

Site Tour 360



NCTECH CASE STUDY



Collection of ground-based 360 degree imaging in disaster management

In 2018, Hurricane Michael struck the Florida panhandle, making landfall as an unprecedented high-end Category 4 Hurricane with maximum sustained wind speeds of 155 mph. They revised it up to a Category 5 after studying damage. The storm caused catastrophic damage from wind and storm surge. Then in March 2019, a tornado in Alabama devastated rural communities, killing 23 people and injuring at least 100 others.

In the aftermath of such events, capturing image data is a critical information resource for disaster management, supporting the response effort to deliver emergency infrastructures and supplies, risk assessment, damage assessment for cost estimation, structural analysis and beyond. The response effort is typically supported by geographic information systems, such as ArcGIS, that help to organise, manage and visualise all information prior decision-making. These GIS systems rely on GPS-encoded image data to build an accurate picture of the scenario.

While the introduction of unmanned aerial vehicles has been proven to become an invaluable aid in this field, they also have some limitations and restrictions, so alternative mobile mapping and imaging solutions are required. Collecting image data at ground level requires mobile 360-degree cameras that incorporate GPS data along with automated data processing in order to accelerate the speed of turnaround in these time-critical situations.

Site Tour 360 is an immersive media company based in Gainesville Florida, providing a wide range of services, including virtual tours, Google Street View services, Matterport tours, and video production. The company was one of the first to purchase the iSTAR Pulsar system from NCTech for collection of 360-degree image data from a moving vehicle or mounted on a backpack.

Mike Vorce is president of Site Tour 360.

“We collect 360-degree imagery from all kinds of sources, whether from the air, ground, or even water, and then make that data available for a wide range of purposes,” says Vorce. “We started out using the Insta360 Pro, but it’s really only useful for uploading to Google Street View and the image quality isn’t great. iSTAR Pulsar is a more professional-grade system, with much better image quality, and you can do much more with the data you collect thanks to their Immersive Studio product, enabling us to create much more flexible and customized 360 degree experiences for our clients.”

NCTech’s Immersive Studio enables users to process, export and play immersive 360 degree content.

“The ability to efficiently collect large volumes of geo-referenced image data is a relatively new development, and has only been made possible by technology like iSTAR Pulsar. We have been experimenting with its use in a range of areas, but one of the most interesting and compelling use cases was in the aftermath of these weather disasters.”

After Hurricane Michael and the Alabama tornado, Site Tour 360 visited the areas and used iSTAR Pulsar to quickly document the affected areas from the ground, simply by driving through them. For Hurricane Michael, the firm created a custom mapping project using imagery posted to Google

Street View to show before and after imagery of specific locations. [See: Hurricane Michael damage images.](#)

For the Alabama tornado, the company collected 5,000 panoramic images collected over 30 miles of roadway and created a custom project where it hosted all of the imagery privately to provide better control over the user experience. [See: Alabama tornado damage images.](#)



“We figured there was a case for being able to quickly turnaround this kind of imagery and make it available to the local response and disaster management teams,” says Vorce. “Even just using Street View to host the images, we were able to demonstrate the clear benefit of having before and after imagery to show the scale of damage to buildings and other infrastructure.”

Following the Alabama tornado, Site Tour 360 was invited to meetings with a range of organizations including insurance firms, academic institutions and local government, and received a request from local government officials to make the image data available as a custom interactive map accessible on the ArcGIS platform. [See: Alabama tornado damage images for ArcGIS.](#)



“We were excited to be asked to do a proof of concept to integrate our 360 degree image data into the ArcGIS system, which is a pretty common format, especially for government departments,” says Vorce. **“We created a custom interface, which allows the client to view a virtual tour of our 360 imaging within the ArcGIS platform.”**

Multiple government departments and organizations use ArcGIS for a wide range of purposes, which means it makes sense for this kind of data to be made available on the platform so that it can be accessed widely. Vorce believes this can potentially save a lot of time and money by reducing the need for multiple site visits.

“Our goal is to be able to go out in the immediate aftermath of a storm, capture and process the site data using iSTAR Pulsar, and then have that data uploaded into ArcGIS by the following morning, making it accessible to everyone from disaster management and the fire department, to law enforcement and tourism,” says Vorce. “One of the issues we see after hurricanes here in Florida is that the public is often prevented from accessing badly affected areas during the period directly after the storm. This can be very stressful, so we see a clear benefit for authorities to quickly make ground-level imagery available online, so that people can easily check and see whether their homes and property have been impacted.”

Following significant weather events, UAVs are now often used to quickly capture lots of high resolution data from the air. But Vorce feels there is still a strong case for the collection of ground-based images.

“There is a limitation to what you’re able to see from aerial imagery – for example, do you have enough angle of view to make a clear assessment of the level of damage. The insurance firms we have spoken to are very interested in being able to access ground-level imagery for this very reason.”