International Conference, Climate Smart Agriculture: the Way of Farming for 21st Century

Smart Agriculture through Computerized Tools under Climate Change Conditions

By:

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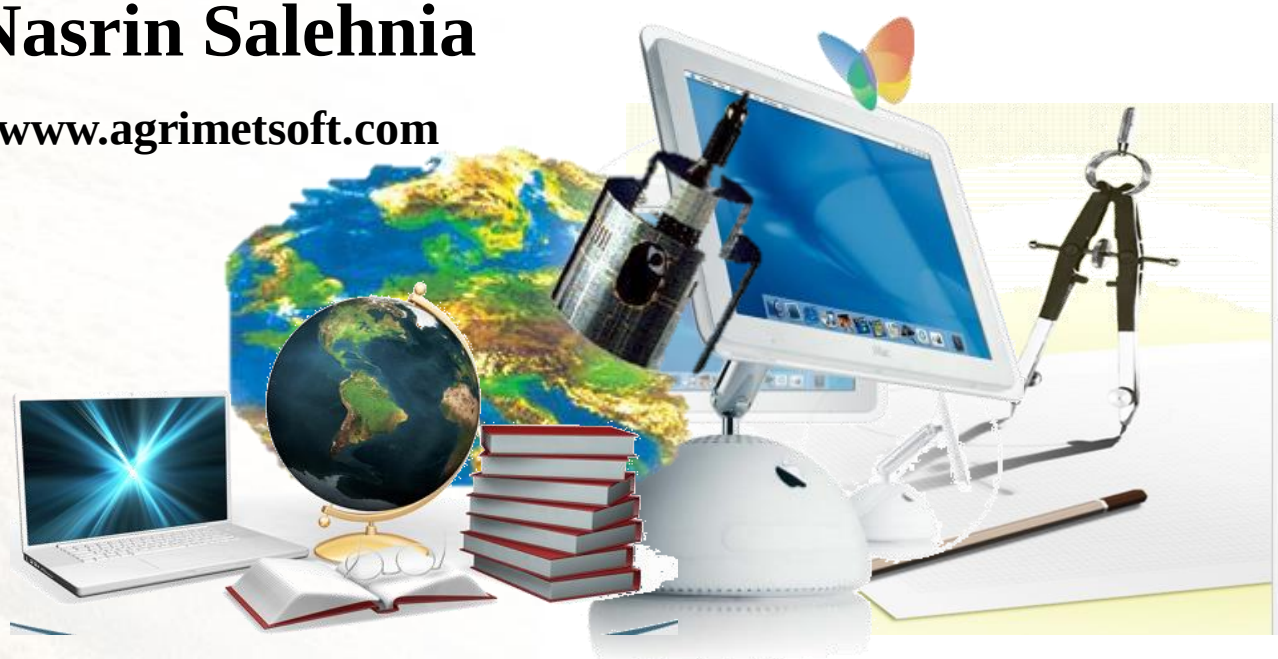


Who am I?

- BSc. is in computer - software engineering (2002-2006).
- M.S. in Agrometeorology (2009-2011).
- Ph.D. in Agrometeorology (2013-2017).
- Visiting scholar in Florida University/USA.

Highlights

- Climate change and agricultural production.
- Precision farming will increase crop yields.
- Challenges and Opportunities for developing tools in smart agriculture.
- Applicable tools in smart agriculture.
- Improving climate prediction tools in agricultural fields by developing user-friendly software tools
- Developing a comprehensive drought tool for monitoring and prediction crop yields.

Introduction

- Climate is the biggest individual driver of production variability in agriculture sector.
- Climate change has negative effects on agricultural production, globally and locally.
- Precise evaluations of climate modelling outputs, atmospheric and weather data tools are valuable for making decisions regarding agriculture, water resource, and ecosystem management.

Introduction

- The Food and Agricultural Organization (FAO) defines Climate Smart Agriculture (CSA) as an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate.

- Precision agriculture aims to optimize the yield per unit of farming land by using the most modern means in a continuously sustainable way.

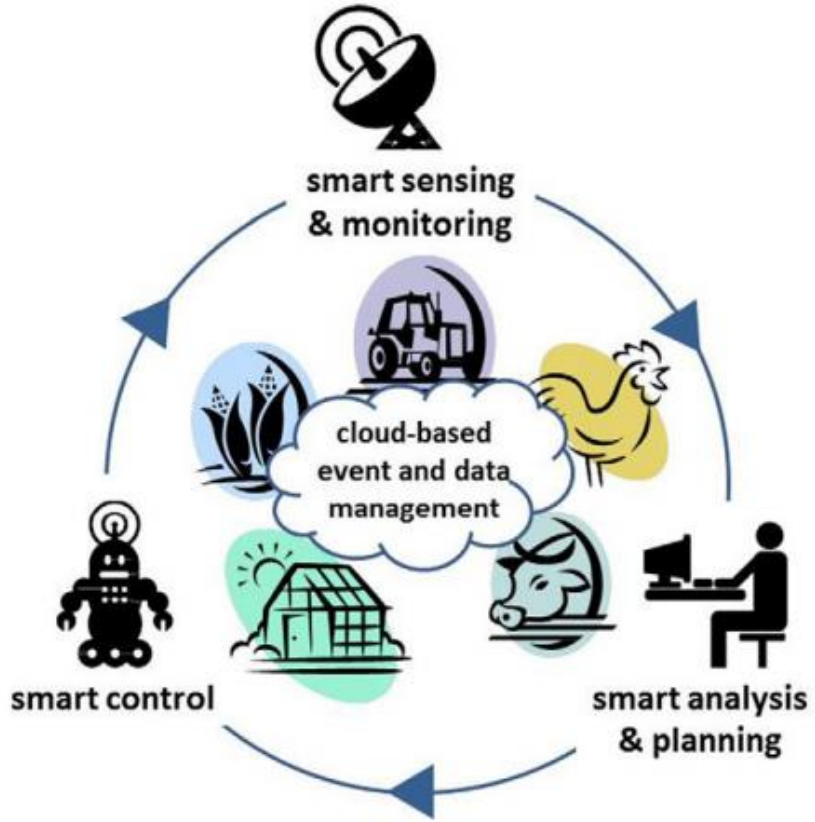
Challenges and Opportunities

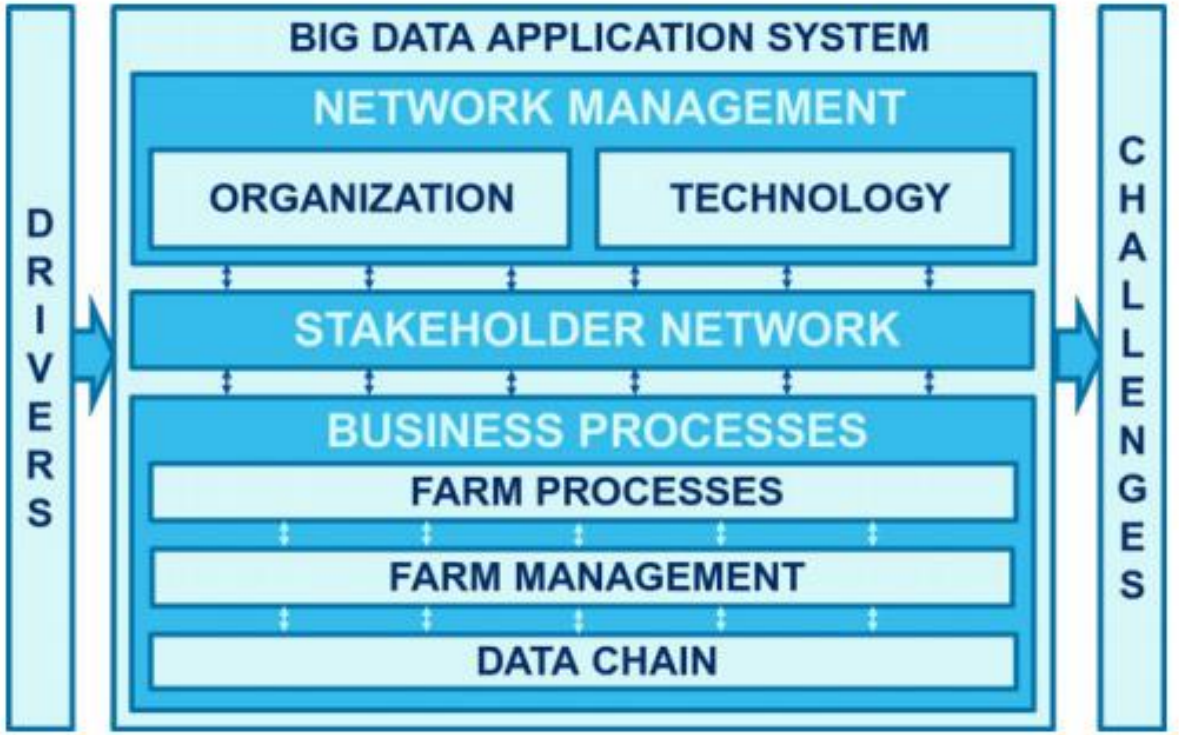
- Getting farmers into the digital era won’t be an easy task.

Challenges and Opportunities

- Precision agriculture was initiated in the mid 1980s, using newly available technologies, to improve the application of fertilizers by varying rates and blends as needed within fields.
- Today: sampling, tillage, planting (rate and variety), fertilizing (rate, blend, and type including manure), crop protection product applications (rate and mix), harvesting, and irrigation

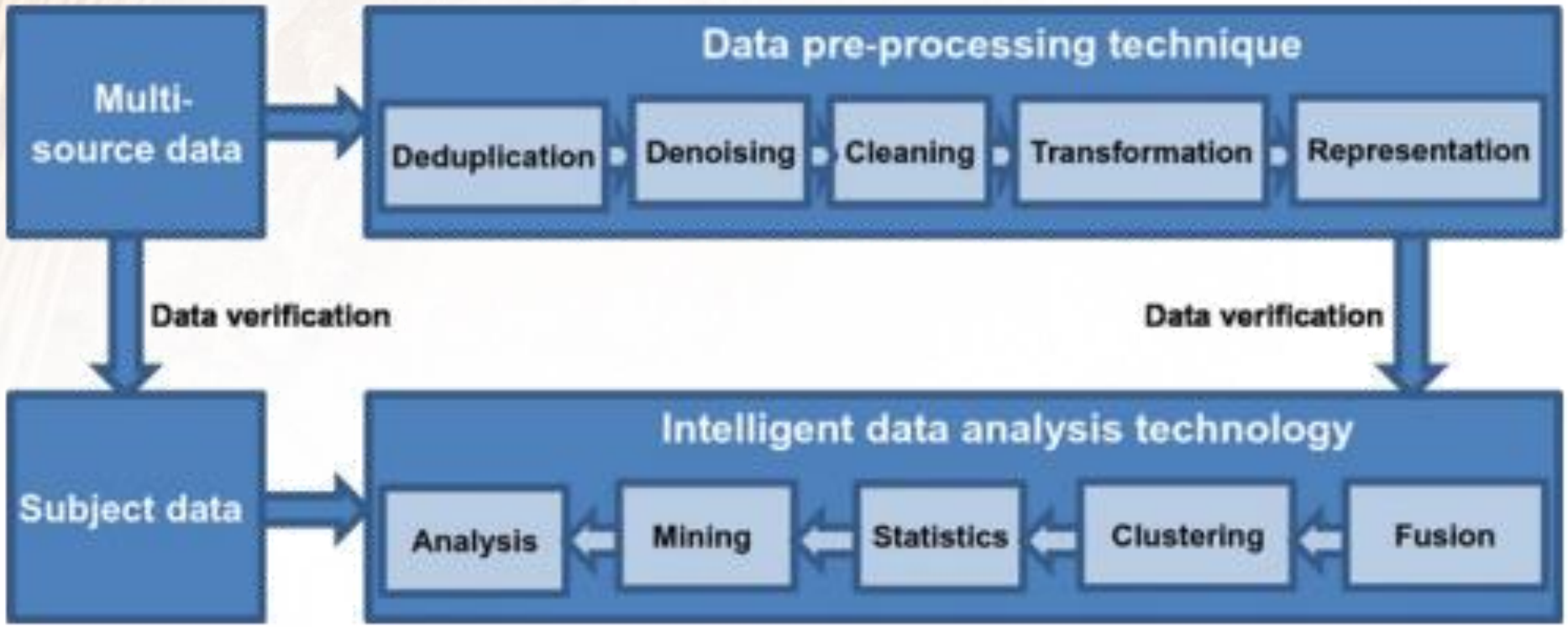
Challenges and Opportunities





Challenges and Opportunities

- **Precision farming reduces greenhouse gas emission**
  - climate
  - environment
  - farm economy

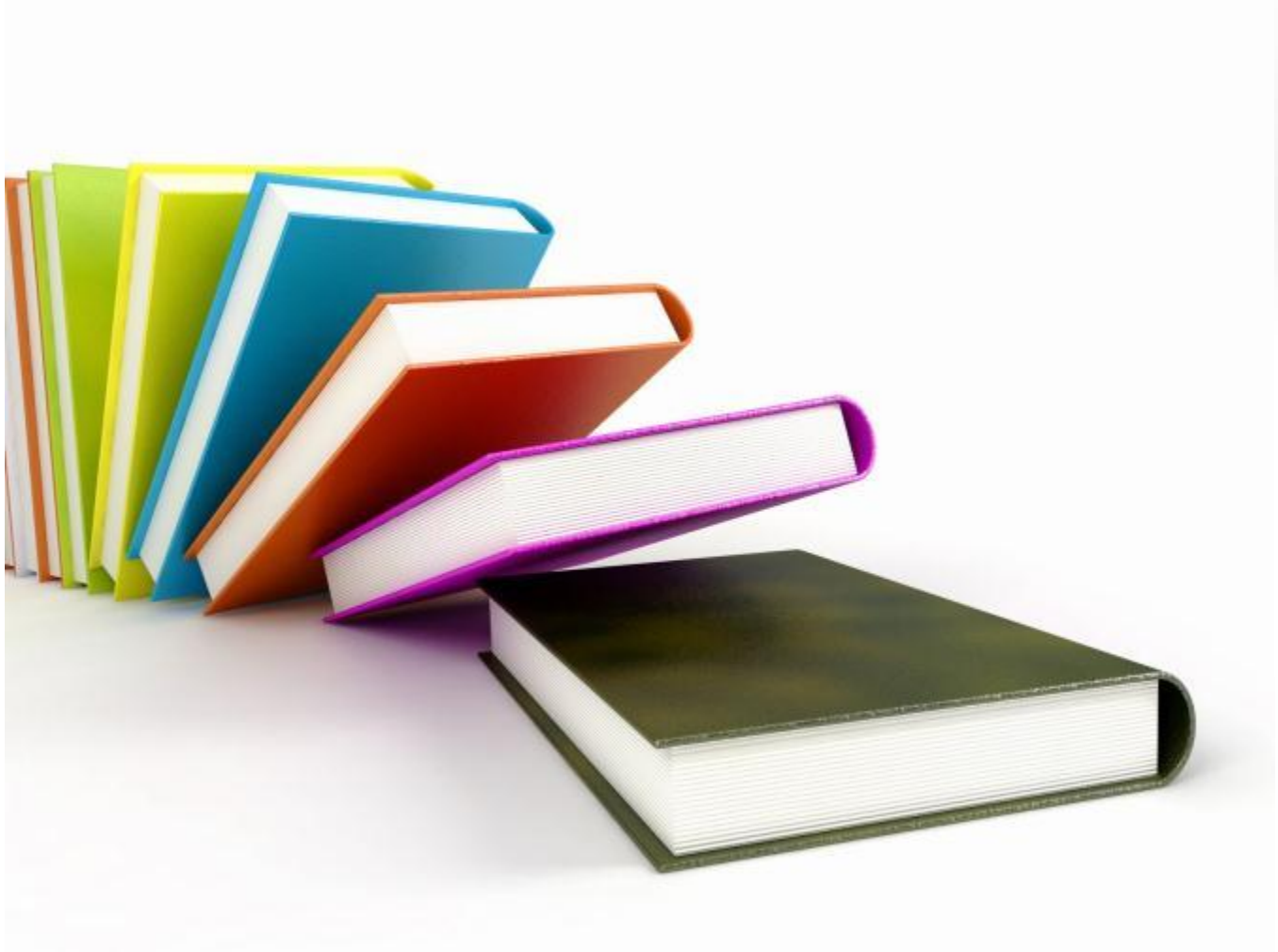

Multi-source data
Data pre-processing technique
Deduplication
Denoising
Cleaning
Transformation
Representation
Data verification
Data verification
Subject data
Intelligent data analysis technology
Analysis
Mining
Statistics
Clustering
Fusion

Applicable tools in smart agriculture

- General technological
- Developments
- Sophisticated technology
- Data generation and storage
- Digital connectivity

- Public drivers
- Food and nutrition security
- Food safety
- Sustainability

Which tools?



Improving climate prediction tools

- Climate Data and CMIP5

- Statistical Downscaling
- Dynamical Downscaling

Improving climate prediction tools

- Drought Monitoring and Prediction
- Meteorological Drought
- Agricultural Drought

Thanks For ***Attention***