe tips and more.

The Avolution

Case Study: Commodity Traceability

Partnership brings authenticity to supply chains, tracing more than 24 commodities, such as coffee, sorghum and grain, in Latin America and North America

Mastercard parterned with GrainChain, using Mastercard's award-winning proprietary and industry-agnostic blockchain technology, Mastercard and GrainChain together can create digital records of commodity data, marking Mastercard Provenance Solution's entry into Central America.

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Case Study: Luxury Retail Traceability

Mastercard partnered with iconic experiential retailer Fred Segal to showcase limited-edition collection from [Rodarte](#) designers and sisters, Kate and Laura Mulleavy, featuring artwork by artist and painter, Mari Eastman. Consumers were able to scan a QR code on the garment's tag to trace each step of the product journey and verify authenticity.

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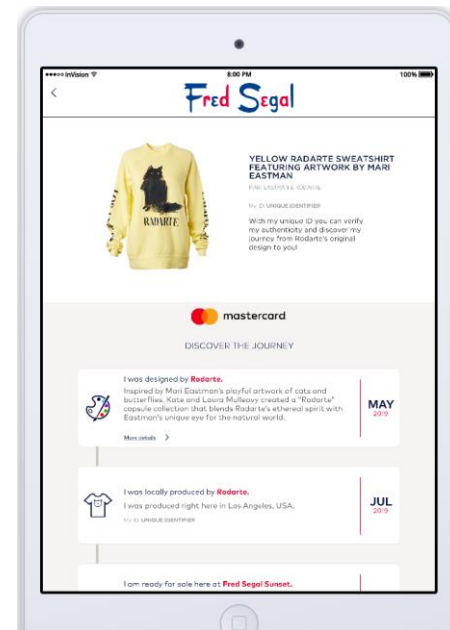
Thank you – Q&A's

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