TRANSFORMING GIS WORKFLOWS

Strengthen your digital transformation strategy with current, contextual aerial maps

nearmap

WE'RE ENTERING AN ERA OF HEIGHTENED AWARENESS

City, state, county and town infrastructures are being scrutinized like never before in an attempt to keep our nation safe. From pandemics to parade planning to protests.

Government departments are having to evolve what they do and how they do it at an accelerated pace in light of our present-day challenges. One role in particular has been at the masthead of change: the GIS professional.

More government departments than ever are utilizing GIS data and aerial imagery to achieve a level of insight and intelligence they simply cannot get from ground level. Assessment, utilities, AEC, transportation, public works, public safety — every sector is becoming more reliant on technology to get the job done, GIS in disaster management is expected to hit a global market size of $9.4 billion by 2030*, and government teams across the world are investing in GIS solutions for homeland security, aerospace, and military applications.

At Nearmap, we've seen the GIS industry surge to address world challenges. Technology providers are driving and enabling digital transformation in government — traditionally a conservative sector when it comes to embracing new processes. Access to high-resolution, up-to-date, contextual location data allows GIS teams across the board to continue serving the public, even while everything around us is changing.

This eBook includes real-life case studies showing some of the ways that government teams are moving forward and highlights trends and insights from some of the leading voices within the sector. We dive into the challenges GIS professionals face every day and explore how digital transformation is changing the world in which we work.

Let's start building tomorrow's communities today.

"Digital transformation in GIS is more important than ever. URISA members are learning from their Government peers, and this shared knowledge inspires our community, pushing it to achieve more."
– Wendy Nelson, Executive Director, Urban and Regional Information Systems Association (URISA)

JAN 2021 | SAN DIEGO, CA U.S.

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"Digital transformation ... signals a new era. "Living data sets" hold the potential to improve everything about your business, from product design and maintenance, to the productivity and well-being of customers and end-users." – Esri

FEB 2021 | THE WHARF, DC U.S.

MAR 2020 | EMERGENCY COVID-19 TENT, NY U.S.

DIGITAL TRANSFORMATION IN GOVERNMENT

Digital transformation is vast, complex, often groundbreaking, and always necessary. Whether you're a multi-billion-dollar organization or a government department or agency, evolving your processes to address your challenges is vital if you wish to succeed.

And government teams — GIS teams, in particular — have significant challenges. Overseeing multiple software applications that need to share data, keeping up-to-date on the latest software releases, maintaining better communication with residents — the list goes on.

The COVID-19 crisis has only amplified government teams' needs:

- Limited access to site
- Lost opportunities
- Optimised resources
- Can't always fly drones

At Nearmap, we create stunning high-resolution, sub-3" ground sampling distance (GSD) aerial imagery used by GIS teams to — global organizations and government departments across the United States, Canada, Australia, and New Zealand.

So, how do advances in GIS technology support digital transformation in the government sector? We looked at the challenges our customers tell us they experience, and dug into what that means to a GIS professional.

> "Digital transformation and product innovation is in our DNA, everything we do has the customer at its core." – Tony Agresta, Executive VP of North American Sales, Nearmap

DIGITAL TRANSFORMATION AND THE ROLE OF THE GIS PROFESSIONAL

The correlation between digital transformation adoption and the expansion of the GIS professional role is linear. As governments embrace their new digitized world, they place more demands upon their GIS teams. They need more data, more workforce alignment, more citizen communication — and this falls upon the GIS team to deliver.

Pressure? Maybe.

Opportunity? Definitely.

Here's why:

- Leveraging data within field applications helps service crews locate, inspect, and inventory public assets with ease
- Cloud-based solutions provide users always-on access, promoting better collaboration and data sharing, while keeping operations running when faced with power outages
- Machine learning tools are streamlining time-consuming workflows by automating data collection and feature extraction, reducing the need for manual digitization

What does that mean for the GIS professional? It means you're at the forefront of digital transformation for your government agency.

Being at the forefront of this change requires the right tools — and the right partner.

NEARMAP TIMELINE: EVOLUTION OF PRODUCTS

We listen when our customers tell us their requirements and we continually evolve our products to better meet their needs.

FEB 2020 | WEST SACRAMENTO, CA U.S.

MAY 2014
First US capture (Santa Barbara, CA)

JUL 2014
Started flying with HyperCamera System (HC1) for commercial operations

JAN 2016
Launch MapBrowser Classic, WMS and Tile API

MAY 2017
Started flying with HyperCamera System 2 (HC2) for commercial operations

OCT 2017
Launch new MapBrowser

OCT 2017
Launch Nearmap Oblique

NOV 2018
Launch Tile API v3 and Coverage API v2

MAY 2019
Launch Nearmap 3D

OCT 2019
Launch WMS 2.0

FEB 2020
Launch DSM & True Ortho API

MAY 2020
Launch Nearmap Oblique for ArcGIS

JUN 2020
Launch Nearmap AI

DEC 2020
Launch DTM/DEM Export in MapBrowser

PROACTIVE SURVEY PROGRAM

We are continuously capturing aerial imagery throughout the United States, **365 days a year**. All imagery uploaded into our web-based application is time stamped and available within days of capture.

CURRENT IMAGERY

We fly large urban areas **up to 3 times per year**, frequently capturing seasonal changes for leaf-on/leaf-off information.

WIDE-SCALE COVERAGE

We cover **70% of the U.S. population**, including the top **700 urban areas** with over **339,000 square miles** captured annually (74 million residential U.S parcels and 3.3 million commercial U.S parcels).

CONSISTENTLY HIGH-RESOLUTION

Our ortho and oblique imagery is delivered at **sub-3" GSD resolution**, meaning you can see clearly and plan accurately, before even setting foot on-site.

INSTANT ACCESS VIA THE CLOUD

Instantly stream imagery from Nearmap on any connected device via our web platform, MapBrowser, or integrate through our APIs. Easily view, measure, and export Nearmap content. Offline imagery is also available upon request.

Our innovative product suite and proactive survey capture program reflects **our goal to continually push innovation forward in the public sector and provide clear context into ground conditions**, It's this certainty our customers depend on.

SEP 2020 | AUSTIN, TX U.S.

THE CHALLENGES

CHALLENGE #1:

PROCUREMENT AND BUDGETING

We dig into how the technologies driving digital transformation are also helping make procurement much easier with timely captures, cloud-based solutions, subscription services, and easy-to-access image libraries.

CHALLENGE #2:

GATHERING ACCURATE DATA

We explore the issues that arise when working with out-of-date and inaccurate data and how digital transformation alleviates the stress on an already overstretched GIS team.

CHALLENGE #3:

IMPROVING INTERNAL COMMUNICATIONS

35% of a project's costs are accrued through remedial work and wasted effort.* We deep-dive into the risks of poor internal communication and the benefits of addressing this problem with technology.

*Marr, B. (2016, April 19). How Big Data and Analytics are Transforming The Construction Industry. Forbes

CHALLENGE #4:

PUBLIC COMMUNICATION PORTALS

We dig into the importance of information sharing and transparency when communicating with the public and how a digital-first approach brings government and communities together.

CHALLENGE #1

BUDGETS AND PROCUREMENT

Budgets are complicated. Procurement even more so. GIS teams are responsible for assets, tools, and systems that are shared with cross-functional teams, and their outputs are usually on behalf of others. This makes for convoluted procurement processes, which can prevent government teams from moving forward with much-needed technologies.

Aerial imagery is essential to government departments. When the truth on the ground forms the foundations of the future, fidelity is not just important: it's vital. Many GIS teams need two or three flyovers a year simply to remain up-to-date with development changes. However, most simply don't have the budget to procure bespoke flyovers. In the face of procurement challenges, they have to make do with outdated flyovers supplemented with low-resolution satellite imagery instead of the up-to-date high-resolution location data they need.

Poor quality aerials aren't clear enough to make out any detail, and what use are they anyway if the content is incorrect? And if you do get the budget to purchase more current imagery, do you have the resources to spend hours combing the content, digitizing it, and updating your database?

TRANSFORMING GIS WORKFLOWS IN GOVERNMENT

Digital transformation looks like accessible, user-friendly data platforms, sharing timely, relevant, up-to-date information. It involves cross-platform integration, data-enriched content, and contextual imagery, and it should allow seamless database updates — a database you can access from anywhere, anytime, on any device. Meanwhile, the products and services driving digital transformation are easy to access, implement, and budget for, making the entire procurement process straightforward for all.

NEARMAP IN ACTION

Nearmap offers a sub-3" ground sampling distance (GSD) per pixel, so you can literally count the tiles on someone's roof when you're calculating roof pitch. We cover 70% of the United States — that's over 700 urban and regional areas — and we capture up to three times a year.

Best of all, our simple subscription model gives you and the rest of your organization easy access to the most current, high-resolution images on-demand. You no longer have to worry about finding budget for bespoke flights: we reach the locations you need within your subscription costs. Reliable, repeatable, and dependably accurate data at your fingertips.

Nearmap AI takes away the hassle of database updates and digitized assets, freeing up weeks' worth of hours that GIS teams can use to better serve their internal and external customers. We offer certainty to governments through our consistent, frequent-capture program. You can rely on Nearmap to provide the truth on the ground.

"Keeping GIS data accurate and up to date is difficult with one annual aerial capture, but Nearmap has changed that. They offer a proactive survey program which allows us to keep our GIS datasets as recent as possible so we can keep pace with rapid growth"
– Shane Burnham, GIS Analyst, The City of Carmel, IN

MAR 2021 | CARMEL, IN U.S.

CHALLENGE #2

GATHERING ACCURATE DATA

GIS professionals deal with vast quantities of geospatial data —especially when you need to analyze everything from emergency routes to stormwater runoff. But data is only useful when it's good data: sufficient, accurate, timely, current, and — ideally — comparable.

Nearmap flies multiple times per year; we see how much can change in just a few months and the variability between seasons.

How can you trust data that are several years old?

How do you look back year-on-year or month-on-month if you have nothing to compare it to?

How confident will you feel about predicting what a development looks like in the fall when you have only springtime data to go from?

Inaccurate data costs time, resources, and money — three things most GIS teams are in short supply of. Adopting technologies that digitally transform data collection allows you to level-up the information you work with. The more comprehensive the data, the more accurate, agile, and informed your projects, developments, and analysis will be.

TRANSFORMING GIS WORKFLOWS IN GOVERNMENT

Effortless, extensive data capture, seamlessly populating a cloud database with up-to-date imagery. Easily accessible historical archives and user-friendly systems. It empowers other teams and departments to pull their own data into an easy-to-understand format — and all this without placing any resource demands on a lean GIS team.

NEARMAP IN ACTION

Nearmap thrives on data as much as you do, which is why we strive to capture as much information as we can every time we fly. And we fly a lot — 339,000+ square miles each year, in fact.

We have new surveys of the regions that matter most to you. Sufficient, accurate, timely, current, and comparable data — it's what we do.

You can also detect changes more often, in just a couple of clicks, with instant access to our catalog of current and historical imagery, georeferenced to show you truth over time. When we capture a new area, you receive that data within days.

Gathering data takes time. Let us do the heavy lifting for you so you can focus on helping create smarter cities and communities.

"High-resolution aerial content from Nearmap gives us a better view of our assets in the field and allows us to understand how variables like new development or road maintenance are impacting the conditions of those assets" – Wade Allsup, Information Systems Specialist, Yucaipa Valley Water District

FEB 2021 | CALIMESA, CA U.S.

CHALLENGE #3

IMPROVING INTERNAL COMMUNICATIONS

GIS professionals are at the pulse of every government organization, deriving data and insights, and creating web applications for government departments. Every piece of data GIS teams generate, every insight they glean, and every report they publish tells a story that enables someone in another department to perform more effectively.

Aerial imagery plays a significant role in this storytelling for many sectors. The tight alignment between the two means that GIS professionals from all government sectors — small, local teams to national agencies — use Nearmap imagery to create detailed base layer maps that integrate directly into their GIS, CAD, and open-source mapping platforms. They then use this content to:

- Create data-enriched maps and apps
- Provide contextual imagery to support budget, planning, and development proposals
- Streamline communication and workflow between departments
- Detect changes and verify permit compliance
- Monitor project workflow

An informed team is a cohesive team. Miscommunication results in out-of-control projects and duplicated work. When this happens, costs escalate. What this translates to in real time is field crews struggling to find locations, staff spending days out of the office on site visits, operational inefficiencies, and inaccurate spatial planning. Digital technologies that make it easier to leverage data internally ensures everyone remains on the same page throughout.

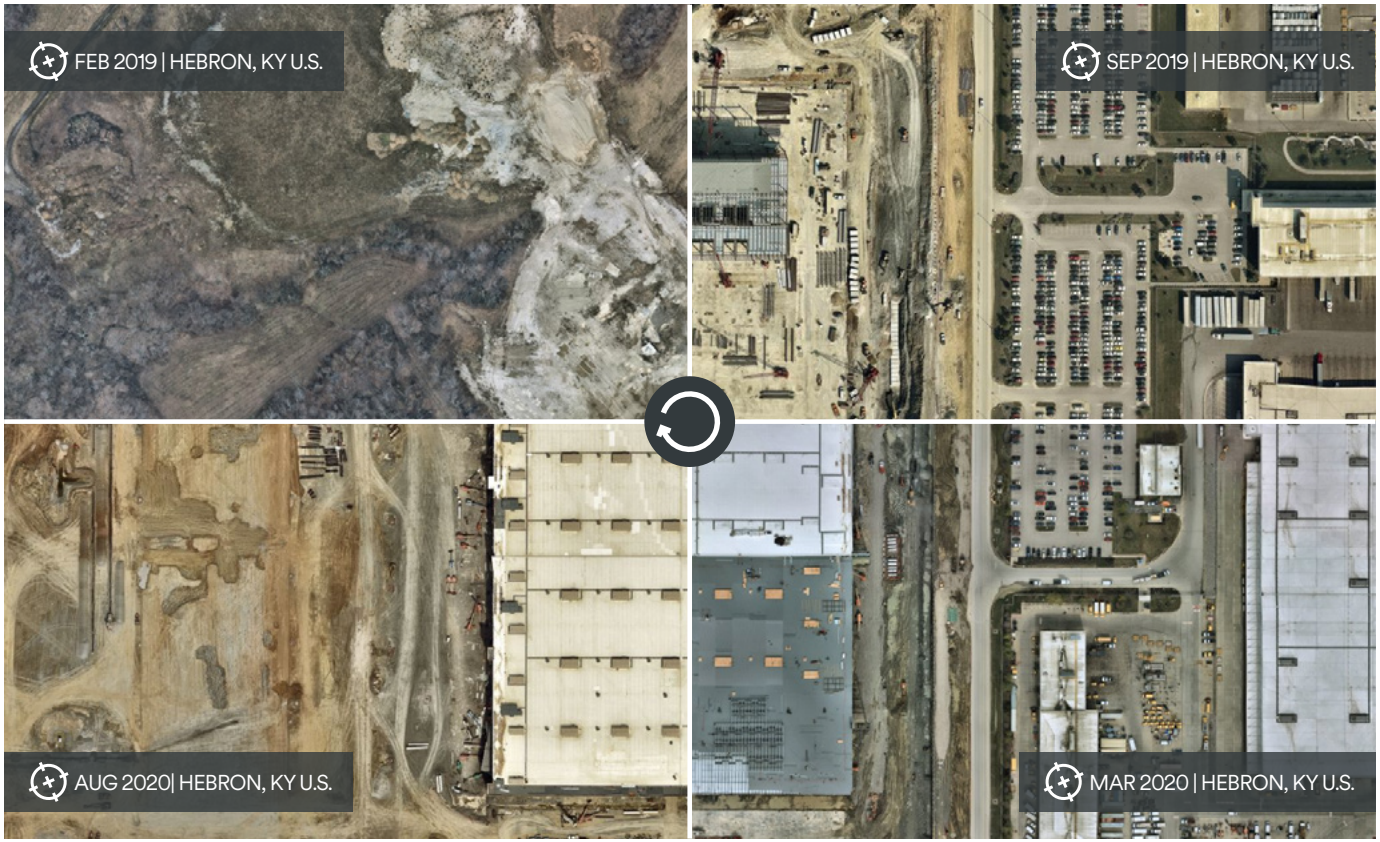
TRANSFORMING GIS WORKFLOWS IN GOVERNMENT

Digital transformation looks like shared, cloud-based internal platforms and processes that make effortless data exchange the new norm. It creates impactful proposal visuals and consistent communication. This digitized future allows everyone — entire departments to individual team members — to make informed, data-led decisions and perform more effectively and efficiently. The upshot? Empowered, engaged people doing their best work.

NEARMAP IN ACTION

As one of the fastest growing airports in the United States, with over 7,700 acres to manage, Cincinnati/Northern Kentucky International Airport—known as CVG—switched to Nearmap high-resolution aerial imagery to stay on top of the many rapid developments occurring on its land.

CVG was already using aerial imagery, but content from a previous provider was limited to a four-year cycle for updates—simply not frequent enough to keep pace with construction activity, additional airfield infrastructure and third-party projects happening on the property. After hearing about Nearmap at the Autodesk University conference, Michael Miller, a CAD and GIS specialist for CVG decided on a trial run—and there's been no looking back. CVG has now been a Nearmap customer for over 12 months.



CHALLENGE #4

PUBLIC COMMUNICATION PORTALS

The most important stakeholder in government is the general public. Residents want to know what's happening in their communities surrounding publicly funded government initiatives.

Citizens want to know about government plans to tackle zoning or areas of new development; about emergency routes and road closures; updates to land use and land classification; and information on construction delays and events. They also want to feel confident that their county holds their correct parcel information permitting and taxation purposes.

However, the way this information is collated would often be unintelligible and, frankly, dull to the average person. The raw data GIS analysts work with isn't appropriate. How you present your story is as important as the story itself if you want people to understand and be interested in what you have to say.

Whether you realize it or not, a GIS professional must be as much a storyteller as an analyst. And with the whole world online, a digital transformation mindset is the only way to reach mass audiences with engaging, interactive content.

WHAT DOES DIGITAL TRANSFORMATION IN GOVERNMENT LOOK LIKE?

Digital transformation looks like user-friendly public-facing portals that allow a city, county, or state's residents to learn about and interact with their local government's initiatives. It allows for two-way communication and promotes a sense of community involvement. Content is current, relevant, and — most importantly — easy to update.

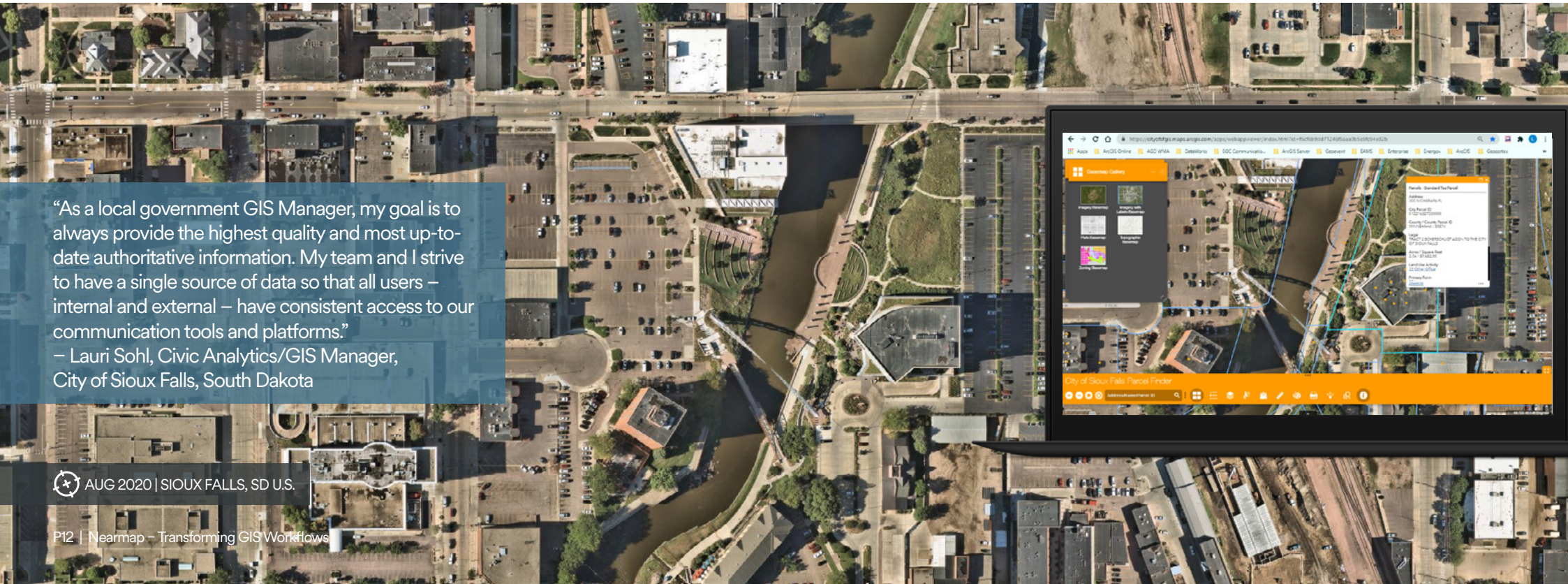
NEARMAP IN ACTION

They say a picture speaks a thousand words, and never is this truer than when sharing geospatial information with everyday people. Nearmap's high-resolution vertical imagery allows you to bring cities to life.

Why try to explain what a new development will look like when you can show it using 3D visualization modeling?

Why post a list of road closures when you can create contextual street maps with alternative routes clearly marked?

Your residents want to hear what you have to say. It's your story: tell it well.



"As a local government GIS Manager, my goal is to always provide the highest quality and most up-to-date authoritative information. My team and I strive to have a single source of data so that all users – internal and external – have consistent access to our communication tools and platforms."
– Lauri Sohl, Civic Analytics/GIS Manager,
City of Sioux Falls, South Dakota

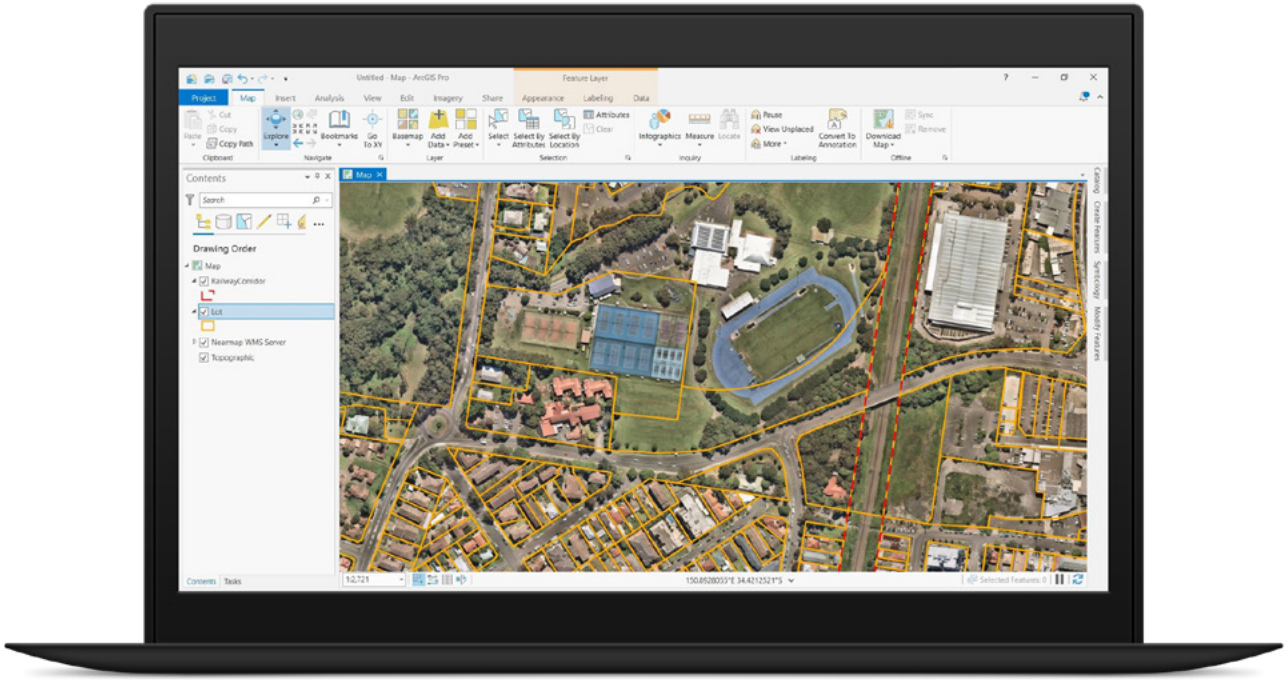
AUG 2020 | SIOUX FALLS, SD U.S.

SPOTLIGHT ON: APPLICATION AND PLATFORM INTEGRATIONS

The government sector is anything but simple. At Nearmap, we do all we can to bring simplicity to GIS professionals across every department. You work with GIS, CAD, and open-source mapping platforms, and so do we. Our aerial imagery works seamlessly with these applications to provide dependable base layer maps through various integrations.

Whether you're responsible for 3D visualization models, asset management systems, or emergency dispatch software, high-resolution aerial imagery allows you to work smarter, not harder.

Nearmap partners with industry-leading GIS technology, design and visualization, and asset management providers to provide multiple benefits within one subscription. Our partners include:



esri Partner Network Gold

AUTODESK.

Bentley Advancing Infrastructure

CESIUM

Geocortex® by VertiGIS™

GEOGRAPHIC TECHNOLOGIES GROUP Beyond Location Intelligence

Cityworks® Empowering GIS

PLANIT GEO™ mapping a greener future

"It's so important for Huntley to have our GIS utilities overlaid with Nearmap imagery, super important. In ArcGIS, we're able to draw features that may be missing and revise line work based on API-keyed imagery in coordination with georeferenced development plans."
Jason Irvin Assistant Director of Public Works and Engineering, Village of Huntley, IL

"With Nearmap imagery, we can maintain good existing conditions and base mapping which helps projects move along while cutting down on costs and mistakes." Michael Miller, CAD and GIS Specialist, CVG

MAR 2021 | HEBRON, KY U.S.

HOW DID NEARMAP TECHNOLOGIES HELP CVG ACHIEVE THEIR GOALS?

With each Nearmap update, new imagery joins the constantly growing library of previous captures, spanning years. For CVG, seeing truth on the ground through historical imagery enables them to learn from the past and move forward with their goals for the future.

Nearmap has wide coverage across the country and captures aerial imagery of vast urban areas proactively. There's location content for thousands of places available for instant look-up whenever needed. For example, since each airport must adhere to FAA guidelines, they often look to each other for ideas and best practices. Using Nearmap, the CVG team can see what other airports are doing—from airfield markings and signage, to layouts for de-icing pads.

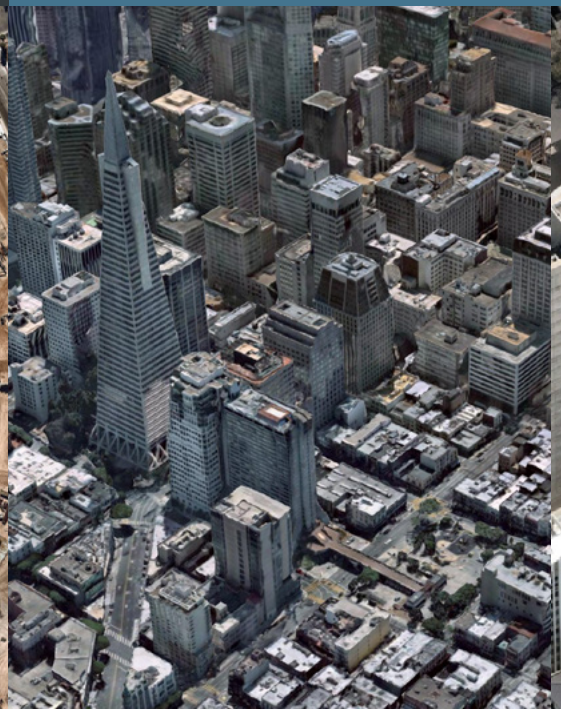
ESRI

Esri's comprehensive ArcGIS platform laid over stunningly clear Nearmap imagery offers a rich, contextually accurate viewing experience — a gift to GIS analysts who often have to piece together information from multiple products.

You can stream Nearmap's up-to-date aerial imagery inside ArcGIS Online applications to create powerful 2D and 3D web applications.

If you're looking for a complete, cloud-based solution for your project, you've got it.

"GIS is the foundation from which cities around the world integrate many different digital representations of the real world, in order to monitor and predict future outcomes."
– Brooks Patrick, Manager Urban Planning and Smart Cities, Esri



If you use ArcGIS Pro, simply add Nearmap from the ArcGIS Marketplace or with an API key — you may want to add Nearmap 3D DEM, DSM, or Textured Mesh for rich analysis, too.

When your team is in the field using ArcGIS Field Maps, ArcGIS Collector, or ArcGIS Survey123 on mobile devices, Nearmap imagery allows your field crews to have the latest imagery for their tasks.

Do you use niche products like ArcGIS Urban for urban planning and design? Nearmap has the largest library of 3D textured mesh ready to go. Access this data in an instant with Nearmap 3D and ArcGIS Urban — no need to create your own 3D for a 3D basemap when Nearmap has it now.

If you need to see your jurisdiction from an oblique angle, Nearmap measurable obliques work in ArcGIS Enterprise with ArcGIS Web AppBuilder. Don't confine your view to orthographic only: view from any angle and see the windows, walls, doors, and any other potentially hidden features.

NEARMAP AND ESRI IN ACTION:

SAN FRANCISCO AIRPORT (SFO)

SFO maintain an accurate log of airport infrastructure, which must be reported back to the Federal Aviation Administration (FAA). Pulling Nearmap imagery into Esri's ArcGIS Pro has simplified the process of verifying infrastructure locations.

"We have some large infrastructure which we maintain in GIS, such as runways and taxiways, as well as maintaining a digital copy of all painted signs and marking lines out in the airfield. All the paint on the airfield needs to be designed or approved."
– Agie Gilmore, GIS Analyst, San Francisco International Airport SFO

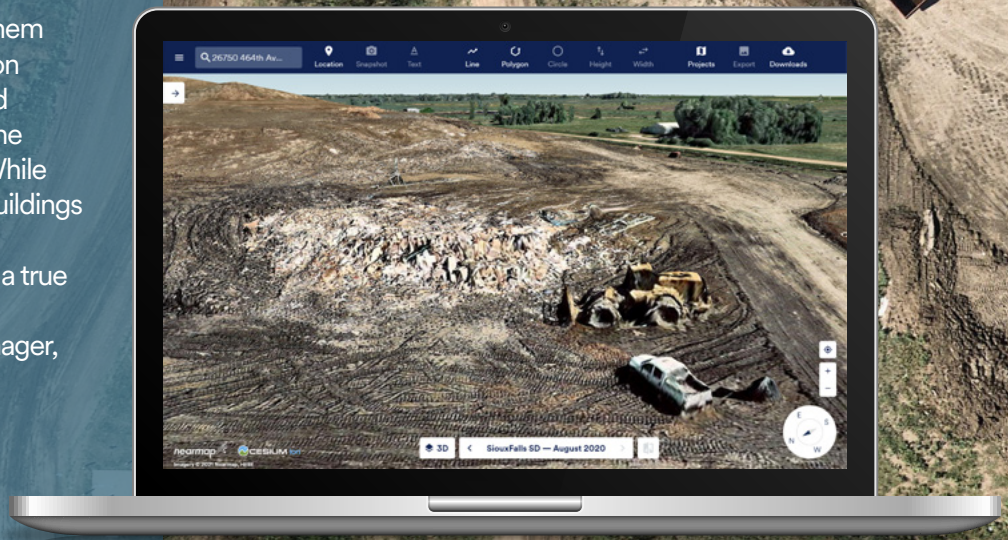
MAR 2021 | SAN FRANCISCO, CA U.S.

NEARMAP AND ESRI IN ACTION:

SIOUX FALLS, SOUTH DAKOTA

Sioux Falls Civic Analytics Analysts who specialize in land records are collaborating with the Planning team to utilize ArcGIS Urban as part of the review process for proposed construction projects, and are using the Nearmap 3D textured mesh as the design context within Urban. As a result, they expect to get a considerably more detailed perspective of how a new project will fit within existing site conditions. They will also have the ability to interact with the 3D mesh to perform various applications, like shadow analysis. Even more, they can use this 3D textured mesh within Urban as a valuable citizen engagement tool that enables the public to better understand a new proposal and provide feedback.

"Viewing surrounding landmarks and vegetation the way we see them in reality instead of simple icons on a screen will help orient users and encourage them to understand the context and provide feedback. While 3D Urban models of proposed buildings are useful, combining them with Nearmap 3D mesh gives people a true understanding of a project."
– Lauri Sohl, Civic Analytics Manager, City of Sioux Falls



AUG 2020 | SIOUX FALLS, SD U.S.

CITYWORKS

Cityworks, a Trimble Company, is the leading GIS-centric solution for public asset management and community development. Built exclusively on Esri® ArcGIS®, Cityworks helps organizations manage public assets and their associated data, work activities, and business processes.

Together, Cityworks and Nearmap help organizations make informed decisions that improve their operations while lowering costs, and ultimately guide them to becoming resilient, sustainable, and safe.

2.8” GSD vertical imagery from Nearmap is the perfect asset management companion, bringing to life your cities and communities from the air. See every park, street, and building with such clarity you can even count the manhole covers. Reduce site visits, improve team communication, and enrich your Cityworks experience with clear, current imagery you can trust from Nearmap.

GEOGRAPHIC TECHNOLOGIES GROUP (GTG)

GTG offers specialized experience in the planning, design, procurement and implementation of geospatial technology. The organization is committed to elevating the use of location intelligence across all levels of government, and now, Nearmap is partnering with GTG to create smarter solutions for our local government customers throughout the U.S. and Canada.

THE FUTURE OF GIS DIGITAL TRANSFORMATION

The government sector has come a long way in adopting new processes and technologies, but it remains a slow journey. The need for change, however, is accelerating and digital transformation is a necessity, not a luxury.

WHAT'S DRIVING CHANGE?

- Governments achieve more success addressing societal needs when they embrace partnerships with third-party technology providers
- Government teams are becoming smarter with how they collect and use data, but risk limitations unless they become more digitized
- Rapid urbanization, increasing populations, and aging populations have forced governments to look to more intuitive, data-driven solutions
- Connected citizens expect the governments that serve them to be connected too. Many government departments still rely on legacy systems and archaic, manual processes

KEY TRENDS DRIVING DIGITAL TRANSFORMATION IN GOVERNMENT

Artificial intelligence (AI)

Artificial intelligence has stepped out of science fiction and is now a part of everyday life, from ecommerce to recruitment to government initiatives. GIS teams are using location data and machine learning to automate insight gathering, streamline business processes, and accelerate decision making.

A mobilized workforce

Mobile devices, from phones to tablets to wearables, have enabled teams to work efficiently while in the field or on the road for years. But while this meant that teams could do more, they still had to conduct data collection in person on time-consuming and costly site visits.

The pandemic has forced organizations to rethink how they collect data and implement change in a world where travel is often restricted.

High-resolution aerial imagery is one technology that's filled the void, enabling teams to work from their homes as effectively as from an office, if not more so. And with the rollout of 5G networks to support faster download speeds, less lag, and more efficient battery use, it's never been easier to bring remote teams together.

Internet of Things (IoT)

The Internet of Things is a network of internet-connected "things" — cameras, devices, wireless trackers, scanners — fitted with sensors and unique identifiers that work together to collect and transfer data, with no need for human intervention. When combined with geospatial location technology and aerial imagery, it's truly transformative.

New York, Barcelona, and Dubai already use this technology as they strive to become smart cities, and we expect to see this become commonplace over the next decade.

Cloud computing

We've seen how efficient remote collaboration is. Many teams that previously had never considered this option are now proactively looking to adopt it. This change in direction means that cloud computing solutions will extend far beyond server software suites. Soon, everything a department does will take place in the cloud to take advantage of its vast storage capabilities, accessibility, and optimized security.

LEARN MORE

To see how Nearmap is transforming government workflows, visit: **www.nearmap.com/government**

JAN 2020 | SUN LAKES, AZ U.S.