



Known for excellence.
Built on trust.

Thoughts on Data Management, Analysis, and Visualization

Pat Sheehan, PE
President/CEO
May 20, 2026



BS/MS Civil Engineering with a Focus on Site Investigation and Remediation and Process Engineering

Started my career with GZA as a staff engineer and have been President and CEO since 2019

Not a DMAV expert!

- But I designed a lot of process data collection, used to know CAD well, can navigate around pivot tables and associated data presentation, and FORTRAN!

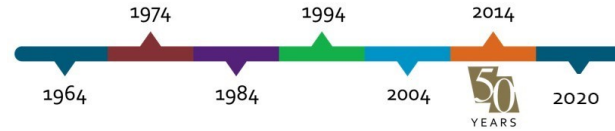
I am a nerd



A Bit About GZA and DMAV

About Us

Safety is a
Priority

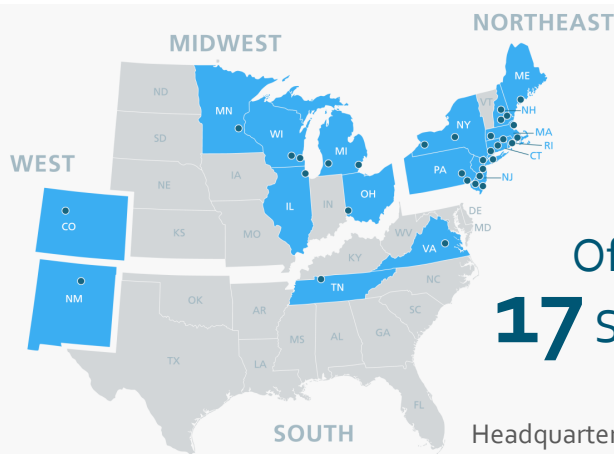


61 Years

Engineers/Scientists
Construction Managers



Extensive
Training
& Experience



32
Offices in
17 States

Headquartered in Norwood, MA



800+ Staff



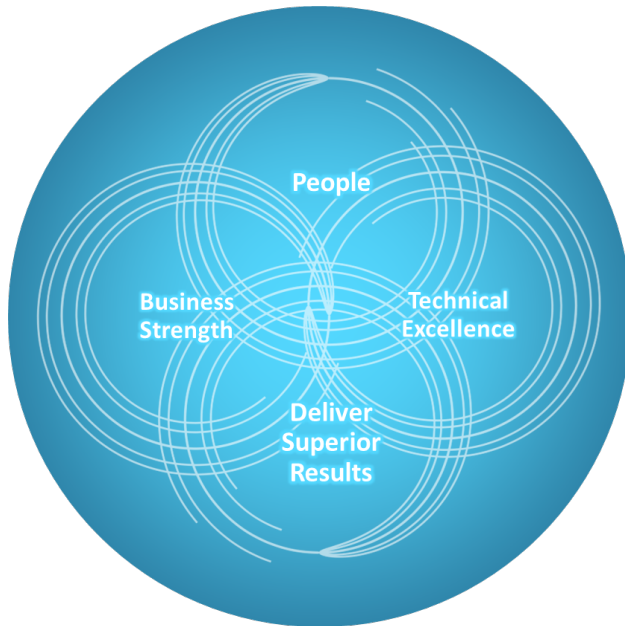
100% Employee-Owned

Our Core Values



Mission Statement

We move our clients forward by empowering our people to develop creative, practical, and sustainable solutions to challenges in the natural and built environments.



Vision Elements

People

Caring for our people and providing opportunities for personal and professional growth.

Technical Excellence

Prioritizing technical excellence and innovation, investing in new technologies, and supporting growth and development of our peoples' technical skills.

Delivering Superior Results

Combining experience, technology, and proactive communication to deliver efficient, consistent, highly effective, and responsive results to our clients.

Business Strength

Growing our services and revenue and operating profitably to reward our people and support our employee ownership model.

OUR CORE SERVICES

GEOTECHNICAL



- **Supporting Structures**

ENVIRONMENTAL



**Compliance
and Improving
the
Environment**

ECOLOGICAL



**Working
with Natural
Resources**

WATER



**Wherever
Water Touches**

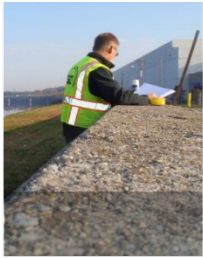
CONSTRUCTION MANAGEMENT



**Planning,
Prioritizing,
and
Executing**

Our Practice Areas

Buildings Services
Civil Engineering/Solid Waste
Construction Management
Dams, Levees and Hydropower
Data Management, Analytics and Visualization
Due Diligence
Ecological Services
Environmental Remediation
Environmental Site Investigation
Environmental Health, Safety, Sustainability and Air Quality
GeoStructural/Structural
Geotechnical
Hydrogeology and Hydraulics/Climate Change
Planning
Water Supply/Hydrogeology
Waterfront/Coastal



PRACTICE AREA

Data Management, Analytics and Visualization

D-MAV and People's Choice Awards!!!!

See who won awards at the Walter E. Jaramila Technical Conference

The Data Management, Analytics and Visualization Solutions PA coordinates the collection, analysis, distribution, and reporting of data for projects throughout GZA.

Today's engineering and applied science projects demand smart, data-driven decisions. GZA employs data management practices and specialized technologies to provide cost-effective and timely solutions. We have dedicated technology practitioners in the areas of Data Science, Information Technology, Geospatial Systems, Application Development, IoT, Sensor and Monitoring Systems, CAD/BIM Design Technologies and Advanced Visualization & Modeling. One or more of these technologies are integrated into virtually every GZA project. We can also develop project-specific data management solutions when appropriate to address specific situational needs.

Important Resources

 [Contacts and Information](#)

 [JPG/JPG File Management Best Practice](#)

 [Digital GZA](#)

 [CAD](#)

 [Data Services](#)

 [Geospatial Solutions](#)

 [Data Modeling](#)

[Contact DM&AV Leads](#)

Welcome to Digital GZA, the home for GZA's digital initiatives! It is now easier than ever to access cutting-edge tools and resources that support our work across all Practice Areas!

See below for an introduction to each resource or click on the button to the right to go right to the resource itself!

Application Toolbox

The Application Toolbox site is your gateway to custom tools developed by GZA for data management, analysis, and visualization. Here, you'll find resources like Chemboxes for mapping chemical data, the GZA Project Explorer, QuickMap, and specialized calculators for groundwater and NAPL transmissivity. The toolbox also includes utilities for comparing Excel worksheets, converting text to Excel, and performing advanced statistical analyses such as PCA and trend testing. Whether you're working with environmental data, modeling groundwater, or managing project information, this site centralizes the digital solutions that streamline your workflow and support technical decision-making.

Digital Technology Solutions (DTS)

The Digital Technology Solutions (DTS) team is dedicated to advancing GZA's digital transformation. Originally focused on instrumentation and monitoring for geotechnical and structural projects, DTS now supports all 16 GZA practice areas. The team brings expertise in drone (UAS) operations, sensor integration, application development, and data visualization. DTS collaborates with innovation and analytics teams to deliver cutting-edge solutions, including photogrammetry, LiDAR, GNSS/GPS, automated field sensors, and more. The site features staff profiles, a table of supported technologies, and links to resources like the DTS Interactive PDF, services, drone program, and FAQs. It's the hub for exploring how technology drives efficiency and insight across GZA's operations.

Field Automation Technologies

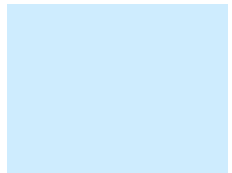
Field Automation Technologies supports GZA's field operations by providing resources for mobile data collection and automation. It's designed for field coordinators and workers who use managed mobile apps and technologies like GPS, GNSS, and RTK for data acquisition. The site offers staff training, best practices, and showcases new mobile tools that enhance project efficiency and data workflows. You'll find links to contacts, learning documents, technology/software pages, and project showcases using platforms like ESRI ArcGIS, QGIS, and Earthsoft EQUIS. Field Automation Technologies help reduce manual paperwork, improve reporting, and integrate digital workflows for both internal and client projects. If you need to set up a mobile app or learn about supported technologies, this site is your starting point.

Sensor Automation Technologies

Sensor Automation Technologies offers solutions for real-time instrumentation projects. It provides resources for managing sensor deployments, data connectivity, and integration with advanced visualization systems. The service area supports complex instrumentation and IoT solutions, helping project teams succeed in both routine and challenging environments. The site highlights the importance of real-time data for downstream analysis, modeling, and design, and offers contacts for coordinators, FAQs, license information, and technology/software resources. If your work involves telemetry, specialized software, or integrating sensor data into broader workflows, this site connects you to the expertise and tools needed for success.



GZA '25
Walter E. Jaworski
TECHNICAL CONFERENCE



AFTERNOON SCHEDULE

12:05 – 1:30 PM	Lunch – Grand Ballroom followed by CEO's Comments and Practice Excellence, D-MAV, Innovation, and Safety Awards Presentation				
	BRISTOL TECHNICAL PRESENTATIONS (NY PDH's)	ROTUNDA TECHNICAL PRESENTATIONS	PLAZA BALLROOM A/B TECHNICAL PRESENTATIONS	PLAZA BALLROOM C/D TECHNICAL PRESENTATIONS	TIVERTON TECHNICAL PRESENTATIONS
1:35 – 2:00 PM	Carving a Cliff: A New Biomed Campus <i>Mike Smith, Luis Navarrete</i>	Help! I'm being sued! PFAS Forensics and Hydrogeology to the Rescue for a Client who Didn't Do It. <i>Jeremiah Duncan, Paige Ehmkle</i>	Kyle's Head Is in the Clouds (Literally): Cloud-Based Capture at New Heights <i>Kyle Szewczyk</i>	Environmental Compliance & Management - National Grid Acushnet to Fall River Reliability Project <i>Jamie Durand, Carmen Dancy</i>	The 10 Decibel Surprise: Uncovering the Discrepancy Between Chiller Specs and Residential Reality <i>Ethan Wagner, Vicki Curran, Gene Bove</i>
2:05 – 2:30 PM	Replacement of the Pier 1 and 5366 Bulkheads at the Newport Navy Base <i>Elliot Ryan, Jim Marsland</i>	Application of an AI/Machine Learning Technique for Separation of Commingled Groundwater Plumes in Urban Fractured Bedrock <i>Matt Gazdor</i>	Planning the Next Descent: Subsurface Hydrogeologic Assessment for a Cement Mine <i>Adam Kittler, Thomas Herbst</i>	A Tale of Two Dam Removals - It was the best of times, it was the worst of times <i>Jennifer Burke, Adrienne Dunk, Rex Gamble</i>	From Siloed Knowledge to Digital Asset: Transforming a Department of Transportation's Noise Program through Geospatial Innovation <i>Tim Kelly, Austin Elliott</i>
2:30 – 3:15 PM	Afternoon Break – Exhibitor Demonstrations (Grand Foyer) and Light Refreshments (Grand Ballroom)				
3:20 – 3:45 PM	Gordie Howe International Bridge - Long Reach Tower Crane Ties <i>Julia McNamara, Andy Ritter</i>	Supreme Court Landmark Eminent Domain, Award-Winning Brownfield Project, After 20-years <i>Richard Desrosiers, Jim Davis, Joe Trzaski</i>	Are All "Problems" Problems? Using risk informed decision making to inform remedial dam safety measures <i>Kevin Finn, Seth Krause, John DeLano</i>	Call Me When You're Out: Botanical Surveys, Bears, and Back Country <i>Lindsey Tower, Peter Petkauskas</i>	D-MAV Lightning Talks - Session 1 <i>Various Presenters</i> See Details Below
3:50 – 4:15 PM	Deep Cuts at Yale New Haven Hospital <i>Chris Eggers, Jimmy McDade</i>	Arsenic and Old Gate: GZA v. Goliath and the Battle for the Brownfield <i>Adam Henry</i>	Stormwater Nightmare – When Glaciers Run into Politics <i>Jesse Graham, Ryan Delawski</i>	Spikes and Sheepnose: A Rare Mussel Relocation in the Kankakee River <i>Beth Hollinden</i>	D-MAV Lightning Talks - Session 2 <i>Various Presenters</i> See Details Below

DMAV Lightning Talk - Session 1

- Simplifying Field Maps: Standardized Workflows for Better GIS Data - *Jackie Clover Hewlett*
- BoreDM Highlights (gINT Replacement) - *Diandra Germinara, Jay Hodkinson, and Jackson Hewlett*
- Data Entry? Automated. Insights? Amplified - *Karen Fletcher*
- Universal Dashboard Exceedance Map - *Karen Fletcher*

DMAV Lightning Talk - Session 2

- GIS reference layers in Portal - *Dustin Hall*
- Survey123/Quick Capture - *Walt Jaslanek*
- PowerBI: Flexible and Intuitive Visualization of Your Data - *Jeremiah Duncan*
- CAD Standards at GZA - *Eric P. Bregman*



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/ 2



Air Quality Monitoring

[Applications](#) / Air Quality Monitoring



AirLogics offers ambient air quality monitoring services to clients who wish to:

- Manage risk associated with potential off-site migration of airborne contaminants, site constituents, odor, and/or emissions.
- Establish baseline or background air quality in a neighborhood or on a work site.
- Measure or improve their indoor air quality.

Digital Technology Solutions (DTS)

Automated Instrumentation and Real-Time Monitoring Capabilities

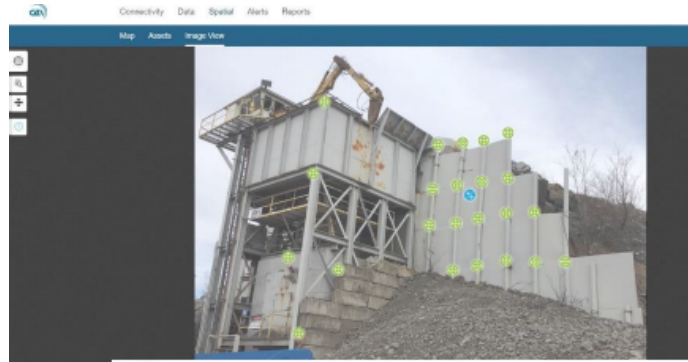
- ❖ Survey Deformation Monitoring
 - Automated Total Stations with Reflective Prisms
 - Automated Reflectorless Surface Monitoring
 - Automated Convergence Monitoring
- ❖ Geotechnical & Structural Instrumentation
 - Displacement Gages
 - Extensometers
 - Inclinometers
 - Piezometers
 - Strain Gauges
 - Tiltmeters
 - Load/Pressure Cells
 - Weather Stations
- ❖ Vibration Monitoring
- ❖ Underwater Turbidity
- ❖ Groundwater Monitoring
- ❖ Sound / Noise Monitoring
- ❖ Air / Dust Monitoring
- ❖ Video / Camera Monitoring
- ❖ Water Quality Monitoring



Digital Technology Solutions (DTS)

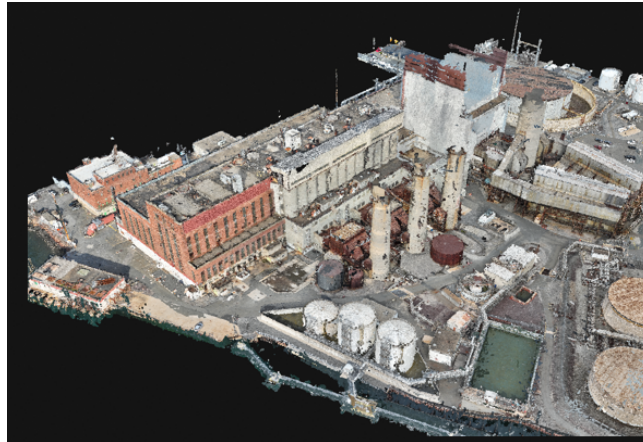
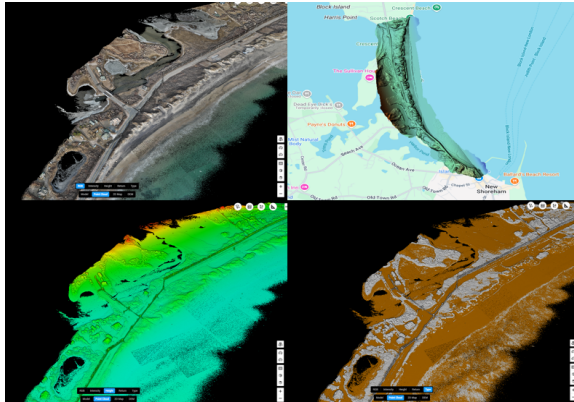
❖ Automated Data Acquisition Systems

- Real-time data acquisition, processing, and visualization.
- Remote, cloud-based communication and data hosting.
- Flexible communications options (radio, cellular, satellite).
- Flexible power options (solar, battery, hard power).
- Secure, web-based software platform.
- Pre-scheduled automated reporting capabilities.
- Real-time threshold exceedance notification system.
- Customizable data visualization features.
- Cross-platform integration capabilities.
- Data export and import capabilities.
- GIS Asset Management and Data Visualization.



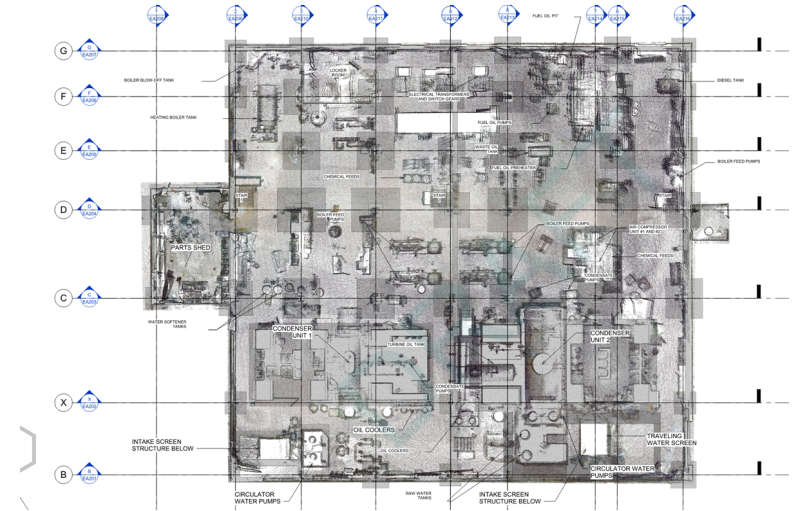
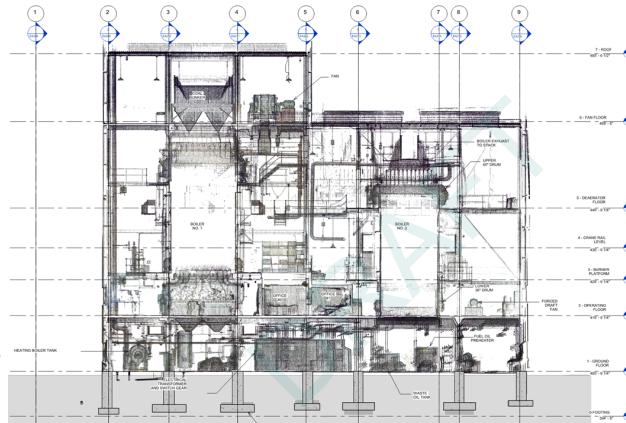
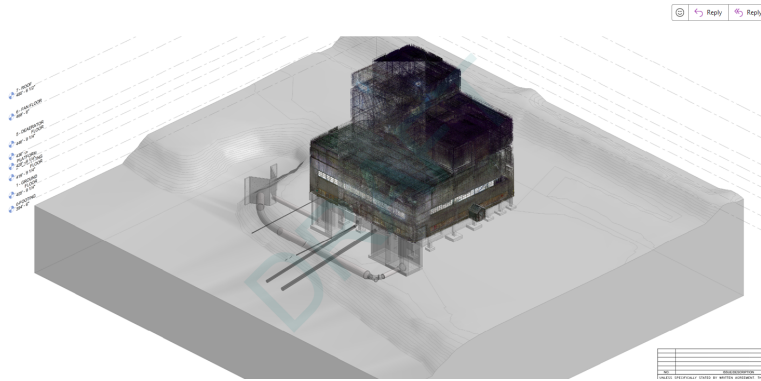
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DTS - DRONES



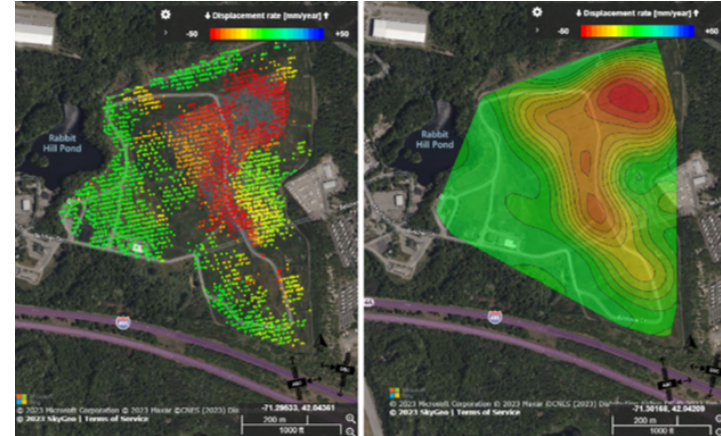
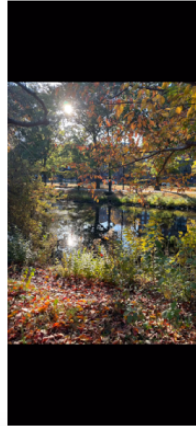
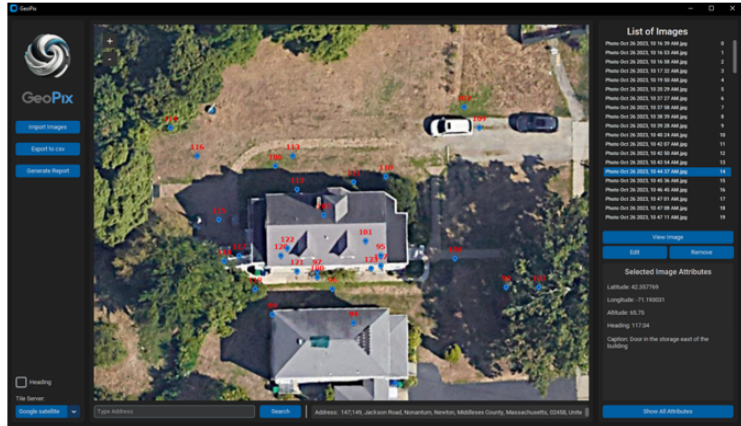
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DTS - DRONES



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DTS – APPS, Satellites (InSAR) and AI



AI Livestock Detection



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What's Important About DMAV to Firm Leaders (My Version)



Accuracy

Clarity

Efficiency

Differentiation

Innovation

Return on
Investment

Accuracy

If the data is wrong, nothing else matters...

Trust is difficult to earn and very easy to break...

In our fields, we are charged with protecting public safety, human health and the environment

- Significant decisions are made based on the data we collect, analyze, and provide

It starts with quality work, but QA/QC processes must be in place because we're all human and we all make mistakes

Clarity

Most of our clients or stakeholders are not scientists or engineers

Analysis is important, but storytelling is equally important

Understand why we are collecting and analyzing the data

How can we best communicate our deep understanding of the issues to those that don't have our technical background?

Visuals are always better than data reports – unless they're too confusing

In most cases, synthesizing 100+ issues into a few key points should be the focus

Efficiency

No one wants to spend more time on something than they need to

With fewer young people obtaining the training we need to support the important projects we execute everyday, we need to be more efficient with our experienced staff's time

Less time synthesizing allows for more time to analyze and develop solutions

- Solve problems, don't just identify them

Placing the proper value on the services we provide

Differentiation

We are competing for the work we want to do

What differentiates us from our competitors?

- Quality
- Accuracy
- Clarity
- Solutions

Differentiation is a catalyst for innovation, and that's exciting

Innovation

Society needs us to face the challenges of - today

- We must evolve with those needs

Innovation is organic and driven by people who are executing the work

- Give yourself the bandwidth to step back and think about how to improve what we're doing today

Types of Innovation:

- Sustaining (keeping pace)
- Incremental (improving things)
- Radical (something completely new)
- Disruptive (completely changing things)



Easier

Harder

Return on Investment

Not just a financial consideration

What will the return on my efforts be?

- Improved quality, accuracy, clarity?
- Is the effort commensurate with the expected outcome?

How can we monetize and be fairly compensated for the value we are bringing to our clients and stakeholders?

Can we decouple time from value?

AI

We have a ways to go before AI can design a bridge

We absolutely need to integrate it into our workflows

The drivers for use need to be accuracy, clarity, efficiency, differentiation, innovation, and return on investment – with no negative impact on any of them

Should be a tool to enhance our capabilities, not a crutch or an opportunity to do work we do not understand

Can it help us with our return on investment? Let's figure out how

Announcement: Issuance of new GZA Generative AI Usage Policy

We are pleased to announce the release of GZA's new Generative AI Usage Policy (Policy Number: 06-1007), effective October 1, 2025. This policy has been developed to guide the responsible, secure, and ethical use of Artificial Intelligence (AI) services and products across our organization.

Key Highlights:

- **Scope:** Applies to all GZA employees, contractors, and subsidiaries using AI Services in their work.
- **Approved Tools:** Only specific AI platforms are permitted for use, depending on the sensitivity of the content. Public AI tools (e.g., ChatGPT, Claude, Gemini, Copilot, GitHub Copilot, Perplexity, Grok) may be used with non-sensitive content. Highly sensitive content may only be processed using approved Non-Public AI tools (e.g., Microsoft Copilot M365 Licensed).
- **Risk-Based Usage:** The policy introduces a tiered model (Red, Yellow, Green Zones) to guide responsible AI use based on data sensitivity.
- **Employee Responsibilities:** Employees must not upload proprietary, confidential, or client-related content to Public AI Services. All AI-generated outputs require human review and must be flagged and disclosed appropriately.
- **Training & Assurance:** Supervisor approval and completion of designated training modules are prerequisites for receiving a Copilot license. Formal acknowledgment of the policy is required.
- **AEC Sector Considerations:** The policy addresses sector-specific risks, including regulatory compliance, engineering judgment, data integrity, client expectations, and intellectual property protection.
- **Enforcement:** Violations may result in disciplinary action. The policy will be reviewed annually and updated as needed.

Disclosure Statement:

GZA is committed to transparency and professionalism in our use of AI tools. All AI-assisted outputs are reviewed by qualified professionals and comply with data privacy and confidentiality standards.

For questions or concerns, please contact GZAi@GZA.com.

We encourage all staff to review the full policy on [PolicyTech](#) and complete the required training (coming in December 2025) to ensure compliance and support GZA's commitment to excellence and trust.

Thank you for your attention and cooperation.

Paul J. Malagrifa
Chief Information Officer/Associate Principal



You're on the front
lines of one of the
most transformative
periods in our industry

Help us innovative

Think solutions and
not just process

What is the return on
investment?



GZA Corporate Headquarters

249 Vanderbilt Avenue
Norwood, MA 02062

781-278-3700 • WWW.GZA.COM

Thank You
Questions?