



# Harnessing DNA & Blockchain Technology for First-Mile Palm Oil Traceability

Erik Malmstrom, CEO

November 4, 2019



# Summary

- **Company Background**
- First-Mile Palm Oil Traceability

# SafeTraces Mission Statement

We are propelling food tech into the future, using nature's own DNA to make food production safer, more transparent, and less wasteful.

# Company Snapshot

- Founded in 2013
- Based in Pleasanton, CA
- Expert team of scientists, engineers, manufacturers, FSQ practitioners, and commercial leaders
- Customers include major food producers, processors, and brands
- Partnered with world-class research institutions and venture capital firms



# Core Technology

- Patented method uses edible DNA barcodes drawn from seaweed
- Applied directly to food and agricultural materials
- No effect on shelf life, flavor, or odor
- FDA Generally Recognized As Safe (GRAS)
- Web-based app integrates easily with other systems



# miniDART™: World's First DNA Printer



Applies barcode directly on fresh produce, dry, and liquid bulk commodities at item-level, enabling rapid trace to source

# miniDART™: How It Works



01

Create safeTracers™ with unique DNA barcode on-site



02

Apply safeTracers™ during regular processing to tag each item or lot with source data



03

Verify authenticity, origin, and purity – anywhere, in 15 minutes

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- Company Background
- **First-Mile Palm Oil Traceability**



# First-Mile Traceability is Defining Problem of Palm Oil Supply Chain

Bloomberg

Business

## Most Palm Oil Companies Can't Fully Trace Supplies, Survey Shows

By [Agnieszka de Sousa](#)

October 29, 2019, 3:00 AM PDT

- ▶ Only 19 of 83 companies can trace from mill to plantation: ZSL
- ▶ Palm output boom is linked to hurting forests and wildlife



Stakeholders have failed to identify effective, practical, reliable, and cost-effective solution

# Use Case: First-Mile Palm Oil Traceability

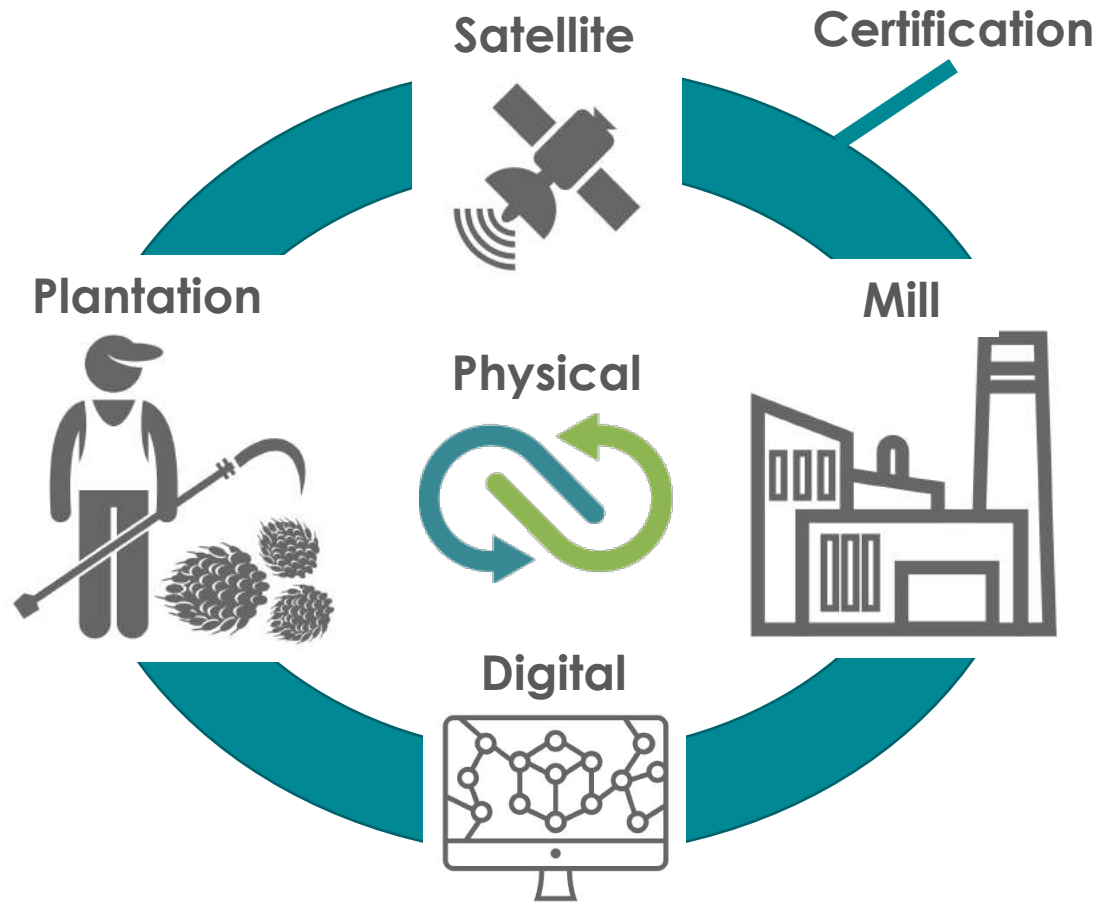
## Problem Statement

Common ingredient in consumer food products

History of environmental & labor abuse in supply chain

Existing traceability solutions are flawed:

- Limited scope
- Vulnerable to fraud
- Impractical
- Costly
- Exclude smallholders



## SafeTraces Solution

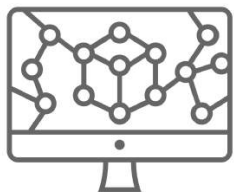
**Physical** item-level tagging of palm FFB's with geo-tag and time-stamp

**Satellite** monitoring of sourcing origins

**Digital** data record secured via blockchain

**Certification** of suppliers & process by third parties

# How SafeTracers Work in First-Mile Palm Oil Supply Chain



<p>Harvest crew applies unique DNA barcode to palm FFB via injector or sprayer linked to smartphone</p>	<p>Quality assurance manager conducts detection test of palm FFB's to confirm positive identification of DNA barcodes</p>
<p>Each DNA barcode application creates data event that is recorded, timestamped, and notarized in blockchain</p>	<p>Detection test results recorded, timestamped, and notarized in blockchain and verified against other critical tracking data</p>

# Highly Accurate Detection During First-Mile Transit From Plantation to Mill



SafeTracers applied to hundreds of FFB's



100% accuracy identifying origin of tested FFB's

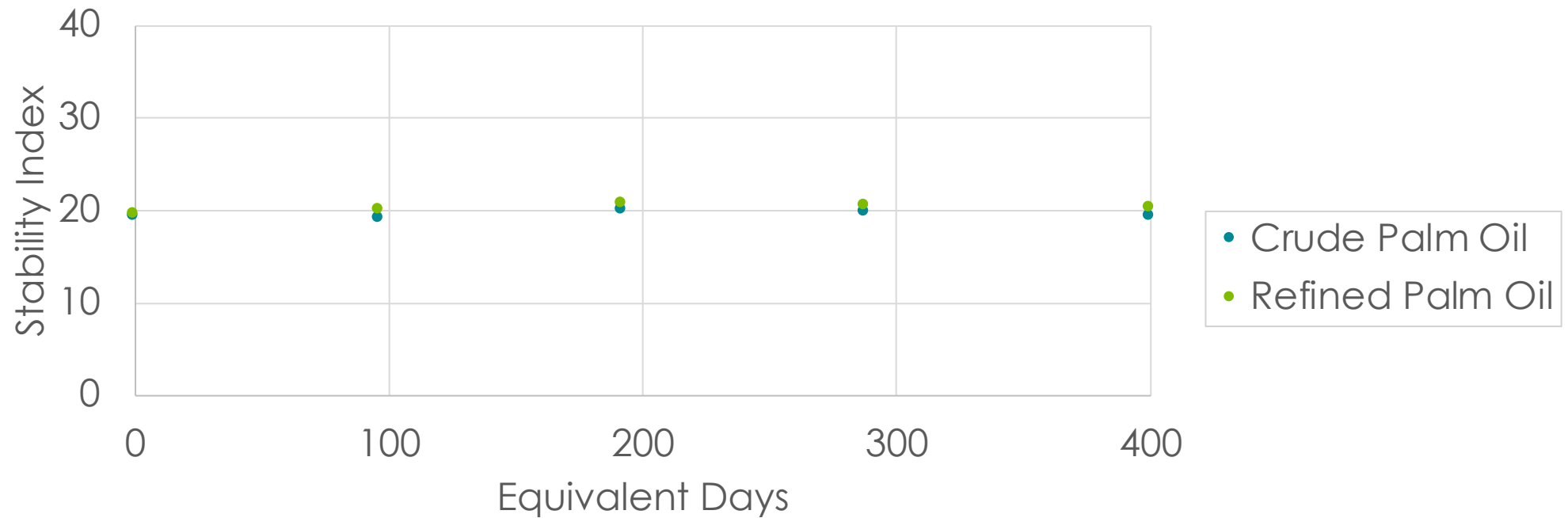
100% accuracy identifying non-conforming FFB's



Local workers performed SafeTracers FFB tagging after five minutes of training.

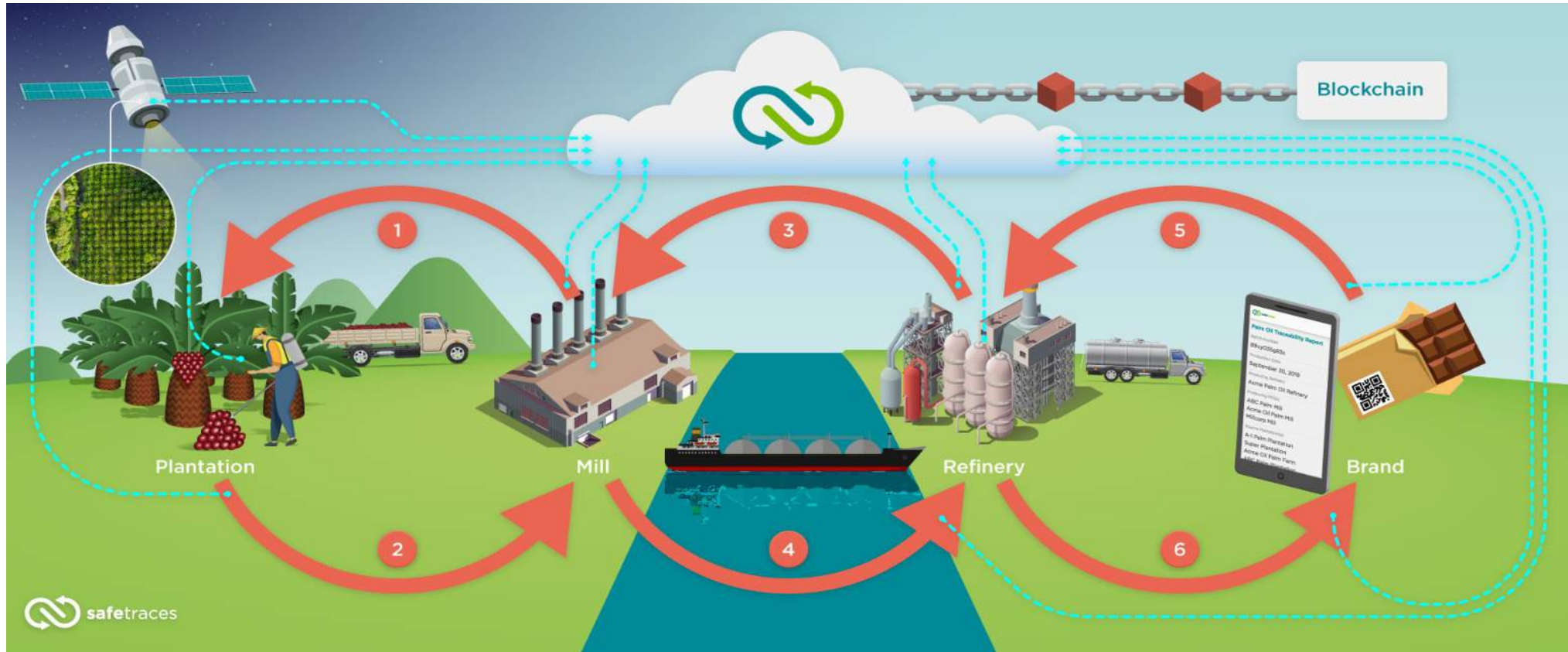
# SafeTracers Are Stable in Palm Oil For Over One Year

## Crude and Refined Palm Oil Accelerated Stability



**Stability is significantly longer than normally required for origin to destination transit**

# SafeTraces Will Extend Beyond First-Mile for True End-to-End Product Traceability



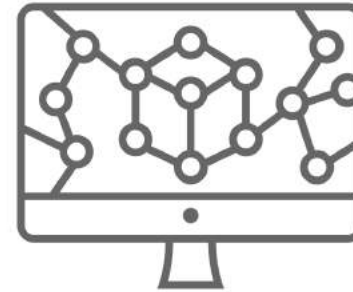
Product is verified at each key node in the supply chain from plantation to consumer

# Next Steps: Strategic Partners and Integrations

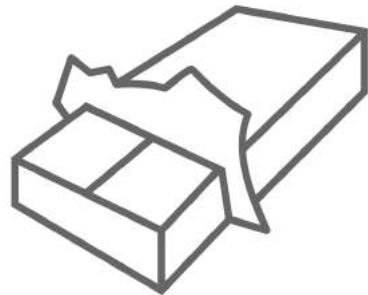
Traders / Processors



Software / Blockchain Providers



Brands / Retailers



Standards & Certifications



# Customer ROI

## **Revenue Creation:**

Gain first-mover advantage with ability to premium price and defend margins

## **Cost Savings:**

Mitigate significant cost and risk exposure associated with fraud / adulteration

## **Brand Equity:**

Strengthen transparency and sustainability story with consumers



# Call to Action

- Partner with SafeTraces
- Contact me:
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  - +1.203.556.1203



Trace the product, not the package

[www.safetraces.com](http://www.safetraces.com)