GWF

GEOSPATIAL WORLD FORUM

CLICK TO KNOW MORE

SATSURE

EO Platforms: From Data Access to Data Insights

Downstream Space Summit, GWF 2024

Bangalore, India
London, UK
Philadelphia, USA

About SATSURE

Empowering decisions through satellite data

2017
Founded in 2017, Series A Co.

$20 MN
Funding raised

160
Employee strength

OUR INVESTORS

BARING PRIVATE EQUITY PARTNERS

promusventures

OMIDYAR NETWORK INDIA

TransUnion

HDFC BANK

ICICI Bank

ADB Ventures

kotak
Kotak Mahindra Bank

SATSURE
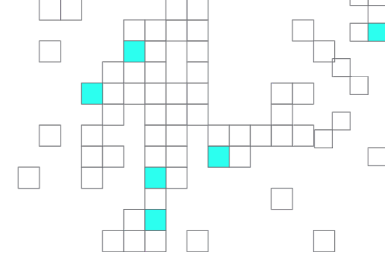
Full Stack Offering

Data Origin

KALEIDEO

Sending 4+1 low orbit satellites
with edge computing

Data Refinery

SATSURE SPARTA

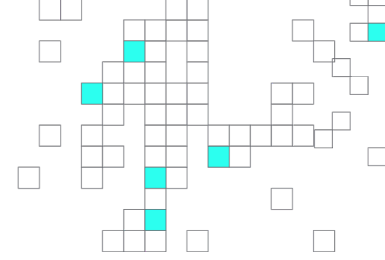Platform for application
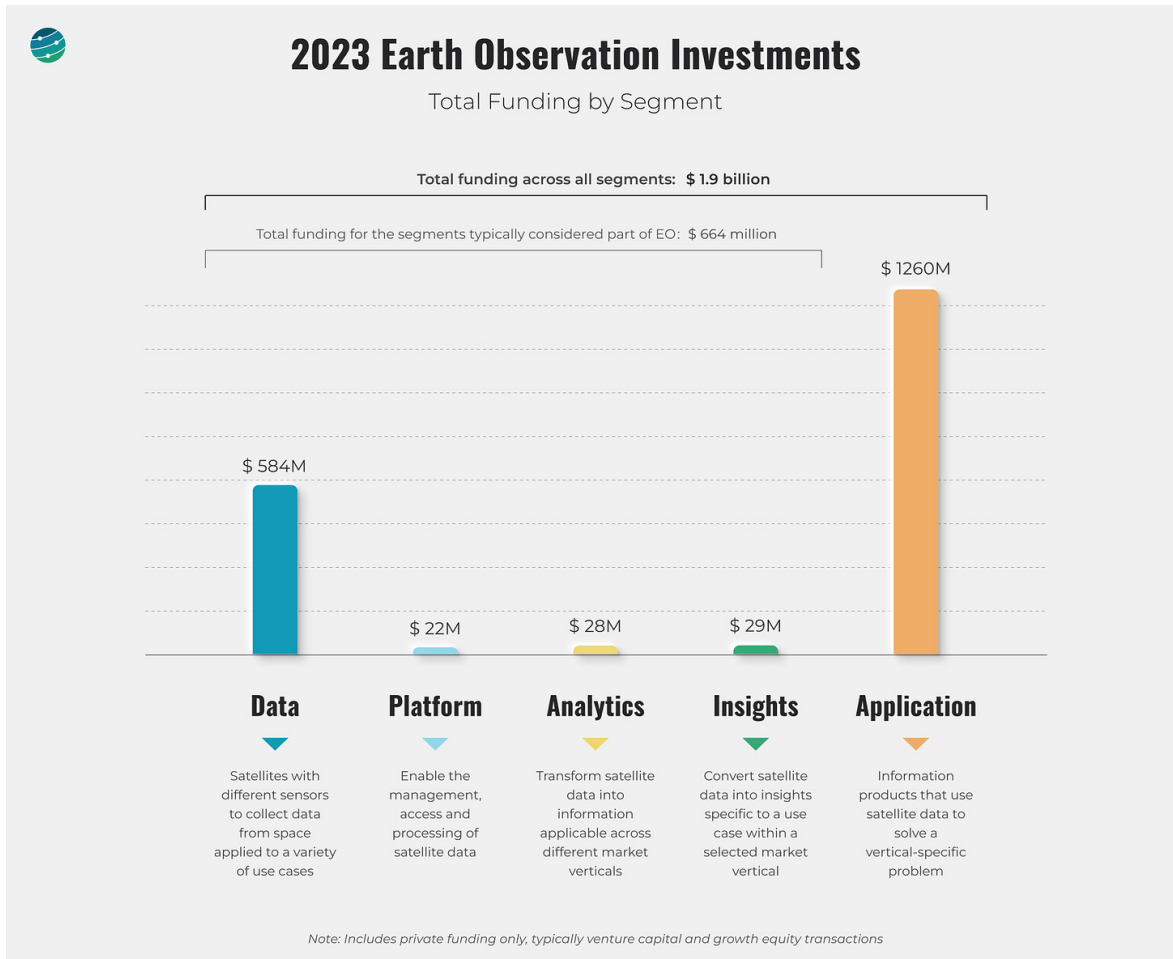ready data products

Data Solutions

SATSURE SKIES

Aviation

SATSURE SAGE

Agri Credit

The State of EO Platforms

2023 Earth Observation Investments
Total Funding by Segment

Total funding across all segments: $ 1.9 billion

Total funding for the segments typically considered part of EO: $ 664 million

$ 584M	$ 22M	$ 28M	$ 29M	$ 1260M
Data	**Platform**	**Analytics**	**Insights**	**Application**
Satellites with different sensors to collect data from space applied to a variety of use cases	Enable the management, access and processing of satellite data	Transform satellite data into information applicable across different market verticals	Convert satellite data into insights specific to a use case within a selected market vertical	Information products that use satellite data to solve a vertical-specific problem

Note: Includes private funding only, typically venture capital and growth equity transactions

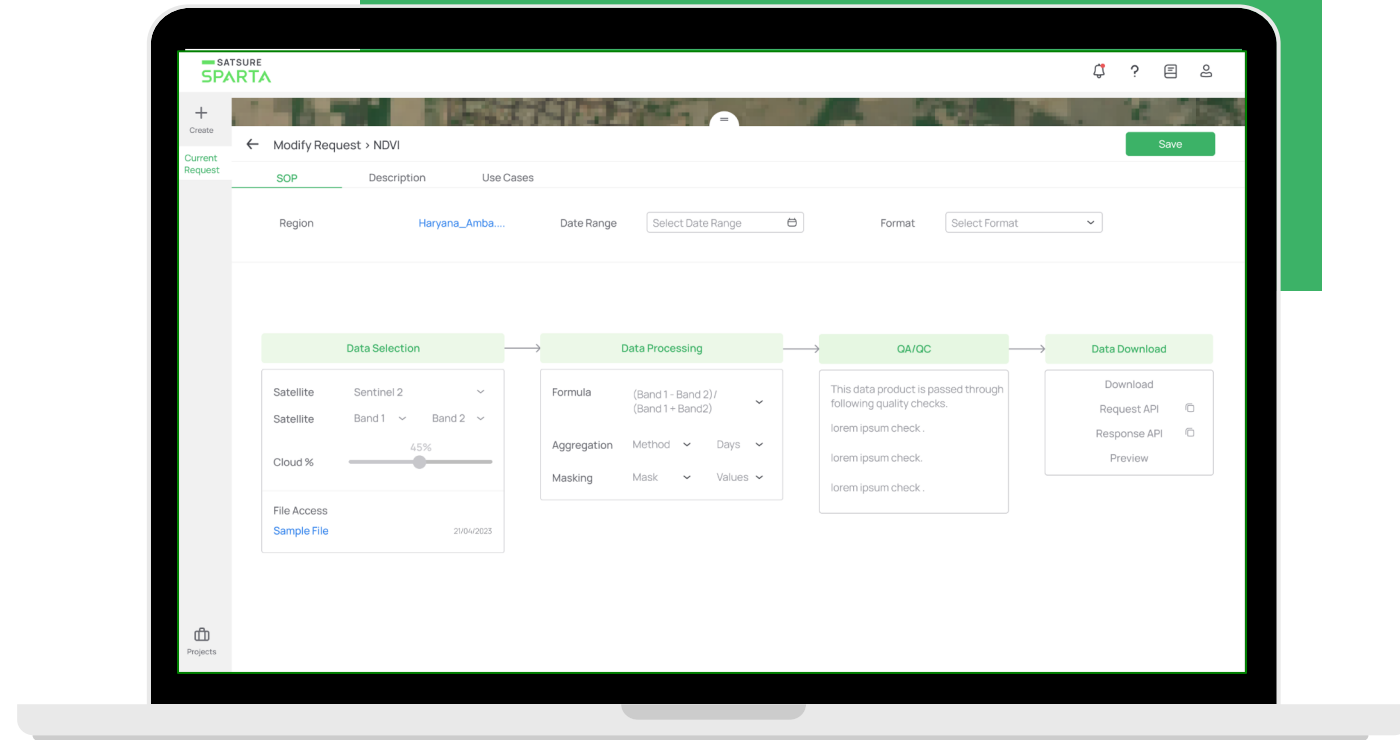January 2024   © TerraWatch Space   terrawatchspace.com

Only 3% of investment in the EO sector has gone towards platforms, which is not surprising because they are abstract and difficult to comprehend. They neither represent the raw materials nor do they represent the final product.

Quoting **Aravind Ravinchandran**:
"Earth observation is a sector that is built by tens of thousands of people and used by hundreds of millions of people. And, for the sector to grow, we need to make it easy for the former to explore and innovate with EO so that they can solve the problems of the latter".

SATSURE

SatSure Sparta

A one of its kind **Earth observation DataOps platform**, revolutionizes management of enterprise's spatial datasets.

- Seamlessly integrating data from diverse sources, it allows **efficient data processing** and enables generating **application-ready products** accessible to the organization through STAC APIs.

- Provides tools for efficient enterprise level spatial data operations management, while enabling the **optimal IT resource deployment and data quality**.

.

Tech stack | SatSure Sparta *(Containerised deployment)*

Visualisation: Leaflet, OpenLayers, QGIS

Data Connectors: WMS, WFS, STAC, OGC APIs

Processing: Jupyter, OPEN DATA CUBE, geomesa, kubernetes, Amazon SageMaker, PyTorch, databricks

Data Lake: PostgreSQL, accumulo, Apache Spark, Object Storage, snowflake
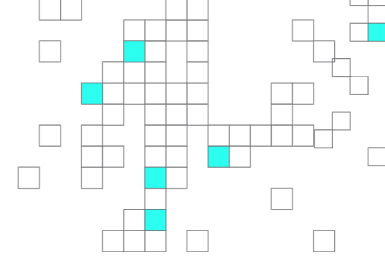
Customer Case Study

Power Transmission line operators spend a substantial amount of money on doing vegetation management. This case study is focused on how SatSure has created value for one large European customer through its Sparta platform.

Glossary of terms:
- **Anomaly** : If vegetation is within 2m radius of the cylinder around the conductor inside the RoW
- **High:** If vegetation is within 2m + 5m radius of the cylinder around the conductor inside the RoW
- **Low:** Any vegetation in RoW which is not Anomaly or High.
- **Fall Risk:** If the Vegetation is outside of RoW and is likely to fall.

SATSURE
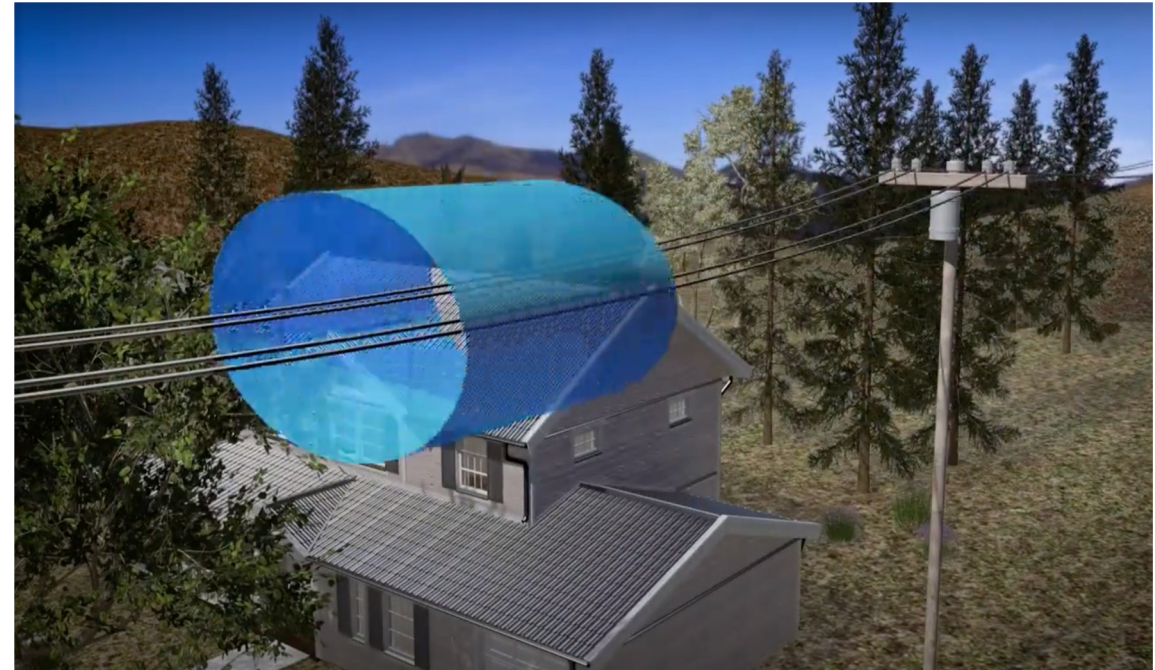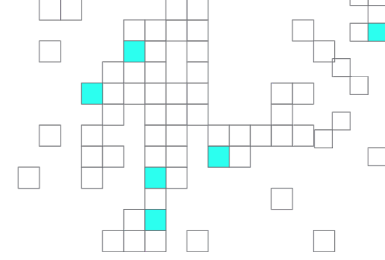
Existing Practices of the Client

01

The line on which the Vegetation Management has to be performed, is identified.

02

The regions are identified for which the required permissions both for flying the aircraft with LiDAR and carrying out the maintenance activity has been obtained.

03

Based on the availability of the aircraft, the LiDAR activity is carried out.

04

The 3-D point cloud is generated of the vegetation around transmission lines. This process of data collection can take upto weeks depending on the weather conditions & terrains.

05

The data is then processed, where manual cleaning & segregation of point clouds which are identified as vegetation & powerline has to be carried out.

06

Due to complexity of data collection & data processing this activity is carried out once in 3-6 years.

This approach cannot be used for maintenance planning, identifying the anomalies, maintenance work auditing and remote payment disbursement which typically happens once or twice annually.

Key Challenges Faced
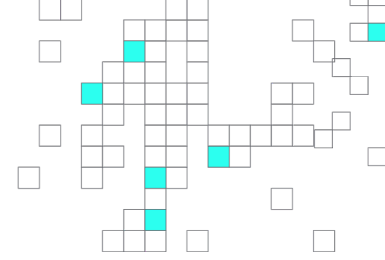
Unable to timely identify the vegetation that require immediate attention

Sub-optimal maintenance activities & field force productivity

Difficulty in carrying out remote & reliable auditing of maintenance activities performed by third party contractor due to lack of transparency.
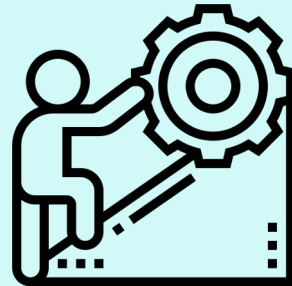
Lack of near real-time data to plan effective risk management

No automated work order management

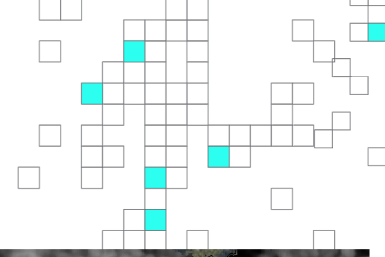Outages & Wildfires caused due to suboptimal vegetation management
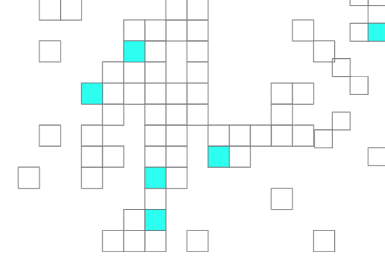
SatSure Sparta Solution

Automate identification of **vegetation growth near transmission lines & change in the growth at periodic interval (more increased frequency) using satellite remote sensing technology enabling efficient pruning and audit of the same**; maximising value per mile.

High resolution satellite images are ingested within the platform, where the model repository also resides. The images go through pipelines for pre-processing in an automated manner, followed by automated feature extraction like vegetation layer, tree layer, etc.

Reduction in Manual Inspections

Enable Larger Coverage Area, Higher Accuracy and Frequency of Monitoring Vegetation

Early Detection of Vegetation Growth Issues

Value Proposition

Cost Savings in Terms of Reduced Operating Expenses and Prevented Economic Loss and Penalty

Reduced Response Time to Incidents (Minimize Damage and Associated Costs)

Enhanced Customer Satisfaction (End User - Lower No of Outages/ Wildfires) or Minimize SAIDI and SAIFI and Wildfire Incidents

Data Processing Steps

The transmission / distribution line is mapped onto the recent high resolution satellite image

The vegetation mask algorithm is implemented on the hi-res satellite images for detecting vegetation in and around the ROW of the power line

Using stereo pair satellite images, height of the vegetation is determined
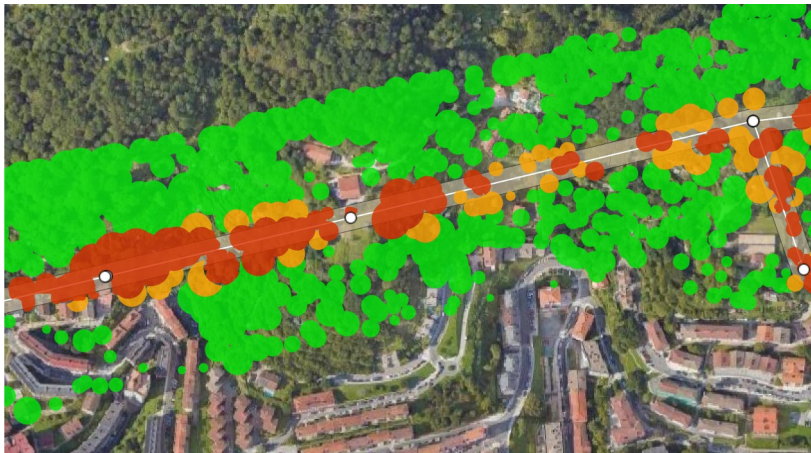
Based on the proximity, growth of vegetation, fire risk, and other business logic, vegetation risk categories are determined.
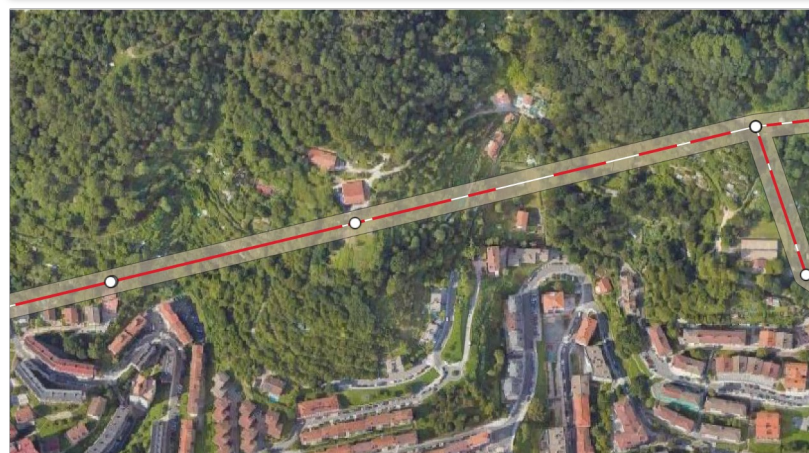
The length of the maintenance of vegetation is determined for quantifying the maintenance work that needs to be done
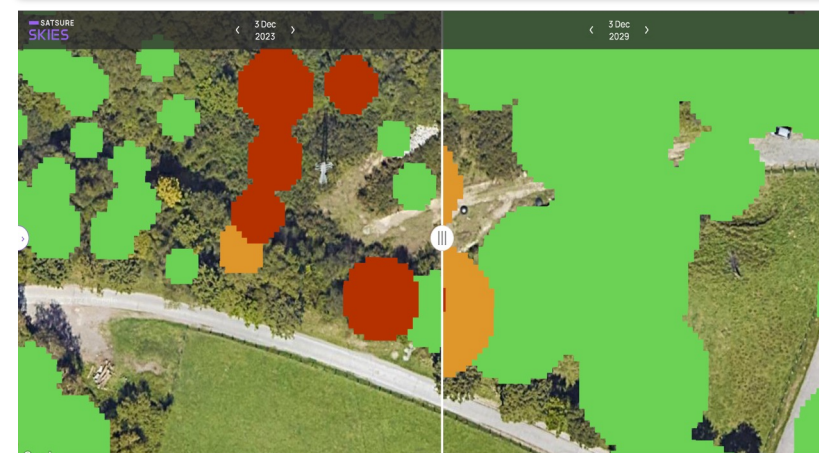
Audit the work completion & changes in risk in upcoming maintenance cycle to optimize budgeting
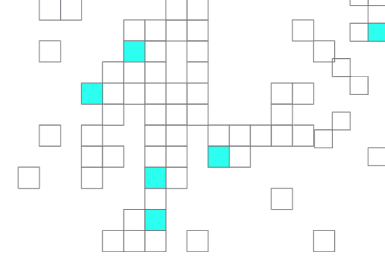
Integrate Land Use Layers

Automate Work Audit

View change in risk *for the region where work was performed*

Compare visually the change *in risk over different time stamps*

View status of the maintenance *work completion*

Work Prioritization & Allocation

Shortlist *based on* **the categories of risk & action type**

Bulk assign the maintenance task to the fieldmen *based on risk & action type*

View status of the maintenance at segment level

View total costing *of the maintenance work*

Add unit cost of maintenance *to be carried out*

ROI Delivered

Projected Case: Risk-based Trimming Strategy	
Parameter	**Amount**
Power line length	10000 km
Portion of network analyzed each year (one-year cycle enabled due to higher frequency and coverage capability)	100%
Risk-based Trimming Strategy leading to pruning of only high-risk vegetation; leading to reduction of carbon footprint, in line with SDGs.	-
Corridor width	25 feet
Mechanical Trimming Cost & Audit Cost (EUR per km) (Assuming an overall 20% reduction due to reduction of actual trimming work, 60% reduction in field visits due to removal of duplication of work during audit, cost reduction based on price by volume trimming)	576.8
Lidar Cost (EUR per km)	0
Total Cost of VM (EUR per km)	635
Reduction of Total cost of VM	42%
Savings (EUR per km)	457
Investment (EUR per km)	58
ROI	**687%**

Conclusion
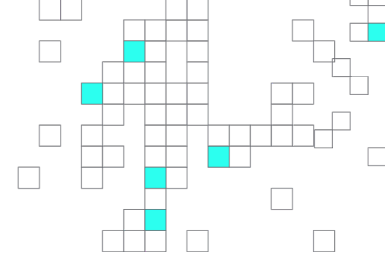
The SatSure way for productizing EO and Geospatial data:

- Focus on the customer needs and stop selling pixels

- Focus on the boring stuff like managing data and models

- Focus on solving problems that are big enough

THANK YOU

SATSURE