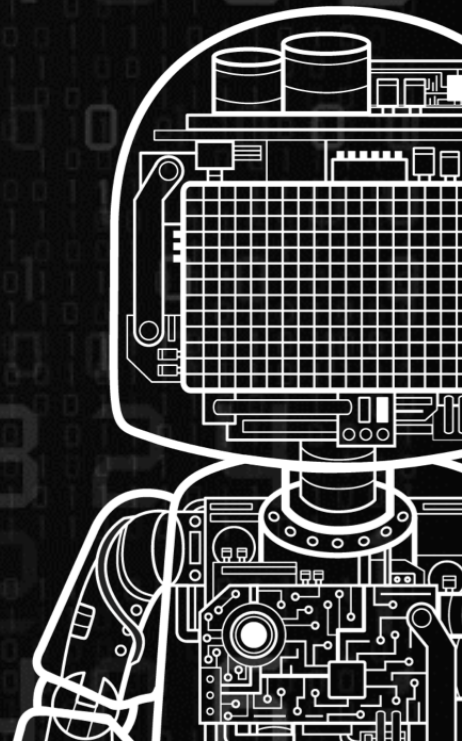




BIG DATA, BLOCKCHAIN AND AI: APPLICATIONS IN EMERGING ECONOMIES

presented by imron zuhri, cto of dattabot and hara



THE BIGGEST GROWTH BIG DATA/AI IS IN ASIA

Hadoop Big Data Analytics Market, by Region, 2016-2021

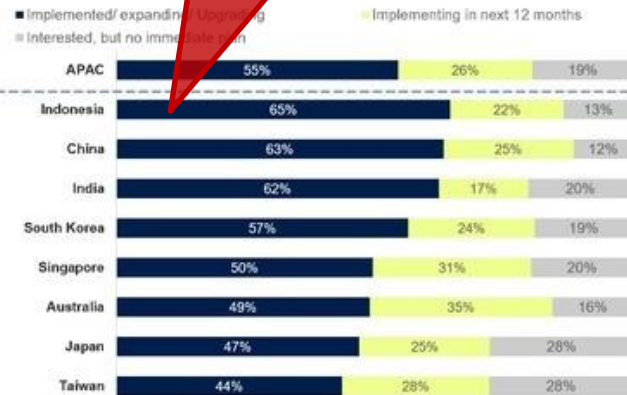
The operational intelligence segment in North America is projected to grow at the lowest CAGR during the forecast period.



Source: MarketsandMarkets Analysis

INDONESIA IS TOP 3 IN THE REGION

The stages of AI implementation in different markets



APIER SURVEY CONDUCTED BY FORRESTER JULY 2018

THE BIGGEST IMPLEMENTOR ARE STILL **TELCO, FSI AND RETAIL**

To achieve customer obsession, which of the following business outcomes are your firm planning to prioritize using artificial intelligence technologies?

Top priority by industry and company revenue size:

IT/TELECOMS



Better anticipate and respond to market changes (55%)

FSI



Improve accuracy of customer behavior predictions (54%)

RETAIL



Develop new products and services (55%)

USD 50 - 99.9M



Better anticipate and respond to market changes (51%)

USD 100 - 249.99M



Develop new products and services (56%)

MORE THAN USD 250M



Improve existing products and services (60%)

Base: 260 business and IT leaders involved in technology-buying decision making process, including artificial intelligence technology

Source: A commissioned study conducted by Forrester Consulting on behalf of Apptio, June 2018

APPTIO SURVEY CONDUCTED BY FORRESTER JULY 2018

BIG DATA/AI BENEFITS SO FAR



IMPROVE **BUSINESS PROCESS** AND
ENHANCED **CONSUMER EXPERIENCE**

Which of the following [could be/are] benefits of your organization using artificial intelligence?

■ Factors affecting digital CX ■ Factors affecting digital operational excellence



Base: 260 business and IT leaders involved in technology-buying decision making process, including artificial intelligence technology
Source: A commissioned study conducted by Forrester Consulting on behalf of Apptio, June 2018

THE BIGGEST CHALLENGE IN BIG DATA/AI IMPLEMENTATION IS STILL DATA INTEGRATION

silo data

difficult to link

no accountability

What [could be/are] the biggest challenges for your firm in using big data-driven AI technologies?

<div><div>High</div><div></div><div></div><div>Low</div></div>	Total	IT/ telecoms	FSI	Retail
Gathering and integrating massive data effectively as it grows	53%	51%	52%	58%
Assembling the right data management and predictive analytics platform	52%	56%	52%	48%
Building cross functional teams	51%	49%	49%	54%
Sourcing data from diversified channels	49%	49%	46%	52%
Governing analytics	49%	52%	49%	45%
Generating predictive customer insights	48%	49%	52%	42%
Identifying and selecting a technology or professional services partner	43%	40%	48%	40%
Enriching the data and extracting holistic view on customers	42%	46%	34%	45%
Designing and prioritizing use cases	39%	40%	40%	37%

Base: 260 business and IT leaders involved in technology-buying decision making process, including AI technology
Source: A commissioned study conducted by Forrester Consulting on behalf of Applier, June 2018

THE SADDEST FACTS ARE: NO PROPER ID AND LOW DIGITAL PENETRATION

ACCORDING TO WORLD BANK,
1.1 BILLION PEOPLE ARE STILL
INVISIBLE **WITHOUT ID**



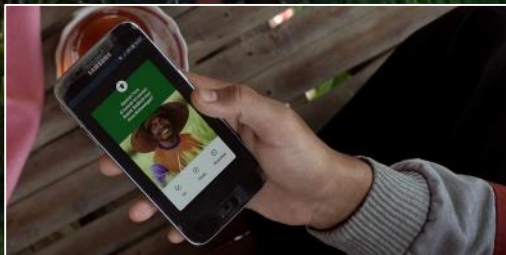
THINGS TO WATCH

THE DIGITAL STARTUPS AND THEIR
USE OF AUGMENTED ANALYTICS

- ▶ FRAUD DETECTIONS
- ▶ IMAGE AND VIDEO RECOGNITIONS
- ▶ LOGISTICS AND SUPPLY CHAIN OPTIMIZATIONS
- ▶ HEALTH CARE PREDICTIONS
- ▶ DRIVING INSURANCE

FINANCIAL INCLUSION AND AGRITECH STARTUPS

- ▶ CREDIT SCORING WITH ALTERNATIVE DATA
- ▶ DIGITAL IDENTITY THROUGH BIOMETRIC IDENTIFICATION
- ▶ DRONES, SATELLITES AND OTHER IOT
- ▶ IMAGE RECOGNITION
- ▶ PRECISION AGRICULTURE



Globally, 1.7 billion adults lack an account
Adults without an account, 2017



Source: Global Findex database.
Note: Data are not displayed for economies where the share of adults without an account is 5 percent or less.

Global Findex is a survey of financial inclusion that provides insights into the financial lives of adults around the world. It is the only survey of its kind, and it is the only one that provides data on financial inclusion for more than 100 countries.

EMERGING ECONOMIES ARE ADOPTING BLOKCHAIN FASTER THAN ANYONE ELSE

Growing number of blockchain initiatives around the world



THE UNICORNS ARE PAYING ATTENTIONS

Go-Jek buys fintech startup Coins.ph for \$72M ahead of Philippines expansion

Jon Russell @ionrussell / 10:24 am +07 • January 18, 2019

Comment



ACCORDING TO WORLD BANK, PHILIPINO WORKERS PAID **2.29 BILLION DOLLARS** JUST FOR TRANSFERRING MONEY IN 2019

Future of Blockchain 2018

What's **accelerating** blockchain adoption?

#1 Decentralized Control

#2 Trust

#3 New Business Models

#4 Transparency

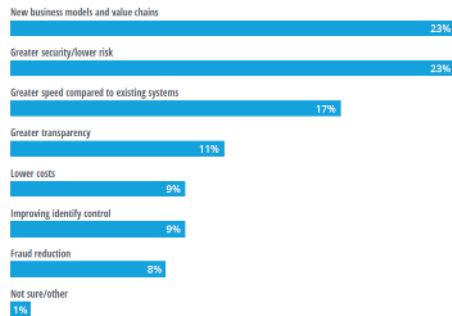
#5 Data Resiliency

FIGURE A-7

Most significant advantages of blockchain over existing systems

Respondents see business model/value chain innovation and lower risk as key advantages of blockchain technology

Survey question: Which one of the following, if any, do you believe is the most significant advantage of blockchain over existing systems when thinking of your specific industry? (Most significant advantage of blockchain over existing systems)



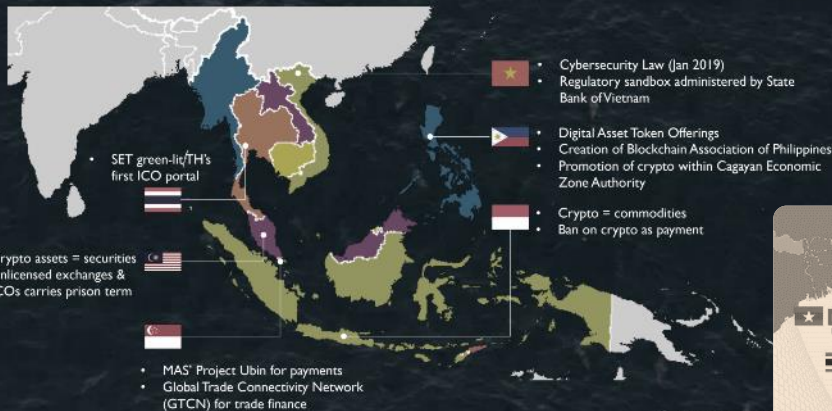
N=1,386 (global enterprises).

Note: Percentages do not total 100 percent due to rounding.

Source: Deloitte's 2019 Global Blockchain Survey.

REGULATION IS STILL THE BIGGEST CHALLENGES

Recent Regulatory Developments in ASEAN



CURRENT AND POTENTIAL USES OF BLOCKCHAIN IN SOUTHEAST ASIA



What's hindering blockchain adoption?

Scalability #1

Regulation #2

Unproven Value #3

Stage of Development #4

Speculation #5

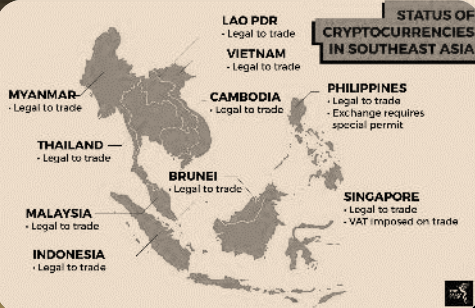
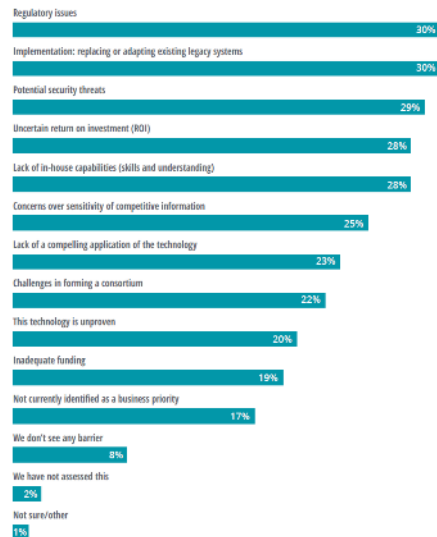


FIGURE A-10

Barriers to greater adoption in blockchain technology

Barriers to adoption vary depending on organizations' unique circumstances. Survey question: What are your organization or project's barriers, if any, to increasing adoption and scale in blockchain technology? (Percentage of respondents who feel the issue is a barrier to greater blockchain investment)



N=1,386 (global enterprises)

Note: Percentages total more than 100 percent because respondents were allowed to submit more than one answer. Source: Deloitte's 2019 Global Blockchain Survey.

SAMPLE USE CASE

HARA: COMBINING BIG DATA, AI AND BLOCKCHAIN
TECHNOLOGY TO TRANSFORM INDONESIA'S
AGRICULTURAL LANDSCAPE



anggar

are

bahu

borong

iring

kesuk

lupit

paron

prowolon

rakit

rante

ru

sangga

tampah

tumbak

tumbuk

ubin

anggar **kalimantan**
1/33 ha

are **bali**
100m²

bahu

borong

iring

kesuk **mataraman**
1/6 ha atau 1000m²

lupit **jawa**
250 ubin

paron

prowolon

rakit **pantura**
1000m²

rante **sumatera**
22 x 22 yard

ru

sangga **jawa**
5 ubin = 70m²

tampah

tumbak **jawa barat**
3.75 x 3.75m²

tumbuk **jambi**
100m²

ubin **nasional**
ru=tumbak

DUE TO
**ASYMMETRIC
INFORMATION**

INDONESIAN
AGRICULTURE IS
**NOWHERE NEAR
ITS POTENTIAL**



paddy productivity
14.5%
less than Vietnam

Even lower compared to
Japan, China,
South Korea and Australia



Highest
paddy production
cost in Asia

2.5x higher than Vietnam,
1.8x higher than Thailand
1.2x higher than China

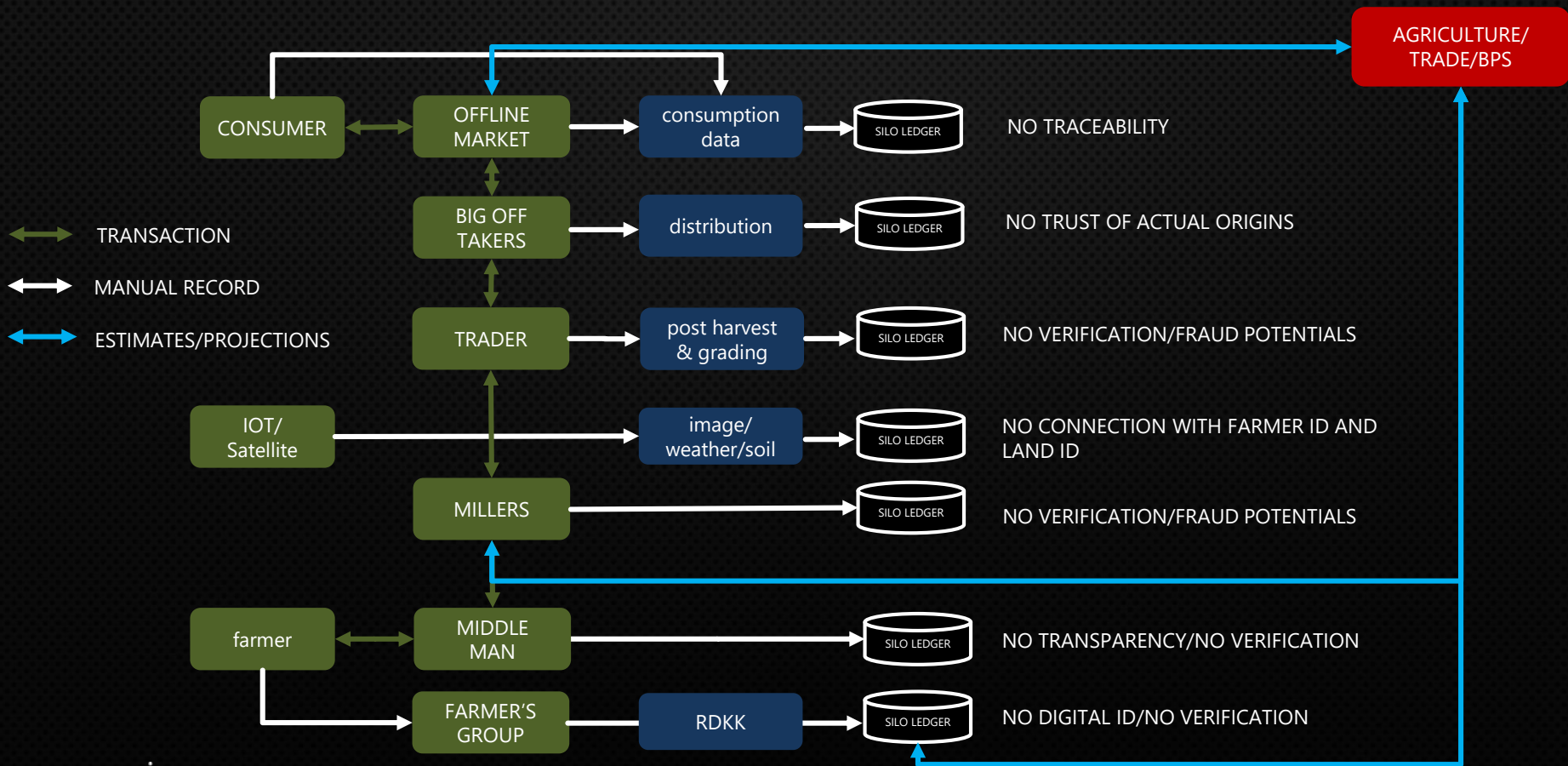


post-harvest
loss 20%
of crops

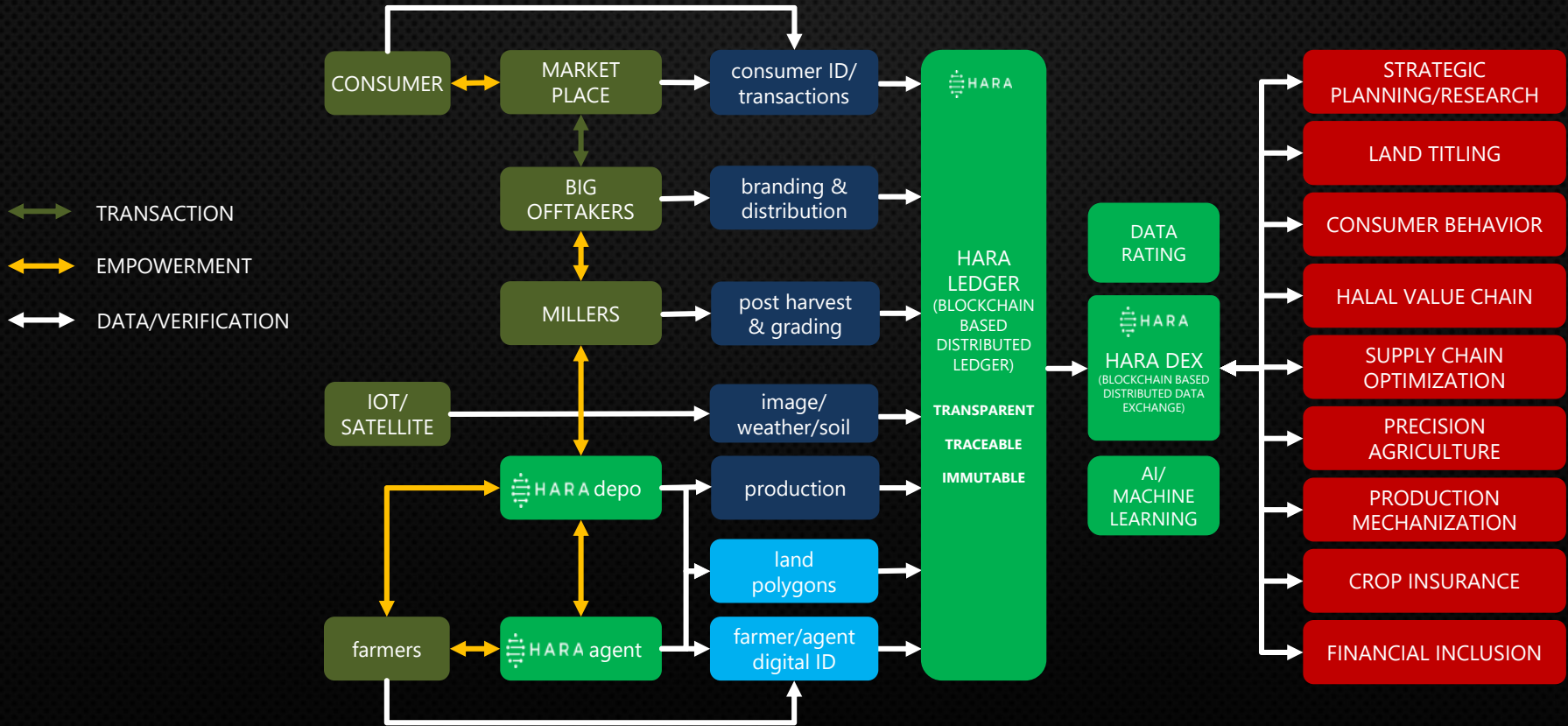
Inefficient value chain
from farmer to consumer

Production becomes expensive, and **limits
economic of scale** for businesses to grow

CURRENT FOOD CROPS DATA VALUE CHAIN



HARA'S BLOCKCHAIN BASED SOLUTIONS



the collected **historical ground data** from the farmers and IoT devices can be used to **train machine learning** to read and recognize **satellite images**

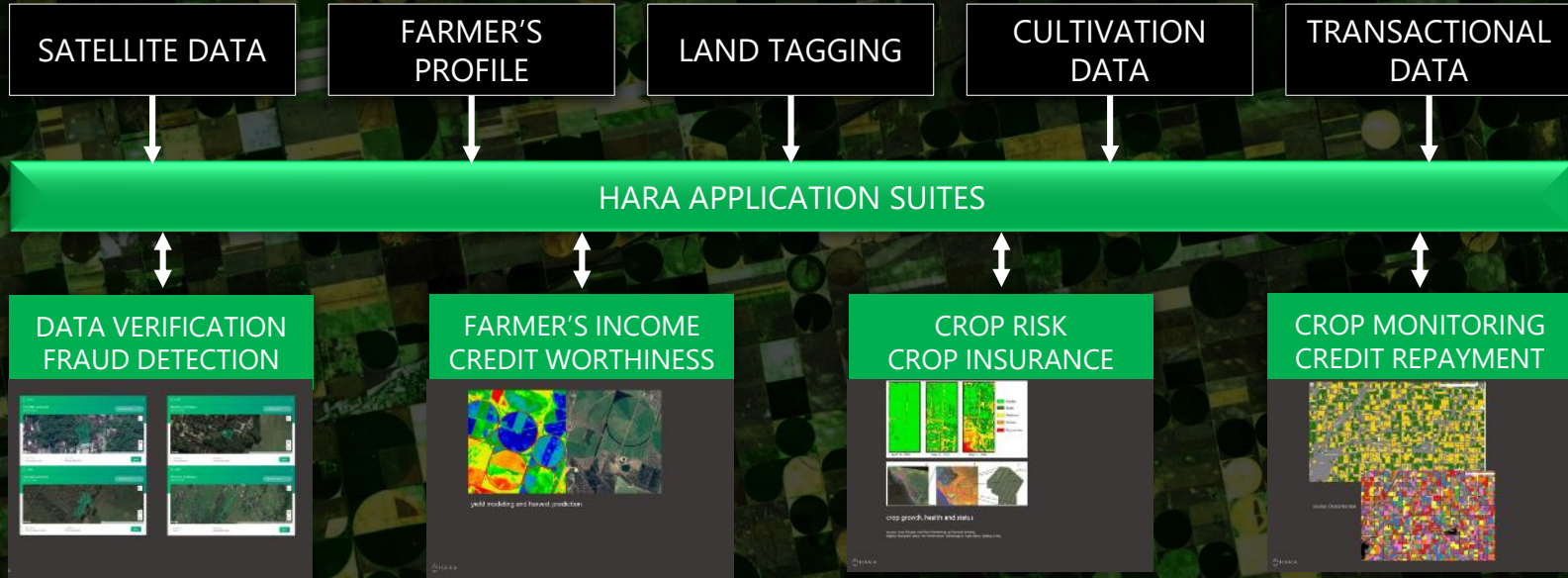


Dattabot: Helping Indonesian Farms Secure Loans With Space Data

Ian Ritchey | June 15, 2017

STORIES agriculture · insurance

Farmers are often at the mercy of the elements. A wetter-than-usual growing season, for example, could provide a hospitable environment for crop diseases that significantly impact yields. Changes in crop conditions over time could signal near-term production booms or long-term problems. For Indonesian farmers, the uncertainty of weather patterns, soil conditions, and [...]



ONCE WE HAVE ENOUGH HISTORICAL DATA WE CAN IMPROVE PRODUCTIVITY FURTHER BY APPLYING PRECISION AGRICULTURE



THANK YOU

