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Topic:

Achieving a Regional Common Operating Picture for Super Bowl XLIX

Prepared for:

Law Enforcement Agencies (LEAs) interested in establishing a Regional Common Operating Picture in support of major events or Regional / Fusion Center operations

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1   INTRODUCTION

nFocus Solutions is pleased to offer this thought paper to the Law Enforcement community, and FirstNet, for evaluation and consideration in establishing Regional Common Operating Pictures (COPs) for State Fusion Center operations, or major event planning and execution. This paper encompasses the planning, execution, delivery and operations of the GeoSuite capability across the Phoenix region to support the 2015 Pro Bowl (NFL), Waste Management Phoenix Open (PGA), Super Bowl XLIX and other local events. The program was executed and delivered within 49 days of award, and completed in 60 days following completion of the operational cycle. The project was funded through a State Homeland Security Grant Program (SHSGP) award, and complimented previous GeoSuite customer deployments in the Phoenix region.

nFocus is a trusted, proven partner for law enforcement agencies seeking to establish a common operating picture at both the agency and regional levels.

- We have fielded the GeoSuite capability to customers planning and executing large scale incidents in Law Enforcement and Disaster Response.
- Unique tactical operations planning and execution capability, linking the higher command and dispatch with users in the field and at the incident.
- Based on the highly mature military equivalent, fielded to over 75,000 users worldwide.
- Developed using User-Centered Designs, purpose-built for the unique needs of Law Enforcement, Public Safety and Disaster Response.
- Enables a wide range of partners in major events and operations to access the system, yielding true collaboration without barriers to success.
- Uses an open-architecture, standards-based, web services approach to a multi-vendor ecosystem that evolves over time.
- We understand the complex system of networks, applications and information

1.1   About nFocus Solutions

nFocus Solutions' experience and skills to support the Law Enforcement and Disaster Response communities spans a broad range of technology and system development capabilities that were pertinent to this program.

 (1) We are a leader in Tactical Situational Awareness / Collaboration at the Field and Command level of Operations. We have developed, integrated and fielded the GeoSuite capability to Public Safety, Law Enforcement and First Responders in the United States. GeoSuite is the commercial equivalent to the Tactical Ground Reporting (TIGR) solution developed by General Dynamics with the Defense Advanced Research Projects Agency (DARPA), and fielded to all brigades in the US Army.

Adapted from the highly successful military equivalent, GeoSuite was launched into the Public Safety market in late 2013, and is used today by the following Law Enforcement / First Responder agencies:

- Phoenix Police
- Phoenix Fire
- Arizona Counter Terrorism Information Center
- Arizona Department of Public Safety

- Glendale Police
- Scottsdale Police
- Tempe Police
- Texas Task Force 1 (Search and Rescue)

(2) Our team consists of thought leaders in the tactical, digital operations space

The GeoSuite team at nFocus Solutions has dedicated the majority of their careers to achieving digitized operations for teams operating in the field at lower levels of the organization, leveraging broadband networks (public or private), as well as the aggregation of field operations to create common operating pictures that span multiple agencies. Collectively, we have developed, delivered, trained and supported capabilities to Soldiers in combat operations, Law Enforcement in tactical planning and execution of major events, and FEMA Urban Search & Rescue teams operating in the harsh realities of national disasters.

(3) Our relationships and awareness of the need for an ecosystem of partners

nFocus Solutions is a member of the EDGE Innovation Network, established by General Dynamics in 2006. There are over 450 companies and universities in the EDGE network (www.edge-innovation.com) today, with a full range of skills and technologies to leverage when needed. The founder of the EDGE Innovation Network is now a member of the leadership staff at nFocus Solutions.

Through the EDGE, we listen to the top gaps and needs of our customers, launch and execute relevant projects to innovate new capabilities that address the stated needs, and demonstrate these projects back to customers to gain feedback and refine if needed. Most recently, we supported a full disaster response exercise called the Winter Institute during November 2014, in cooperation with the EDGE Innovation Center administered by Texas A&M University at their Disaster City complex. In this exercise we worked with Texas Task Force 1 Urban Search and Rescue, Army National Guard, US Border Patrol, and others to utilize GeoSuite as the Joint Common Operating Picture (COP) for the incident planning and response, of a simulated national disaster involving Federal, State and Local agencies.

2 WHAT IS GEOSUITE?

2.1 Description of the GeoSuite Capability

GeoSuite is a unique, mature, common operating and information management tool designed for use at all levels within an organization, from Senior Executives to the operational and individual levels executing missions. It provides critical information from multiple sources across full spectrum operations, connecting users in the field to supervisors and analysts in the command

center. Originally developed to enable low-level patrol planning, as well as collection and sharing in the field for the military, the capability has been fielded (in its military form) to all brigades in the US Army, and is now being sold to Public Safety, Law Enforcement and Disaster Response customers in the United States.

The capability is currently in use by customers for different roles and use cases, with a partial list of customers and usage below:

- Phoenix Police, Phoenix Fire, Arizona Counter Terrorism Information Center (ACTIC), Glendale Police, Scottsdale Police, and Tempe Police

    o Emergency Operations Planning

    o Large Scale Event Planning and Operations

    o Regional Common Operating Picture (COP), integrating CAD (police and fire), Vehicle Location (police and fire), and User-created events and information

    o Multi-agency investigative queries and joint incident response

- Arizona Department of Public Safety (DPS)

    o Joint Common Operating Picture (COP), integrating CAD, Vehicle Location, Tips and Leads, and TRACS

    o Critical Infrastructure Management System – used to collect and manage all critical infrastructure information in the State and provide the information to tactical first responders in the field, comingled with their other operational data

- Texas Task Force 1 (TX-TF1) Urban Search and Rescue (USAR)

    o Disaster Response planning, operations and wide area search

    o Collaboration with State Department of Emergency Management through shared visibility in the State Emergency Operations Center (EOC)

2.1.1   Fundamental Capabilities

2.1.1.1   Event Management

GeoSuite is used by current customers for the planning and execution of events, such as NASCAR races, Parades, Football games, etc. The capability also lends itself to respond to ad-hoc, or unplanned events or incidents, such as floods or natural disasters. Figure 1 offers a screen capture of the GeoSuite tool when used in November 2013 by the Phoenix Police Department's Homeland Defense Bureau to help a multi-agency team plan and manage the NASCAR race at the Phoenix International Raceway. Planned areas, artifacts and other information were loaded into the system, and allowed for graceful transition into the day of event operations where 911 dispatch calls from the on-scene dispatch center were visible to all users.

Figure 1 – GeoSuite Screen Capture of NASCAR Event Management

2.1.1.2   Event Searching

GeoSuite enables users to search information relevant to an active or historical event. The toolbar illustrated at the top of Figure 1 indicates the user's flexibility to conduct searches based on geographic shape, type of information, source of data, timing of data entry, keyword, category of data, or originating unit/user type. Additionally, all searches can be saved by the User for future quick-search if desired. This feature empowers each user to find and monitor the exact types of events and information that is relevant to their role. Searches can be set to repeat to create a live operating picture during operations.

2.1.1.3   Asset Management

Asset tracking is offered through existing vehicle location capabilities on vehicles and assets that have a GPS-enabled device or vehicle location system. These assets will report their location as a Position Location Information (PLI) symbol in GeoSuite. The information is updated dynamically on the map as the asset reports its position. Figure 2 below offers a view of a Regional PLI view of multiple agencies in the GeoSuite system. Individual police agencies are

designated by an initial within their blue PLI symbol, and fire assets are designated with a red diamond.
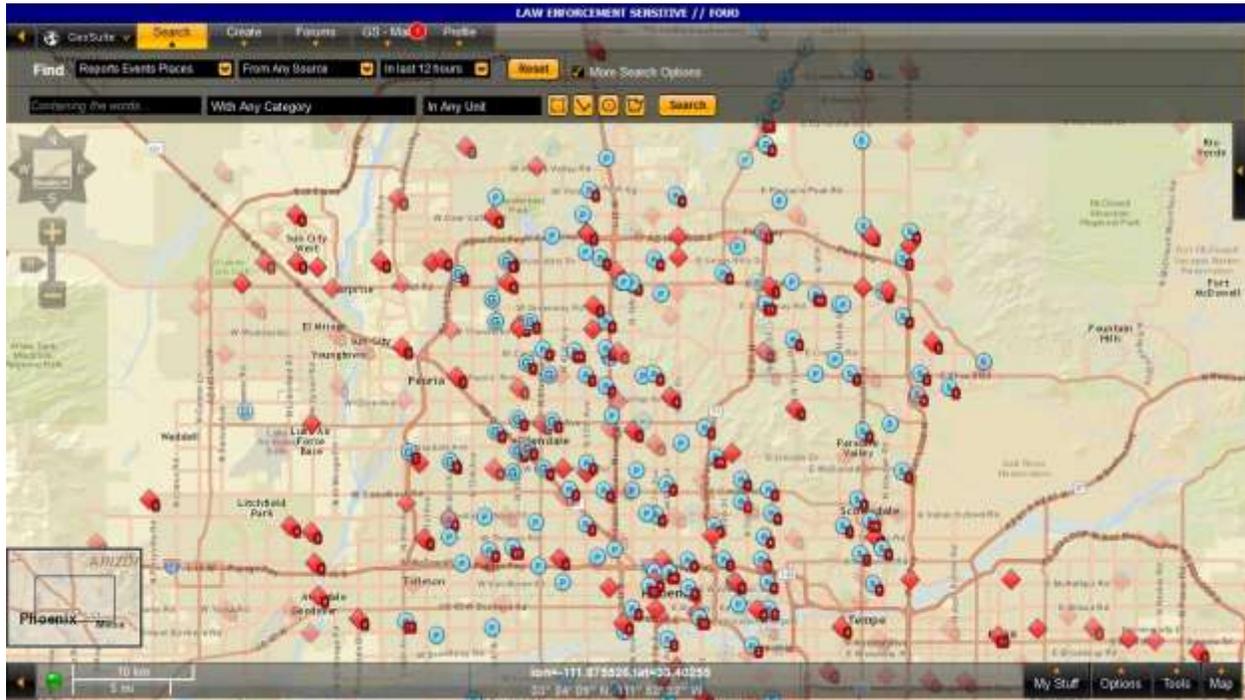
Figure 2 – GeoSuite Asset Tracking across a Region

2.1.1.4 Video Integration

Using GeoSuite, Users can discover sensor locations where live or historical video feeds exist, and can request a real-time streaming feed of that sensor if desired. Equally, users can build up the locations of all camera locations across their area of responsibility, allowing for rapid identification of the best cameras to utilize to see an incident that is developing. Figure 3 provides a GeoSuite screen shot showing live video from highway transportation cameras as an example.

Figure 3 – GeoSuite Screen Shot with Live Highway Video Camera Feed

2.1.1.5   Information Integration

The GeoSuite tool offers multi-source information integration onto one map-based view. No longer does a user need to interpolate between multiple screens and systems to get the complete picture. Examples of data feeds and sources that can be displayed include:

- Information from multiple Computer Aided Dispatch (CAD) systems including incident and unit locations.

- Ability to incorporate or interface with intelligence information systems (eg: Palantir or CopLink).

- Tips and Leads information

- Traffic, Accident and Citation Systems (eg: TRaCS)

- Additionally, Users can create, search or edit events and places using the GeoSuite desktop or mobile enabled devices and tablets. Figure 4 depicts the GeoSuite Android application running on a Samsung Galaxy III smart phone.
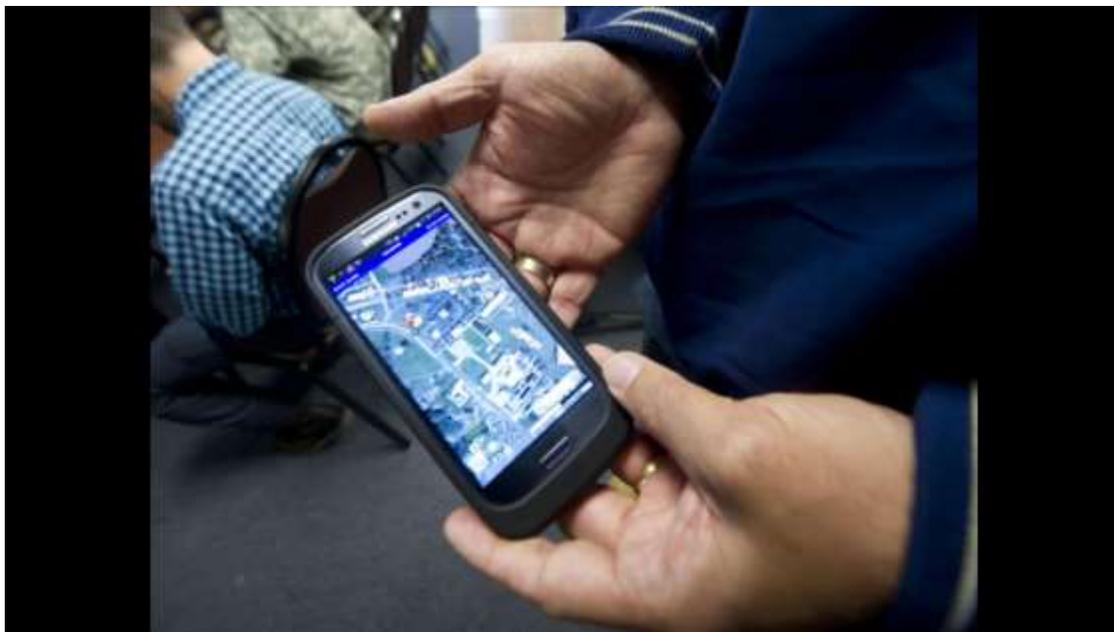
Figure 4 – Smart Phones offer Position Location of Responders, Ability to Collect Field Information, and View Operations in Field

2.1.1.6 Mapping and Symbology

GeoSuite can deal with most forms of open, industry standard mapping/GIS data layers. Frequently deployed with ESRI mapping layers from customer GIS teams, we also can utilize Google or similar web mapping tools if licenses exist in the customer organization. Lastly, GeoSuite is designed to handle customer-furnished maps and imagery, which enables disconnected operations when network connectivity is not available.

Our symbology library consists of NIMS compliant symbols, augmented by additional relevant symbols that were defined by users for specific use cases. If desired, additional relevant symbols can be defined and added to the library.

2.1.1.7 After Action Reporting

The GeoSuite system supports after action reports or even ad-hoc reporting during incidents. By running specific searches, the user can achieve a desired set of results on the map, which can then easily be exported to several different reporting formats. Users can export to Microsoft Word, PowerPoint, or an Excel workbook format that provides tabs for raw data, summary data, graphic reports, and relevant AAR information. Additional export options include the ability to export to a .CSV file, or to Google Earth as a .KML file. Both of these enable rapid evaluation of the GeoSuite data sets in third party tools if desired.

Figure 5 – Quickly Generated Reports Provide a Summary of Daily and Event Activities

2.1.1.8 Critical Infrastructure Management

The GeoSuite system is able to collect and store Critical Infrastructure locations and pertinent information, so that it can be rapidly searched and accessed during incidents.

GeoSuite is complimented by the Critical Infrastructure Management System (CIMS) at nFocus, which offers States a way to collect, manage and access their Critical Infrastructure information in a tactical manner. Originally developed under contract with Arizona Department of Public Safety, the CIMS addresses challenges accessing ACAMS (old) and IP Gateway (new) data tactically by users when an incident is unfolding in the field. The CIMS consists of a secure web-based server that enables the customer to create and publish surveys, to collect the information pertinent to Critical Infrastructure protection in the State. Published surveys can then be accessed and taken by Facility Managers of known Critical Infrastructure. Completed surveys are then available to Terrorism Liaison Officers (TLOs) in the State to conduct site walks and offer recommendations for improvement.

When combined with the GeoSuite solution, CIMS will publish Critical Infrastructure information to GeoSuite, allowing First Responders to access appropriate levels of information to facilitate better response, and TLOs can access full PCII level data through a separate, secure GeoSuite server. Figure 6 illustrates how Critical Infrastructure information from CIMS appears in the GeoSuite solution.

Figure 6 – Critical Infrastructure Information and Reports Accessible in GeoSuite

2.2   Description of the Technical Architecture

The GeoSuite technical architecture is depicted in Figure 7, and consists of a web-based application running on distributed servers that synchronize over a connected network. The GeoSuite capability is available in three variants:

1. Core Server License - Either hosted in a secure cloud service or as a classic license that can be loaded on an on-premise server inside the customer firewall. A core server can be accessed by any User on the network as a web client, which enables rapid addition of authorized users during incidents, major events, or disaster response operations.

2. Field Server – A smaller version of our Core server that runs on a rugged laptop for use in field deployments or command vehicles where operations may be subject to disconnected network environments.

3. Mobile Apps – GeoSuite mobile apps come in Android or IOS versions, and enable Field users to rapidly and easily collect observations around them, or see the location of peers and relevant events and places around them.

By leveraging these three variants of the solution, clients can define the right basis of issue for their specific operational needs.
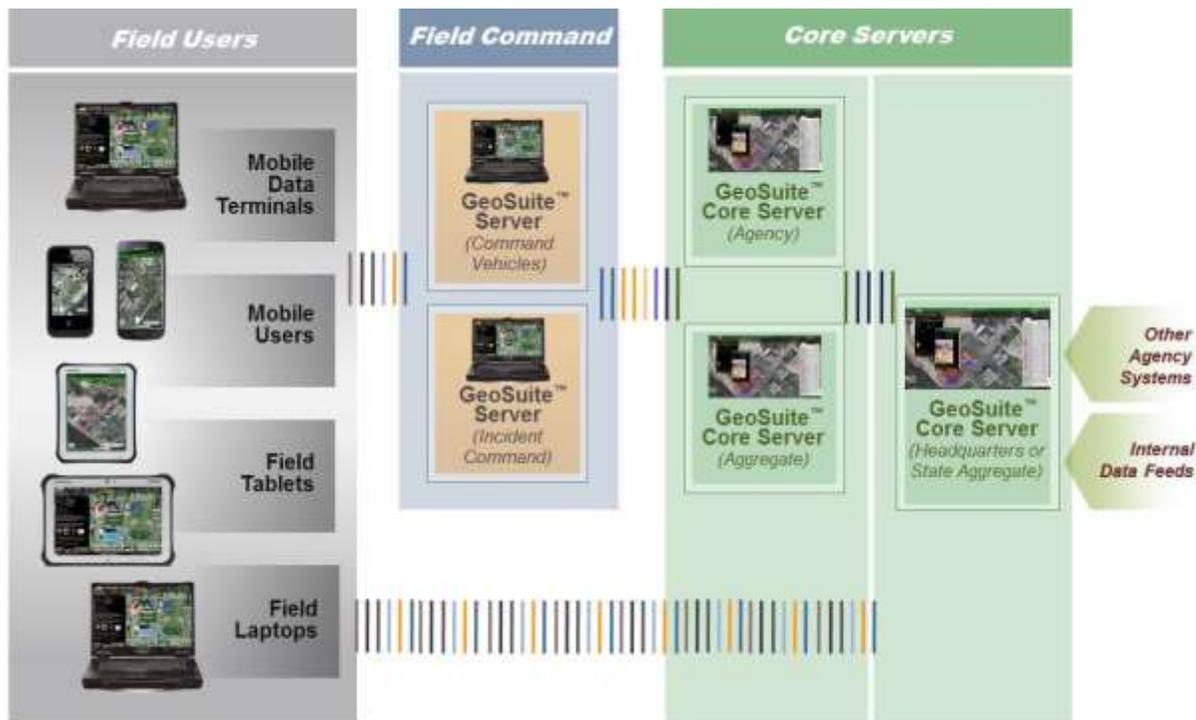
Figure 7 – Typical GeoSuite Architecture

3   SUPER BOWL XLIX PROGRAM

3.1   Existing GeoSuite Implementations

The GeoSuite capability existed in several implementations in the Phoenix Metropolitan Region prior to the Super Bowl XLIX Grant Project. In 2013, The Phoenix Police, Phoenix Metro Fire and Arizona Counter Terrorism Information Center (ACTIC) procured three GeoSuite servers as part of the new Emergency Operations Center (EOC) construction project. In establishing these three servers, the initial nucleus of the Regional Common Operating Picture (COP) was achieved. One server interfaced with the Phoenix Police CAD system, obtaining vehicle location and 911 CAD events. The second server interfaced with the Phoenix Fire CAD, obtaining the Fire vehicle location and 911 CAD events. These two servers were then aggregated into the third GeoSuite server, creating what is referred to as the "GeoSuite Event Aggregate". This server offered immediate value to the Fusion Center and Phoenix Police in planning and execution of major events across the city during 2013 and 2014.

In 2014, the Arizona Department of Public Safety (AZDPS) purchased a GeoSuite server, into which they interfaced three systems (CAD/Vehicle location, TRaCS, and TipSoft). This server began providing operational value to the AZDPS in the Fall of 2014.

3.2 SHSGP Grant Application

The planning for Super Bowl XLIX began in 2014 even before Super Bowl XLVIII ended in New Jersey. Phoenix Police authored a grant application to expand the GeoSuite ecosystem in preparation for Super Bowl XLIX. The initial grant application and associated funding estimates included the addition of multiple new agencies, as well as additional data feeds and capabilities in the system

- Glendale Police
- Scottsdale Police
- Tempe Police
- Mesa Police
- Maricopa County Sheriff's Office (MCSO)
- Addition of Social Media data feed

3.3 Scoping the Program

When the grant was evaluated against other priorities in the State, it was approved, but with a partial funding allocation. This funding cut resulted in a de-scoping exercise to fit the most critical agencies into the available funding level for the grant.

As a result of this exercise, the focus of the grant project was adjusted to place a priority on the addition of Glendale, Scottsdale and Tempe Police, where the major crowds would be gathered to participate in the numerous events related to the Super Bowl as well as the Waste Management Open golf tournament. The remaining agencies (Mesa and Maricopa County Sheriff), as well as additional features, were deferred to a later date. To further fit available funding dollars, the project was scoped to operate in a secure hosted cloud, where appropriate server performance could be established, monitored, and adjusted in real time if needed. The team took into account the total numbers of data feeds anticipated, data flows between servers and concurrent users in the system, and then aligned with appropriate server performance settings in the cloud to guarantee optimal performance during the operational period.

Although a successful prototype had been achieved integrating Social Media feeds from Geofeedia in preparation for the grant, due to funding limitations, the addition of a live Social Media feed within GeoSuite was deferred to a later date as well.

3.4 Obtaining Support Across Participating Agencies

In the months between the grant selection meetings and the actual grant funding award, the team spent time briefing the "New Agencies" on the GeoSuite capability, the value of the existing GeoSuite Event Aggregate capability in use in the ACTIC, and the particulars of the grant itself. The grant was written to cover the entire costs of the initial year of operations for each participating agency. This would allow each participating agency to simply support and sponsor

the grant project, achieve the initial operations for the Pro Bowl and Super Bowl events, and then benefit from a remaining 12 month operational period to use, assess and determine value of the capability to their own department. At the completion of the grant period, each participating agency would make an informed decision regarding continued operations, and whether they desired to continue operations in the secure cloud, transition operations into a server based inside their firewall, or to cease operations and end the project.

Briefings to leadership, IT and operations teams from each agency resulted in the support and sponsorship of all three agencies prior to the award of the grant. Formal Inter-agency agreements had to be established to allow for sharing of information.

3.5   Planning for Award

In addition to the effort to conduct outreach to the participating agencies, the team at nFocus Solutions began proactive planning for the grant award well in advance. Assessments of the system, data sizing and bandwidth were conducted to best align the project needs with appropriate server sizes on the secure cloud. The team defined a security strategy which included network connectivity between systems and user access.

3.5.1   CAD Vendor Engagements

Engagements with the CAD Vendors for the New Agencies began well in advance of the grant award as well. As part of the initial estimates for the program, the team at nFocus engaged each vendor. The nFocus team worked with the CAD partners to define the CAD data fields and requested an initial quotation from the vendor for the interface scope of work. Engineering estimates were kept low by leveraging the documented GeoSuite Web Services Guide and defining an Interface Control Document.

As the grant award neared, the team was then able to confirm the scope of work, and refine any estimates into formal quotations. All vendor subcontracts were written and in place when the grant was awarded, allowing for immediate subcontract awards and kickoff within days.

3.5.2   Cloud Vendor Engagements

Similar to the approach with the CAD vendors, the team at nFocus engaged the hosted cloud vendor in advance as well. Discussions centered on the appropriate size of server platform required, as well as the approaches to establish secure VPN tunnels between the cloud and each participating agency. Details surrounding support and monitoring tools were also discussed so that all details were in place prior to the grant award.

3.5.3   Leaning Forward

Following the receipt of grant funding by the program sponsor, delays were experienced in achieving the ultimate grant award to nFocus due to administrative approvals between the participating agencies. This resulted in a delayed project award of approximately 6 weeks, which resulted ultimately in only 49 days from grant award to the beginning of operations for the Pro Bowl. Recognizing that the deadline for operational capabilities could not slip, the team at

nFocus began to "lean forward" to prepare and streamline the project execution as much as possible prior to grant award. Planning for the symbology and data synchronization across the new agencies was conducted. In addition, early coordination with the CAD and Cloud vendors began as well.

The team at nFocus met repeatedly with the customer to define the project steps, timeline, critical path, risks and mitigations. Roles and responsibilities were set and a regular project update meeting was conducted even before award.

On the customer side, preparations for key information in GeoSuite also had begun. Critical Infrastructure locations and details were loaded into the existing Phoenix Aggregate server, so that the information would synchronize up into the Super Bowl Regional Aggregate when it was operational.

3.6   Grant Award and Kickoff – The Sprint Begins

The grant was formally awarded on December 4, 2015, just 49 days before the Operational cycle for the Pro Bowl and Super Bowl would begin. The 49 day timeline did not include the fact that the Christmas holiday would impact days or a week of schedule for some members of the team, participating vendors and customers. Background checks needed to be established, inter-agency agreements signed, network definitions completed and test environments needed to be quickly created.

Within days of award, subcontracts to vendors were issued, kickoff meetings were conducted with each CAD vendor, as well as with each participating agency. Details of the project and timeline were presented, with specific roles and dates defined for all participants. All personnel involved in the project were committed to success, which was clear from the level of support and drive to achieve the tight schedule deadlines.

Prior to the Christmas holiday, initial test deliveries from the CAD vendors were received. This rapid delivery of working interfaces would not have been possible without the documented GeoSuite Web Services Guide, ICD, prior experience by each vendor with their own open interfaces, the dedication of top talent at each CAD vendor, and the constant communications between the vendors, nFocus and the participating agency IT staffs.

Upon return from the holiday by Agency IT staffs, the VPN connections between each agency and the GeoSuite Secure Cloud were established. This enabled the secure flow of data from each agency CAD to GeoSuite, as well as the User access in each agency to the GeoSuite instances in the cloud.

A week later, in mid-January, the initial flow of CAD data and vehicle locations began to flow into the Agency servers and up into the Super Bowl Regional Aggregate. Additionally, the Existing Phoenix Police and Phoenix Fire Aggregate Server was synchronized with the Super Bowl server, creating the true Regional COP. The 49 day sprint had been a success.

3.7 System Operations

Achieving the 49-day sprint enabled a short, but achievable timeline for system pre-planning, training, and transition into live usage for the 10-day operational cycle that encompassed the Pro Bowl, Super Bowl and the Waste Management Open. These operational activities are described further in this section to offer context of how the system was used in the initial delivery and subsequent weeks.

3.7.1 Pre-Planning in System

3.7.1.1 Initial Operating Capabilities Achieved

As the network connections between agencies and the GeoSuite secure cloud were achieved, and the CAD vendor interfaces were put in place, the GeoSuite instances for each agency, and the Super Bowl Regional Aggregate all began to populate with vehicle location data, as well as CAD event data. This initial operating capability marked the beginning of user's ability to interact in the system and see a regional COP. Initial operating capability was accomplished in the second week of January, although minor interface modifications continued in the background to refine the interfaces and data presented to the Users.

3.7.1.2 Joint User Training

All planned users for the participating agencies were convened for a half day of Joint User Training in the system. User names and details had been provided by each agency in advance, so that profiles and user accounts could be established in the system. For any users who joined on the day of training, a new user account was quickly created on the spot easily by the system administrator.

Training in GeoSuite is not a complicated task. Users find the interface highly intuitive, and once the basic user functions are communicated, Users move on to more advanced use of the system that suits their role before the end of class. In training, users learned how to quickly navigate in the system setting and selecting locations around the area of operations that they wanted to monitor. Users then learned how to create events and places in GeoSuite, including the ability to draw tactical graphics on the map to designate events, incidents, perimeters, routes, or other relevant information. Users learned how to search for events and information in the system, with the ability to save searches, and even subscribe to be notified of changes to their searches. Lastly, Users learned how to export search results into one of several report formats (Word, PowerPoint, Excel, Google Earth, or .CSV). This reporting feature would prove to be powerful and useful to Command Staff during the operational period.

3.7.1.3 Use in Command Centers Across Region

Following the training session, the nFocus team visited each of the Incident Command Centers across the Region. This allowed the nFocus team to better understand use cases and user roles at each site and provide over-the-shoulder training to equip those users with GeoSuite capabilities. The GeoSuite capability was accessed and used at the following locations:

1. Multi-Agency Coordination Center (MACC)

2. Phoenix Incident Command

3. Glendale Incident Command / Glendale Regional Public Safety Training Center (GRPSTC)

4. Scottsdale Incident Command / Emergency Operations Center (EOC)

5. Waste Management Open / Incident Command

6. Tempe Incident Command

7. Arizona Counter Terrorism Information Center (ACTIC) / Watch Center (AZDPS)

8. FBI – Intelligence Operations Center (IOC)

Figure 8 – MACC Video Wall Configuration on 2/1/15 – GeoSuite Monitoring of Downtown, Stadium and Waste Management Tournament Simultaneously

Figure 9 – Phoenix Incident Command, Co-Located in the MACC

Figure 10 – Glendale Regional Public Safety Training Command (GRPSTC) Operations Monitoring the Stadium

Figure 11 – Scottsdale EOC Operations Monitoring Old Town and Waste Management Open

Figure 12 – Waste Management Open Incident Command Monitoring Tournament Operations

Figure 13 – ACTIC Watch Center Monitoring Valley-Wide Operations

3.7.1.4 On-Call Support and Training

Due to the compressed and delayed program schedule, the team at nFocus dedicated to on-call support and training for all users in the Regional system during the operational cycle. Although seldom needed, Users with skill fade or who were challenged to recall how to generate a report or specific search were able to phone for support, and resolve their question within minutes.

The nFocus team also made rotations to the various command centers to offer any refresher training, or to assist in setting up unique searches that were relevant to each team or location. Periodic visits to the MACC were also made to confirm operations were without issue, and offer advanced feature training to the MACC team regarding how to set the system to best compliment the video cameras deployed around the city.

3.7.2 MACC Activation – 2-Week Operational Cycle Begins

Beginning on January 23rd, the MACC established a 10-day operational period that would encompass the 2015 Pro Bowl, NFL Experience in Downtown Phoenix, DirecTV Super Bowl Fan Fest in Glendale, nightly surges of fans in the Old Town Scottsdale and Mill Avenue Tempe

locations, the 2015 Waste Management Phoenix Open, and culminate with Super Bowl XLIX on February 1st.

3.7.2.1   2015 Pro Bowl

The Pro Bowl operations gave all agencies a good opportunity to operate the system in a real world event in preparations for the intense week that would follow. MACC Operations ran GeoSuite with a view of the University of Phoenix Stadium where the Pro Bowl was played, allowing them to monitor Police locations and CAD events throughout the day and evening for this initial event. Operations were also monitored in the downtown Phoenix area around the NFL Experience, which was already beginning to attract crowds day and night.
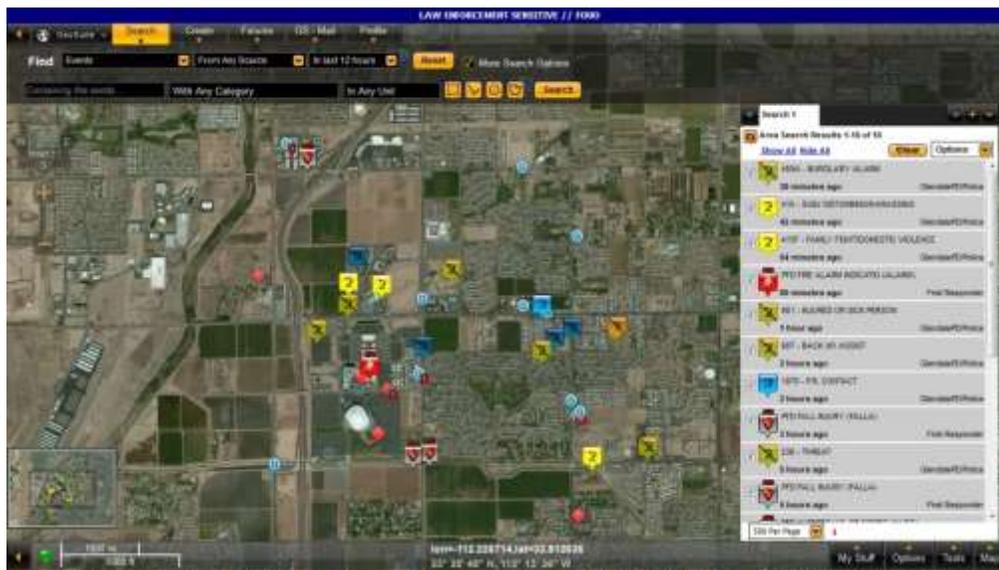
Figure 14 – Pro Bowl Stadium Operations

Figure 15 – Pro Bowl Downtown Phoenix Operations

3.7.2.2 NFL Experience Downtown

The NFL Experience encompassed a footprint in the downtown core of Phoenix from 7th Avenue and Van Buren Avenue, to 7th Street and the Railroad tracks just south of the Chase Field. This area of operations became known as the "downtown box", and was heavily monitored in GeoSuite due to the high number of fans and activities that were in this area. Phoenix Police had dedicated cameras to coverage in this area as well, all of which were designated in GeoSuite so that CAD events could be associated quickly with the best camera locations to capture good viewing of the incident. Phoenix Police had loaded all the Critical Infrastructure facilities into the system as well, so that facility locations and points of contact could be rapidly identified should an incident require. Users also used the tactical graphics capability to create a tactical map of the NFL Experience so that CAD events could be easily associated with event specific locations.

Figure 16 - Downtown Phoenix Operations with Cameras and CIKR

3.7.2.3   DirecTV Super Bowl Fan Fest

The DirecTV Super Bowl Fan Fest was created in a field just south of the University of Phoenix Stadium in Glendale. This venue hosted daily and nightly concerts and major acts for fans, which also drew a large crowd. The Users in GeoSuite were able to draw out the event using the tactical graphics for this location as well, allowing them to associate CAD events with the venue more easily.
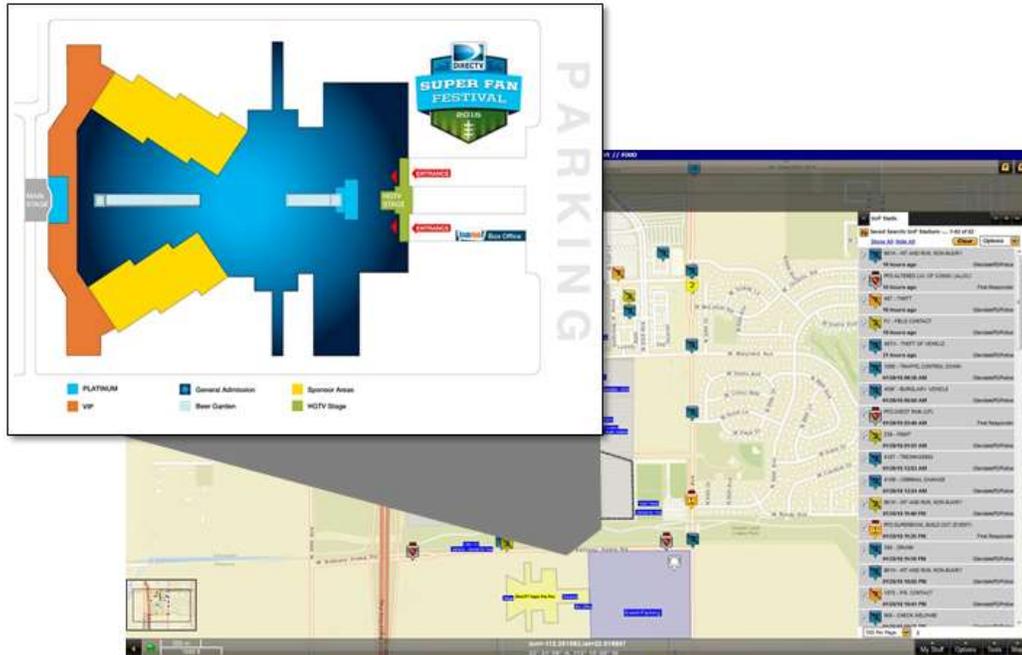
Figure 17 – Tactical Graphics used to create venue footprint of DirecTV Fan Fest

3.7.2.4 Old Town Scottsdale

Old Town Scottsdale runs from Scottsdale Road and Chaparral Road, south to Scottsdale Road and Goldwater Boulevard. The two loop roads that bypass Old Town to the West and East offer a good visual of where the majority bars, restaurants and art galleries exist. This area is a very popular destination almost every night, and was even busier with fans during the operational period. Scottsdale Police had placed additional security cameras in the Old Town core, and these cameras were also located within GeoSuite to assist in correlation to CAD events more easily by Scottsdale Police officers who had not participated in setting up the cameras.

Figure 18 – Old Town Scottsdale Operations

3.7.2.5 2015 Waste Management Phoenix Open

The Waste Management Open is the single largest golf tournament in the world. With annual crowds in excess of 500,000 for the tournament every year, attendance on Saturday alone can surpass 200,000 spectators. In addition to the daily challenges on the course and surrounding parking areas, the tournament includes a large concert and bar venue known as the *Birds Nest*, where top name bands perform each night. The result of this is a very high crowd volume with a high consumption of alcohol, offering a host of challenges to first responders assigned to the tournament.

The tournament has its own dedicated incident command, as well as dedicated camera systems deployed throughout the venue. These systems, as well as GeoSuite, were available in the tournament incident command, in the Scottsdale EOC/IC, and also visible in the MACC.
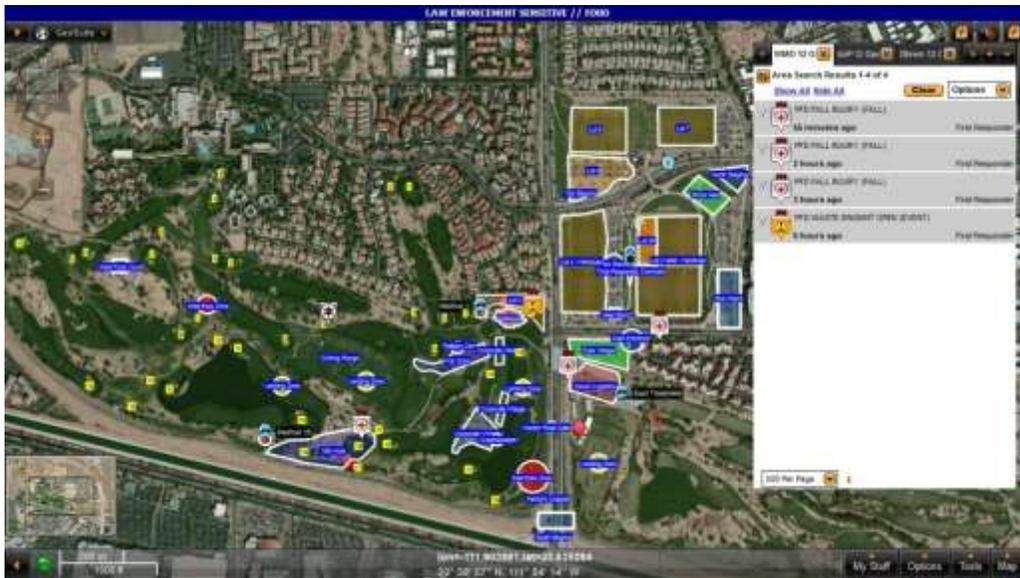
Figure 19 – Waste Management Open Tournament Operations

3.7.2.6 Super Bowl XLIX

Super Bowl XLIX was played at the University of Phoenix Stadium in Glendale, the same location as the Pro Bowl just 7 days prior. This was the culminating event in the operational period, and resulted in simultaneous operations in the MACC on Game Day monitoring the Downtown Super Bowl Experience, the final round of the Waste Management Open golf tournament, and the Super Bowl operations at the stadium in Glendale. In this period, GeoSuite was able to offer unique views of all venues in the MACC simultaneously.

Figure 20 – Super Bowl XLIX Game Day Operations
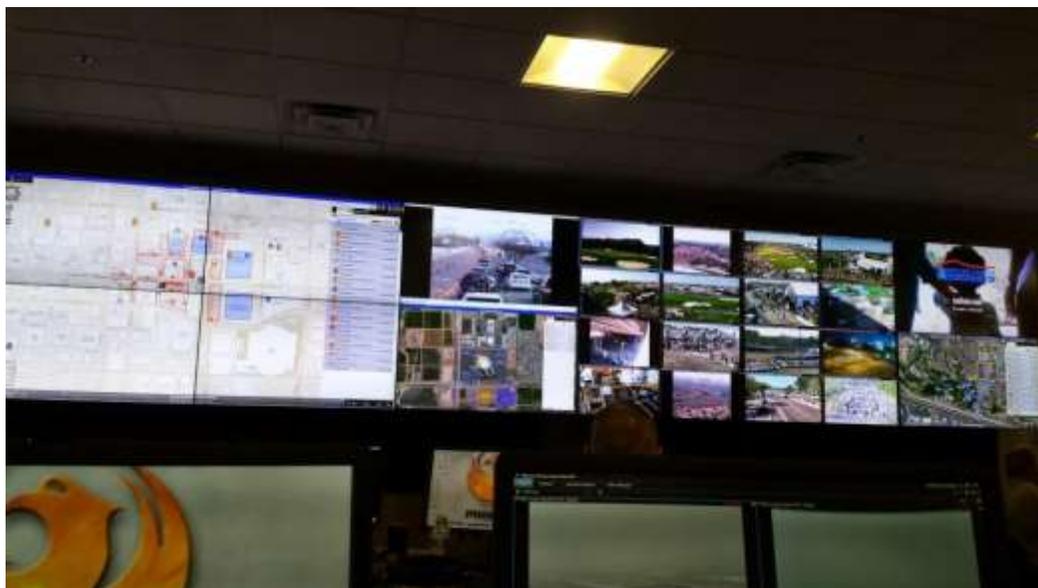
Figure 21 – MACC wall on Super Bowl Sunday – Downtown, Stadium and WMO

3.7.3 Reporting and AAR

GeoSuite's reporting capability proved to be very useful during and after the operational cycle for the Pro Bowl and Super Bowl. For each of the areas of operations, GeoSuite users were able to generate reports of relevant information on a daily or as needed basis. By example, Commanders were able to request morning reports that showed all CAD events that occurred in a particular area during overnight shifts. This allowed morning briefings to have clear context regarding events that occurred in the Phoenix downtown core, the Old Town Scottsdale core, at the Birds Nest or at the DirecTV Fan Fest.

Following the operational period, Users were able to pull reports for the entire operational period, showing there were 677 calls for service (Police and Fire) in the downtown core for the 10 day period, as compared to 45 calls for service in the 10 days prior to Pro Bowl. Reports include full details on events, allowing the agency to develop a deep understanding of what transpired during the operation.

Figure 22 – Reports Are Exported Easily for Command Staff Review

4 LESSONS LEARNED

By any measure, the program to establish a Regional Common Operating Picture (COP) for the Super Bowl XLIX operations was a success. Through sponsors and grant funding, six agencies were able to conduct collaborative operations within GeoSuite, which provided them with a degree of situational awareness that exceeds what is available in most other metropolitan areas. The execution of this program offered several lessons learned that were captured by the teams

involved, and offered below for consideration by others seeking to establish a regional COP for major events or normal operations across a Metroplex.

1. Scheduling – Customers should plan their project well enough in advance to yield an achievable schedule. This project was successfully delivered through intense commitment and collaboration of all parties, in 49 days. That said, it would have been more successful if executed in 90-100 days to allow for greater training and table top exercises with participating agencies to fully appreciate the breadth of capabilities.
2. Training – The more time on the system before any major operations, the better for users and well as Command Staff. As users interact with the system, they come to understand the powerful features that exist, such as Command Staff briefings, operations monitoring, reporting, or movement of dignitaries or convoys.
3. Funding – Customers should join up and support regional grants to fund the project at a level to achieve complete success. In the case of this project, interested agencies had to be de-scoped, and highly valuable features (Social Media feeds) were de-scoped due to lack of funding.
4. Determine if agencies are open to secure hosting of the capability, or of servers must reside inside the agency firewall – Costs to implement in the secure cloud are lower, but the IT challenges and discussions to allow interfaces through the agency firewall can be time consuming. It is recommended that the sponsor engage the IT staff early in the project planning.
5. Sharing of information between agencies requires a MOU or Inter-Governmental sharing agreement. It is recommended that this be worked early in the planning cycle to ensure agencies are supportive and agreed up front. This will facilitate the technical and IT integration much easier.
6. Clearly define the CAD interface including the information required and the timing of that information. Determine if CAD system has an open web services interface – Each CAD system is different. Some vendors have an open interface included in the system installation. Others have a separate licensed module to activate. It is recommended to engage CAD vendors to determine what is required to achieve a web service interface to extract CAD information into the Regional COP. Be aware that some vendors will invoke an annual service charge to maintain this interface as well.
7. Backups and Recovery – It is recommended that the customer consider and decide what level (if any) of backup and recovery they will want in their Regional COP.
8. Data Feeds – Consider what data feeds are relevant and desired in your Regional COP. Typical default feeds are CAD, to achieve the Automated Vehicle Locations and CAD Events. There are many other potentially relevant data feeds to consider, such as TRaCS, Tips and Leads, CopLink, Judicial Warrants, or Social Media. It is recommended that the customer consider the capabilities they desire in their COP, and build the costs and schedule into their program.

9. Network Bandwidth – Video has a major impact on bandwidth which can in turn have ebbs and flows. Bandwidth should be monitored closely in the early stages to ensure the IOCs have access to the GeoSuite server. If necessary, a field server can be placed at each IOC to help with intermittent bandwidth issues.

5 SUMMARY

The team at nFocus Solutions would like to thank the following agencies for their support, belief in GeoSuite and professionalism in conducting the program and Super Bowl operations.

- Phoenix Police
- Phoenix Fire
- Glendale Police
- Scottsdale Police
- Tempe Police
- Arizona DPS / ACTIC
- FBI

Through this effort, we were able to successfully deliver and manage a regional COP for multi-agency planning and execution of six major events occurring over a 10 day operational period. The tactical planning and coordination of multiple agencies across the Phoenix Region in a single tool was shown to be very valuable to all participants. The shared visibility of assets and CAD events not only enabled a successful Super Bowl execution, it now positions these agencies to operate in a new manner for operations during the coming year. Whether used in future major events, incidents that occur on agency boundaries, or investigative searches for crimes that span agency jurisdictional boundaries, the GeoSuite system will offer a level of visibility, situational awareness, and collaboration not previously possible.

For agencies seeking or considering the creation of a multi-agency Regional COP, we welcome the opportunity to engage with you in an open planning dialogue. The team at nFocus have dedicated the past 15 years to solutions delivering situational awareness and command & control capabilities for teams at lower tactical levels of operations, up through regional common operating pictures. Having successfully fielded capabilities to military customers for years, we are excited to apply this vast experience and knowledge to providing the Regional COP for Super Bowl XLIX, which significantly enhanced participating agencies' ability to ensure a safe and successful outcome.