AgriBKChain: Blockchain-based Network for Agricultural Traceability and Product Advertising

BK-blockchain Research Group
Hanoi University of Science and Technology

Motivation

- Food safety

- Carbon dioxide emission
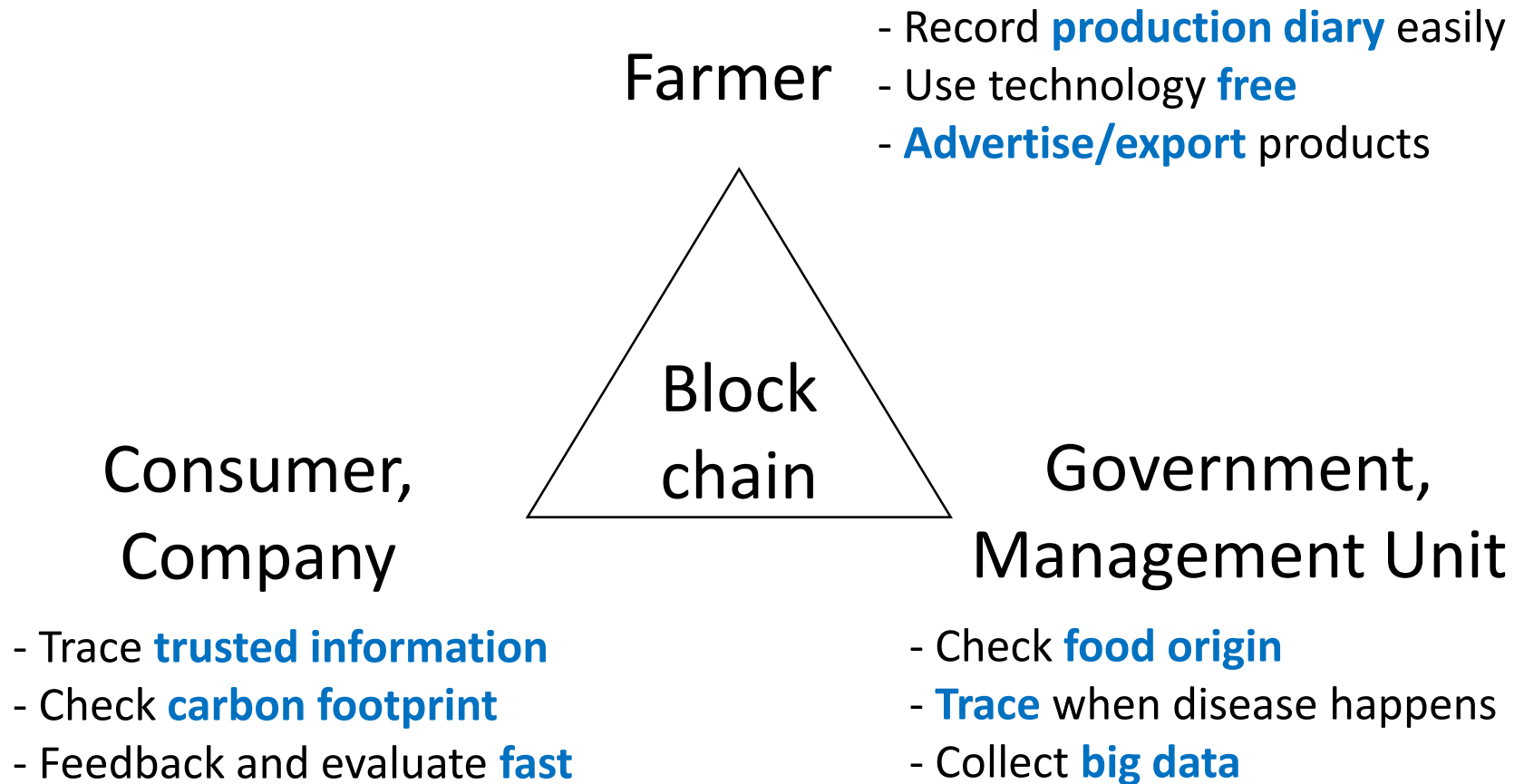
- Exporting agricultural products

Challenges

- Providing trusted information about
  - Origin: location, production diary
  - Culture of agricultural products: harvesting processes, and how to serve

- Connecting to Japan, Europe, and US for product advertising and export
  - Exa network: at Fukuoka, Japan (http://kurateblockchainvillage.jp/)
  - Te-Food network: at Germany (https://ico.tefoodint.com/)

Our proposal

- AgriBKChain: blockchain-based network
  - Network among developing countries and Japan
  - End-user application
    - Used by farmers, governments, and consumers

- Blockchain technology
  - Creating records that cannot be changed or deleted
  - Verification accomplished in a decentralized manner

AgriBKChain advantages

Farmer
- Record **production diary** easily
- Use technology **free**
- **Advertise/export** products

Block chain

Consumer, Company
- Trace **trusted information**
- Check **carbon footprint**
- Feedback and evaluate **fast**

Government, Management Unit
- Check **food origin**
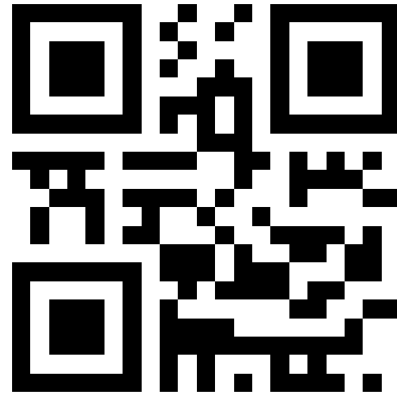- **Trace** when disease happens
- Collect **big data**

End-user demo application

- Demo is based on our bk-blockchain platform

- Product and location
  - Japanese Melon
  - At Delco farm

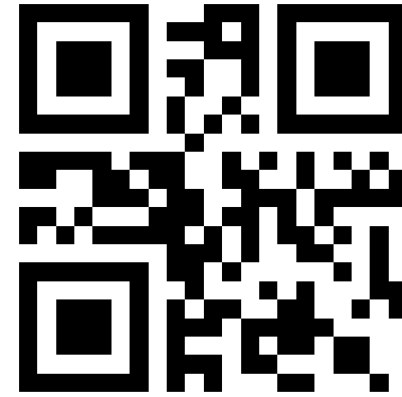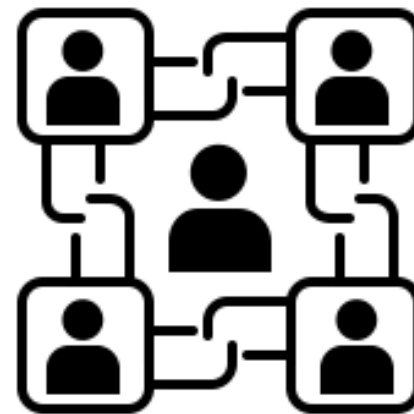# Creating Diary from QR code
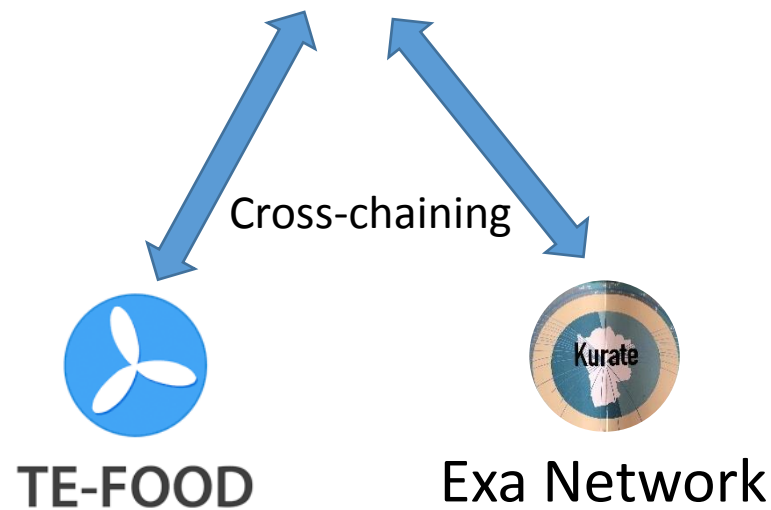

Fertilizing

Watering

Pruning

Writing Diary to AgriBKChain

Production diary

AgriBKChain Blockchain

Cross-chaining

TE-FOOD

Exa Network

Tracing from QR code by Anyone

https://delcofarm.thingxyz.net/qrc?q=BENIYDCG314

Người chăm sóc	Lê Thị Hường
Công dụng	- Tốt cho phát triển của thai nhi - Tăng cường hệ miễn dịch - Ngăn ngừa tình trạng xơ cứng vữa động mạch - Tăng lưu lượng máu và oxy tới não cho tinh thần thoải mái hơn - Ngăn chặn sự thoái hóa xương khớp

Giai đoạn sinh trưởng	
Gieo hạt	22-06-2018
Cây non	02-07-2018
Tăng trưởng	13-07-2018
Thụ phấn	30-07-2018
Tuyển trái	04-08-2018
Nuôi quả	08-08-2018
Tạo lưới	18-08-2018
Tạo ngọt	23-08-2018
Thu hoạch đợt 3	17-09-2018

Bảo quản		
5-11 (°C)	12-19 (°C)	20-25 (°C)
20 Ngày	15 Ngày	5 Ngày

Chứng chỉ, chứng nhận	
Số chứng nhận VietGAP	vietGAP-TT-14-05
Chứng chỉ, chứng nhận	DELCO_Dưa lưới Kimoji

Nơi sản xuất	Delco Agriculture

Photos from Delco-farm
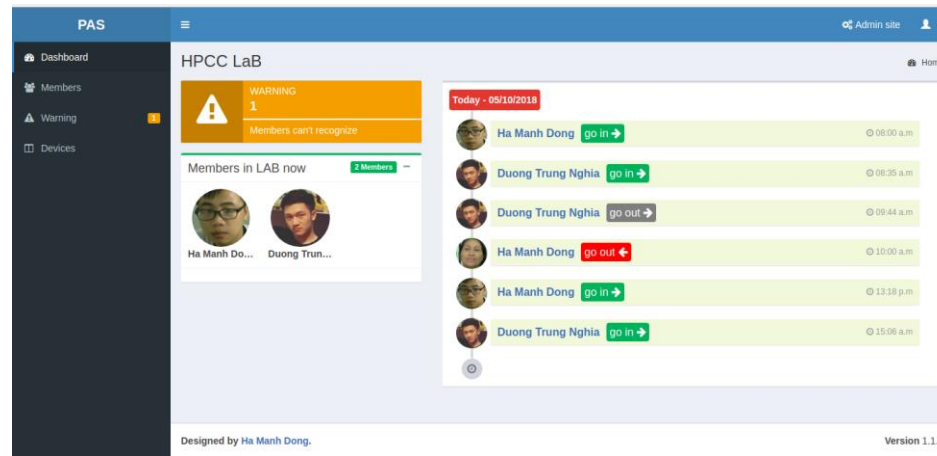
Hardware Requirement at Farm

- Smart phone or tablet (150 ~ 250 USD)
  - Creating Diary from QR code
  - Product information and usage

- Printer supporting smart phone (150 USD)
  - Printing QR code for each product

Preferred collaboration and plan

- Collaboration
  - From Asian countries
    - Writing production diary of their own agricultural products to AgriBKChain
    - Storing IOT data on AgriBKChain
  - From Japan
    - Tracing the origin of agricultural products from AgriBKChain
    - Connecting to Japanese blockchain networks for exporting

- Two-year plan
  - Developing and deploying AgriBKChain application at collaborated countries
  - Testing and extending the application and network

Our related blockchain projects

- Paying and tracking employee salary on a daily basic

- School degree and transcript management