



# Mapping a More Efficient Approach to Land Use

This aerial footage from West Virginia was taken by the Center for Geospatial Solutions as part of its work with a large-scale ecosystem restoration partner. Drone footage can complement on-the-ground fieldwork to create more dynamic maps. Credit: CGS.

**THESE DAYS**, we tend to expect technology to deliver ever more sophisticated data, in ever greater quantities. That's just as true for users of everyday tech tools as it is for high-level decision makers relying on the most cutting-edge and complex tools to grapple with knotty challenges like conservation and climate change. But sometimes the more important priority is to make the best use of the data and technology that already exist.

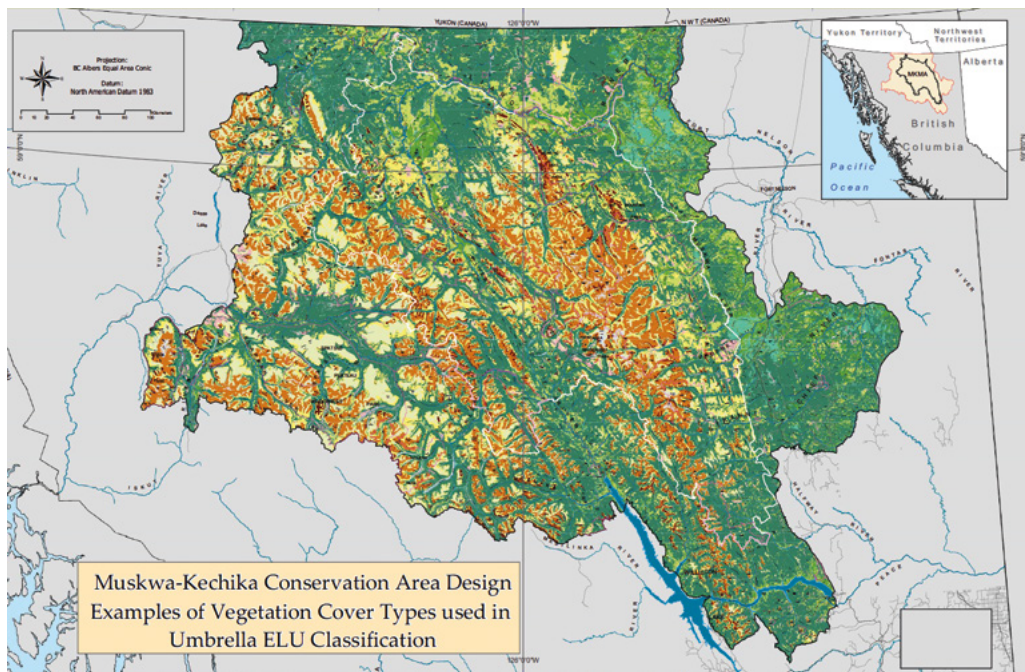
That spirit has helped guide some of the early work of the Center for Geospatial Solutions (CGS), launched by the Lincoln Institute in 2020. A nonprofit, mission-driven entity focused on marshalling data and mapping tools to support land use decisions, CGS works with a range of global partners large and small, both on deploying new technology and on helping organizations navigate the tools and information they already have.

Think of it as a hub of data, expertise, and service: "There's a ton of data," as well as platforms and tools, says Anne Scott, executive director of CGS. "If you're there on the ground, trying to do something for your community, it can be overwhelming. We are here to help with that."

One of the more ambitious early enterprises for CGS has been a collaboration with the Nature Conservancy of Canada (NCC), a private nonprofit focused on conservation. NCC is a large, fast-growing organization with a long track record. Today it protects land equivalent to the size of Florida, spread across multiple provinces. Its interest in sorting out a multiyear strategy to make the most of the mapping and other technologies it was already using led it to seek out the help of CGS. The resulting work in progress is an instructive example of how CGS can play a vital role in helping inform and shape both immediate-term and long-term strategy.

**A nonprofit, mission-driven entity focused on marshalling data and mapping tools to support land use decisions, the Center for Geospatial Solutions works with a range of global partners large and small, both on deploying new technology and on helping organizations navigate the tools and information they already have.**

CGS helped the Nature Conservancy of Canada (NCC) conduct a strategic assessment of the way it uses tools and technology. NCC manages land across the country, including the Muskwa-Kechika Conservation Area in British Columbia. Credit: NCC.



Clearly NCC was already deploying plenty of advanced geospatial tools, but, as its chief conservation officer Marie-Michèle Rousseau-Clair notes, NCC is a land trust, not a tech organization: “Our business is to do conservation.” With that guiding principle in mind, CGS conducted a deep organizational-tech dive, collecting information from around 125 NCC staffers across its Canada-wide outposts.

“We were looking for opportunities, gaps, and pinch points,” says Jeff Allenby, director of geospatial technology for CGS. Allenby noted that this initial analysis was intended to seek ways for NCC to save time and streamline work by, for example, making consistent the way field data are collected and shared across regional offices. Or if, say, certain staff members are emailing several colleagues a day to collect particular nuggets of information, maybe there is a way that process can be automated. CGS has now made a set of recommendations to implement over 18 months, designed to improve NCC’s tech and data processes.

The beginning of the relationship between NCC and CGS happened to intersect with the onset of the pandemic, when regulations

restricted NCC field workers from gathering data in person. “There was an extra sense of urgency to leverage technology,” Rousseau-Clair says, and to “achieve the same kind of work with new methods.” CGS helped with creative new thinking and connections with private firms that collect satellite data that might function as a stand-in for field data collection in the short term, and perhaps a useful supplement in the longer term.

As a result of that input, NCC has set up a tech committee to provide considered oversight to the organization’s tech efforts—to make sure everyone understands how Initiative A affects Department B. That may not be the sexiest tech story, Rousseau-Clair says with a laugh, but it lays an important foundation that actually encourages innovation in the long run. “The desire for individuals to innovate is sometimes faster than the organization can change,” she says, but the CGS roadmap aims to accommodate that reality.

CGS also helps partners work directly with cutting-edge technologies for building better and more data-rich maps. It is helping one client experiment with the use of drones to supple-



ment traditional on-the-ground fieldwork to build more comprehensive maps of invasive species (for instance, tracking kudzu's spread as it chokes out other plants). This data can be combined with surface and elevation information—including information gathered via satellite, as well as by drones and by people on the ground—into dynamic map products.

That said, Allenby notes that while the CGS mission certainly entails keeping tabs on the cutting edge, a key goal always involves sorting out which tech tools are really helpful, and which are just flashy. That's true whether an organization is large or small. "Just because a tool is there doesn't mean that you should use it," he says.

The same spirit animates the newest addition to CGS, the Internet of Water project. Spearheaded by Peter Colohan, the initiative grew out of research suggesting the need for comprehensive and widely accessible water data, analogous to the kind of mapped data associated with land use.

"Let's say you're a decision maker in a city, like an urban planner," Colohan says, "and you want to understand the conditions of a local reservoir and a local river over time—supply conditions, quality conditions, as they relate to runoff or particular pollutants." In Washington, DC, as an example, you'd have to pore over something like 45 data sets to answer your questions. Thus you end up hiring a consultant to gather and organize the data, and if you want to revisit it in a year, you'll have to do that again. "All of this data should be more readily discoverable," Colohan concludes. "The future of water management and the future of land management are intimately connected."

What the Internet of Water initiative recognizes is that there is plenty of water data out there, it's just not easily accessed, falling under a mix of federal, city, county, state, and private jurisdictions. The idea is to build what amounts to a data network where anyone can "publish" water data with a common set of protocols, making that information available to all. That makes things easier for the hypothetical big-city planner who can hire a consultant, because the

consultant can go straight to interpreting and strategizing around the data tranches rather than gathering information, and it also opens up that data to smaller entities that never would have considered trying to access it in the past.

For the last few years, the Internet of Water project has been incubated at Duke University. The move to CGS coincides with what Colohan calls its growth phase, which entails expanding over the next five years but also, crucially, doing so in a way that's sustainable over time. "The internet is littered with unused tools that have no sustainability model," he says.

As with much of the early work CGS has done with NCC and other partners, taking this longer view is precisely the key. In a way, CGS is like a consultant, keeping an eye on the latest developments across the field. "Being in the flow seat," Allenby says. "Trying to position ourselves to know what people are doing, and how it can be applied elsewhere—and making those connections, putting those people together who should be talking to each other."

At the same time, since CGS is not a traditional consultancy but rather part of a larger organization that is focused on truly moving the needle on land use, climate change, and related challenges, it can take a wider view. "What we're trying to do," Allenby says, "is really solve systemic challenges." □

Since CGS is not a traditional consultancy but rather part of a larger organization that is focused on truly moving the needle on land use, climate change, and related challenges, it can take a wider view. "What we're trying to do," Allenby says, "is really solve systemic challenges."

---

**Rob Walker** is a journalist covering design, technology, and other subjects. He is the author of *The Art of Noticing*. His newsletter is at [robwalker.substack.com](http://robwalker.substack.com).