



## **SecurSoft– BSEC Security Planning System**

Based on Criterra Technology

*A breakthrough in optimized and automated planning*

### **Introduction**

Concerns about terror threats, illegal immigration and crime have made buffer zone boundary protection at borders and critical infrastructure sites, such as airports and border police posts, a critical global priority. Security and defense forces are deployed in support of protection of these sites, based on incomplete information. Permanent detection and observation posts, response forces posts, permanent barriers, reconnaissance patrols, communications networks, and semi-permanent forward detection and observation posts require timely and detailed advance mission planning. Security planners and infrastructure designers involved in planning security and defense systems incorporating physical infrastructures, response force positions, communications networks, and advanced sensor technology, now play a key role in enhancing homeland security and defense.

Existing systems are based on a combination manual paper-based and automated generalized engineering tools originally designed for other purposes. When used for planning detection and observation systems, communications and power networks, and mission-oriented semi-permanent sensor arrays for temporary forward observation posts, these makeshift security planning systems are generally too difficult, expensive, inflexible and time consuming to achieve optimal planning within technological, operational, budgetary, time and other constraints. The shorter the planning time frame, the more evident it becomes that these planning approaches are simply inadequate and are prone to contribute to deployment failure. Rapidly deployed forces require mission flexibility or what is known as “on-the-fly mission planning” to maintain their initiative. This is nowhere more important than for the front lines in response to an approaching threat.

### **Background**

Worldwide border police forces are charged daily with the critical mission to defend their homelands against increasingly sophisticated and capable threats. BSEC Planning Corp is a company comprised of software engineers and former security police with hands on operational experience. BSEC provides an automated security planning system called SecurSoft.

The current version of SecurSoft, version 4.2, automatically plans the locations of towers, sensor heights and coverage, barriers, communications, and response force locations necessary to intercept the threat in-time. The software performs line-of-sight and time & space analyses on a 3-D computer model of the threat and protected areas of interest and produces tower, sensor, barrier, and response force positions automatically once the areas have been defined by the planner. The software can calculate sensor parameters such as coverage areas and blind spot areas for already installed sensors as well.

SecurSoft is aptly termed a breakthrough security planning system as it provides a vertical automated solution for the entire survey and planning process. In addition to allowing users to automatically achieve optimal perimeter sensor deployment, SecurSoft also dramatically reduces planning time, management costs and overheads. Many police agencies have used, and are

continuing to use, SecurSoft to plan the security arrays of national borders, help plan reconnaissance missions, and protect critical infrastructure such as International Airports.

Our company, BSEC Planning Corp., continues to develop SecurSoft software. We are based in Massachusetts and consist of 3D modelling, security engineering and security planning staffs dedicated to providing our clients with the best available security system plans, designs, and planning tools. Our personnel have professional engineering and operational security experience in planning sensor arrays along the national borders of the United States and other countries worldwide, as well as in facility security and mission planning operations of border police and emergency responders. BSEC's sole mission is to help commercial and government organizations plan and implement cost-effective security solutions. We plan in the near future to enhance our SecurSoft software with significant improvements which will support sophisticated time and space analysis in the most demanding urban areas. The BSEC software incorporates our operational experience and field-tested security design philosophy.

### **Design Philosophy and Process**

Throughout the design process to achieve our client's goals, we employ the BSEC design philosophy, a logical step-by-step process consisting of the eight steps listed:

1. Understanding Client Needs
2. Gathering 2D and 3D Mapping, Field Data
3. 3D Model Construction of the area of interest with and without planned improvements
4. Threat and Vulnerability Analysis and Definition
5. Sensor, Communications and Countermeasure Deployment Definition
6. Response Forces and Infrastructure Analysis and Refinement
7. Integrated Countermeasures Analysis and Refinement
8. Security System Design and Response Validation and Verification
9. 3D Model and Plan/Design Reports Delivery to Client

This BSEC security design philosophy is fully automated in the BSEC SecurSoft. SecurSoft is an integrated set of analytical and visualization tools. SecurSoft can be used worldwide by operational security planners and engineers to optimize the complex security designs required to protect national borders, oil and gas sites, airports, seaports, border patrol posts and other critical assets. BSEC, in 2008, provided versions of SecurSoft for application to the USA border security programs and for application to several International Airport security planners.

SecurSoft is the first integrated system on the market to combine digital mapping information, sensor device simulation and mission planning to automatically produce realistic integrated security system deployment plans for technology, infrastructure and mission response forces.

BSEC SecurSoft integrates a wide range of data including:

1. Operational Security requirements and up-to-date field information
2. Environmental characteristics
3. Facility Engineering data of existing and future planning
4. Aerial and satellite mapping (Geographic Information System, or GIS) data
5. Existing and planned communication and power supply networks
6. Radar and Camera Sensor specifications
7. Response Force Makeup
8. Environmental, budgetary and technological requirements

An important aspect of the BSEC design process is incorporation of current field information. SecurSoft combines this information about threats and vulnerabilities with realistically calculated operational security force response times and estimates of individual assets' vulnerabilities to defined threats. SecurSoft supports the ready evaluation of existing and potential security force patrols, and of sensor arrays along perimeters and surrounding areas, and can automatically locate and optimize coverage for sensors and placement of forces. Figure one below shows the time rings of the response forces and attack threat, and is just one example of SecurSoft's time and space analysis capabilities.

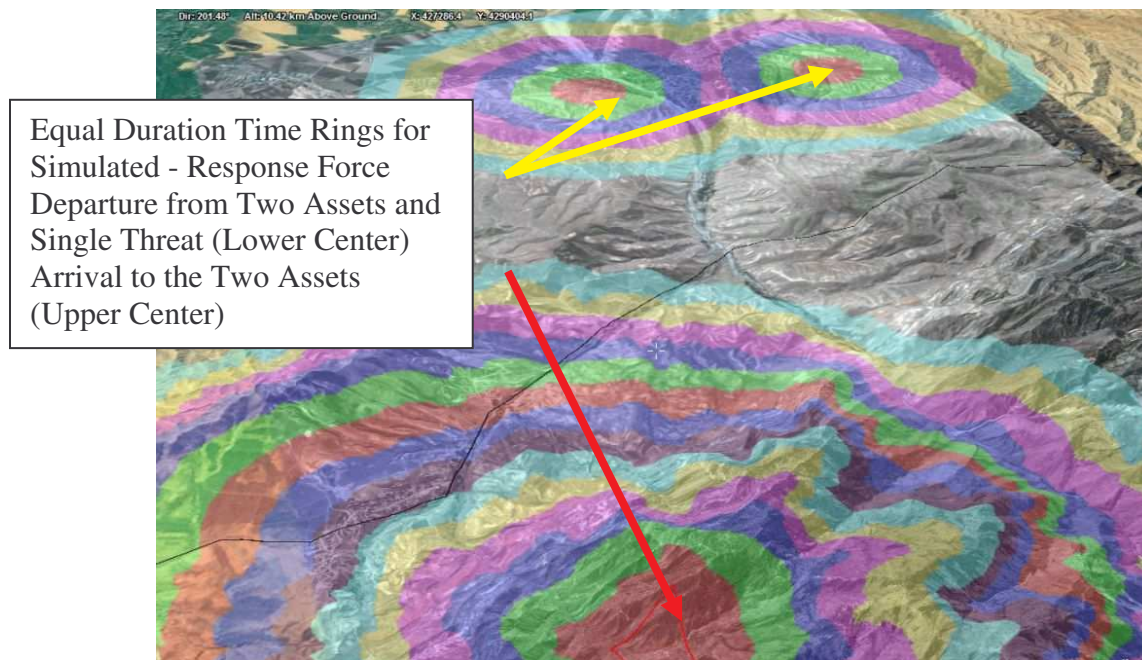


Figure One -Time and Space Analysis of a Border Area Showing Equal Time Progress Rings

SecurSoft results help planners locate any additional physical barriers and time delays required for system's effectiveness. All of the system generated reports and graphical results are exportable into common databases, spreadsheets, mapping formats and text processors. These reports support the important benefit to planners of reducing the guesswork involved in boundary security planning today. Reducing this design uncertainty helps planners reduce their project risks, costs and planning times.

SecurSoft gives the planner an accurate graphic display of detection and investigation sensor coverage, which highlights vulnerabilities (blind spots). For each sensor, SecurSoft can automatically locate sensors and display several best location and fit alternatives to allow the planner to select the best one meeting requirements. Planners also can check the positioning of existing defense measures along a desired path or perimeter, all within an interactive 3D environment. Finally, SecurSoft generates numerous useful reports including a detailed bill of materials and precise sensor coverage and deployment information.

Figure two below shows a first pass worldview of four radars positioned to protect a river port against cross border incursion. This graphical display of coverage clearly shows the coverage gaps and quality of coverage; it has been found extremely useful to planners working on complex security projects.

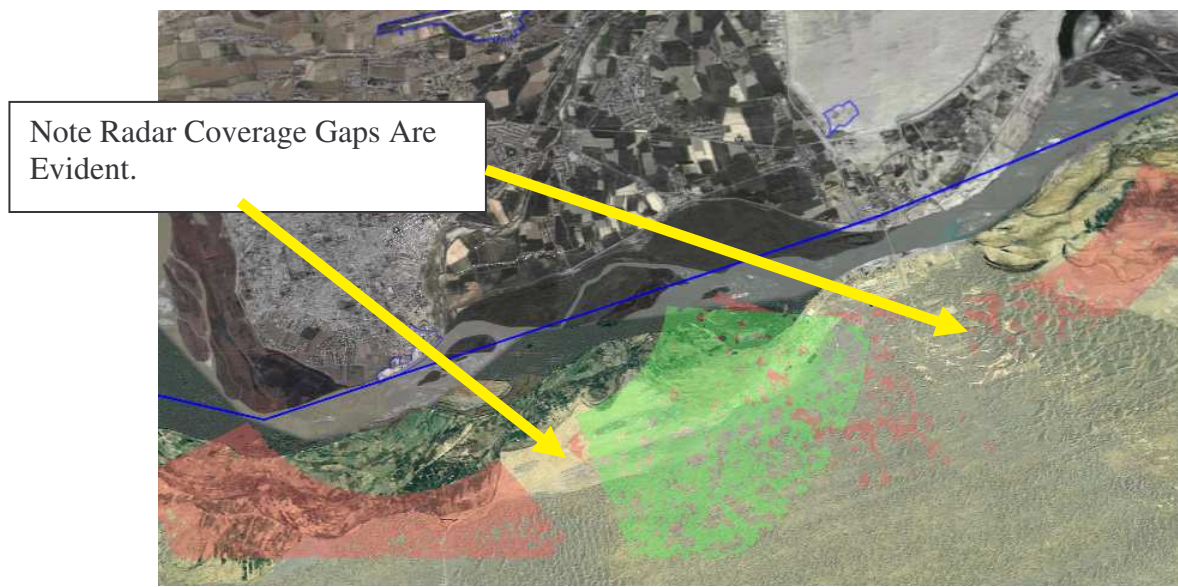


Figure Two- Worldview Sensors Detection Coverage (light red and green) for a River Port

SecurSoft gives planners instant feedback on the side-by-side comparison of various sensor technologies. This unique capability supports the effective evaluation of new sensors and methodologies. The flexibility and modularity of SecurSoft supports future inclusion of complex sensors and security environments.

Figure three below shows a typical representation of the sensor's field of view. Planners can use this SecurSoft capability to evaluate both fixed and mobile sensor placements. This is especially useful when SecurSoft is integrated into command and control systems. Combined with SecurSoft, data of a wide variety of sensors including radar, video and acoustic, can simulate accurately the sensor's field of view. This provides the capability for planners to generate accurate multiple sensor coverage areas for direct input into the common operating picture of command and control systems. SecurSoft allows the planner to look through the point of the sensor, pan and tilt it, and see what the sensor sees.



Figure Three - Coverage Area as Seen from Sensor's Point of View

Additionally being able to see what the sensor sees makes possible a wide range of dynamic mission planning and analysis of alternatives. Even on a field deployable notebook computer, SecurSoft is fast enough to support on the fly planning of reconnaissance patrol missions. SecurSoft can easily generate patrol route simulations or “mission movies” which have been found to be very useful to field personnel planning patrols. Mission movies simulate the field of view of the sensors along the patrol route and enable field commanders to transmit route changes in real time securely to patrol units. This gives a field commander a considerable degree of mission flexibility. As fully demonstrated by security planners, it is possible to improve a patrol's operational effectiveness by quickly assessing alternative vantage points and taking full advantage of short time frame opportunities to capture current field data.

### Summary and Conclusion

SecurSoft helps planners and designers to plan optimal buffer zone protection for sensor deployments at borders and coastlines, border police posts, airports, seaports, industrial campuses, urban zones and other strategic infrastructure sites using an automated planning process. The system has been used successfully by security planners on international borders, border police bases, and critical infrastructure projects and on the perimeters of International Airports and Seaports. SecurSoft offers several unique integrated features which make this possible.

1. High performance flexible 3D terrain engine
2. Built in threat and vulnerability analysis and force response assessment
3. Mission tested time and space and line-of sight analyses
4. Automatic sensor, barrier and communications deployment planning

Using digital terrain models, aerial and satellite imagery, GIS technology, sensor specifications, engineering data and environmental data, SecurSoft creates a highly accurate 3D interactive representation of a security sensor deployment. The system takes into account sensor coverage as well as physical obstacles. SecurSoft is designed to deliver solutions across the entire planning spectrum. This covers everything from analysis of alternative concepts to surveying existing security measures and drawing up of specifications. SecurSoft automatically executes optimized operational planning and outputs a detailed plan of the security system project.

SecurSoft can greatly improve the effectiveness and timely deployment of fixed radar and camera based detection and assessment equipment for large national borders and critical asset perimeters protection. Our system reduces the planning costs for fixed and mobile deployments by rapidly simulating the deployment scenario and by accurately assessing the impact of blind spots on overall mission completion.

The benefits of BSEC Planning Company's SecurSoft are:

1. **Increased Mission Flexibility:** Ability to rapidly plan and re-plan short duration reconnaissance missions and security for semi-permanent forward observation posts.
2. **Lower Costs:** Significantly lowers project budgets, design time and project delivery time through automated processes for locating towers, sensors, barriers and response forces.
3. **Increased Design Confidence:** Supports rapid analysis of automatically produced security system deployments and alternative "what if" re-positioning of sensors and security barriers
4. **Reduced Project Complexity:** Significantly reduces the representation of complex sensor digital outputs into an easy to understand and accurate graphical display format.
5. **Improved Results:** Allows planners to rapidly reduce critical threats and vulnerabilities.
6. **Rapid Evaluation:** Permits the accurate and rapid evaluation of existing security measures
7. **Better Future Planning:** Supports enhanced engineering plan generation with precise and rapid data generation.
8. **Reduces Errors and Enhances Reliability and Accuracy:** Provides a list of specifications, detailed design, project implementation requirements.

The SecurSoft approach to security system planning is a better solution than existing methods because SecurSoft has demonstrated it can rapidly provide planners an accurate, complete and cost-effective security plan capable of defeating known threats. Compared to conventional methods SecurSoft gives users excellent confidence in their designs.

If the current experience of security planners using SecurSoft can be considered typical, and we think it should be, then planners should be able to achieve project schedule reductions of up to 90 percent. These time savings will directly translate into improved operational mission effectiveness, reduced project costs and mitigated risks to field operations.

SecurSoft is an accurate field tested solution for planning security deployments. Past experience has shown SecurSoft will dramatically reduce the need for planners to conduct expensive, time consuming, error prone field validation and verification efforts.