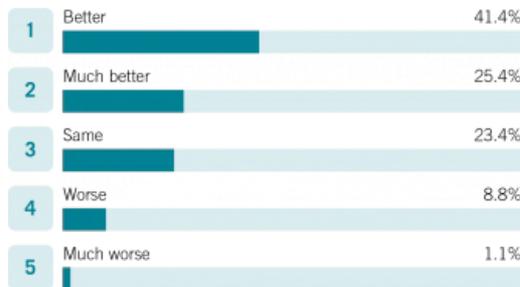


# INDUSTRY SURVEY 2021: BRIGHT SPOTS HELP TO KEEP SPIRITS HIGH

## Outlook for Geospatial Industry Grows Even Brighter as COVID-19 Restrictions Are Eased



At the height of the pandemic, our annual industry survey revealed the key challenges to be remote working and balancing productivity with employee well-being. Now that COVID-19 restrictions are gradually being eased in many parts of the world, it is a good time to revisit the findings and discover why the outlook for the geospatial industry is growing even brighter.



This year's annual *GIM International* industry survey was conducted in the twilight of 2020. After a year in which the COVID-19 pandemic turned everyday life upside down in many parts of the world, it seems more important than ever to gauge the mood of the geospatial business. Encouragingly, despite all the trials and tribulations caused by coronavirus, there are plenty of bright spots helping to keep spirits high in the mapping and surveying profession. This article outlines the key findings from the survey.

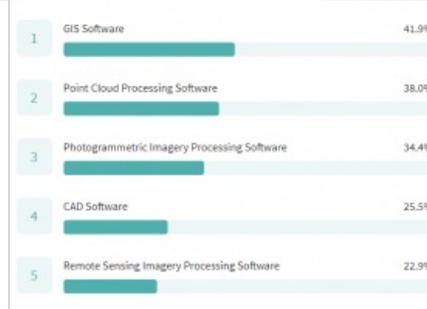
While some industries soared to new heights due to behavioural shifts caused by the pandemic, other sectors have taken a severe hit. The global outlook is unclear, although financial analysts state that governmental stimulus measures – for instance in the USA and European

Union – together with the expected upturns once the pandemic has passed its peak will lead to new prosperity. “Vaccines will bring economy near recovery by end of 2021” was the [headline](#) in *Forbes* magazine in December 2020. Let's hope it comes true.

### Impact of COVID-19

This year's industry survey received responses from professionals in no less than 115 countries and with a wide variety of job titles, including consultant (31.3%), researcher/academic (17.8%), manager (16.5%), government official (9.7%) and technician (7.8%). They also covered the broad spectrum of sectors in which geospatial applications are used: 49.7% of the respondents are involved in land management, 39.6% in building & construction, 35.4% in infrastructure, 27.3% in urban planning and 14.3% in agriculture.

Unsurprisingly, the survey shows that the pandemic is affecting the business of almost all mapping and surveying companies across all verticals worldwide. Many surveyors have experienced a decrease in activity due to a reduced volume of work. Projects have been delayed, postponed or even cancelled. Revenues have fallen by 20%, 30% or even more due to the coronavirus restrictions. One respondent states that their business has been brought to a standstill.





What are the expectations of the prospects in the surveying market in 2021 compared with the past couple of years?

Similar challenges are being experienced around the world. Remote working is difficult when much of the activities involve field work, such as to collect spatial data. A survey engineer from Hong Kong echoes this: "In the construction industry it is hard to work from home. You can't pour the concrete to 'remote construct' a project." "It has been pretty bad for us in the UK," comments another respondent. "We don't have any projects in our area because of the pandemic, so many people are leaving and resources are going to waste." A consultant from Bolivia states: "There are a lot of delayed or cancelled projects. We have seen a shift in the allocation of funds, from land administration to COVID-19." A land survey professional from India sums up his position as follows: "Being confined to home has turned me in a keyboard consultant."

Meanwhile, many companies are struggling to find a balance between productivity and employee well-being, as indicated by a manager from a survey company in the USA: "It has been hard to keep the crews on track and productive; we are all scared we may be causing harm by being exposed and then taking the virus home with us." Other effects being felt by geospatial professionals include longer stints away from home due to travel restrictions, quarantine both onshore and offshore, and uncertainty of contract work.



Governments across the world are initiating major national infrastructure projects. (Image courtesy: ZÄ¼blin Spezialtiefbau)

## Wide range of expectations

While it can be difficult to remain optimistic during such challenging times, a positive mindset always helps. A considerable number of survey participants are doing their best to see the upside of the current temporary lull in activity. As a geospatial consultant from Bulgaria puts it: "We now have time to think about innovation. On the edge of crisis, throughout the history of humankind there have been a lot of good examples of innovations that change directions to success." A consultant from South Africa takes a similar view: "COVID-19 has made me rethink and refocus my business." A software developer from Ireland states that his company has used the opportunity to make a positive shift to new technology and smarter working. Likewise, a consultant from Canada has seen positive change at his company: "The circumstances favour changes and have pushed the adoption of new technologies." These and other positive responses from the survey participants provide a ray of hope in the short term.

Although a considerable number of respondents are only cautiously optimistic about the future and prefer to take a 'wait-and-see' approach, many other industry professionals seem to already be focusing on the brighter future that will follow when the pandemic is finally over. In fact, the mood among some matches the same positive vibe reflected in [last year's industry survey](#). This optimism is supported by the fact that various governments are initiating major national infrastructure projects, in effect investing their way out of the crisis rather than intensifying it by making cutbacks. For example, during the first wave of the pandemic the UK government announced a [multi-billion-pound road and railway investment plan](#) to stimulate the nation's economic recovery. Meanwhile, in the Netherlands, the government has launched a €20 billion national growth fund to invest in infrastructure and research & development projects. Although that initiative is not directly linked to the coronavirus pandemic, it nevertheless offers interesting opportunities for mapping and surveying companies.

## Worldwide need for geodata

Geospatial data already forms the essential information layer for many public services, but the rapid spread of the pandemic and the high number of cross-border initiatives to monitor and contain the spread of the virus have further highlighted its importance. For example, governments require highly detailed maps to be able to organize the nationwide programmes. A survey consultant from Indonesia experts this to drive the demand for reliable geodata, creating excellent opportunities for companies specialized in data capture, processing and visualization. Moreover, the pandemic has put our industry firmly in the public eye. Hence, one US-based surveying manager involved in the autonomous driving business foresees a post-pandemic realization of how important spatial data is for various other markets and industries. A geomatics academic draws the same conclusion, commenting: "There are so many challenges facing different parts of the world which can be solved by our profession, thus presenting opportunities to show our relevance and importance."

Digitalization will play an important role in helping the industry to make the most of the brighter future that lies ahead, as a surveyor from Canada points out: "Once the pandemic is over and there is a return to near normal, I believe the industry will continue to grow through the increasing adoption of technology." A researcher from Croatia sees the current circumstances as fuelling new initiatives and opportunities: "The pandemic has shown that spatial information is essential for so many human activities. The ongoing development of technology and new concepts (digital twins) will boost development and business." A researcher from Malaysia agrees: "I expect that the integration of BIM and surveying applications will mature."

## Robotics

The survey confirms that developments in the field of autonomous systems are expected to continue to drive progress in scanning technologies, including processing. For example, the miniaturization trend in advanced sensor technology means that high-performance scanning equipment is getting smaller all the time, which is opening up new applications related to autonomous vehicles and mobile mapping systems. As this year's industry survey reveals, such solutions are high up on the wish list of a significant number of mapping and survey companies.

It is a relatively small step from autonomous vehicles to robots. There are already [examples](#) of robots being used in construction and mining, among other applications, as part of a complete surveying workflow or an as-built reality-capture workflow with a high degree of autonomy. Therefore, the robotization trend is generally expected to accelerate. Not everyone sees this as a positive development, however. An academic from Malawi makes the following prediction: "Surveying will increasingly be controlled by robots. One day, a person will only be required for verification, and eventually verification will be done by robots too. With machine learning/artificial intelligence/computer vision coupled with robotics, the number of workers in the companies will greatly reduce. The money will be invested in buying equipment rather than paying salaries."



GIS is increasingly shifting towards apps on mobile devices which enable faster data capture and information processing.

## Mobile connectivity

According to the respondents, mobile connectivity is another of the technological developments having the greatest impact on today's surveying profession. Several professionals point out that GIS as an end product is increasingly shifting towards apps on mobile devices which enable faster data capture and information processing. Needless to say, the key benefit of app-based mobile mapping is convenience; such solutions support easier and more user-friendly surveying, especially in hard-to-reach areas and when accuracy demands are not too high. "Mobile is king for getting geospatial into the hands of users," states a New Zealand government official, summarizing the popularity of such apps. However, a surveying manager from the United Arab Emirates sees this as posing a potential threat to the reputation of the profession: "Although the technologies will get better, the quality of the end products will deteriorate since more and more individuals without solid technical/theoretical surveying background will get involved (for cost-saving reasons) by the decision-makers who don't possess the technical knowledge to properly support decision-making on these issues." On the upside, a Belgian respondent working for a large manufacturer of survey equipment and software states: "I see parallels with the iPhone... the [iPhone](#) hardware gets better, but it is the app ecosystem that drives adoption and value-add. We will see the same in surveying. The ever-improving sensors will bring new applications."

## Artificial intelligence

A survey company manager from Romania sees a strong connection between the rise of mobile devices and artificial intelligence (AI): "More and more on-board artificial intelligence is embedded in these devices and the 5G technology will allow them to collect and process files data and provide the basic deliverables from the field." Judging by the frequency with which AI is mentioned in this year's survey, many others agree with him that this is an important development in the surveying profession. "The automated processing of collected data simply offers so many opportunities," observes one professional from the Netherlands. In a broader software and IT context, several respondents believe that the innovations made in software for mass data processing will lead to large-scale adoption of photogrammetric and remote sensing processes. Again, AI plays a key role here.



In what type of hardware systems do organizations plan to invest in 2021?

## Growth opportunities and investment plans

In terms of hardware trends and investment plans for 2021, the respondents' answers indicate that many organizations are keen to invest in mobile mapping systems, whether as unmanned aerial vehicles (UAVs or 'drones') or ground-based systems. Total stations – the surveyor's workhorse – and GNSS receivers are also part of many investment plans, so it seems that these classics remain indispensable tools. On the software side, the top-ranking purchases lined up for 2021 are GIS software, photogrammetric imagery processing software and point-cloud processing software.

While many companies still intend to invest in new survey equipment and software systems this year, some of them have understandably put their purchasing plans on hold due to the economic impact of COVID-19. This has somewhat hampered the preparedness to invest compared with a year ago. However, based on the respondents' feedback in the survey, it is likely that the situation will return to pre-COVID-19 levels once the economy has bounced back.

## Conclusion

The overall industry mood can perhaps best be illustrated by a consultant from Nepal who, despite having lost his job due to the economic effects of the coronavirus pandemic, nevertheless remains optimistic: "A geospatial component is being added to every part of technology. So there is increasing usage in a variety of fields beyond just disaster management and infrastructure. Hence, I strongly believe that future is very geospatial." A researcher from India is likewise positive about the longer term: "Geospatial technology is being recognized as an efficient, accurate and cost-effective technology by administrators, planners and decision-makers, so we can expect its use to increase." While there is no denying that the COVID-19 pandemic is currently creating economic headwinds for many of us, we can conclude that the outlook for the geospatial industry remains very promising.



In what type of software do organizations plan to invest in 2021?