

# ABOUT TERRA HELIX

## WHAT WE DO

We help governments and organisations unlock the value of location data. Our focus lies in designing geospatial systems that support planning, monitoring, and decision-making—without adding technical overhead.

Whether you're tracking environmental change, managing services across a region, or responding to urgent infrastructure needs, we build tools that show where, when, and why things happen.

## HOW WE WORK

We don't believe in reinventing the wheel. Our approach is modular, data-first, and built to work alongside the systems our clients already use.

Most of our work combines spatial analysis, cloud-native GIS, and custom dashboards. We also train teams to manage and evolve these tools internally, ensuring sustainability from day one.

## WHO WE SERVE

We work with local authorities, civic tech groups, public health teams, and climate-focused organisations. Many of our clients start with one clear question: *"What can we learn from the location of things?"* We help turn that into a solution that drives impact.

FOR SPATIAL TOOLS  
THAT BUILD CLARITY,  
VISIT OUR WEBSITE  
OR CONTACT US.



## BUILDING RESILIENCE THROUGH LOCATION DATA

From air quality mapping to infrastructure monitoring, spatial tools can strengthen how institutions plan, operate, and respond. Terra Helix builds GIS solutions that are grounded in context, shaped by user needs, and focused on action, not complexity.

TERRA HELIX TECHNOLOGIES

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# AIR QUALITY MONITORING

## CONTEXT

Cities across the world are grappling with deteriorating air quality, particularly in dense urban areas. While low-cost air quality sensors have become more accessible, converting their raw readings into meaningful, spatially-aware insight remains a challenge for local governments and environmental bodies.

## CHALLENGE

Air pollution is not uniform. Localised hotspots often emerge near traffic corridors, construction zones, and industrial belts. Without a spatial understanding of how PM2.5 and PM10 levels fluctuate across neighbourhoods, policy interventions risk being broad and ineffective. Traditional station-based monitoring provides limited coverage and does not account for intra-urban variability.

## APPROACH

To address this, sensor networks can be integrated with spatial interpolation models such as kriging or inverse distance weighting (IDW) to

# TRANSFORMING AIR SENSOR DATA INTO ACTIONABLE PUBLIC INSIGHT.

estimate pollutant levels across the city. Satellite data, such as aerosol optical depth (AOD) from MODIS or Sentinel-5P, can be fused with ground observations to extend coverage.

Results are visualised through dynamic dashboards and pollution heatmaps. When overlaid with land use data such as schools, hospitals, transport hubs, and housing density, these tools allow for targeted responses. Urban planners can identify high-exposure zones, environmental agencies can issue more precise warnings, and public

health bodies can correlate pollution levels with respiratory disease trends.

## IMPACT

Spatialised air quality platforms enable a shift from reactive to preventive planning. They allow public authorities to track improvements, engage citizens through transparency, and prioritise clean air investments based on evidence rather than intuition.

# URBAN HEAT ISLAND MAPPING

## CONTEXT

The Urban Heat Island (UHI) effect causes city centres to be significantly warmer than their rural surroundings due to surface materials, reduced vegetation, and dense construction. As climate change intensifies, this effect becomes a public health hazard, especially for vulnerable populations in high-density, low-income areas.

## CHALLENGE

Many cities lack a spatial understanding of where heat exposure is most severe, and which communities are at risk. Without targeted diagnostics, heat mitigation strategies such as tree planting or cool roofing are often implemented uniformly, ignoring local variation in land use, income, and infrastructure quality.

## APPROACH

UHI analysis combines satellite-based thermal imagery (e.g. Landsat 8 TIRS or Sentinel-2 LST) with spatial indicators such as vegetation cover (NDVI), impervious

# A SPATIAL APPROACH TO MANAGING URBAN HEAT STRESS



surface data, and building footprints. By overlaying temperature anomalies with demographic data and service access layers, cities can generate high-resolution heat maps that pinpoint priority zones.

These insights are used to guide strategic interventions including cool pavement trials, urban greening, rooftop gardens, and development controls in heat-prone wards. Planners can simulate scenarios to understand the cooling effect of proposed interventions, or to assess how ongoing development will exacerbate thermal stress.

## IMPACT

Heat-resilient infrastructure, when informed by spatial data, becomes more cost-effective and equitable. Targeted action reduces heat-related illnesses, improves liveability, and aligns with sustainable urban development goals.

# ENVIRONMENTAL IMPACT TRANSPARENCY

## CONTEXT

Environmental Impact Assessments (EIAs) are critical tools for evaluating the risks of major infrastructure projects. However, they are often locked in static PDF documents or fragmented across multiple reports. This makes it difficult for local communities, researchers, or regulatory bodies to understand the spatial extent of potential harm.

## CHALLENGE

In many jurisdictions, even large-scale industrial or infrastructure projects such as highways, thermal power plants, and ports lack a public-facing spatial footprint. This obscures their proximity to ecologically sensitive zones, inhabited areas, or cultural heritage sites. Civil society groups and concerned citizens have limited capacity to analyse or question EIA claims.

## APPROACH

A spatially-enabled platform can bring together EIA documentation, project boundaries, and regulatory

# MAKING REGULATORY DATA SPATIALLY ACCESSIBLE FOR BETTER PUBLIC SCRUTINY

zones into a single interface. Layers such as forest cover, wetlands, protected areas, ground water zones, and habitation clusters are overlaid to assess cumulative impact. Time-based visualisations allow users to see the phased expansion of projects or historical environmental degradation.

Searchable interfaces help users locate nearby projects, view environmental clearance status, and access relevant documents. By democratising access to regulatory spatial data, such platforms empower scrutiny and accountability.

## IMPACT

When environmental assessments are made spatially intuitive and publicly accessible, they foster better dialogue between developers, authorities, and citizens. They also serve as internal tools for agencies to prioritise site visits, cross-check documentation, and ensure compliance with national and international safeguards.