



5 FORCES RESHAPING SURVEYING IN 2027







GEO WEEK NEWS

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Introduction

Most years, change arrives in the survey profession one piece at a time, which is roughly the pace a working firm can absorb. However, 2027 is not shaping up that way - with more changes on the horizon than ever before.

In 2027, a surveyor could be asked to provide a deliverable in a new reference system, derived from a point cloud a client's own crew collected, processed by software that classified most of it automatically, on a project funded by an agency that does not yet know its own budget. Each of those is manageable alone. Arriving together, in the same year the person who would have known how to handle any of them retires, they become a staffing and liability problem rather than a technology story.

The five shifts below are not predictions. Each is tied to something scheduled, already in motion, or already in production. What they share is that they land where surveyors actually carry risk, in control decisions, in QC, in what a seal attests to, and in what a crew can be billed out for.



The federal funding cliff

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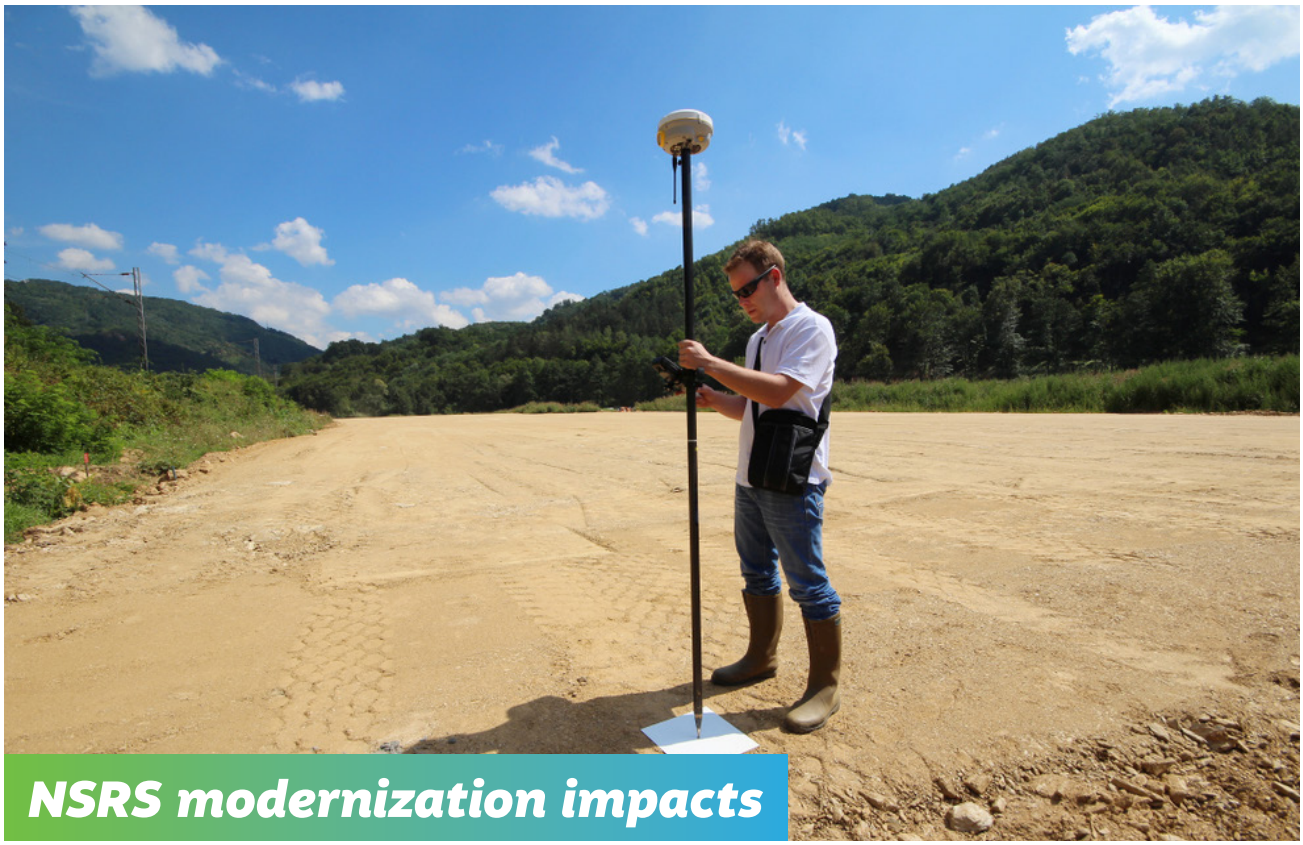
Surface transportation programs under the Infrastructure Investment and Jobs Act (IIJA) were authorized through fiscal year 2026, and Congress has extended those authorizations only on a short-term basis while a full reauthorization remains unresolved. For survey firms, the question is not whether highway work disappears. It is how much new work enters planning, environmental review, and design during the uncertainty, because that is the phase in which surveyors get hired.

Unfortunately, this means that, as of this writing, the industry is not able to provide certainty on how this all plays out. IIJA authorized federal highway, highway safety, transit, and rail programs for fiscal years 2022 through 2026, and Congress has **extended those authorizations** only through December 11, 2026. The law was also set up differently from past transportation bills, pairing $476.2 billion in authorized funding with $156 billion in advance appropriations, and that second pot does not continue past FY2026 without **further action from Congress**. Replacing it is not a simple vote. The Highway Trust Fund, which **pays for most federal highway and transit work**, already takes in less than it spends, because the federal fuel tax has not changed since 1993 while construction costs have climbed. A new five-year bill starting in fiscal 2027 that holds spending near current levels would face a projected shortfall of roughly $166 billion, and a six-year version about $199 billion. Closing a gap that size means raising revenue or cutting programs, which is why Congress keeps reaching for short extensions instead. That gap is the reason short-term extensions keep happening, and short-term extensions are what prevent agencies from programming the multiyear work that survey crews depend on.

Projects already obligated will proceed and get paid, but there is inherent uncertainty in the projects that are awarded but not fully funded, and in anything depending on future formula allocations or new discretionary grant rounds. Survey and design sit at the leading edge of that pipeline, which means firms heavily exposed to state department of transportation (DOT) work feel a slowdown roughly a year before contractors do, and feel a recovery about a year later.

What to do today

- Separate your backlog by funding certainty, not by client. Sort active and pending work into three buckets, federally obligated, state or local funded, and dependent on a future federal allocation. The third bucket is your actual exposure, and most firms find it is larger than they assumed because it hides inside long-standing agency relationships.
- Have the 2027 programming conversation with agency clients before they have it with you. State DOTs are running their own scenario planning. Asking a program manager which projects they intend to carry with state funds, and which they will shelve, is a reasonable question in a reauthorization year and it tells you where to put your crews.



NSRS modernization impacts

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For most of the past decade, modernization of the National Spatial Reference System (NSRS) has been something that's been something to worry about in the future, not the present. That changed when the beta products were released this fall. Now more than ever is the time to take the opportunity to work with the new datums, prepare workflows and identify risk.

The National Geodetic Survey (NGS) has described modernization in three phases, beta release, a minimum of six months of public testing and feedback, and official transition. Speakers on a recent Geo Week News webinar placed that official transition in 2027. The pieces are arriving separately rather than all at once, including the North American-Pacific Geopotential Datum of 2022 (NAPGD2022) and its GEOID2022 model, the State Plane Coordinate System of 2022 (SPCS2022), an updated version of the NGS Coordinate Conversion and Transformation Tool (NCAT), and updates to the Online Positioning User Service (OPUS), each released for public testing before adoption. On the vendor side, the message to users has been that once official adoption occurs, the beta version becomes the released version, with product update timelines following the NGS rollout. In practical terms, the testing window is the last stretch in which a firm can discover a problem on its own schedule rather than on a client's.

Major software vendors have already signaled their readiness, but some surveying firms depend on a small, specialized package (or even in-house built solutions) that rest somewhere in the workflow, and those are the tools less likely to be certified on day one. The firms that have a problem in 2027 will mostly be the ones that assumed their whole stack moved together.

What to do today

- Get your whole staff the same briefing, not just the geodesy person. Our on-demand webinar, NSRS Modernization is Here, What Surveyors Need to Know Now, puts NGS leadership alongside the National Society of Professional Surveyors, the American Association for Geodetic Surveying, and practitioners, and it covers the rollout timeline and the questions to put to your vendors. It is free, it is roughly an hour, and running it as a lunch session for field and office staff together costs you less than the first hour of confusion on a live project.
- Inventory every piece of software that touches a coordinate, including the obscure one. Then contact each vendor directly and ask for a certification date in writing. The large platforms will answer easily. The answer that matters is the one from the niche package your most profitable workflow quietly depends on.



The workforce shortage

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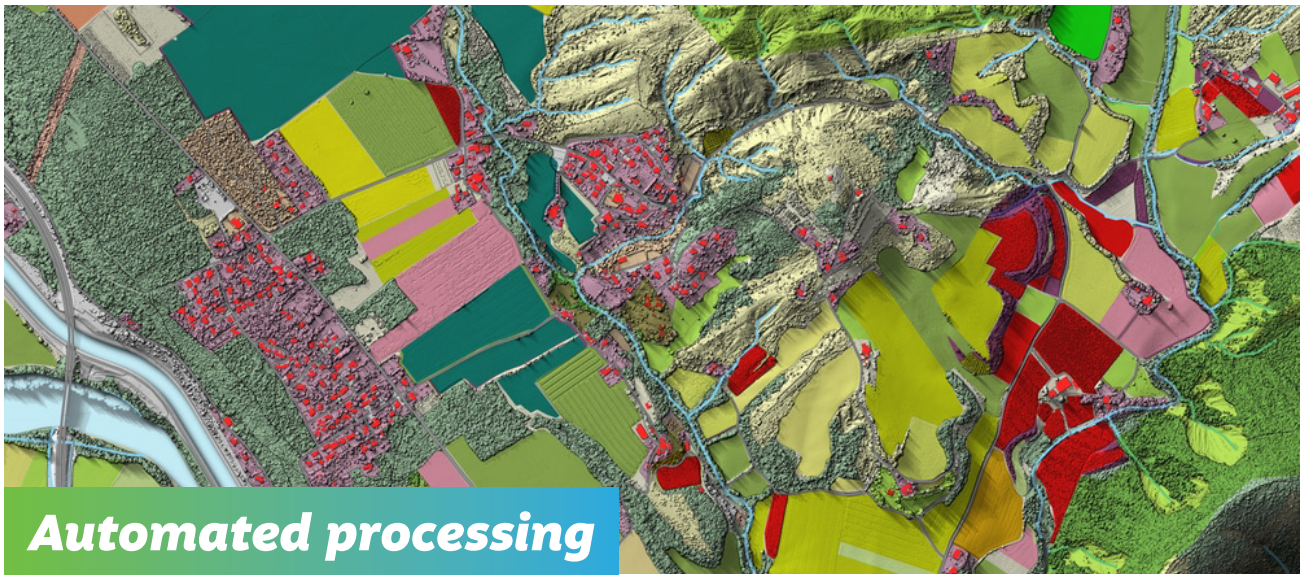
Over the last decade, the nature of the work of a surveyor has expanded. A licensed surveyor who spent a decade running crews now spends more of the week reviewing, sealing, and answering to clients, while the field work moves to technicians trained via the trades or a two-year program. Tasks that require a license are being further separated from tasks that never have. Crews are also getting smaller because the equipment allows it (with more automation, and lower barriers to entry for technicians) and, unfortunately because there is simply nobody to put in the truck. The workforce shortage is a two-fold problem; trying to find the right workers and adapting your business when you can't.

The Bureau of Labor Statistics projects employment of surveyors to grow 6 percent from 2025 to 2035, with about 3,100 openings a year, most of them replacing people who have left (rather than adding capacity), with a median annual wage of $75,440 as of May 2025. Demand across the wider geospatial sector is steeper. The World Geospatial Industry Council has put open positions at between 20,000 and 25,000, with that figure forecast to roughly double within five years. The squeeze is worst in the specialties that are difficult to improvise around. Panelists in our 2026 outlook webinar pointed to geodesy in particular, where shrinking academic programs are reducing domestic training capacity. That is the specialty a datum transition makes most valuable, which is not a coincidence so much as bad timing.

What works is doing two things at once, adapting the workflow and planning around thinner crews rather than treating either as the only solution. A scanner may allow two people to collect what used to take four, but it can also move hours into registration and QC that somebody has to cover. Companies that budget for both sides of that tradeoff come out ahead, because they size the office to the field work they are actually winning. While the crews are not going to get bigger, the work can still get done well.

What to do today

- Audit which tasks actually require a licensed professional. Most firms have never done this explicitly, and the result is licensed staff spending hours on work a trained technician could complete. The audit produces a real career ladder, which is also the most effective retention tool available to a small firm.
- Capture institutional knowledge from anyone within five years of retiring. Record how they make judgment calls, not just how they operate equipment. Pair them with junior staff specifically on QC and problem jobs rather than routine work, because the irreplaceable knowledge is in the exceptions.



Automated processing

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It helps to be precise about where the technology actually sits, because the marketing and the reality have drifted apart. Classifying the standard classes is production work now. Ground versus non-ground, vegetation, buildings, and road surfaces come back from commercial tools at accuracy **roughly in the low to high eighties** depending on point density and terrain, which saves real hours on a first pass, yet is nowhere near good enough to deliver unreviewed. Plane and cylinder detection have become reliable enough that walls, floors, and exposed pipe runs can be pulled from a scan automatically, though what comes back is **usually geometry stripped of the attributes** a finished model needs. Breakline detection and full planimetric extraction are the live frontier, with service providers now selling finished linework across dozens of feature types on a few days' turnaround, always paired with human review before anything ships. What is not close, and is not on anyone's roadmap, is judgment about the evidence. No algorithm can reconcile a deed description with a found monument, or decide which of two conflicting rebars controls, or recognize that a weird cluster of points is a boundary problem rather than a data problem.

Your seal goes on the drawing, not the software vendor's. That was a simple proposition when a technician drew every break line and a party chief could tell you which shot each one came from. It is less simple when classification and feature extraction run automatically across a corridor and the surveyor signing the deliverable is attesting to a process they cannot fully reconstruct. State board rules, errors and omissions language, and the standard of care language in your own contracts were all written for a workflow where a person made every call.

Practitioners have settled on a workable interim position, trust but verify, with the better software surfacing certainty levels for each classification and steering a reviewer toward the specific areas that need a human look rather than asking anyone to accept the output wholesale. Where that breaks down is transparency. When a provider will not explain how a system reaches its result, users treat it as a black box and withhold trust, fairly or not, which is a reasonable instinct for anyone whose license is on the line.

"Trust but verify" as a mantra still leaves the practical questions open. What percentage of an automated classification does a surveyor need to check before signing? Who in the office decides that number, and what record of the review survives a boundary dispute or a claim three years later? Those answers will not come from the vendor. They are a standard of care question, and right now each company is working one out on their own.

Two things to do now

- Write down your QC protocol for automated output. Sampling percentage, acceptance thresholds, who reviews, what gets logged, and what triggers a full manual pass. An undocumented process is indistinguishable from no process when someone questions a deliverable, and writing it down usually reveals that two people on staff were doing it differently.
- Ask your errors and omissions carrier and your state board where they stand, in writing. Do it before a project, not during a dispute. Carriers are still forming positions, and being early in that conversation is better than discovering a coverage gap after a claim.



Cheaper, faster capture

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Handheld and mobile systems have pushed data collection toward people who are not surveyors. A facilities manager, a contractor's field engineer, or a municipal staffer can now walk a site and come back with a point cloud. Whether that cloud is usable for anything with legal or engineering consequence is a separate question, and it is a question only a surveyor can answer.

A handheld scanner running simultaneous localization and mapping (SLAM) is a precisely engineered ranging instrument taking angles and distances and converting them to point coordinates, the same job a tripod scanner does. What changes is how the nodal point gets tracked, with computer vision following thousands of observation nodes along a walked path instead of a few fixed setups. Control enters that workflow in the same familiar way a surveyor already understands, and the highest class of these instruments carry integrated GNSS receivers, ranges beyond 100 meters, and relative accuracies under a centimeter at 50 meters. SLAM isn't necessarily a threat to the profession, but rather a faster workflow that can get a surveyor "better than good enough" coverage on a large share of jobs. The case for adopting it is strongest where a device costs half what a terrestrial scanner does and works twice as fast in the field.

So the decision is not whether to pick up the technology. It is how you work and what deliverables you provide once everyone has one. Competing on capture alone means relentless price pressure against a hardware gap that keeps closing. The durable position is the one a license already supports, deciding what control a job requires, validating what came back, and certifying data whoever collected it. That work needs doing before you can bill for it, defining the service, pricing it, and writing the limits of liability that make it safe to sell.

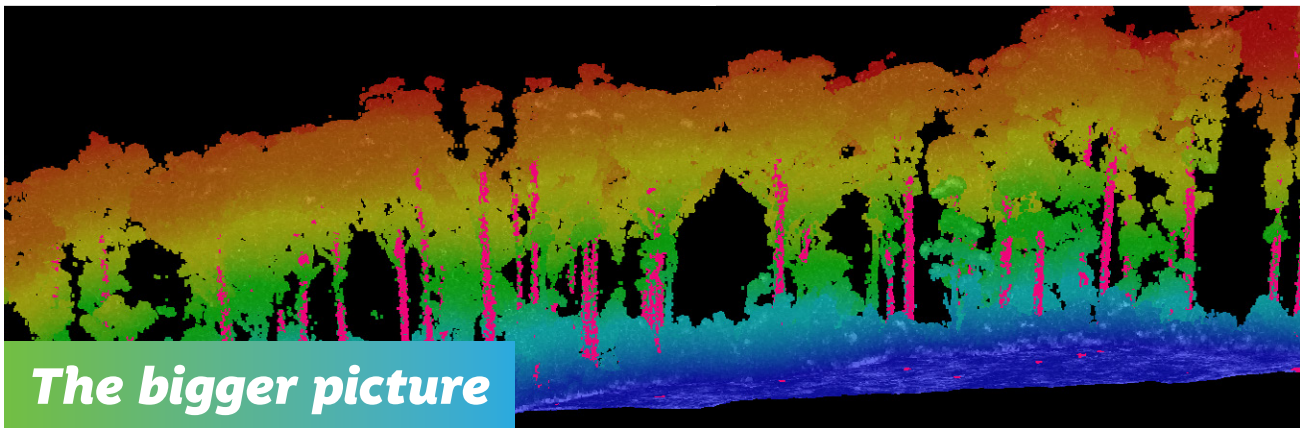
Two things to do now

- Define and price a data verification service. Specify what you check, what you will and will not certify, what control you require, and what the client receives. Firms that have done this report that clients readily pay for it, because the alternative is a dataset nobody will stand behind.
- Publish a one-page capture specification for client crews. Control requirements, overlap, environmental limits, and what metadata to record. It costs an afternoon to write and it converts unusable incoming data into billable work you can actually sign off on.









The bigger picture

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Read these five factors together and the same tension keeps showing up. Classification runs automatically but can't decide which of two conflicting pieces of information is correct. A handheld scanner can collect a site in an hour, but nothing in the box decides what control that job required. A client arrives with a point cloud and a specification sheet but cannot tell you whether the absolute accuracy holds on their coordinate system. Coordinates themselves become a function of time, and somebody has to explain to a property owner why the number changed.

Every one of those is a judgment call attached to a license, and none of them is getting automated.

That is a durable position, and it is also a demanding one. It asks a surveyor to understand a modernized reference system well enough to work in it and explain it, to know where an algorithm is reliable and where it quietly is not, and to write down a standard of care that currently exists mostly as habit. The firms that get there will be doing it with smaller crews and a federal funding picture nobody can forecast, which is why the workforce item is less a trend than the condition the other four operate under.

None of this requires betting on a prediction. The reference system transition has a timeline. The automated tools have known strengths and known limits. The scanners are already in clients' hands. What 2027 rewards is deciding deliberately which of this work you intend to own, and writing it down before a project forces the answer.

Further reading

WEBINARS TO WATCH

- **Inside the NSRS Modernization Beta Release and What Comes Next**. The most current session on the transition, covering the beta products and the road to official adoption.
- **NSRS Modernization is Here, What Surveyors Need to Know Now**. NGS leadership alongside the National Society of Professional Surveyors, the American Association for Geodetic Surveying, and practitioners. The best single briefing to put in front of your whole staff.
- **Mapping the Future, Strategies for Attracting and Developing Geospatial Talent**. Practical approaches to recruiting and keeping staff when the licensure pipeline will not fill itself.
- **2026 Outlook, The Big Shifts Reshaping Geospatial**. Useful context on where specialist shortages are biting hardest, geodesy in particular.
- **From Data to Decisions, Turning Reality Capture into Actionable Intelligence**. What happens to captured data after the scan, which is where the margin now sits.

ON THE REFERENCE SYSTEM TRANSITION

- **Don't Be Scared of NSRS Modernization, Be Prepared**. The phased rollout explained, including why small software vendors are the risk to watch.
- **The Central Place of GNSS in the Effort to Modernize the National Spatial Reference System**. How positioning practice changes underneath the new system.

ON STAFFING AND THE TALENT PIPELINE

- **Building the Geospatial Pipeline, Lessons from the Field**. Two practitioners on what has actually worked for them, including hiring for character and training the skill.
- **Talent, Tech, and Transformation in Geospatial**. Recruiting beyond traditional engineering backgrounds, including military and trade school pathways.

ON AUTOMATION AND WHAT IT CAN BE TRUSTED TO DO

- **What AI Is**. A clear-eyed look at what these systems do today and why the black box problem drives user skepticism.
- **The Essential Role of AI in Point Cloud Classification**. How deep learning classification is built and trained, from the people building it.
- **How can point cloud data be leveraged to its fullest potential?** The trust but verify framework, including how certainty levels should steer a reviewer.

ON CAPTURE, ACCURACY, AND WHO IS HOLDING THE SCANNER

- **Handheld SLAM Isn't a New Reality Capture Technology**. The argument that a SLAM scanner is a scanner, and control enters the workflow the way you already know.
- **Three Accuracy Numbers, One Confusion, What SLAM Spec Sheets Should Say**. Required reading before you accept anyone's accuracy claim, including a client's.
- **Field Evaluation of Photogrammetric SLAM for Infrastructure Asset Mapping**. Measured field results rather than published specifications.
- **The Democratization of the Reality Capture Space**. How the cost and training barriers came down, and who came through the gap.

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