Intrado
Information to Insight

Attachment to Intrado Response
Solicitation 0900000417

Value Added Options for NG9-1-1 GIS Solutions

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Optional NG9-1-1 GIS Data Management Solutions

This attachment includes following optional products and services which add substantial value to NG9-1-1 GIS data preparation, data management, and ongoing maintenance of established NG9-1-1 GIS data operations but are outside the scope of this RFP Intrado would be pleased to discuss these additional solutions with each PSAP, municipality, county, or organization within Oklahoma responsible for creating, managing, and maintaining NG9-1-1 GIS data.

Enterprise Geospatial Database Management System (EGDMS)

NG9-1-1 GIS Life Cycle System Support Services

Transitional Data Management Services

MapSAG GIS Data Management System Options

Pricing for each of these solutions is dependent upon multiple factors including GIS jurisdiction population and solution configuration requirements for software systems. As Intrado would contract separately with the end-user customer agency/location, we would be pleased to develop custom price quotes for each solution separately, configured to provide the best combination of value and performance for each individual Oklahoma GIS authority.

Enterprise Geospatial Database Management System (EGDMS)

The Enterprise Geospatial Database Management System (EGDMS) is Intrado's GIS Data interrogation and integration system serving as the nexus for all of Intrado's GIS data processing, has integration points for other Intrado GIS products and is what enables Intrado to provide a comprehensive set of Spatial Data Solutions described in this Service Guide.

The EGDMS is a secure, cloud-based service used by local, regional or state-level GIS data sources for ongoing QA/QC validation and reporting, coalescing and provisioning of GIS data. It provides automated GIS data format standardization and data aggregation between regional or state-level individual participating agencies.

When utilizing Intrado's NG9-1-1 core services, the EGDMS serves as the NENA Spatial Interface ("SI"), provisioning the Emergency Services Network ("ESInet") functional elements including the Emergency Call Routing Function ("ECRF") and the Location Validation Function ("LVF").

The EGDMS provides a secure GIS data upload portal, automated GIS data QA/QC validation and reporting, and provisioning to a coalesced database. In areas where Intrado manages the ALI database directly or on behalf of the Local Exchange Carrier ("LEC"), the EGDMS provides the ability for users to automatically initiate ALI to Road Centerline ("RCL") and/or ALI to address point GIS data comparisons and match rate reports. This capability allows the GIS Authority to immediately know if a GIS change or omission may result in an ALI to GIS comparison error or fallout. To support this feature, Intrado requires permission/access to the underlying ALI and MSAG databases of the applicable LEC. Intrado will coordinate with the 9-1-1 Authority and the LEC to obtain permission for this access.

The EGDMS GIS data validation services include critical error detection and reporting in an automated fashion, so GIS Authorities can have immediate feedback and shorten the error correction processing timeframes. The EGDMS portal provides:

- Secure file transfer via secure two-factor authentication
- Support for file geodatabase and shape file
- Automated schema change detection and error notification
- Browser-based attribute field mapping configuration driven by the GIS Authority
- Automated email notifications for upload and processing status
- NG9-1-1 GIS data compliancy checks
- Address Point, Road Centerline, and boundary layer validation checks
- Streamlined ALI to RCL and ALI to address point comparisons and reporting
- Validation report retrieval
- Ability for GIS Authority's data to be maintained in its native format and schema
- Integration with MapSAG™

NG9-1-1 GIS Life Cycle System Support Services

Intrado's NG9-1-1 GIS Life-Cycle System Support provides NG9-1-1 GIS managed services that support the implementation and ongoing support of NG9-1-1 geospatial location validation and call routing. Life-Cycle System Support is tailored specifically to deliver essential GIS data onboarding services and provide ongoing GIS data management support services to the Customer / GIS Authority. Life-Cycle System Support is scalable to support individual PSAP or local authority deployments up to the largest regional and state NG9-1-1 implementations.

Life-Cycle System Support is powered by coupling the EGDMS with an assigned Intrado i3 GIS Coach. The EGDMS serves as Intrado's NG9-1-1 Spatial Interface portal, and enables the GIS Authority to upload GIS data, which initiates automated GIS data validations, notifications, and reporting on that data. The Intrado i3 GIS Coach is not only an expert with GIS data and technology, but also possesses a deep understanding of E9-1-1 and NG9-1-1 data structures and how they must work in unison with the Spatial Interface and other downstream systems in order to drive successful NG9-1-1 geospatial call routing. An i3 GIS coach is assigned to each GIS Authority, or EGDMS GIS data submitting agency, and is available to help manage the project, provide system access and training, GIS data upload assistance, error report interpretation, go-live support and ongoing consultation and support.

i3 GIS Life-Cycle System Support services are provided in two stages, Onboarding and Ongoing Support. The Life-Cycle System Support Onboarding stage delivers services, training, and support needed to successfully deploy NG9-1-1 GIS data within Intrado's EGDMS prior to NG9-1-1 go-live. The Ongoing stage of Life-Cycle System Support provides continued support of the Customer's NG9-1-1 GIS data following the successful completion of the Onboarding stage. Intrado's Life-Cycle System Support provides support throughout all phases of deployment on the EGDMS.

These initial project start-up services establish communication between the GIS Authority, the Intrado i3 GIS coach, and the NG9 1 1 service provider. Intrado will provide the EGDMS system access, account creation, remote training, and assistance with the initial GIS data upload and field mapping configuration.

Project start up services includes the following:

- Assignment of an i3 GIS Coach
- NG9-1-1 GIS Project Kick Off meeting
- EGDMS overview, and field mapping training (web-based)
- EGDMS report interpretation and error correction training (web-based)
- ALI to GIS reporting
- ALI to GIS report review and error correction training (web-based)
- GIS data testing and remediation
- General NG9-1-1 GIS Q&A support
- NG9-1-1 Geospatial Routing go-live support

After the initial implementation within the NG9-1-1 system, Ongoing Life-cycle System Support continues and maintains the lines of communication between Intrado, the 9-1-1 Authority and the NG9 1 1 service provider. End users will continue to receive i3 GIS coaching and support along with periodic system refresher training services.

Ongoing Life-cycle System Support includes the following services provided by an assigned i3 GIS Coach including:

- GIS data layer and schema mapping assistance
- GIS data troubleshooting for geospatial call routing issues
- EGDMS report interpretation and error resolution assistance
- Provisioning Boundary management and conflict remediation
- Refresher training courses

Life-cycle System Support billing is based on the population serviced by the GIS Authority. In the event Intrado is contracted to provide these services to multiple GIS Authorities billed to a single entity, pricing is not based on the aggregate population of the entity to be billed, but will be calculated for each individual GIS Authority submitting data through EGDMS based on the population serviced by each GIS Authority.

Intrado also offers Advanced NG9-1-1 GIS Managed Services for 911 and GIS Authorities that require additional assistance beyond what is covered by Ongoing Life-cycle System Support.

Transitional Data Management Services

When Intrado is contracted as the ALI database provider, Transitional Data Management Service (TDMS) provides services and tools which enable locally sourced GIS data to serve as the authoritative source for 9-1-1 address validation by supporting legacy Originating Service Provider (“OSP”) subscriber provisioning and Automatic Location Information (“ALI”) database management.

TDMS significantly reduces the amount of work performed by 9-1-1 coordinators and GIS Authorities that make frequent edits to its GIS data by automatically updating the Master Street Address Guide (MSAG) using the provided GIS data as the source. TDMS enables the end user to upload GIS Road Centerline (RCL) GIS datasets into a web portal and changes within the RCL data are identified automatically and applicable updates to the MSAG are made.

TDMS includes an initial replacement of the customer MSAG with a GIS-based MSAG (“geoMSAG”), ongoing MSAG synchronization and maintenance as changes to the GIS data are made and received from the end user, and NG9-1-1 GIS Managed Services required to successfully onboard and manage GIS data within the NG9-1-1 environment before and after deployment.

TDMS delivers the following benefits:

Operational Efficiency

TDMS provides 9-1-1 address management using GIS road centerline (RCL) data instead of traditional MSAG data, eliminating the need to synchronize and maintain synchronization between disparate GIS and MSAG databases

Improved Data Accuracy

TDMS utilizes GIS data which typically is more precise than the traditional MSAG and provides continuous GIS to MSAG and ALI synchronization

No Changes Required for OSPs (Carriers)

TDMS supports legacy OSP provisioning and ALI database management and is fully transparent to OSPs

Improved i3 Readiness

TDMS helps facilitate the transition to NG9-1-1 by keeping the GIS data synchronized with the MSAG and ALI until fully transitioned to NG9-1-1 and the MSAG / ALI are replaced by the geoMSAG

Support for i3 Interim Routing

TDMS significantly streamlines deployment to Intrado’s or a partner / reseller’s i3 core routing services

TDMS offerings are described in greater detail on the following pages.

geoMSAG Replacement Services

The geoMSAG Replacement Services described in this section can be provided on a one-time basis in preparation for the deployment of TDMS, or are included in the Initial TDMS services performed when TDMS is deployed separately or as part of a larger ESInet / NG9-1-1 deployment. Initial TDMS services include but are not limited to the geoMSAG replacement; they will include additional one-time and ongoing tools and services described in detail below.

Once the legacy MSAG has been replaced with the GIS-based MSAG, the authoritative GIS source data will be used exclusively to drive changes to the GIS-based MSAG, replacing the need to manually enter individual MSAG change requests in 911Net. This GIS-based MSAG is referred to as the geoMSAG.

GIS-Based MSAG Replacement Services ("geoMSAG Services") provide 9-1-1 and GIS Authorities with the following services and deliverables:

- One GIS RCL-to-ALI data match rate report
- Validations of the RCL layer with a corresponding critical error reports
- Creation of a geoMSAG load file from customer-provided GIS RCL data once an agreed upon RCL-to-ALI data match rate had been reached (NENA recommends a 98% or greater match rate)
- Replacement of the hosted tabular MSAG with the geoMSAG once the agreed upon match rate has been achieved

Replacing the MSAG with the geoMSAG is required to implement ongoing maintenance of the GIS. This process follows the steps outlined below:

1. A Customer agreement is initiated between the end user and Intrado or the end user and the channel partner or OSP. Intrado, or the channel partner or OSP, will secure permission to extract ALI and MSAG data from the appropriate databases.
2. The end user is provided access to the EGDMS system for GIS data upload and GIS error detection. The end user will then have the opportunity to resolve appropriate errors within the RCL layer until all critical errors have been resolved.
3. Intrado provides a one-time comparison of the end user's GIS dataset (RCL feature class) against the ALI database and provides a report identifying discrepancies. The GIS Authority or end customer will then have the opportunity to resolve errors within its RCL layer or the OSP to correct ALI records, if and as appropriate.
4. Intrado will create the geoMSAG to support TN simulation. If geoMSAG build errors are encountered, the end user will have the opportunity to resolve appropriate errors within its GIS data if and as appropriate.
5. Intrado will perform a one-time TN simulation to identify discrepancies between the newly-created geoMSAG and ALI TNs. Intrado will provide the discrepancies between the geoMSAG and ALI data to the end user. The end user will then update the GIS data and use 911NET (if applicable) to work with the OSP to resolve any ALI discrepancies.
6. After all comparison and simulation testing outputs result in either the recommended 98% or greater match rate between the ALI and geoMSAG or an agreed-to match rate is

achieved, Intrado replaces the MSAG with the geoMSAG which is then used as the MSAG database of record. If the agreed upon match rate is less than 98%, additional Intrado professional services fees may apply, to be quoted on a case by case basis.

Following the successful replacement of the MSAG with the new geoMSAG, the end user will continue to perform ongoing GIS to MSAG synchronization. From this point forward, the GIS data is used exclusively to drive the tabular MSAG and 911Net is no longer required or used.

If geoMSAG Services are provided as a one-time service project, billing is based on the population to be serviced by the GIS Authority. In the event Intrado is contracted to provide one-time geoMSAG Services to multiple GIS Authorities billed to a single entity, pricing is not based on the aggregate population of the entity to be billed but will be calculated for each individual GIS Authority based on the population serviced by each GIS Authority.

Replacement of the MSAG with the GIS-based MSAG (geoMSAG) is described below.

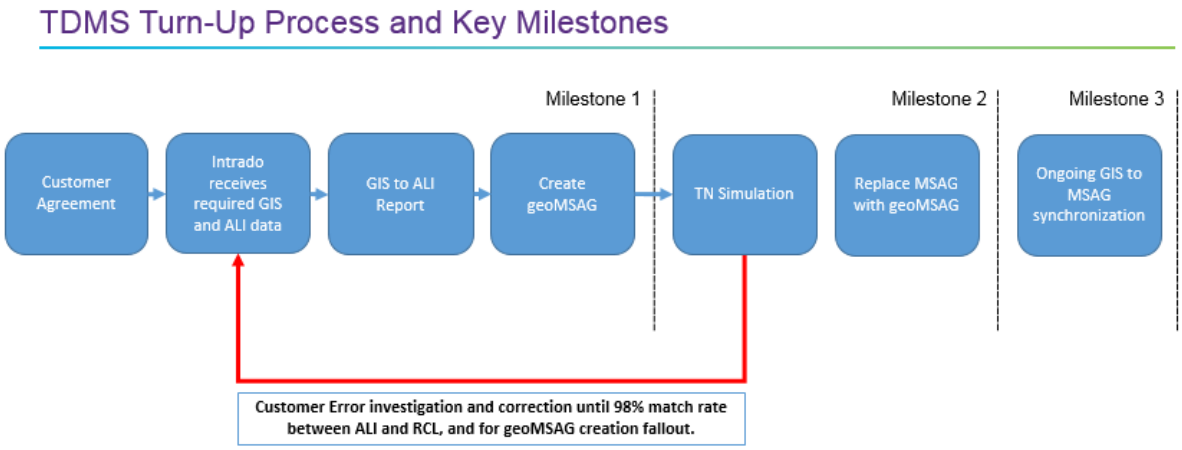

Figure 1: TDMS Turn-Up Process and Key Milestones

Ongoing TDMS

Ongoing TDMS provides the end user with access to purpose built tools and portals to upload and validate RCL data and to identify and report GIS data discrepancies for error resolution.

Ongoing TDMS enables 9-1-1 address validation and management to be performed against the end user's geoMSAG, which can be updated as often as changes are made to the underlying RCL data. Following the completion of the one-time geoMSAG replacement, the RCL data becomes the master data set and tabular MSAGs are derived from the RCL data, going forward.

Following the successful replacement of the MSAG with the new geoMSAG, ongoing GIS to MSAG synchronization will be performed using EGDMS. The GIS data is used exclusively to drive the tabular MSAG and 911Net is no longer required or used.

Ongoing TDMS includes ongoing GIS validation services and ongoing geoMSAG processing services. Once TDMS is implemented, the end user will no longer use MSAG CRs for making MSAG updates and instead make updates to the geoMSAG by submitting RCL updates using

Intrado's EGDMS. Additionally, Ongoing TDMS includes Intrado's EGDMS and ongoing GIS support services, described in greater detail in this section below.

Ongoing TDMS is provided to GIS Authorities responsible for managing the jurisdiction's GIS data after the solution has been deployed. Ongoing TDMS billing is based on the population to be serviced by the GIS Authority. In the event Intrado is contracted to provide ongoing TDMS to multiple GIS Authorities billed to a single entity, pricing is not based on the aggregate population of the entity to be billed but will be calculated for each individual GIS Authority Intrado has engaged to deliver TDMS based on the population serviced by each GIS Authority.

Ongoing TDMS Overview

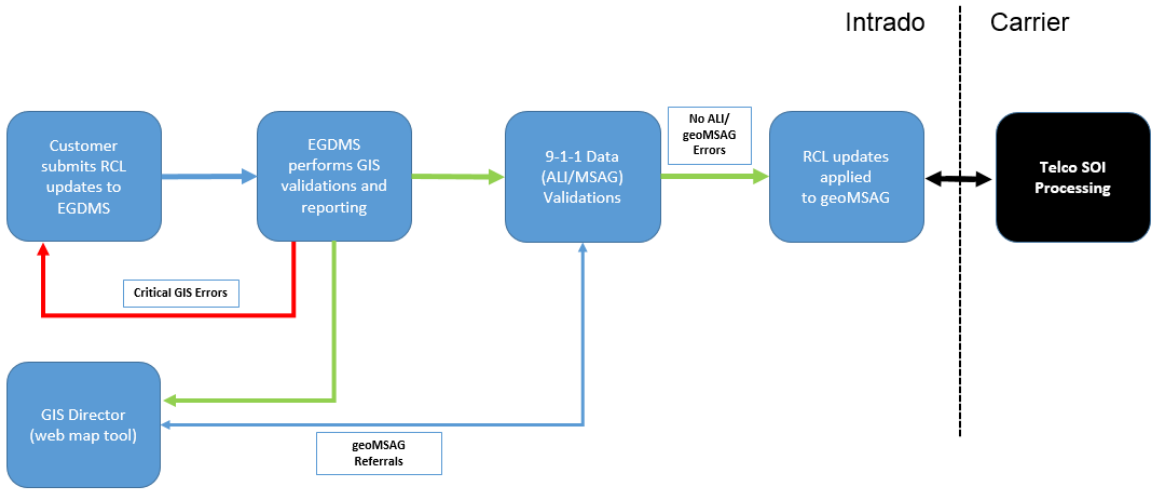

Figure 2: Ongoing GIS to MSAG Synchronization

Ongoing GIS data management using TDMS follows the steps outlined below.

1. End customer submits GIS data to EGDMS.
2. EGDMS performs validations on the end user-submitted GIS data.
3. EGDMS delivers critical error reports and GIS data representing errors; End customer corrects critical errors in GIS data file and resubmits to EGDMS.
4. RCL changes are submitted for the geoMSAG and ALI validation performed in Step 6.
5. geoMSAG and ALI validations are performed to identify errors within the geoMSAG or the OSP TN information.
6. geoMSAG referrals are communicated to the end user.
7. The end user reviews the geoMSAG referrals and either corrects the RCL data and resubmits it through EGDMS indicates a TN issue needs to be resolved by the OSP.
8. geoMSAG GIS changes that pass validations are applied to the production geoMSAG 9-1-1 database.

EGDMS

TDMS includes Intrado's NG9-1-1 Spatial Interface portal, the Enterprise Geospatial Database Management System ("EGDMS"). EGDMS enables the end user to upload GIS data, which initiates automated GIS data validations, notifications, and reporting on that data. EGDMS supports either Shapefile or File Geodatabase formats and allows the authoritative GIS data to be maintained using the end user's native data schemas. EGDMS detects changes between new GIS data and current data, and those changes are subsequently propagated to the geoMSAG unless a critical error is detected. In the case of an error condition, MSAG CRs are created and referred for error resolution. EGDMS training is provided with TDMS and includes system navigation, report generation, and report interpretation.

TDMS GIS Support Services

TDMS includes GIS support services provided to the primary / initial GIS authority as well as any subordinate GIS authorities or PSAPs contributing GIS data to the geoMSAG deployed in support of the NG9-1-1 solution. These service support the implementation of NG9-1-1 geospatial location validation and call routing and are specifically tailored to deliver essential GIS data onboarding services as well as ongoing support for EGDMS and the end user's geoMSAG.

GIS support services are delivered in two stages, based on the go-live date of the end user's NG9-1-1 system. GIS onboarding provides the services, training, and support necessary to successfully deploy NG9-1-1 GIS data and EGDMS prior to the NG9-1-1 system going life. Ongoing GIS support services provide continued support of the NG9-1-1 GIS data (the geoMSAG) following deployment of NG9-1-1.

After NG9-1-1 GIS onboarding services to implement TDMS and deploy EGDMS have been completed, GIS support services maintain communication between the end user, Intrado, and the NG9-1-1 service provider following deployment of NG9-1-1. Intrado will continue to provide i3 GIS coaching services and support to the primary GIS authority and subordinate GIS authorities / PSAPs along with periodic solution refresher training services.

Data Requirements for the Implementation of TDMS

Implementation of TDMS, including geoMSAG replacement and ongoing TDMS, requires the following:

- ALI data must be managed by Intrado or a NG9-1-1 system provider partnered with Intrado
- Intrado must manage the MSAG for the area of interest
- A mutually agreed to ALI and RCL data match rate is to be achieved, prior to NG9-1-1 solution going live, as a condition of TDMS implementation
- Intrado requires that all EGDMS critical errors be resolved within the RCL feature class
- The end user's GIS data must contain the required data fields and attributes

- Please refer to the table in the next section for a list of required fields and attribute examples

- The geographic area covered by the RCL data must be equal to or larger than the area covered by the MSAG

Road Centerline (RCL) Fields Required for geoMSAG Replacement

The table below includes the required RCL fields for geoMSAG replacement and ongoing TDMS.

Please note this list includes only those fields required for the implementation of TDMS and the geoMSAG replacement; it does not include all i3/NG9-1-1 required fields.

Table 1: RCL Fields Required for geoMSAG Replacement

Descriptive Name	Example	Type
RCL Unique ID	13575@county.st.us	A
Left From Address	101	N
Left To Address	199	N
Right From Address	102	N
Right To Address	198	N
Street Name Pre Directional*	S	A
Street Name*	Main	A
Street Name Post Type*	ST	A
Street Post Directional*	N	A
ESN Left	356	A
ESN Right	356	A
MSAG Community Name Left	Smithville	A
MSAG Community Name Right	Smithville	A

*Street name elements should be parsed and abbreviated to match existing / legacy ALI and MSAG format.

A = Alphanumeric text / string field

N = Number field

Note: For ongoing services, if any of the fields listed above or associated attributes are not available in the RCL data, Intrado can discuss options and alternatives available to the end user.

MapSAG GIS Data Management System Options

Intrado's proposed solution includes the MapSAG GIS Data Management solution, configured to provide one single-user license of MapSAG Professional, remote training services, and renewal of annual support and maintenance services for years two through five for a single monthly price, billable for 60 months. In our experience, this solution is scalable and best fits the broadest range of PSAP and GIS authority deployments and offers the solution on a pricing model which fits most jurisdictional operating budgets.

MapSAG is available in multiple licensing and deployment options and if the proposed MapSAG solution does not best fit the PSAP or GIS authority responsible for managing GIS data, Intrado encourages those agencies to reach out to Jason Jackson, Director of Sales for Intrado's GIS solutions, to discuss available versions and licensing options.

MapSAG Versions

Beginning with release 6.4, MapSAG is offered in four versions, as described below. Each version is designed to accommodate specific GIS data management requirements and functionality. These range from editing and data maintenance to integration with Intrado's map display system and synchronization of GIS data with MSAG and ALI data. Customer may upgrade from one version to another, adding functions and features as GIS data management needs evolve toward i3 migration.

Professional

MapSAG Professional combines all features and functions provided in MapSAG Edit, Data Exchange, and 9-1-1 Sync into a single GIS data management platform configured for GIS power users.

Edit

MapSAG Edit includes the primary tools for editing and maintaining accurate GIS data. MapSAG's data validation tools, combined with its powerful and easy to use editing tools, enable GIS professionals to reduce errors in the data set and save time managing GIS data.

Data Exchange

MapSAG Data Exchange includes all features and functions provided in MapSAG Edit and adds the Data Exchange Center. The Data Exchange Center provides simplified tools enabling users to exchange data with Intrado's MapFlex® PSAP mapping system. Data Exchange enables MapFlex to be updated directly from MapSAG without exporting and copying files between systems. Additionally, discrepancies identified by 9-1-1 call takers and dispatchers can be flagged through MapFlex and reported to the MapSAG user to locate and correct within the GIS data set. This functionality is available in MapSAG release 6.4. The Data Exchange Center includes an interface to Intrado's EGDMS for use with NG9-1-1 and TDMS, in version 6.5.

9-1-1 Sync

MapSAG 9-1-1 Sync includes all features and functions provided in MapSAG Edit and adds 9-1-1 Sync tools which enable the synchronization of MSAG and ALI data with GIS data. The synchronization of MSAG and ALI data is considered an important first step to achieving i3 success. MapSAG delivers the tools and step-by-step processes to make this difficult task easier.

MapSAG License Types

Single User and Concurrent Use Licensing

All releases and versions of MapSAG are available in two licensing options, Single User and Concurrent Use. The Single User license is installed on a single workstation and can be used full-time on that workstation. A Concurrent Use license can be shared by up to three MapSAG users but only one workstation at a time can use the license.

System Requirements

Intrado does not provide workstation or server equipment for this application and is only supported on Microsoft Windows based platforms. MapSAG supports published ESRI hardware and software requirements for Microsoft Windows systems. For Customer using ArcGIS for Server, MapSAG supports only Microsoft SQL and Oracle databases.

MapSAG is highly configurable and is designed to work with most end customer GIS data. The data must be in ESRI format such as Geodatabase, File Geodatabase, or ArcGIS for Server (SDE). An Intrado GIS professional will review the data format and communicate any changes necessary for the deployment of MapSAG.

The most current version of MapSAG requires ESRI ArcGIS version 10.4.x through 10.7. Intrado must be notified of end customer's ESRI software release version and request a version of MapSAG which is compatible with Customer's ArcGIS software.

Older versions of MapSAG provided to accommodate Customers with older versions of ArcGIS software are billed at the same rate as MapSAG Professional, and may not include all features and functionality offered in the most current MapSAG Professional version.

Implementation and Support

MapSAG will be installed on end customer systems remotely by an Intrado GIS professional. Implementation of MapSAG includes user training delivered by an Intrado GIS trainer. Training can be conducted remotely via webinar or onsite at end customer location. Onsite training will include additional travel fees for the Intrado GIS trainer. Additional training may be purchased by end customer desiring periodic refresher training or training for new users following system implementation.

New MapSAG systems include one year of Annual Support and Maintenance services. This provides telephone support for all users during normal business hours and software updates (including patches and updates of major and minor releases). Starting in year two, Customer will be required to renew its support and maintenance services to maintain access to support and software updates. Support and maintenance renewals may be purchased annually or prepaid for multiple years.

Intrado will provide MapSAG software, remote installation, and configuration of the MapSAG software on Customer-provided workstations, and onsite or remote MapSAG user training.

Additional training sessions following system implementation may be purchased separately if an agency requires additional user training. Additional training will be performed by an Intrado GIS trainer.

End Customer Responsibilities

Each Customer deploying MapSAG will be responsible for providing the hardware and additional software necessary for MapSAG installation and operation, including the proper ArcGIS license(s).

MapSAG is an add-on to ESRI ArcGIS for Desktop and requires an active ArcGIS for Desktop license at each MapSAG-enabled workstation. End customer is responsible for acquiring and maintaining the necessary ESRI licensing. At the customer's request, Intrado can facilitate acquiring the necessary ESRI licensing.

Each Customer requiring MapSAG training will be responsible for providing a suitable training facility and the equipment required for delivering MapSAG training.