

State of the geospatial industry 2025





Contents

01

Page 5

Industry
challenges

02

Page 10

Trends and
opportunities

03

Page 20

Technological
advancements

04

Page 26

Training and skill
development needs



Executive summary

In 2025, the geospatial industry is poised to experience significant advancements driven by the adoption of digital technologies, increased investment in reality capture solutions and the integration of cloud-based technology.

Key trends include the move to automated and AI-driven processes for faster data analysis and decision making, the rising importance of cloud solutions for easier collaboration and data sharing, and the growing use of reality capture technologies like SLAM and terrestrial laser scanning for quicker real-world data collection.

Despite these advancements, the industry faces challenges, mainly a shortage of skilled personnel and resistance to digital transformation. Addressing these challenges will require efforts in training and education, initiatives to simplify new technologies and continued innovation to further integrate and streamline workflows.

Purpose and methodology

This report was created from the **Trimble Geospatial Annual Industry Survey 2025** as well as in-depth interviews conducted with top leadership in the Trimble organization. The survey included responses from geospatial professionals from around the world, conducted online in May 2025. Supplemental industry research is cited and linked.





CHAPTER 01 Industry challenges



CHALLENGE

Personnel shortages

The surveying profession and the construction industries are currently grappling with a significant challenge:

a shortage of skilled personnel, compounded by an aging workforce and lack of experienced professionals entering the field. Many seasoned surveyors are approaching retirement, and the pipeline of new, qualified surveyors is not sufficient to meet demand. New entrants need to acquire the necessary skills and experience to produce high-quality work, which can lead to errors and inefficiencies as they learn.

In the United States alone,

41%

of the construction workforce from before 2020 is expected to retire by 2031.

McKinsey, June 2020





PREDICTIONS

The shortage of skilled labor highlights the urgent need for proactive training initiatives, with companies investing in comprehensive programs to quickly upskill new hires.

INSIGHTS

There is widespread concern over the lack of skilled surveyors, emphasizing the need for better training programs to improve workforce competence and efficiency and build a sustainable pipeline of professionals.



of workers across the construction industry value career plans to pursue future training, education, or credentialing opportunities, 17 percentage points higher than the national average.

McKinsey, October 2022



CHALLENGE

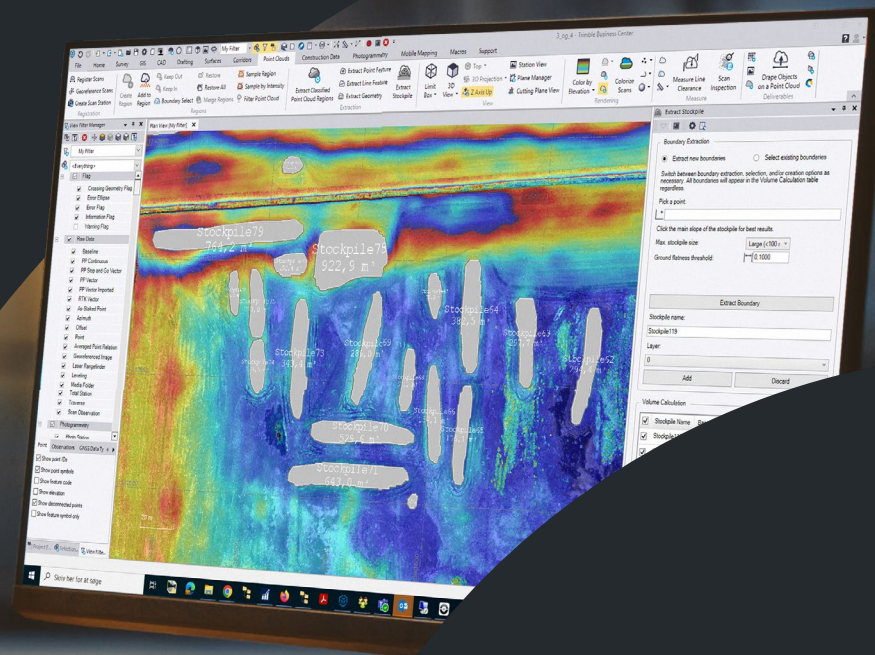
Digital transformation resistance

Another significant challenge the industry faces is the slow adoption of digital workflows.

Courtesy of LE34

Despite the clear benefits of digital transformation, many companies and industries are resistant to change. This resistance often stems from the complexity and unfamiliarity associated with new technologies, including reality capture, BIM and model-based workflows and cloud solutions.

Many owners, clients and other stakeholders in construction and surveying are accustomed to traditional methods or are required by law to include a paper copy, and may find the transition daunting and the initial cost too high.





PREDICTIONS

The industry will likely see a gradual but steady shift toward digital workflows, driven by competitive pressures and regulatory requirements.

As the benefits of digital transformation — such as improved efficiency, accuracy and data management — become more apparent, geospatial technology users will face growing incentives and, in some cases, mandates to adopt these technologies.



34%

of construction businesses reported that they lacked the budget to make investment in new technologies.

Despite this, businesses that invest in new technologies reported strong returns, with the use of an additional technology associated with

▲ 1.4%

higher revenue growth,

▲ 1%

higher profit growth and more projects delivered on time and under budget.

Deloitte, 2024

INSIGHTS

A significant portion of the industry is still hesitant to adopt digital solutions.

However, as more companies successfully implement digital tools and demonstrate their value long-term, it is expected that resistance will decrease. Technology providers can offer clear, tangible examples of the benefits of digital transformation, that along with targeted training and ongoing support can help alleviate these concerns and encourage broader adoption.



CHAPTER

02

Trends and
opportunities



OPPORTUNITY

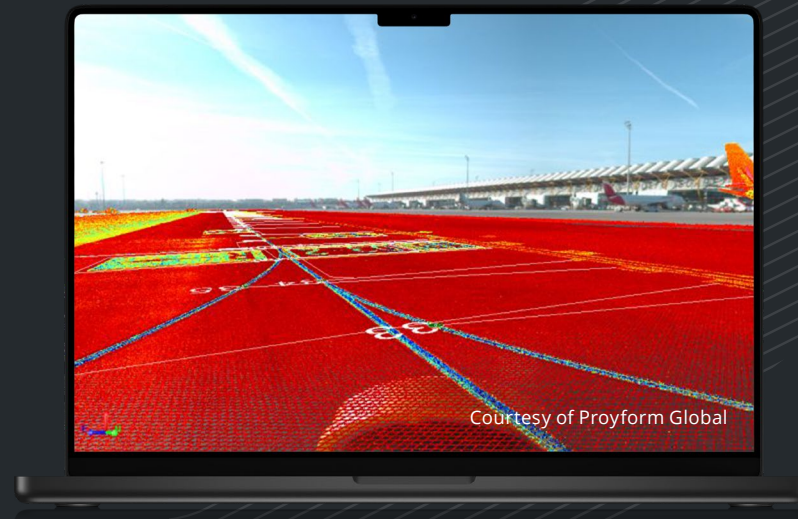
Expanding and maximizing reality capture data

In the geospatial industry, there is a growing emphasis on reality capture technologies, particularly SLAM and terrestrial laser scanning.

These technologies are transforming how spatial data is collected and utilized, enabling precise and efficient mapping of complex environments. Reality capture technologies stand out for their ability to capture point clouds of an object with a high level of precision and density, while easily integrating with imagery data to provide an intuitive experience of the environment in question.

The increased focus on reality capture has spurred significant investments in these technologies. Manufacturers and technology providers are dedicating substantial resources to develop and enhance tools that improve the precision and speed of data capture. This investment is driven by the recognition that rich spatial data is essential for a wide range of applications and workflows, and accurate data collection can lead to better project outcomes and efficiency.

When using control points, scans can also be precisely georeferenced, making reality capture technology invaluable for indoor and obstructed environments where traditional GPS is ineffective to establish the reference frame.





“Reality capture is the idea of using scanning and visualization technologies to rapidly capture and display **detailed, accurate and intuitive** 3D representations of the real world. As the technology becomes easier to operate and more tools for online collaboration become available, professionals from a wide range of industries are discovering the benefits of using reality capture to drive **faster and smarter decision making.**”

— Gareth Gibson, mapping and GIS director, Trimble



PREDICTIONS

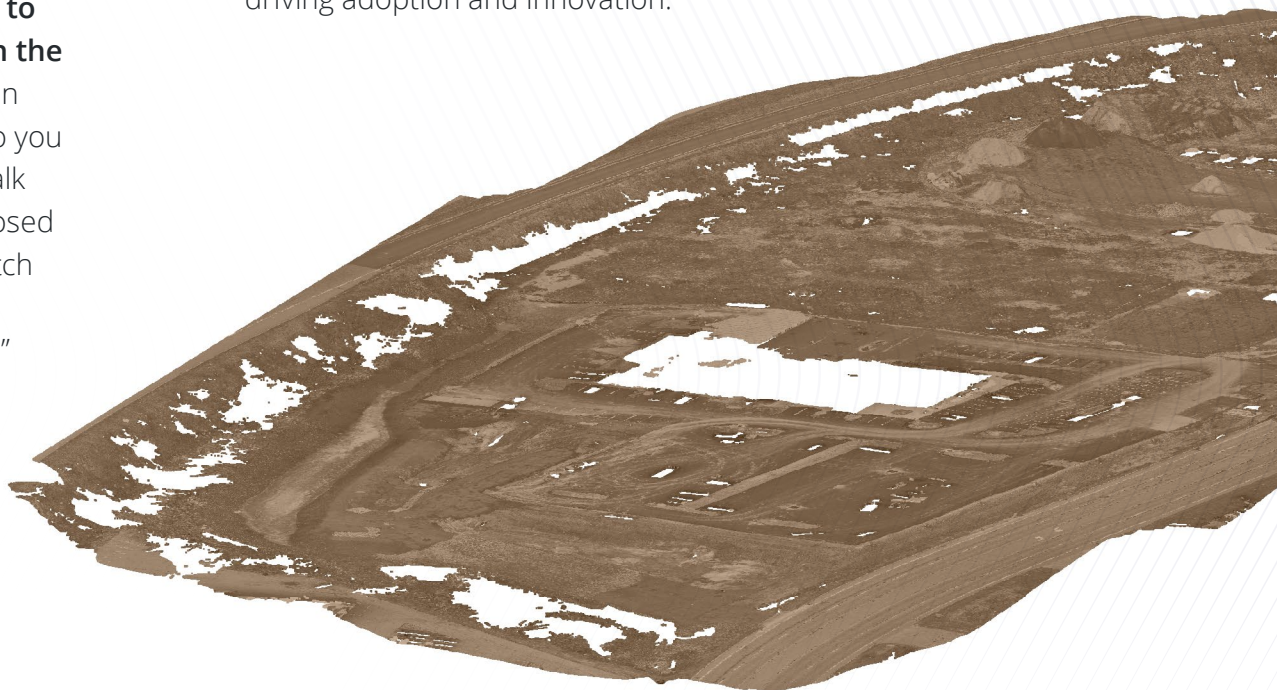
The future of reality capture technologies is promising, with expectations of enhanced precision and speed in data capture.

Intuitive reality capture data like scans and images will improve decision-making with rich, contextual information. As technology evolves, more sophisticated and user-friendly tools will facilitate highly accurate spatial data collection. Innovations in sensor technology, data processing algorithms and integration capabilities will drive this trend, making reality capture more accessible and effective.

“When I look at reality capture, it’s really the best tool that there is to build trust, to build communication, and get people on the same page. You can’t argue with a real scan that captures the world around you, and so you can come in and talk about that. You can talk about “what do we do about this?”, as opposed to, “whose fault was it?” or “I have a mismatch in my design, what are you talking about?” It provides data instead of those problems.”

— **Nathan Patton**, senior product manager, Trimble

One notable area of advancement is the integration of artificial intelligence (AI) and machine learning (ML) with reality capture technologies. These advancements will enable more automated and intelligent data processing, significantly reducing the time and effort required to produce accurate maps and models. As sensors become more compact and affordable, and with the availability of subscription-based models, advanced reality capture tools will become accessible to a broader audience, driving adoption and innovation.





INSIGHTS

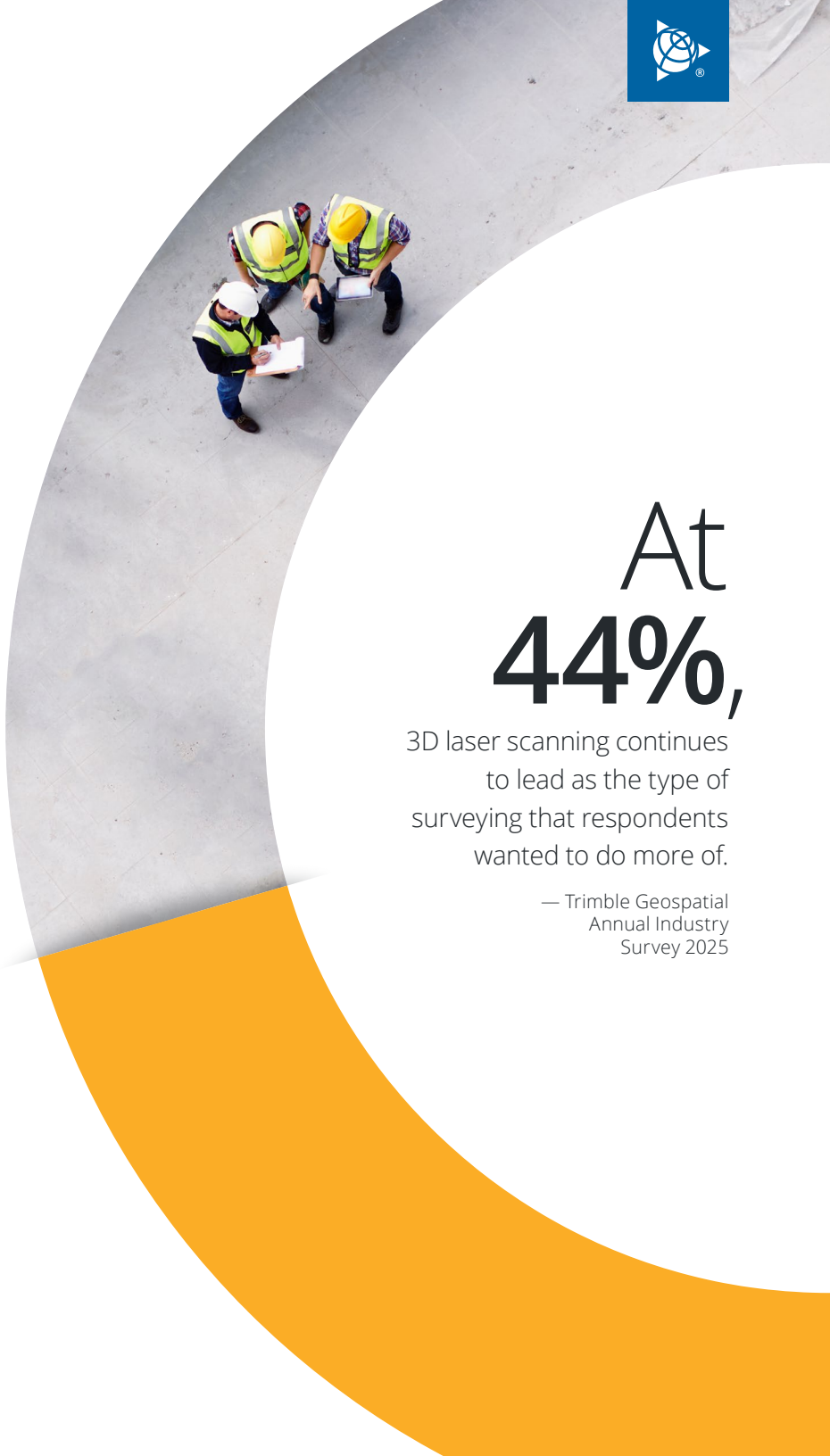
There is strong industry interest in reality capture technologies, primarily due to the potential to streamline data collection and improve accuracy.

Feedback from Trimble customers and survey respondents indicates a high demand for solutions that incorporate these advanced technologies, recognizing their ability to enhance project efficiency and outcomes.

“3D data really makes for informed decisions. And it also helps you to avoid missing things. A lot of times I’ve talked to customers and they’ll say, without 3D data, we would have totally missed critical problems in our solution. We would have measured one end of the pipe and we would have measured the other end of the pipe and gone along on our way. And we would have missed the fact that there was a bend or a wrinkle or something in the pipe halfway through. But by looking at the point cloud data, it was easy to see it stuck out like a sore thumb, so to speak.”

— **Jason Hayes**, 3D laser scanning market manager, Trimble

Geospatial technology users need the ability to quickly and accurately capture spatial data, which not only boosts productivity but also enhances decision-making by providing precise and reliable information. This growing interest is reflected in the increasing adoption of reality capture tools across various industries, including construction and geospatial.



At
44%,

3D laser scanning continues
to lead as the type of
surveying that respondents
wanted to do more of.

— Trimble Geospatial
Annual Industry
Survey 2025

OPPORTUNITY

Value of data as an operational imperative

Accurate data serves as the foundation upon which all geospatial and construction activities are built, influencing decision-making, project outcomes and overall operational efficiency. As technology continues to advance, the demand for rich, precise data is more critical than ever.



Courtesy of Control Point Associates





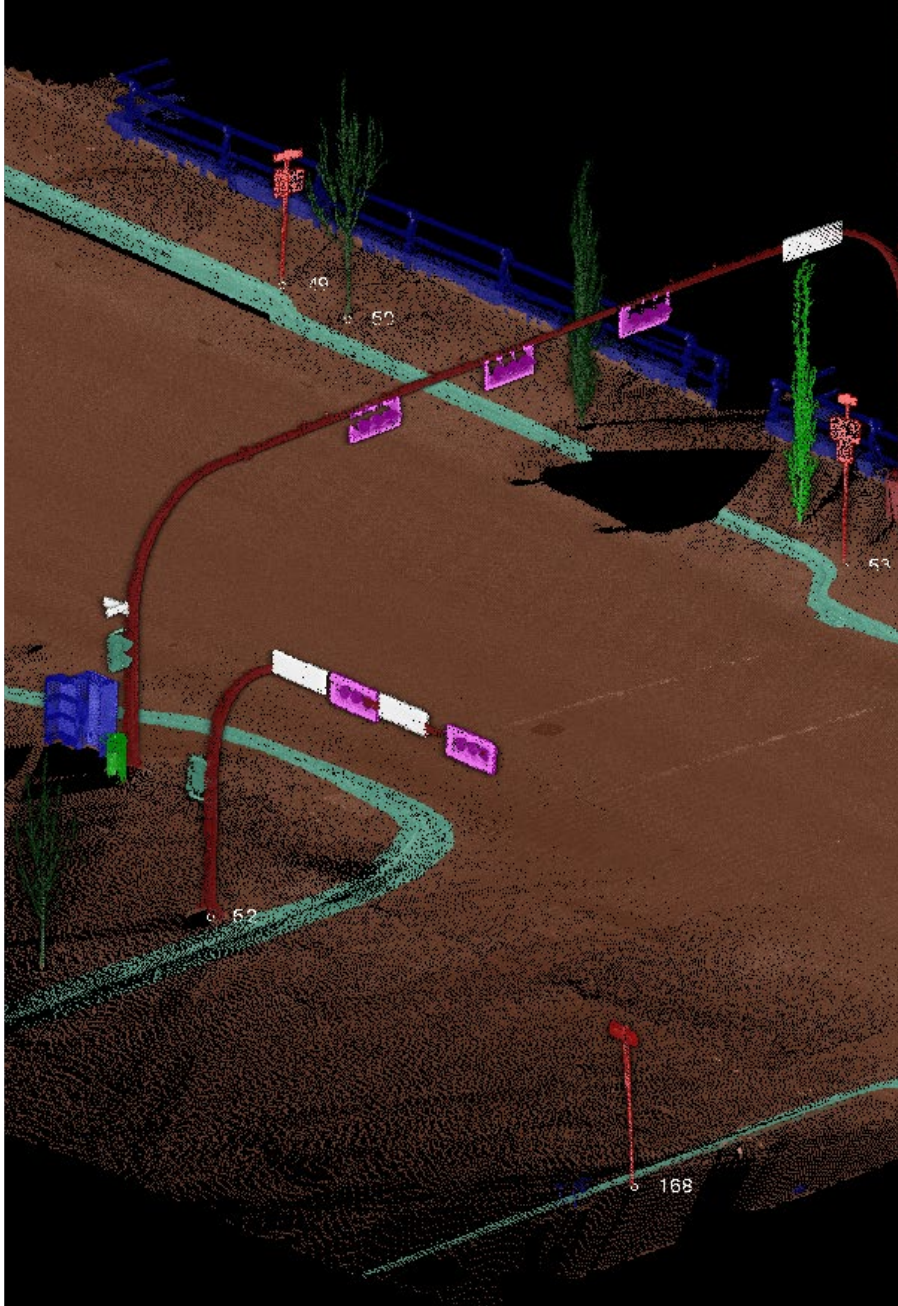
PREDICTIONS

Technological advancements, including AI and cloud solutions enhance data analytics, data sharing and collaboration and decision making.

AI algorithms can process vast amounts of geospatial data, identifying patterns that might otherwise go unnoticed and eliminating tedious, repetitive work for human analysts. Cloud platforms provide a centralized repository for data management, ensuring that all users have access to the most up-to-date and accurate information.

“We will definitely see the maturity of AI, cloud and IoT supporting sensor fusion and bridging the field and office. The importance of the expertise will grow significantly as will the understanding of who needs the data, when and what they are going to do with it. Our customers are perfectly positioned to act as trusted advisors as they operate across the domain with geospatial data being key to transforming nearly every industry.”

— **Boris Skopljak**, vice president, geospatial, Trimble



Courtesy of GeoVerra



INSIGHTS

The operational efficiency of any project that uses geospatial data is directly linked to the accuracy of the data being used.

High-quality data allows for precise planning and execution, reducing the likelihood of rework and minimizing resource wastage. For instance, in construction projects, accurate data enables precise site assessments, efficient material allocation and timely project completion.





OPPORTUNITY

Importance of the cloud for connecting workflows and sharing geospatial data

Cloud platforms have transformed workflows and geospatial data sharing, ensuring data is accessible, current and secure across locations. This is crucial for projects with multiple stakeholders needing seamless coordination.

Cloud solutions can help to integrate various tools and systems, creating cohesive workflows that boost efficiency and productivity. Field survey data can be instantly uploaded, processed and accessed by project managers in real time, facilitating quicker decision making and more effective project management.

A significant benefit of cloud solutions is enhanced accessibility and collaboration, providing a centralized repository for project data that authorized users can access in real time. This improves team collaboration, reduces delays and enables efficient model-based workflows and QA/QC by syncing data from the office to the field.



91% of respondents share data between the field and office, and more than half connect to the internet in the field “always or most of the time.”

Trimble Geospatial Annual Industry Survey 2025

PREDICTIONS

As technology evolves, there will be greater reliance on cloud solutions for data management and project collaboration.

The geospatial industry will increasingly adopt cloud-based platforms for managing large datasets and facilitating near real-time field-to-office-to-field workflows, providing scalable and secure management options. This will lead to more efficient management and better outcomes, regardless of team or project size.



INSIGHTS

Survey responses indicate demand for cloud solutions that ensure data integrity and support real-time collaboration.

Stakeholders also emphasize the need for cloud providers to prioritize data security and offer robust backup and recovery options.





CHAPTER

03

Technological
advancements



ADVANCEMENT TO WATCH

AI and automation

AI and automation are revolutionizing the geospatial industry by significantly enhancing productivity and streamlining workflows.

AI plays a crucial role in automating repetitive tasks, allowing professionals to focus on more complex and value-added activities. Automation driven by AI not only increases efficiency but also reduces the likelihood of human error, ensuring higher accuracy in data collection and processing.

One of the standout applications of AI in the geospatial field is feature extraction and data processing. Advanced algorithms can rapidly analyze large datasets, identify relevant features and process information with unprecedented speed and precision. This capability is particularly valuable in tasks such as point cloud classification, object detection and change detection over time.

“The biggest things that I see impacting right now are cloud data processing and also using different ways of analyzing and working with our data. **Everyone talks about artificial intelligence, but what is important is actually what you interpret or the decisions you're making from that data.**”

Using cloud processing to do work faster or using machine learning to extract information from standard data sets or using rule sets to interpret that really facilitates and eases the burden on our geospatial professionals so that they're able to understand what does this actually mean? How can I communicate that to the right people in a certain way? That's a massive trend impacting how we work with geospatial data today, and it won't go away anytime soon.”

— **Stephanie Michaud**,
director of product marketing, Trimble

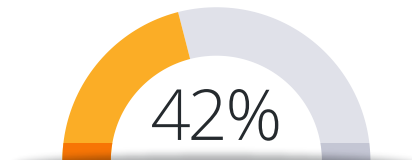


PREDICTIONS

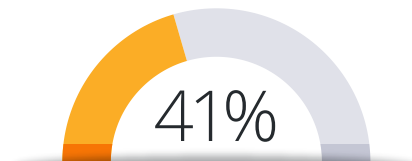
Looking ahead, we can expect advanced AI applications to play a more significant role in geospatial data analysis and decision-making.

Future developments will likely include more sophisticated machine learning models capable of predictive analytics, helping professionals anticipate trends and make informed decisions. AI-driven tools will become integral in automating complex workflows, further enhancing productivity and accuracy in the field. In addition to built-in AI capabilities, we will also see more and more possibilities for users to train their own custom models.

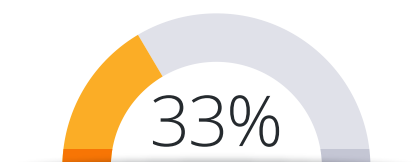
The top 3 greatest impacts on the industry are predicted by respondents to be:



AI and machine learning



Increased use of UAV/drones



Labor shortages and workplace development

Trimble Geospatial Annual Industry Survey 2025



INSIGHTS

There's strong demand for AI-driven tools that can automate repetitive tasks and improve data analysis accuracy.

Many users are eager to adopt technologies that leverage AI to streamline operations and reduce the burden of manual data processing. This enthusiasm underscores the importance of continued investment in AI research and development to meet the evolving needs of the geospatial industry.



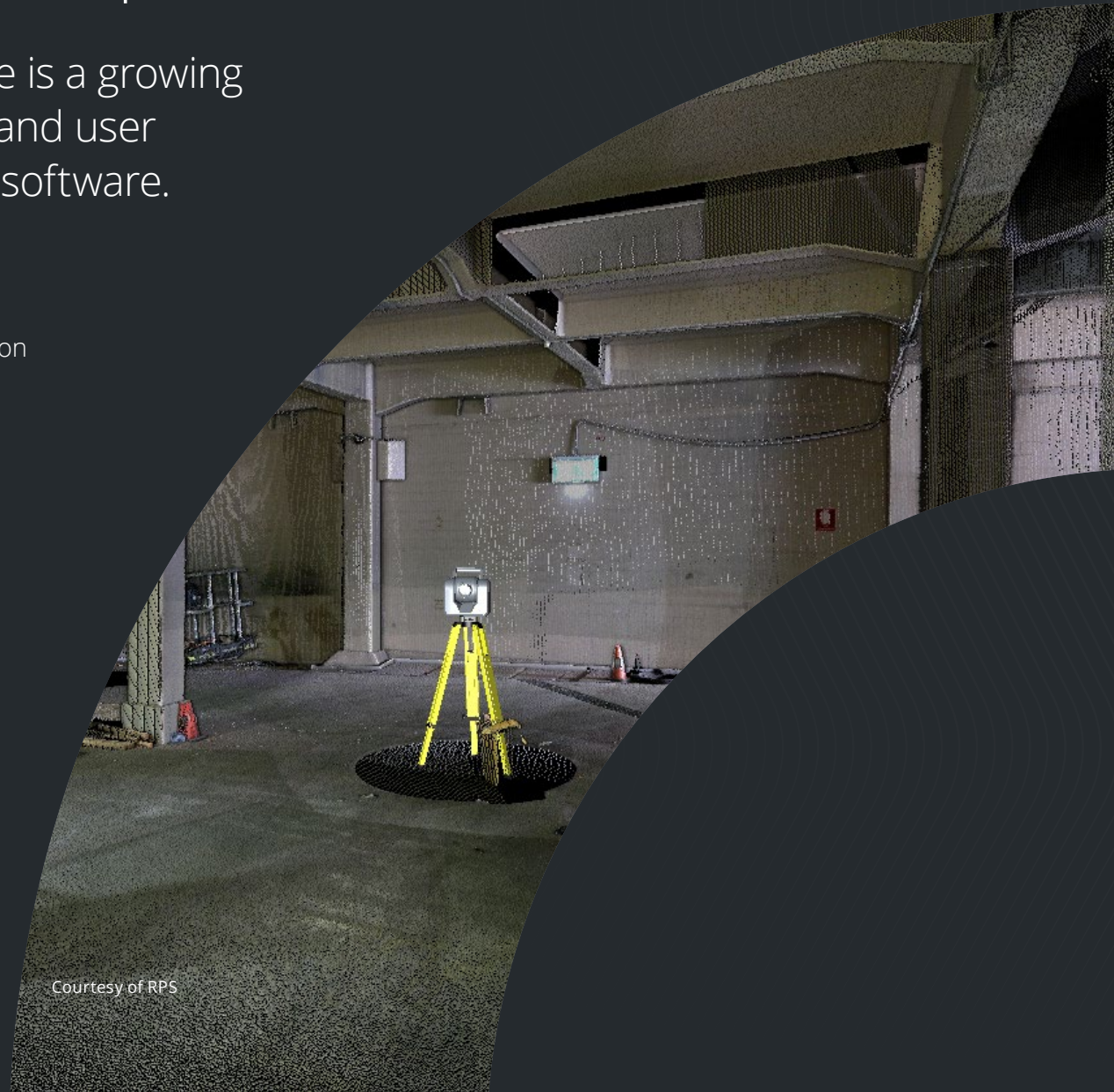
ADVANCEMENT TO WATCH

Ease of use and user experience

As technology advances, there is a growing emphasis on the ease of use and user experience (UX) of geospatial software.

Simplifying and streamlining these tools is essential to make them accessible to a broader range of users without compromising on precision and professional requirements. A user-friendly software interface can significantly reduce the training burden and speed up the adoption process, making advanced technologies more approachable for both new and experienced users.

Balancing user-friendliness with professional requirements is a key challenge. Tools must be intuitive enough for beginners yet robust enough to meet the needs of seasoned professionals. This balance ensures that users can leverage the full potential of the technology, regardless of their skill level.



Courtesy of RPS

PREDICTIONS

We anticipate more intuitive interfaces and tools designed for broader user adoption in the future.

Developers will focus on creating solutions that offer a seamless user experience, incorporating features such as guided workflows, contextual help, and simplified data visualization. These advancements will make it easier for users to perform complex tasks with minimal training, fostering wider adoption of geospatial technologies.

INSIGHTS

Geospatial technology users appreciate tools that are easy to learn and use, allowing them to quickly integrate new technologies into their workflows.

Trimble survey feedback underscores the importance of prioritizing UX design in the development of geospatial tools.



Courtesy of Mesta



CHAPTER

04

Training and skill
development needs



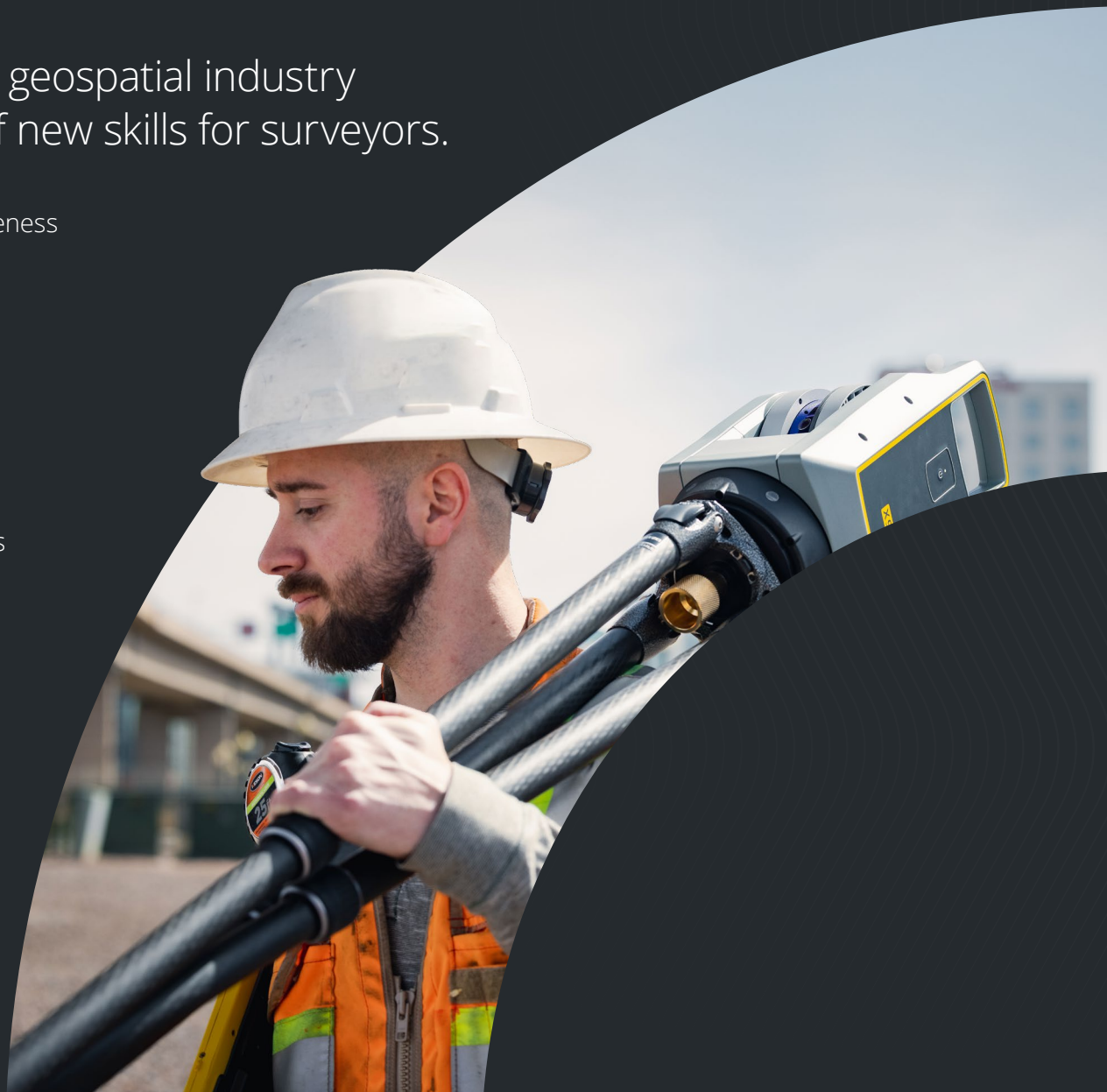
INDUSTRY NEED

New skills for surveyors

The evolving landscape of the geospatial industry necessitates the acquisition of new skills for surveyors.

There is an increasing emphasis on spatial awareness and digital data analysis and management, as these competencies are essential for modern surveying practices. Surveyors must also have a solid understanding of geodetic principles and coordinate systems to ensure the accuracy and integrity of their work.

As the industry adopts advanced technologies, surveyors must become proficient in digital tools and software. Trimble survey respondents use on-the-job training (69%), in-person training sessions (57%) and video tutorials (56%), but approaches vary widely, with some designating an expert, some getting group support and some relying on the vendor.



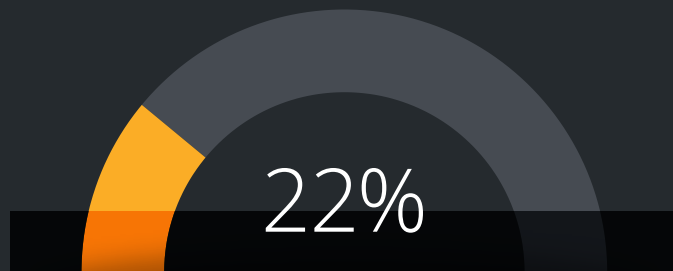


Today's landscape

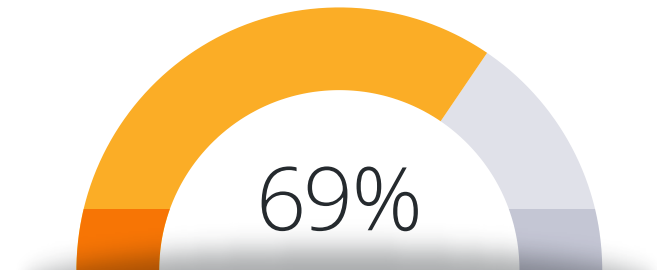
The primary ways to
acquire work are:



Repeat business



Competitive bidding



This year, most are having a difficult
time finding qualified workers



with **42%** saying it is
"somewhat difficult"



and **27%** "very difficult."



PREDICTIONS

In the coming years, surveyors are expected to become stewards of geodetic rigor, with an increased need for digital competencies.

Professional development programs will likely place greater emphasis on digital skills, ensuring that surveyors are well-equipped to handle the demands of modern geospatial projects. The role of the surveyor will evolve to encompass both traditional surveying techniques and advanced digital methodologies.

INSIGHTS

There's a strong demand for educational programs that equip surveyors with the knowledge and skills to navigate the complexities of the digital age.

This industry trend underscores the importance of technology companies and manufacturers investing in continuous professional development and training initiatives for geospatial professionals.





INDUSTRY NEED

Educational initiatives

To address the skills gap in the geospatial industry, Trimble and other leaders in the industry have made significant investments in technology labs and partnerships with educational institutions.

These initiatives aim to provide hands-on training and foster a deeper understanding of geospatial technologies among students and professionals. By collaborating with academia, technology providers are helping to bridge the gap between theoretical knowledge and practical application.

Industry standardization and interoperability are also critical components of these educational initiatives. Ensuring that tools and systems can work seamlessly together enhances the overall efficiency and effectiveness of complex projects.





According to the World Economic Forum's
Future of Jobs Report 2023,



of the current skill requirements in infrastructure
are likely to evolve over the next five years.

World Economic Forum, 2023

PREDICTIONS

We can expect a greater emphasis on early education programs and industry partnerships in the future.

These efforts will help cultivate a new generation of geospatial professionals who are proficient in the latest technologies and methodologies. By fostering strong industry-academic collaborations, the geospatial community can ensure a steady pipeline of skilled talent.



INSIGHTS

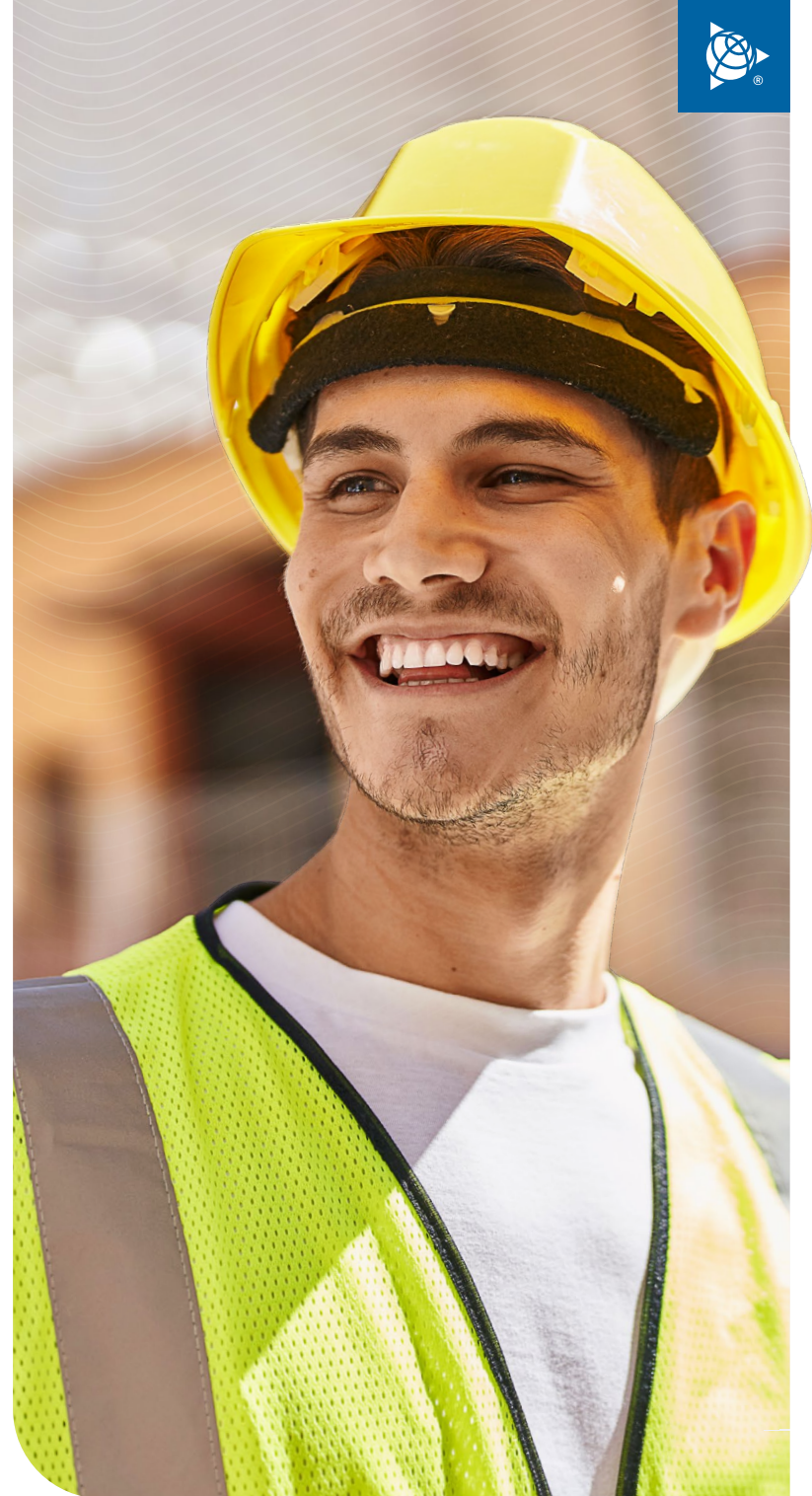
Trimble survey responses and market trends suggest strong support for educational initiatives and partnerships.

Stakeholders recognize the value of these programs in preparing the workforce for the challenges of the future. There is a clear demand for continued investment in educational initiatives that promote industry standardization, interoperability and practical training.

"I see increasing opportunities for expanding uses of geospatial technology because in our world today, everyone carries a GPS device in their pocket and now those devices are getting additional sensor upgrades too.

I see a huge opportunity to democratize this geospatial data to a vast number of users, which is really exciting because I think historically, many people thought that you had to have a certain degree in order to participate in delivering this technology or finding use in it. Now, I'm just always amazed at the level of applications that consumers are using with our products."

— **Stephanie Michaud**, director of product marketing, Trimble





Strategic recommendations for industry stakeholders

To stay competitive and capitalize on these advancements, industry stakeholders, technology users and technology providers should consider the following strategic recommendations:

01

Embrace AI and automation

Utilize AI-driven tools to automate repetitive tasks and improve data analysis accuracy, allowing for a focus on more strategic activities.

02

Leverage cloud solutions

Leverage cloud platforms to connect workflows, share geospatial information and facilitate real-time collaboration.

03

Focus on user experience

Technology providers should develop intuitive and user-friendly technology tools that cater to a broader audience. Simplifying and integrating common interfaces will reduce the training burden and accelerate the adoption of advanced technologies.

04

Prioritize training and skill development

The industry needs to keep investing in continuous professional development to ensure proficiency in new technologies. Educational initiatives and industry partnerships will be crucial in bridging the skills gap.

05

Foster innovation

Encourage a culture of innovation by leveraging the skills and perspectives of digital natives. Their familiarity with technology can drive the development of new applications and enhance the overall adoption of advanced solutions.



“We believe the future is very bright. We live in exciting times where geospatial technology is evolving rapidly. Between the people, process and technology, we need to make sure we keep evolving as professionals to embrace the technology to improve processes and take full advantage of the opportunities ahead. Technology will keep getting better, making our jobs easier and enabling us to get the power of geospatial insights in front of more people than ever before. Enjoy the ride and happy surveying.”

Boris Skopljak, vice president, geospatial, Trimble





Conclusion

The geospatial industry is on the cusp of a major transformation, driven by rapid technological advancements and the integration of AI, cloud computing and digital workflows.

As these technologies evolve, they will bring about significant changes in how geospatial data is collected, processed and utilized.

Stakeholders who embrace these changes and invest in the necessary tools and training will be well-positioned to thrive in this dynamic environment. By fostering a culture of continuous innovation and

leveraging the strengths of digital natives with the experience of seasoned professionals, the industry can unlock new levels of productivity, accuracy and efficiency.

The future of the geospatial industry is bright, with endless possibilities for growth and development. As we move forward, the collective efforts of industry professionals, educators, and technology providers will shape a more connected, efficient, and innovative geospatial landscape.



Visit geospatial.trimble.com to discover
more resources to help your business thrive.

LEARN MORE