

Building resilient agri-food system for sustainable future

# AI & IoT for Inclusive Agro-Ecosystems for Sustainable Development

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Geospatial Opportunities in Inclusive Agro-ecosystems for Sustainable Foods and Future

Increased land, water and system productivity while safe guarding the environmental flows and ecosystem services

- more crop per drop -water focus
- in a inch of land and a bunch of crop -multi dimensions  
-integrated systems

Knowledge based prioritization (space & time) for better strategy for investment, intervention, implementation and impact

Ecological intensification  
Target specific interventions  
Bridging the gaps  
Inputs use efficiency  
Agricultural policy  
Halt degradation  
Technology scaling

- food and nutritional security
- resilience and risk reduction
- agro-ecosystem sustainability
- adaption and mitigation
- citizen science and collective actions
- trade, social security and stability



### Medium resolution (5 - 30 m)

**Very High Resolution ( Up to - 1 m)**

### High Resolution ( 1 to 5 m)

## Radar Satellites

[illegible][illegible]

1738

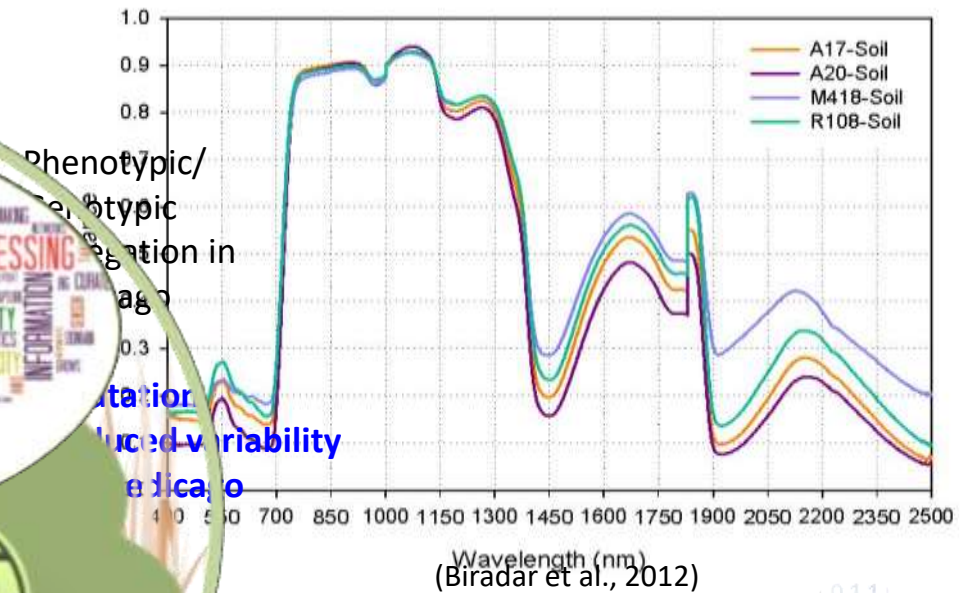
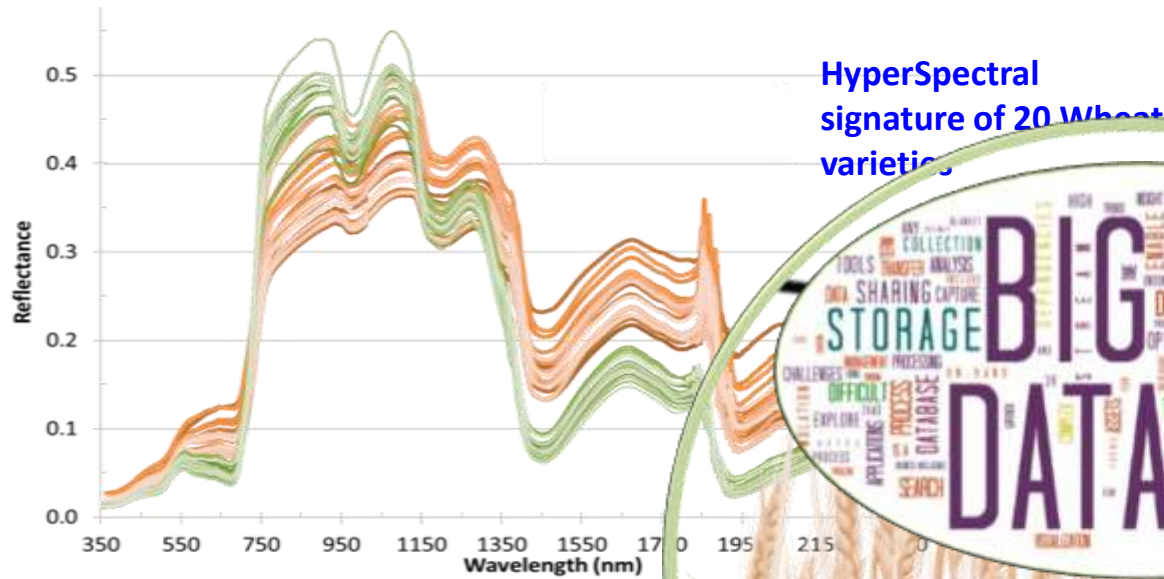
## Active Satellites

2271

## Satellites in Orbit



# Advanced Sensors and Tools

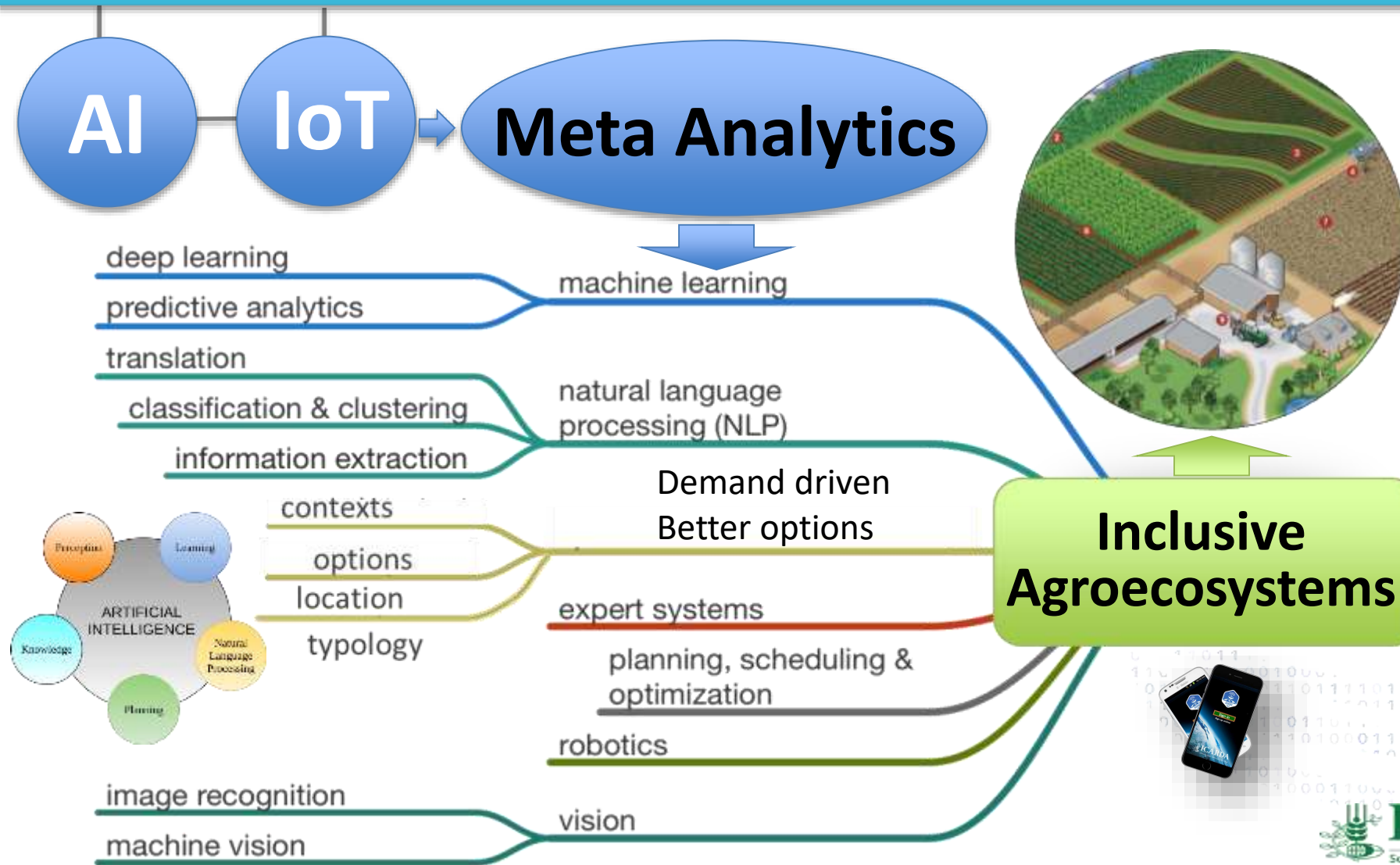


Portable spectral devices

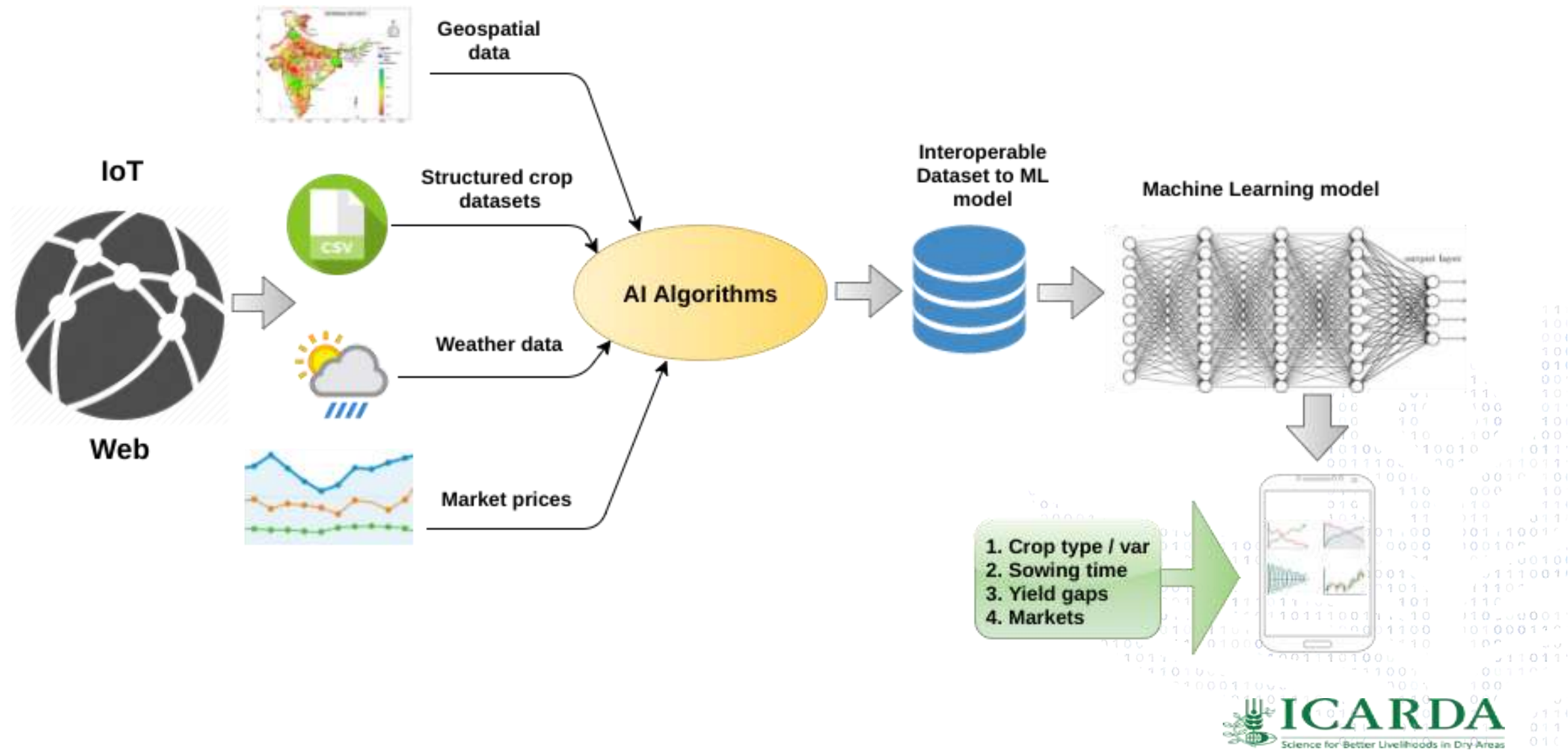


# Interoperability of Data for Better Decisions

# AI @ genetics, chemistry, weather, agronomies, trade...

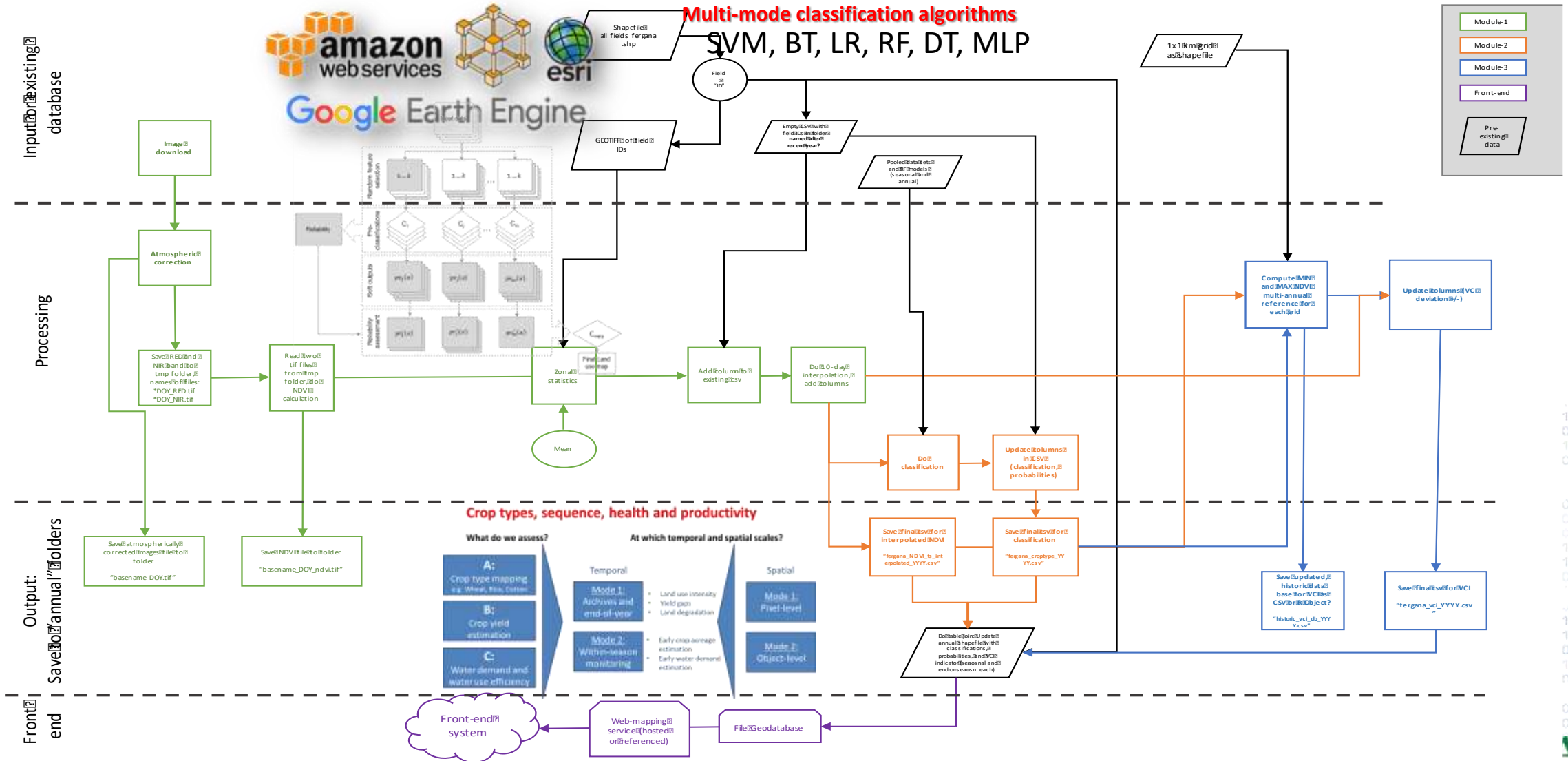


# Big-data, Machine Learning and AI algorithms





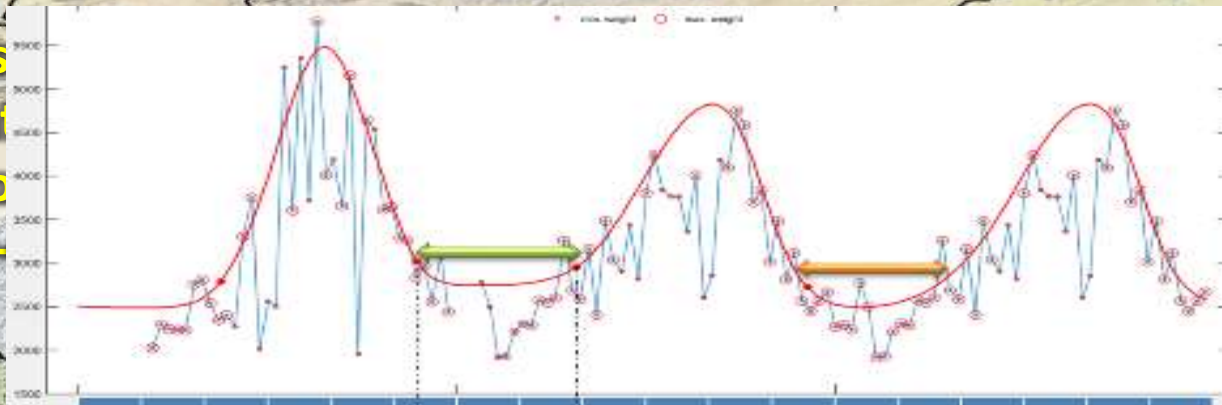
# Big-data, Machine Learning and AI algorithms



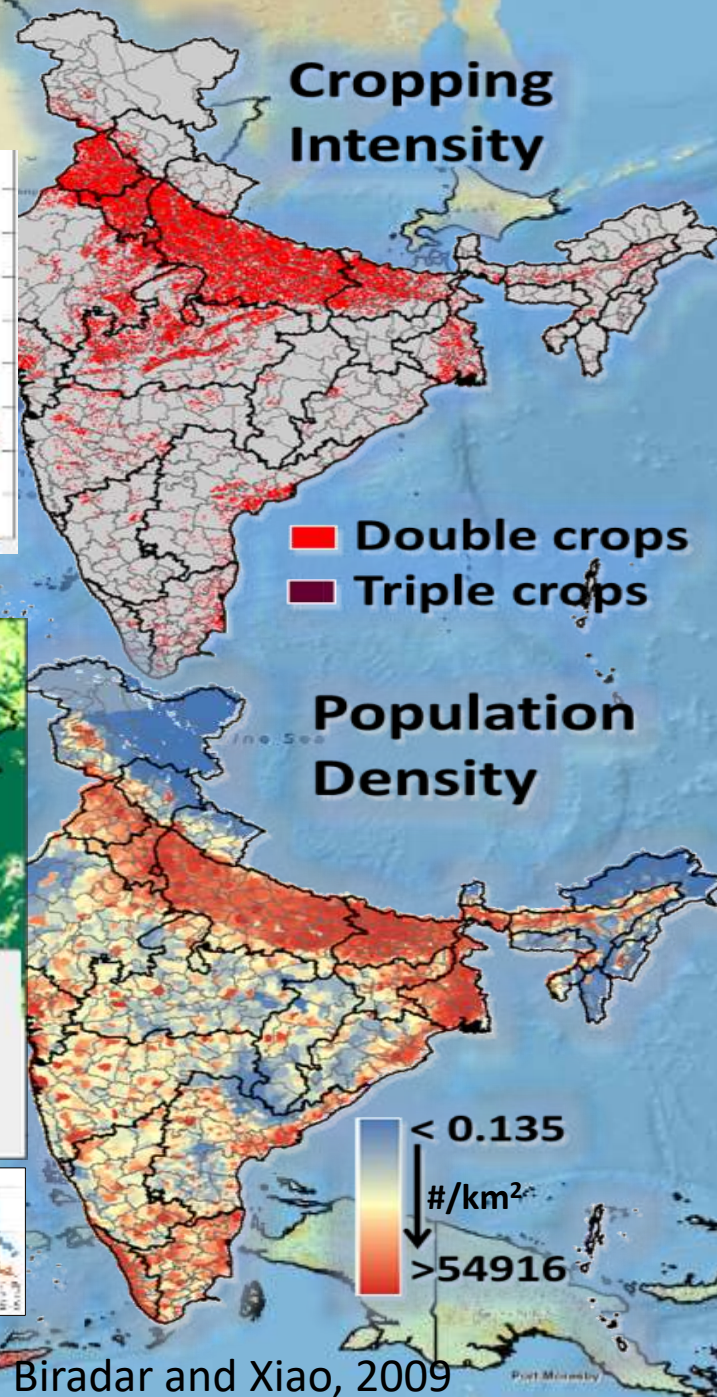
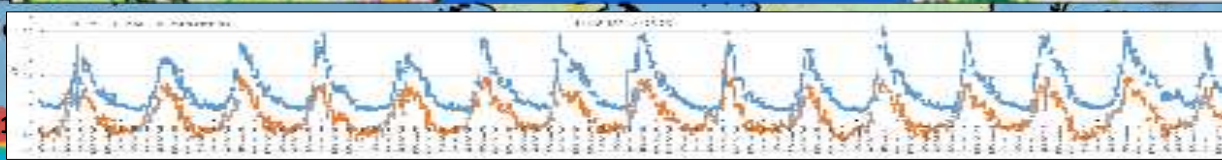
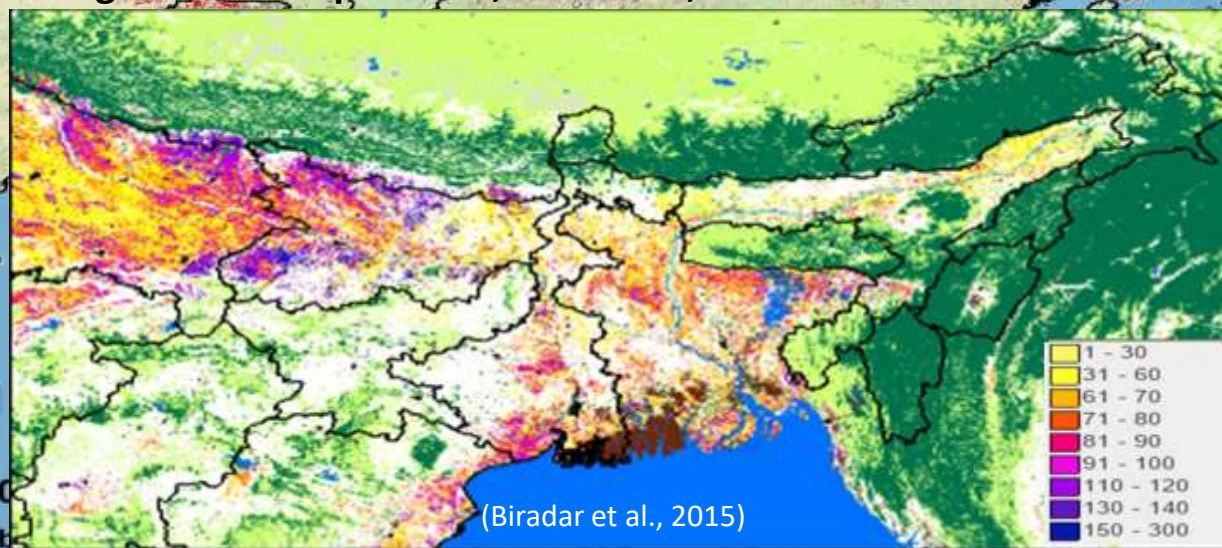


# Dynamics of Cropping Systems

- Integrated Agro-Ecosystems
- Sustainable Intensification
- Input Use Efficiency-Cost
- Thematic Land-Water-Soil



Length of the crop fallows, start-date, end-date



Year 2000  
 ■ Double  
 ■ Triple

Agricultural  
 Intensification

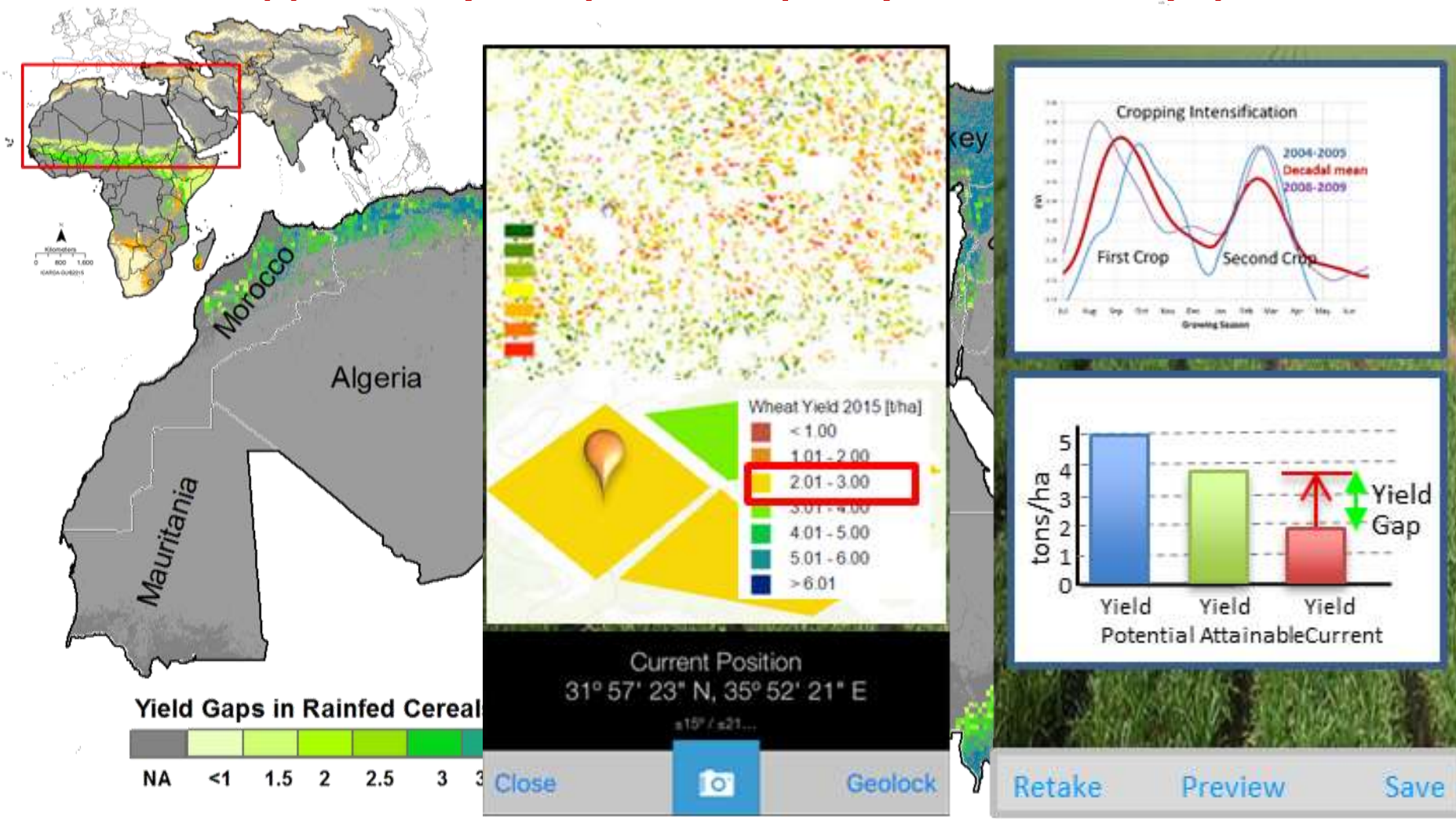


Increase in Arable  
 Land



# Bridging the Gaps @ multiple-scales

data, knowledge, productivity, resilience



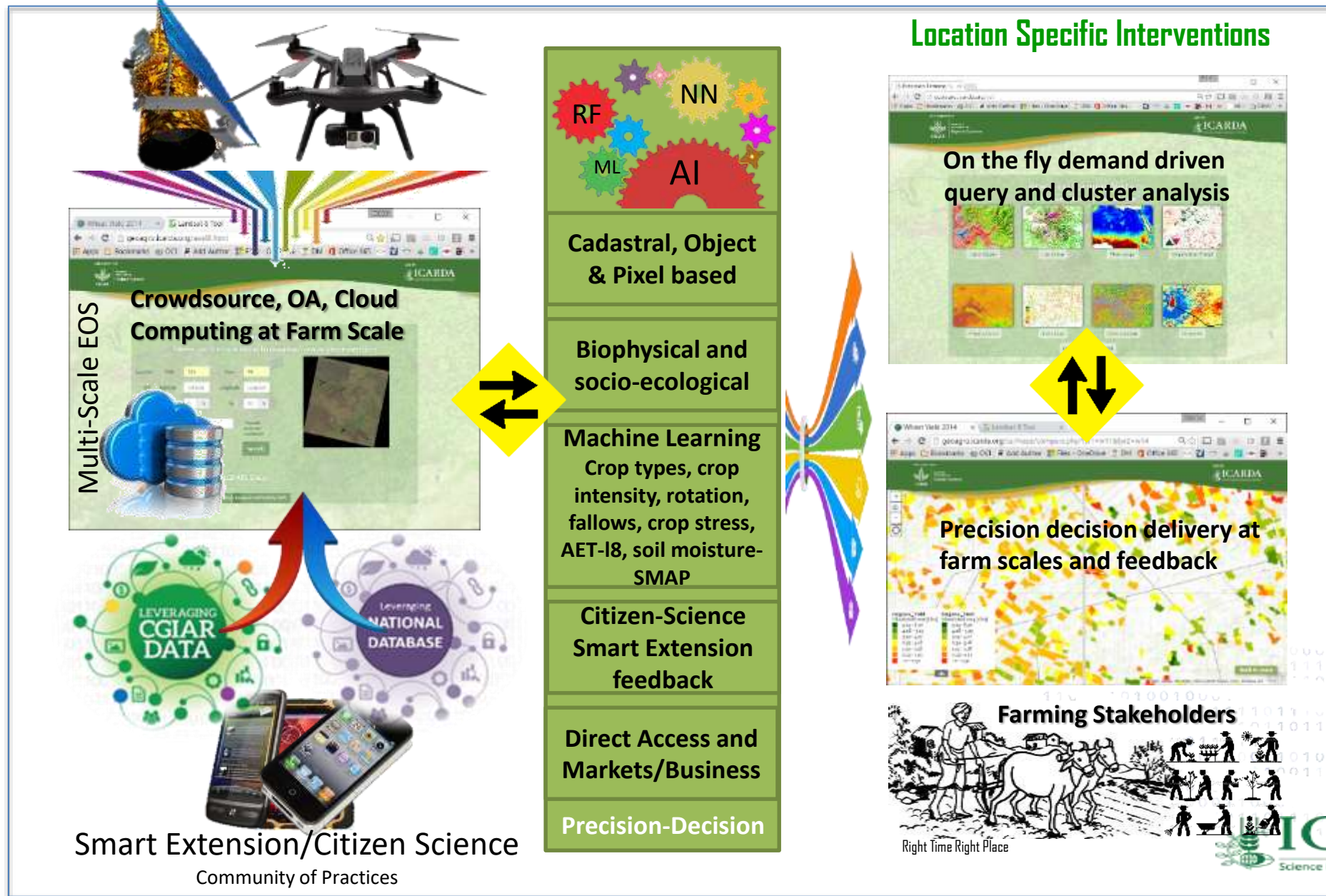






# Digital Agriculture Platform

Image Based, Open Source  
Precision Decision at Farm scales



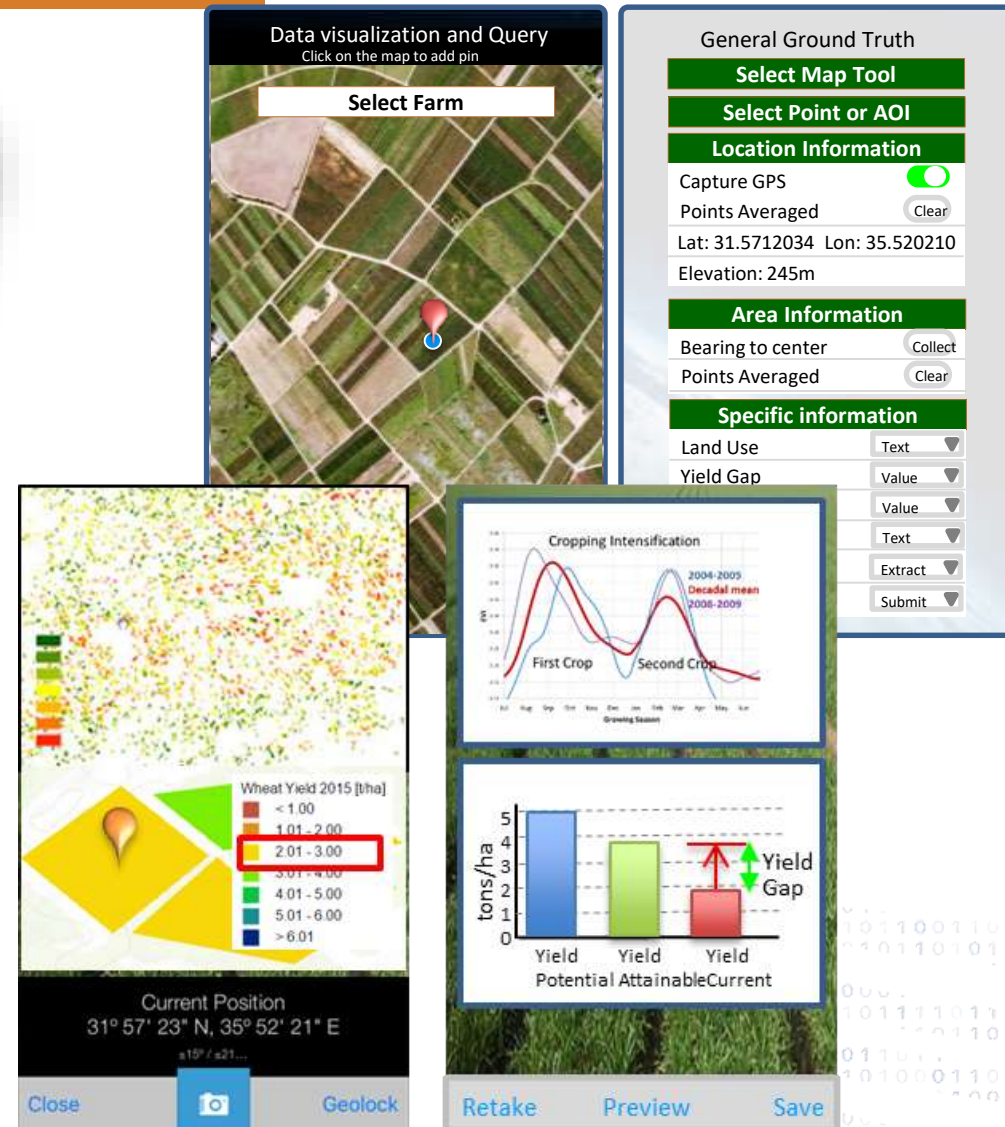
# GeoAgro App:

Citizen Science Field Data Collection, Data Management,  
Precision Agriculture App for Tablets and Smart Phones



## In Beta Testing

- Citizen Science
- Crop Type
- Crop Suitability
- Yield Forecasting
- Pest Risk
- Real-time Advisory
- Field Data
- Yield Gaps
- Droughts/floods
- Crop Stress
- Water use
- Real-time AET





in an **inch of land** and **bunch of crop**



avoid the unmanageable and  
manage the unavoidable

**Where much gain is expected?**

Is that from genetic? 15-20

Is that from management? 50-60

Is that from socio-economy? 20-35

**Thank You**

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