U.S. Forest Service

Solicitation Number: SN-2012-12

Request for Information for Computer Aided Dispatch (CAD) System

RFI Response

Prepared for:

Melinda G. Draper

U.S. Forest Service, Contracting

Owyhee Building - MS 1100

3833 S. Development Avenue

Boise, Idaho 83705-5354

Prepared by:

Data Transfer Solutions, LLC

409 Mason Court, Suite 127

Fort Collins, CO 80524

www.dtsgis.com

dtswildfire

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1. Introduction

This document provides a response by Data Transfer Solutions, LLC (DTS) to the U.S. Forest Service Solicitation No. SN-2012-12 for Request for Information (RFI) for a Computer Aided Dispatch (CAD) System. Our response satisfies the requirements as identified in the RFI as well as provides additional technical information that describes our **FiResponse™** product's capabilities.

FiResponse™ is a full featured enterprise incident management system and CAD that provides spatially enabled incident and resource tracking and reporting capabilities. For more information about FiResponse™ please refer to the supplemental PDF document provided with our response that describes the complete range of capabilities.[1]

The DTS-Esri Team

This section provides a brief overview of the DTS-Esri team responding to this RFI.[2]

Leveraging Both DTS and Esri Capabilities and Strengths

DTS (Orlando, FL) and Environmental Research Systems Institute, (Redlands, CA) has recently formed a strategic partnership to provide premier GIS based solutions for forestry and wildland fire management agencies. The DTS-Esri strategic partnership reflects a teaming of GIS and software technology providers that offers the best of class for forestry and wildland fire software solutions – Esri's core technology and experience with DTS' premier web and mobile software applications in wildfire.

The DTS-Esri partnership is in response to an increased demand within the wildfire management arena for proven GIS enabled, Esri based integrated solutions. Instead of developing applications from scratch, Esri has chosen to partner with DTS to build upon existing products that have proven capabilities in the field. This partnership builds upon a joint venture company, DTSwildfire, formed between DTS and Tecnosylva (Leon, Spain) to combine technologies for the U.S. marketplace. This demand has been from existing federal (USFS) and state fire management agency clients who have requested support from our team to meet current operational incident management needs.

With these partnerships in place, DTS offers a robust GIS enabled incident management and CAD system, **FiResponse™**, that has been developed and implemented for over 10 years on Esri's core technology. Continued development of FiResponse focuses on leveraging the enhanced capabilities of Esri's ArcGIS 10.1 platform, providing significant advantages over other CAD and incident management vendors.

Together, DTS and Esri are currently involved in discussions with several states for an enterprise, integrated incident management CAD system based on DTS' **FiResponse™** product. The blend of proven, robust applications with Esri's core technology offers a complement to meet virtually all incident management and CAD requirements.

Leading the Way in Geo-Web and Geo-Mobile Wildfire Solutions

DTS is a leading provider of wildland fire GIS based web and mobile application solutions for both fire protection planning and incident management and operations. Of recent note is our development of Wildfire Risk Assessment Portals for 30 states, including the highly profiled Texas Wildfire Risk Assessment Portal (TxWRAP).[3]

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[1] More information can also be obtained at www.firesponse.com or at www.dtswildfire.com.

[2] Esri is a registered trademark of Environmental Research Systems Institute, Inc. (Redlands, CA).

[3] Please visit www.texaswildfirerisk.com for an example.

This is complemented by our WildfireMaps.com portal that provides up to date information about wildfire incidents Nationwide. WildfireMaps.com is a centralized web mapping portal that provides situational awareness through agency data and social media integration for both the public and private subscribers – be it government agencies or commercial companies.

We invite you to investigate WildfireMaps.com as it demonstrates the level of integration possible with incident management systems, like FiResponse, to provide real time situational awareness of incidents and associated resources for tracking and reporting.

Dependable. Stable. Established.

Our strategic partnership with Esri not only provides a comprehensive suite of capabilities and technology, but it also offers corporate stability and infrastructure to support large scale, long term implementation and deployment. The financial stability of both organizations, and the breadth of experience and knowledge, ensures absolutely no risk to our clients and customers. This partnership has been established to leverage the distinguishing capabilities of both firms leveraging our unique knowledge, experience and relationships in forestry and wildland fire agencies.

Solicitation Synopsis

It is our understanding that this solicitation RFI is issued for the purpose of gathering information to determine the feasibility of purchasing a replacement Computer Aided Dispatch system that meets fire dispatch business needs. The USFS Fire and Aviation Management (FAM) Operations Branch is very familiar with the standard functionally provided by most commercial off-the-shelf CAD systems, so this information request focuses on the functionality needed to dispatch resources to wild land fires and collect data required by FAM for decision support and external reporting requirements.

Offerer Information

Although our response reflects a partnership and combined capabilities of DTS and Esri, DTS will be the prime company for this solicitation. Accordingly, the following corporate information is provided to satisfy the RFI requirements.

1. **Company name**: Data Transfer Solutions, LLC. (DTS)

2. **Company mailing address**:
   a. Corporate Headquarters:
      i. 3680 Avalon Park Blvd. East, Suite 200
      ii. Orlando, FL 32828
   b. Regional (for this procurement)
      i. DTSwildfire
      ii. 409 Mason Court, Suite 127
      iii. Fort Collins, CO 80524

3. **Point of contact information** (One person's name, telephone number and e-mail address):
   a. David Buckley
   b. Office Telephone: 905.727.8352
   c. Mobile Telephone: 970.213.4635
   d. Email: dbuckley@dtsgis.com

4. **References** (name and phone number) of individual/company where your CAD system has been implemented:

a. To date the FiResponse CAD has been implemented internationally in Spain. Currently no U.S. based installations exist, although negotiations are currently underway with several state fire management agencies and one federal agency for implementations.

b. Please refer to C. Technical Information Being Requested for information about current FiResponse implementation references.

5. **Indicate if you are considering competing in the CAD procurement as either a Prime Solution Provider or System Integrator** (prime or sub-contractor):

a. DTS will compete in the CAD procurement as a Prime Solution Provider. Esri will partner will DTS to provide systems integration and administration capabilities.

2. Technical Response

B. SYSTEM REQUIREMENTS

This section provides a response to the System Requirements as identified in the RFI. Note that we also provide a more detailed description for specific items so that the capabilities of our FiResponse product is properly reflected. This additional information is provided as bullets below each line item. To aid in reviewing, we have highlighted current capabilities in GREEN, and items not currently supported in GREY.

System Requirement	DTS
1. The System should support web based technologies, such as mobile and cloud computing.	☑
- FiResponse uses a combination of web and desktop software and database components. This is done to ensure continued operation during potential communication failures should they occur. - If desired, a web-only version can be supplied although we propose this could be limiting in certain response situations. - FiResponse operates using centralized database and web servers deployed on-premise or through hosting services (DTS & cloud options). Depending on the number of user sites and the organization of those sites, different configurations can be deployed. DTS typically works with the customer to design a server configuration best for the structure of the participating agencies to facilitate optimum synchronization of data. - To support the scale of implementation defined in the RFI we anticipate a cloud based computing environment may be best to support synchronization for a wide range of remote offices and centers. This would be supplemented with desktop, web and mobile applications that utilize the data to support functional operations. This architecture is well understood and tested for over 5 years with FiResponse. - Access to all servers including synchronization services is done via internet connectivity. However, FiResponse also employs localized client services and desktop installations to ensure that capabilities are still available if/when internet connectivity is not available. When access to the internet servers is available again all users are seamlessly synchronized. This synchronization includes all attribute and geometries.	

System Requirement	DTS
Note that different configuration options exist for different types of users. • Mobile applications can support either connected-only operation (through cloud services) or in future disconnected editing capabilities. Full disconnected capabilities involving GIS capabilities may require some Native application development depending on client preferences. Multiple options exist.	
2. The System must support the ability to merge an instance of the database with another instance, as in the case where data is created and stored in a standalone database that then must be combined with another database to consolidate the data. Note: For example, when two dispatch centers are becoming one.	☑
• FiResponse employs a centralized web-deployed database to provide seamless synchronization capabilities to each user. The synchronization engine (called TecnoSync) automatically tracks and synchronizes data edits and updates for all users through the centralized database. • However, by providing a desktop client application users can continue to edit and operate FiResponse should they lose connectivity to the central database. This ensures operations continue and are not interrupted by communication failures. Once connectivity is restored, the local desktop database of the user will automatically synchronize and update with the central database without any user intervention. • This underlying architecture ensures that data for different users, or dispatch centers or offices, can be merged without issue. This accommodates organizational changes when new centers may be added, or when existing dispatch centers may be merged.	
3. The System must have disaster recovery processes that include data redundancy.	☑
• Since the FiResponse centralized web database is always synchronizing to obtain updates from remote users, and to post updates to users, a database archive and backup capability can be added to ensure redundancy for the worse case disaster. • In addition, the underlying database synchronization architecture ensures that users can continue to function in a worst case disaster situation when communication failures occur and no internet connectivity is available. While users cannot receive automatic database updates from other user's updates, they can continue to operate. Once communications are restored, the local user's database will automatically synchronize with the centralized database. • In situations where the centralized database is corrupted or destroyed in a disaster situation, it can be restored using backups very quickly especially if deployed using a cloud computing infrastructure. However, note that with a cloud computing architecture it is highly unlikely that destruction of the centralized database can occur due to the inherent deployment infrastructure and redundancy.	

System Requirement	DTS
4. The System must have robust interoperability with established systems with the ability to share data easily and efficiently.	☑
• FiResponse uses standard DBMS architectures that afford integration with virtually any agency system, as long as that system does not utilize proprietary data architectures that are not published or offer an API. Integration with proprietary vendors and formats, such as WildCAD or others, can be accomplished if either an API, data schemas and standard commercial database formats are provided and adhered to. • FiResponse currently adheres to the Oasis-EDXL interoperability standard.[4] • Development is currently underway to also adhere to the UICDS incident operability standard.[5] • Currently, FiResponse does not directly interface with ROSS, although this design is underway for future releases. We anticipate no problems with satisfying integration requirements considering the current maturity of ROSS with recent versions. • In future, we also anticipate integration with the USFS Automated Flight Following system once federal clients facilitate access to those data standards and services. We cannot support this until such times as federal support and approvals are provided.	
5. The System must be available (24/7) at the local dispatch center without interruption for any reason so as to maintain operational continuance at the local level at all times.	☑
• This is satisfied by providing a redundant centralized web deployed database using cloud computing environments. Redundant servers can be initiated very quickly to satisfy any rollover needs. • In addition, the hybrid database architecture of supporting both a centralized web deployed and local user desktop databases ensures continued operability for users no matter what centralized computing issues arise.	
6. The System must support a multi-user platform with real-time access.	☑
• FiResponse controls user access to dispatch and incident related information based on a *role permissioning* design that permits assignment of data access privileges to any user, independent of their location. This includes desktop or web users. • Role based permissions are also used to grant access to software capabilities as well. • User roles and access privileges are typically configured during implementation with the agency participation.	
7. The System must meet all Federal and Agency requirements for security.	TBD

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[4] The **Emergency Data Exchange Language (EDXL)** is a suite of XML-based messaging standards that facilitate emergency information sharing between government entities and the full range of emergency-related organizations. EDXL standardizes messaging formats for communications between these parties. EDXL was developed as a royalty-free standard by the OASIS International Open Standards Consortium.

[5] The **Unified Incident Command and Decision Support (UICDS)** is information sharing middleware for NIMS incident management that continuously receives and shares standardized data among many agencies during an incident.

System Requirement	DTS
• FiResponse can be customized to meet customer security requirements as determine during implementation and configuration planning. We anticipate that currently FiResponse does not adhere to all current federal and state agency requirements. This is a requirement that must be defined during project implementation activities and satisfied with development to meet these requirements.	
8. The System must have on-going technical and user support.	☑

• Support and help desk capabilities can be provided using various different options, including but not limited to:
   o Formal help desk with email and phone access
   o On-site support for predefined or on-demand situations
   o On-line user tutorials and documentation
   o Regular web training and refresher sessions
   o Formal on-site training sessions	

9. The System must be based on an interactive Graphical User Interface (GUI) environment.	☑
• The primary user interface to view FiResponse data is map based, leveraging Esri's ArcGIS Server and Arc Runtime (ArcGIS 10.1) capabilities. This provides a standard approach of sharing map based data on either desktop, web or mobile platforms. • Incident, dispatch, resource and ICS information can be viewed on either the map, or custom UIs, or both simultaneously. Several different interface panes (i.e. map pane, dispatcher pane, chat pane, alert notification pane, staffing pane, etc.) exist and can be viewed or docked in any combination. Specific modules can also be operated separately if desired. • Firesponse supports using multiple display monitors at once to view the difference user interfaces as required by the user's role and viewing preferences.	
10. The System must support real time, read-only access to data by local and remote fire managers and GACC personnel.	☑
• FiResponse employs a user role based permissioning architecture that allows system administrators to assign data access privileges and functional privileges for specific users and/or predefined roles. This allows for user interfaces that match a user's role and responsibilities as defined by their agency.	
11. The System must meet the needs of an all-risk dispatch center.	☑
• FiResponse has been developed specifically to meet wildfire dispatch and incident management operational requirements for a multi-agency, multi-jurisdictional operating environment. Accordingly, the FiResponse architecture is based on tracking incidents and those resources and personnel associated with incidents and dispatch centers. Because the basic nature of any hazard is very similar this affords the opportunity to leverage the FiResponse design to also track "all-risk" incidents in future. This capability has not yet been implemented with a customer although it has been tested in a development environment.	

System Requirement	DTS
12. The System must be scalable and flexible to accommodate individual dispatch center data, policy and business practices while complying with national agency requirements for standardized data elements and reporting requirements.	☑
• The database and user permissioning architecture affords customization per center to incorporate unique or specific business rules for FiResponse use and deployment. This is due to the underlying design on a DBMS architecture (Oracle/SQL Server) that inherently affords business rule definition and enforcement for data entities. • Unique requirements of specific agencies would need to be accommodated during system configuration and implementation activities.	
13. The System must be able to create an Incident from any computer via the internet.	☑
• FiResponse also supports the ability to use mobile devices with interactive web mapping capabilities for creating incident notifications including capabilities for defining incident location and attributes. • Multiple different methods are employed with the Dispatch module to define incident locations to create new incidents in the database.	
14. The System must include a variety of robust mapping features that allow the dispatch center to determine the location of a potential incident quickly and easily.	☑
• FiResponse is GIS enabled and built upon Esri's spatially enabled databases – be it Oracle, SQL server etc. Accordingly, the FiResponse user interface provides a full featured set of capabilities for mapping including capabilities to define incident locations with point-and-click tools. Standard capabilities also exist to define an incident location using lat/long coordinates (varying formats supported), tower triangulation, address geo-coding, etc. • The incident mapping capabilities are available on the FiResponse Mobile application as well that operates on any mobile platform using mobile web capabilities.	
15. The System must be able to produce standard and ad hoc reports.	☑
• FiResponse has a very rich and robust reporting engine that support both standard ICS report generation from the incident and resource data components, as well as ad hoc report design and generation. • Standard reports also exist to reconstruct dispatch and incident actions automatically to support after action and investigative requirements. This is made possible by the time tracking engine within FiResponse and the rich reporting capabilities. • The reporting engine affords the design and development of custom reports by a system administrator or power user. These reports can be made available as standard reports to specific users or by user role.	
16. The System must allow for local management to pre-determine the resource response by incident type, response area, and response level.	☑
• This is accommodated for in the Resource Allocation and Tracking module. A similar module exists for ICS team management as well.	

System Requirement	DTS
17. Daily log and entries may be retained as part of the official record of an incident.	☑
• FiResponse tracks and timestamps each and every activity for incidents, resources and personnel. This underlying architecture was design to satisfy stringent time tracking and reporting for resources and personnel while on a fire. • The module is supplemented with the ability to assign user alerts and notifications to time tracking so that key users or administrators (such as EOC or Incident Commanders or Dispatchers) can be notified automatically when a resource or personnel have reached time-on-fire thresholds. • The time tracking data architecture was specifically built to support the reconstruction and reporting of incident activities as official records. This includes several standard viewing interfaces (screens) to retrieve this information at any time, as well as standard output reports that can also be generated at any time.	
18. When multiple incidents are created but should be tracked as one incident, the multiple incidents are merged, (i.e. A reported smoke incident and a reported vehicle collision, are the same incident.) When incidents are merged, all documentation and resource data is tracked in one incident.	
• Currently this is not supported within FiResponse but could be added without any significant development.	
19. The System must provide multiple ways to create an incident, such as using a function key or typing in an address or designating a map location through lat/long or GIS, etc.	☑
• FiResponse supports a wide range of methods to create an incident and define that incident's location. These include different methods for defining the incident lat/long coordinates, in addition to a full suite of GIS enabled capabilities.	
20. The System maintains an incident log that records activity on an incident, such as radio communications, phone communications, dispatcher activity, notifications, etc.	☑
• FiResponse provides a chat panel and log capabilities to facilitate interaction between specific users, especially dispatchers and incident commanders, and the logging of all interaction in the incident database. • Radio and phone communications can be accommodated by custom attributes, however we suggest a more enhanced capability to facilitate an easy and efficient method of capturing this information. This would need to be investigated with the participating agencies during system implementation design activities. • All dispatch activity, notifications, and chats are automatically tracked and recorded and can be retrieved at any time.	
21. The dispatcher must be able use a timer to track status, and position checks of resources. For example, if it is a law enforcement incident the timer will notify the dispatcher when a safety check is required. For aircraft, Automated Flight Following may want a verbal check back every 15 minutes to track the location in case of loss of contact.	☑
• This is accommodated by the time tracking capabilities and alert notification module.	

System Requirement	DTS
22. Standard land-based geospatial data layers should be available within the System.	☑
• FiResponse is fully GIS enabled. Accordingly it provides complete flexibility to incorporate map layers for viewing by different users. This map data can be provided using different local desktop or web map services methods (unsecure and secured) as required by the agency requirements.	
23. Response area data includes: response levels, associated Fire Danger Rating Area, response areas.	☑
• Any response data or attributes can be accommodated.	
24. Dispatch (run cards) data includes: response types, incident types with incident subtypes, response types, response levels, dispatch strategy, copying and reporting dispatch strategies, dispatch action required.	
• Currently "run cards" are not supported, however we do not anticipate any issues with implementing this capability.	
25. Interfaces with radio console over a serial data connection to select frequencies and tones (repeaters). Dispatcher can click the [SELECT] button on the CAD screen to select dispatch frequencies and tones on the radio console screen.	
• Currently FiResponse supports this capability with one radio technology provider. This could be enhanced to satisfy multiple provider requirements in future. In addition, new capabilities exist with web technologies to integrate radio communications into a web interface. DTS is currently investigating this as part of our product development activities.	
26. Provides an application administrator with the ability to add a common place name to the geographic data file with only a latitude/longitude location (location is off-road).	☑
• Standard GIS capabilities for labeling and augmenting the map display are provided.	
27. Provides an application administrator with the ability to configure response areas for fixed (run order) or dynamic (road network calculation) unit recommendation.	
• Currently this is not supported, however we anticipate it could be added in future.	
28. Provides a dispatcher with the ability to assign a weather-based dispatch level to response areas that have been organized into dispatch zones.	
• Currently this is not supported, however we anticipate it could be added in future.	
29. Recommends units based on the current weather conditions (dispatch level) in the response area associated with incident location. The dispatch level influences the selection of a response plan.	
• Currently this is not supported, however we anticipate it could be added in future.	
30. Calculates a bearing and distance for recommended units that travel through the air.	☑
31. Provides an application administrator with the ability to assign air-to-air and air-to-ground frequencies to individual response areas.	
• Currently this is not supported, however we anticipate it could be added in future.	

System Requirement	DTS
32. Generates a fire number in addition to an incident number from a federal or local fire number counter as specified in the response area record associated with the incident location.	☑
33. Provides an application administrator with the ability to create a hazard record at a latitude/longitude location.	☑
• This is supported in several ways including full support for a range of different lat/long coordinate formats.	
34. Alerts the dispatcher when a call is entered at a latitude/longitude associated with a hazard record.	
• We assume that by "call" a telephone call is meant. Currently this is not supported by easy to add.	
35. Provides a dispatcher with the ability to set the dispatch priority of units in a fire station where there is more than one unit of the same type.	
• Currently this is not supported, but can be added in future.	
36. Displays an automatically-updated fire coverage window with the dispatch coverage status in green, yellow, or red.	☑
37. Provides the dispatcher with the ability to assign the person responsible for completing the fire or investigation report by entering a command.	☑
38. Replicates live CAD incident and unit information to a backup device.	☑
• This is currently supported. FiResponse has a rich capability to reconstruct and export incident and associated resource/personnel information to a variety of formats for use outside of FiResponse.	
39. Provides a dispatcher with the ability to select an alternate tactical and/or air to air frequency when the primary tactical frequency is in use.	
• This is currently not supported but can be implemented in future.	

C. TECHNICAL INFORMATION BEING REQUESTED

The following additional information is provided in response to the technical information requested in the RFI. RFI questions are identified in **bold text** for clarity.

1. **How many staff months (project management, analysis, design, coding, documenting, and testing) and calendar months do you estimate it would take to modify your CAD system to meet all of the requirements listed above**?
   We anticipate approximately 6-12 months depending on the number of staff allocated for determining specific user workflows, implementation priorities, detailed functional requirements and wireframes.

2. **How many multi-site CAD customers does your company currently have?**
   Currently we have 4 key customers for FiResponse currently. These customers have been using the product since its inception in 1998. Existing customers are Provinces in Spain (analogous with U.S. states), however as previously identified, DTS is currently in negotiations with several state agencies for implementations in the U.S. Existing customers are:

   1. Andalucia Province (18 dispatch centers)
   2. Extremadura Province (4 dispatch centers)
   3. Aragón Province (6 dispatch centers)
   4. Murcia Province (3 dispatch centers)

3. **How many physical servers are required to run your full CAD system with ROSS and other interfaces including testing and training instances of the system?**

   The specific architecture required to run a full CAD implementation will vary depending on the specific deployment strategy and organizational infrastructure. The following basic server configuration would be required:
   - ArcGIS Server map server
   - Web server
   - AVL server
   - Database server
   - Redundant database server
   - Training server
   - Development server
   - Production server(s)
   - Backup and archive server

4. **What is your company's estimated annual revenue from CAD system sales, consulting services, and maintenance fees?**

   $500,000 U.S. per year as an average over the past 5 years.

5. **How many procurements for a CAD project exceeding $2 million has your company responded to in the 24 months just prior to the release of this RFI?**

   One.

6. **What is the probability 0 – 10 (10 being the highest) that your company would participate in a best value Request For Proposal process for the CAD described above where all requirements must be met in order to qualify?**

   10.

7. **What is your estimated cost to provide a CAD system that would meet all of the requirements listed in this request for information?**

   Cost for implementation of a FiResponse CAD with all capabilities as defined in the RFI will vary depending on specific implementation preferences, training, documentation, support/help desk and customization requirements, and the specific FiResponse modules that are purchased. Given our current understanding of the number of dispatch centers we anticipate the cost would be in the $2-4 million range. However, note that this is fully dependent on understanding a good definition of project scope obtain through some business analysis and client interviews.

D. ADDITIONAL INFORMATION

1. **Provide any additional information not requested above but which you deem important and relevant to this RFI.**

   Our description of additional capabilities and architecture provided in B. System Requirements provides additional information that is important for understanding the capabilities of FiResponse. Some of the benefits and advantages of FiResponse over traditional non-spatially systems include:
   - Hybrid desktop, web and mobile implementation support disconnected operability, even when communication failures occur
   - Database updates occur seamlessly to the user ensuring that every user is synchronized with the central database. This is the foundation for provide comprehensive situational awareness to all users.
   - Full support for AVL data integration including the findmeSpot satellite.
   - Complete ICS personnel tracking and reporting
   - Seamless integration with the DTSwildfire Wildfire Analyst™ wildfire simulation software (see www.wildfireanalyst.com).
   - Mobile incident notification capabilities
   - Comprehensive time tracking and incident reconstruction capabilities

2. **Provide any lessons learned from other similar projects.**

   With a rich history of supporting operational CAD and incident management since 1998, FiResponse evolved to support a disconnected architecture required for in-the-field operations for Incident Command Posts where communication failures may occur and internet connectivity is not available. These experiences led to the development of a hybrid system that uses a small footprint desktop client application in concert with a web deployed centralized database for synchronization. Many other systems focus on web only implementations without considering the realities of field operations and communications challenges. This hybrid approach that users are never "down" and always have capabilities available no matter what their connectivity status.

3. **On-going annual maintenance and technical support**

   A critical component of a successful implementation is the ability to provide on-going training with regular refresher sessions and on-site scenario training. DTSwildfire offers a combination of support and maintenance options that provide training throughout an extended incremental implementation period.