

ANNEX

LET THE WORLD  
INTELLIGENCE THAT MAKES GLOBAL TECHNOLOGIES COME TO

NURTURING  
TODAY'S  
AGRICULTURE  
WITH  
TOMORROW'S  
TECHNOLOGY



AMNEX

**AGRICULTURE  
INTELLIGENCE**

Intelligence  
Is natural

# 1

## About AMNEX





## TRANSPORT

BUILDING INDIGENOUS SOLUTIONS FOR INTELLIGENT TRANSIT MANAGEMENT



## AGRICULTURE

TOUCHING THE LIVES OF 14 LAKH FARMERS WITH CROP HEALTH DATA



## MINING

ENABLING VISIBILITY IN FUEL MANAGEMENT



## URBAN SOLUTIONS

MAKING CITIES OF THE FUTURE A REALITY WITH SMART TRANSPORT, STREET LIGHTS, SOLID WASTE MANAGEMENT



## ENERGY & UTILITIES

OPTIMISING ENERGY & UTILITY SYSTEMS TO EFFICIENTLY MANAGE & DISTRIBUTE RESOURCES



## ARCHITECTURE ENGINEERING DESIGN

MAKING ARCHITECTURE SMARTER WITH TECHNOLOGY APPLICATIONS



## MARINE & LOGISTICS

ENABLING THE PROPER MANAGEMENT OF SYSTEMS AND DATA AT INTERNATIONAL PORTS



## GIS

FACILITATING INDUSTRIAL AND GOVERNMENT ECOSYSTEMS WITH IN-DEPTH GIS DATA

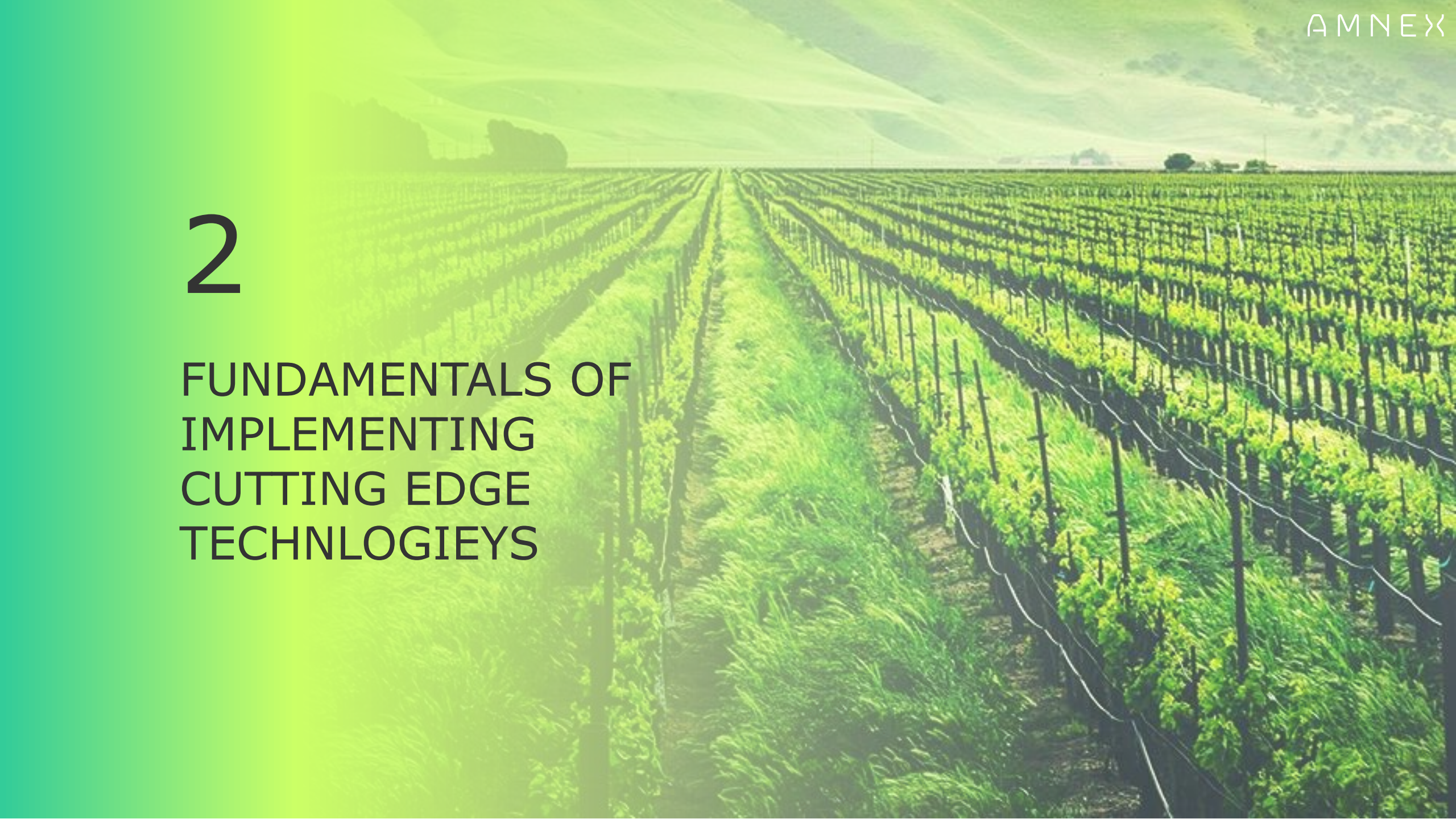


## DAIRY & MANUFACTURING

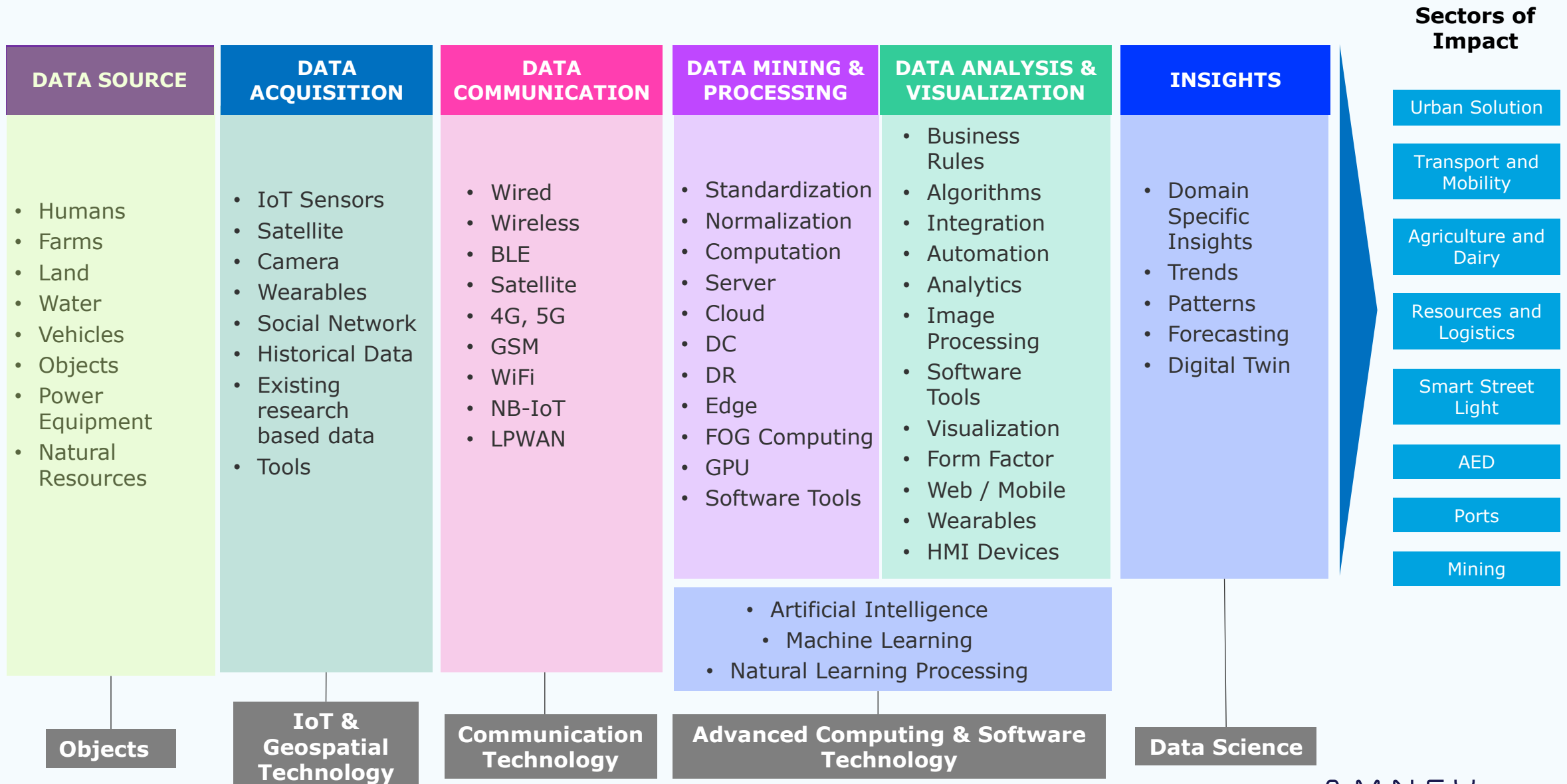
USHERING IN A NEW ERA OF GROWTH FOR THE DAIRY AND MANUFACTURING SECTORS

# 2

## FUNDAMENTALS OF IMPLEMENTING CUTTING EDGE TECHNOLGIEYS



# HARNESSING THE POWER OF DATA USING DATA SCIENCE TO YIELD DATA DRIVEN TRANSFORMATION



Market Linkages



Financing & Insurance



Precision Agriculture



Farm Inputs



Farming as a Service



IoT Monitoring Platform



Farm management Software



Next Gen Logistics



Quality Management Compliance



Yield Forecasting



Soil Sensing / Analysis



Precision Irrigation



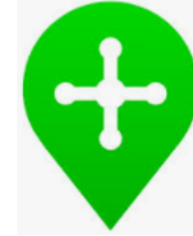
Digital market place



Cold Chain Monitoring



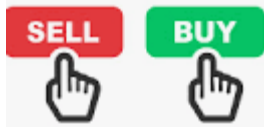
Farm ERP



Input Supply Analytics



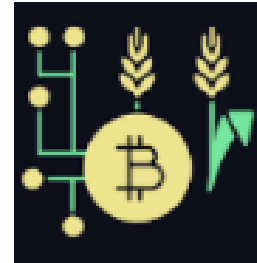
Crop marketing / Trading Platforms



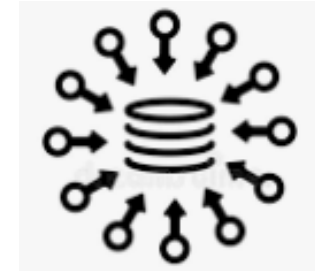
Post Harvest Management



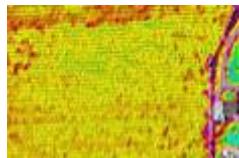
Blockchain



Data Aggregators



Imagery Analytics



Integrated Solution Platform



Partnership



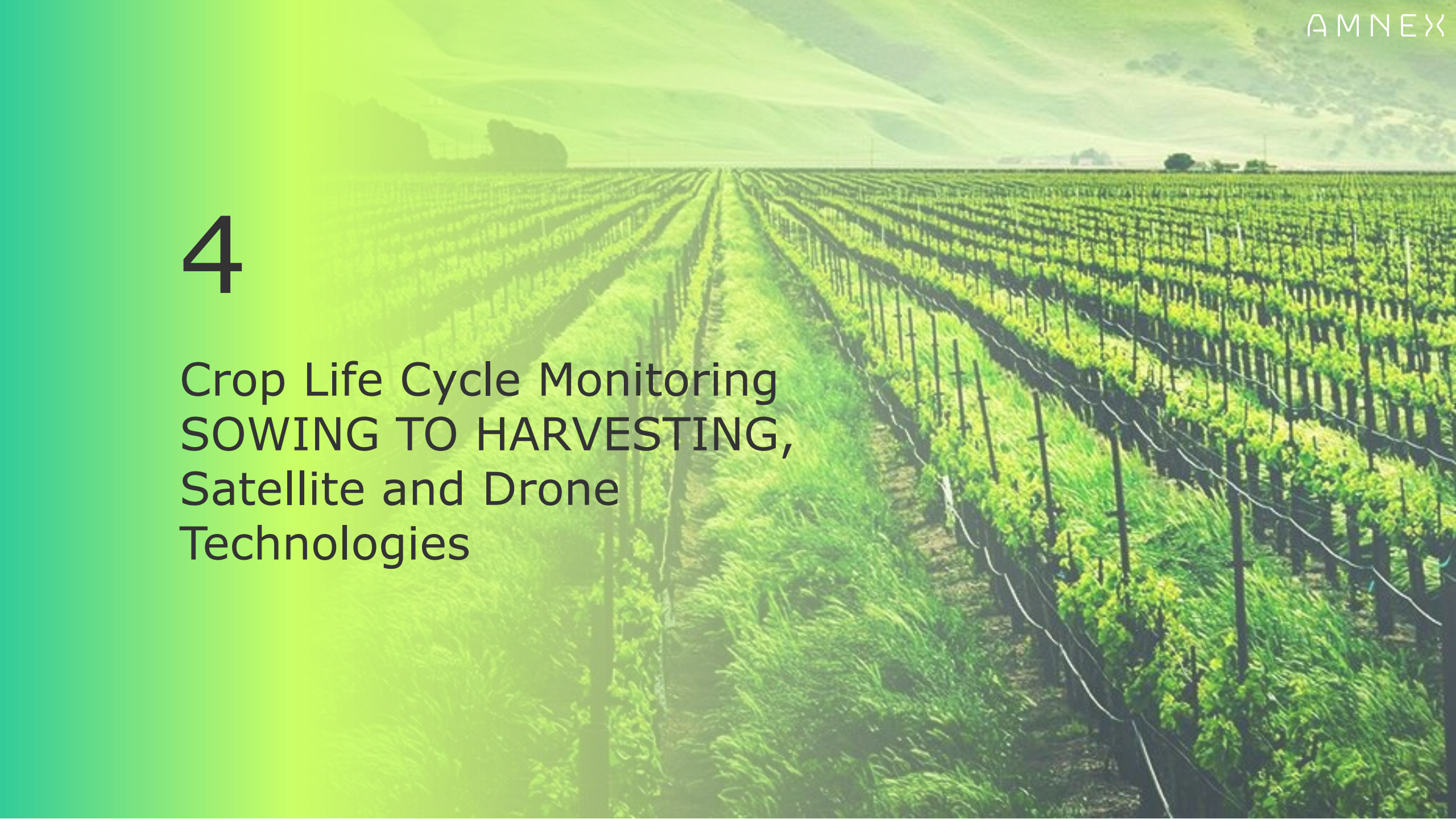
R&D





# 4

Crop Life Cycle Monitoring  
SOWING TO HARVESTING,  
Satellite and Drone  
Technologies





Farmer Advisories (Farm Level)	Weather Advisories	Department Advisories (State & Village)	Irrigation Maps	Crop Disease Maps	Crop Classification Maps
Sowing Advisory	Soil Preparation Advisories	Soil Moisture Maps	Flood Maps	Crop Loss Maps	Crop Heath, Sow & Harvest Date Maps
Irrigation Advisory	Crop Management Advisories	Cropping Pattern	Weather Incident Maps	Land Use / Cover Maps	Crop Intensification Maps
Crop Stress Assessment Maps	Weather Pattern	Farmer Advisories (General)	Problematic Soil Maps	Soil Degradation Maps	Crop Yield Maps
Pest & Disease Infection Advisory	Moisture Stress Advisory	Crop Stress Maps	Soil Preparation Advisories	Crop Calendar	Reports

Forms, Maps, Reports, Advisories, Dashboard









API Management – Platform Service

Farm Land Services

Agriculture Services

Government and Business Services

Land registry	Crop Husbandry	Harvest Management	Disaster Management	Stakeholder Registration Module	Content Management
Farmer Registry	Crop Registry	Agriculture Extension	Service Request Module	Real-time market place information	Alerts and Notification
Advisory Compliance	Crop Phenology	Pre Harvest Management	Audit Management	Issue Management	

 Historical Crop Information	 Satellite Imagery	 Unmanned Ariel Vehicle	 Field Survey	 Weather Data	 IoT Sensors Data	 Transactional Data (Farm Level, Land Records)	 Soil Data	Data Sources External Integration
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# 5

## Futuristic Technologies and Solutions





- Precision Agriculture
- Artificial Intelligence and Machine Learning
- Blockchain Technology
- Robotics and Automation
- Internet of Things (IoT) and Sensors
- Renewable Energy Integration
- Agroecology and Sustainable Practices
- Advance Satellites



- Generative AI
- Hybrid AI
- Adaptive AI
- Advance Deep Learning





- Vertical Farming
- Agri-Photovoltaics (APV) Combination
- Hyper-Precise Weather Forecasting
- SMART GREENHOUSE
- Digital Twin

# 7

## AWARDS & RECOGNITION AMNEX



# Recognition

Amnex was appreciated by the GoI for implementing innovative technology in agriculture



## Doubling Farmers' Income



### Report of the Committee on Doubling Farmers' Income

Volume XII

“Science for Doubling Farmers' Income”

Focusing Scientific Development and Technological Applications on Doubling Farmers' Income

Document prepared by the Committee for Doubling Farmers' Income, Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare.

February 2018

- Amnex has been a frontrunner in implementing innovative technologies in the field of agriculture that have further contributed to doubling the farmers' income.
- The Government of India appreciated the company's work by publishing information about it on the Department of Agriculture, Cooperation & Farmers Welfare portal.

Doubling Farmers' Income – Volume XII  
Science for Doubling Farmers' Income

### Chapter 9

#### Bouquet of Technologies for Smart Agriculture

*Agriculture is vulnerable to risks at various stages of its value chain. In order to generate profits from agriculture, resource use efficiency, and advanced preparation based on access to real time data and its analytics based interpretation would be useful. A package of tools, including information technology (IT) tools would help achieve this objective.*

#### 9.1 Introduction

One of the pre-requisites for enhanced and stable farm incomes is sustainable and efficient management of agriculture yield and output. Management of diverse crop growth, ambient conditions, uncertainties of climate, soil and water regime will require pertinent and timely crop and soil information on temporal and spatial basis. Thus, a farmer needs to be informed well in advance of the probable upcoming problems and outbreaks.

The relevant technologies for generating the required information at requisite spatial and temporal scales comprise Remote Sensing (RS), drones, and mobile-based Information Technology (IT) applications. In recent years, a few farmer friendly apps have been designed (Pongnumkul et al., 2015) to inform farmers on the best sowing date for a season, based on local weather and soil conditions. This information can be accompanied by the knowledge and information of products to forge a viable strategy for farming operations efficiently. Such tools will help farmers to understand the health of crop, the extent of infestation or stress/damage, or potential yield and further climate, soil and water regime. The policy makers would be interested in harnessing the best available tools, mainly IT tools, for optimizing the resource use, minimizing the damage/losses from external sources and ensuring the societal benefit. Most important component of such decisions is an availability of agricultural and allied sector information, as accurately as possible in real time and at required place.

This leads one to the concept of Smart Farming. It is a capital-intensive and highly technical system of growing food and crops efficiently and sustainably. It is coupled with modern Information and Communication Technologies (ICT) that provides smart and efficient inputs to the agriculture management and sustainable development (Anderson, J. R., 2008).

It could be said, that smart agriculture management is an amalgamation of various technologies, which includes artificial intelligence (AI), machine learning (ML), remote sensing, internet of things (IoT), satellite-based observation, and more importantly an advanced analytical system. Such system can empower farmers and field management to increase output value. However, extension activities that can also play a major role along with smart management system, activities include on-site processing of food crops, price control, and maximization of yield (Firozgar Hansotia, 2017).

Herein, the role of RS in integration with AI & ML and also advanced ICT technologies is examined, with a view to providing timely, objective, and accurate information to government agencies and farmers, for efficient farming practices, and reaping higher crop productivity. The

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possible components of management of smart agriculture that support assured returns to the farmers are:

- Remote sensing
- Geographical Information System (GIS)
- Artificial intelligence
- Machine learning
- Internet of things

The concept is further diagrammatically presented in Figure 9.1 below:

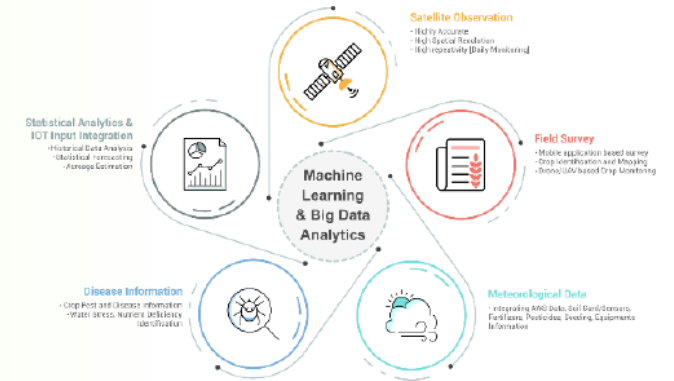


Figure 9.1 Machine learning and big data analysis

#### 9.2 Role of Remote Sensing in Smart Farming

In smart farming, advanced technologies like Remote Sensing, Geographical Information Systems and Global Positioning System (GPS) play an important role in many aspects (Gibbons 2000). These technologies have manifold applications in agriculture including crop classification, crop inventory/CCE/production, crop health assessment, crop disease detection, crop loss assessment, soil moisture estimation, computation of crop evapo-transpiration, site-specific management/precision agriculture, crop acreage estimation and yield prediction (Kingra P.K., 2016). Timely and reliable information on crop acreage, growth condition and yield estimation can be highly beneficial to the producers, managers and policy planners for taking tactical decisions regarding food security, import/export and economic impact.

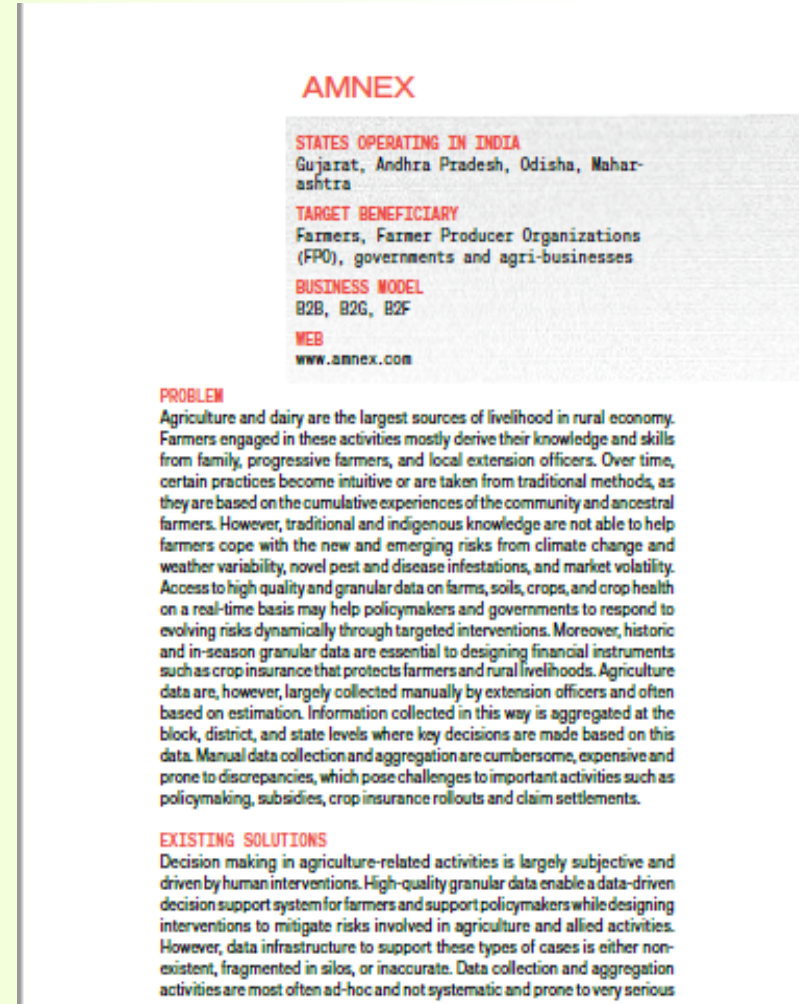
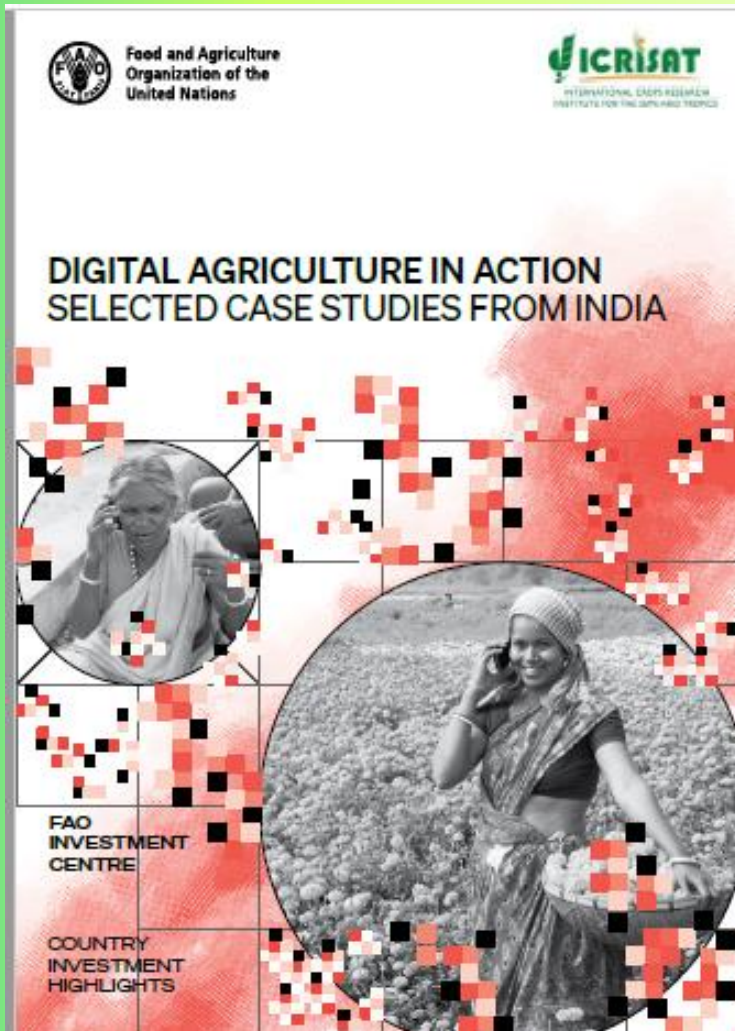
# Recognition

Annex was appreciated by the FAO for implementing innovative use cases for Government Sectors in agriculture



## Digital Agritech Case Studies

- Annex has been a frontrunner in implementing innovative technologies in the field of agriculture that have further contributed to doubling the farmers' income.
- The FAO appreciated the company's work by publishing information about the same.



# EMBRACE INTELLIGENT DISRUPTION

We look forward to hearing  
from you!

Mihir Dakwala  
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# Thank you!

# AMNEX

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