Table of Contents

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

Innovation Spotlight Articles

"Innovation is EVERYWHERE"

Drones, Imagery, and Visualization

Innovation is everywhere in Broward County – including "overhead!" A drone in the hands of a geoscientist is like a highly intelligent bird soaring the skies, collecting data, and understanding the world around us.

Recently, Broward County geoscientist and Assistant Chief Resilience Officer, Dr. Greg Mount, shared insights into how drones have been integrated into operations, leading to innovative approaches in emergency response, environmental monitoring, and public information sharing. Among other duties, Dr. Mount leads the drone program for the County's Public Works and Environmental Services Department.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

Dr. Greg Mount holds drone workshops for County employees

Broward County Commissioner Michael Udine flies a drone during Broward County Innovation Day

According to Dr. Mount, "*The County has been doing drone work for at least eight years for flooding, social media, and public awareness. We are continuing to capture storm events and imagery to show situations as we encounter them in the field. The Resilience Unit has collected pre-storm imagery at the beach to look at changes due to tide and erosion. We used to do that from the ground, so this was a huge time savings.*

We also partner with other agencies to help them address other challenges, such as high-resolution imagery for a construction project at Port Everglades, and collaboration with Public Works to create 3D models of parts of the County to plan for future projects. The drones add the ability for a reduced number of staff hours to accomplish more work, in a shorter time, at a cost savings to the County and our residents."

LiDAR Technology

Light Detection and Ranging (LiDAR) is a remote sensing method used to examine the surface of the Earth. *"A typical survey using LiDAR technology results in a relatively low resolution of 10*

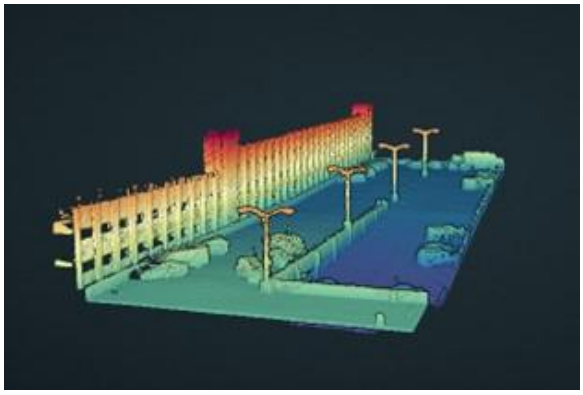
Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

points per meter. When I fly a LiDAR-equipped drone, depending on my flight elevations, I get at least 300 points per meter, so I get really high-resolution ground detail. And my level of accuracy and precision is within a few millimeters. So, the type of data that I can collect, in a very short period of time and a very quick turnaround time for processing, is equal to months in time savings. Using traditional methods, it could have taken 3-6 months to collect and process the data. I can do the same using drone-mounted LiDAR in the same day."

"As another variation, I strapped that same LiDAR equipment to my backpack and rode my bicycle around my neighborhood and was able to do it in about seven minutes. That would take a surveying team of multiple people several days. I collected billions of points in less than seven minutes. I'm able to even map the leaves on the trees. An FPL crew of two to three people are collecting points manually; I collected billions of points in minutes."

"Once the data is collected, we upload the LiDAR into the "cloud," and we tell the software what we want it to look for. When we are looking at where flooding occurs, we can see changes in the swales, or something that would influence the ponding of water or restrict water movement."

Dr. Greg Mount flies a drone in a local County Park



A 3D LiDAR photo collected from drone data

Some innovative uses and benefits of Broward County's Drone Program

- Cost-effective data collection: Using drones to collect data significantly reduces the costs of flight data collection which otherwise require expensive helicopter flights.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

- High-resolution 3D LiDAR mapping: A LiDAR-equipped drone can capture 3D models of the land and built environment to an accuracy of a few millimeters, providing precise and detailed topographical data.
- Integration of Artificial Intelligence (AI) for infrastructure mapping: Employing AI to analyze LiDAR data and identify features like trees, power poles, and manholes automatically streamlines the process of infrastructure mapping, reducing human error, benefiting city planners, public works departments, and utility companies.
- Portability and flexibility in data collection: Using portable LIDAR-equipped drones for on-the-go data collection has allowed for rapid and versatile data gathering in various conditions, supporting Broward County emergency responders, environmental researchers, and surveyors.
- High-quality images and videos during storm events: Drones can be flown over flooded areas during storms, ensuring the accuracy of predictive models and helping to better understand flood patterns. This has improved public communication, understanding, and awareness of environmental and infrastructure conditions and is providing crucial information to local governments, and residents living in flood-prone areas.

In Conclusion

The integration of drone technology within Broward County's operations exemplifies how innovation can lead to significant improvements in efficiency and data accuracy. These advancements not only benefit government agencies and public services but also enhance the overall safety and quality of life for the community. By continuing to explore and adopt new technologies, organizations can stay ahead in addressing the ever-evolving challenges in disaster response and environmental management.

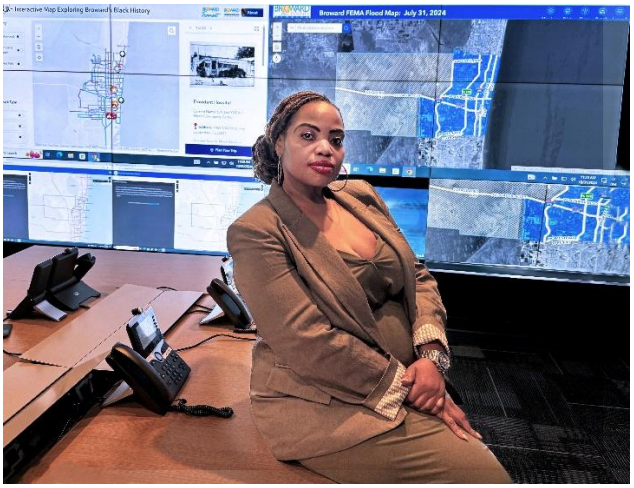
Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

GIS: The Powerful Intersection of Data and Location

Geographic Information Systems (GIS), simply put, are powerful tools and technology that allow users to visualize, analyze, and interpret data to understand relationships, trends, and patterns in relation to location and geography.

Gabrielle Drice, GIS Information Systems Manager in Broward County's Urban Planning Division, recently sat down to talk about the County's GIS program, and how this technology is transforming the way organizations, governments, and communities manage and analyze spatial data.

According to Ms. Drice, "GIS is the thread and the interconnectivity of life and of everything that you do." Think of your home address, it is the starting point to connect everything – your water, sewer, electricity, and internet to name a few. Your insurance costs are determined by your location. Traffic signals make decisions based on GIS information. "GIS is everywhere you are."



At the Broward County Emergency Operations Center (EOC), Gabrielle Drice discusses the various maps and dashboards provided by the GIS Program to aid in decision-making during emergency events.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

County-Wide GIS Program

Since 2018 the Broward County GIS program has grown nearly ten-fold, with program users in nearly every County agency. Broward County's GIS program tools have become a resource to improve public services, increase efficiency, and provide real-time decision-making support to agencies and organizations within and outside of the County.

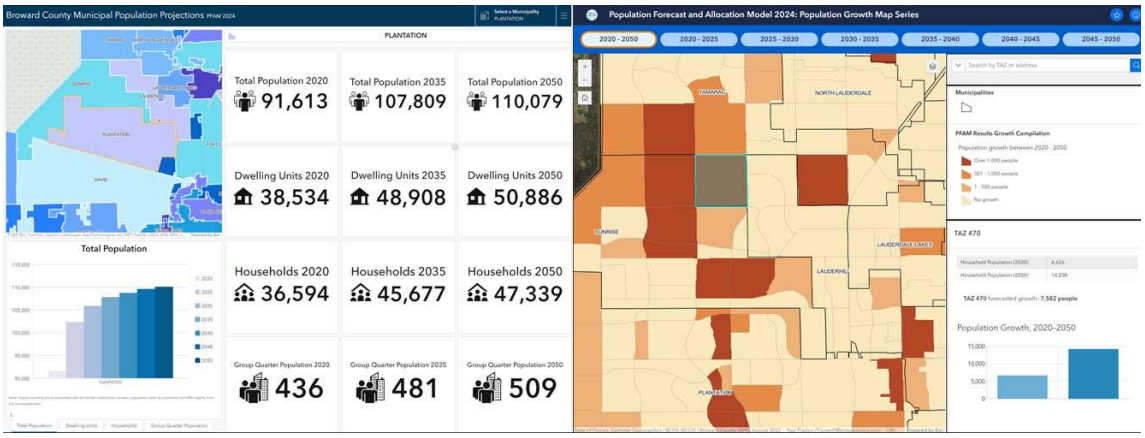
Just a few of the many GIS projects and programs and their far-reaching impact are as follows:

The Broward County Demographics Hub

The County Demographics Hub features the 2024 Population Forecast Allocation Model (PFAM). The PFAM analyzes patterns of land development using population forecasts. These forecasts are then modified for future years, based on anticipated changes to development patterns. Municipalities can then use this data to predict where residential growth will occur.

- What's Cool?: Municipalities can see real-time results, eliminating paper-based processes, and increasing efficiency, and allowing for more accurate and dynamic data entry.
- Who Benefits: City planners, government officials, and residents benefit from faster and more accurate decision-making regarding city planning and public services.
- What's New?: Shift from physical, paper-based processes to fully-digital municipal interaction and mapping systems.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223



Population Forecasts Maps

Homeless "Point-In-Time" Count Automation

Accurately accounting for the Broward County homeless population and their locations, in order to provide effective services, used to be a slow and tedious process of printing maps, annotating them in the field, and then updating them to a digital format in the office. Now a laptop is taken into the field, and the data being collected is then automatically updated. From there, a dashboard report is created, making the information immediately available to agencies and end users.

- What's Cool?: Migrating from paper-based surveys to real-time data collection using tablets and live dashboards in near real time.
- Who Benefits: Homeless services, volunteers, federal agencies -- and ultimately homeless County residents -- by facilitating increased speed in service provided.
- What's New?: Increased accuracy and efficiency, clearer insights, and faster reporting to federal agencies. This process allows for a more immediate understanding of the homeless population's needs.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

Other recent noteworthy GIS innovations include:

- 3D Base Map for Broward Sheriff's Office (BSO)
- Broward County Transit (BCT) Tracking System
- "GIS-powered" Mosquito Control with Geo Web Server

GIS Developments on the Horizon

The Broward County GIS program will be moving to a new infrastructure system that will include the ability to leverage artificial intelligence. Dedicated cloud storage capabilities will allow for the storage of the big data needed for real-time program applications. Also, further development of Application Programming Interfaces (API's) will allow more seamless data exchange between different software systems, enhancing data connectivity and real-time information-sharing across various County agencies and organizations outside of the County.

GIS Team at 2024 South Florida GIS Expo

The Power of GIS in Public Service Delivery

Broward County's innovative use of GIS has revolutionized its public service delivery. By embracing GIS real-time data collection, cloud-based solutions, and cross-agency

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

collaboration, the County has not only improved the efficiency of internal operations, but also enhanced the quality of services provided to its residents. GIS technologies are proving to be an essential tool for forward-thinking communities looking to build smarter, more connected cities.

GIS Day Commemorates 25th Anniversary

On November 20th, the Broward County GIS Team hosted GIS Day at the Government Center West, in Plantation, commemorating the 25th anniversary of GIS. The day featured demonstrations, presentations and displays -- all showcasing ways in which GIS is utilized to provide better service, data, and mapping information to Broward County government agencies, residents, and businesses.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

GIS Day featured many presentations, visitors, municipal collaborations, and special guest appearances. Top left, clockwise to bottom: Broward County Chief Innovation Officer Leonard Vialpando and GIS Program Manager Gabrielle Drice; Broward County Innovation Unit presentation; and a vendor mapping demonstration with visitors. For more highlights and a recap of GIS Day, visit:

https://geohub-bcgis.opendata.arcgis.com/pages/gis-day

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

Broward Cultural Division

Innovation abounds in Broward County – Phillip Dunlap, Director of Broward Cultural Division, has a lot of innovative projects on his plate these days.

The excitement in downtown Fort Lauderdale's Esplanade Park was contagious on the eve of the third annual IGNITE Broward: Art & Light Festival, which took place at the end of January. IGNITE illuminated and enlightened Broward residents during Lauderdale Art week as one of the signature events. The five-day, interactive of immersive art and technology, featured both national and international artists using innovative digital technologies.

"Technology is something everyone is familiar with; but it's also a great way for people to experience art in new and innovative ways and immerse yourself in the arts," reflects Director Phillip Dunlap.

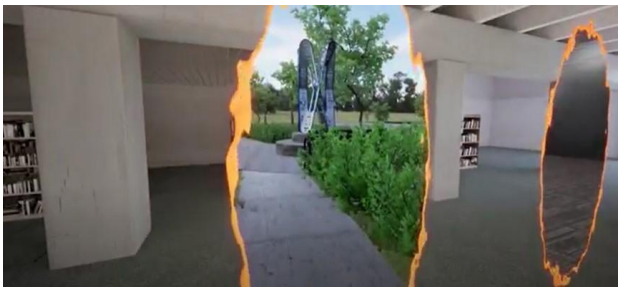
Besides the announcement of a new cultural center in West Broward, Broward Cultural Division is working on a Digital "Metaverse" as a digital way to view 35 pieces of the County's public art collection, which consists of more than 300 commissioned pieces across the County. "This technology allows everyone anywhere to virtually approach the art," says Dunlap.

"We thought, through AR/VR (Artificial Reality/Virtual Reality), we could create a unique experience of a centralized collection and do it virtually. It's currently in a pilot phase but is set

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

for launch soon. The idea is that you will enter a central 'station' or location virtually, and it will take you to different places in the County to view some of the many amazing pieces of public art.

The prototype creates a virtual "homebase" that resembles a floor on the Main Library. In the blink of an eye the viewer can virtually be transported to either the arena, the airport, the south regional courthouse, or the Dillard green space. The great thing about it is that it doesn't require downloading an app, as one can access it through a mobile device or computer. The next step might include utilizing AI to enhance the experience so that a visitor will be greeted by an AI tour guide, and could answer questions about the art, that they may have." The Public Art Metaverse is currently in a beta phase, set to launch in late spring/early summer.

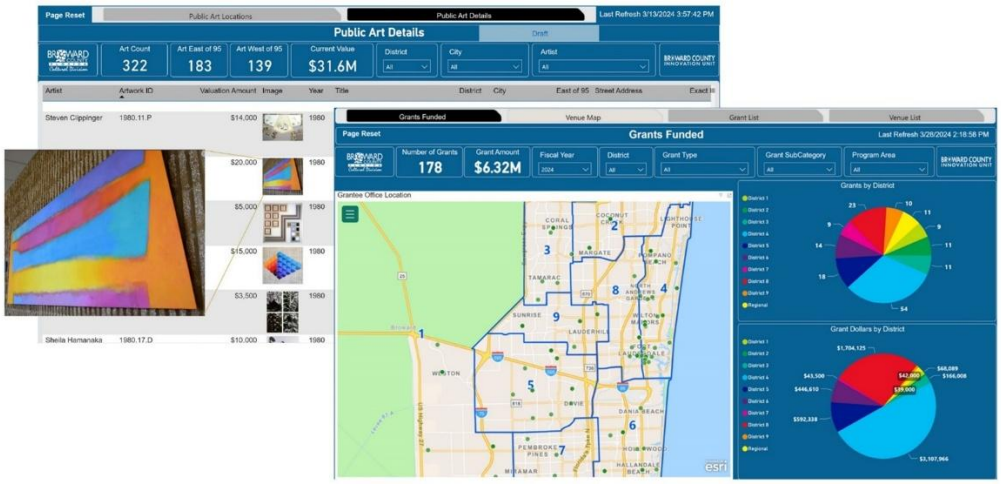


The prototype for AR/VR project will virtually take you to different artwork locations throughout Broward County.

Another project in the works is the Public Art GeoMap and Grants Dashboard.

The Broward County Innovation Unit is working on multiple projects with the Broward Cultural Division. Among them is **The Public Art GeoMap**, which includes maps for locations of public art, a description of the work, monetary value, and details such as: artist name, artwork title and medium, and year it was commissioned by the County, as well as where the art is located. A thumbnail image accompanies each art reference, which can be expanded for a better viewing of the piece.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223



***The Grants Dashboard**, also built by the Broward County Innovation Unit, may be accessed by the public. Users can search for art opportunities, as well as an understanding of where grant funds are being distributed and to whom. Grants support music, performing arts, film, and writing, to name a few, and the dashboard helps to highlight the locations and Commission District.*

Rest assured, Phil Dunlap and the Broward Cultural Division have many more innovative initiatives in store for the future. "Part of why I love the idea of art and technology is because it's become more accessible, which in turn makes the art more accessible. These advances in technology allow more and diverse groups of people to virtually approach and experience art.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

Broward Library's "Creation Station"

From 3-D designs and virtual reality (VR) headsets to printing stickers and learning to sew, Broward County's Creation Station is a community center to imagine and innovate.

Recently, a customer at Broward County's Main Library needed help with a project. "Was it a book report or research for an upcoming vacation?" you ask. Not these days. She needed a part for her refrigerator door that she was unable to get from the manufacturer and she turned to the experts at the Creation Station for help. She was able to get the 3D file of the part and shared it with one of the associates at the library, who made the part using one of the County's 3-D printers. "It is a plastic hinge that goes in the refrigerator door. The part broke and she got the 3D file for it, and we were able to accommodate and print it out for her," said Christopher Rubio, Creation Station Manager and Senior Library Specialist. "We do have occasions when we get some customers who are inventors, and they have prototype ideas for whatever they're inventing and they create them on a 3D file, send them to us, and we can 3D print it for them. That way, they can try it out before they send it to a manufacturer to get it mass-produced. Has anyone become a millionaire yet by using our prototypes? I can't say for certain."

Senior Library Specialist Christopher Rubio, and Creation Station Manager at the Main Library, demonstrates the VR headset.

Robert Anstett, Library Coordinator of Digital Initatives, also known as "Bob from the Future."

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223

The Creation Station's offer many state-of-the-art services including, virtual reality PCs, electronics and robotics kits, arts and crafts stations with sewing machines and Cricut (a die cutting machine that takes images or designs and cuts them out of various materials). Customers also have access to co-working hubs and meeting areas, complete with Apple computers and PCs with design software, such as Adobe Photoshop and Premiere. There are also green screens, high-end video cameras, and lights for shooting photos and video production.

"Every library has something, depending on the location." Says Robert Anstett, or "Bob from the Future" as he's known to his fellow techies. Bob, Broward County Library's Coordinator of Digital Initiatives, has worked for the Library for 29 years. He loves to talk libraries and technology. Just tune in to "Tech Talk Weekly," on the YouTube channel @BCLCreationStation, and listen for yourself.

Anstett launched the podcast, now up to 160 plus episodes, which he produces, and hosts. The twenty-minute episodes touch on three or four current events topics, and always have a guest. The podcast comes out every Thursday, with topics as varied and diverse as the rise of Artificial Intelligence, flying and radioactive dogs, and 40,000-year-old worms. Anstett is also responsible for the Library's first robot, "Temi" which he calls "an addition to the staff that can be used for virtual reference, library events, or just to follow you around. You just walk up to it and ask it anything you want, like where are the travel books, and it will take you there" says Anstett. "It's simple and straightforward." So far, Temi has visited and "worked" at 14 different libraries in Broward County.

Address: 1 N. University Drive, Suite 203, Plantation, FL 33324
Email: innovation@broward.org
Phone: 954-519-1223