

Earth Observation Hub Report

2024 industry trends and analysis

UP⁴²

**GEO
AWESOME**



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Foreword

In an era where our planet faces unprecedented challenges, the role of Earth observation (EO) data has never been more crucial. This report, based on a comprehensive survey conducted in Q4 of 2023, with participation from professionals across the globe, provides a deep dive into the evolving landscape of EO and geospatial technology.

2024 will be a watershed year for the industry, given the number of planned EO satellite launches and expected industry adoption. This report navigates the intersection of technological innovation and environmental stewardship, showcasing how professionals use EO data to meet the challenges of our time.

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About EO Hub

The EO Hub initiative, presented by UP42 and Geoawesome, serves as a central resource for all topics related to satellite data and Earth observation (EO). It is a knowledge database built to help policymakers, business leaders, geospatial experts, and enthusiasts to understand the transformative effects of EO.

The EO Hub has published more than 50 high-quality articles so far, and facilitates knowledge sharing and community engagement through written content, meetups, and panels featuring top figures in the field. This platform aims to be an open, inclusive, and global venue for discussions on EO use cases worldwide and the disruptive technologies shaping our industry's future.

[Visit EO Hub](#)

Executive summary

The data reveals a strong preference for optical EO data types. Radar, LiDAR, and thermal infrared also play significant roles. With 64% of participants utilizing EO data daily, open data platforms remain a popular choice, though nearly half of these users require high resolution imagery and therefore also depend on commercial data sources.

QGIS stands out as the preferred analytical tool across the board. A notable minority opts for custom in-house solutions to meet their specialized requirements, reflecting a strategic investment in bespoke tools for data processing.

Challenges highlighted by the survey include cost and data quality concerns, indicating a critical need for balance between affordability and the quality of data. Many respondents call for flexible and transparent pricing models, with a "pay for what you need" approach being particularly favored. Issues surrounding data availability and accessibility persist, despite technological advancements, suggesting a gap in the EO data platforms market that needs addressing.

Furthermore, a preference for local data processing points to potential hesitations around cloud computing, likely stemming from concerns over familiarity and security. This indicates a potential area for growth in cloud services adoption, provided these concerns are addressed effectively.

In summary, the EO industry relies on a range of data types and tools tailored to specific sectoral needs, with an emphasis on accessibility and resolution. The industry recognizes the necessity of commercial data sources for higher resolutions, but favors a mix of commercial and open data sources when possible. As the industry continues to evolve, these insights suggest that EO data providers and platform developers must continue to innovate, balancing cost with quality, while also enhancing user trust in cloud-based solutions.

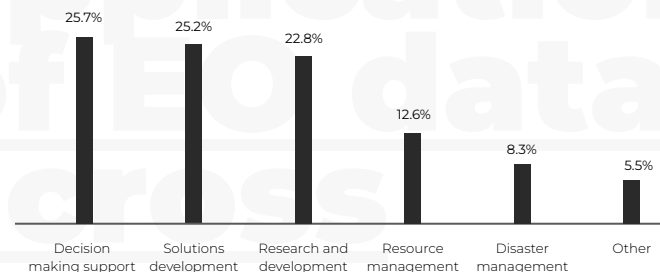
The applications of EO data across sectors

EO technologies enable stakeholders to forge a safer, more informed, and sustainable world

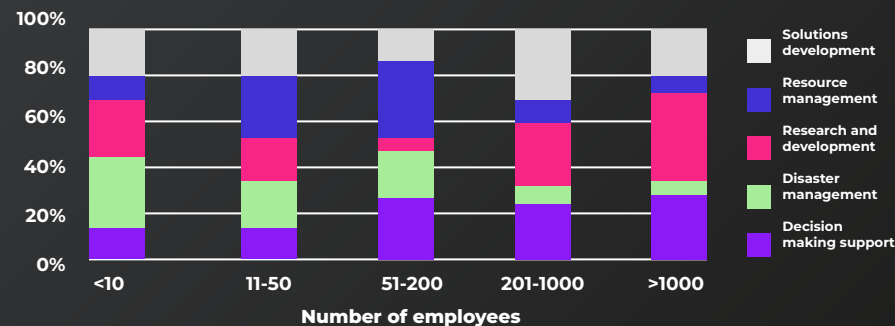
A quarter of respondents leverage EO data for strategic decision making, shaping policies with precision and foresight. A nearly equal portion applies this data to develop innovative solutions for complex environmental and logistical challenges, demonstrating a commitment to progress and sustainability. The third-largest group primarily uses data for research and development.

We see wide variation in how organizations of different sizes use EO data. Organizations of less than 10 people are most likely to use data for disaster management, while those of 1000+ people are most likely to use data for research and development.

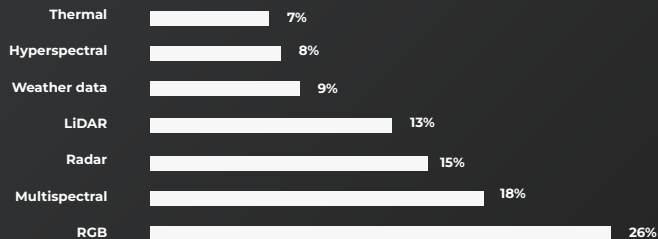
How does your organization primarily use EO data?



How does EO data usage differ based on organization size?



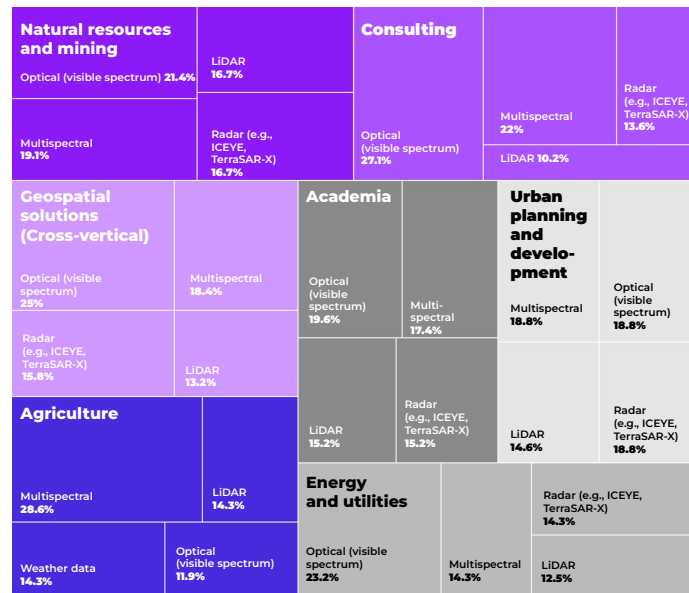
Types of EO data



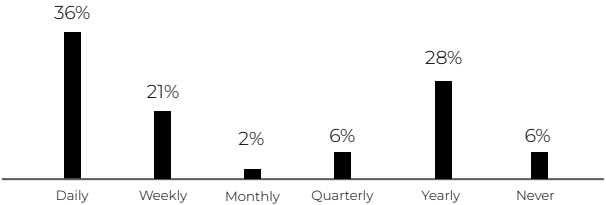
The survey reveals a clear preference for RGB and multispectral data, which together form the backbone of EO imagery for nearly half of the surveyed entities. This widespread adoption reflects the ease of use and interpretability that these data types offer, making them indispensable tools for a broad range of applications.

Despite the complexities of radar and LiDAR technologies, their robust capabilities have spurred widespread adoption, with these data types being heavily utilized across major sectors.

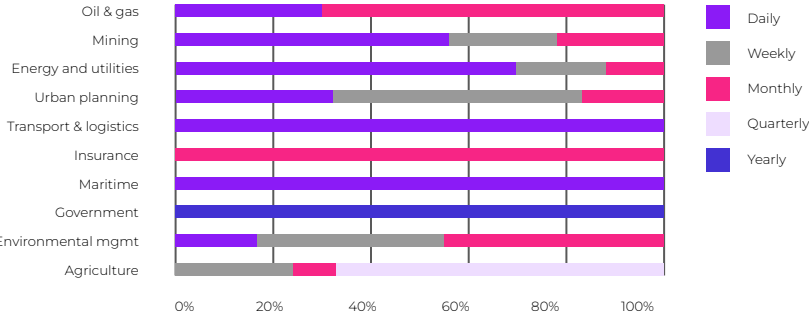
Top 4 EO data types among various industries



How often do you use EO data for professional purposes?



How often do different sectors use EO data?



Frequency of use

Results show a broad frequency of usage across different sectors

36% of respondents engage with EO data on a daily basis, underlining its integral role in their daily workflows. Weekly usage is reported by 21%, pointing to regular reliance for various tasks. 28% use satellite data annually, suggesting a strategic utilization for specific, perhaps large-scale planning or analysis.

A closer look at sector-specific data usage reveals that daily and weekly access to EO data is prevalent in sectors with operationally intensive workflows. The government sector, on the other hand, stands out for its yearly use of satellite data, hinting at a possible oversight or regulatory function of the data rather than direct operational application.

Spatial resolution

Around 42% of users require EO data with resolution higher than 50 cm

Which spatial resolutions do you use the most in your work?



The survey reveals a keen focus on precision within the professional community. A significant 42% of respondents prioritize high resolution imagery of 50 cm or better, indicating the critical need for detailed visual information.

14% of respondents work with drone data along with satellite imagery.

Size of the organization vs spatial resolution



The survey responses suggest that smaller organizations work more with higher resolution optical data than large organizations with over 1000 employees.

Commercial vs open data

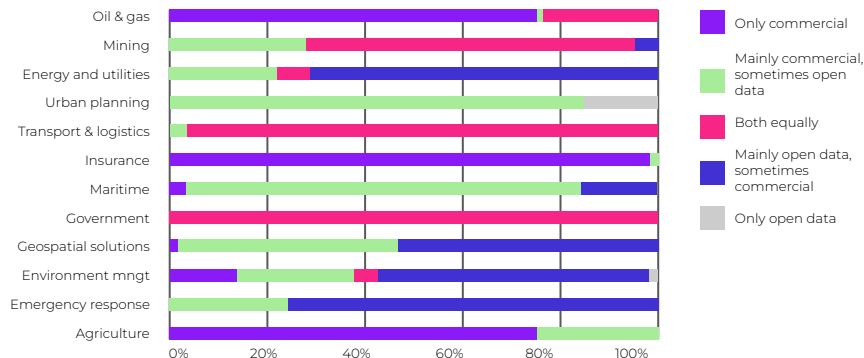
83% of respondents use commercial EO data

Do you use open data and/or commercial data in your work?



Although open data is still a primary data source for some, responses show a significant inclination towards commercial satellite data, with 83% of respondents incorporating it to some extent in their workflows. This suggests that the advanced capabilities and specific data offerings of commercial providers are integral to the operations of a vast majority of users.

Open data vs commercial data by sector



The sectoral analysis within the survey reveals a nuanced landscape where almost all sectors appear to utilize a blend of data types. This indicates a versatile approach to data application across industries, with organizations tailoring their data sourcing to match the demands of their projects or operational goals.

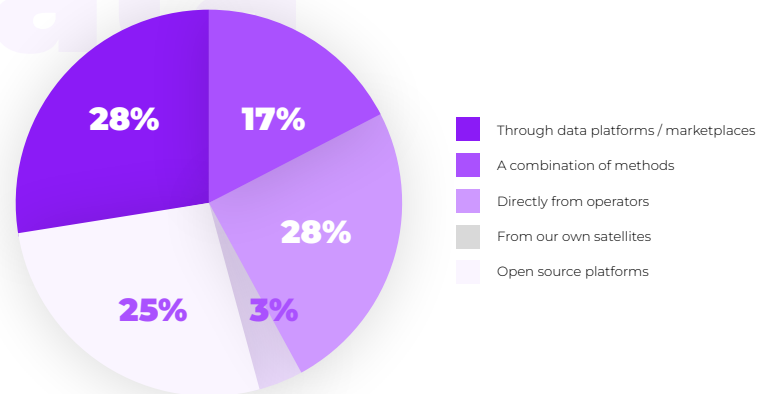
Accessing EO data

28% of respondents access EO data using platforms/marketplaces

The survey reveals diverse preferences for EO data access: 28% of users engage directly with satellite operators, while an equal percentage utilize data platforms or marketplaces, showing a split in data sourcing strategies. A notable 52% leverage these combined third-party services.

EO data marketplaces are still relatively new, with usage expected to increase in the coming years.

How does your organization typically access EO data?



Budgets for EO data

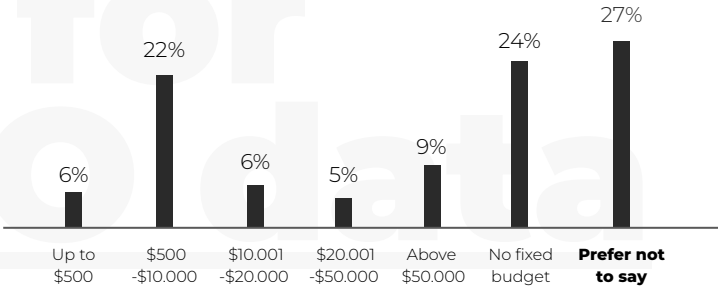
22% of organizations allocate up to \$10,000 yearly for EO data

The budgetary allocations for procuring remote sensing data present a varied picture, reflecting an emergent stage in the integration of EO data into organizational operations. While a notable 24% of entities operate without a fixed budget, there is a discernible commitment from others, with 22% setting aside up to \$10,000 annually for this purpose.

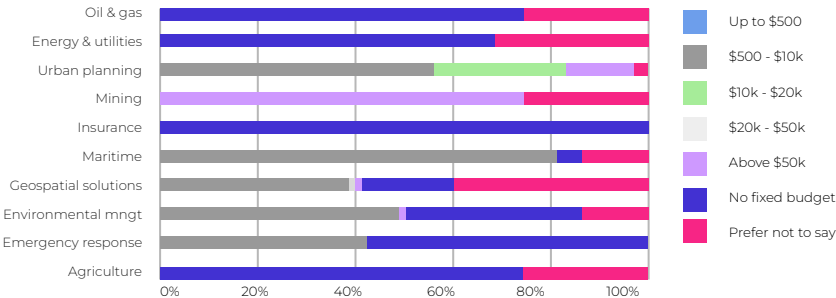
The spectrum of investment levels further reveals that only a small fraction, 9%, allocate over \$50,000, indicative of more mature or data-intensive operations. However, with 27% choosing not to disclose their budgets, there is an element of ambiguity that underscores the private nature of strategic investments in EO data.

Despite this, the presence of specified budgets, even if not substantial, suggests a growing recognition of the value that EO data can contribute to a range of organizational functions.

What's the typical yearly budget you work with for procuring remote sensing data?



Sector vs budget for EO data



EO tools

25% of respondents depend on QGIS to process EO data

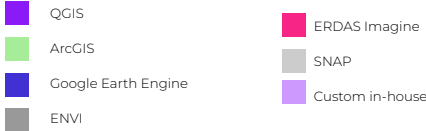
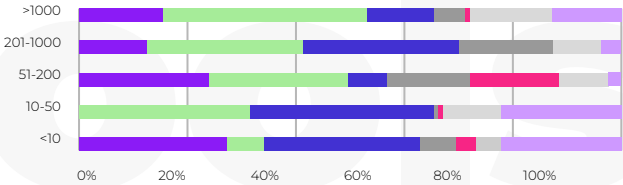
Tools to Process EO Data

QGIS 25.1%	ArcGIS 19.7%	SNAP 12.9%	Custom in-house tools 8.1%
	Google Earth Engine 19%		ENVI 10.5%
			ERDAS Imagine 4.7%

QGIS, an open-source tool, is the preferred choice among industry professionals. All respondents with a yearly budget over \$50,000 opt for QGIS, indicating that its adoption is driven by its effectiveness and capabilities, rather than merely budgetary considerations.

A tailored approach is also evident, with 10.5% of professionals developing bespoke in-house tools.

Size of organization vs tool

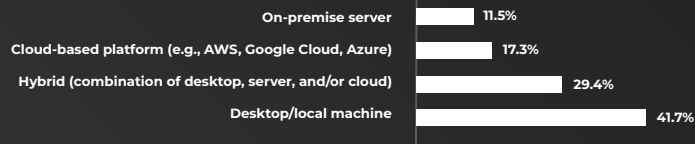


Processing environment

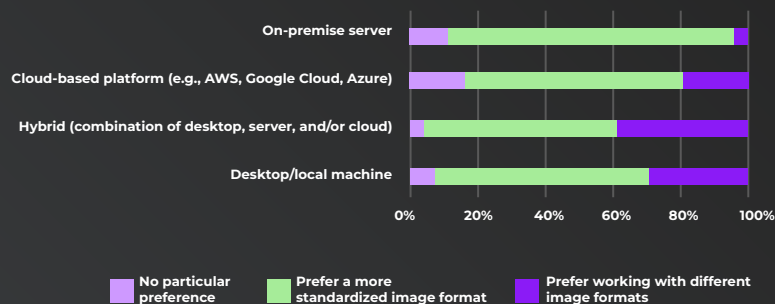
41.6% of the respondents utilize their local machines for data processing

In the realm of EO data processing, a significant proportion of professionals, 41.6%, prefer using desktop or local machines. Notably, a high investment in EO does not necessarily correlate with cloud adoption, as 40% of those investing over \$50,000 annually stick to local solutions. Cloud platforms like AWS or GCP are utilized by only 30% of respondents, possibly due to concerns over platform familiarity or data security.

What environment does your organization primarily use to process and analyze EO data?



Processing environment by image format preference



Platform features

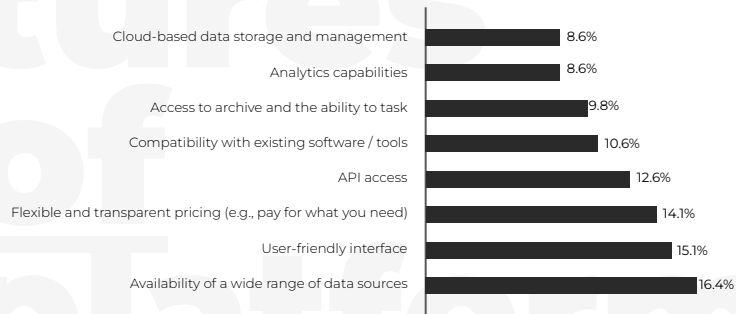
23.2% of respondents highly value seamless integration capabilities in EO data platforms, emphasizing API access and compatibility with existing software and tools

The survey results show a clear demand for accessibility and an optimal user experience. A significant 16.4% of respondents look for a platform offering a wide range of data sources, underpinning the need for diverse data to support varied applications. User-friendly interfaces are also a key priority for 15.1% of users, highlighting the importance of ease of use.

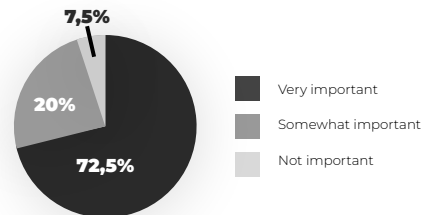
Flexibility in pricing models, such as pay-per-use, is critical for 14.1% of the survey participants, reflecting a desire for cost-effective solutions that align with their usage patterns. Additionally, the majority, at 72.5%, consider access to open data sources as very important, indicating a strong preference for platforms that support open initiatives and facilitate broader data accessibility.

Integrating these features with existing systems is important for around 23.2% of users, emphasizing the need for API access and compatibility. These findings suggest that users value platforms that blend expansive data availability with a seamless and cost-effective user experience, while also enabling efficient integration with their current workflows.

What are the ideal features you seek in a geospatial data platform?



How important is it for a geospatial data platform to provide access to open data sources?



Industry challenges

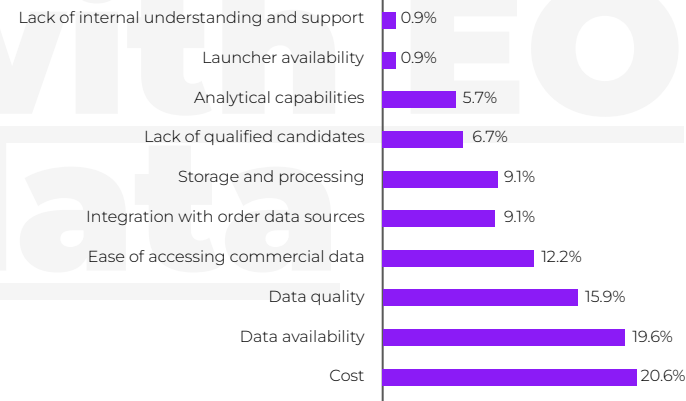
Cost associated with accessing EO data presents a significant challenge for the industry

Cost is cited by over 20% of organizations, reflecting the tension between the need for quality data and budget limitations. Nearly as many respondents report difficulties with data availability and commercial data access, indicating a need for more accessible data sources.

The market has responded with varied pricing models, such as pay-as-you-go and subscriptions, yet around half still seek more transparent and flexible pricing. Despite advancements, 35% of users struggle with the complexity of accessing commercial data, leading to the rise of platforms that simplify purchases.

In essence, organizations value a wide variety of easily accessible data sources and user-friendly platforms.

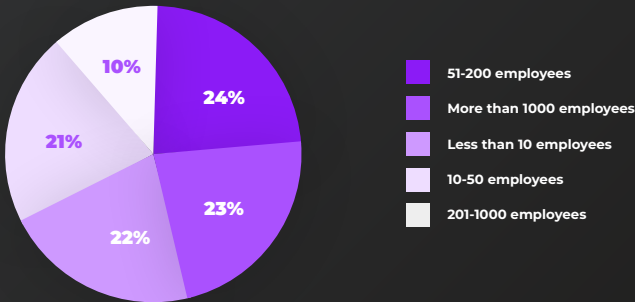
What are the main challenges your organization faces when working with satellite data?



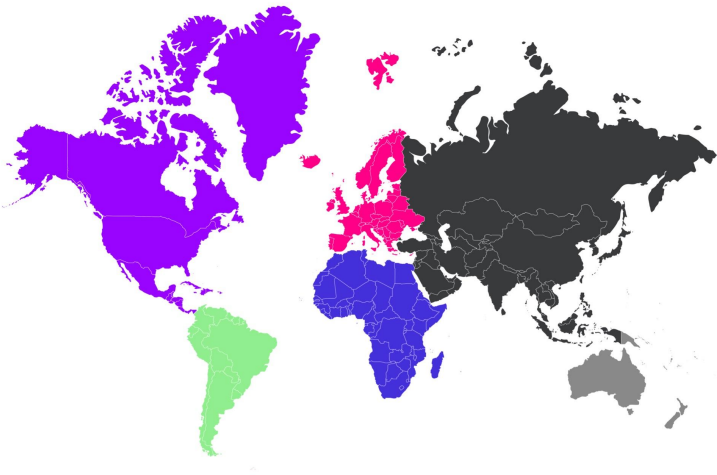
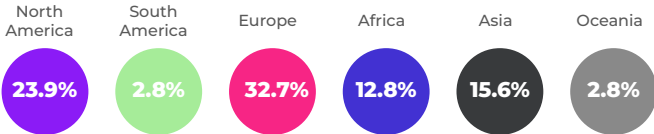
Analysis of respondents

The survey was conducted between September 10, 2023, and December 15, 2023, to explore trends in the EO industry. The survey gathered insights from 106 participants representing various countries, organizations, roles and sectors.

Organization size based on number of employees



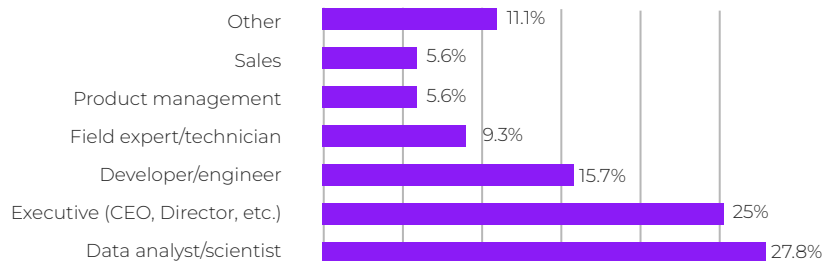
42.25% of respondents are from the United States, Germany, Canada, and India



Respondent roles

36.2% of the respondents hold management roles, while 63.9% are in technical and engineering positions

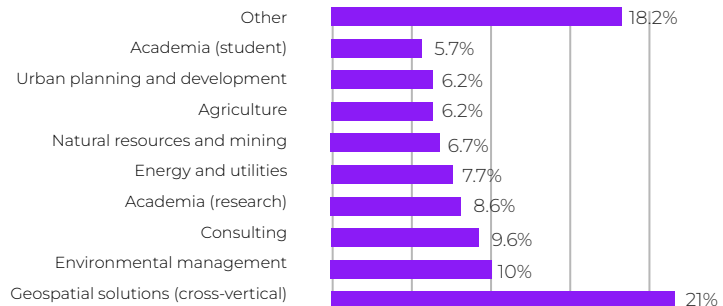
Respondents by employee role



Respondent industries

Respondents represent a diverse range of industries with a geospatial dominance

Respondents by industry



about

UP42 was founded in 2019 with a clear purpose: to provide quick and easy access to geospatial data and analytics. The developer-first platform grants access to the world's leading providers of optical, radar, elevation, and aerial data, all in one place, and offers flexible APIs and a Python SDK to help build and scale solutions. Users can search the catalog for existing imagery, or task a satellite to capture a desired area. Whatever the use case, UP42 is the one-stop-shop for all geospatial data needs.

[Visit UP42.com](https://up42.com)

about

Geoawesomeness.com serves as a vital hub for the geospatial community, offering a rich repository of knowledge and a platform for discourse on the latest advancements in the field. As a digital nexus for industry news, in-depth articles, and expert commentary, it empowers professionals with the insights needed to navigate the complex landscape of geospatial technology. Through its commitment to sharing expertise and fostering community engagement, Geoawesomeness.com continues to be an essential resource for enthusiasts and experts looking to stay at the forefront of Earth observation trends and innovations.

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