# Mango

# The 10 Most Common Myths About Cloud GIS

# Since 2012, the number of organizations leveraging cloud applications increased from 58% to 70%.

Most businesses and organizations that have migrated to Mango's online GIS platform started to think about moving to an online platform well before they tried Mango. Their reasons for switching are numerous, but all boil down to extracting more value from their data than previously possible.

Before making the switch, it's important that you thoroughly evaluate your needs. Adding value and increasing usability for your end-user products, while enhancing reliability and security is possible, and forms the primary benefits of online GIS mapping.

If you're considering the switch, you're at the right place.

Since 2012, organizations leveraging cloud applications grew 12% to 70%, according to the 2016 IDG Enterprise Cloud Computing Survey. IDG found that the top business goals driving investment in the cloud were lowering total cost of ownership, replacing on-premises legacy technology and enabling business continuity in critical failure scenarios.

Despite this continued growth in cloud adoption, a number of objections and myths about the cloud have taken root. While cloud based GIS is no stranger to these myths, there's no doubt that cloud mapping can bring real benefits for any business with geospatial data or those who have data, but lack the tools to visualize and analyze the data.

The good news is that most companies are no longer questioning whether they should move to the cloud. Instead, they've realized they can take advantage of the many benefits the cloud GIS has to offer and still satisfy their security and compliance needs.

Cutting through the myths and embracing the cloud will help you find real solutions that deliver value for you and your users. No matter where you are in the cloud adoption cycle, it's worth pulling apart the common objections to cloud GIS to see which—if any—hold water.

**70%** of organizations have at least **one application in the cloud.**

**16%** have plans to do so **within 12 months.**

*The 2016 IDG Enterprise Cloud Computing Survey found that the top business goals driving investment in the cloud were lowering total cost of ownership, replacing on-premise legacy technology and enabling business continuity.*

# #1
## *I don't like "The Cloud".*

For those of us familiar with the hum of an in-house server, it's a reassuring sound. All your data is safe and sound in those black boxes, within view, and secure in your office. That reassurance has a tendency to make you question if your organization needs, or is even ready, for the cloud.

It's wise to remember that for most industries, the cloud is delivering value in ways that weren't previously possible. Almost all facets of daily life involve interaction with cloud based applications, and they've undoubtedly made life simpler. Whether we realize it or not, it's likely we're already knee deep in the cloud.

The services you use daily to make your life easier in those small but significant ways are part of the cloud. If you check your Facebook, Gmail, store photos on iCloud, Google Photos, or share documents and files with Dropbox, you're already in the cloud. Check your bank balance online or pay for things with Paypal? Maybe you've studied a subject on a MOOC, or maybe you track your daily run and keep tabs on your pace and fitness with an app. Yep, you're in the cloud.

If you don't think it's necessary to deliver cloud based services with your data, think of those who do: your customers, your users, your communities.



*You don't have to be this guy.*

# #2

## *We have very strict security and compliance needs—the Cloud just doesn't cut the mustard.*

Robust security is critical for any organization, but a common complaint is that the cloud is simply not secure.

Cloud security, however, gains its strength from a seemingly inherent weakness—as a candidate for cyber-attack, the Cloud is an irresistable target.

With unprecedented amounts of data, users, attack vectors, and distribution of massive amounts of data to a wider geography than any single company or agency has managed before, cloud providers have amassed a wealth of security intelligence over the past few decades that has shaped real world security processes. Today, these processes are without rival by any traditional means, and most certainly out of reach of small business and local government offices.

In fact, existing in-house infrastructure may be the weakest point in your security processes.

It's not uncommon to find that physical security procedures for locally hosted servers are neglected.

Consider how many people have had physical access to your locally hosted servers? You and your staff, but then what about cleaning staff, the site maintenance manager, his staff, third party contractors such as builders, pest control.

How many of these people have been vetted? How often do you review access authorizations?

Mango leverages the industry-leading physical and digital security of Amazon Web Services (AWS) cloud data centers, which exceeds traditional data center safeguards, and likely exceeds the capacities of most organizations.

The core protocols of AWS physical security and protection includes:

- Background checks for all staff with physical/ network access
- Review of staff credentials every 90-days
- Full audit log of all interactions with the servers
- Access Control/Intrusion Detection and CCTV Surveillance
- Fire detection and suppression

- Climate and temperature control
- Uninterrupted power supply systems and backup generators for the entire facility
- Storage device decommissioning processes that include degaussing and physical destruction

The IT infrastructure behind AWS is designed and managed in alignment with security best practices and a variety of IT security standards, including:

- SOC 1/SSAE 16/ISAE 3402 (formerly SAS 70)
- SOC 2
- SOC 3
- FISMA, DIACAP, and FedRAMP
- DOD CSM Levels 1-5
- PCI DSS Level 1
- ISO 9001 / ISO 27001
- ITAR
- FIPS 140-2
- MTCS Level 3

In addition, the flexibility and control that the AWS platform provides allows Mango to meet several industry-specific standards, including:

- Criminal Justice Information Services(CJIS)
- Cloud Security Alliance (CSA)
- Family Educational Rights and Privacy Act (FERPA)
- Health Insurance Portability and Accountability Act(HIPAA)
- Motion Picture Association of America (MPAA)
- Secure Network Architecture / Secure Access Points
- Corporate Segregation (servers on a different physical network to staff)
- Fault Tolerant Design (one system goes down a replacement goes up)
- Network Monitoring and Protection

Amazon Web Services complies with **more than 50** global certifications, attestations, frameworks and regulations, making it certifiably the most secure cloud storage and compute platform available.

AWS has proven itself to be a strong cloud partner to many of today's biggest, fastest, and most innovative companies, and Mango leverages the power of AWS to deliver our powerful online GIS platform that's seriously simple to use.

amazon
web services

*"Using the cloud is like putting your money in the bank versus under your mattress.*

*Even though your money, or data, is not on-premises, **the bank will do a much better job protecting it because it has vaults and security cameras,** more than what a single enterprise company can do."*

—David Linthicum

Cloud Computing Visionary & Senior Vice President,
Cloud Technology Partners

# #3

## Our data is too sensitive for the cloud.

As with most industries, GIS has a tendency to regard the Cloud with a certain amount of suspicion and trepidation—after all, it's simple for a GIS professional to deploy a single map containing all the public datasets, and keep private data private. But does that provide the best outcome for the users of your maps and data?

For organizations that do publish maps for external users, the balance between open access and full lockdown is a choice that doesn't have to exist; instead, leveraging secure cloud services like Mango can deliver useful outcomes across all stakeholders and users.

Your organization's geospatial data is your most precious asset, and the thought of putting that data in cloud can raise a cold sweat.

It seems logical that it would be safer to keep data on premises. The physical proximity of desktops or servers are comforting, but what this inevitably leads to is siloed data and limited access for the users your data provides the most value to.

Migrating data from the back room to the front desk via the cloud utilizing elastic infrastructure provides efficient delivery outcomes that allows for increased visibility, analysis, and delivers greater value to a wider set of users.

Keeping sensitive data secure is a core necessity, but by holding out against the cloud just because some data needs to be restricted also restricts your open data that your community really does need.

Multi-tenancy cloud platforms, where many data stores share the same physical infrastructure, also raise the fear that data could inadvertently become exposed to others, including competitors.

Our infrastructure provider AWS is well aware of such concerns and have implemented layers of protection to ensure that you — and only you — see your own data.

Mango's infrastructure maintenance procedures ensure applications and operating systems are patched and kept up to date, and employee access is secured with frequently changing root and administrator credentials, and multi-

factor authentication including device specific sign in. Authentication keys are never stored in public repositories or in a manner which would allow for inadvertent publication.

Mango secures your data in a number of ways and provides granular access permissions that ensures only your authorized users have elevated access, and unauthenticated users only see what you have specifically made public.

All map data uploaded to Mango is not stored in its native format. It is converted into an intermediary format that cannot be opened or read by desktop GIS packages.

Data uploaded to Mango is not accessible or shared with any third parties and when you delete a dataset from your account it is completely deleted from our servers.

While Mango is built to secure your data, it's important to remember where your responsibilities lie, and how best to ensure that potential risk factors are mitigated and appropriate processes are built into your existing data security and governance policies.
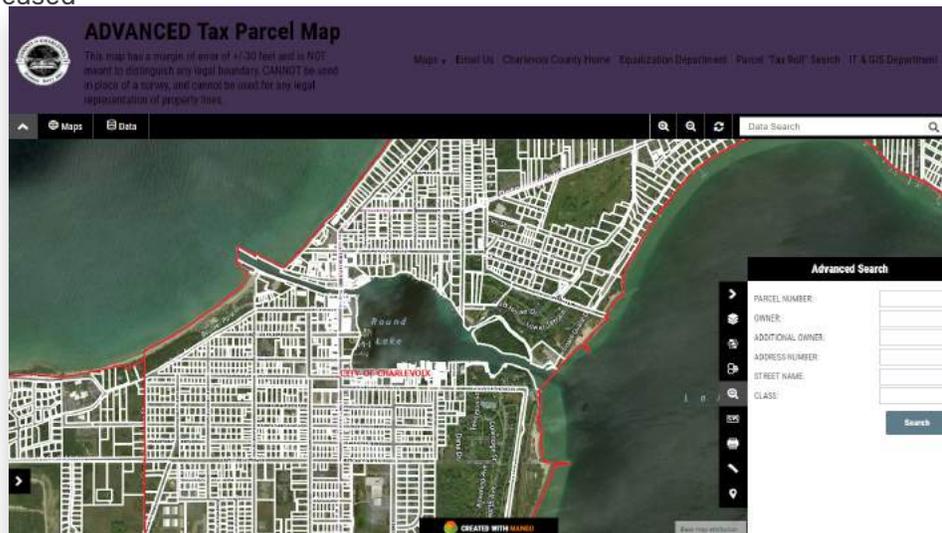


"*Mango is a great out-of-the-box product that will allow you to get a professional product with minimal outlay of time and money.*"

Charlevoix County, Michigan

# #4

## We can't move to a cloud GIS — we have mission critical legacy applications.

Many organizations have substantial software and hardware deployments in place already. Migrating away from these systems while they're still functional probably isn't high on the agenda, and finding cloud GIS services that provides interoperability is often crucial.

It's not necessary to rip out legacy apps all together, unless that's a priority for your organization. Cloud GIS can enhance the value of the output of your legacy applications and infrastructure by extending functionality and accessibility, provided value to more end users of your maps and data, in ways that legacy apps simply can't deliver.

Mango integrates into many common workflows and offers simple interoperability, with support for all major file formats produced by desktop GIS platforms. Mango can be deployed as a 'front desk' solution to enable distribution and access to otherwise 'back office' data while maintaining data privacy.

Complex data editing and creation can remain at the desktop GIS level, if required, and regularly updated data can be automatically pulled into Mango via the Data Sync feature. Whether by scripted output from your server, or simply dropping updated datasets into a Dropbox folder for Mango to consume, when Data Sync detects updated datasets, it automatically uploads the dataset to your account. All maps using that dataset are also updated, gaining efficiency, and allowing you to and your team to focus on other work.

As a web-based service, Mango is platform-agnostic and offers a wider range of accessibility for end users of your maps on all mobile and tablet devices, desktops, and laptops - across any operating system.

A key benefit of cloud based GIS is scalability. Proprietary in-house server solutions are not built in a way that allows for dynamic scalability and deployment, so the overheads for scaling on premises servers are far greater than cloud GIS in both acquisition expenses, planning and approvals, and a potentially lengthy time-to-live.

When you reach a plan limit in Mango, upgrading to a higher tier of service is effortless and can be completed in seconds while requiring zero downtime. Click to upgrade, and keep working.

> *"Mango has changed our business for good.*
>
> *We are now publishing analyses that are only possible on Mango."*
>
> —Ricardo Calva, Director at MapsMind

# #5

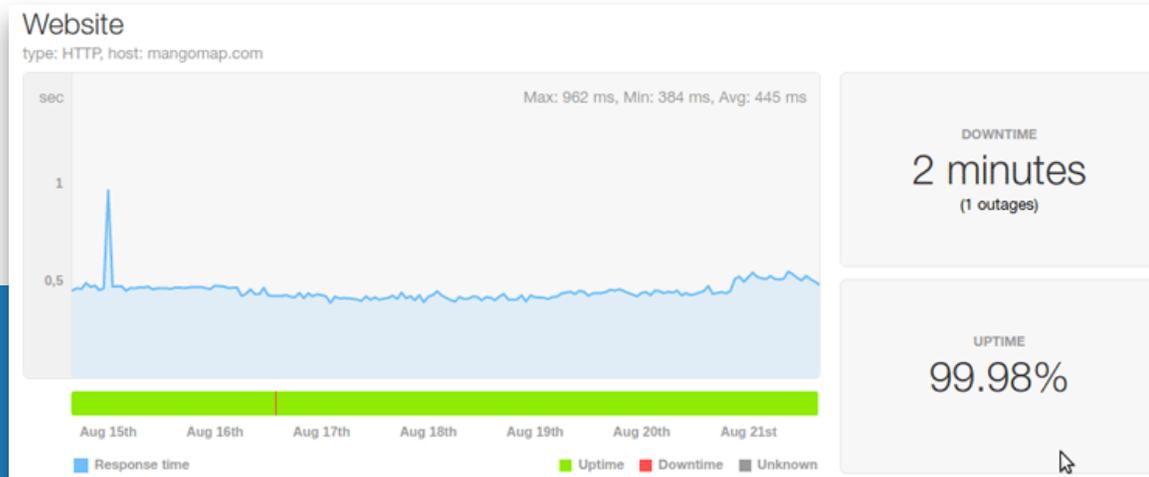## *The cloud is less reliable than in-house systems.*

A common myth about cloud GIS is that reliability inevitably suffers.

The cloud is only as reliable as the internet connection you have, but on-site installations are no less vulnerable to outages because of connectivity issues. When your connection goes down, your users' access is cut off.

With AWS as the backbone of Mango, we can ensure on-demand availability with an extremely low downtime.

Mango employs a range of processes that ensure your data is available when it's needed, beginning with the Mango application.

Built upon robust industry standard open source platforms, Mango benefits from the power of open source, with thousands of eyes checking and updating source code.

## Website
type: HTTP, host: mangomap.com

Max: 962 ms, Min: 384 ms, Avg: 445 ms

sec

1

0,5

Aug 15th   Aug 16th   Aug 17th   Aug 18th   Aug 19th   Aug 20th   Aug 21st

■ Response time          ■ Uptime   ■ Downtime   ■ Unknown

DOWNTIME
## 2 minutes
(1 outages)

UPTIME
## 99.98%

## Ensuring Maximum Availability

### Daily Snapshots

Mango takes Daily server snapshots and stores each snapshot for 7 days This means that in the event of critical server failure, we can instantly bring a complete copy of our servers online. A snapshot isn't just a simple backup - it's a complete copy of the entire server, including the operating system.

### Automatic Failover

All of our core servers have a failover server in place. These are duplicate servers that are on permanent stand by, and can take the place of any servers that run into problems such as a hardware failure, crash, or scheduled maintenance.

The second our monitors detect a problem, the server in question is swapped out and replaced by its failover.

### 24/7/365 Server Monitoring and Alarm Systems

All of our servers a monitored 24/7/365. It doesn't matter if it's 3am on Sunday morning or Christmas Day, the moment a server experiences problems alarms are activated on the cellphones of our on-call technicians.

Together, these protocols allow Mango to boast a Mango maintains an average uptime of 99.98%.

### Data Storage

Mango treats your data like you do - it's the most

precious and valuable asset you've got.

All data uploaded to Mango is written to multiple disks instantly, backed up daily, and stored in multiple locations.

Files that our customers upload are stored on servers that are fault tolerant and use techniques to remove bottlenecks and points of failure. No data uploaded to mango will be available to be used by Mango, Mango staff or shared with any third parties.

### Employee access

No Mango employees ever access private repositories unless required to for support reasons.

Staff working directly in the file store access

the compressed Mango database.

Support staff may log into your account, with your explicit permission, to access settings related to your support issue.

When working a support issue we do our best to respect your privacy as much as is technically possible, restricting access only to files and settings required to resolve an issue.

Mango is committed to confidentiality of sensitive data, and all staff contracts include non-disclosure agreements, and confidentiality clauses, regardless of whether they will come into contact with customer data in the course of their duties.

# #6
## Moving to the cloud will be expensive.

This is probably the myth that is farthest from the truth.

Rather than costing money, a move to Mango usually represents a significant cost saving for most organizations. While it is true that a cloud based system represents an ongoing cost, in most cases that cost is less than the cost of keeping an existing self-hosted system running, when all the costs are taken into consideration. In tech we call this TCO (total cost of ownership).

While some cloud services require migration, customization, training and ongoing operations costs, Mango is straightforward: A simple monthly fee.

Mango is simple. Anyone familiar with GIS will find Mango a breeze, and those unfamiliar will find Mango incredibly simple to get started.

If you've already bought all the software you currently use, the prospect of paying an ongoing monthly subscription fee might not fill you with joy.

However, consider the maintenance, the necessary upgrades, the incidental costs that surround in-house software and servers, and that monthly fee for Mango will almost always come out cheaper.

The fact is that on-premises solutions aren't a one-time expense. Hardware inevitably fails, and must be replaced, and labor, power, cooling — even before you've considered the upfront purchase costs and ongoing credit usage for software.

If your on site server has a lifespan of 5 years - not uncommon for high load servers - it means that besides your regular operation and maintenance costs associated with the server, every five years you're probably going to need to replace your entire setup. This includes software licenses.

Unlike proprietary server solutions, with Mango there are no surprises. There are no license fees, no upfront costs, no credits or view quotas, and no maintenance contracts with Mango; just a fixed monthly or annual (or multi-year) payment that can be as low as $49 per month, and cancelled at any time with no further charges.

Look forward ten years, and the overall cost of on-site solutions begin to look worrying. Total Cost of Ownership of your server is most likely many times higher than a cloud GIS subscription.

While lowering the TCO and minimizing expenses associated with owning and maintaining on-premises infrastructure provides a clear advantage, cloud GIS computing can offer organizations much more, accelerating efficiency through agility, scalability, innovation and faster deployments.

One key advantage of cloud GIS is scalability; testing cloud deployments with a small amount of data is a good strategy. If it meets requirements, repeat and migrate more data. There's virtually no overheads taking this approach. Once you reach a barrier of storage or map quota, it takes seconds to scale to the next level required. No hardware acquisition, no. Just pick the level you need, and keep working.
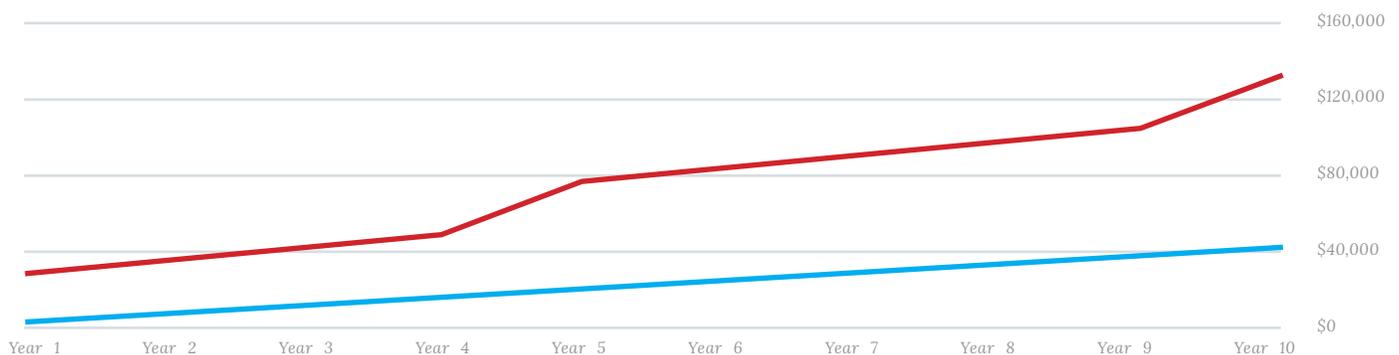


**On-Premises** vs. **Software as a Service**

# #7

## *There's no one to turn to for help.*

Mango's responsive customer support is available to answer any question, provide technical support and mapping advice at any time.

During your trial, you can speak directly with a web GIS expert to discuss migration and deployment requirements to ensure you have the full picture of the capabilities web GIS with Mango.

From within the application, you can start a conversation with our support team that will follow you wherever you are - email, or directly within Mango when you're working on maps.
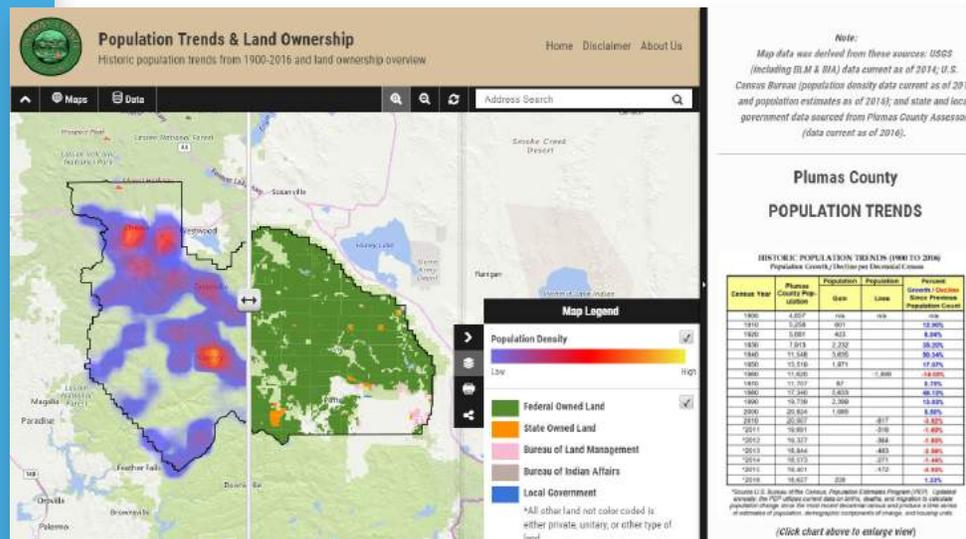
For Enterprise and Agency customers, a personal account manager is on hand to assist, and our technical team provide prompt support.

I need some assistance

Sure, we're here to help

…
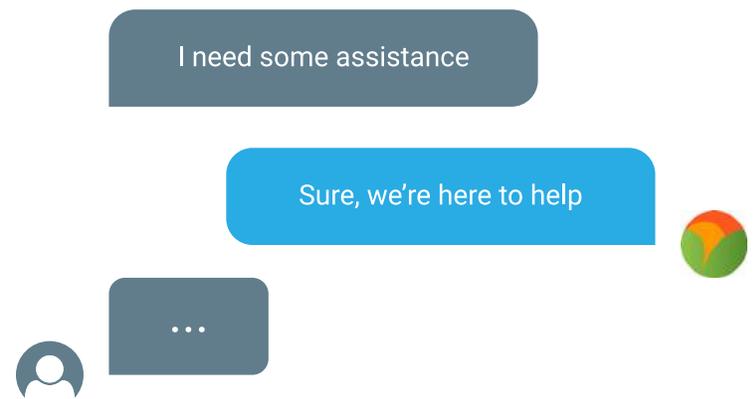
*"Since implementing Mango into our GIS department's website, we went from 'basic and boring'...*

*...to 'WOW!'"*

—Becky Osborn, GIS Planner
Plumas County, CA

# #8

## *Cloud GIS will require more IT management.*

With Mango, you won't be thinking about scheduling computation time, spinning up server instances, or worrying about what the hosting bill is going to cost you at the end of the month.

Mango manages the storage, databases, backups, and infrastructure. We do the heavy lifting, and we're the ones up at 4am when the server alarm rings.

Both you and your IT staff (and in a small operation, that could be you), can rest easy and focus on what matters: maintaining your datasets, deploying maps, and delivering value to your users.

# #9

## *We lose control of the look and feel of our maps.*

Mango is designed to put your data first, but when you need to align your brand, messaging and corporate personality across all your assets, Mango provides simple and fast ways to get it done.

Mango lets you apply your brand and corporate persona directly into your maps and portal.

It's simple to integrate your corporate color scheme into all maps and data views, as well as display your logo. Each map can have its own custom navigation menu to link between web assets and back to your home page.

If your users don't speak English, or if you have specific terminology Mango's language pack allows for complete localization and customization of end-user interface text. Need to run your maps on your domain? Configure an A-record on your domain, flip a switch in Mango and your maps are right there on your domain.

Want a white-label solution? With the flick of a switch your maps are seamlessly integrated into your brand and website with no Mango branding.

*"Conveying complex data-driven concepts in customer presentations is tough at the best of times. But once we load up Mango as an aid to discussing geo-spatial risk models, those 'aha' moments inevitably cascade around the room."*

— Dion Oryzak,
ISO Verisk Analytics

# #10

## *Cloud based solutions can only do X, we need more power.*

Cloud mapping deployments don't have to replace the entirety of your GIS office. Our customers range from small to large organizations around the globe, and each have implemented Mango to suit their data distribution, analysis, and visualization needs.

What we can promise is that we offer one of the most powerful web-based GIS solution on the market, with desktop level tools that allow you and your users to perform complex queries and advanced spatial analysis of your data, as well as a host of useful tools that enhance the user experience and deliver pathways to exposing vital answers and information within your data.

Powerful full text address search and data attribute search with autocomplete, along with coordinate search, and customizable advanced search tools offer users familiar and simple pathways to find points of interest and features that meet user's criteria.

Mango supports all major spatial file formats, including Shapefile, CSV, KML, MapInfo TAB, FileGDB, GeoJSON, GeoTIFF rasters, and WMS.

Mango offers a range of visualization styles including category, choropleth, bubble and heat maps that can be implemented with a single click to make apparent patterns and trends within your data. In-map attribute and feature editing allows you to keep data fresh and for field staff to update maps directly from their laptop. For datasets that need complex desktop editing, Mango supports automated updates with Dropbox integration.

Formatting and presentation tools are baked in, allowing you to display your data in easily understood popups and sidebars. Image, video and audio links in your data are automatically embedded into your popups, and you can use attribute variables to retrieve images or links stored in external databases and content management systems.

Mango's feature permalinks allow for bi-directional linking between your web assets, using unique variables in the data, creating seamless information gathering workflows.

Extending the collaborative power of Mango is simple, with unlimited, free, add-on Viewers, and premium add-on Administrators and Data Editors to enable secure team based workflows. Create sketches on top of maps

that can be shared privately or with the public, and bookmark and share features, places, and sketches.

Map performance can be tracked and analyzed for continuous improvement with powerful analytics integrations with Maptiks, and Google Analytics.

The full complement of Mango's features:

| | |
|---|---|
| *Users & Groups* | Unlimited Private Viewers |
| | Additional Administrators ($49/month each) |
| | Additional Editors ($99/month for packs of five) |
| *Analytics* | Google Analytics |
| | Maptiks |
| *Branding & Customization* | Custom logo |
| | Custom color scheme |
| | Custom layout |
| | Custom navigation bar |
| | Custom language |
| | Custom domain / sub-domain |
| | Removable "White Label" branding |
| *Security* | SSL encrypted maps - 128-bit encryption |
| | Public maps and datasets |
| | Standalone maps |
| | Hidden maps |
| | Password protected maps |
| *Data Management* | Edit feature geometry |
| | Edit feature attributes |
| | Add / Remove features |
| | Reupload datasets |
| | Data Sync |
| *Data Formats* | Vector Data: SHP, CSV, KML, TAB, FileGDB, GeoJSON |
| | Raster Data: GeoTIFF |
| | WMS: v1.3.0 Web Mercator (EPSG:3857) |
| *Visualizations* | Thematic Maps |
| | Category Maps |
| | Choropleth Maps |
| | Bubble Maps |
| | Heat Maps |
| | Clustered Pushpins |
| *Map Tools* | Advanced Search |
| | Query Tool |
| | Proximity Analysis |
| | Address & Data Search |
| | Coordinate search |
| | Print to PDF |
| | Measure |
| | Geolocation |
| | Google Street View |
| | Scale Bar |
| | Coordinate Display |
| | Base Map Switcher |
| | Custom Copyright |
| | Sketch |
| | Bookmark |

# OK, so the cloud is powerful.
# Why wouldn't I just go to the big cloud players, like {insert geo-platform here}?

Mango's cloud GIS solution and solutions of the big guys aren't necessarily opposed. The two technologies are complementary and have a symbiotic relationship. Desktop GIS is to web GIS what a word processor is to a blog.

Businesses need to decide if they want to work with a behemoth, with impenetrable usage algorithms, byzantine support, and complex scalability, or with a straightforward cloud GIS platform with responsiveness and support that's always close to hand.

Customers that appreciate guidance, management and support simply won't find what they need with the big boys; they're simply unable to deliver the same attention that Mango gives to all its clients.

Businesses need to know where their priorities lie.

*"Mango allows us to create visually stunning maps that tell a more detailed story about where general aviation accidents occur.*

*The reason we chose Mango is the ability to quickly apply advanced filters—a feature no other web-based mapping application offers."*

—Michael Deer, Aviation Statistics

# Ready to get started?

Dive straight in to your 30 day free trial of Enterprise web mapping with Mango.

Sign up at www.mangomap.com/sign-up

# Still have questions?

If you still have questions about Mango, we'd love to talk!

You can request a demo from one of our amazing team members. Just click the link below to book an appointment, and we will be in touch!

Talk to you soon.

Book an appointment at www.mangomap.com/contact

# The Simple Online GIS

Make Amazing Interactive Web Maps That You and Your Users Will Love!