

FOOD PRODUCTION TRACKING BLOCKCHAIN

IBM
Research



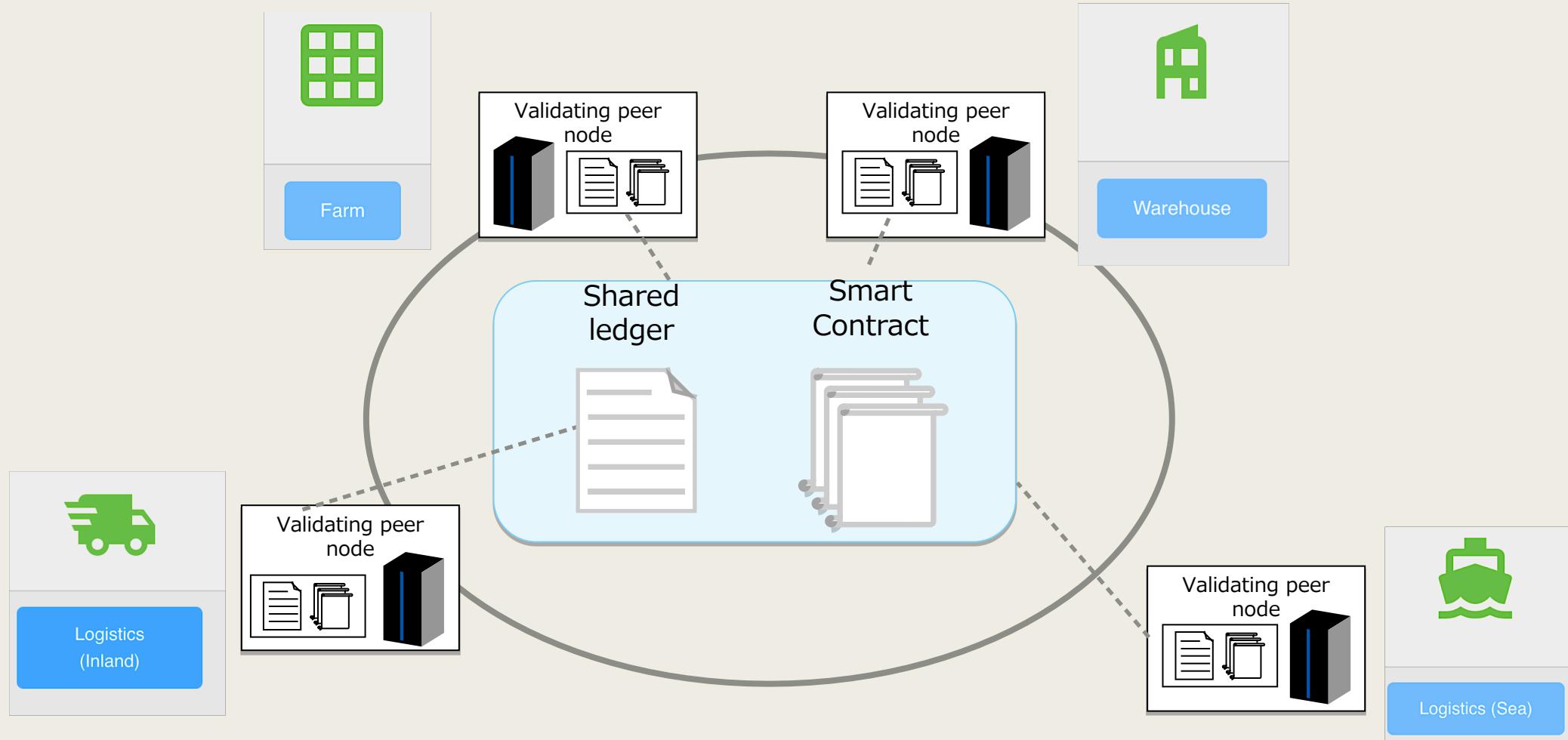
PERCIVAL LUCENA

About AgTrace

AgTrace (is a traceability solution that ensures transparency and information reliability, reducing response time to issues within the food value chain. Based on farming processes analysis and advanced IoT and blockchain technologies, AgTrace guarantees information security about agriculture processes, using sensors and equipment to register information from inside and outside the farm.

- The project has started as a Partnership with Solinfitec a company with 15 years experience on Agriculture Systems and Brazilian leader on Sugar Cane Systems
- A new company called AgTrace was created for Traceability projects for Organic Food and Special Coffee
- The project was first deployed on Rizoma Fazenda da Toca in Sao Paulo state.
- A second pilot is being tested on a special coffee producer.
- The project has been nominated one of the 8 most innovative Agriculture projects @World Agri-Tech Innovation Summit 2019 <https://worldagritechusa.com/radicle-challenge/#TheFinalists>

AGTRACE - BLOCKCHAIN NETWORK



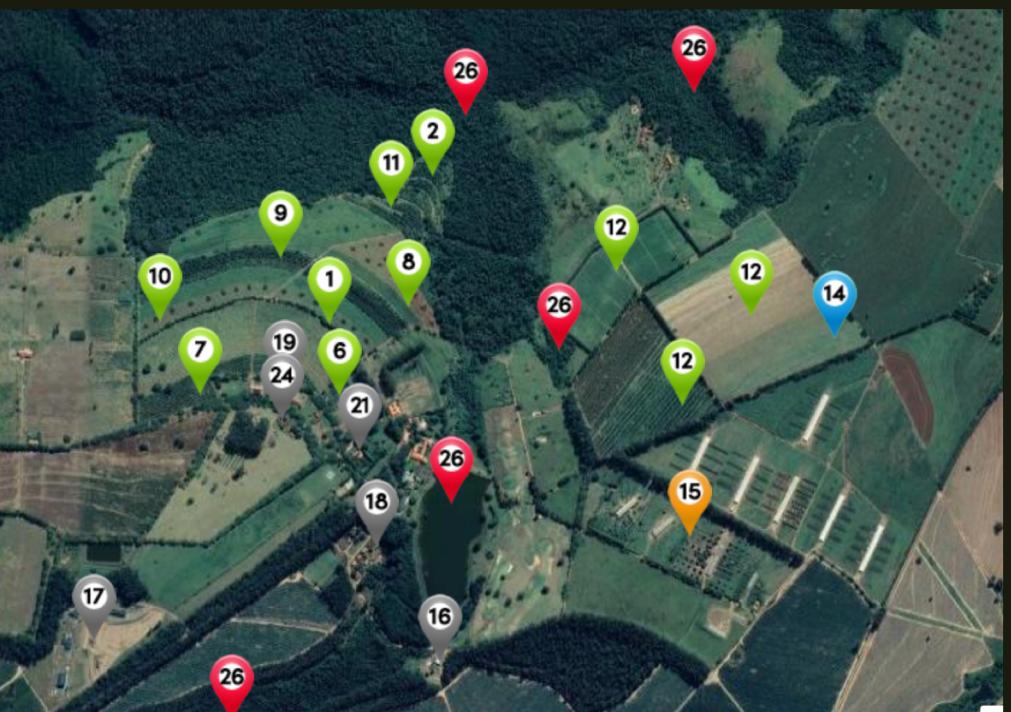
Organic Products Tracking

- Solinfitec SGPA is a farm office planning system who provides operation information for tractors on board computers.
- Connectivity between devices provided by a mesh network
- Solinfitec already deployed on 6 million hectares and +30.000 equipment
- **Agtrace Blockchain** is a project to create a Hyperledger 1.1. blockchain network to provide farm production information

The screenshot displays the AgTrace Blockchain platform interface. On the left, a sidebar shows navigation options: Season (1-Regenerative Organic C...), Product, Location (Farm, Zone, Field), Unit, Load data, and Certifications. In the center, a "Groups" section contains four categories: Farm (grid icon), Warehouse (house icon), Transport (land) (truck icon), and Transport (sea) (ship icon). Below these is a photograph of a black handheld tablet device with a touchscreen displaying a map and various data fields. To the right, a "Laboratory Analysis" module is shown with the following details:

- Collect date: 2018-08-02 10:40
- Analysis date: 2018-08-02 10:40
- Laboratory: LABORATORIO DE ANALISES 1
- Analysis code ... 12
- Farm-Sector-Field code, ... 1768
- Soil analysis: Organic: not approved (button)
- Organic: approved (button)

At the bottom are buttons for "Take photo" and "Register".



IBM Blockchain Starter Plan

Everest Network - 3tr

← Back to channels

defaultchannel

View channel activity and configuration

Channel Overview Members Access Control List Chaincode

3482 TOTAL BLOCKS 1 days TIME SINCE LAST TRANSACTION 0 RECENT INSTANTIATIONS 10 RECENT INVOCATIONS

TIME	BLOCK NUMBER	INSTANTIATIONS	INVOCATIONS
> 03/20/19 15:30 GMT-0300	3481	0	1
> 03/20/19 12:12 GMT-0300	3480	0	1
> 03/20/19 12:00 GMT-0300	3479	0	1
> 03/20/19 12:00 GMT-0300	3478	0	1
> 03/19/19 11:03 GMT-0300	3477	0	1

Organic Products Tracking Pilot

- Deployed on Rizoma Fazenda Da Toca in Itirapina São Paulo
- Organic Corn Tracking <https://bit.ly/2U4DESO>
- IBM Blockchain Network 3K + events captured



Any farm can be viewed as a system, with inputs, processes, outputs and feedback



Inputs can be divided into two groups.

Physical inputs are naturally occurring things such as water, raw materials and the land.

Human or Cultural Inputs are things like money, labor, and skills.



Processes are the actions within the farm that allow the inputs to turn into outputs. Processes could include things such as milking, harvesting and shearing.



Outputs can be negative or positive, although they are usually the latter. Negative outputs include waste products and soil erosion. The positive outputs are the finished products, such as meat, milk and eggs, and the money gained from the sale of those products.



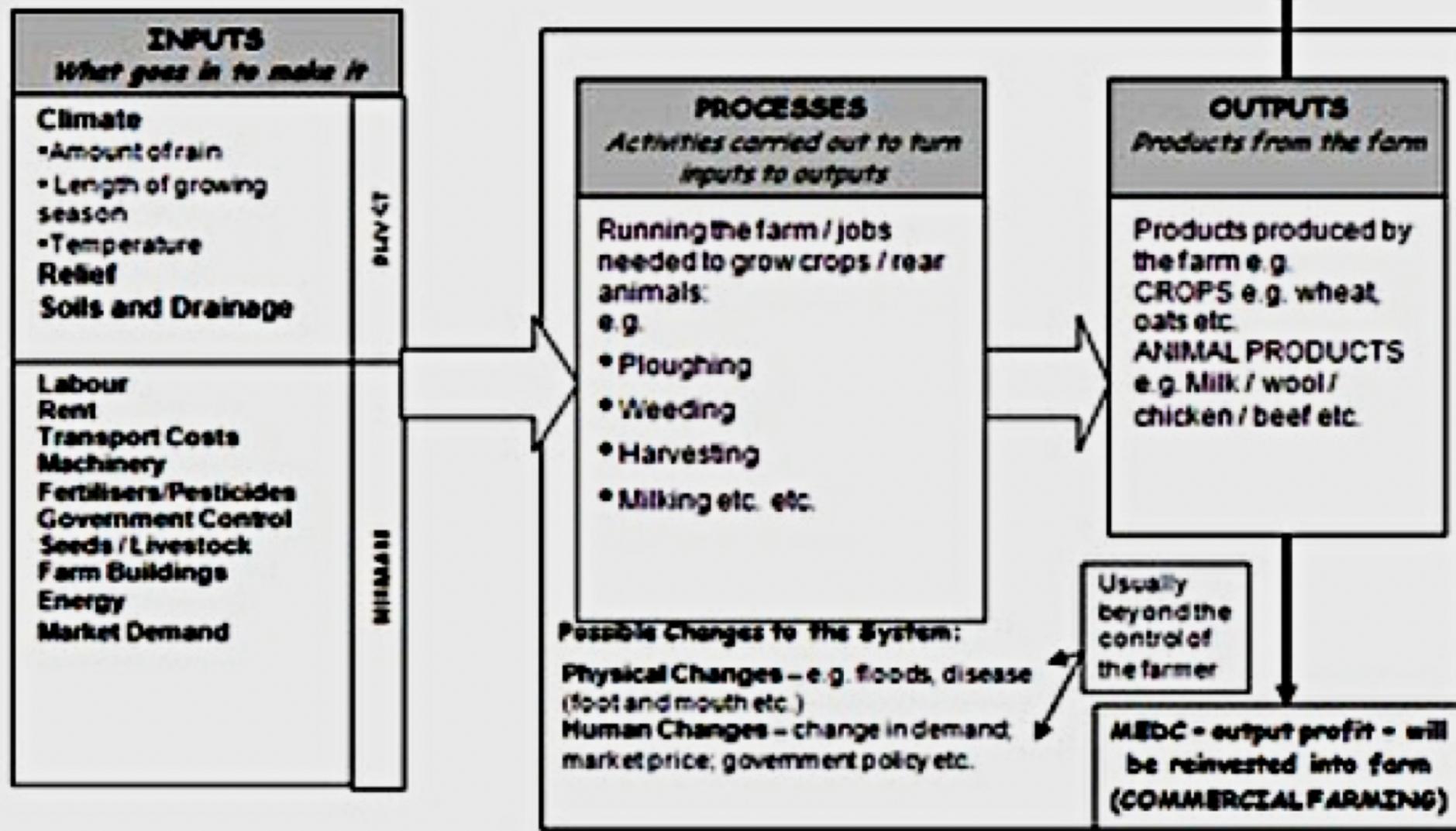
Feedback is what is put back into the system. The main two examples of this are money, from the sale of the outputs, and knowledge, gained from the whole manufacturing process. This knowledge could then be used to make the product better or improve the efficiency of the processes.

Farm as a System *

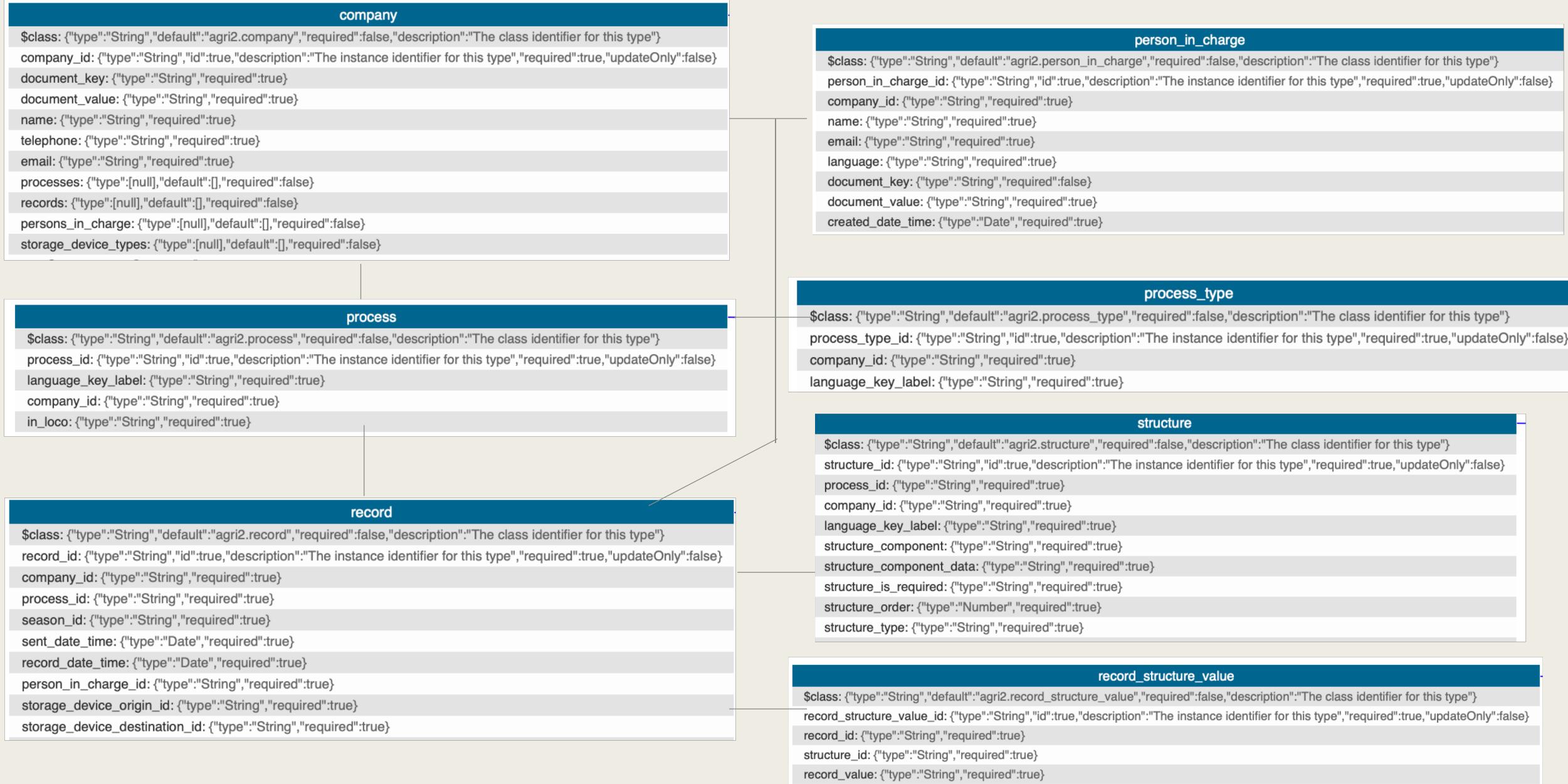
* Cambridge IGCSE Agriculture

FARMING SYSTEMS:

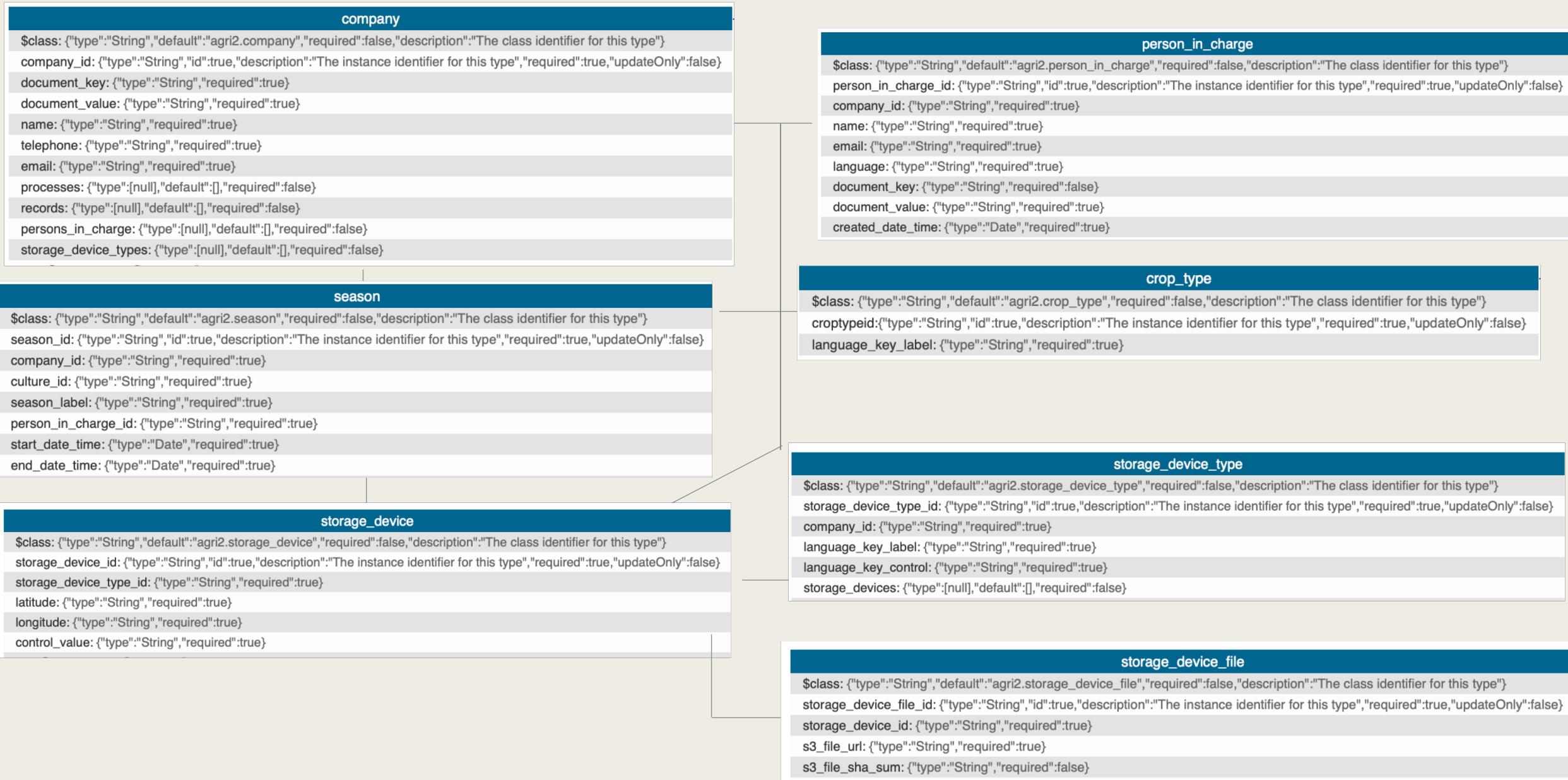
A farm is a system, with inputs, processes and outputs



PRODUCTION PROCESS



STORAGE PROCESS (includes field)



Agtrace- API

connects UI and Blockchain

Hyperledger Composer REST server			
certification : An asset named certification	Show/Hide	List Operations	Expand Operations
company : An asset named company	Show/Hide	List Operations	Expand Operations
culture : An asset named culture	Show/Hide	List Operations	Expand Operations
language_key : An asset named language_key	Show/Hide	List Operations	Expand Operations
person_in_charge : A participant named person_in_charge	Show/Hide	List Operations	Expand Operations
process : An asset named process	Show/Hide	List Operations	Expand Operations
process_type : An asset named process_type	Show/Hide	List Operations	Expand Operations
record : An asset named record	Show/Hide	List Operations	Expand Operations
record_structure_value : An asset named record_structure_value	Show/Hide	List Operations	Expand Operations
season : An asset named season	Show/Hide	List Operations	Expand Operations
storage_device : An asset named storage_device	Show/Hide	List Operations	Expand Operations
storage_device_file : An asset named storage_device_file	Show/Hide	List Operations	Expand Operations
storage_device_type : An asset named storage_device_type	Show/Hide	List Operations	Expand Operations
structure : An asset named structure	Show/Hide	List Operations	Expand Operations
System : General business network methods	Show/Hide	List Operations	Expand Operations

Agtrace- UI

← → ⌂ ⌂ https://blockchain.saas-solinftec.com/module/farm



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Filters

Producer

Season

1-Regenerative Organic C...

Product

Location

Load data

Certifications

◀ Farm

general applications

- 31/12/18 - 00:00:00
general applications
- 21/12/18 - 00:00:00
general applications
- 10/12/18 - 00:00:00
general applications
- 06/11/18 - 00:00:00
general applications

soil preparation: fertilizers and correctives

- 21/12/18 - 00:00:00
soil preparation: fertilizers and correctives