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Designing the role of Tacit Knowledge on Open Agriculture

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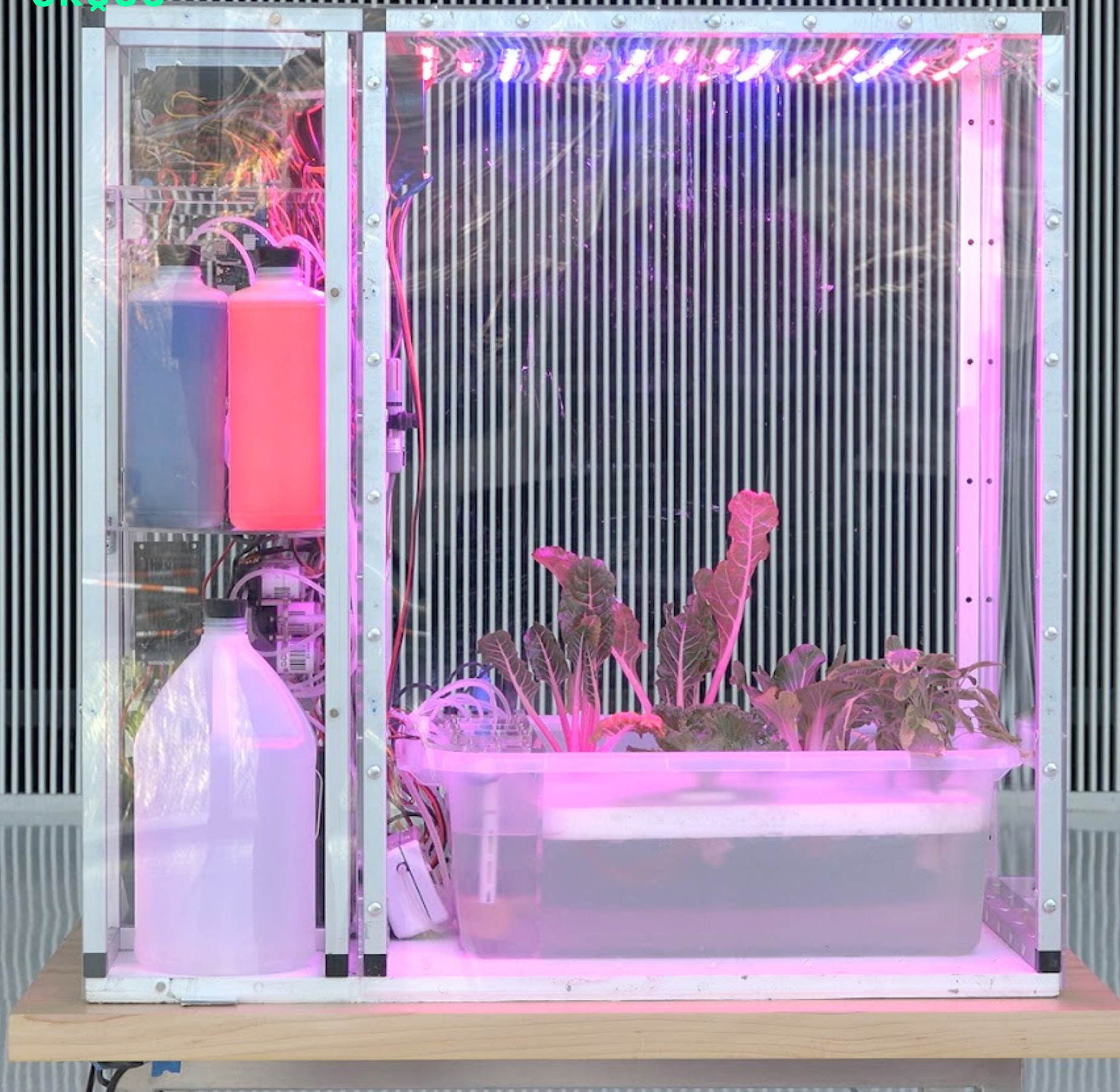
UT | P
UT Austin | Portugal
(Digital Media Program)

NOVALINCS

CIED.

ESCOLA SUPERIOR
DE EDUCAÇÃO
DE LISBOA

1. Open Agriculture

OpenAg™
is an open-source
community build-
ing an ecosystem
of food technolo-
gies to create
healthier, more en-
gaging and more
inventive food sys-
tems.

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2. Explorations | Prototypes

FUN!

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Arduino

SENSORS — i2c

NEAR PROBE 1	NEAR PROBE 2	NEAR PROBE N
soil	soil	soil
MOISTURE	MOISTURE	MOISTURE
TEMPERATURE	TEMPERATURE	TEMPERATURE
pH	pH	pH
enviromnent	enviromnent	enviromnent
RELATIVE HUMIDITY	RELATIVE HUMIDITY	RELATIVE HUMIDITY
AIR TEMPERATURE	AIR TEMPERATURE	AIR TEMPERATURE
LIGHT	LIGHT	LIGHT
plant	plant	plant
LEAF WETNESS	LEAF WETNESS	LEAF WETNESS

i2c

linux mini-computer

CORE — MQTT — **NODE.js CLOUD SERVER**

Bridge Library / Arduino Yún

Arduino + Multiplexing Module

ACTUATORS — SPI

Enviromental

EXTRACTION FAN
SERVO MOTOR WINDOWS

Watering

FERTILIZATION DOSAGE (6 peristaltic pumps)
MAIN WATER PUMP
WATER ROUTING (Washing machine electronic valves)
OTHER INTERNAL WATER ROUTING and LEVEL CONTROL ON DEPOSITS

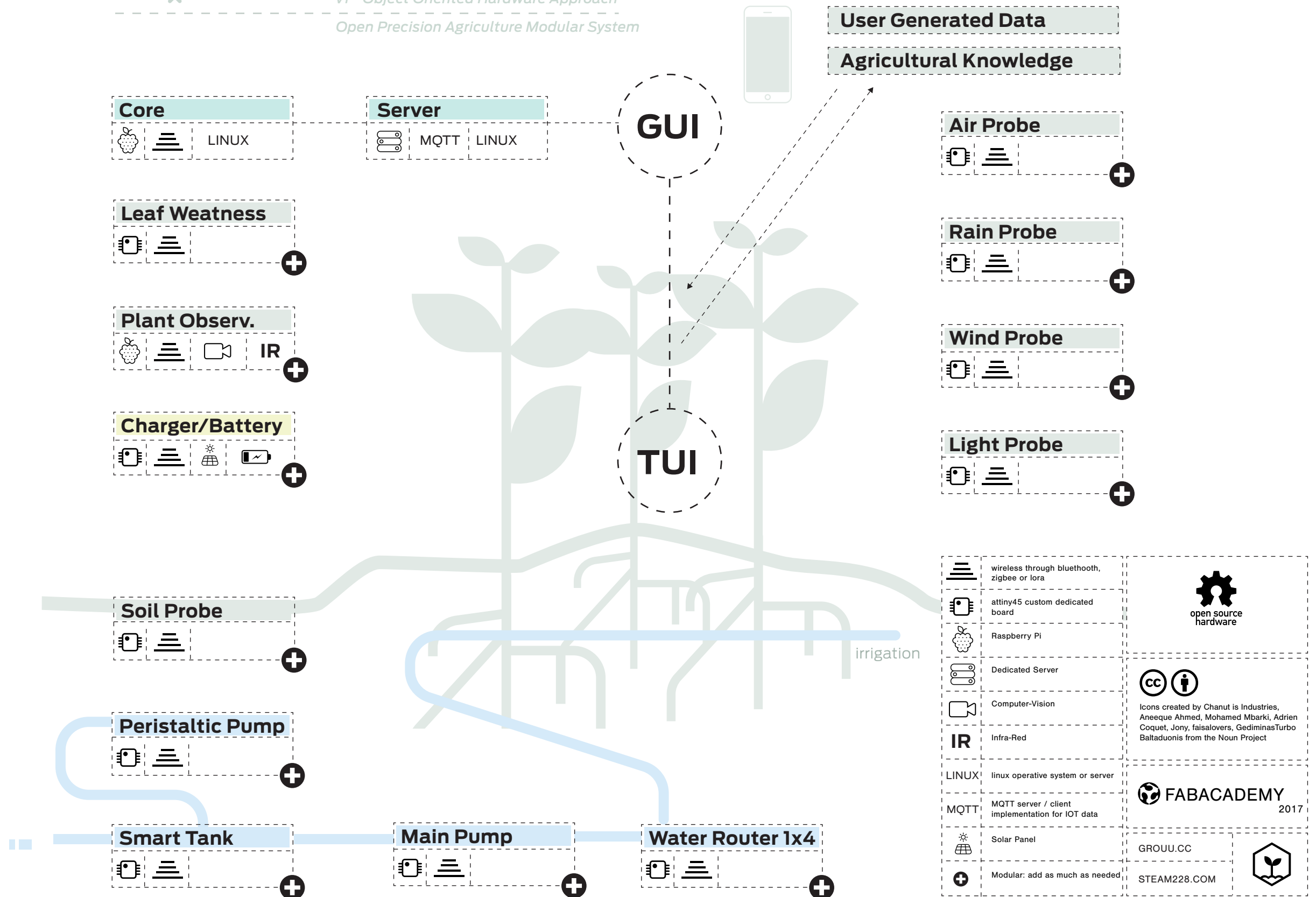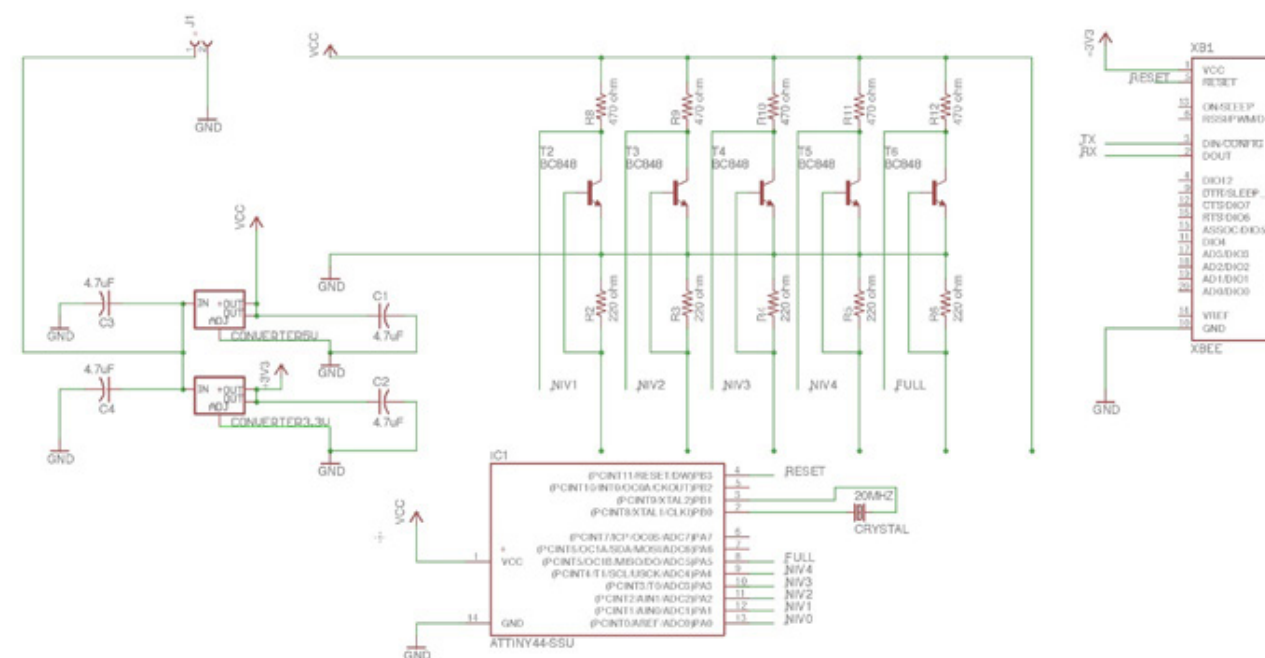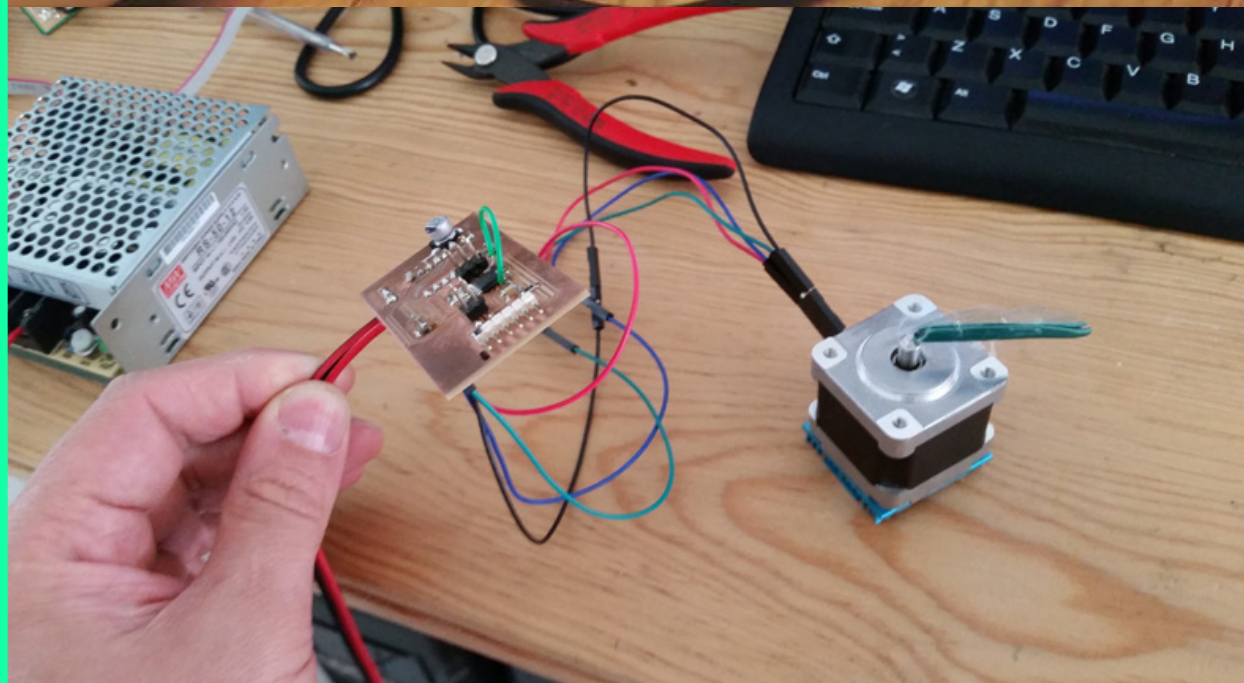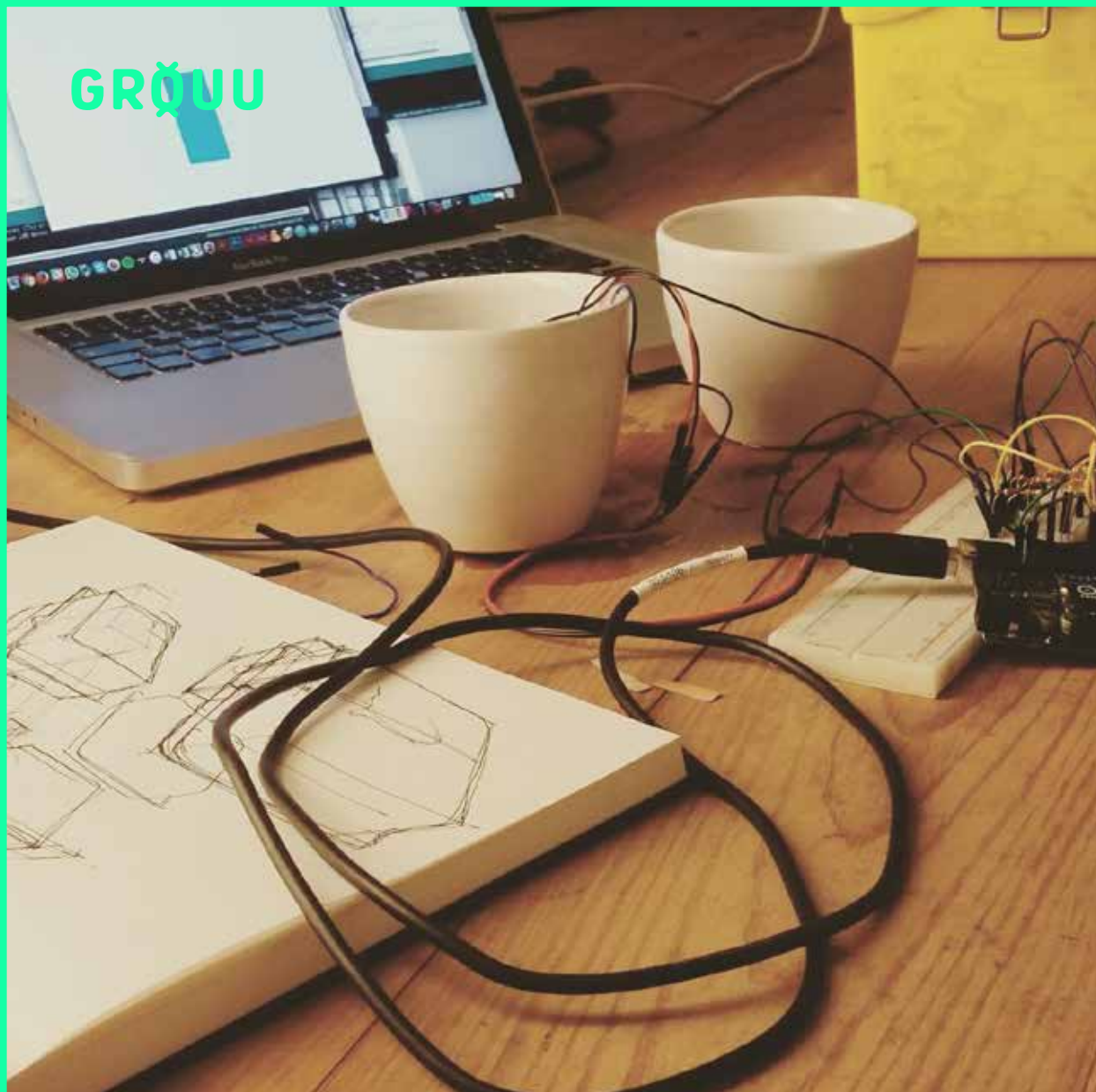**Artificial Illumination (not implemented)**

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v1 - Object Oriented Hardware Approach
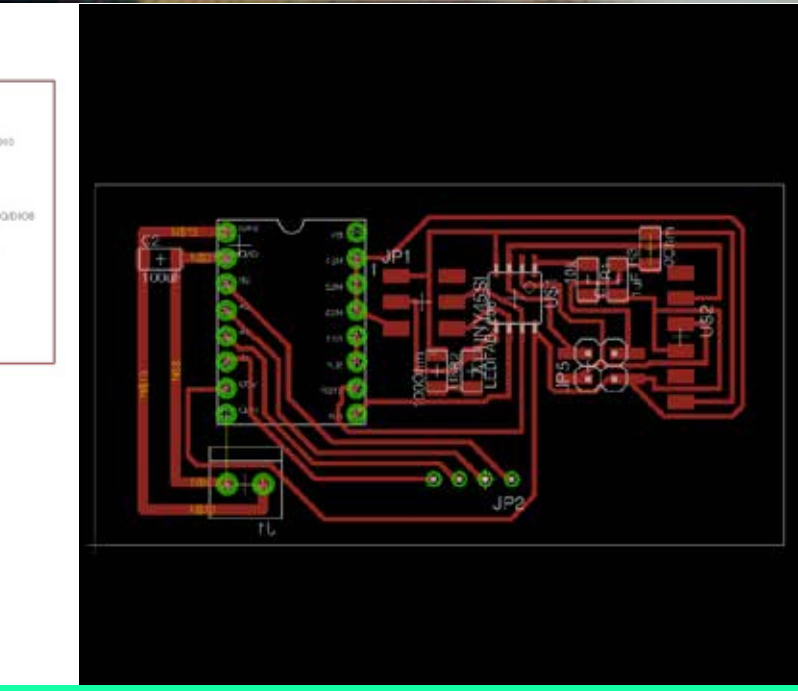
Open Precision Agriculture Modular System

User Generated Data

Agricultural Knowledge

Core — LINUX

Server — MQTT LINUX

GUI

TUI

Air Probe

Leaf Weatness

Rain Probe

Plant Observ. — IR

Wind Probe

Charger/Battery

Light Probe

Soil Probe

irrigation

Peristaltic Pump

Smart Tank

Main Pump

Water Router 1x4

	wireless through bluethooth, zigbee or lora
	attiny45 custom dedicated board
	Raspberry Pi
	Dedicated Server
	Computer-Vision
IR	Infra-Red
LINUX	linux operative system or server
MQTT	MQTT server / client implementation for IOT data
	Solar Panel
	Modular: add as much as needed

open source hardware

Icons created by Chanut is Industries, Aneeque Ahmed, Mohamed Mbarki, Adrien Coquet, Jony, faisalovers, GediminasTurbo Baltaduonis from the Noun Project

FABACADEMY
2017

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GROUU modular develoment documentation

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Modular Open Agriculture

Enabling the implementation of Precision agriculture / Automation in any context or scale of production:

- from indoor hydroponics to traditional agriculture;
- from a balcony vase implementation to a large exploration;
- in an urban or rural context; These modules can be useful for all, used together, adapted, remixed, distributed...

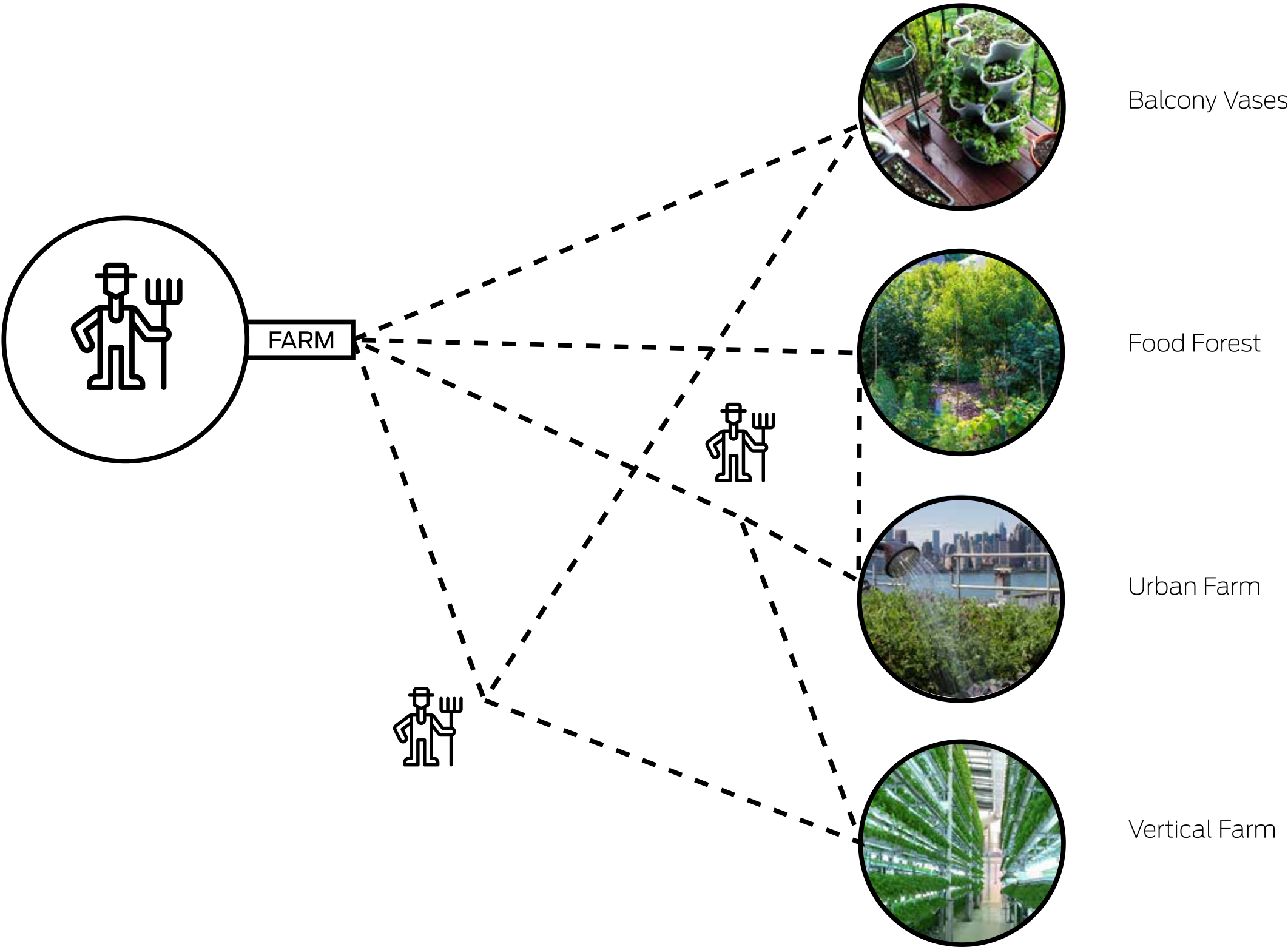**Your collaboration is precious! No onboarding needed, just start designing and developing!**

Modules V1 - ESP12 based version (under dev - design (boards, enclosures), firmware(arduino))
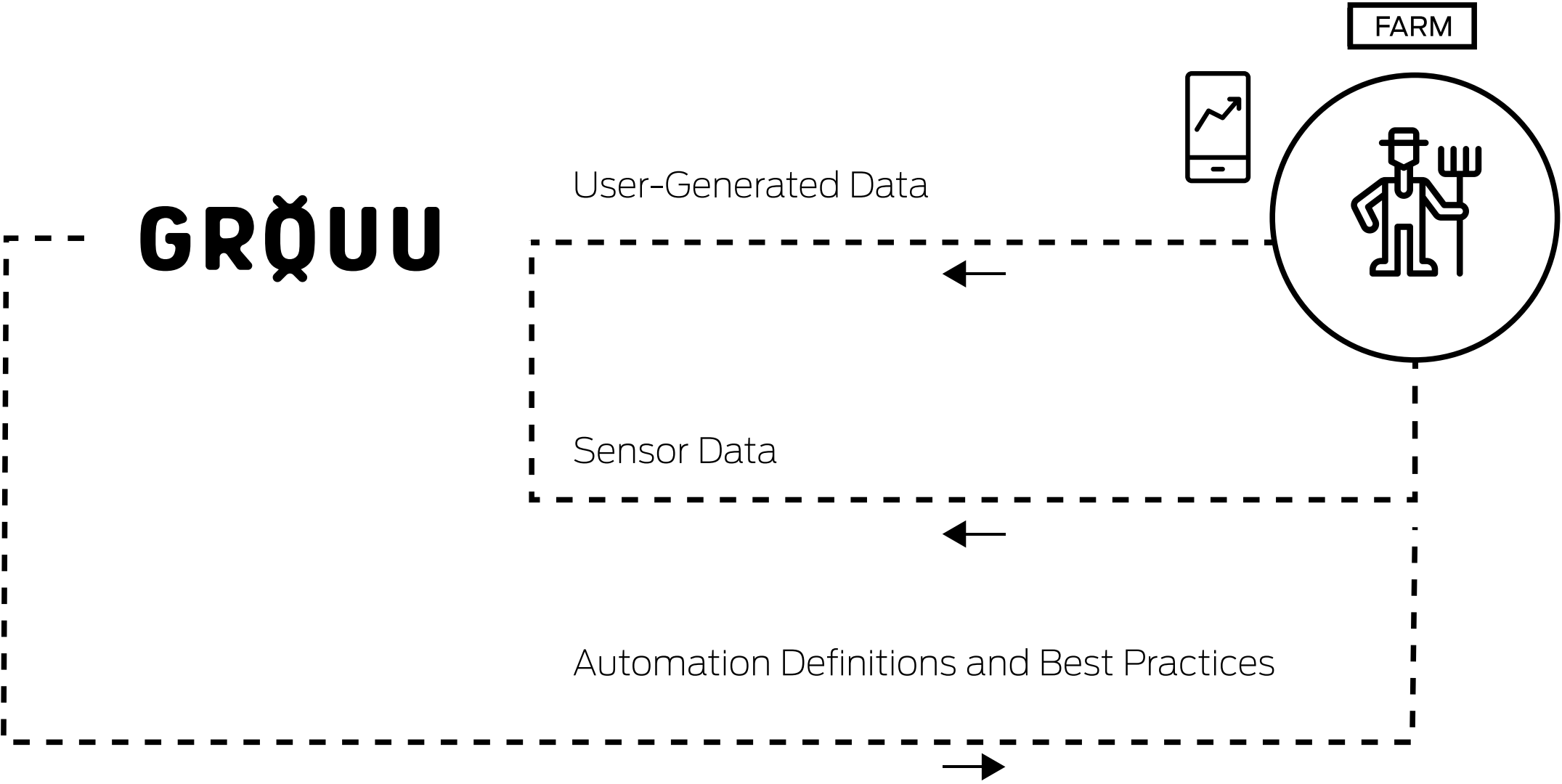
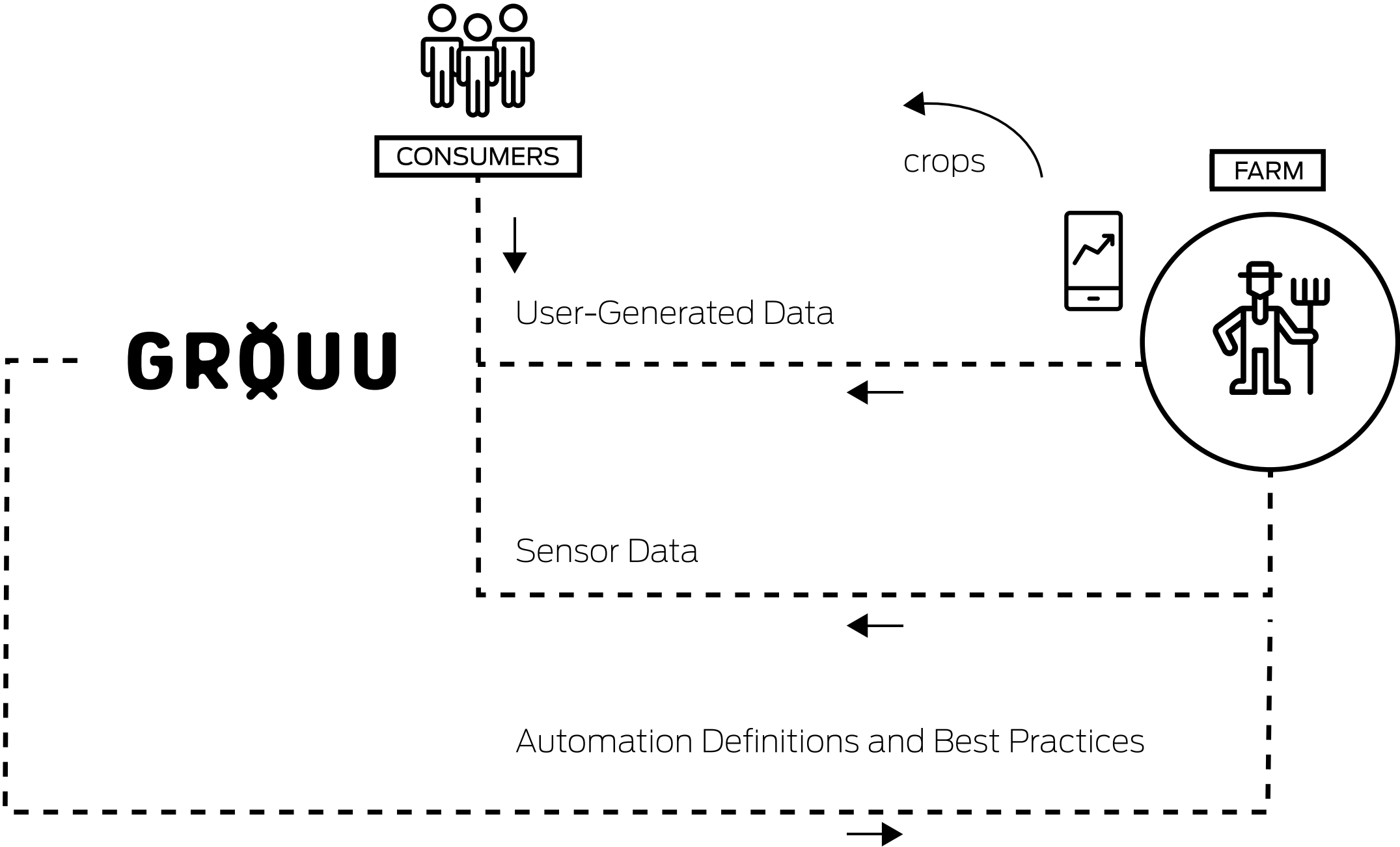## Types:

- core;
- s modules (wireless sensors);
- a modules (actuator modules);

Goals

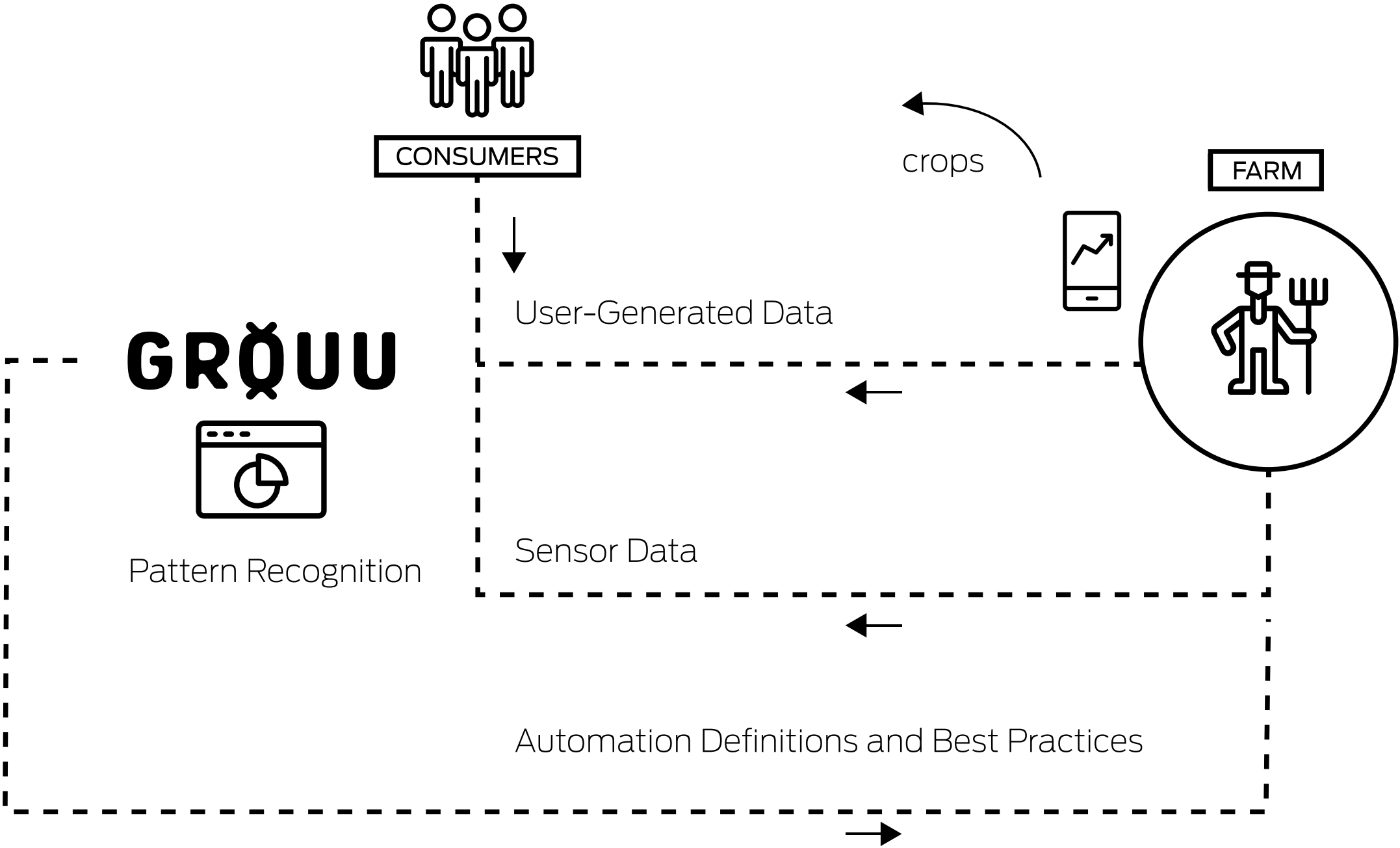GRØUU

3. Research

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FARM

Balcony Vases

Food Forest

Urban Farm

Vertical Farm

Report, Graph, People, Farmer by Mello from the Noun Project

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FARM

User-Generated Data

Sensor Data

Automation Definitions and Best Practices

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CONSUMERS

crops

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User-Generated Data

Sensor Data

Automation Definitions and Best Practices

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FARM

User-Generated Data

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Pattern Recognition

Sensor Data

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Pattern Recognition

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Automation Definitions and Best Practices
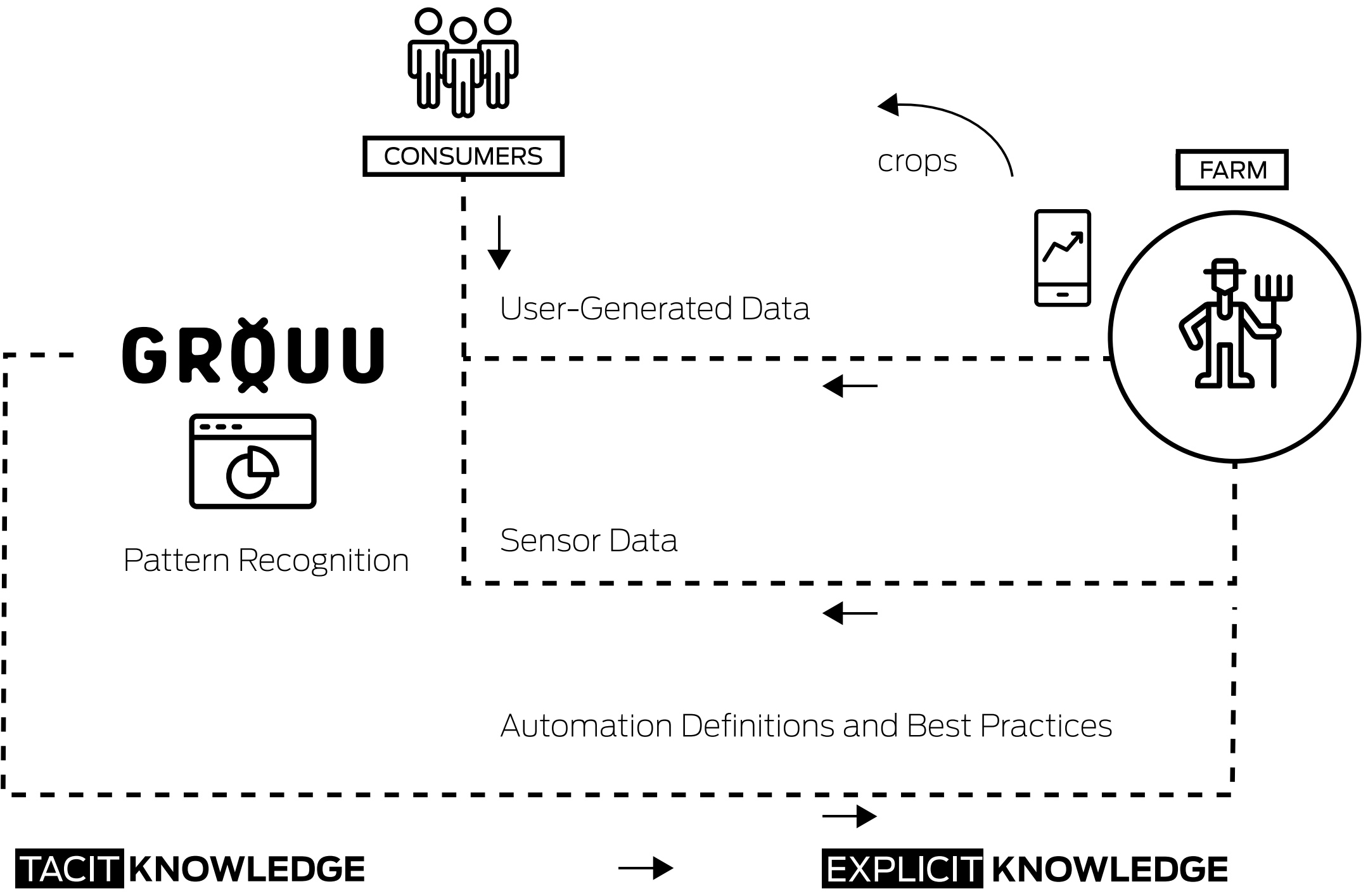
TACIT KNOWLEDGE → EXPLICIT KNOWLEDGE

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Can Agricultural Tacit Knowledge
become Open Agricultural Knowledge?
And therefore a Common?

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CultiMake Workshop at Ioaninna, Greece.

Organized by P2P Lab at Habibi.Works a Makerspace located next to a Refugee Camp in Northen Greece

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THANK YOU!
@steam228