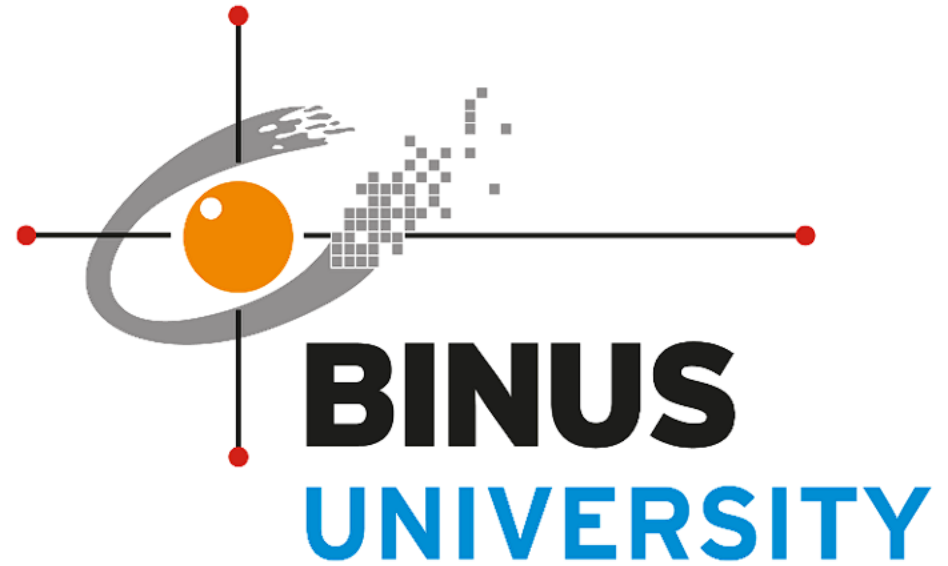


# Digital Payment Evolution

How do we transform from gold, coin, paper money, into cryptocurrency, and IoT in the era of Industry 4.0

Ariyo Nugroho

Openway Teknologi Indonesia



# Executive Summary



1. INTRODUCTION



2. HISTORY OF  
PAYMENT



3. FUTURE  
TECHNOLOGY



4. B2B PAYMENT



5. CONCLUSION



Q&A



## 1. INTRODUCTION



188

countries where transactions  
are processed on WAY4

76

countries where OpenWay has  
**direct** and **indirect** customers

20

countries where OpenWay has  
offices and representatives



[OpenWayGroup](https://www.openwaygroup.com)



	RATING				
	Strong Negative	Caution	Promising	Positive	Strong Positive
ACI Worldwide			X		
BPC Group				X	
Compass Plus			X		
ElectraCard Services				X	
Euronet Worldwide			X		
Fidelity National Information Services			X		
GFG Group			X		

Open Way



RS2 Software			X		
S1				X	
SunGard		X			
Tieto				X	
Total System Services (TSYS)			X		

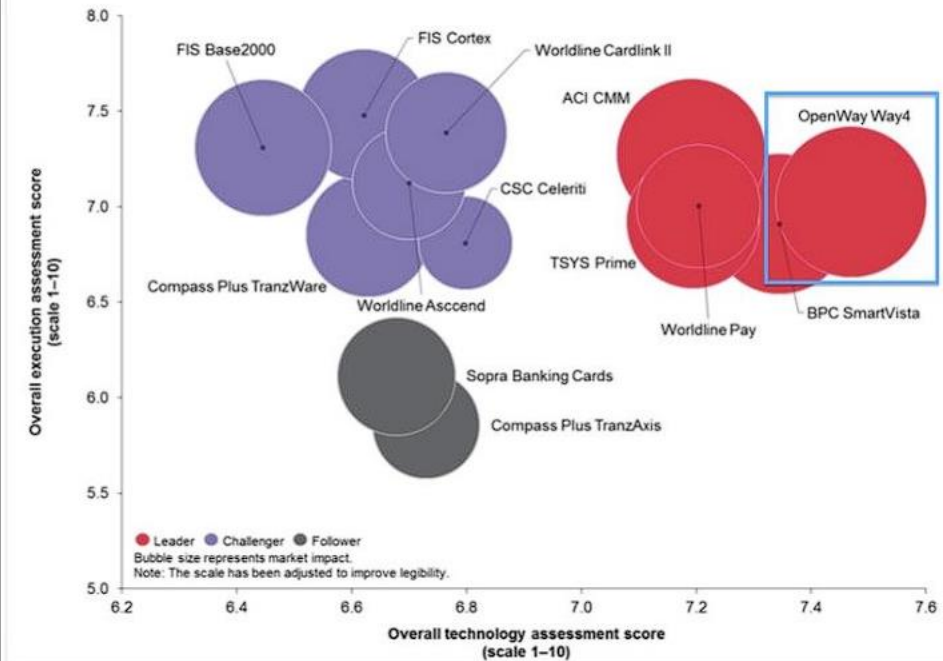
As of 22 June 2010

#1

in Card and Merchant Management Platform

Gartner

Figure 3: Expanded view of Ovum Decision Matrix: CMS platforms, 2015–16



Source: Ovum

#1

in Card and Merchant Management Platform

Ovum



Best Provider  
for Payment  
Systems in the  
Cloud

**Paytech Awards  
London, 2019**



Previous companies



Ariyo Nugroho 



Associate Business Development Director

[linkedin.com/in/ariyonugroho/](https://linkedin.com/in/ariyonugroho/)





## 2. HISTORY OF PAYMENT



Heraclitus,  
Greek philosopher

---

*“The Only Thing  
That Is  
Constant  
Is **Change**”*



## BARTER



1940s

## CASH

is king



1950s

## CHECKS

used as  
mass instrument



1960s

1970s

## DEBIT CARDS

- Invented in the 1970s
- Not widespread until 1990s



1980s

1990s

## CREDIT CARDS

- Invented in the 1950s
- Widespread use by 1970s
- Peaked as a percentage of consumer transactions in the 1990s





Security Paper



ATM Network



EDC

Those technologies still exist **until today**

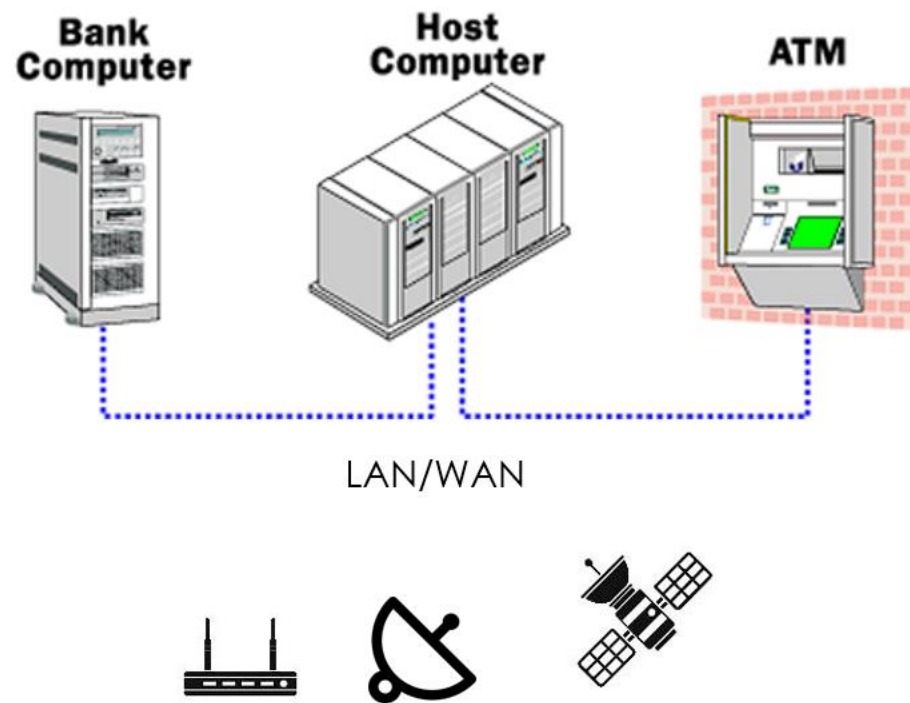




## Security Paper

- Special material
- Watermark
- Security Thread
- Intaglio Printing (relief)
- Rectoverso
- Optical Variable Ink
- Micro Printing
- Invisible UV Ink
- Multi Layer Latent Image
- Color/Clear Window





Security Keys  
Cardholder Data  
Microchip

Personalization



Brand Mark

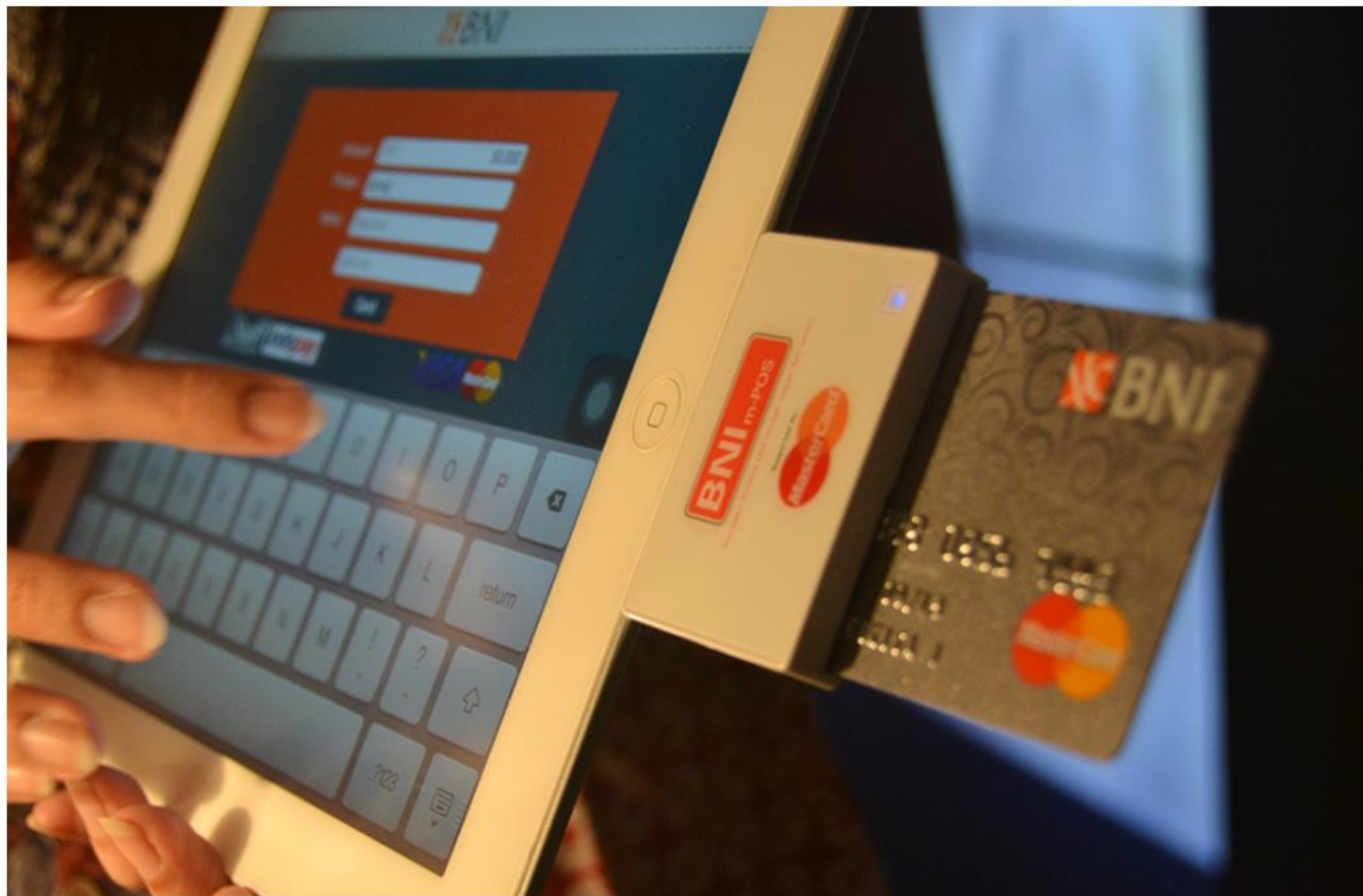
Magnetic Stripe

Hologram

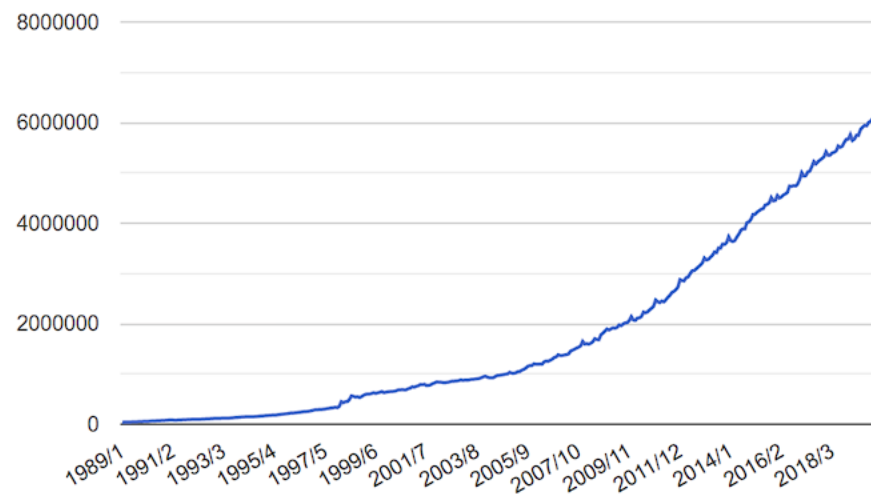


CVV2

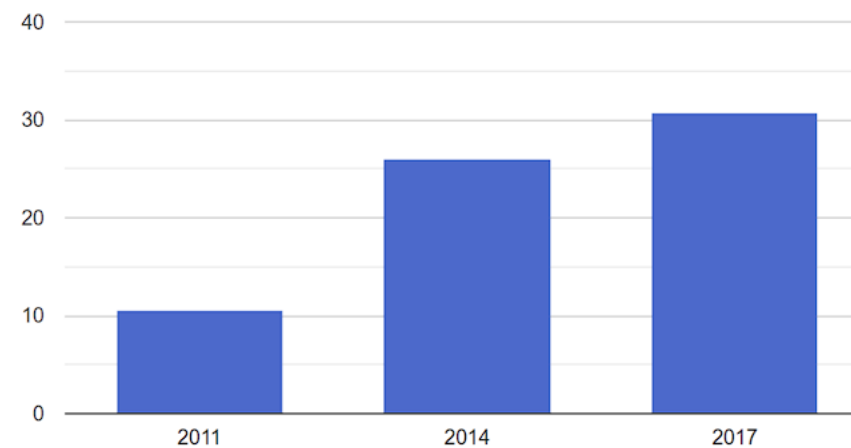
# EDC



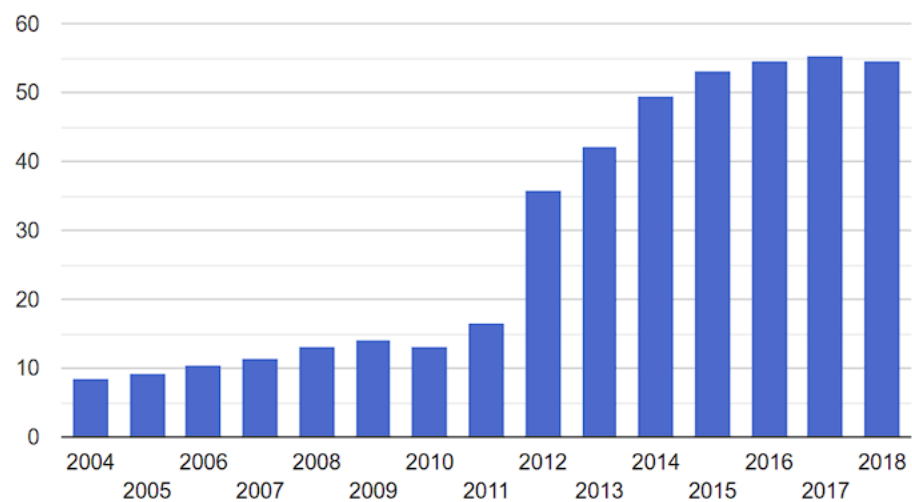
Indonesia - Money supply, billion currency units



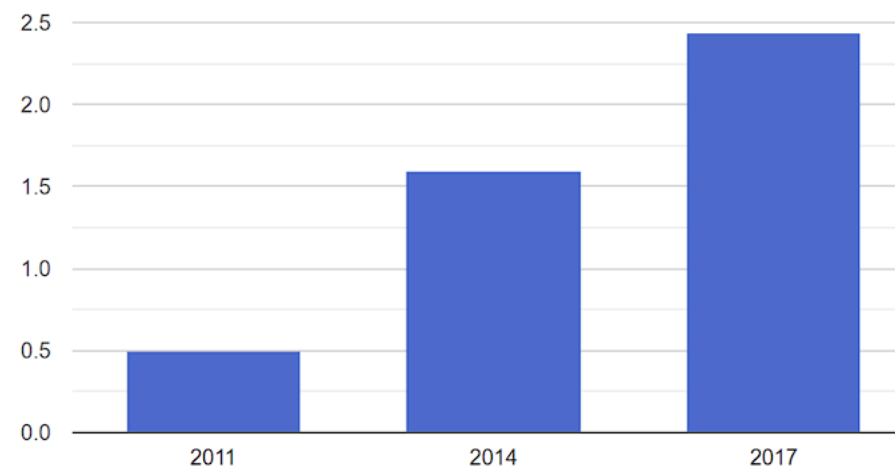
Indonesia - Percent people with debit cards



Indonesia - ATMs per 100,000 adults



Indonesia - Percent people with credit cards





## Challenges for paper money

- Difficult to maintain & distribute
- Cost for security
- Difficult to track (law enforcement)
- Lack of Automation



## Challenges for card payment

- Difficult to obtain
- Not practical for having multiple cards
- Costly for merchant to acquire EDC
- Costly for banks to maintain ATM





### 3. FUTURE TECHNOLOGY





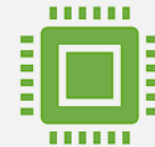
MOBILE  
APPLICATION



IOT



ARTIFICIAL  
INTELLIGENCE



BLOCKCHAIN



MOBILE  
APPLICATION

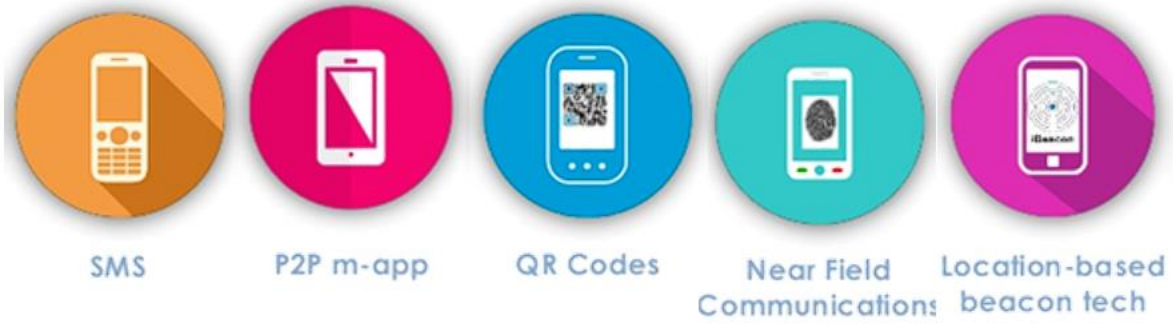
# Mobile Internet transforming lives of Southeast Asians: unprecedented access to people, information, services

“A day in the life” of a Southeast Asian mobile Internet user





MOBILE  
APPLICATION



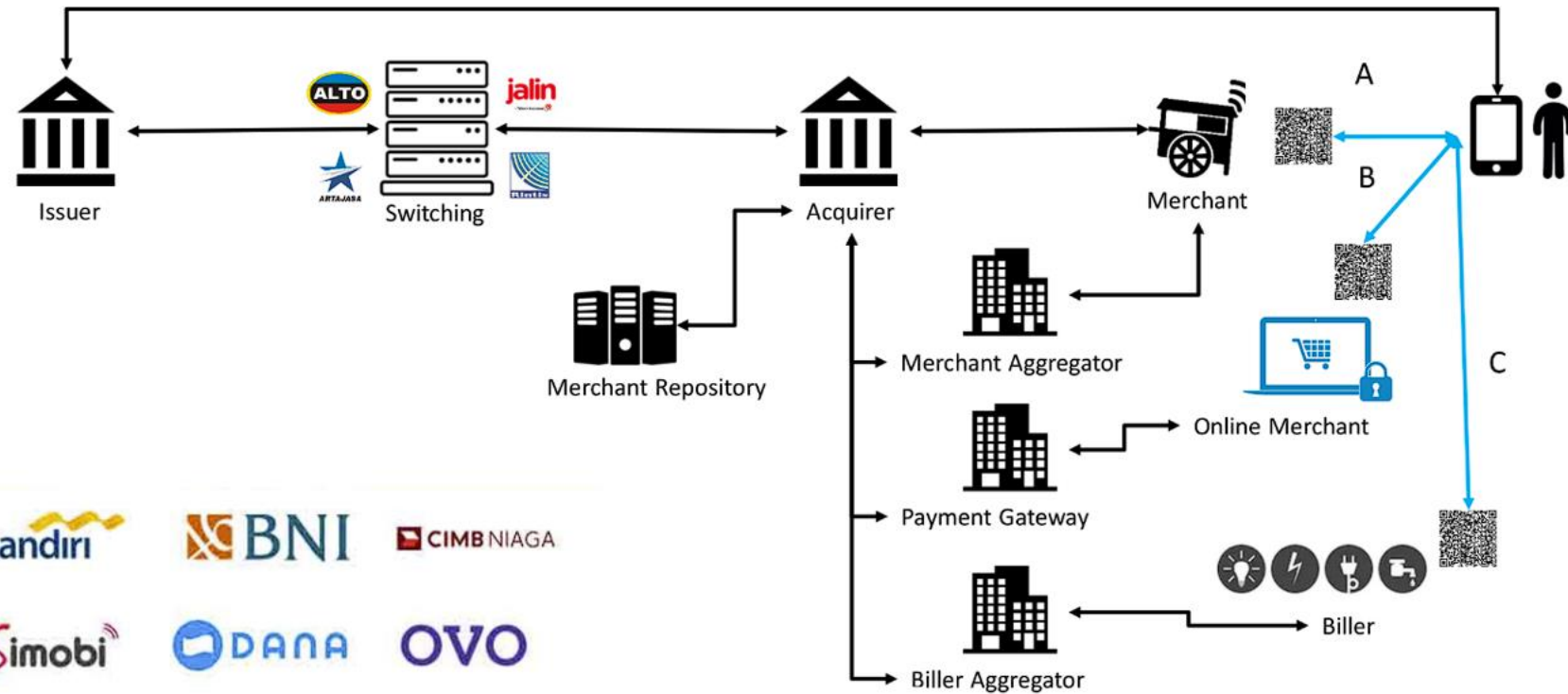




MOBILE  
APPLICATION



# QRIS QR Code Standar Pembayaran Nasional



Sumber:



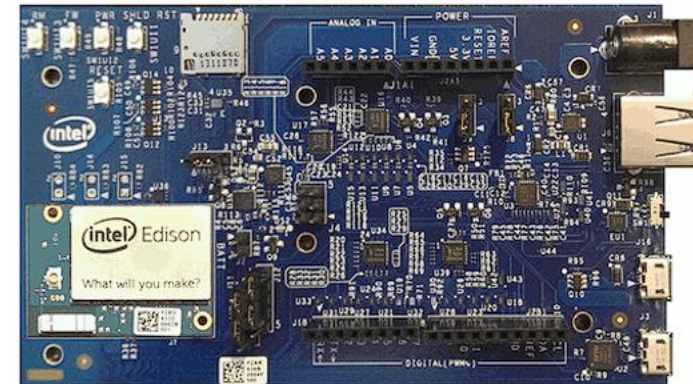
QRIS: Quick Response Indonesia Standard



# IOT



# INTERNET OF THINGS





# IOT



## Wearable



## Stand-alone device



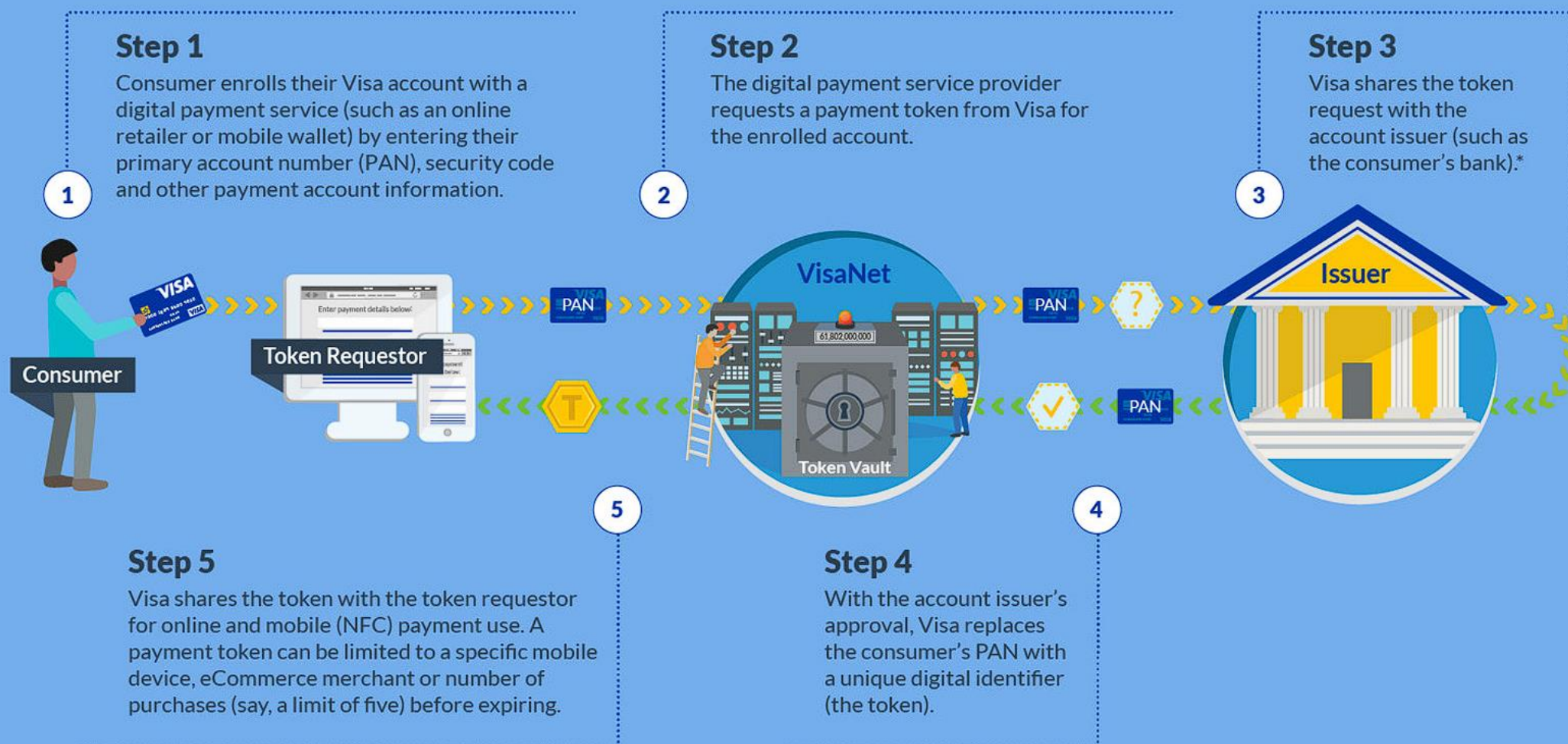




# IOT

## How Visa Token Service Works

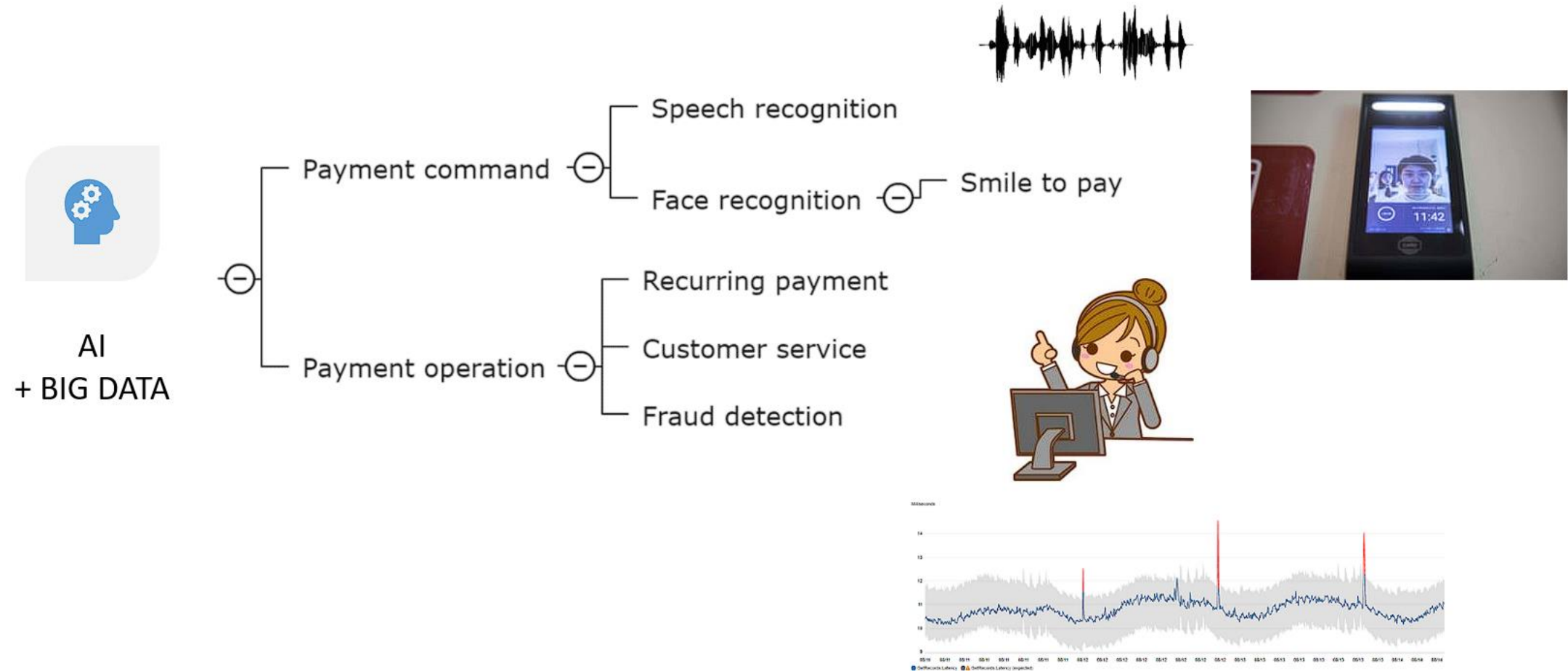
The Visa Token Service enables digital payment service providers and financial institutions to offer their customers a safe way to shop online and with mobile devices. Here's how a token is initiated.







Vision for In-Car Payment  
<https://bit.ly/incarpayment>



Technology which influence the future of payment



## "Smile-to-Pay" facial recognition system now at 300 locations in China

Nov 16, 2018 | [Chris Burt](#)

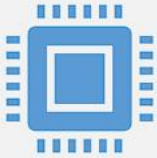
CATEGORIES [Biometrics News](#) | [Commercial Applications](#) | [Financial Services](#)



Yum China has announced that it has extended its "Smile-to-Pay" facial recognition payment system to more than 300 KFC locations across the country, as it continues to roll out digital technologies to improve customer experiences, growth, and operational efficiency.

Other technologies recently introduced include AI-powered self-ordering kiosks, and an automated dessert station, and Yum has launched a future store to show off its latest initiatives for more convenient and immersive customer experiences. The further roll-out of "Smile-to-Pay," which was launched at a [single restaurant in 2017](#), was motivated by positive customer feedback, according to the announcement.





# BLOCKCHAIN

## Blockchain is:

- a decentralized, distributed digital ledger
- sometimes is public,
- used to record transactions across many computers
- so that any involved record cannot be altered retroactively, without the alteration of all subsequent blocks.

Blockchain was invented by a person (or group of people) using the name [Satoshi Nakamoto](#) in 2008.

Sometimes interchanged with *cryptocurrency* or *bitcoin*

## **Beware:**

- Blockchain is not synonym of bitcoin, nor other cryptocurrency
- Blockchain is not invented for investment instrument



# BLOCKCHAIN



1  
A transaction is requested



2  
The transaction is broadcasted to a peer-to-peer (P2P) network that consists of computers (otherwise known as nodes)



3  
The network of nodes uses known algorithms to validate the transaction and user's status



4  
A verified transaction can involve cryptocurrency, contracts, records or other information



5  
The transaction is now finished



6  
The new block is added to the existing blockchain (which is permanent and unalterable)



7  
The transaction is combined with other transactions, once verified, to create a new block of data for the ledger





## BLOCKCHAIN



A digital ledger that keeps a record of all transactions taking place on a peer-to-peer network



All information transferred via blockchain is encrypted and every occurrence recorded, meaning it cannot be altered



It is decentralized, so there's no need for any central, certifying authority



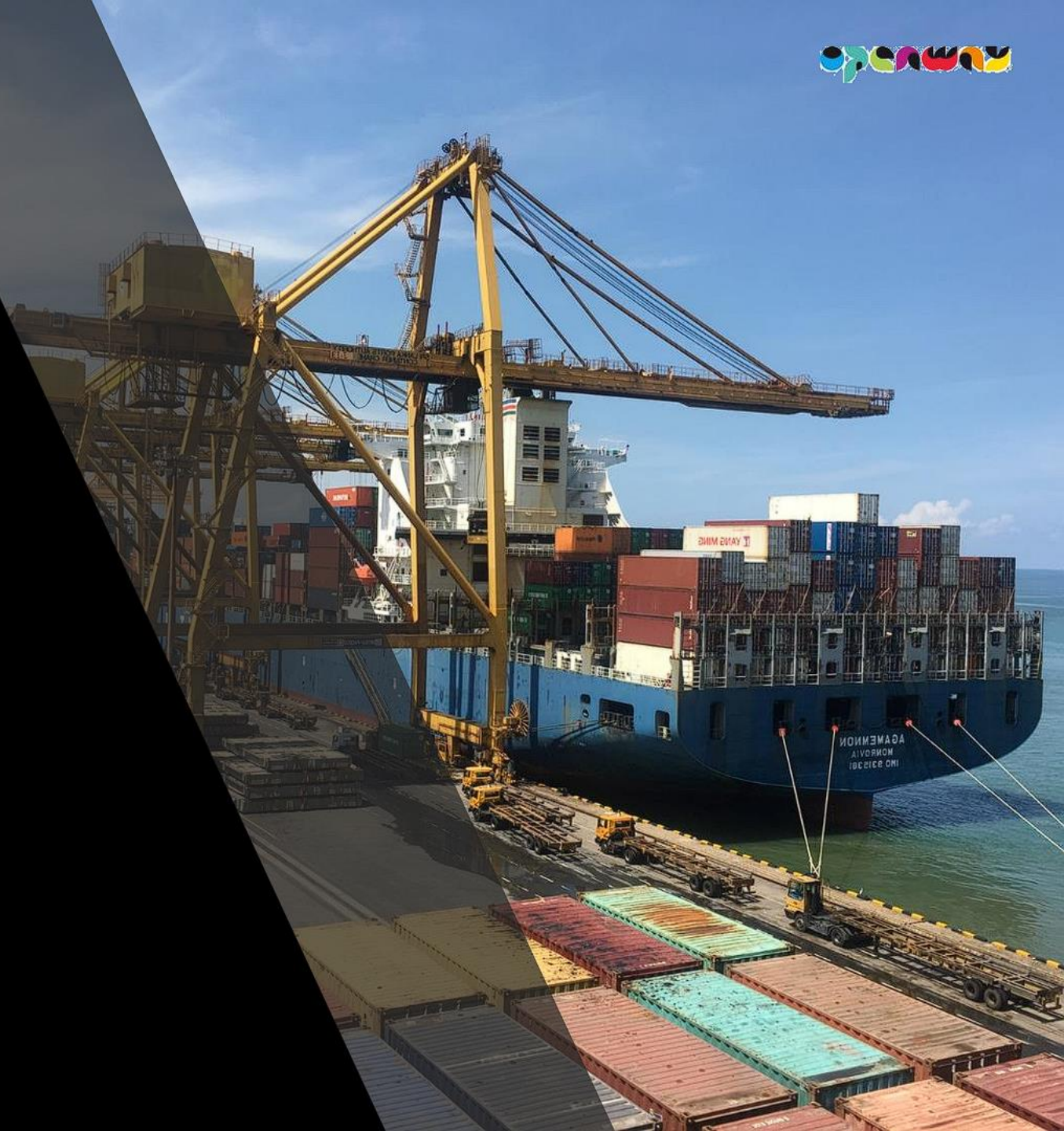
It can be used for much more than the transfer of currency; contracts, records and other kinds of data can be shared



Encrypted information can be shared across multiple providers without risk of a privacy breach



## 4. B2B PAYMENT



# B2B Payment



## How institutions make payment

- Cash
- Cheque
- Internet Banking
- Letter of Credit

## Why it's different from individual payment

- Involve big amount
- Multiple approval
- Need historical record
- Need more security

# Blockchain Smartcontract



Pre-programmed  
Smart Contract



1



**A transaction is  
requested**

2



**The transaction is  
broadcasted to a peer-  
to-peer (P2P) network  
that consists of  
computers (otherwise  
known as nodes)**

3



**The network of nodes  
uses known algorithms to  
validate the transaction  
and user's status**

4



**A verified transaction can  
involve cryptocurrency,  
contracts, records or  
other information**

7



**The transaction is  
now finished**

6



**The new block is added to  
the existing blockchain  
(which is permanent and  
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5



**The transaction is combined  
with other transactions, once  
verified, to create a new  
block of data for the ledger**





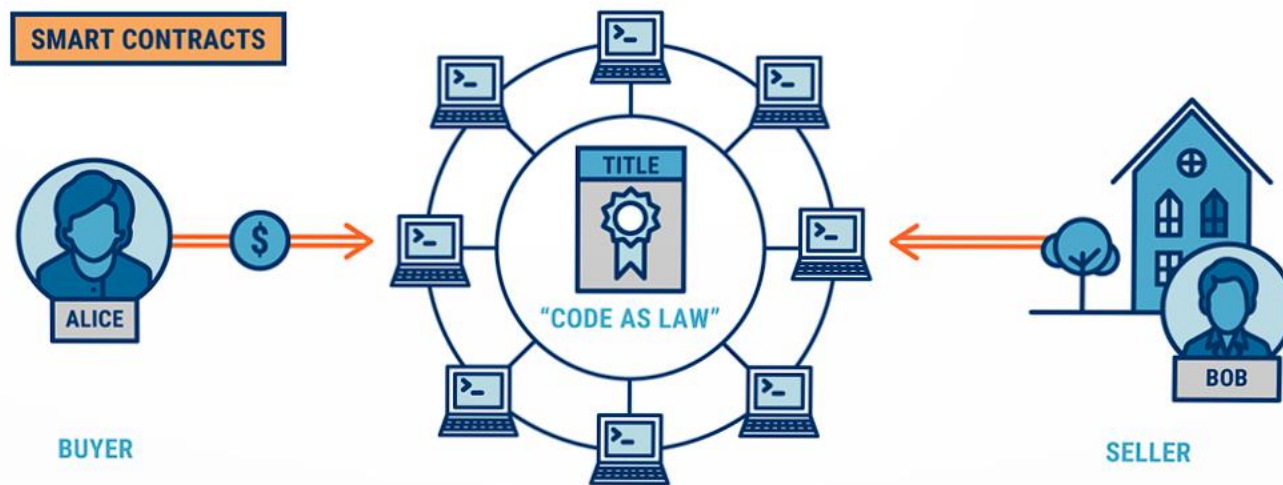
## Buying a house on Ethereum

NOW



- No middlemen needed
- Actions will be executed immediately
- More secure

SMART CONTRACTS

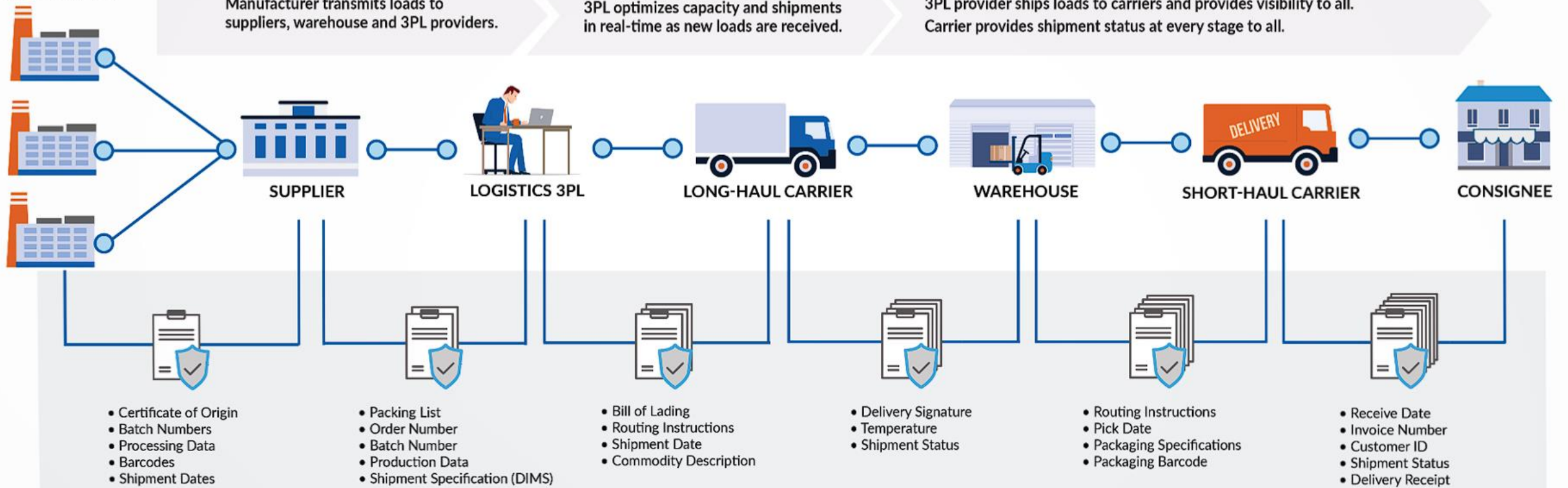


## MANUFACTURER

Manufacturer transmits loads to suppliers, warehouse and 3PL providers.

3PL optimizes capacity and shipments in real-time as new loads are received.

3PL provider ships loads to carriers and provides visibility to all. Carrier provides shipment status at every stage to all.



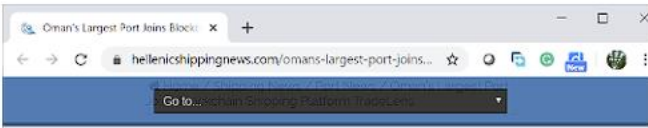
## LOGISTICS BLOCKCHAIN CONSORTIUM



Identical encrypted distributed ledger via the Internet



Smart Contracts orchestrating shipment transaction flow based on codified parameters, process triggers and algorithms.



## Oman's Largest Port Joins Blockchain Shipping Platform TradeLens

in Port News 07/04/2020

### TRADELENS

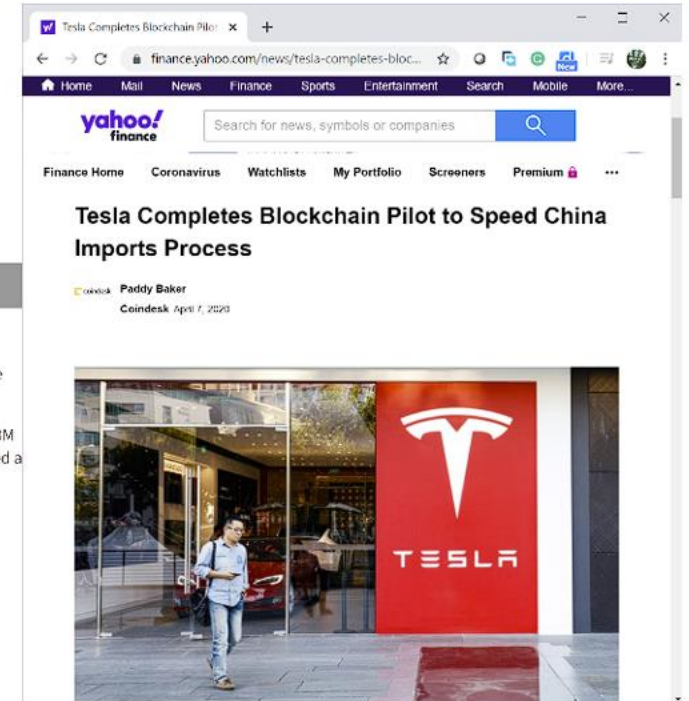
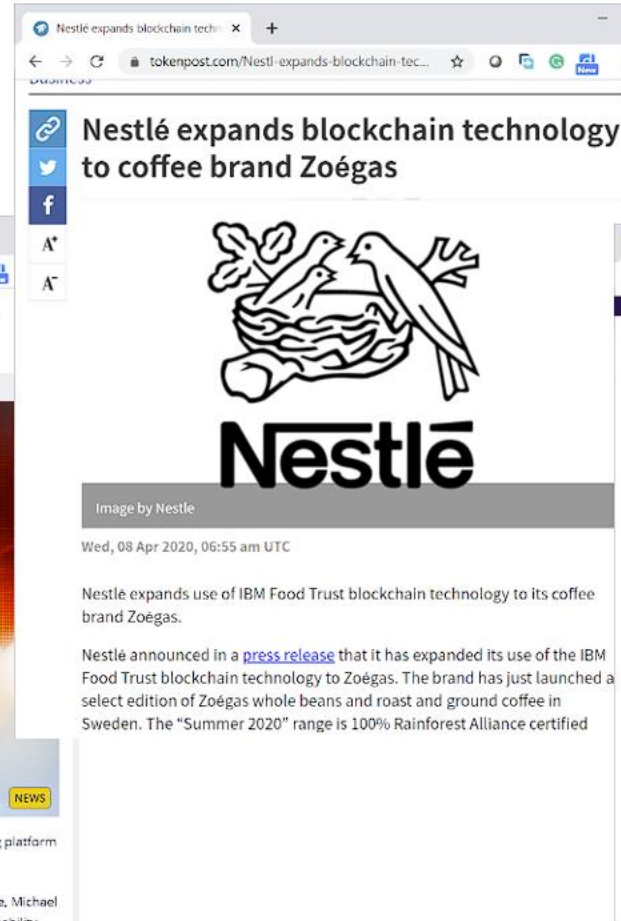
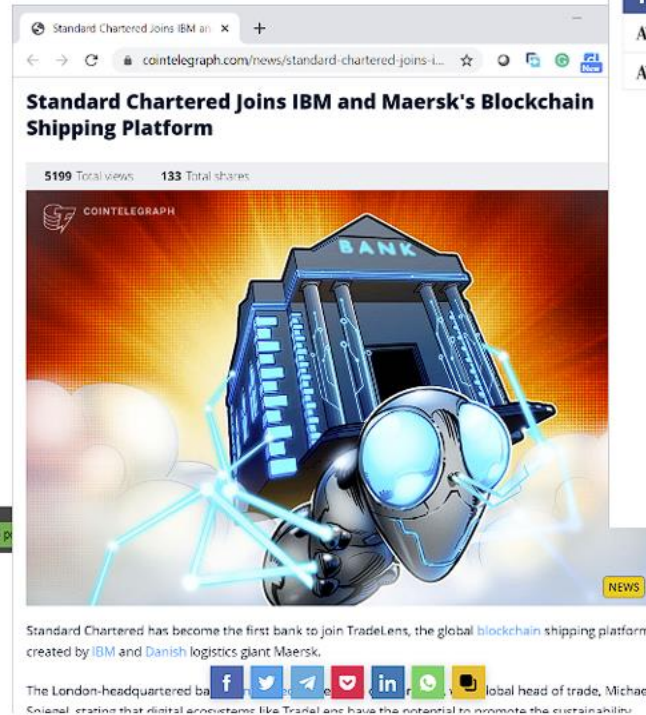
The biggest port within the Center Jap nation of Oman has signed up with TradeLens - a blockchain provide chain platform based by IBM and Maersk.

The Port of Salalah not too long ago turned a member of the delivery knowledge mission as a part of its digital transformation efforts. In line with a report within the Instances of Oman on Wednesday.

The platform permits corporations alongside the delivery provide chain to share knowledge on cargoes in actual time over its permissioned blockchain, in the end aiming to carry improved transparency and effectivity to worldwide commerce. In accordance with the Instances, the port is working with different entities within the provide chain to digitize its operations and sees TradeLens as a approach to carry a worldwide transparency normal to delivery operations.

"Adopting and incorporating blockchain know-how into all points of the provision chain won't solely improve the

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# Case Study



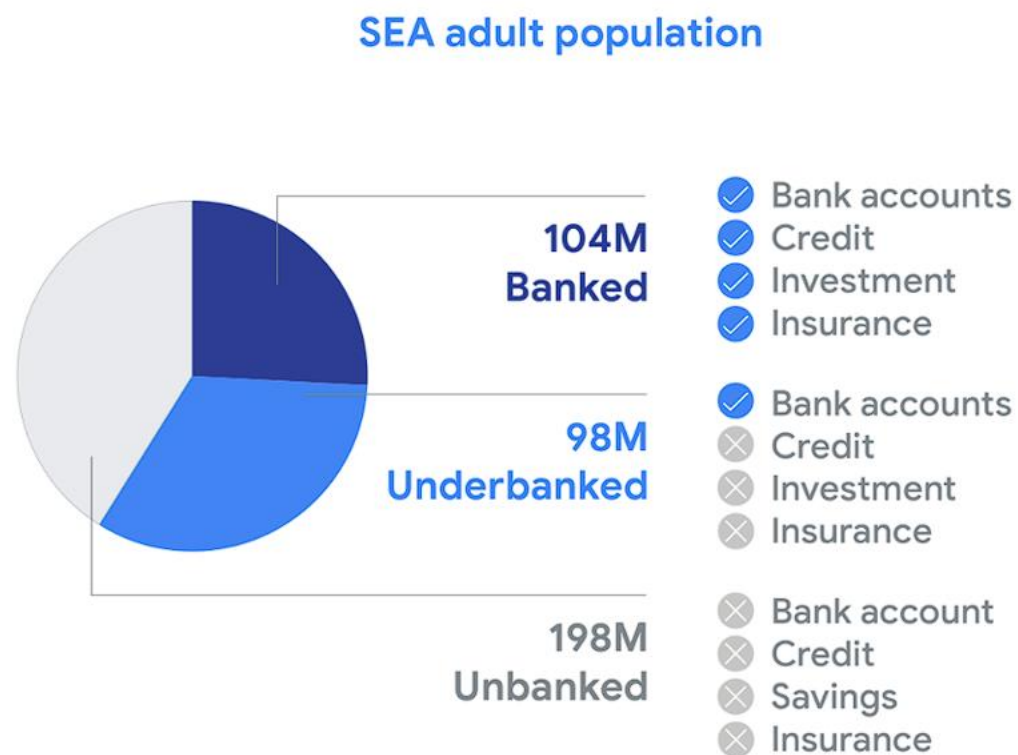
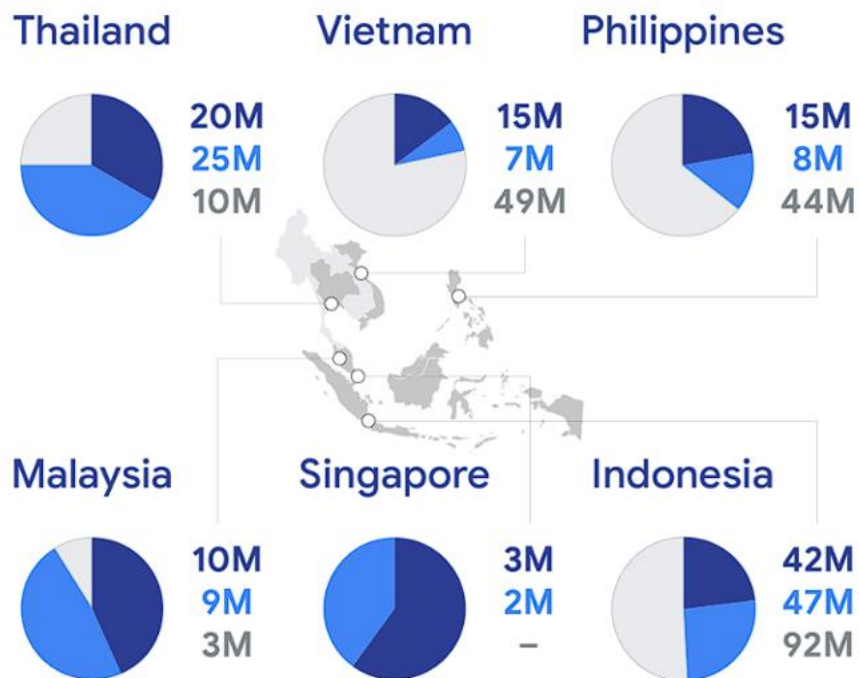


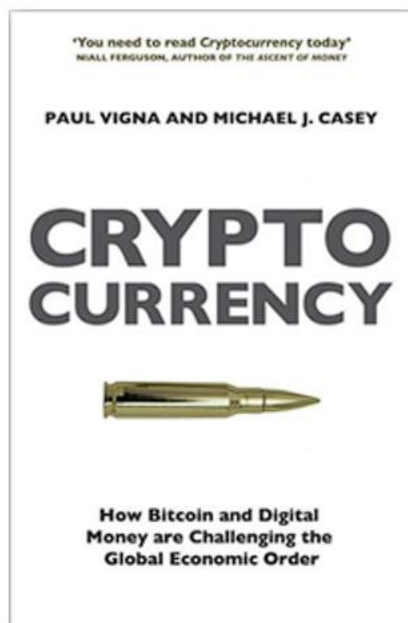
## 5. CONCLUSION





# Today, 3 in 4 people in Southeast Asia have **insufficient access** to financial services





## Cryptocurrency: How Bitcoin and Digital Money are Challenging the Global Economic Order

Paul Vigna Michael J. Casey January 28, 2015  
Random House

★★★★★ 3


 Family Library ☐



## Bank 4.0: Banking everywhere, never at a bank

Brett King August 14, 2018  
Marshall Cavendish International Asia Pte Ltd

★★★★★ 12

The background of the slide is a photograph of a person's hands typing on a laptop keyboard. The image is partially obscured by three large, overlapping, semi-transparent blue circles. A white rectangular box with a black border is centered over the image, containing the text.

Technology will always change  
But transactions will always happen





# thank you

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



[facebook.com/Openwaygroup](https://facebook.com/Openwaygroup)



[twitter/openwaygroup](https://twitter/openwaygroup)

