

HELIOS®

Fast and accurate real-time ground intelligence

Microclimates are on the rise, and as a result, there are extreme deviations of wind, snow, fog and visibility even over short distances. Hyperlocal ground information enhances operational efficiencies and decision making that can save time, money, property and even lives.

Helios environmental intelligence platform from NV5 Geospatial provides essential information about hyperlocal weather that traditional weather sources typically struggle to discern. Helios uses Artificial Intelligence (AI) to detect the occurrence and impacts of weather on critical ground infrastructure through its large terrestrial camera network. This timely data is important for weather-dependent decision making.

HELIOS ENABLING TECHNOLOGIES

SAAS PLATFORM

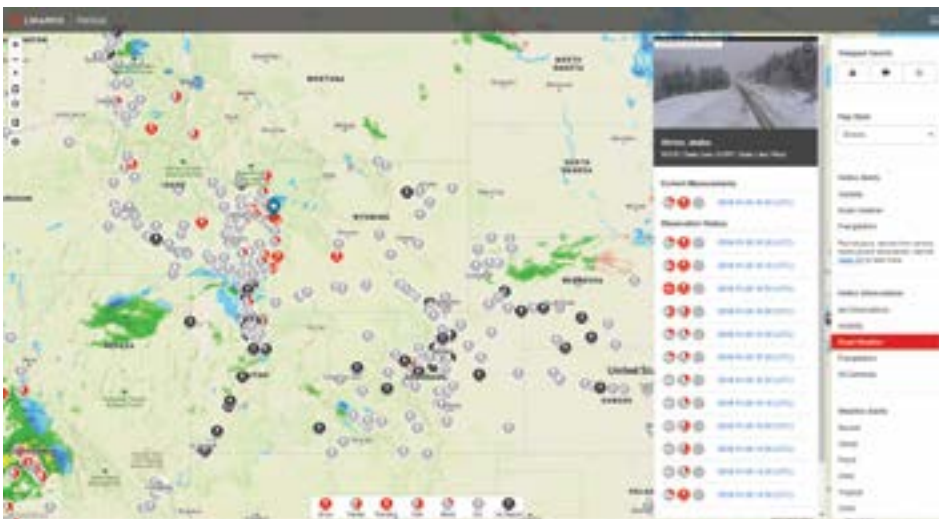
A scalable cloud AI processing platform is the foundation for imagery management and provides an open API and web application for content delivery. The platform brings large existing disparate camera networks together. This removes the need/cost to source and maintain these camera networks.

HELIOS CAMERA NETWORK

Helios is integrated with tens of thousands of publicly available terrestrial cameras around the world. These cameras are primarily located on critical roadway infrastructure and can be easily enhanced.

USING AI

Helios uses AI to detect and classify ground conditions and impacts day and night. The AI has been trained using millions of global, seasonal, regional and historical images for high detection rates.



Helios analytics provide warnings for areas of heavy localized snow and dangerous traffic conditions during a recent snowstorm in the western United States.



HELIOS:

- > Real-time ground truth information
- > Accurate weather conditions on a hyperlocal scale
- > Integrated camera network
- > Maximize existing infrastructure
- > Intuitive user interface
- > Scalable cloud AI platform
- > Patented analytics

PATENTED ANALYTICS

There is no need to spend valuable time monitoring hundreds of cameras; let Helios analytics do it for you. A browser-based interface allows users to have an interactive mapping application that integrates multiple weather observations and data layers such as clouds or radar to get the most complete picture of weather events in a particular spot.

ROAD WETNESS ANALYTIC



Helios Road Wetness Analytic provides confirmation of precipitation affecting road or pavement conditions and notifies users of wet or dry pavement and potentially dangerous areas during a storm event.

ROAD SNOW ANALYTIC



Helios Road Snow Analytic provides visual confirmation of snow impacting road or pavement conditions, identifying three specific road snow conditions: no snow, partially covered and totally covered.

ROAD ICE ANALYTIC



Helios Road Ice Analytic provides warning for road icing conditions by combining information about precipitation on the ground, falling precipitation, fog and road temperature.

VISIBILITY ANALYTIC



Helios Visibility Analytic alerts users of real-time fog formation, dissipation, and overall poor visibility conditions caused by fast-moving, localized fog, heavy rain, heavy snow (white-out condition), or even smoke.

PRECIPITATION ANALYTIC



Helios Precipitation Analytic detects moderate-to-heavy rain conditions that require reduced speed and could result in hydroplaning and localized flooding.

TRANSITION ANALYTIC



Helios Transition Analytic identifies transitioning and trending ground conditions that are predictive of major incidents (e.g. knowing exactly when snow begins to accumulate can help ensure safer travel and efficient deployment of resources).

THE HELIOS API

The Helios Explore web app provides on-screen visualization capabilities to get the complete weather picture. Our interactive map interface allows you to browse live imagery from the vast camera network, view real-time weather alerts from the National Weather Service and view traditional weather sources such as radar and cloud cover.

With access to the full Helios API, you can also perform powerful searches and save imagery using recordings or collections, all from your desktop or mobile device.



APPLICATIONS OF HELIOS

Helios applies more than 50 years of NV5 Geospatial's remote sensing and AI expertise and patented analytics to terrestrial cameras. Helios provides tip and cue alerts for changing ground weather and its impacts to support weather forecasting, traffic management, emergency response and vehicle safety. Helios analyzes imagery from tens of thousands of existing public and private video cameras using a combination of machine learning and traditional image science to instantaneously identify and classify changes in conditions.

WEATHER DECISION MAKING

- > Provides ground truth observations – fills the gap of lack of real-time monitoring of current ground conditions to validate, adjust and complement weather forecasts
- > Provides localized indications of fast developing fog/mist – this cannot be detected with traditional sensing methods
- > Provides validation to support inaccuracies and generalities of now-casting
- > Supports micro-climate activities where hyper-local data is needed, such as drone flight approval



EMERGENCY RESPONSE

- > Provides real-time situational awareness
- > Analytics can be developed based on needs such as smoke, flames, flowing water and other indicators of a potential emergency
- > Supports pre and post-response efforts with ground-based intelligence



VEHICLE SAFETY

- > Provides a delivery platform to combine connected car data and data derived from stationary CCTV cameras to the driver in-vehicle
- > Extracts road and weather conditions for in-vehicle processing using AI
- > Supports traffic, navigation, telematics and connected device companies with complimentary data

TRAFFIC MANAGEMENT

- > Automates the manual process of scanning cameras by operators to find issues that can cause congestion (i.e. fog, snow, wet, incident, debris, etc.)
- > Provides road weather condition decision information for variable speed lanes
- > Enhances traveler information, which can result in better route planning and more effective, safer transportation system use
- > Maximizes budget dollars by reusing existing infrastructure to augment road safety programs
- > Allows multiple transportation agencies to collaborate on road issues

Helios®

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