



MINISTÉRIO DA
AGRICULTURA E
PECUÁRIA



Collaborative Development Project for Precision and Digital Agriculture to Strengthen the Innovation Ecosystem and the Sustainability of Brazilian Agri-food Chains (Implementation Phase)

August 2023

Oriental Consultants Global
Vision Tech

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1. BACKGROUND OF THE PROJECT

- The "Co-creation Project on Precision and Digital Agriculture for Enhancing Innovation Ecosystem and Sustainability in the Agri-Food Chain" (hereinafter referred to as "the Project") aims
 - to promote precision and digital agriculture in Brazil based on the concept of ESG (Environment (E), Social (S), and Governance (G)).
 - to establish an environment in which technology and information on precision and digital agriculture can be shared beyond the framework of existing organizations (innovation ecosystem) in order to improve the environmental and economic sustainability of agriculture;
 - To be implemented through public-private partnerships between Japan and Brazil.

2. OBJECTIVE AND EXPECTED OUTPUTS OF THE PROJECT

Overall Goal

With the aim to improve environmental and economic sustainability of agriculture, the open innovation environment for precision and digital agriculture is established.

Project Purpose

Development of precision and digital agriculture is promoted through public and private partnership between Brazil and Japan.

Output 1

An environment for exchange human resources, technologies and information to co-create sustainability is established for **innovation ecosystem** by precision and digital agriculture.

Output 2:

The **agricultural digital platform** is improved by means of promoting the innovation ecosystem.

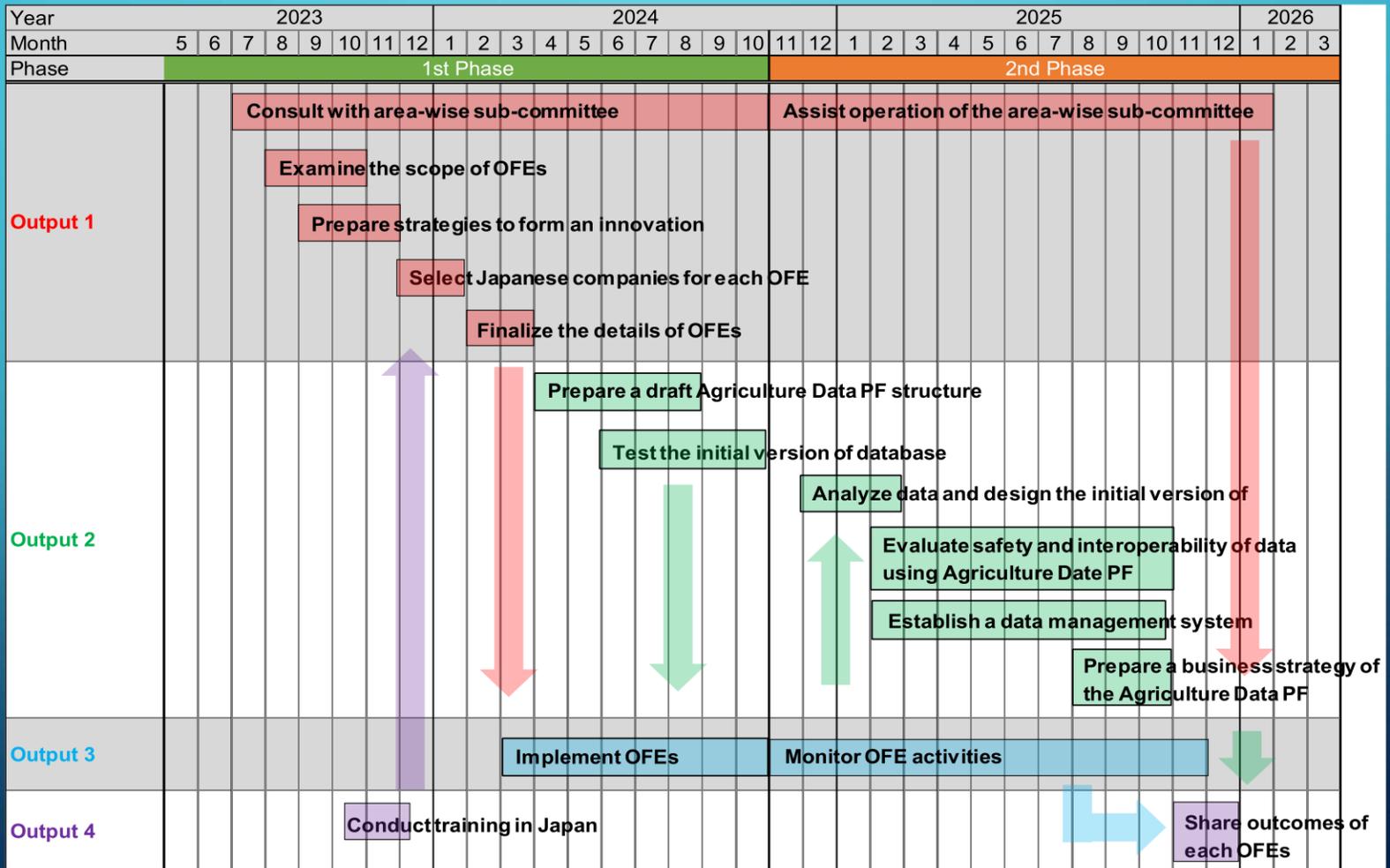
Output 3:

On-farm Experimentation of the areas (Crop, Livestock and Agroforestry) is carried

Output 4:

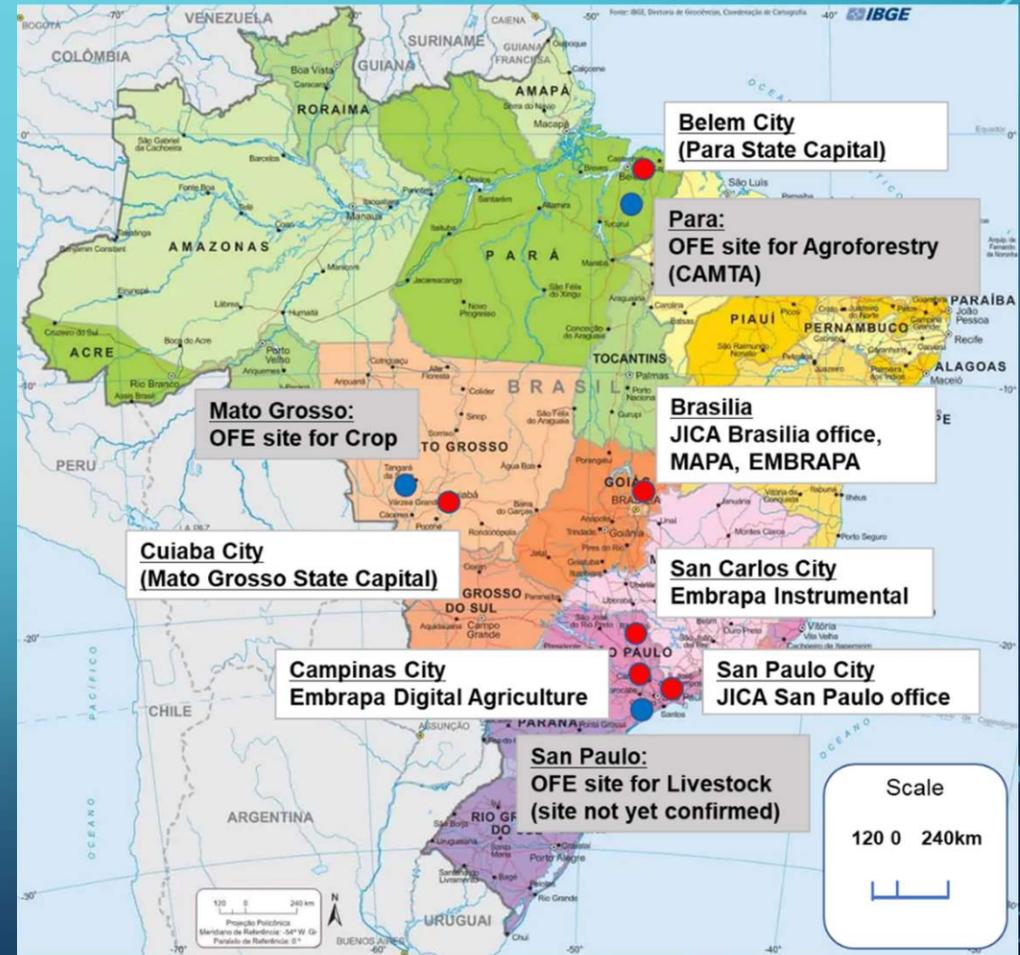
General knowledge of the project is **transferred** to agricultural innovation ecosystem

3. SCHEDULE OF THE WORK



4. TARGET AREA

- Project Office :
 - Embrapa Instruments
 - San Carlos City
- Counterpart Offices
 - MAPA : Brasilia
 - Embrapa Digital Agriculture : Campinas City
- Expected Pilot Project Sites
 - Crop : Matto Grosso state
 - Livestock : San Paulo state
 - Agro-forestry : Para state



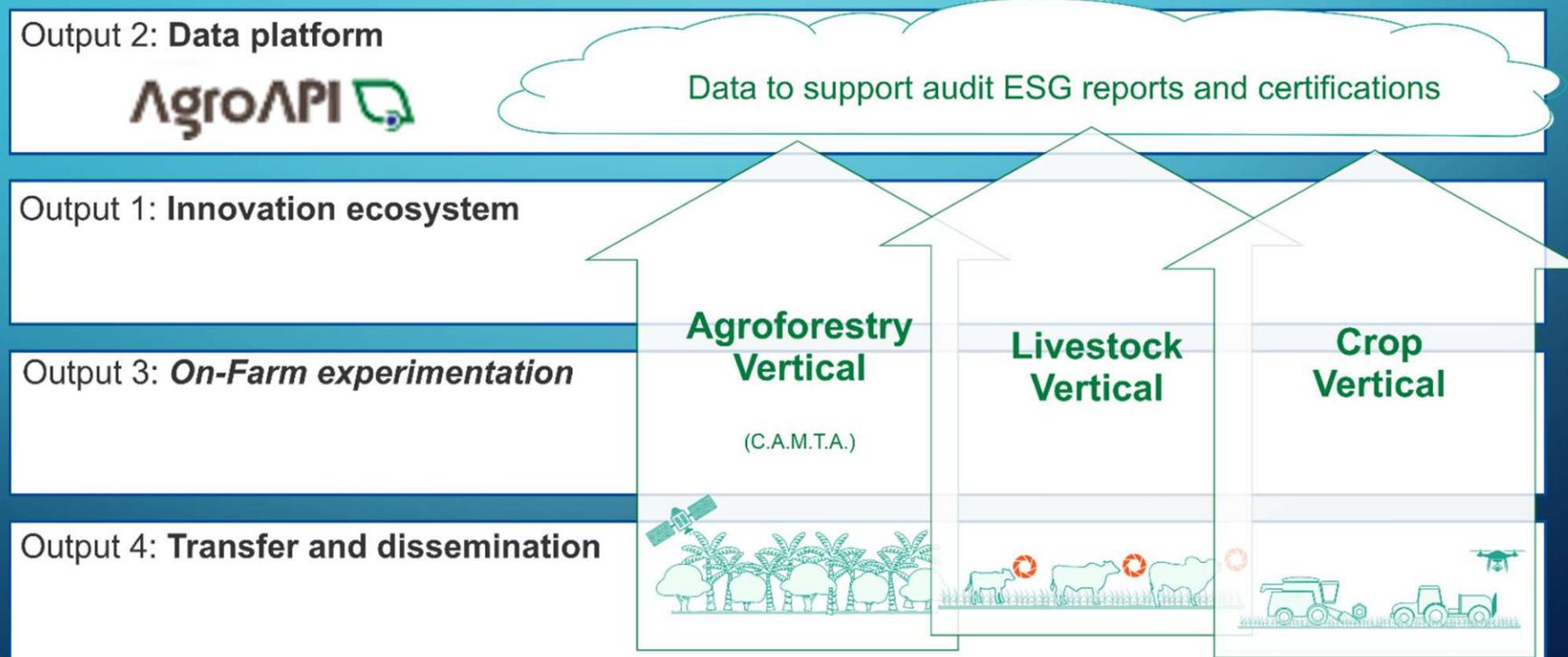
5. HYPOTHESES OF THE PROJECT ACTIVITIES

- Data generated by Precision and Digital Agriculture can be used to **track** and **prove** sustainable practices (**Audits** for ESG reports and Certification) and bring greater transparency to Brazilian Agriculture.
- The data generated by **Agritecs** must be stored in safe, reliable, and **transparent** places (must be inviolable for use in audits).



6. The project structure

There are four horizontal outputs and three vertical scopes

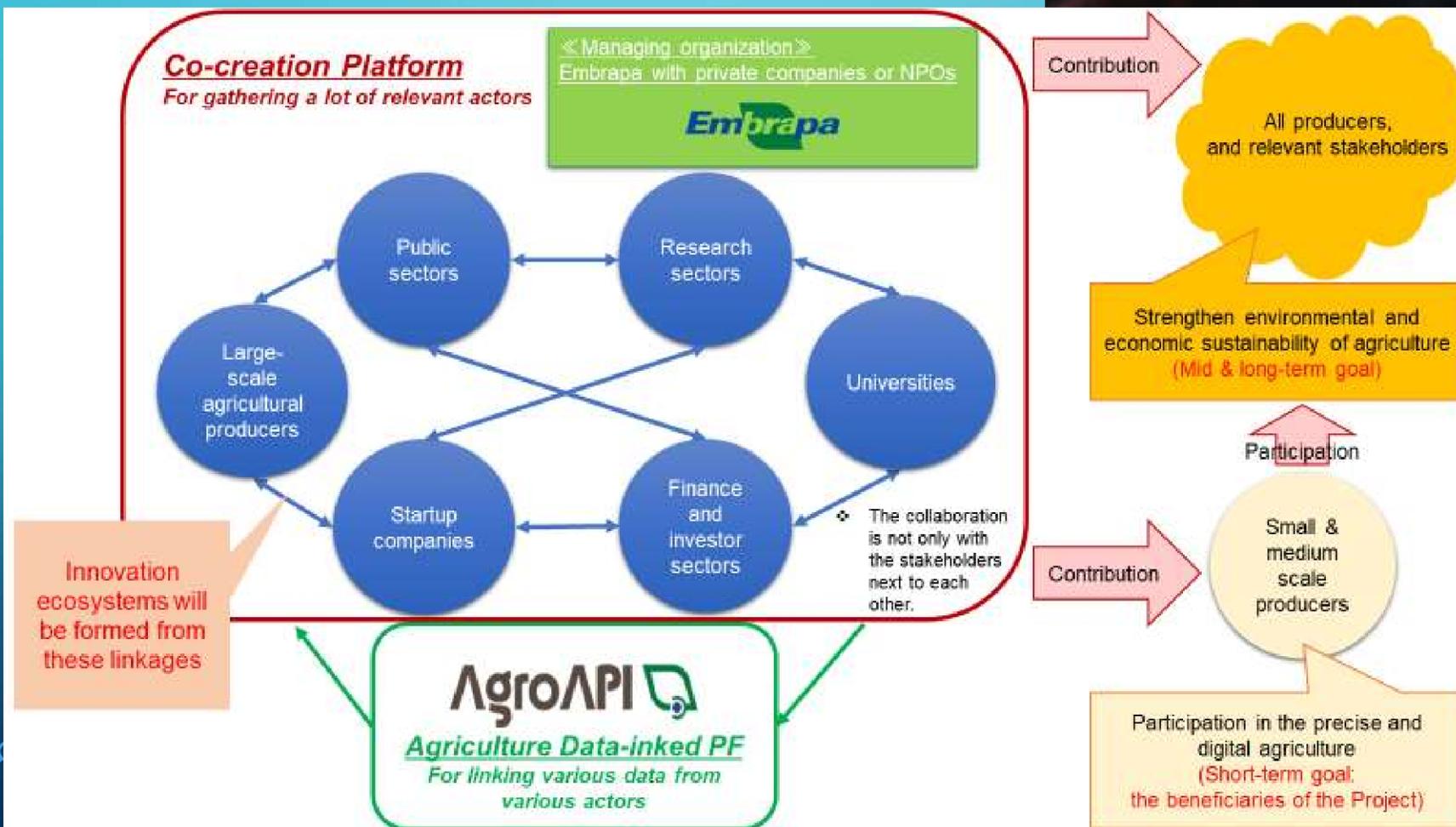


6. OUTLINE OF OUTPUT 1

An environment for exchange human resources, technologies and information to co-create sustainability is established for innovation ecosystem by precision and digital agriculture.



CONCEPTIONAL DIAGRAM: INNOVATION ECOSYSTEM ON AGRI-FOOD CHAIN IN BRAZIL



Technology development

Structure of Digital transformation (DX) strategy

Output 1: Digital transformation (DX) strategy

Technology mapping
[Current situation]

Roadmap for development
[Action plan]

Scope definition of OFE
[Concrete action plan in this project]

Output 2: Data-linked PF

Output 3: OFE

Technology mapping

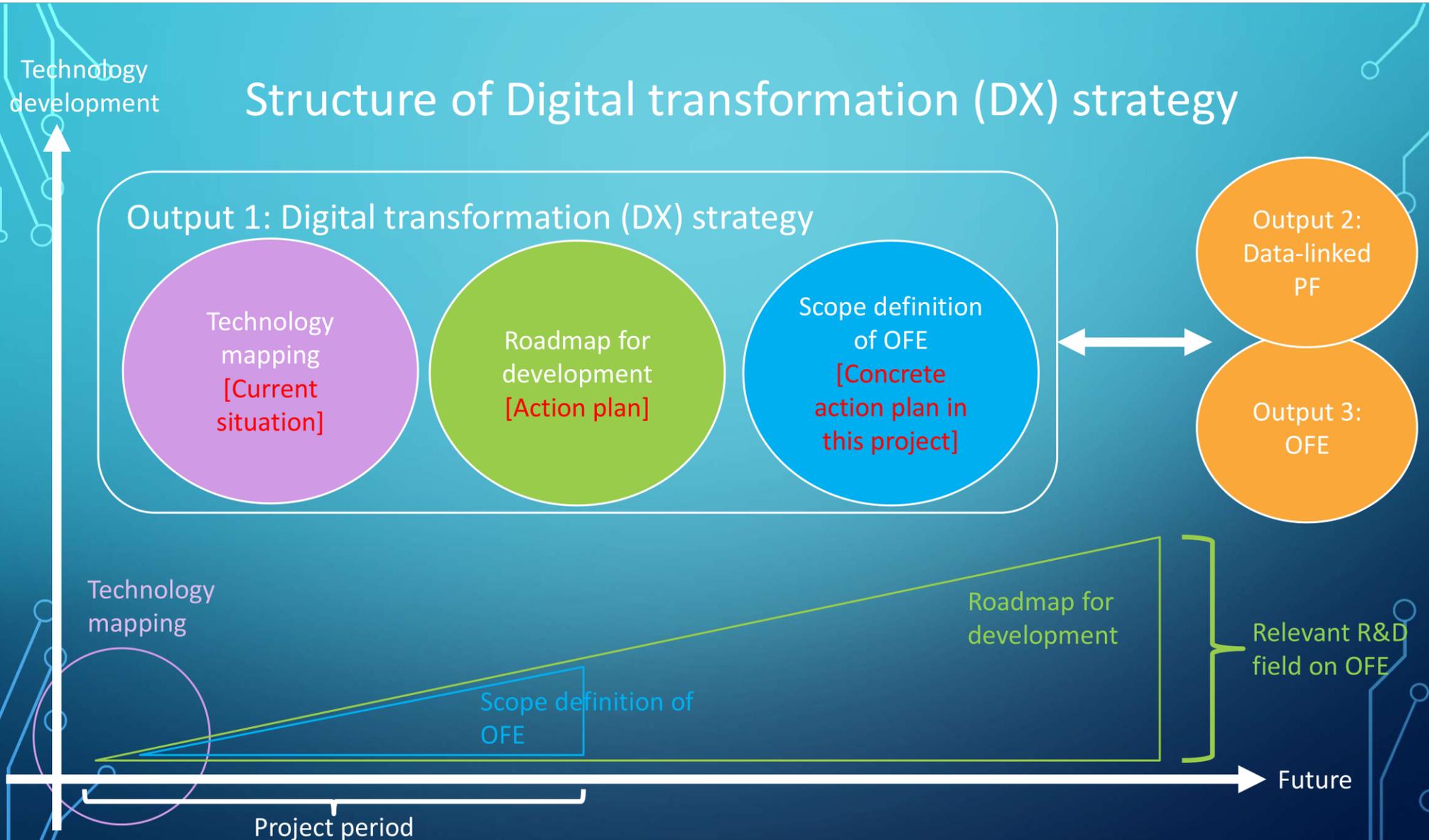
Roadmap for development

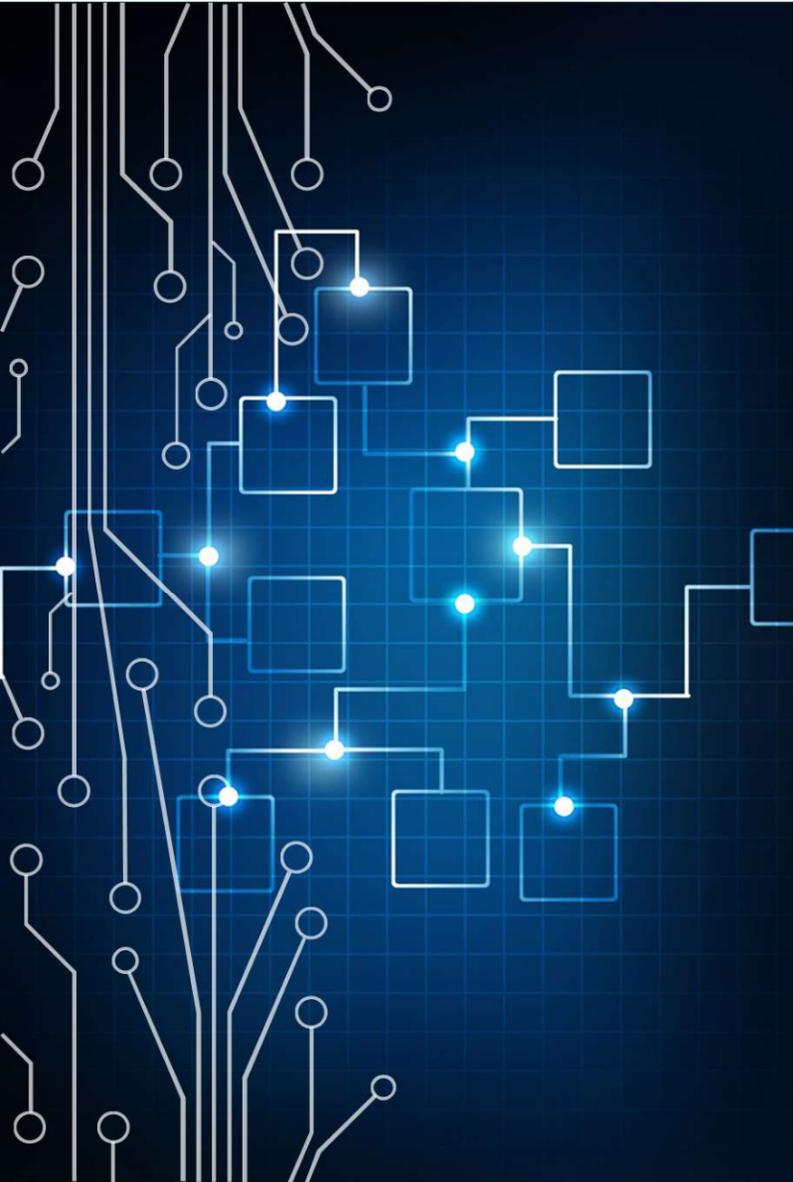
Relevant R&D field on OFE

Scope definition of OFE

Future

Project period

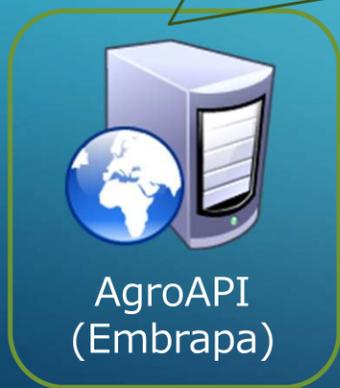
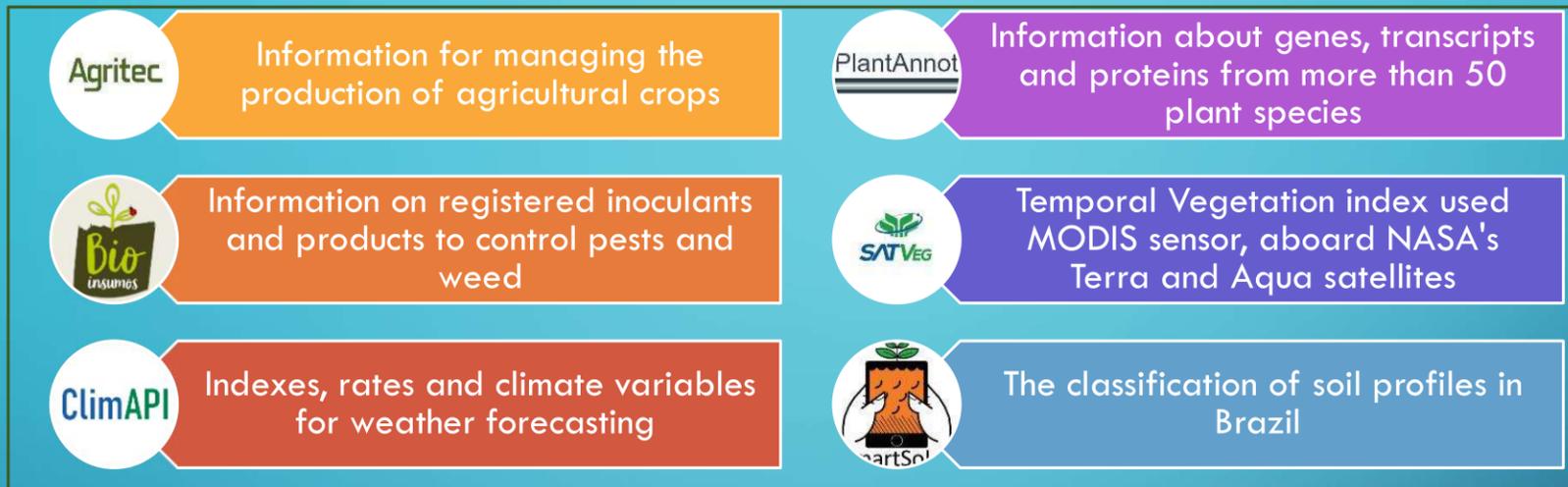




7. OUTLINE OF OUTPUT 2

The agricultural digital platform is improved by means of promoting the innovation ecosystem.

Outline of WebAPI service



Accumulation and Disclose of acquired Information.



Available to use information on any foreign systems.

(1) IMPROVING AGRICULTURAL DATA PLATFORMS.

- AgroAPI will be positioned as an agricultural data Platform for the development of an open innovation environment.
- Improve AgroAPI into a data-linked agricultural data PF that registers relevant technologies of public institutions, companies and organisations in each innovation ecosystem in one place, makes their APIs public and promotes collaboration.

Database on Public institutions



Database of MAPA (Observatório)



APIs developed in OFEs



EMBRAPA
Agricultural data platform



Information sharing

Now operating

- API Agritec
- API SATVeg
- API SmartSolos Expert
- PlantAnnot
- API Bioinsumos

APIs development and API communication support through OFE projects



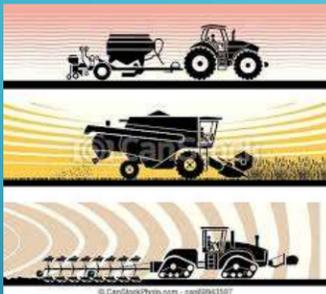
8. OUTLINE OF OUTPUT 3

On-farm Experimentation (OEFs) of the areas of a particular technology is carried out to confirm the usability of precision and digital agriculture data.

OUTPUT3 : (1) CROP VERTICAL

Objective : Generation of auditable digital data, of good quality, that allow **quick responses with transparency.**

Agribusiness in Brazil



- Amaggi
- Scheffer
- SLC
- Other

Embrapa

Agri-tech companies in Japan and Brazil



ESG certifiers



Trading Companies



Existing digital data (land information, fertilizer and pesticide application by agricultural machinery, harvest volume, etc.)

APIs on the integration of digital data in various formats

Extraction of ESG related data (indicators)

Ensure traceability

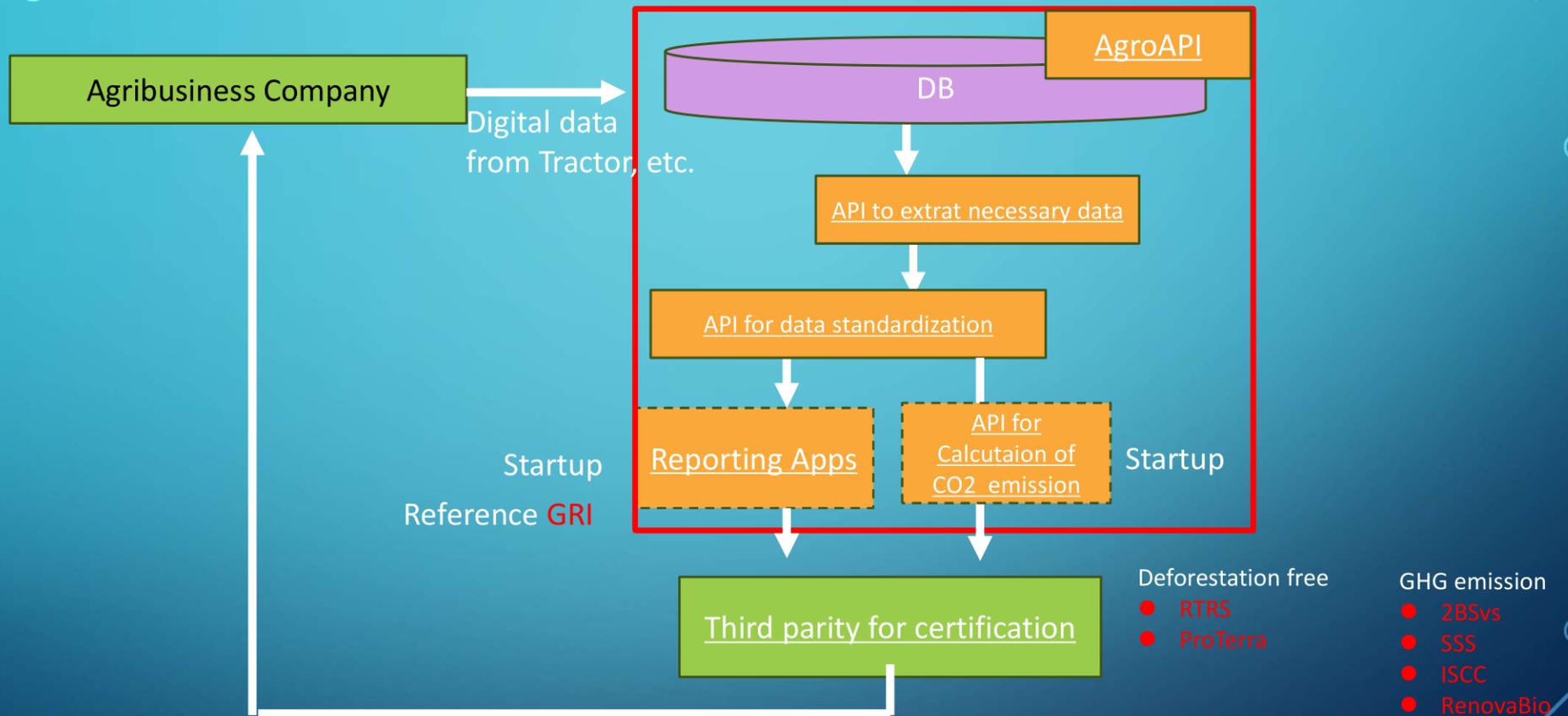
- Usage of Results with AgroAPI
- Digital Data Integration API
 - ESG indicator data extraction API

Expansion of services by start-up companies

Can be used by middle and small-scale farmers



OFE : Crop Vertical – Generate Auditable Digital data



Develop an API to standardize digital data provided by Agribusiness companies as a sample, and verify the development of an API to support ESG-related reporting using the standardized data.

- Standardize the provided data with various agricultural machines such as tractors, harvesters, etc.
- Develop an API to extract and report information that conforms to EU exports and other certifications.
- Collaborate with a startup that develops a reporting application.

Objective :
 1) Promotion
 2) Carbon credit

OUTPUT 3 : (2) LIVESTOCK VERTICAL

Objective: Generation of quality digital data, supporting traceability and increasing production efficiency.

Livestock Farms and Farmers



Currently, much of the livestock-related data is not yet digitized

Usage of results with AgroAPI

- Application of individual certification to traceability
- Application of digital data of individual cattle to feedlot management

Embrapa

Agri-tech companies in Japan and Brazil



Develop a technology to identify individual cattle, which is of great interest to the livestock industry.

Certifiers



Apply technology to existing beef cattle traceability systems

Expansion of services by start-up companies

Trading Companies



Ensure traceability, export overseas

Participate in the supply chain

Can be used by middle and small-scale farmers



OFE: Individual identification of cattle for traceability and increasing production efficiency

Taking picture

Individual Identification

Trading

Camera on
Smart phone



For small-scale , Individual

Nose-print Authentication
API

True/False

Cow trading apps

3D camera image



For large-scale farms, Large number in group

Body Shape Authentication
API

True/False

Accumulating of digital data,
supporting traceability and
increasing in production efficiency

OUTPUT 3: (3) AGROFORESTRY VERTICAL

- Objective: to develop a model for SAFTA certification with digital data

CAMTA Cooperative



The Tomé-Açu-style agroforestry (SAFTA) trademark has been registered and is being implemented, but the product is not adding value.

Embrapa

Agri-tech companies in Japan and Brazil



Form the basis for SAFTA certification and auditing using digital data

Certifiers



SAFTA Certification System

Domestic Market, Trading companies



Ensure traceability, branding

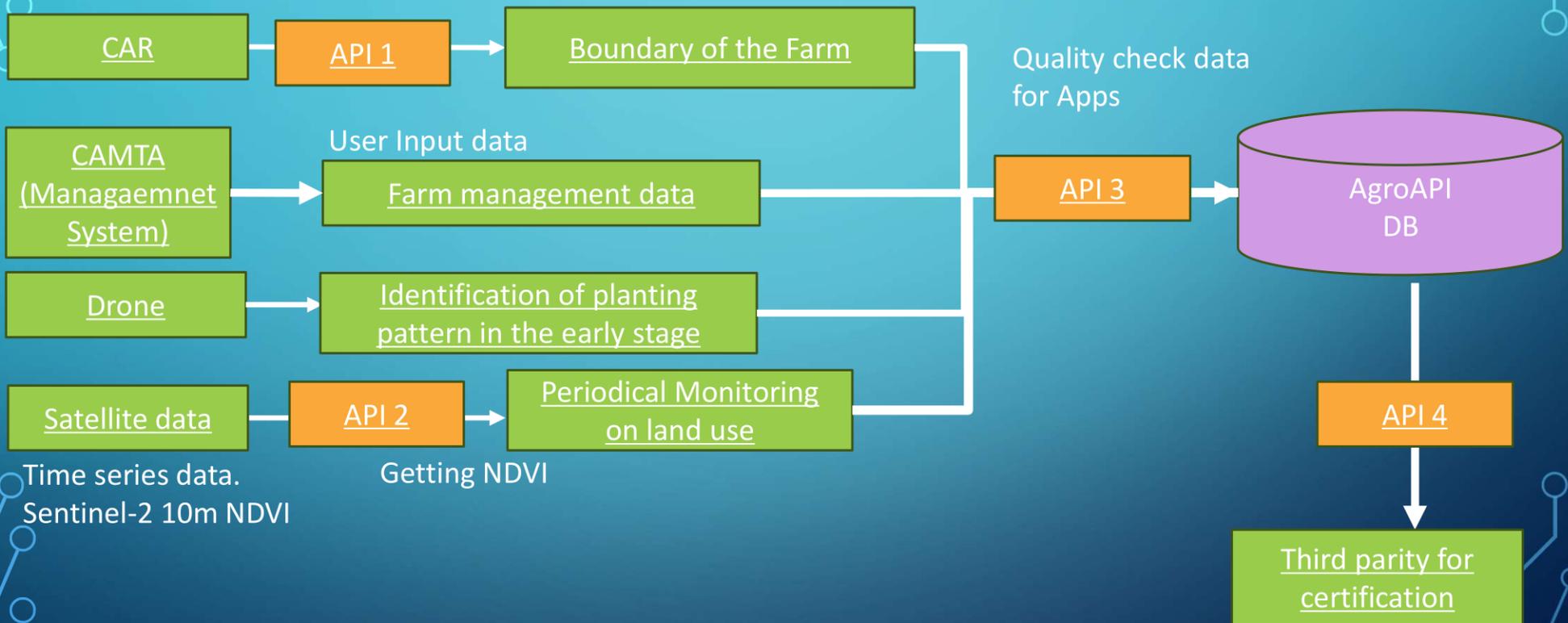
Usage of results in Embrapa

- Application to the institutionalization of SAF certification
- Digitalization of agroforestry operations

Promoting the use of degraded lands through the application of SAF



OFE : Generalization of Certification flow as SAFTA





9. OUTLINE OF OUTPUT 4

General knowledge of the project is transferred to agricultural innovation ecosystem

A decorative graphic on the left side of the slide, consisting of white lines and circles on a blue background, resembling a circuit board or network diagram.

(1) INFORMATION SHARING

Target Indicators:

- 200 business managers, researchers, and disseminators learn sustainable agriculture system
- 300 students and Agri-food tech learn API and agriculture platform functions and/or implementation.
- 600 professionals and students learn about precision and digital agriculture



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- Muito Obrigado
- ご清聴ありがとうございました。