



**SAP
Innovation
Awards 2019**



SAP Innovation Awards 2019 Entry Pitch Deck

Sustainable Agriculture with Location Intelligence

Asociacion de Cooperativas Argentinas C.L.

THE BEST RUN





For 2019 awards we have introduced the option to provide us with a short video (no more than 3 minutes), that describes the challenges your project addresses and any notable benefits.

To provide a video:

- Create your video
- Post to [YouTube](#), [Vimeo](#) or other publicly accessible site
- Paste video link in above

IMPORTANT: If your submission includes personal data in video/pitch deck you have to comply with data privacy and in particular [GDPR](#) by obtaining written consent from anyone whose personal data is included in the video/pitch deck. *Additionally if you do not consent to use of personal data in the entry form the award team will require the removal of all personal data included in your pitch deck in order for it to be valid.*

Note: Delete this box prior to submission

Sustainable Agriculture with Location Intelligence

Asociacion de Cooperativas Argentinas C.L.



“Quote”

Will supply next week

Challenge

Asociacion de Cooperativas Argentinas C.L. has 50.000 producers that make up a fundamental part of the agro-industrial Argentinean chain. They want a simple and intelligent way to monitor each stage of the farming campaigns in the fields: from seeding to harvesting in a large scale. Currently, consuming satellite imagery on their own is very challenging and there is a lack of visibility into the health of the crops and fields. This lack of insights lead to increased costs while creating negative impacts on socioeconomics and environments in Argentina. For example: wasteful use of water and pesticides due to lack of visibility on crop health, and more.

Solution

The solution is an intelligent spatial platform build by combining SAP Cloud Platform, SAP HANA spatial services and SAP Leonardo Machine Learning Foundation. This innovative system provides insights from the fields using satellite and drone imagery, weather data, machine learning and combined with business data from Asociacion de Cooperativas Argentinas C.L to provide daily end to end monitoring of crops to determine anomalous areas to inspect for feasible pest and diseases. Utilizing SAP Leonardo Machine Learning foundation, Asociacion de Cooperativas Argentinas C.L will receive automatic recommendations and alerts on information such as suggested fertilization plan, nutritional deficiencies alert map, pests and diseases of crops alert, projected harvest yield map, and water stress alerts.

Outcome

- Sustainable farming
- Lower TCO
- Higher Yield
- Simple and continuous access to global satellite and weather information

Detect and mitigate harm to ground water, crops and fields

Manual field scouting for each field to less than 24 hour for all field

Automatic alerts and recommendations on conditions of the fields on daily basis



Business Challenge & Objectives

Challenge:

- Need to consume satellite imagery in a easy way. They found it was too expensive on their own.
- Lack of visibility during each stage of the farming campaigns: entire process of seeding to harvesting and crop + soil health and conditions
- Way to detect and prevent incidents (pesticides, drought, etc.)
- Simple way to be alerted on potential threats and incidents on crops and fields to mitigate costly and unforeseen damages

Project Objective:

The goal is to develop a decision making system that provides analysis and insights into the conditions of crops, fields, and soil during all stages of a campaign. The objectives are the following:

- High quality data (satellite/drone, indices details, weather data combined with business data)
- Proactive (being able to react on the data and insights for efficiency)
- Precise (accuracy, granularity, resolution for satellite/drones)
- Predictive (yield, margin based on the yield)
- Intelligent (who learns, recommendations)
- Generate early alerts (proactive recommendations)



Project / Use Case Details

For the first time, Asociacion de Cooperativas Argentinas C.L. finally has a GIS and geo data interface build using SAP HANA spatial services, SAP Cloud Platform, and SAP Leonardo Machine Learning Foundation. This innovative system will provide information from the fields using satellite and drone imagery, weather information, and etc. This combined with business data from Asociacion de Cooperativas Argentinas C.L. provide all in one, day to day monitoring of crops to determine anomalous areas to inspect for feasible pest and diseases.

Through the interaction with the front end of the application, the producer adds a crop batch with its coordinates, the cultivation plan (which crop, density of sowing, etc.). The system also computes soil studies, analyze satellite images prior to the campaign to bring visibility into each stage of the campaign, from seeding to harvesting.

The system calculates all possible radiometric indices, then generates vector maps (polygons in .shp format) for the entire coverage area of the field. This process is carried out every 5 days, whereas before it would these information would not be possible to get.

A set of automated alerts and advices based on AI classification of several radiometric indices from weather IoT and other sources. Asociacion de Cooperativas Argentinas C.L. will have access to suggested fertilization plan, nutritional deficiencies alert map, pests and diseases of crops alert, projected harvest yield map, and water stress alerts.

This will decrease costs, increase efficiency and optimize all operations for Asociacion de Cooperativas Argentinas C.L. and it's 50,000 customers.



Benefits and Outcomes

Business / Social

- Significant reduction in operating costs
- New ways for sustainable farming identified
- Efficient usage of resources such as pesticides and water
- Detect and mitigate harm to ground water, crops and fields
- Increased profit margin

IT

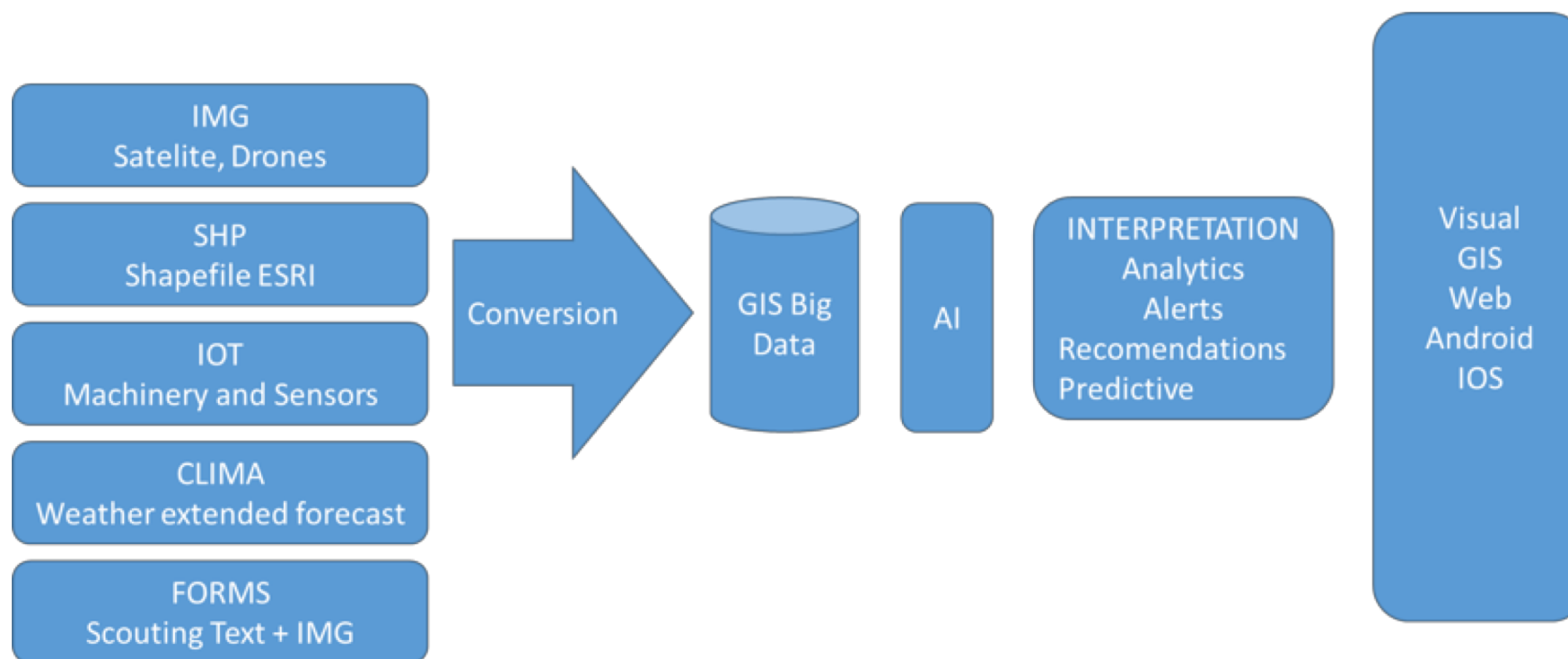
- domain knowledge for satellite imagery
- Infrastructure that enables for speed and agility
- Near real time insights
- Receive recommendations on daily basis
- Manual field scouting for each field to less than 24 hour for all fields
- Lower maintenance for IT

Human Empowerment

- Educated job tasks
- Increased employee skills and engagement
- New job opportunities

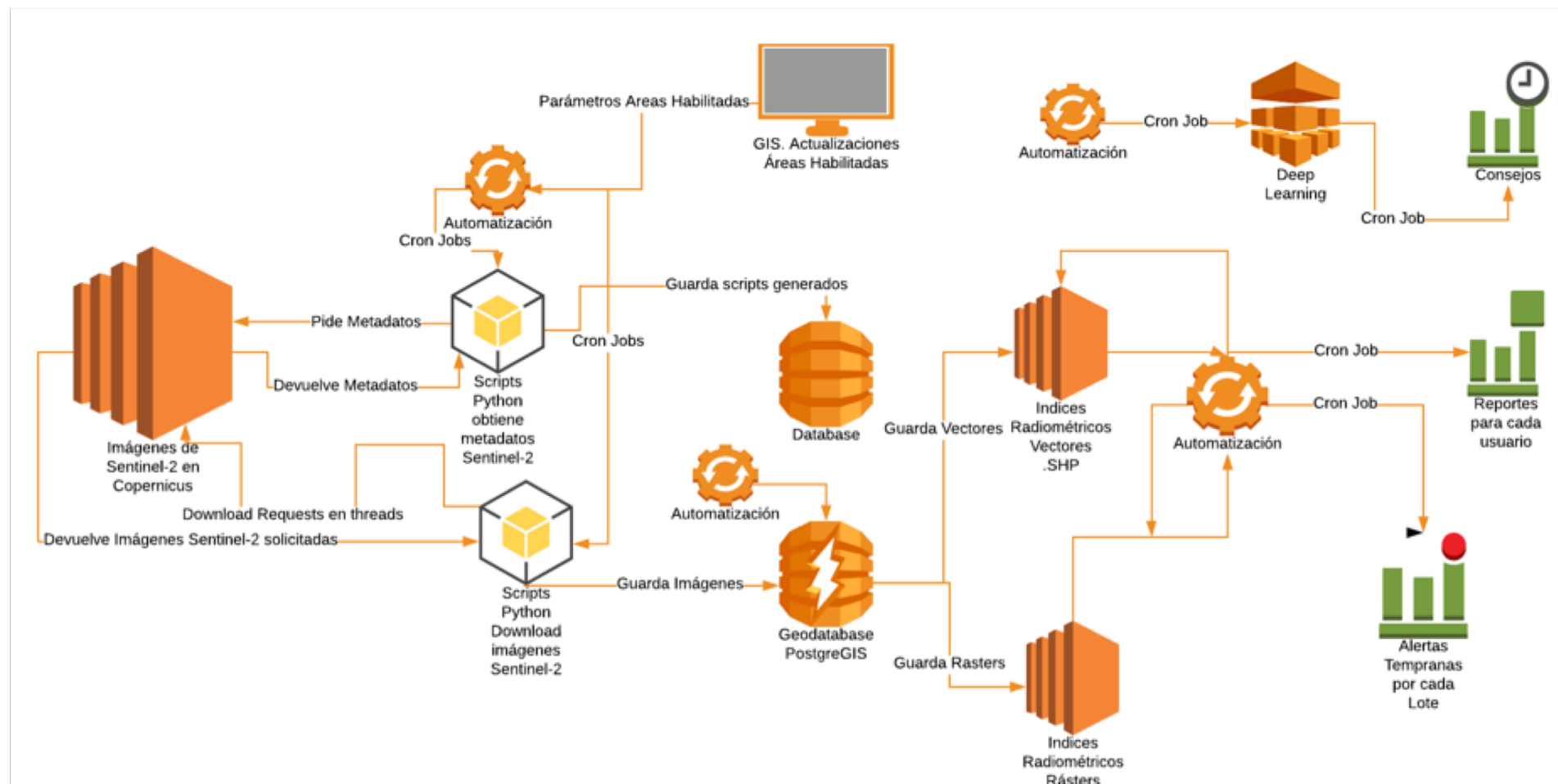


Architecture





Architecture





Deployment

Date of Deployment or POC: December 17, 2018

Number of live users: 100

SAP Technologies Used:

SAP HANA spatial services	Live
SAP HANA service	Live
SAP Cloud Platform	Live
SAP Leonardo ML Foundation	POC

Server Processor: SAP Cloud Platform

Linux Distribution: Cloud Foundry



Emerging Technologies and Use Cases

The following Emerging Technologies and use-cases are part of the project and describe the contribution

	Technology or Use Case	Yes/No	Contribution to Project
1.	Machine Learning / Artificial Intelligence	Yes	Deep Learning issued a series of tips based on irrigation application reports, agrochemicals, tasks, etc to the producer
2.	IoT	No	
3.	3D printing	No	
4.	Blockchain	No	
5.	API Economy / Integrate the Intelligent Enterprise	Yes	Integration to various APIs
6.	Cloud Native / Event Based Architectures	No	
7.	Extending the digital core with SAP CP / ABAP in SAP CP	Yes	Build on SAP Cloud Platform
8.	SAP Leonardo Application (extending SAP application, using Industry Innovation Kits or result of Design Thinking workshop)	No	