

ADMA based reference framework

for agriculture

accenture



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2 | 3 | 4 | 5 | 6 | 7 | 8

Introduction and purpose



Azure Data Manager for Agriculture (ADMA)

What this is...

The agriculture industry is going through a significant technology transformation where technology is playing a key role towards building sustainable agriculture. With the increase in adoption of technology like drones, satellite imagery, IOT devices – there are large volumes of data generated from these source systems and stored in cloud.

Today, companies are looking at ways to efficiently manage this data and derive actionable insights that are provided to the user timely and help achieve more with less. Microsoft Agri Data Service provides core technology platform that hides all the technical complexity and helps customers focus on their building their core business logic and drive business value.

ADMA is B2B PaaS Data integration platform offering to acquire, aggregate, and process agricultural data from various sources (farm equipment manufacturers, weather, satellite, sensor, drone, etc.) to build intelligent digital agriculture solutions.

Agri Data Services provide organizations with the ability to bring together farming data from different sources, transform the same and run science & AI/ML insights of choice, to drive innovation & improvement in their farmer facing offerings for efficiency, quality & sustainability.

MS ADMA is a great tool for regenerative farmers to collect and analyze data that can help make more informed decisions on their farming operation and it can have a big impact on the regenerative farming process, especially when it comes to demonstrate compliance with regenerative agriculture practices, such as reducing tillage, increasing soil organic matter, and promoting biodiversity. This data can be used to verify compliance with certifying organizations and to communicate the benefits of regenerative agriculture to customers.

Azure Data Manager for Agriculture (ADMA)

Why it matters

By using ADMA, agriculture businesses can focus on core value-adds instead of the undifferentiated heavy lifting of data engineering. Azure ADMA enables users to query and reason through data present in standardized schemas.

Some specific ways that ADMA can be used to support compliance with regenerative agriculture principles include:

- Minimizing soil disturbance: This helps to improve soil structure and increase organic matter content, which can lead to better water retention and increased fertility. MS ADMA can use cameras and drones to capture images of fields, which can be analyzed to determine the extent of tillage and the presence of cover crops. This data can be used to track progress over time and identify areas where tillage practices can be improved.
- Increasing biodiversity: ADMA can use cameras and drones to capture images of fields, which can be analyzed to determine the diversity of crops and the presence of cover crops. This data can be used to track progress over time and identify areas where biodiversity can be increased. ADMA can also be used to monitor wildlife and other biodiversity on the farm, which can help farmers understand how different species interact with each other and how they may be affecting crop yields and overall ecosystem function. This can help farmers make more informed decisions about land use, crop selection, and other aspects of regenerative agriculture.
- Managing water resources: ADMA can use sensors to measure soil moisture and weather data to determine the best time to apply water and how much to apply. Additionally, ADMA can use cameras and drones to capture images of fields, which can be analyzed to determine the presence of erosion and water infiltration.
- Enhancing soil health: ADMA can use IoT sensors to collect data on soil moisture, pH, and nutrient levels to measure soil moisture and weather data to determine the best time to add organic matter, such as compost or mulch. Additionally, ADMA can use cameras and drones to capture images of fields, which can be analyzed to determine the presence of beneficial microorganisms and soil erosion.
- Maximizing diversity of crops and animals: MS ADMA can be used to monitor crop growth and phenology, which can help farmers identify which crops are doing well and which ones are struggling. By understanding the strengths and weaknesses of different crops, farmers can make more informed decisions about which crops to grow and where to grow them, which can help increase diversity and improve the overall health of the farm.
- Crop growth monitoring: ADMA can use cameras and other sensors to collect data on crop growth and phenology, which can help farmers identify problems such as pests or disease and optimize planting and harvesting times.
- Weather monitoring: ADMA can use weather stations to collect data on precipitation, temperature, and other meteorological variables, which can help farmers make decisions about irrigation and fertilization.
- Livestock monitoring: ADMA can use cameras and other sensors to collect data on livestock activity and health, which can help farmers improve the welfare of animals, and optimize grazing and feeding practices.
- Predictive analytics: ADMA can use AI algorithms to analyze the data collected from the farm, which can help farmers make predictions about future crop yields and identify potential problems before they occur.
- Data sharing with ecosystem partners: The platform also allows farmers to share data with their agronomist and other trusted advisors, to get a better view of the farm operations and improve their regenerative practices.

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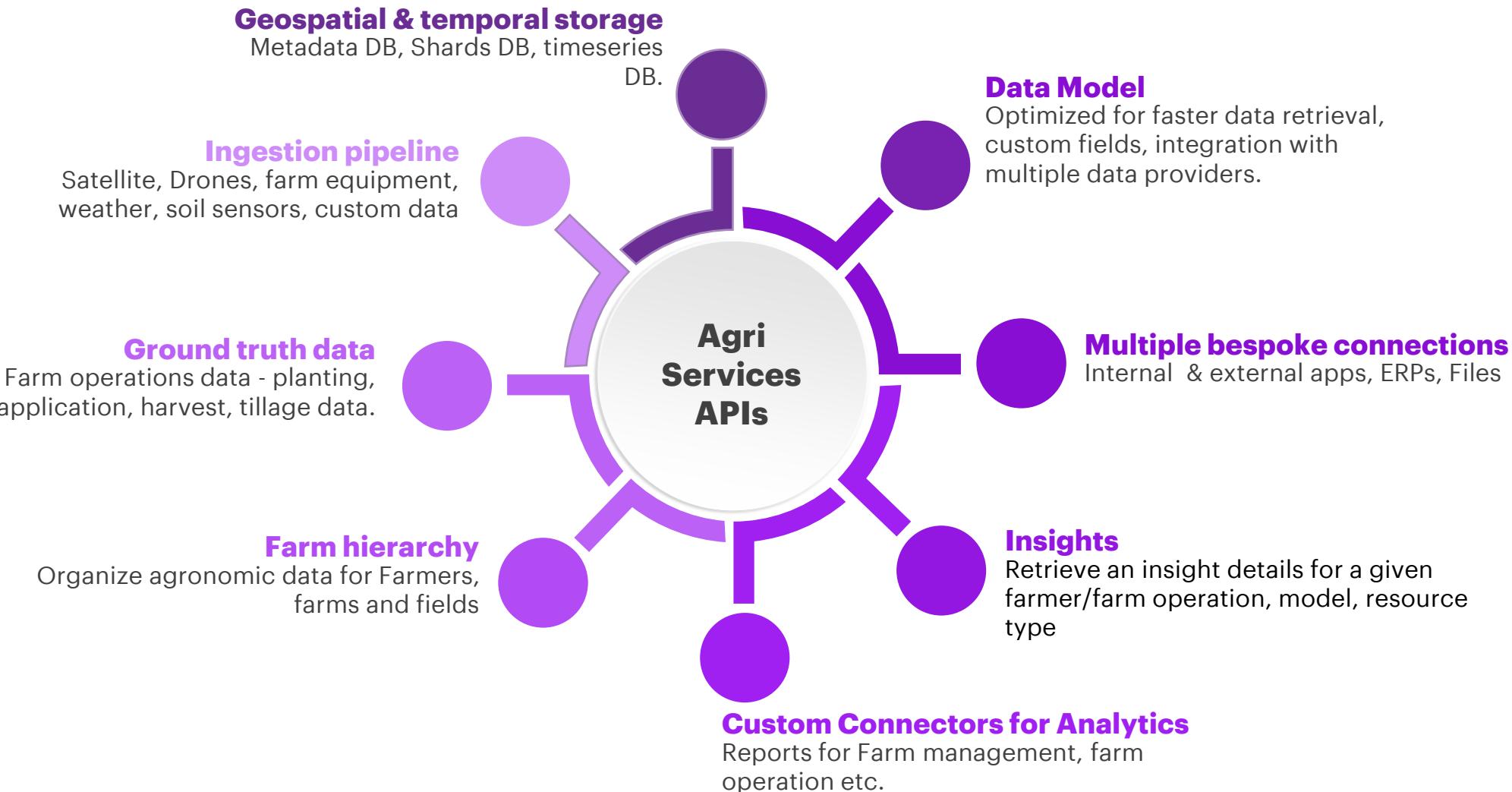
8

System Overview



Azure Data Manager for Agriculture(ADMA)

Key enablers

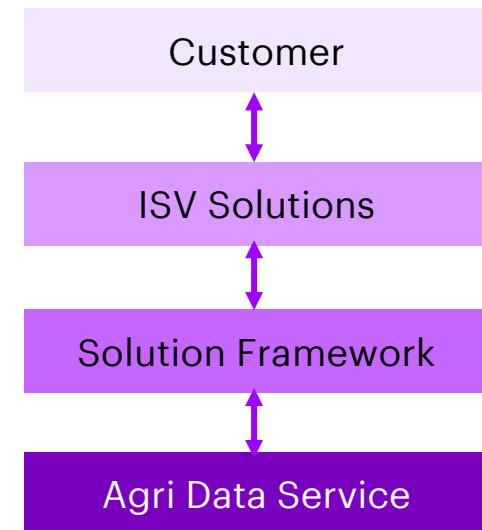


Azure Data Manager for Agriculture (ADMA)

Framework

- The **solution framework** is built on top of Agri Data Service that provides extensibility capabilities. It enables our Independent Software Vendor (ISV) partners to leverage their deep domain knowledge and develop specialized domain specific industry solutions to top of the core platform. The solution framework provides below capabilities:
 - Enables **ISV Partners** to easily build industry specific solutions to top of Agri Data Service.
 - Helps ISV's generate revenue by monetizing their solution and publishing it on the Azure Marketplace.
 - Provides simplified onboarding experience for ISV Partners and **customers**.
 - Asynchronous Application Programming Interface (**API**) based integration
 - Data privacy complaint ensuring the right level of access to customers and ISV Partners.
 - Hides all the technical complexity of the platform and allows ISV's and customers to focus on the core business logic
- Solution framework use cases:**
 - Carbon Emission Model:** An ISV partner can estimate the amount of carbon emitted from the field based upon the imagery, sensors data for a particular farm.
 - Pest Detection Model:** An ISV partner can pro-actively identify the possibility of pest based upon the color of the leaves using imagery data
 - Crop Identification:** An ISV partner can identify which crop is grown in a particular field or farm based upon the imagery data.
 - Yield Prediction Model:** An ISV partner can build a Yield prediction model that uses historical data for a specific farm and track periodic progress of the crop in the farm and predict the estimated yield for the upcoming season.

The above list are only few examples, but an ISV partner can come with their own specific scenario and build a solution.



Azure Data Manager for Agriculture (ADMA)

How to get started

ADMA works in 4 steps:

1. Ingest, store & manage farm data – Farm
2. Run custom build apps on farm data
3. Build and run models/analytics at scale
4. Get meaningful insights

Below steps illustrates the customer specific model building process, here we have taken an example of NDVI forecast model

Step 1: Download satellite and weather data

- Create a farmer.
- Create boundaries.
- Create satellite and weather (historical and forecast) jobs in ADMA for created boundaries.
- Check the status of jobs in ADMA.
- Download satellite data from ADMA to local compute.
- Download weather data from ADMA to local compute.

Step 2: Train model

NDVI forecast model is built using satellite and weather (historical and forecast) data on dataset (curated locations spread across USA from Crop Data Layer), which predicts NDVI for next 10 days in advance for an Area of Interest (AOI)

Step 3: Test NDVI forecast model

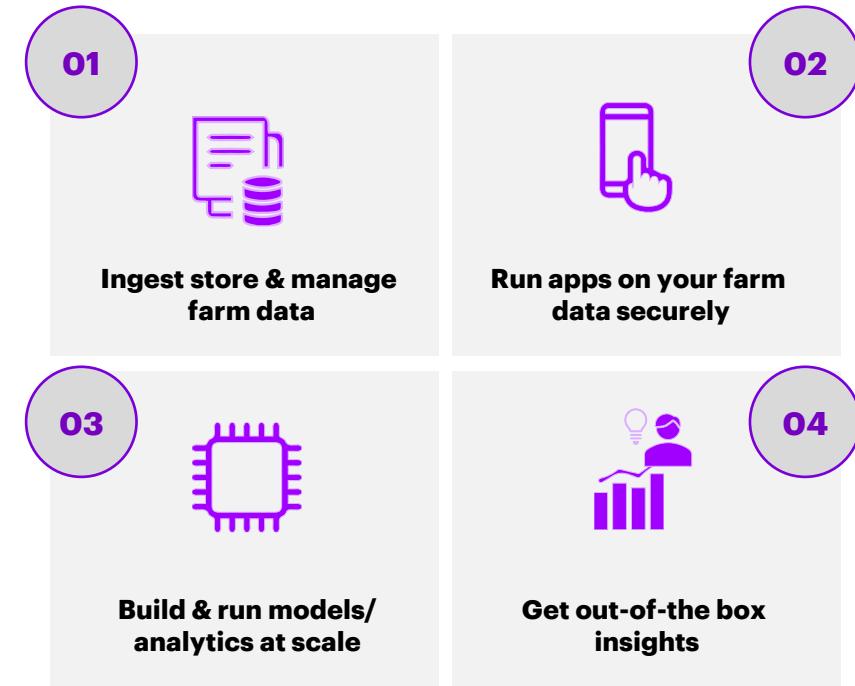
This model has been trained using previous existing notebook 2_train.ipynb and forecast NDVI for next 10 days on new AOI.

Step 4: Deploy NDVI forecast model

Model deployment is done using Azure Machine Learning SDK. In this notebook and it will also create a web service endpoint, which can be used for inference (Forecasting NDVI) on any Area of Interest (AOI).

Step 5: Inference

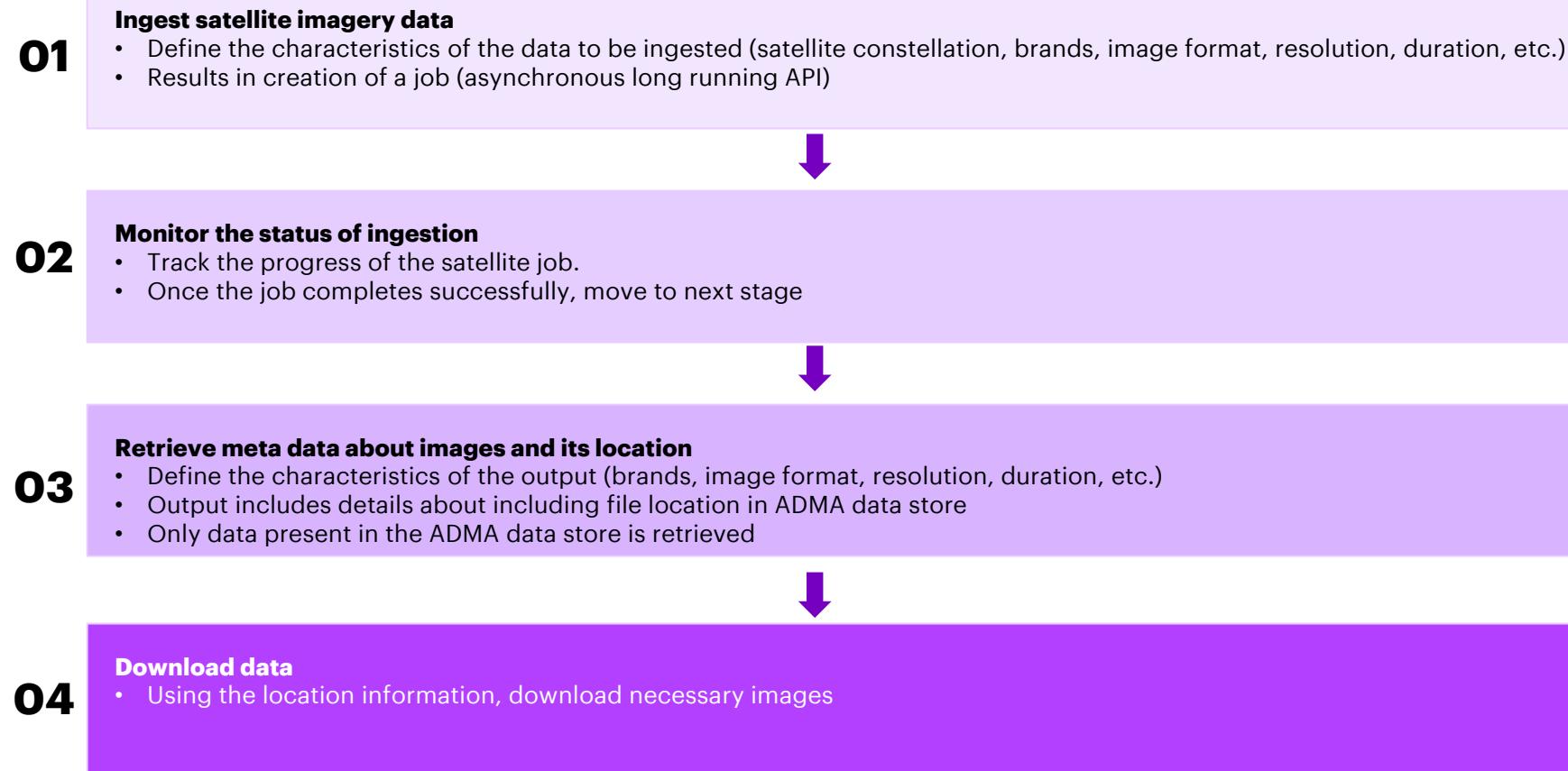
The web service endpoint created in step 4 can be used for inference (Forecasting NDVI) on any AOI.



Azure Data Manager for Agriculture (ADMA)

How to get started

ADMA supports geospatial and temporal data. Remote sensing satellite imagery (which is geospatial and temporal) has huge applications in the field of agriculture. Farmers, agronomists and data scientists use of satellite imagery extensively to generate insights. Using satellite data in ADMA involves following steps.



3

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ADMA Technology Stack



Three-layer Lego Model For ADMA Platform

A cohesive grouping of related, reusable, and integrated technology and business capabilities that has accountable owners for strategy and execution.

A PLATFORM IS NOT...

Just an infrastructure stood up in the cloud or migrated to cloud

Deployment or migration of existing applications or products without a platform mindset

FOUNDATIONAL



Provide "**technology as-a-service**" to provide the foundation for building all other capabilities

CORE



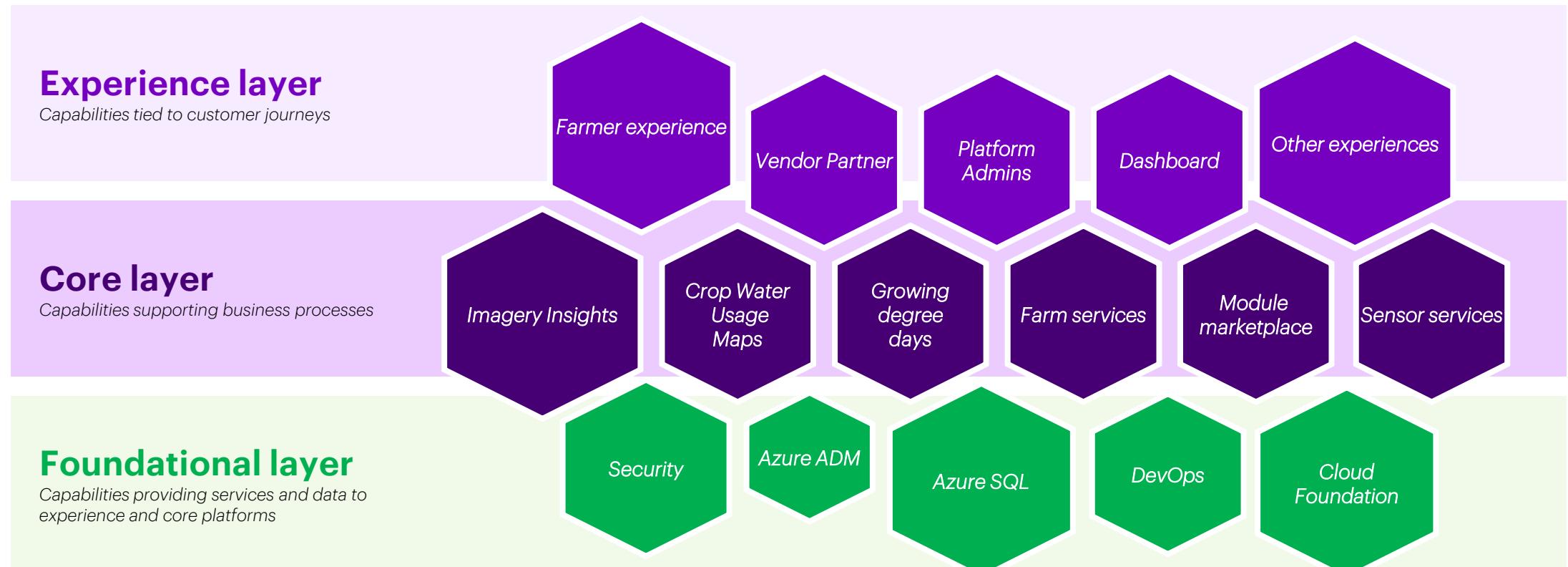
Provide "**business capability as-a-service**" to represent core business logic

EXPERIENCE



Provide "**consumer journey as-a-service**" to directly power experiences

High-level Composable Architecture view for ADMA



Modular and reusable application building blocks



Technology and business teams assemble platforms to deliver business and customer outcomes

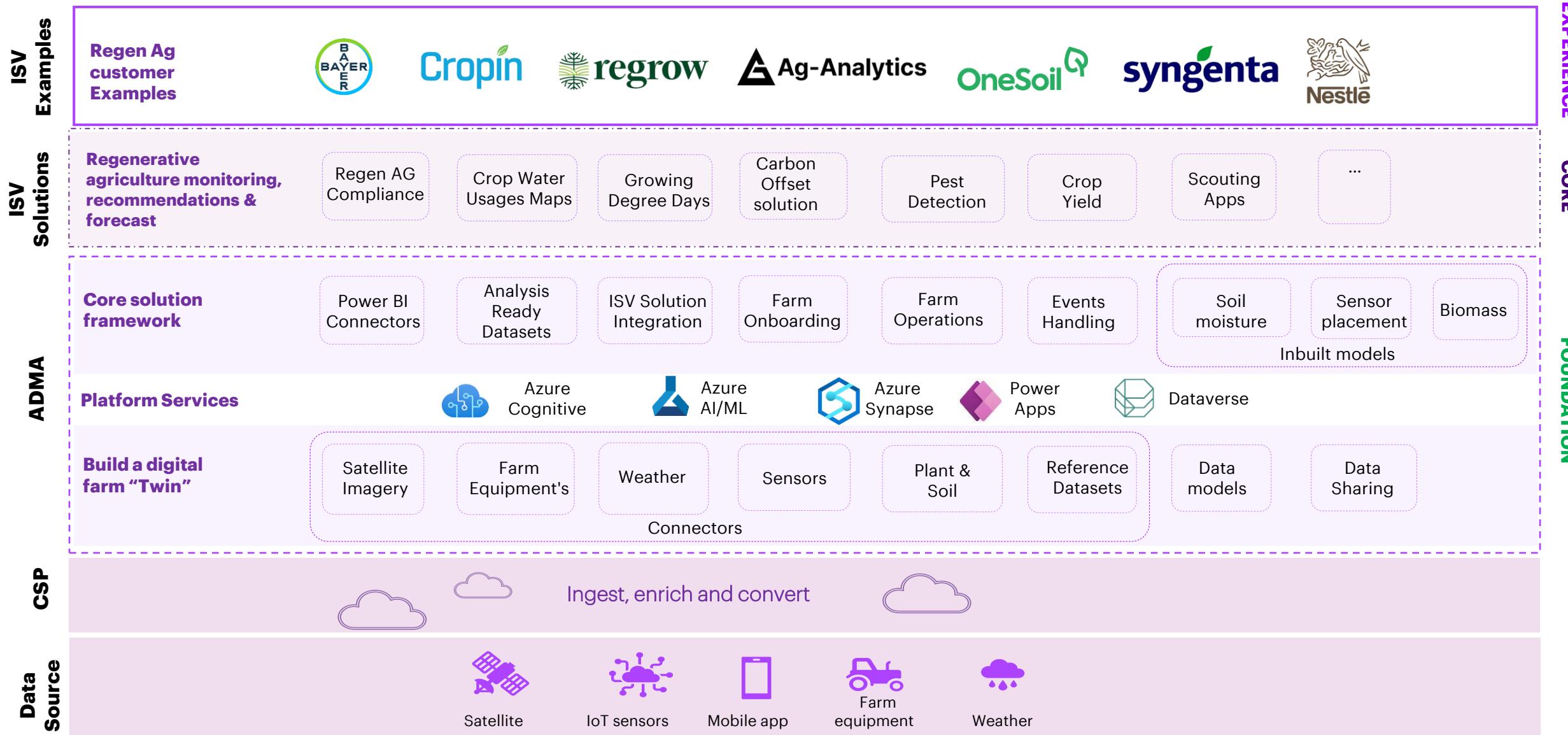


Individual platform comprises a grouping of strategically related, global business capabilities



Implemented by modular and composable technologies exposed through APIs

ADMA layered technology stack



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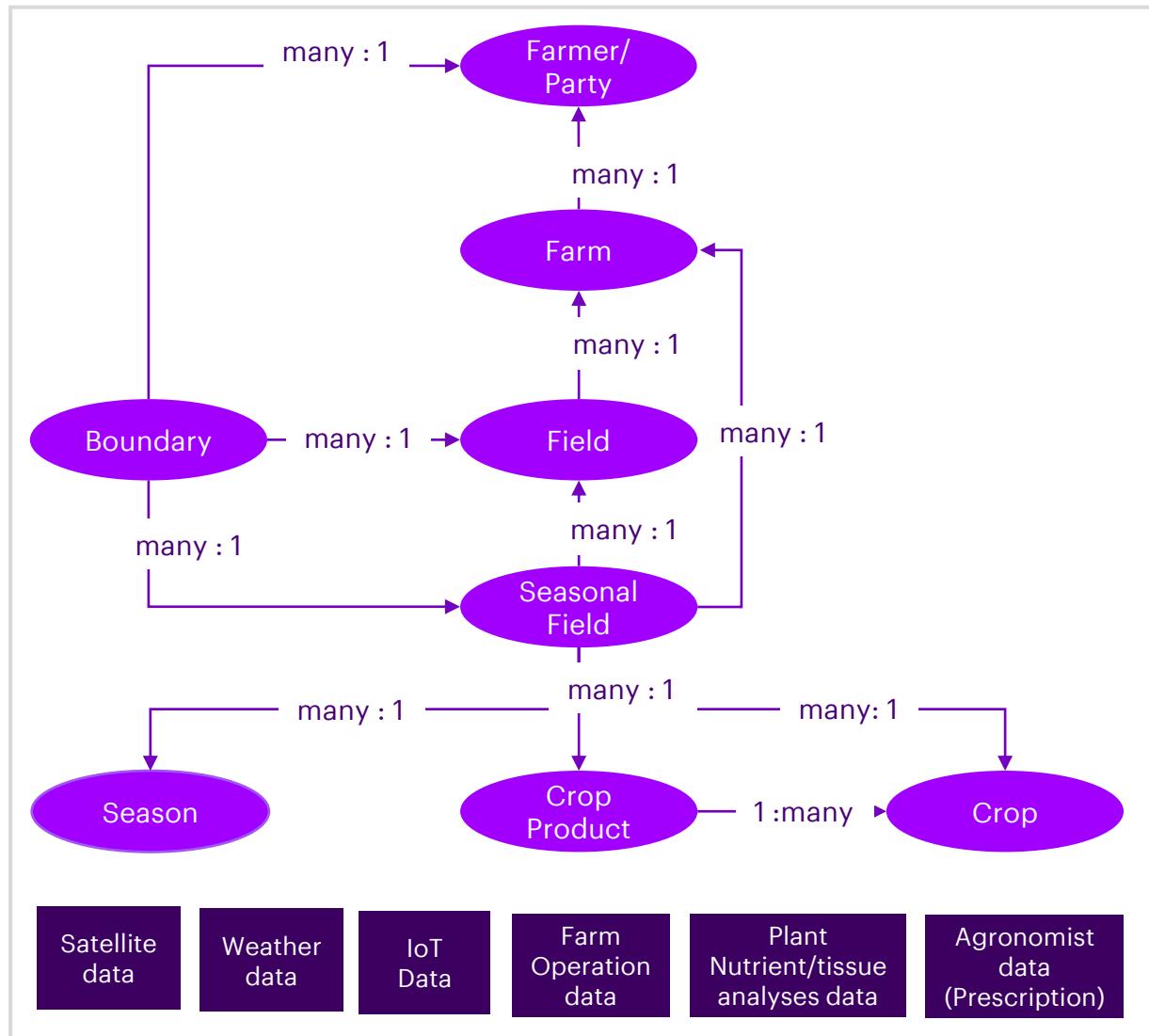
5 6 7 8

Technical Approach

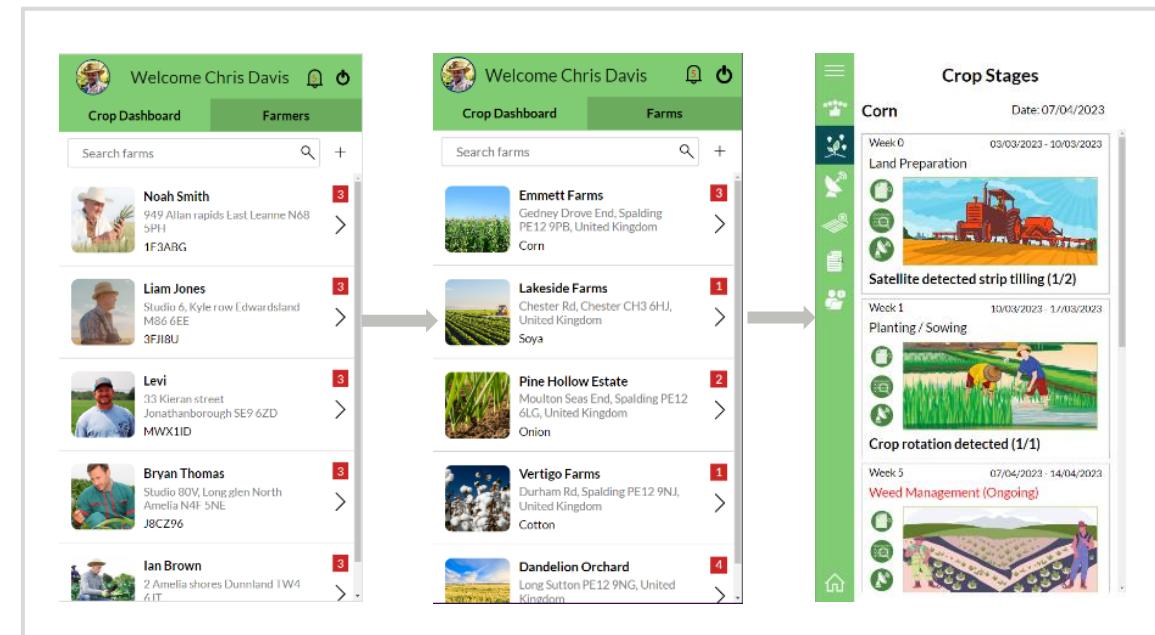
Data architecture, API details, third party integration



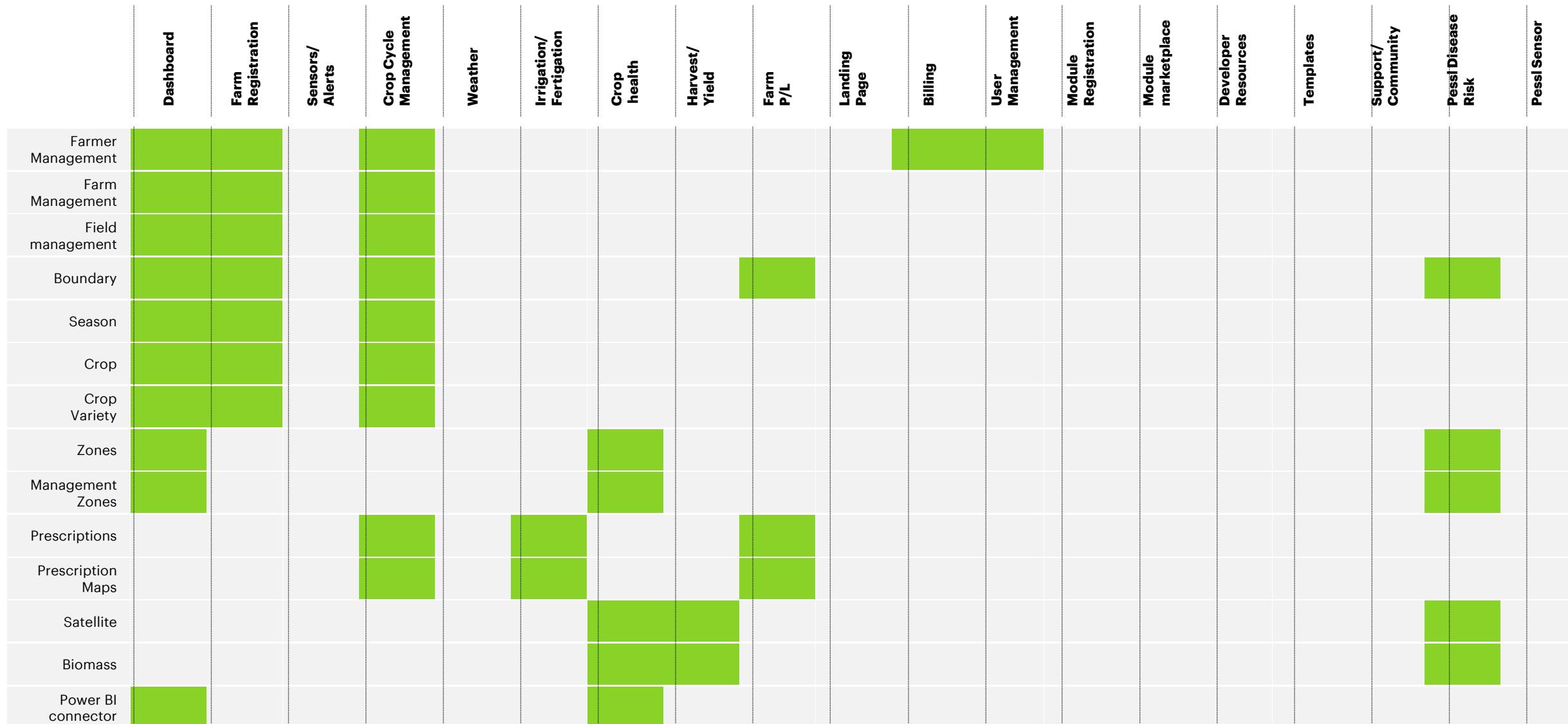
Illustration of ADMA standard data model supporting farm experience



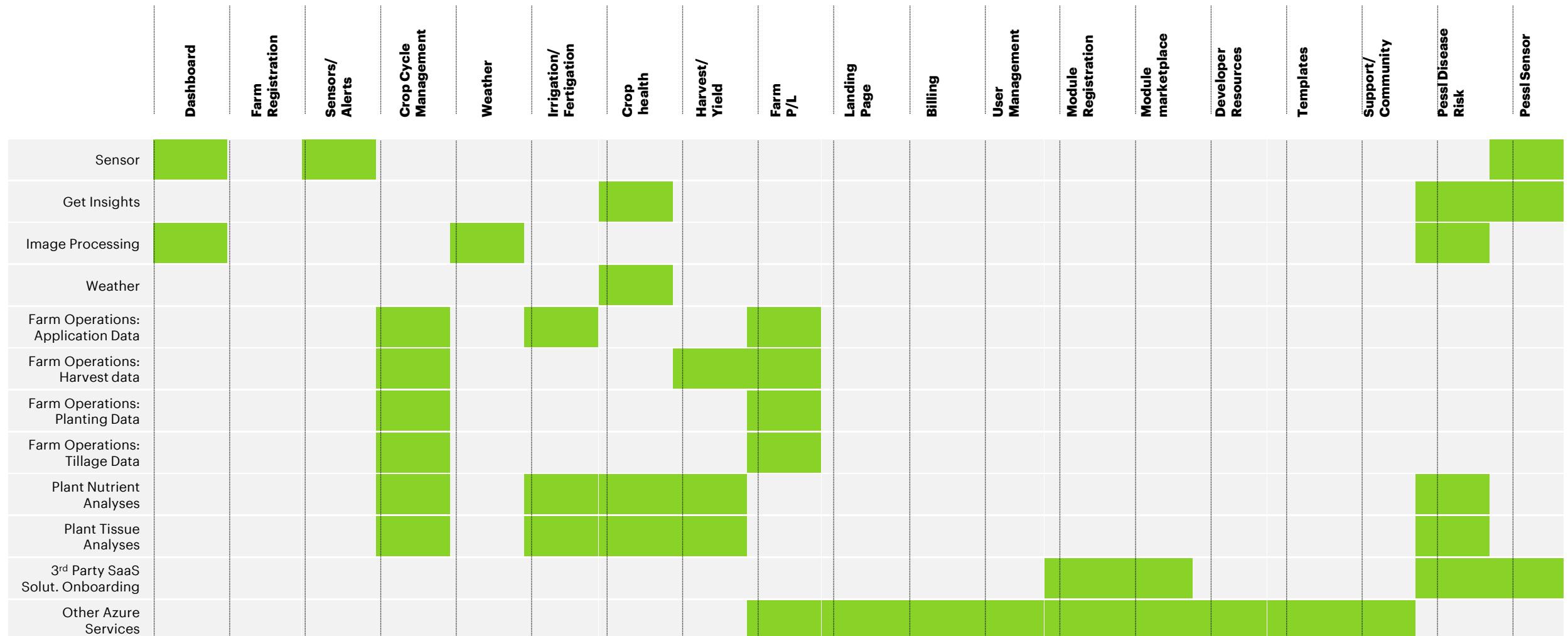
Sample Prototype of unified frontend for farmer (Farmer ->Farm->Crop view)



ADMA APIs to functionality | Mapping



ADMA APIs to functionality | Mapping (cont.)



Azure ADMA - API

Sample example with code snippet

ADMA API list

Microsoft Excel
Worksheet

Workspaces API Network Explore

Search Postman

PUT {{baseUrl}}/model-inference/models/microsoft-biomass/infer-data/:job-id?api-version={{api-version}}

Params Authorization Headers (10) Body Pre-request Script Tests Settings

Body JSON

```

1
2   "farmerId": "Farmer123",
3   "boundaryId": "BON123",
4   "modelVersion": "1.0",
5   "cropName": "Corn",
6   "plantingStartTime": "2021-11-10T10:12:09.780Z",
7   "inferenceEndTime": "2022-02-16T10:12:09.780Z",
8   "weatherExtensionId": "DTN.ClearAg",
9   "satelliteProvider": "Microsoft",
10  "satelliteSource": "Sentinel_2_L2A",
11  "imageResolution": 10,
12  "imageFormat": "TIF",
13  "name": "BIOJOB22",
14  "description": "biomass for a Ruiphata farm",
15  "properties": {
16    "key1": "sample-value-1",
17    "key2": 123.45
18  }
19

```

Response

Input parameter to create a Biomass job

Explore

GET {{baseUrl}}/model-inference/models/microsoft-biomass/infer-data/BIOJOB22?api-version={{api-version}}

Params Authorization Headers (8) Body Pre-request Script Tests Settings

Query Params

KEY	VALUE
api-version	{{api-version}}
Key	Value

Body Cookies Headers (11) Test Results

Pretty Raw Preview Visualize JSON

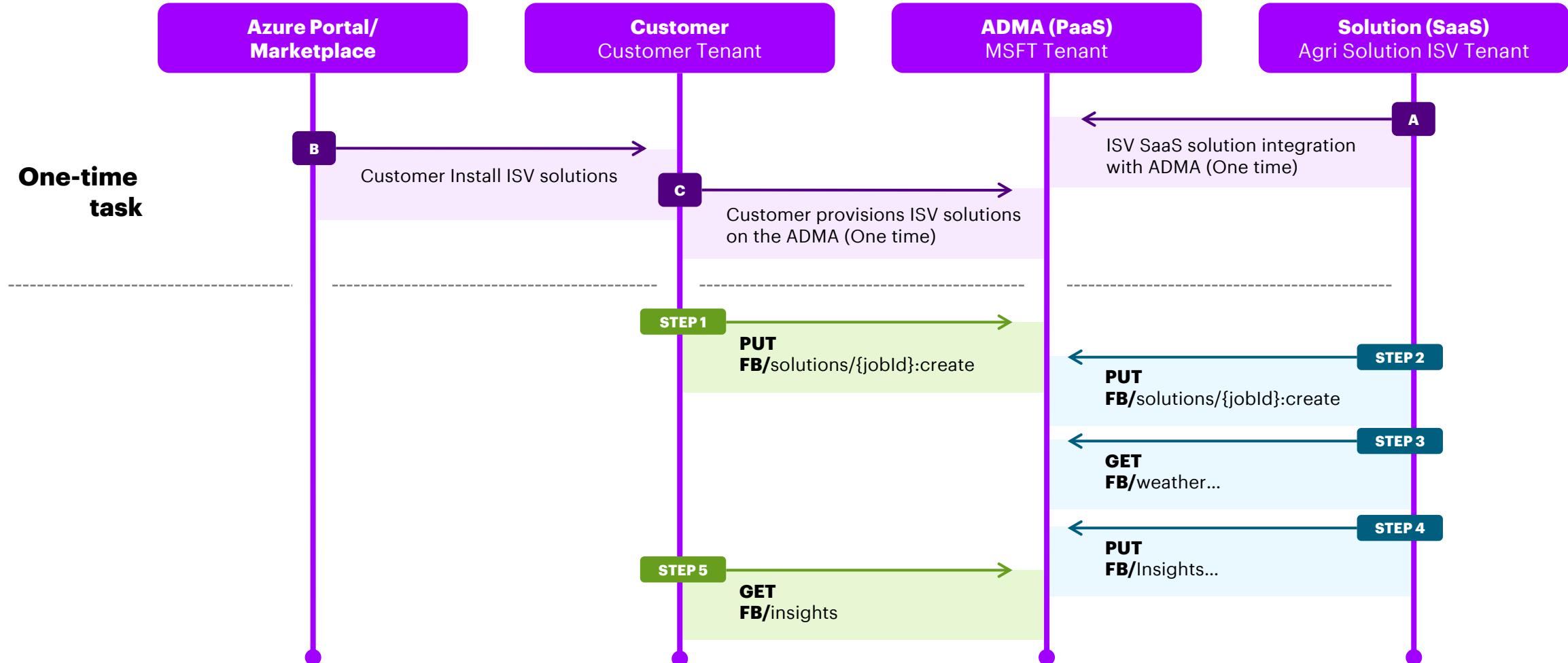
```

1
2   "farmerId": "Farmer123",
3   "boundaryId": "BON123",
4   "modelVersion": "1.0",
5   "cropName": "Corn",
6   "plantingStartTime": "2021-11-10T10:12:09Z",
7   "inferenceEndTime": "2022-02-16T10:12:09Z",
8   "weatherExtensionId": "DTN.ClearAg",
9   "satelliteProvider": "Microsoft",
10  "satelliteSource": "Sentinel_2_L2A",
11  "imageResolution": 10.0,
12  "imageFormat": "TIF",
13  "id": "BIOJOB22",
14  "status": "Succeeded",
15  "durationInSeconds": 68.1909562,
16  "message": "Successfully calculated biomass feature form plantingStartDate '11/10/2021' to inferenceEndDate '02/16/2022' modelId 'Microsoft.Biomass'.",
17  "createdAt": "2022-11-23T15:00:53Z",
18  "lastActionDateTime": "2022-11-23T15:02:01Z",
19  "startTime": "2022-11-23T15:00:52Z",
20  "endTime": "2022-11-23T15:02:01Z",
21  "name": "BIOJOB22",
22  "description": "biomass for a Ruiphata farm",
23  "properties": {
24    "key1": "sample-value-1",
25    "key2": 123.45
26  }
27

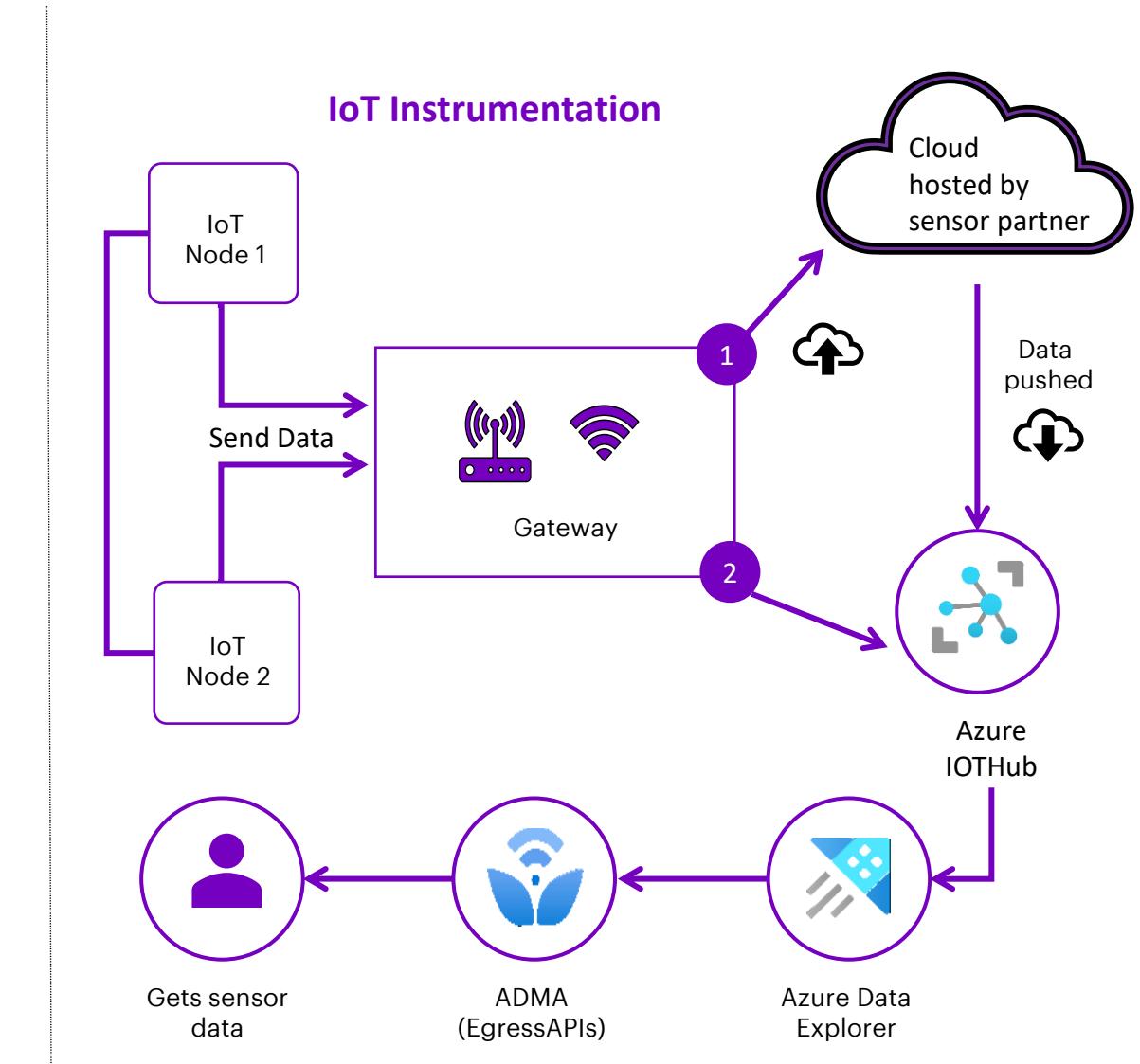
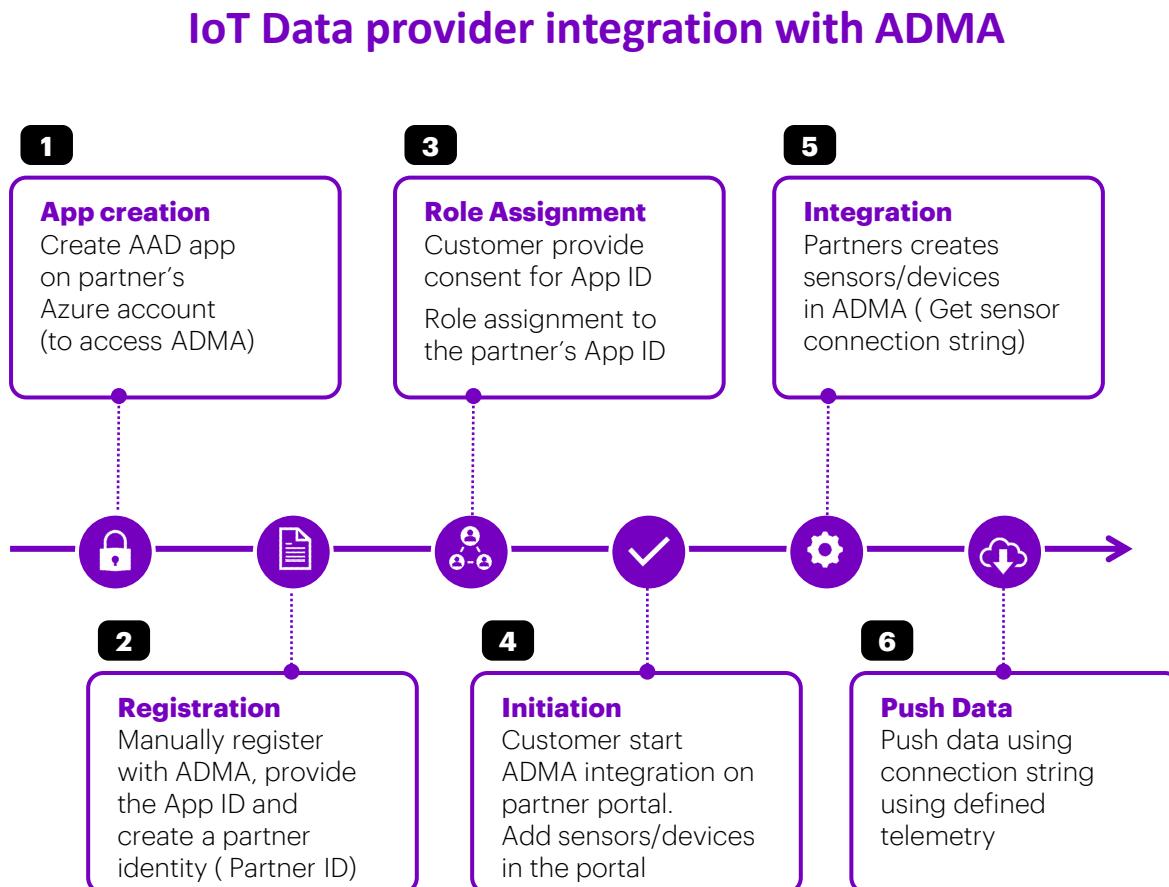
```

Response Query Biomass job status

Vendor ISV Module (Solution) Onboarding and Interactions with ADMA



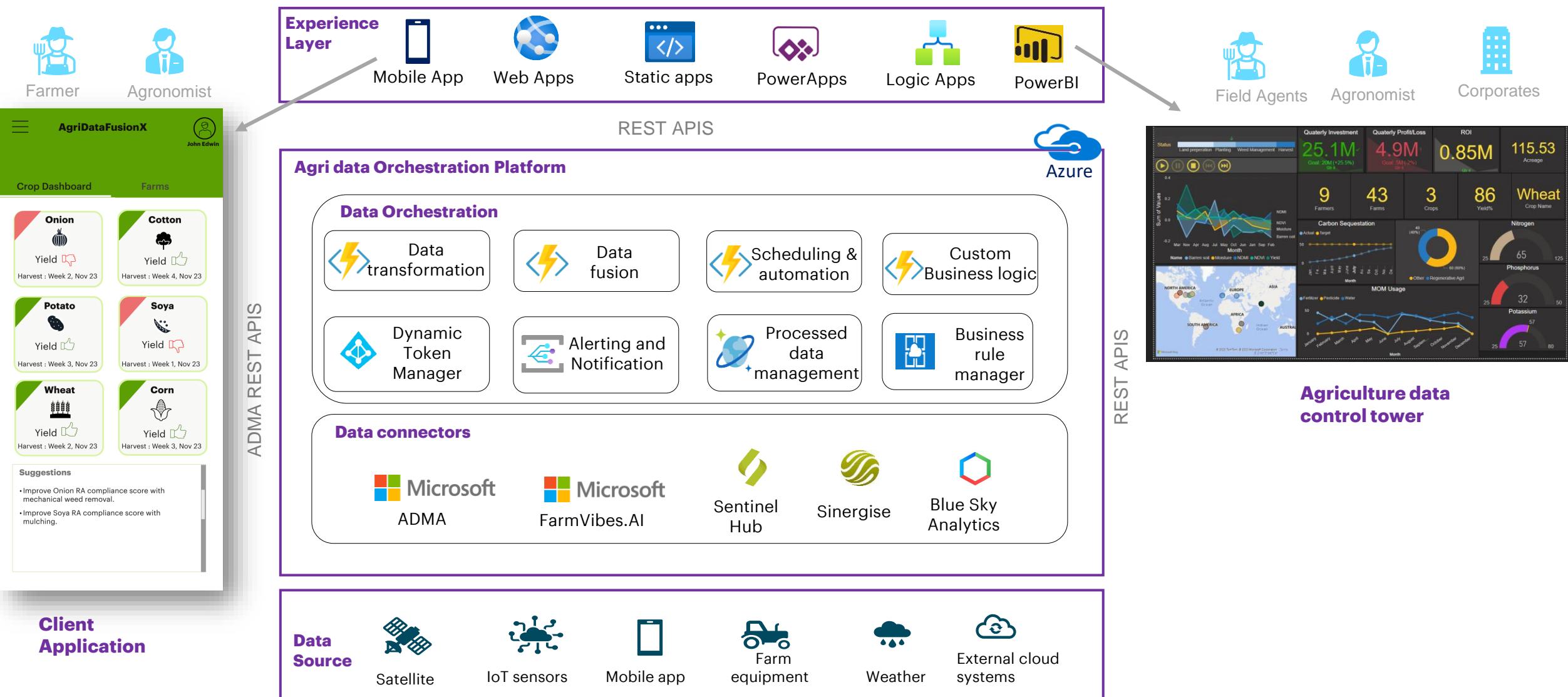
Third Party IoT Data Provider (IOT Vendor) Onboarding



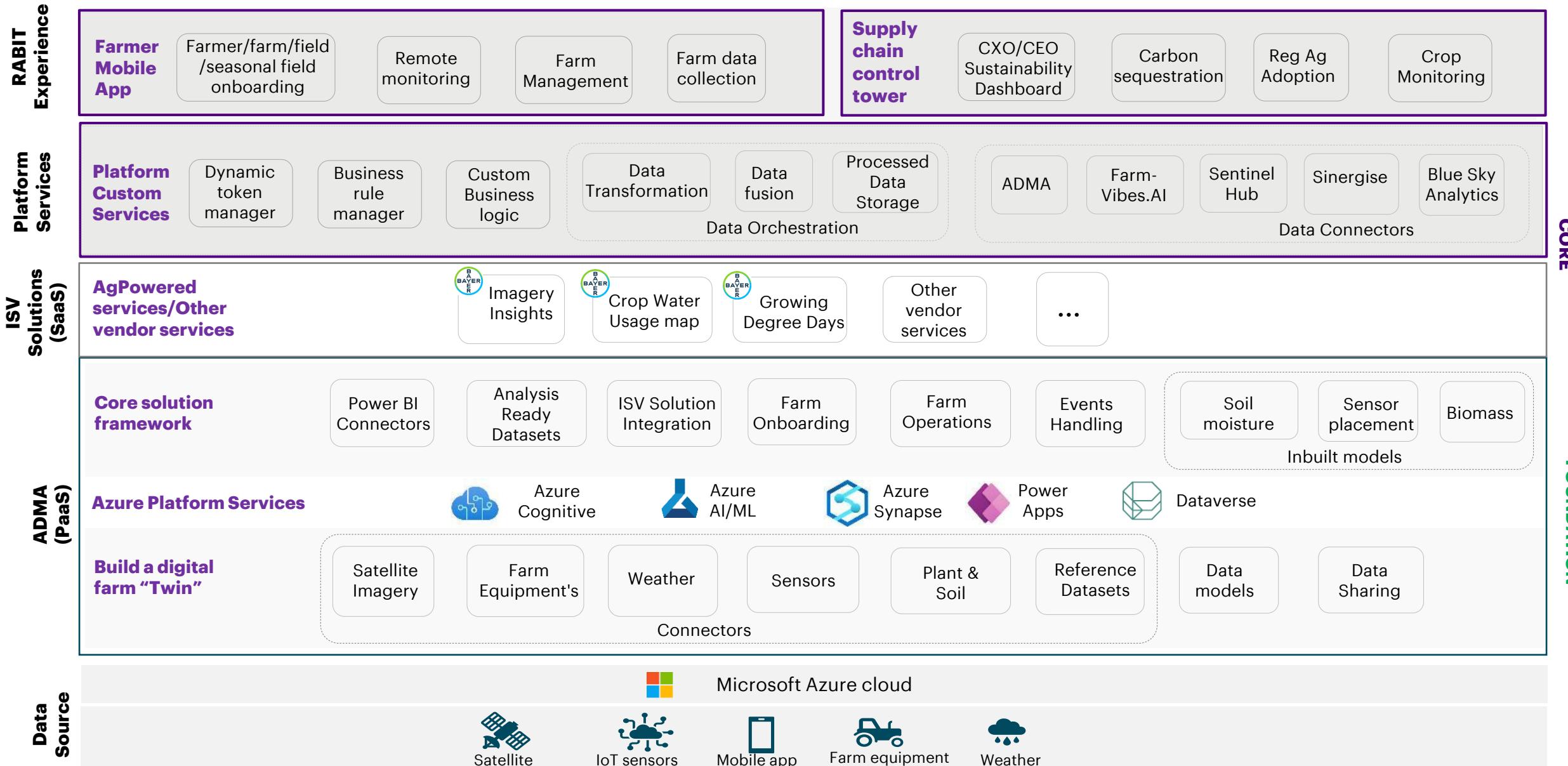
Agriculture Data Orchestration – Reference Framework



Reference Framework– Agriculture data Orchestrations



Reference Framework - Agriculture data Orchestrations



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Model UI/UX

UI/UX to implement standard
agriculture data models for ADMA

Farmer mobile application – wireframe scope

1. Implementing standard agriculture data models intuitively by hiding complex farm hierarchies
2. Collect the ground data.
3. Enable remote monitoring by triggering field-specific jobs for Satellite and weather.
4. Enable agronomic-specific operations (management zone and Prescription map management).
5. Access field-specific insights and alerts from external systems (e.g., MS FarmVibes.AI).

This screen shows the "Registration" process. It includes a decorative image of a small green plant at the top center. Below it, there are five input fields: "Name", "Email", "Phone", "Password", and "Confirm Password". A dropdown menu labeled "Role" is set to "Producer" with "Agronomist" as an option. At the bottom are two green buttons, "Reset" and "Submit".This screen shows the "Log In" process. It includes a decorative image of a small green plant at the top center. Below it, there are four input fields: "Email", "Password", "Forgot Password?", and "Registered Phone". A green button "Back" is at the bottom left, and another green button "Submit" is at the bottom right.



Crop Dashboard

Farms

Onion

Yield
Harvest : Week 2, Nov 23

Cotton

Yield
Harvest : Week 4, Nov 23

Potato

Yield
Harvest : Week 3, Nov 23

Soya

Yield
Harvest : Week 1, Nov 23

Wheat

Yield
Harvest : Week 2, Nov 23

Corn

Yield
Harvest : Week 3, Nov 23

Suggestions

- Improve Onion RA compliance score with mechanical weed removal.
- Improve Soya RA compliance score with mulching.

Organize agronomic data – Aggregated crop view

• **Dashboard:** This placeholder can give an aggregated view of all the crops producer is growing in terms of various factors, such as RA compliance (the green color depicts RA compliance), Pest outbreak, yield, and other aspects of precision agriculture, etc.

Common data model for Agriculture:
Intuitively manage complex agriculture data hierarchy

The system can perform agriculture data management operations like add, update, delete, and delete recursively.



Crop Dashboard

Farms

Search Farms

Emmett Farms

Meadow Field
Gedney Drove End, Spalding PE12 9PB, United Kingdom

Hill Field

Chester Rd, Chester CH3 6HJ, United Kingdom

Add new Field

Lakeside Farms

Dairy Field
Moulton Seas End, Spalding PE12 6LG, United Kingdom

Add new Field

Vertigo Farms

River Field
Gedney Drove End, Spalding PE12 9PB, United Kingdom

Add new Field

+ Add Farm



Crops



Crops Varieties



Seasons



Help



Crop Dashboard

Farms

Search Farms



Emmett Farms



Meadow Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Hill Field

Chester Rd, Chester CH3
6HJ, United Kingdom

Add new Field



Lakeside Farms



Dairy Field

Moulton Seas End, Spalding
PE12 6LG, United Kingdom

Add new Field



Vertigo Farms



River Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Add new Field



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Farm hierarchy

Farm management

Crops list management

Farm Onboarding

Name

Description

Status

Submit

AgriDataFusionX



John Edwin

Crop List



Wheat



Corn



Maize



Potato



Onion



Barley



Add New Crop

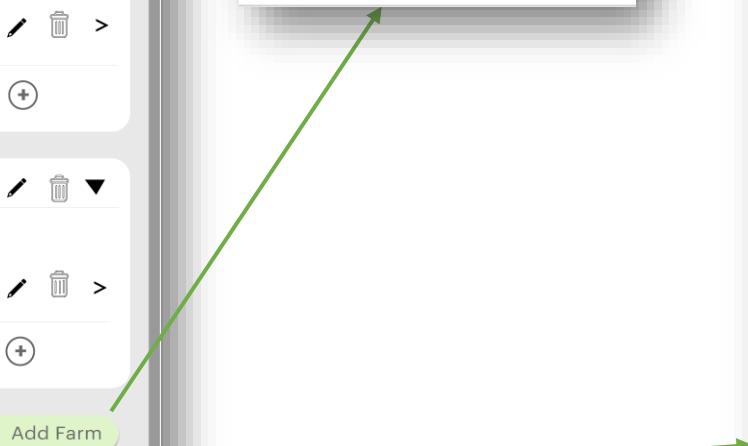
Add New Crop

Name

Description

Status

Submit





Crop Dashboard

Farms

Search Farms

Emmett Farms



Meadow Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Hill Field

Chester Rd, Chester CH3
6HJ, United Kingdom

Add new Field

Lakeside Farms



Dairy Field

Moulton Seas End, Spalding
PE12 6LG, United Kingdom

Add new Field

Vertigo Farms



River Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Add new Field

+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Farm hierarchy



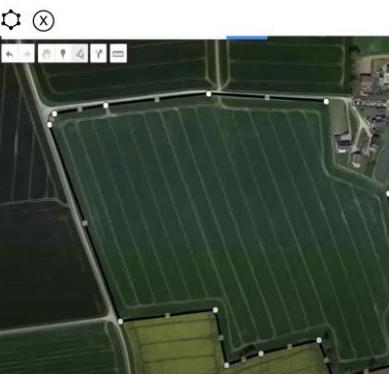
Field Onboarding

Field Name _____

Description _____

Boundary

Location _____



Submit



Crop Varieties

Soft Wheat

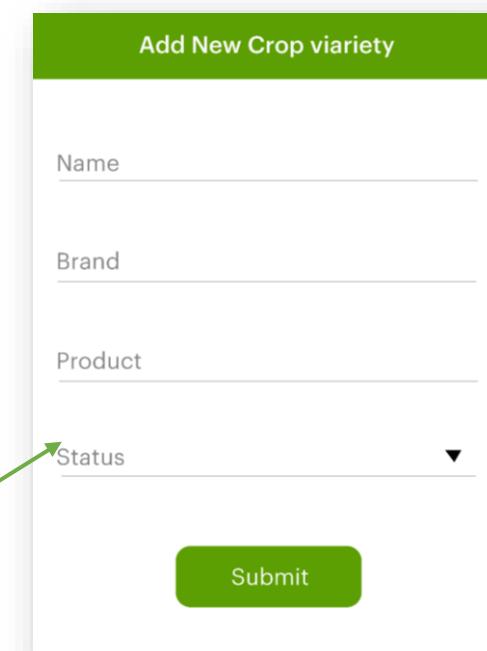
Spring Barley

Inca Rainbow Sweet Corn

Golden Midget Corn Organic

Liseta Potato

Spunta Potato

Farm -> Field management
Crops varieties management

Add New Crop variety

Name _____

Brand _____

Product _____

Status _____

Submit

Add New Crop Variety



Crop Dashboard

Farms

Search Farms



Emmett Farms



Meadow Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Hill Field

Chester Rd, Chester CH3
6HJ, United Kingdom

Add new Field



Lakeside Farms



Dairy Field

Moulton Seas End, Spalding
PE12 6LG, United Kingdom

Add new Field



Vertigo Farms



River Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Add new Field



+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Farm hierarchy

Season management

AgriDataFusionX

Season List

- Summer Maize 2023
- Summer Soyabean 2023
- Winter Corn 2023
- Winter Wheat 2023
- Winter Onion 2023
- Summer Barley 2023

Add New Season

Name

Description

Status

Start Date time

End Date time

Submit





Crop Dashboard

Farms

Search Farms

Emmett Farms

Meadow Field

Gedney Drove End, Spalding PE12 9PB, United Kingdom



Hill Field

Chester Rd, Chester CH3 6HJ, United Kingdom



Add new Field



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Add new Field



Vertigo Farms

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Add new Field



+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Farm hierarchy

Meadow Field (Emmett Farms)

Monitoring **Ground Data** **Advisory**

Satellite
Crop: Corn (50 Acres) Exp Harvest Date: 9 Sep 23
NDVI zones

Weather SUN 72° MON 73° TUE 75° WED 77° THU 81°

IoT **Soil Moisture** 40% (50-75%) **pH** 7 (6-7.5) **Temperature** 15° (18°C-28°C) **NPK** 3 (<1)

Insights

- Pest: 4 Alert
- Productivity: 4 Alert
- RA Compliance: 1 Alert
- Carbon Offset (Metric ton): 400
- Carbon Emission (Metric ton): 150
- Weed: 1 Alert
- Weather Job
- IoT

Farm -> Field -> Seasonal Field Management

1. Monitoring

Ability to monitor seasonal fields:

- Satellite job** to monitor the farm remotely.
- Weather job** and fetch forecast and **IoT sensors** data for proactive measures.
- IoT sensors** to collect ground data.
- Integration with external systems to fetch crop-specific **Insights/alerts/advisory** generated using ADMA data.

E.g., seasonal field-specific alerts for pests and weeds, insights specific to field productivity, and carbon emission and sequestration are derived by the FarmVibes.AI models.

Ability to configure/troubleshoot the Satellite/Weather/IoT specific issues with privilege access.



Crop Dashboard

Farms

Search Farms

Emmett Farms

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- Hill Field
Chester Rd, Chester CH3 6HJ, United Kingdom

Add new Field

Lakeside Farms

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Add new Field

Vertigo Farms

- River Field
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Add new Field

+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Farm hierarchy

Farm -> Field -> Seasonal field management
-> Add new seasonal field

AgriDataFusionX

Meadow Field (Emmett Farms) John Edwin

Monitoring Ground Data Advisory

Satellite Crop: Corn (50 Acres) Exp Harvest Date: 9 Sep 23

Weather SUN MON TUE WED THU 72° 73° 75° 77° 81°

IoT Soil Moisture pH Temperature NPK

40% (50-75%)	7 (6-7.5)	15° (18°C-28°C)	3 (<1)
--------------	-----------	-----------------	--------

Insights

4 Alert Pest	4 Alert Productivity	400 Carbon Offset (Metric ton)
1 Alert Weed	RA Compliance	150 Carbon Emission (Metric ton)

Satellite Job Weather Job IoT

AgriDataFusionX

Seasonal Field Onboarding

Name _____

Description _____

Status _____

Select Crop Wheat +

Select Season Summer +

Select Crop variety Cotton +

Planting Date & Time

Next

AgriDataFusionX

Boundary

Location

Submit



Crop Dashboard

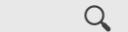
Farms

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Add new Field



Lakeside Farms

Dairy Field

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Add new Field



Vertigo Farms

River Field

Gedney Drove End, Spalding PE12 9PB, United Kingdom



Add new Field



+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Farm hierarchy

Farm -> Field -> Seasonal field management

2. Ground data management

Farm operation data management for tillage, planting, pest, tissue analysis, harvest across all the crop schedule plotted using POP derived from the rule engine.

Separate interface to collect the crop data across all the crop stages.

Manage prescription maps and management zones.



John Edwin

Crop Dashboard

Farms

Search Farms

Emmett Farms



Meadow Field

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Hill Field

Chester Rd, Chester CH3 6HJ, United Kingdom



Add new Field



Lakeside Farms



Dairy Field

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Add new Field



Vertigo Farms



River Field

Gedney Drove End, Spalding PE12 9PB, United Kingdom



Add new Field



+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Ground data collection

AgriDataFusionX

Meadow Field (Emmett Farms) John Edwin

Soya Monsoon 23 Rice Monsoon 23 Corn Summer 23 New Seasonal Field

Monitoring Ground Data Advisory

Crop Schedule

- Land Preparation/Tillage Week 0 01/06/2023-08/06/2023 **Tillage Data**
- Planting/Sowing Week 1 01/06/2023-08/06/2023 **Planting Data**
- Add Nutrient/Pesticides Week 8 03/08/2023-10/08/2023 **Pest Data**
- Plant Tissue sample analysis Week 8 03/08/2023-10/08/2023 **Tissue Data**
- Harvesting Week 14 14/09/2023-21/09/2023 **Harvest Data**

Reg Ag verification: strip tilling observed (2/2)

Reg Ag verification: Crop rotation observed

Reg Ag verification:

Reg Ag verification:

Prescription Maps Management Zones

AgriDataFusionX

Tillage Data Information

Name _____

Description _____

Operation Start Date time

Operation End Date time

Depth (cm) _____

Area (Hectare) _____

Status Active ▾ Inactive

Source Manual ▾ Farm equipment manufacturer

Submit

AgriDataFusionX

Planting Data Information

Name _____

Description _____

Operation Start Date time

Operation End Date time

Area (Acre) _____

Total Material (Seeds) _____

Average Material (Seeds Per Acre) _____

Status Active ▾ Inactive

Source Manual ▾ Farm equipment manufacturer

Submit

AgriDataFusionX

Harvest Data Information

Name _____

Description _____

Operation Start Date time

Operation End Date time

Area (Acre) _____

Total Yield (Kilos) _____

Average Yield (Kilos per Acre) _____

Wet Mass (Kilos) _____

Average Wet Mass (Kilos per acre) _____

Average Moisture (Percentage) _____

Average Speed (Kms per hour) _____

Status Active ▾ Inactive

Source Manual ▾ Farm equipment manufacturer

Submit



Crop Dashboard

Farms

Search Farms

Emmett Farms

Meadow Field Gedney Drove End, Spalding PE12 9PB, United Kingdom (Edit) (Delete) (View)

Hill Field Chester Rd, Chester CH3 6HJ, United Kingdom (Edit) (Delete) (View)

Add new Field (+)

Lakeside Farms

Dairy Field Moulton Seas End, Spalding PE12 6LG, United Kingdom (Edit) (Delete) (View)

Add new Field (+)

Vertigo Farms

River Field Gedney Drove End, Spalding PE12 9PB, United Kingdom (Edit) (Delete) (View)

Add new Field (+)(+) Add Farm

Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Prescription management

AgriDataFusionX
Meadow Field (Emmett Farms)
John Edwin



Monitoring Ground Data Advisory

Crop Schedule

- Land Preparation/Tillage Week 0 01/06/2023-08/06/2023 Reg Ag verification: strip tilling observed (2/2) Tillage Data
- Planting/Sowing Week 1 01/06/2023-08/06/2023 Reg Ag verification: Crop rotation observed Planting Data
- Add Nutrient/Pesticides Week 8 03/08/2023-10/08/2023 Reg Ag verification: Pest Data
- Plant Tissue sample analysis Week 8 03/08/2023-10/08/2023 Reg Ag verification: Tissue Data
- Harvesting Week 14 14/09/2023-21/09/2023 Reg Ag verification: Harvest Data

Prescription Maps

Management Zones

AgriDataFusionX
John Edwin

Prescription Map List

Fertilizer Prescription Map (Edit) (Delete)

Nitrogen Fertilizer Prescription

Phosphorous Fertilizer Prescription (Edit) (Delete)Add New Prescription (+)

Seed Prescription (Edit) (Delete)

Soyabean seed rating Prescription (Edit) (Delete)Add New Prescription (+)

Prescription Map 3 (Edit) (Delete)

Add New Prescription (+)

Add Prescription Map



Prescription

Name _____
Description _____
Product Name _____

Submit



Prescription Map

Name _____
Description _____
Type Fertilizer Pesticide
Status Active Inactive
Source Manual Agronomist

Submit



Crop Dashboard

Farms

Search Farms

Emmett Farms



Meadow Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Hill Field

Chester Rd, Chester CH3
6HJ, United Kingdom

Add new Field



Lakeside Farms



Dairy Field

Moulton Seas End, Spalding
PE12 6LG, United Kingdom

Add new Field



Vertigo Farms



River Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Add new Field



+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Zone management for agronomist

AgriDataFusionX

Meadow Field (Emmett Farms) John Edwin

Monitoring **Ground Data** **Advisory**

Crop Schedule

- Land Preparation/Tillage Week 0 01/06/2023-08/06/2023 Tillage Data Reg Ag verification: strip tilling observed (2/2)
- Planting/Sowing Week 1 01/06/2023-08/06/2023 Planting Data Reg Ag verification: Crop rotation observed
- Add Nutrient/Pesticides Week 8 03/08/2023-10/08/2023 Pest Data Reg Ag verification:
- Plant Tissue sample analysis Week 8 03/08/2023-10/08/2023 Tissue Data Reg Ag verification:
- Harvesting Week 14 14/09/2023-21/09/2023 Harvest Data Reg Ag verification:

Prescription Maps **Management Zones**

AgriDataFusionX

Management Zones List

Nutrient Management Zone

- Rich Nutrient Zone
- Low Nutrient Zone

Add New Zone

Yield Potential Zone

- High Yield Zone

Add New Zone

Pest Management Zone

- Add New Zone

Add Management Zone

AgriDataFusionX

Zone

Name _____

Description _____

Status Active Inactive

Submit

Management Zone

Name _____

Description _____

Type Fertilizer Pesticide

Status Active Inactive

Source Manual Agronomist

Submit



Crop Dashboard

Farms

Search Farms

Emmett Farms



Meadow Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Hill Field

Chester Rd, Chester CH3
6HJ, United Kingdom

Add new Field



Lakeside Farms



Dairy Field

Moulton Seas End, Spalding
PE12 6LG, United Kingdom

Add new Field



Vertigo Farms



River Field

Gedney Drove End, Spalding
PE12 9PB, United Kingdom

Add new Field



+ Add Farm



Crops



Crops Varieties



Seasons



Help

Organizes agronomic data - Advisory

The screenshot shows the 'Advisory' tab for Meadow Field (Emmett Farms). At the top, there are four crop cards: Soya Monsoon 23, Rice Monsoon 23, Corn Summer 23, and New Seasonal Field. Below the cards are three advisory items:

- Organic fertilizer application** (29/06/2023): Please apply organic fertilizer at ...
- Guided irrigation plan** (03/07/23): Please follow the guided irrigation plan at ...
- Weed management** (06/07/2023): Please remove weed using a mechanical weed removal...

At the bottom of the screen, there is a green button labeled '+ Add Farm'.

Farm -> Field -> Seasonal field management

3. Advisory

Data driven advisory/insights



Crop Dashboard

Onion



Yield



Harvest : Week 2

Potato



Yield



Harvest : Week 3

Wheat



Yield



Harvest : Week 2, Nov 23

Suggestions

- Improve Onion RA compliance score with mechanical weed removal.
- Improve Soya RA compliance score with mulching.

Welcome
John Edwin

Profile

Settings

Log Out

Dynamic data pipeline configuration and other third-party integration



Settings

ADMA Configuration:

Base Url

Client Id

Client Secret

Authority

Default Scope

Weather Job:

Provider (IBM/Microsoft)

Extension Id

Extension Data Provider App Id

Extension Data Provider Api Key

FarmVibes.AI:

Rest API (Webserver)

IoT Configuration:

1 2 3 4 5 6

7

8

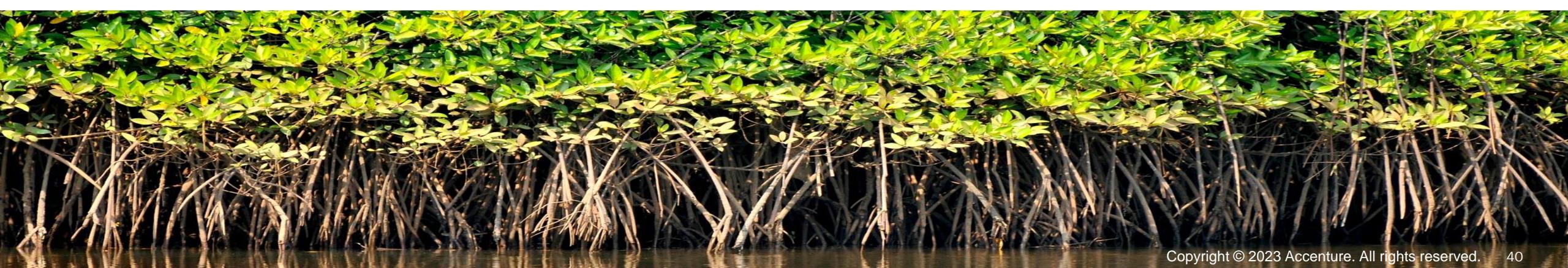
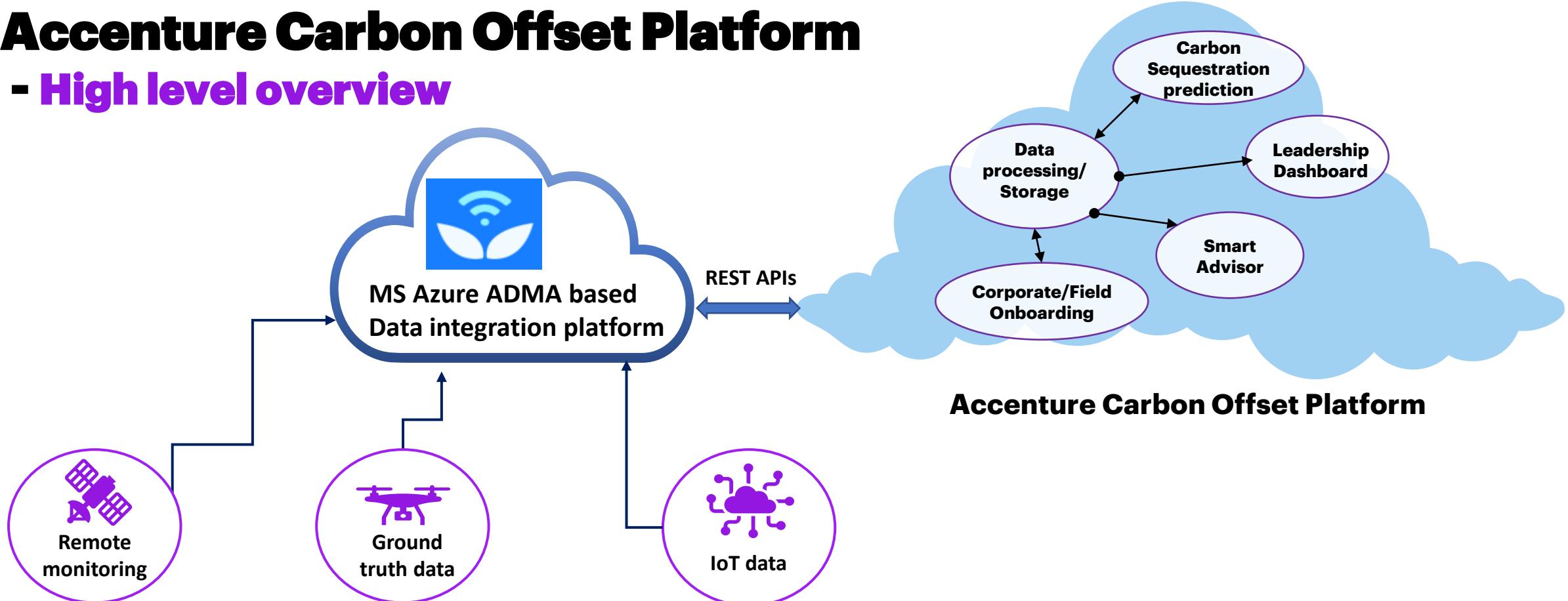
Reference POC

Accenture Carbon Offset Platform

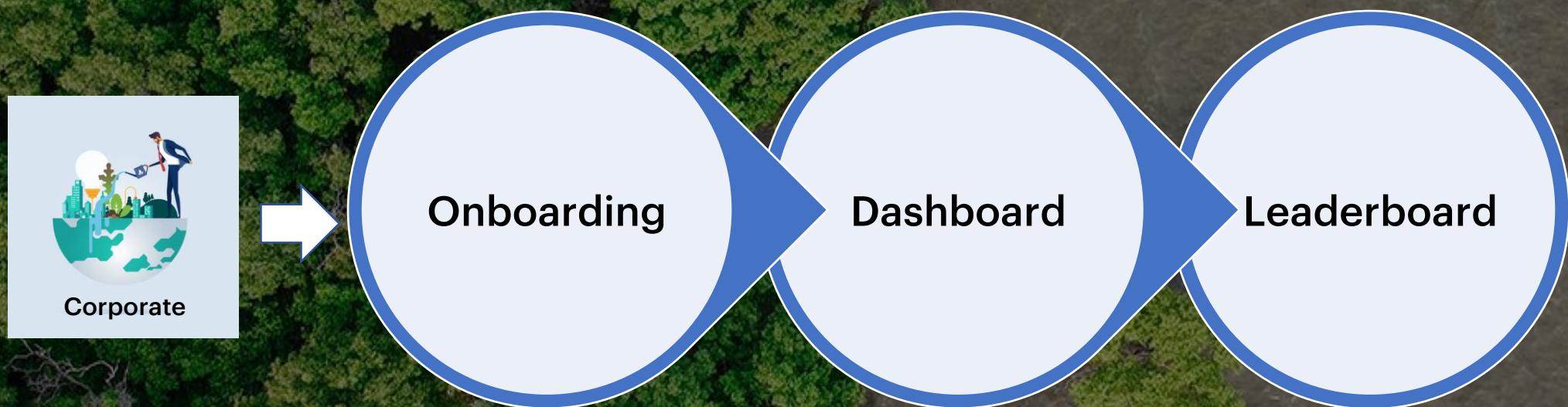


Accenture Carbon Offset Platform

- High level overview



The Journey –



Smart Advisor recommends –
Right **Location**, Apt **Area**, Suitable
Mangrove Species based on
Carbon Removal Offset **Goals**

Intelligent Assessor measures –
Carbon removal offsets combining
Sentinel – 2 satellite images &
ground truth data using AI

Social Gamification Engine –
Provides insights on progress
towards carbon offset goals and
enable easy data exchange
between Corporates

Corporate Onboarding with Smart Advisor

OCEANUS CONSERVATION

CARBON STOCK ASSESSMENTS USING REMOTE SENSING

Corporate Name: Microsoft

Address: Redmond, Washington, United States

Point Of Contact Name: John

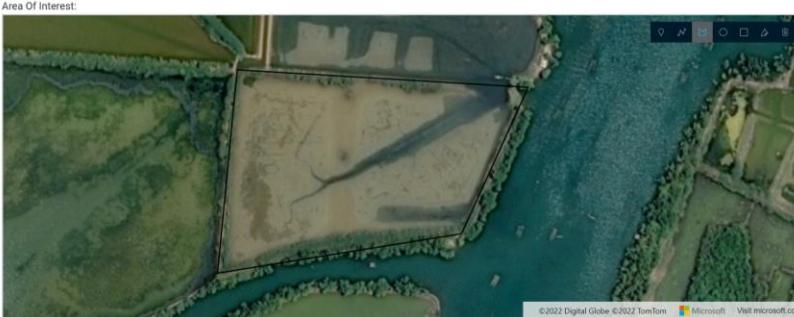
Phone: +1 971-205-0675

Email: vp.sustainability@microsoft.com

Carbon Removal Offset Goal - 2030(Tonnes): 5500

Project[Locations]: Capiz

Area Of Interest:



Smart Advisor Mangrove Stratification Potential Offset

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Phone: +1 971-205-0675

Email: vp.sustainability@microsoft.com

Carbon Removal Offset Goal - 2030(Tonnes): 5500

Project[Locations]: Capiz

Area Of Interest:

Mangrove Stratification



Strata 1 Seaward fringe
Strata 2 Rhizophore dominated
Strata 3 Scrub forest
Strata 4 Freshwater marsh / emergent vegetation

Mangrove Stratification Potential Offset

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CARBON STOCK ASSESSMENTS USING REMOTE SENSING

Corporate Name: Microsoft

Address: Redmond, Washington, United States

Point Of Contact Name: John

Phone: +1 971-205-0675

Email: vp.sustainability@microsoft.com

Carbon Removal Offset Goal - 2030(Tonnes): 5500

Project[Locations]: Capiz

Area Of Interest:

Predicted Potential Offset

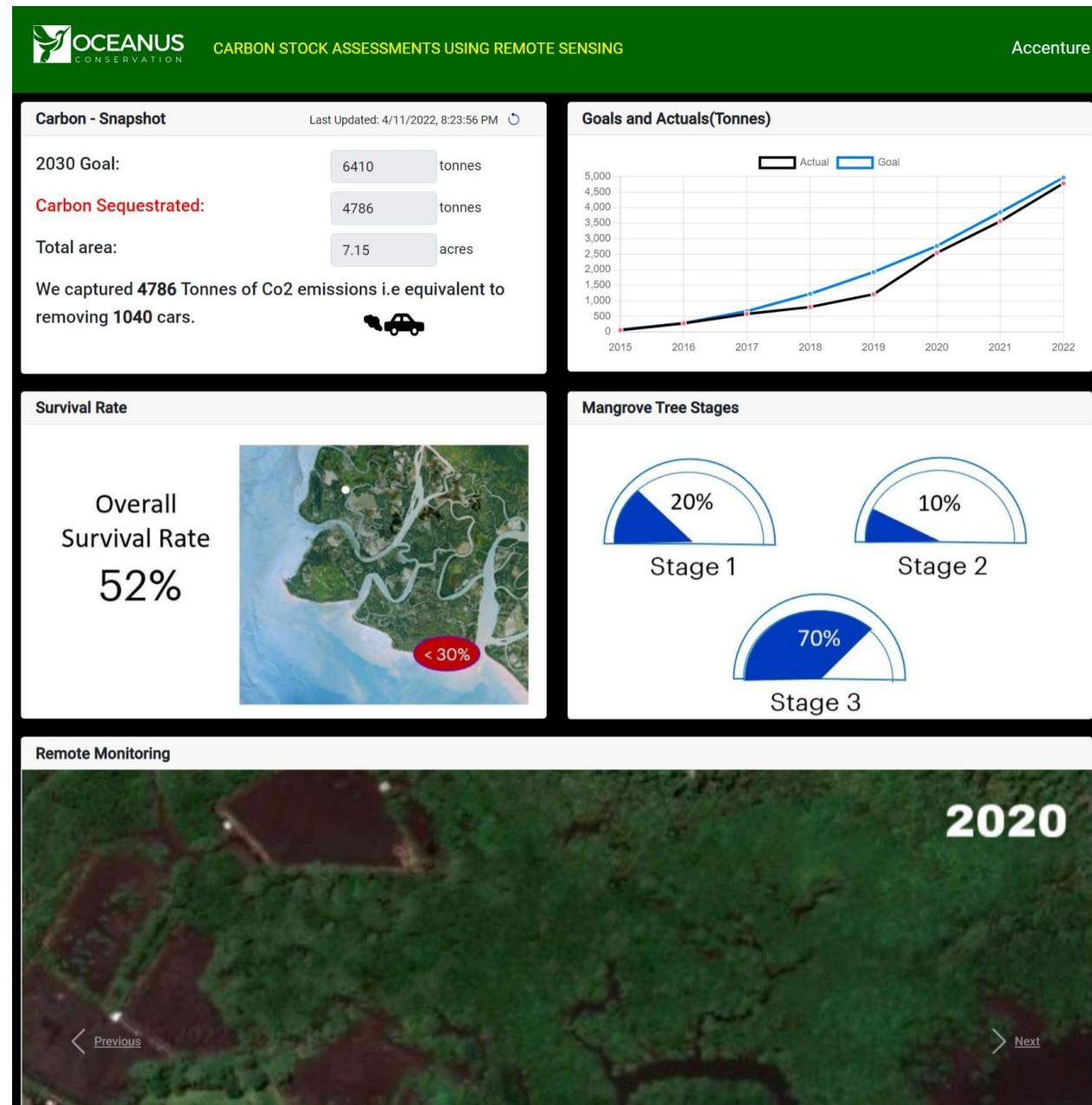
Mangrove Species	Local Name	Area (acres)	Potential Carbon Offset (tonnes)
Acanthus ebracteatus	Tigbau	3	90
Ceriops tagal	Tangal	9	105
		12	195
		15	225
		30	765

Mangrove Stratification Potential Offset

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Corporate Dashboard with Intelligent Assessor



Corporate Leaderboard



CARBON STOCK ASSESSMENTS USING REMOTE SENSING

Leaderboard

Sl.No	Company	2030 Goal (Tonnes)	Removed Carbon (Tonnes)	Progress	Survivability	Smart Tracker
1	 Accenture	6410	4786	<div style="width: 74%;">74%</div>	<div style="width: 42%;">42%</div>	
2	 Microsoft	5500	0	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	
3	 company3	800	80	<div style="width: 10%;">10%</div>	<div style="width: 35%;">35%</div>	
4	 company4	300	100	<div style="width: 33%;">33%</div>	<div style="width: 39%;">39%</div>	

8

1 2 3 4 5 6 7

Appendix

