



Signature Analyst®

SPADAC
The Deciding Factor.

**THE WORLD'S MOST ADVANCED
GEOSPATIAL PREDICTIVE ANALYSIS TOOL**

Signature Analyst is a spatial decision support system that delivers enhanced objectivity by discerning subtle yet powerful and actionable insights, maximizing likelihood of success. Combining predictive analytics with spatial information as well as human terrain and social networking elements, the solution delivers effective consequence modeling and improved confidence in decisions for a range of global operational and business challenges.





ACTIONABLE INTELLIGENCE FOR COMPLEX QUESTIONS

- Where is an event most likely to occur?
- Where is the greatest risk and opportunity?
- How should I best deploy my resources?

When your success depends on how you answer critical questions about future events, Signature Analyst is the solution. As the world's most advanced geospatial predictive analytics tool, Signature Analyst provides the unique insights and actionable intelligence you need to make high-confidence decisions about future events, and more effectively allocate resources.

SUPERIOR METHOD FOR PREDICTING EVENTS

Signature Analyst uses unique, patented scientific methodologies that allow analysts to understand events and their relationship to the social, cultural and physical environment. Unlike traditional techniques, which rely heavily on assumptions, this purely empirical, statistical approach helps eliminate potential human error and bias. Once the relationship between events and hundreds of factors is understood, Signature Analyst generates a spatial assessment to identify areas where future events are most likely to occur. The result is a geospatial hot-spot map where brighter or hotter colors represent areas with the highest likelihood of the event occurring again.

EASE OF USE

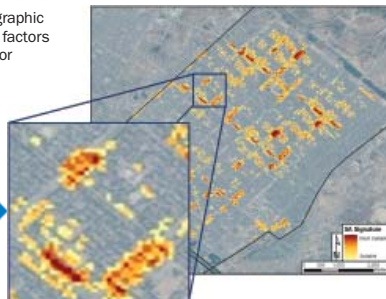
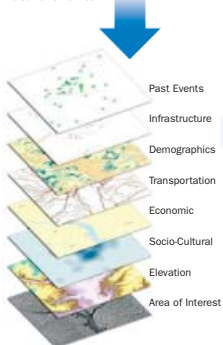
Signature Analyst streamlines a number advanced geoprocessing tasks used to perform tasks such as site selection, risk assessments, and resource allocation. To create a suitability model or "hot-spot" map, users simply create a new project based on an identified Area of Interest (AOI), add factors and events, and run the assessment.

PAST EVENTS OCCUR AT GEOGRAPHIC LOCATIONS... WHERE WILL THEY OCCUR IN THE FUTURE?



People are influenced by conscious and unconscious factors in everything they do. Using patented search algorithms geospatial predictive analytics compares events to each of the factors, in terms of distance, value, and cost.

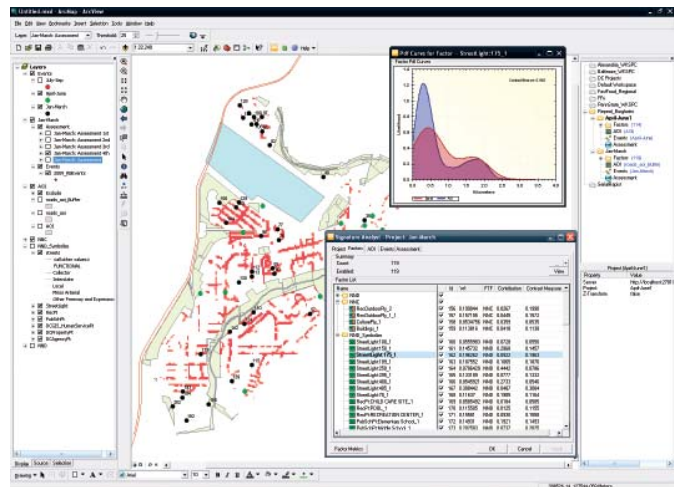
Signature Analyst characterizes the geographic relationships between these events and factors to find the highest probability locations for future events.



Signature Analyst accumulates the weighted likelihood values for each factor to create an overall assessment, and then projects this to the entire Area of Interest in the form of a "hotspot" map like the one above.

ArcGIS® INTEGRATION

Signature Analyst is available as a stand-alone client or as an extension to ESRI's ArcGIS desktop products. Signature Analyst extends the variety of capabilities found in ArcGIS by providing advanced spatial analysis and modeling.



Signature Analyst ArcGIS Extension Interface

UNIQUE INSIGHTS TO ENHANCE DECISION-MAKING

With this powerful geospatial predictive analytic intelligence, you can discern which factors help influence events and make critical decisions about where to focus and allocate your resources. For example, Signature Analyst has been used to:

- Reduce the target area of interest
- Identify highest probability locations
- Focus action plans to manipulate factors that influence events or behaviors
- Support decision-making with statistical modeling
- Recognize patterns and the factors that influence them
- Discover hidden relationships among threat and target
- Understand factors that attract or repel events or behaviors

RAPID DECISIONS AND IMPROVED PRODUCTIVITY

In today's fast-paced, ever-evolving world, speed is vital. Signature Analyst delivers by streamlining advanced geoprocessing tasks used to perform site selection, risk assessments and resource allocation. Analysts improve their effectiveness and efficiency, decision-makers solve complex problems and make informed decisions quickly, and organizations improve their overall productivity.

PROVEN RESULTS

Signature Analyst is a proven intelligence asset that has been used to support counter-terrorism missions around the world. Military planners rely on Signature Analyst to help find high value targets, identify weapons caches and safe-houses, and to disrupt enemy networks. Signature Analyst is proven technology based on real-world results.

ADVANCED FEATURES YOU CAN COUNT ON

Gain New insights. Signature Analyst provides users the ability to discern which factors contribute to future events. This insight is critical to understanding and evaluating an output assessment and can be used to influence future events. As a result, patrol routes can be rerouted, security checkpoints can be moved, and sensors can be retasked to more effectively control your environment.

Modeling. Signature Analyst relies on an advanced statistical technique known as geospatial preference modeling which assumes that human behavior and other events are influenced by a wide range of environmental, cultural, and social factors. Signature Analyst discovers these relationships by analyzing events in a geospatial context. Past events are compared against hundreds, sometimes thousands, of factors. Each of the factors are evaluated in terms of distance, value, cost, and other Factor Type Functions (FTFs). An assessment is made for each factor to determine which factors may have influenced past events.

Empirically-based Algorithms and Techniques. Analysts can model a variety of consequences and outcomes through purely empirical modeling techniques based on Signature Analyst's patent-pending statistical and predictive algorithms. Furthermore, specific algorithms based on data type are applied for optimal evaluation.

Support for Diverse Data Types. Signature Analyst supports a wide range of structured and unstructured data, such as physical terrain, temporal, demographic, cultural, social, economic and human terrain, in a wide variety of input and output formats. Specific spatial input and output formats are shown in Spatial Inputs and Outputs.

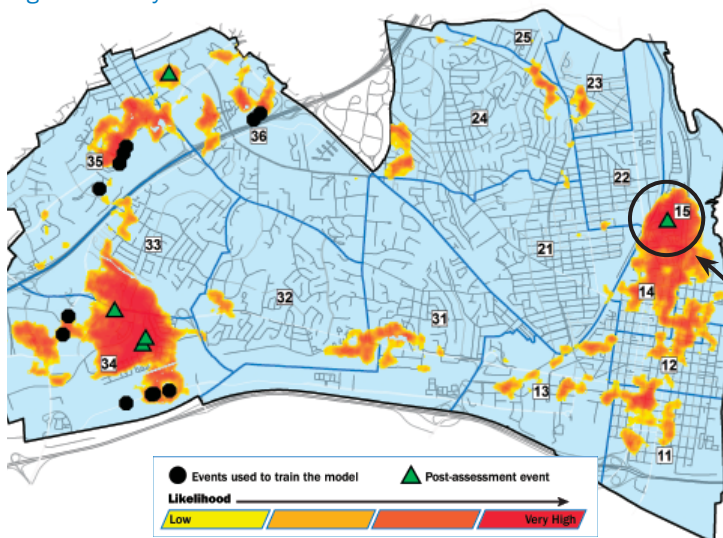
Detailed Examination Capabilities. Through a variety of statistical and exploratory assessment tools, Signature Analyst provides detailed examination of outputs and relationships between contributing data elements. Users can analyze factor metrics for each individual factor, as well as visualize the correlation between events using dendrogram event clustering.

Advanced AOI Definition. Signature Analyst accepts AOIs in virtually any shape or geometry, and supports region exclusions within selected AOI and user-defined grid sizes and variability.

Sophisticated Visualization. Signature Analyst provides seamless support for leading geospatial interfaces such as Google Earth and ESRI ArcMap for defining AOI and visualizing outcomes.

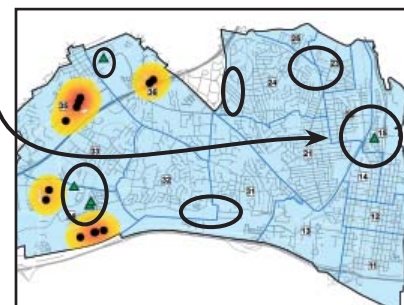
Scalability and Performance. Signature Analyst's modular architecture enables full enterprise scalability. Multi-threaded processing and distribution across multiple CPUs enhance performance, as do sophisticated spatial indexing capabilities.

Signature Analyst Assessment



Although traditional density mapping techniques are useful for visualizing events that have already taken place, Signature Analyst determines where future events are likely to occur next. Evaluating events and determining how the geospatial environment influences them, allows Signature Analyst to identify new areas of likelihood that would not be identified with traditional density mapping techniques. When Post-Assessment events are laid over the two different map types, Signature Analyst identifies new areas of focus with ease and accuracy.

Traditional Density Mapping





SIGNATURE ANALYST KEY FEATURES

- **Model Inputs** - As few as 2 or 3 training points or events can be analyzed against hundreds of different factors (Distance, Value, Category, Friction Surface, etc) to compute a Signature Analyst assessment. An advanced AOI definition capability accepts virtually any shape/geometry, and supports the ability to exclude regions.
- **Multiple models for varied assessments** - Both Feature Space Preference (FSP) and Spatial Naïve Bayes models are available for dynamic flexibility.
- **KML Support** - Create factors, events, and AOI from KML links as well as exporting assessments to KML.
- **Ability to Export Factor View to Excel** - With Signature Analyst's ArcMap extension, users can export the list of factors and associated attributes (e.g. factor metrics) into an Excel spreadsheet for varied use.
- **Advanced Factor Management/Organization** - Organize factors into groups that can be shared across projects in a workspace.
- **Sophisticated Event Filtering/Visualization** - Intuitive interface provides capabilities such as date/time filtering and dendrogram event clustering. Additionally, generate kernel density estimation maps from selected events for rapid side by side comparisons.
- **Thresholding Toolbar** - Dynamically threshold assessment layers and view top 10%, 5%, and 1% likelihood values with Signature Analyst's advanced thresholding toolbar.
- **Advanced Project and Assessment Settings** - Multiple project settings are available to perform exploratory analysis, compute factor metrics, review summary statistics, and perform K-fold validation for internal/external accuracy measures.
- **Multi-Threaded Indexing** - Significantly improve the speed with which RFDs are computed for NND, NNV, and NNC factor type functions on multi-core/multi-processor machines.
- **Architecture** - Platform independent (C++Core) provides a vendor agnostic architecture to enhance flexibility and integration capabilities. Client/Server licensing options provides scalability for enterprise environments.

DATA FORMATS

Format Name	Read	Write	Notes
ASC	x	x	ESRI ArcGrid - ASCII
ADF	x		ESRI ArcGrid - Binary
BMP		x	
CONTOUR		x	Exports a CONTOUR SHP file
CSV	x		Comma Separated Values
GeoJP2		x	JPEG2000 Format
GeoTIFF	x	x	
GIF		x	
GML		x	Geography Markup Language
IMG	x	x	ERDAS Imagine Format
JPEG		x	
KML		x	Keyhole Markup Language (Google Earth)
MDB	x		ESRI Personal Geodatabase
PNG		x	
SDE	x		ESRI ArcSDE Geodatabase
SHP	x	x	ESRI Shape Files
TIFF	x	x	With TFW file
TXT		x	ASCII text file

SYSTEM REQUIREMENTS

Software:

- Microsoft® Windows XP

ESRI ArcMap Extension (Optional):

- ESRI ArcMap Version 9.2, service pack 5 with Microsoft .NET support or higher
- Version 9.3, with Microsoft .NET support

Minimum Hardware:

- 32-bit Pentium 4 or compatible
- 1GB RAM (2GB RAM optimal)
- 5GB free disk space

DODIIS ACCREDITED

Signature Analyst has been approved for use on a number of proprietary networks including JWICS.

AVAILABLE ON NGA IEC

Signature Analyst is available as an option to NGA analysts via the Integrated Exploitation Capability (IEC) Enterprise Application Services

LEARN MORE

Contact SPADAC today to find out more about Signature Analyst and our wide range of offerings. Go to www.spadac.com, call 703-740-4000 or email sales@spadac.com.