



Explore satellite imagery, drone data, and AI to transform geospatial decision-making

+ A practical guide

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Introduction

Facing today's challenges with remote sensing

In every industry, organizations face the pressing challenge of making data-driven decisions amidst vast, complex datasets. Geographic information systems (GIS) and remote sensing technologies are pivotal in addressing these challenges by providing powerful tools for data analysis and visualization. Whether you're a seasoned GIS user or new to remote sensing, you might be asking:

- How can I manage and make sense of vast amounts of imagery data?
- How do I justify the investment in remote sensing to stakeholders?
- How can I ensure our organization's workflows integrate seamlessly with these tools?

This eBook is your guide to overcoming these challenges with remote sensing and GIS. You'll see how industries like urban planning, natural resources, energy and utilities are transforming their operations. Learn practical steps to start leveraging these tools today, ensuring your organization stays ahead in the data-driven world.



What is remote sensing and how can it transform your organization?

Remote sensing collects data about the Earth's surface using satellites, drones, and sensors—giving you the ability to monitor, analyze, and respond to changing conditions without direct contact.

What makes remote sensing essential?



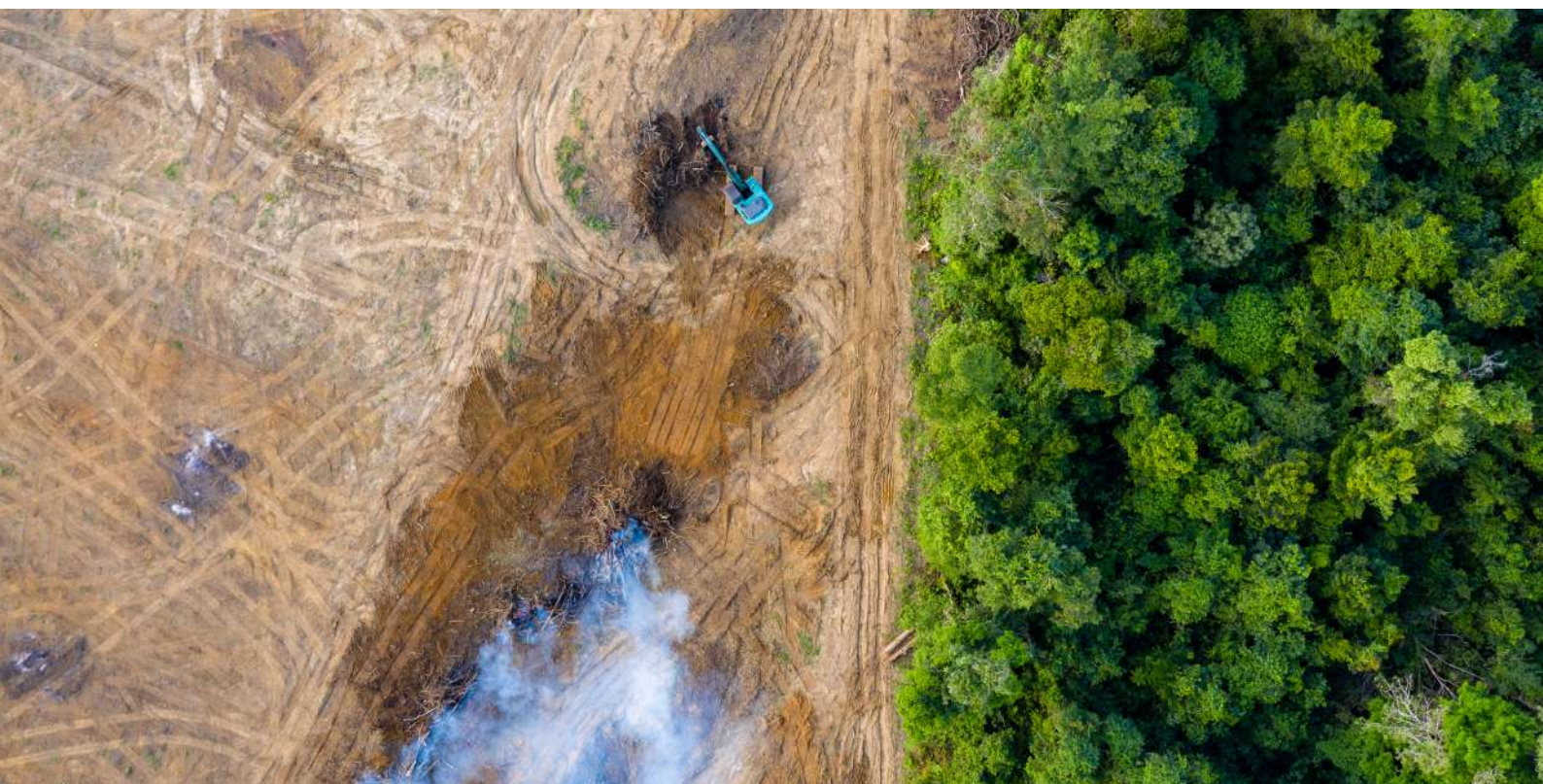
Real-time monitoring of critical assets and land use changes



Improved planning accuracy in industries like urban development and natural resources.



Rapid response in situations requiring immediate action, such as natural disasters or infrastructure breakdowns.



Real-world applications across industries

Esri's remote sensing solutions are currently driving innovation and success across a wide range of industries. Here's how:

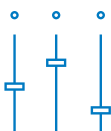
SECTOR	CHALLENGE	SOLUTION	RESULT
Plantation, forestry and agriculture	Difficulty in monitoring crop health, pest outbreaks, water stress and optimizing fertilizer.	Utilization of drone imagery to map crop conditions and early pest detection, analyze fertilizer needs, and optimize water usage on fragmented land.	Improved crop resilience, increasing productivity, and reduced risk.
Mining	Difficulty in obtaining accurate data for resource exploration, environmental compliance, safety enforcement, and mine closure monitoring.	Use drone mapping, LiDAR, and hyperspectral imagery to monitor facility conditions and land degradation, track site safety compliance, and identify land changes for mine closure.	Reduced environmental damage, improved operation effectiveness, and safer operational oversight.
Oil and gas	Challenges with pipeline leaks, land change monitoring, floods, and environmental risk in offshore/onshore blocks.	Integrate remote sensing with IoT sensors to detect anomalies, monitor land changes, mitigate flooding, and validate drilling activities in real time.	Faster incident detection, lower environmental risks, and improved ESG compliance for operators and regulators.
Urban planning and development	Challenges in managing rapid urban growth while ensuring sustainability. Uncontrolled expansion can lead to issues in inefficient land use, traffic congestion, and strain on public infrastructure and services.	Remote sensing technologies, particularly Sentinel-2 satellite imagery, can be utilized to monitor land use changes, guide infrastructure planning, and ensure zoning compliance through NDVI analysis.	Empower policy makers to anticipate growth patterns, manage resources efficiently, and design cities that are resilient, inclusive, and environmentally conscious.

SECTOR	CHALLENGE	SOLUTION	RESULT
Construction	Challenges in effectively monitoring progress, ensuring compliance with safety regulations, and managing on-site assets efficiently.	Drone imagery and LiDAR can be utilized to generate accurate 3D models of construction sites, provide up-to-date visual and spatial data to support progress tracking and safety inspections.	Project timelines are accelerated, safety compliance is enhanced, and overall operational efficiency is significantly improved.
Environmental monitoring	Deforestation, forest fire, monitoring climate change impacts, protecting ecosystems, and managing natural resources.	Combine satellite and drone data to monitor land cover changes, detect early fire outbreaks, and assess ecosystem health.	More timely interventions, data-driven conservation policies, and stronger law enforcement support.
Disaster response	Urgency to accurately assess damage rapidly, prioritize response efforts, and manage resources during emergencies.	The use of drone and satellite imagery data for leveraging GeoAI in automatically identifying damaged objects affected by disasters.	Faster, more effective disaster response with prioritized rescue efforts, efficient resource allocation, and accelerating decision-making processes.
Commercial	Site selection, branch performance visibility, land appraisal, and consumer behavior insights are often limited.	Use location intelligence to analyze traffic, competitor proximity, demographics, and spending patterns from spatial data sources, as well as using imagery for land appraisal and monitor development progress.	Smarter retail/branch expansion, targeted marketing strategies, and increased customer engagement and sales.
Defense and intelligence	Object targeting, border security, threat detection, tactical operations.	The utilization of surveillance drones supports the monitoring of target objectives. Terrain slope and elevation analysis derived from drone imagery enhance the effectiveness of field operations. Temporal data from Sentinel also drives change detection analysis across the border.	Enhanced decision-making capabilities and operational efficiency through timely intelligence, leading to improved national security and threat response.

Overcoming the challenge of data overload with smart tools

Managing large volumes of geospatial data can feel overwhelming, especially for organizations new to remote sensing. Esri's imagery and remote sensing suite simplifies this by filtering, processing, and visualizing only the most relevant data.

Best practices for managing geospatial data:



Custom data filters

Focus on specific areas or timeframes to avoid unnecessary data.



Real-time monitoring

Use satellite feeds and drone data to respond to events as they happen.



Data visualization tools

Identify trends with intuitive, interactive maps and graphs.



Streamline your data

Esri's ArcGIS platform provides advanced imagery and remote sensing tools, empowering organizations across industries to monitor assets, streamline operations, and adapt to changing demands with accuracy and efficiency.



Seamlessly integrate satellite imagery and drone data into your workflows

Integrating remote sensing into your organization's operations doesn't have to be complicated. Esri's scalable tools are designed to grow with your organization's needs, whether you are running small projects or managing complex infrastructure.

Simple steps for integration:



High-resolution satellite imagery for monitoring

Use satellite (Sentinel-2 or Landsat) data to monitor environmental changes, such as urban sprawl or water resource availability.



Drone data for infrastructure inspections

Capture real-time views of pipelines, powerlines, and construction sites for better asset management.

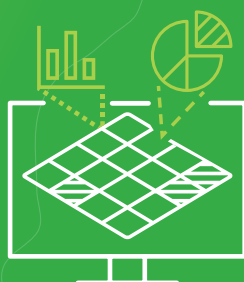


3D models for urban planning and construction

Create digital twins of infrastructure to visualize and optimize development projects.



Satellite real-time data imagery



Analysis and reporting



Creating digital twins for urban planning

Future-proof your operations with the latest advancements in remote sensing technology

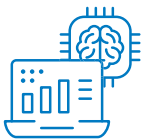
Remote sensing technology is rapidly evolving, offering new tool and capabilities that give organizations a competitive edge. Esri Indonesia provides access to these innovations to ensure you stay ahead.

Latest capabilities:



High-resolution satellite imagery processing

Analyze detailed imagery to detect changes in land use, water levels, or infrastructure conditions.



AI-driven predictive analytics

Use machine learning algorithms to forecast equipment failures or environmental risks.



3D modelling and digital twins

Build accurate, interactive models of cities, infrastructure, or assets for better planning and maintenance.



Best practices for data acquisition across industries

Choosing the right data sources is crucial to unlocking the full potential of remote sensing technologies.

Top tips for industry-leading data utilization:



Satellite imagery

Use Sentinel-2 and Landsat for large-scale monitoring. For more precise imagery, explore commercial satellite providers.



Drone data

Collect high-resolution drone imagery for detailed infrastructure inspections and Light Detection and Ranging (LiDAR) mapping.



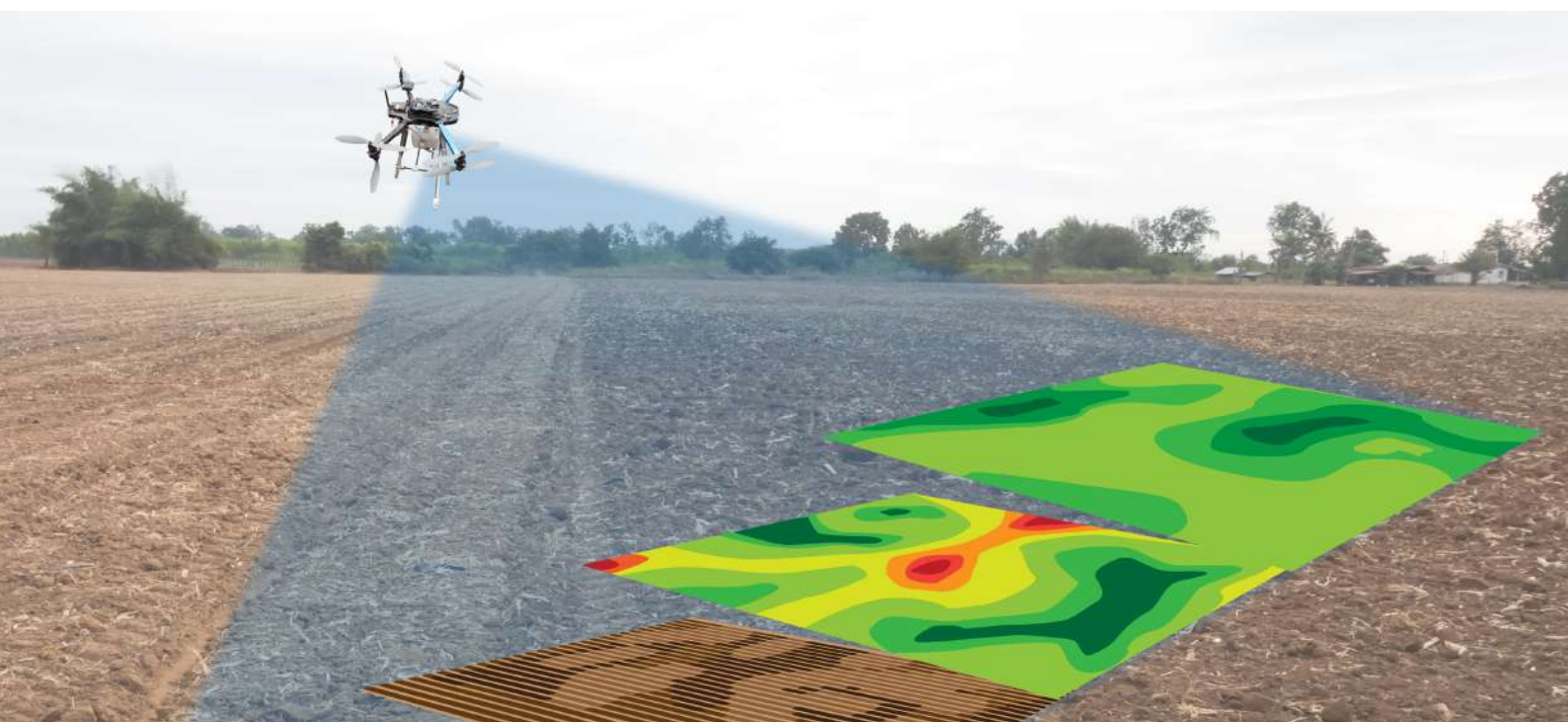
Environmental data

Integrate real-time weather, hydrological data, and forecasts into your workflows to optimize decision-making.



Cloud-based data management

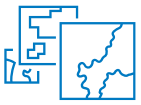
Store large datasets securely in the cloud for easy access and collaboration.



Leveraging AI and automation for smarter operations

AI-powered analytics and automation tools allow organizations to process large datasets quickly, providing actionable insights with minimal manual input.

Key benefits of AI in remote sensing:



Automated image classification

Identify patterns such as crop stress or equipment faults in imagery without manual analysis.



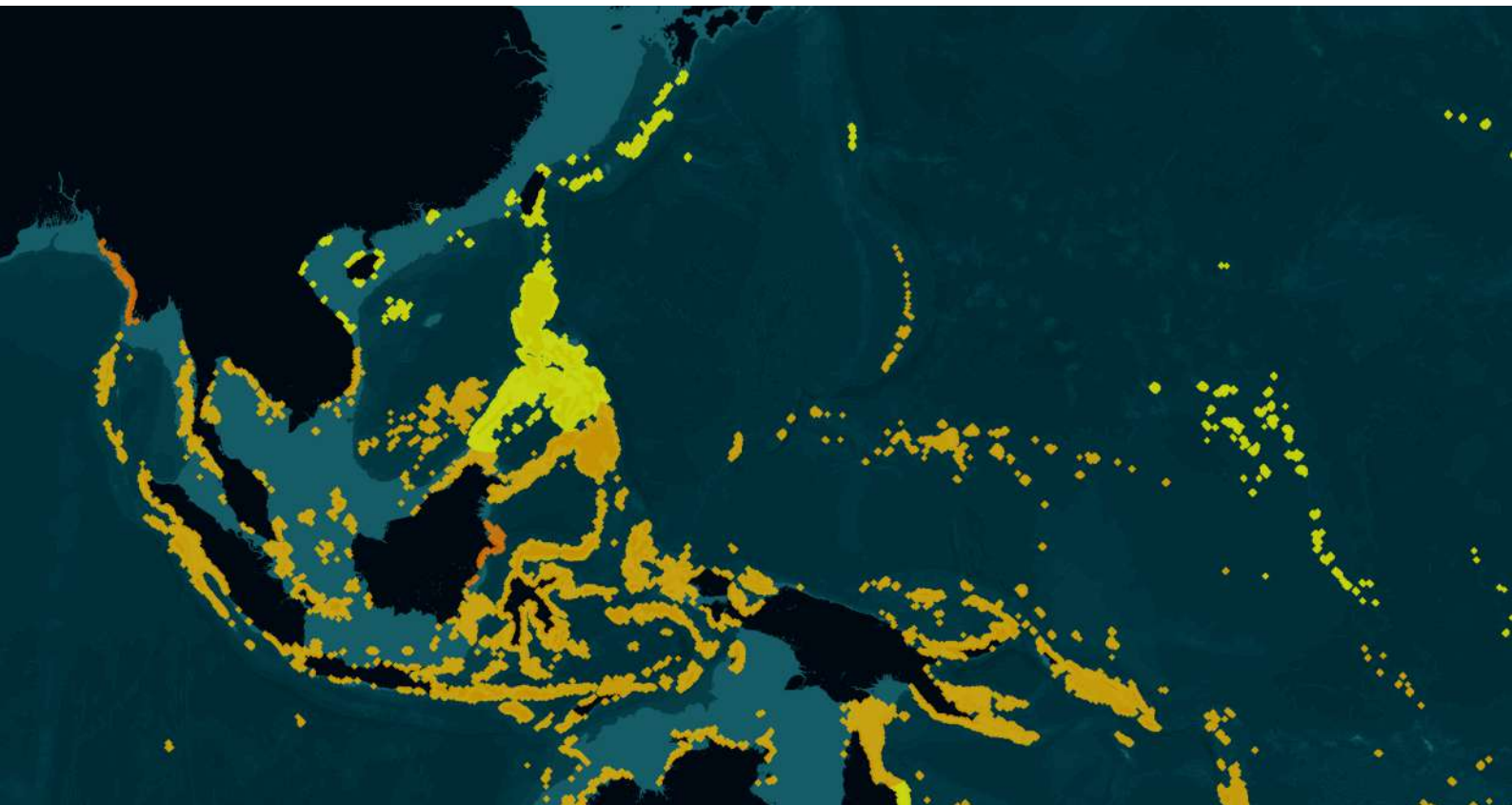
Predictive analytics

Forecast infrastructure failures and environmental changes with AI models.



Automated workflows

Streamline operations by automating repetitive tasks like data processing and reporting.



Training and support for continuous learning

While adopting new technology can present a learning curve, Esri Indonesia provides a comprehensive support network, to help users transition confidently and build their skills.

Available resources:



**Esri Indonesia's
GeoEnablement portal**
for tutorial videos
and courses



**Webinars and user
communities**
for professional
networking



Ongoing support
to ensure seamless
integration of geospatial
technologies into your
operations

This continuous education and support ensures your team stays at the forefront of innovation.



Key takeaways for maximizing the value of remote sensing

This eBook explores how remote sensing and imagery technologies can drive value across your organization, offering practical insights for industries such as urban planning, natural resources, energy, and many more.

By leveraging tools such as satellite imagery, drone mapping, and AI-powered analytics, you can enhance decision-making and streamline operations.

To help you get started, here are the key takeaways that can guide your organization in maximizing the value of remote sensing technologies:

1

Focus on clear objectives

Before working with large datasets, it's crucial to define the specific goals you want to achieve. Whether you aim to improve infrastructure monitoring, optimize agricultural productivity, or manage flood risks, clearly identifying your objectives will help you choose the right tools and data sources for your needs.



2

Choose the right data sources for your needs

With access to a range of high-resolution satellite imagery, multispectral data, and drone-collected insights, you can ensure your organization makes informed decisions. Leveraging data sources such as Sentinel-2 satellite data for urban planning or LiDAR, equipped drones for infrastructure inspections can significantly enhance the accuracy of your analysis.



3

Automate and innovate with AI-driven solutions

Automation and AI-powered analytics are transforming how organizations process geospatial data. By automating workflows such as image classification or applying predictive analytics to forecast risks, you can free up your team to focus on higher-value tasks. These technologies enable faster, more precise decision-making while reducing manual workloads.



4

Scale your capabilities with flexible, scalable solutions

As your organization grows, so do its data needs. Esri's imagery and remote sensing tools offer flexible solutions that can evolve with your operations—whether you are managing a small project or expanding to regional or national initiatives. With cloud-based storage and automated data processing, your team can seamlessly handle large datasets and increasingly complex analyses.



5

Stay ahead with continuous learning and expert support

Adopting new technologies is a journey, and Esri Indonesia supports this with a wide range of learning opportunities and community forums. Access training through the GeoEnablement portal, join webinars, or connect with other professionals to stay at the forefront of geospatial technology advancements. These resources ensure your team can continuously build expertise and make the most of remote sensing technologies.



Conclusion: Unlock the future with Esri's imagery and remote sensing tools

Esri's imagery and remote sensing tools offer unmatched capabilities to transform data into actionable insights.

From improving response times in disaster zones to optimizing urban growth, Esri's solutions empower organizations to tackle complex challenges with ease and precision.





Ready to start?



Find out more

Connect with our team to discuss your needs.



 Follow us on LinkedIn

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