

GE^{GOV} SUMMIT

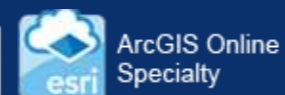
6-8 September 2023
Hyatt Regency Dulles, Virginia, USA

Industry Perspectives on GeoAI Strategy, Policy and Application

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IST
SMART SOLUTIONS



We provide innovative Geo Smart Solutions

PRODUCTS



SERVICES

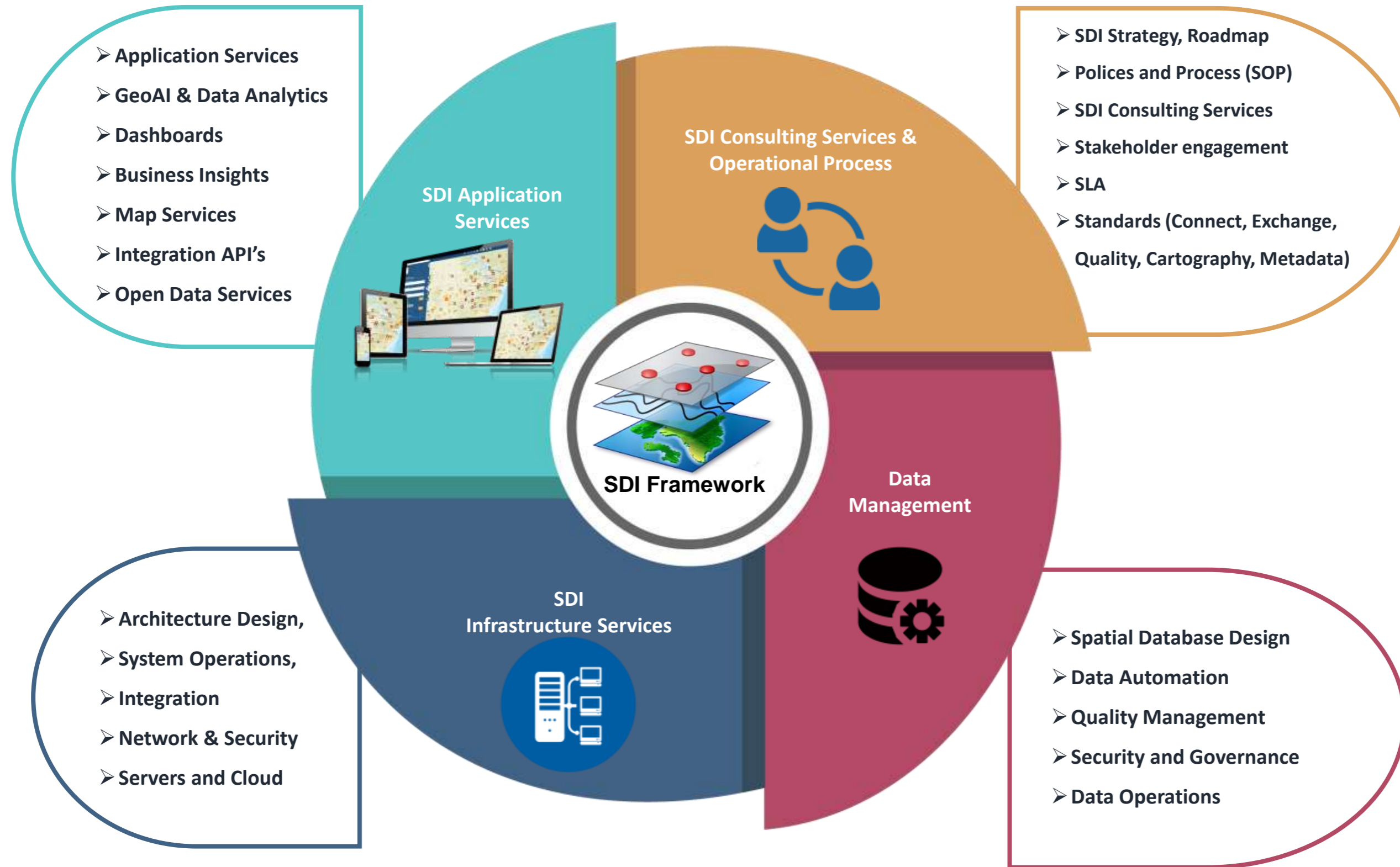


TRACK RECORD



INDUSTRIES





○ Demand for GeoAI Strategy, Policy and Application

- 80% of data generated in our daily lives are spatially enabled
- Value of spatial data for developing Smart Nations
 - Understand where, when, how & why
 - Support policy-making
 - Increase Efficiency
 - Digital Twin, GeoSmart Apps and Services



Green Energy



Policies & Regulations



Autonomous Transportation

Objectives:

- Improve Quality of Life
- Smart Decision making
- Geo-Enabled Digital Transformation
- Creating New Opportunities
- Stimulating Innovation



Blue Economy

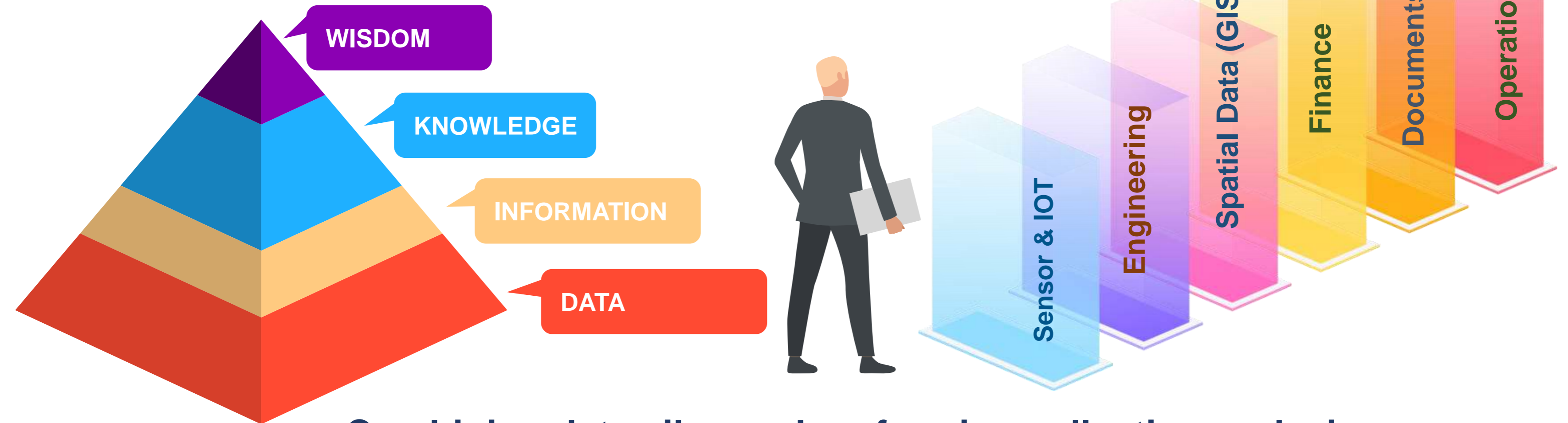


Space Science & Research



People Wellbeing

- Imagery / Location Data (GIS)
- Sensors (IoT)
- Facilities
- Business information systems
- Operational Systems
- Engineering Data
- Transactional Systems



Combining data silos and performing collective analysis by Applying technology Intelligence will Generate Value.

**GEO AI
Modeling, 3D,
HD Maps,
Spatial Analytics**



**Location
Intelligence**

**Earth Observation,
Live IoT Data,
Geospatial BIG
Data,
Edge Computing**



**Real-time
Data Access**

**Feature Extraction
from the images,
Photos and Videos**



**Object
Detection**

**Cloud Computing,
Hosting,
Scalability,
Reliability**



**Cloud
Computing**

**Driverless AI,
Spatial Algorithms,
& Data Science
Generative AI**



**AI / ML / Deep
Learning**

**Prediction Models
Location Analytics,
Neural Network
First Principle**



**Predictive
Analytics**

**Chat GPT,
NLP, Voice
Commands**



**Voice
Recognition**

**Metaverse,
AR/VR,
Gamification /
Simulation**



Metaverse



- Policies & Governance
- Standards
- Collaboration
- Capacity Building



- GREEN ENERGY
- ELECTRIC TRANSPORT
- GREEN ENERGY
- MOBILITY
- BALANCED TRAFFIC
- CITY SERVICES
- DELIVERY BY DRONES
- ZERO EMISSION
- CONTROL
-

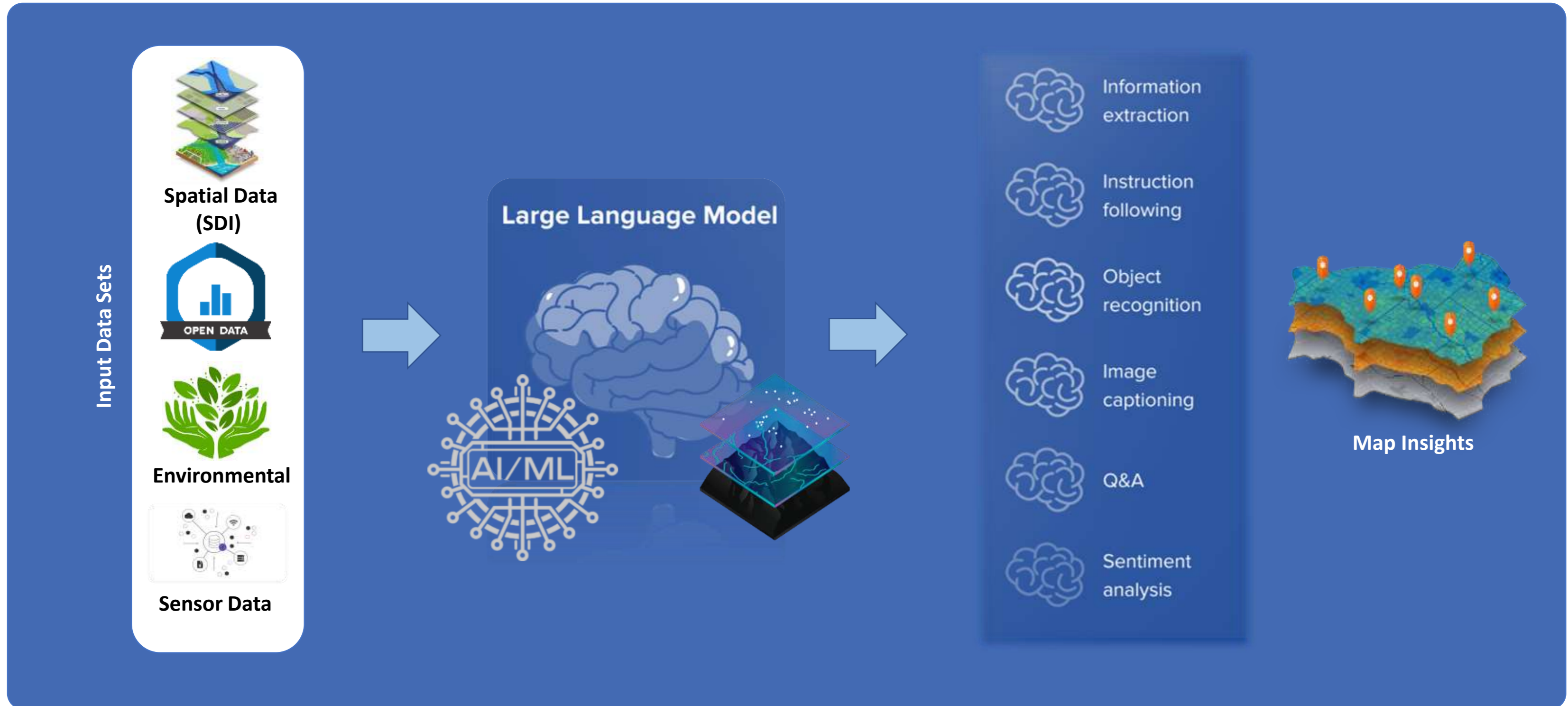


- Data Catalog
- Master Data
- Metadata
- Geospatial Datasets
- Standards

Scalable Cloud Infrastructure



- Prediction / Forecasting
- Corrective Actions
- Location Intelligence



Use Case: National Mapping – 50 Years of National Growth and Insights

- Education
- Health
- Transportation
- Communication
- Population
- Economy
- Environment
- Youth Empowerment
- Woman empowerment
- History
- Culture and Heritage
- Future Horizons



Processing & Conversion



Scheduling



Data Automation



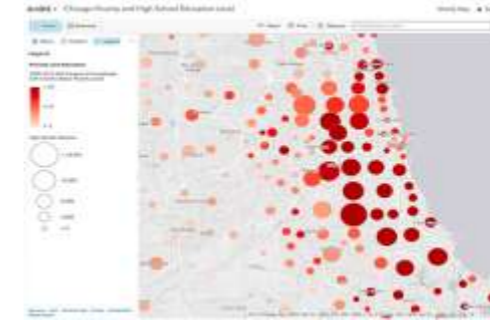
National SDI Database



Geo Processing



Geo AI Models



Geospatial Data Exploration



Maps & App



Documents / Multimedia (Photos & Videos)



Data Insights

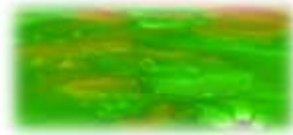
Use Case: Smart Data Acquisitions and Insights – Applying AI and Remote sensing



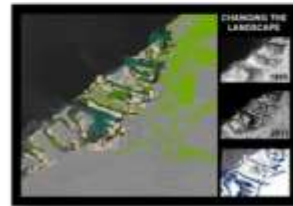
Community Facilities



Land Use / Land Cover



Analysis



Changing the Landscape



NOC



Construction Permits



Green Areas



Basemap / Planning



Objects Extraction

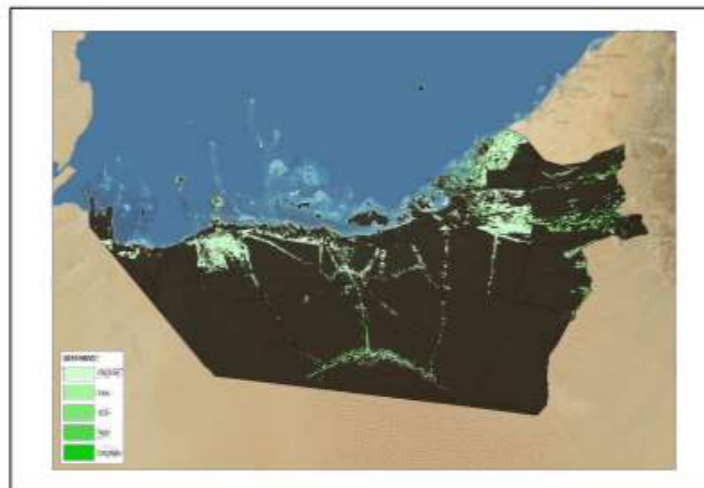
- # Cars
- # Buildings
- Building Height
- # Trees
- # Greenhouses
- Others

Indices Extraction

- % Agriculture Area
- % Crops Production
- % Not Used Areas
- % Trees
- % Healthy of Vegetation
- % Irrigated Areas
- % Soil

Land Use / Land Cover

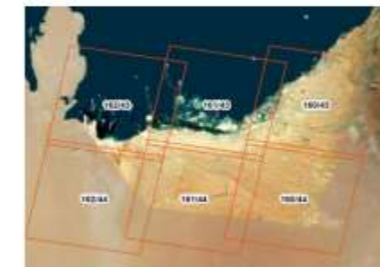
- % of Residential Area
- % of Empty Area
- % of Green Area
- % of Farm
- % of Desert
- % of Roads
- Other



The presented results is an analysis for 1988, 1998 and 2016, showing the increase or decrease of vegetation in each year, highlighting the health on each area.

A normal, healthy, plant will absorb visible blue and red light and reflect green visible light, which is why they appear green to our eyes. In addition to green visible light, plants also reflect Near-Infrared (NIR) as this type of light isn't actively used for the photosynthesis process. When a plant is weak or diseased, reflection of this NIR light is greatly decreased.

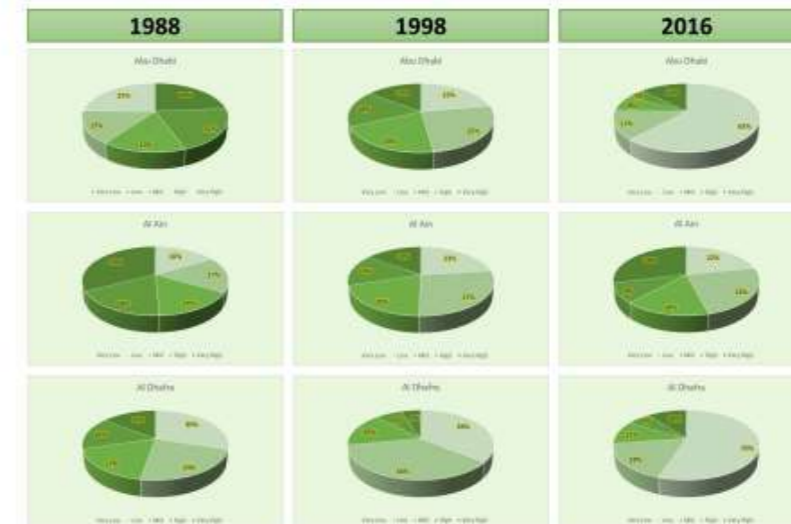
The normalized difference vegetation index (NDVI) is a simple graphical indicator that can be used to analyze remote sensing measurements, typically but not necessarily from a space platform, and assess whether the target being observed contains live green vegetation or not.



Landsat Sensors
Bands (MSS – TM – ETM)
432 - IR vegetation
541 - Agriculture
451 - Health Vegetation
543 - Vegetation Analysis

Bands (L8)
543 - IR vegetation
652 - Agriculture
562 - Health Vegetation
654 - Vegetation Analysis

Abu Dhabi Vegetation Change Detection (1988 – 1998 – 2016)

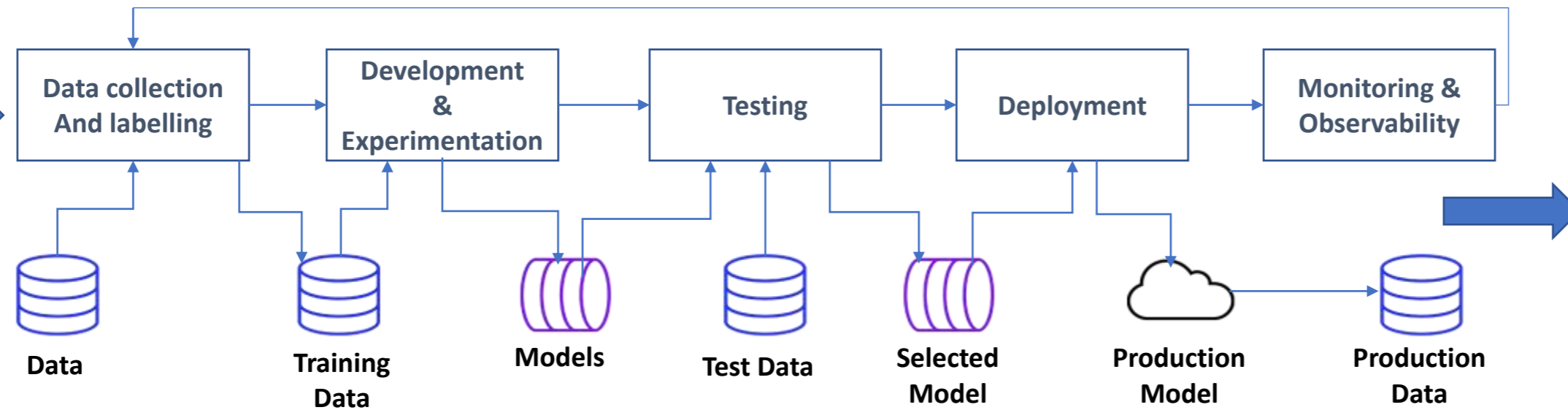


1988 Area (sqkm)	
Abu Dhabi	24,294
Al Ain	70,051
Al Dhafra	7,292
1998 Area (sqkm)	
Abu Dhabi	30,336
Al Ain	43,151
Al Dhafra	5,774
2016 Area (sqkm)	
Abu Dhabi	147,592
Al Ain	247,392
Al Dhafra	89,961

Use Case: Smart Data Acquisitions and Insights – Applying AI and Remote sensing

Inputs

- Vector Data
- Satellite Imagery
- Areal Imagery



Output



- Building
- Roads
- Green Area
- Land Use and Land Cover



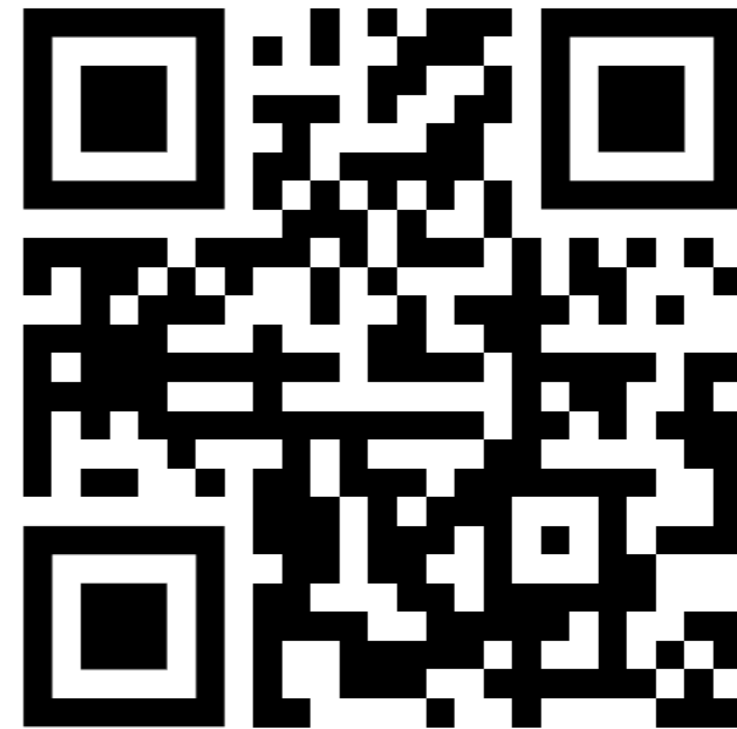
- **Define Clear Objectives and Use Cases**
- **Assess your data readiness**
- **Technology assessment**
- **Plan for the pilot (POC)**
- **Plan for Governance Framework**
- **Implement full solution**
- **Capacity building**



**By Applying the Science of Ware
We all can design a Sustainable World.**



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SUMMIT

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Thank you



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