

**U.S. GEOLOGICAL SURVEY/EROS CENTER  
TECHNICAL REQUIREMENTS DOCUMENT  
for  
TECHNICAL SUPPORT SERVICES CONTRACT SOLICITATION**

**TRD NUMBER**

13

**PERFORMANCE PERIOD**

Contract Base Year: April 1, 2010 thru March 31, 2011

**PROJECT NAME**

Information Access & Data Distribution

**Scope:**

The Center for Earth Resources Observation and Science (EROS) Information Access and Distribution Section is responsible for managing multiple Projects which have several overall objectives:

- Support the NGPO organization by hosting and delivering orthoimagery and elevation data for The National Map and GOS.
- Support delivery of high-resolution orthoimagery to NGA.
- Support development of The National Map with technology improvements in the areas of data access, delivery, and archiving.
- Support Science Projects by hosting web sites and developing interactive map products with specialized data.

**Objectives:**

- Operate and enhance The Seamless Server for hosting, delivering, and archiving orthoimagery and elevation data for The National Map and GOS.
- Provide innovative state-of-the-art technology for access and delivery of orthoimagery and elevation data from The Seamless Server in support of The National Map and GOS.
- Investigate and implement new technologies to quickly ingest and deliver high-priority data for emergency response situations using The Seamless Server.
- Investigate and implement new technologies to improve user's abilities to view and interact with data hosted on The Seamless Server.
- Provide support for Science Projects needing to utilize data from The National Map to underpin the delivery of scientific data and analysis via web sites and interactive maps. Support Geography discipline web sites.
- Provide for effective and efficient project technical and financial management including appropriate communication and reports.

In support of the IADD Section, the Technical Support Services Contractor (TSSC) is delegated responsibility for managing and enhancing The Seamless Server including ingesting new data, hosting orthoimagery and elevation data for The National Map and GOS, providing security and rights management for that data, providing new technology for viewing, analyzing, and delivering that data, and coordinating the archiving of that data with the Long Term Archiving (LTA) Project. The TSSC is also responsible for delivery of appropriate high-resolution urban areas data to NGA and DHS.

Specific Projects and Tasks and their representative requirements are defined in the remainder of this document.

## **Communication:**

Project communication consists of both formal and informal settings using varying venues in order to ensure effective communication between TSSC and USGS project management staff. Formal communications are denoted in the following bulleted list. In addition, the project's management team interacts informally on a daily basis in response to unforeseen requirements and requests and produces ad-hoc reports as required.

- Weekly Project meetings
- Monthly status reports including Cost Data
- Quarterly accomplishments reports including Cost Data
- Technical Reference Document and Work Commitment Document
- Miscellaneous other ad-hoc meetings and reports as requested.

## **Project DJ9– Digital Data Products – Orthoimagery**

### **Tasks 2.73 - Infrastructure Maintenance, 2.82 - Seamless Operations Labor, 6.30 - NGA Delivery**

#### **Scope:**

- The scope of the Seamless Operations Task is to provide map and data services from The Seamless Server in support of The National Map and Geospatial One Stop. This is a CTM SIR funded activity. This task is also charged with routing incoming and outgoing data to NGTOC locations and National Map partners and liaisons. This task provides the ongoing support for The Seamless Server including all maintenance and development activities.

#### **Deliverables:**

- Enable map and download services for imagery and other data acquired through USGS partnership agreements with states, cities, and other federal agencies to The Seamless Server for delivery through The National Map and Geospatial One Stop.
- Develop and maintain the main Seamless portal at <http://seamless.usgs.gov> and the partner's portal at <http://gisdata.usgs.gov>.
- Publish map services in ArcIMS and OGC formats and register these services with The National Map catalog and Geospatial One Stop.
- Provide free online downloads from The Seamless Server through the portal interface appropriate for low and high speed network access.
- Provide free bulk data delivery on media for partners through a round-robin firewire pool and for the public on a media-provided basis.
- Operate of the more than 100 Windows servers, the Oracle Grid, the Image Server SAN, and the two SUN FIRE 4800 servers that comprise The Seamless Server to optimize availability and ensure acceptable service levels for customers who access map and data services.
  1. Enhance the hardware platform for The Seamless Server through appropriate systems design and architecture planning
  2. Partner with the Archive activity to utilize the SL8500 Silo in CR 1 to store nearline data for archive and delivery
  3. Ensure compliance with all DOI web requirements including the TRM, visual identify, and 508 requirements
  4. Provide hardware and software maintenance and administration for all systems in The Seamless Server.
  5. Plan lifecycle replacement strategies for older hardware.
- NGA Deliverables (Urban Areas) will be reprojected to the NGA standard of UTM Projection and referenced by the National Grid Coordinate system

**Schedule:**

- Major tasks will be initiated on a prioritized basis as determined by the Project Manager
- All deliverables will be completed by the end on the fiscal year.
- Urban Area Data will be delivered to NGA based on receipt of the data according to the following schedule:
  - If data is missing, the appropriate mapping center will be contacted to resolve the deficiencies. The delivery due date will start counting from the point where we receive all the data including metadata.
  - For those data that requires no reformatting (reprojection or rechipping), we will delivery data to NGA within 30 days
  - We will need 60 days to deliver data that needs to be altered to meet NGA specifications

**Communication:**

- Provide quarterly and annual reports for Geography and GIO, EROS ELT, and accomplishments highlight reports
- Provide complete statistics on data loaded, maps rendered, map services utilized, data downloads by customer types and product types on a monthly, quarterly, and annual basis
- Provide monthly, quarterly, and annual Cost Data reporting.

**Tasks 2.3 – Data Loading****Scope:**

- The scope of the Orthoimagery Project Extract, Translate, and Load task is to ingest orthoimagery data including DOQs, NAIP, DRGs, and high-resolution Urban Area data into The Seamless Server for distribution in support of The National Map and Geospatial One Stop. USGS agreements with NGA, USDA, and other partners result in large amount of orthoimagery being delivered from contracts to EROS for delivery in the form of map services and data downloads from The Seamless Server. The data must be checked for accuracy, copied to the SL8500 for archiving, and loaded into ArcSDE on the SUN servers or copied to Image Server on the Dell Servers that are part of The Seamless Server architecture. Data is delivered online free of charge.

**Deliverables:**

- Ingest and load all high resolution urban areas imagery obtained under USGS and NGA contracts to The Seamless Server for distribution through The National Map and Geospatial One Stop. Maintain all updates for DOQ and NAIP holdings also.
- Map Services must be provided for each data layer in both ArcIMS and OGC formats

- Data is delivered in GeoTiff format as free online downloads
- Maintenance of the Orthoimagery inventory

**Schedule:**

- Data will be loaded on a prioritized basis as determined by the Project Manager

**Communication:**

- Participation in the weekly Urban Areas telecon with appropriate record keeping of data received, data expected, data loaded, data delivered
- Participation in the weekly Orthoimagery Telecons
- Monthly, quarterly, and annual reporting with statistics on Orthoimagery holdings on The Seamless Server

## **Project DJF – Information Technology**

### **Task 2.8 – IT Security**

#### **Scope:**

- The IT Security Task is responsible for compliance with all DOI and GIO directives pertaining to Internet security for the Seamless Operations support systems that maintain distribution services for the The Seamless Server. This includes maintaining and updating the C&A plans as needed, installing all security upgrades and patches promptly, and responding to all data calls from DOI and GIO as required.
- The IT Security Task is responsible for coordinating security issues and documents with MST security staff at EROS.
- The IT Security Task is also responsible for coordinating web security scanning using WebInspect and other appropriate applications security tools with the MST security staff at EROS.

#### **Deliverables:**

##### IT Security Deliverables:

- Information on fixing security problems that have been identified will be shared with the MST security staff.
- The C&A responsibilities including document preparation and testing for all servers lie with the IADD Section.
- Appropriate training in web security must be scheduled for the software staff to keep current with the new technologies and threat techniques.
- Organize system architecture environments
- Deliverables pertain to Development, Production, Failover environments.

##### Operations and Maintenance:

- Maintain Software code control (CVS)
- Maintain security of existing websites

#### **Schedule:**

- IT Security goals are on going work and will be handled throughout the year. Continuity of operations will continue from last year with plan implementation by second quarter. Web service generation will be dependent on the staff's availability and other reimbursable project work.

#### **Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.

- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.

## **Project DJ6 – Delivery Services Management**

### **Task 5.7 – Maintain Tiled Data Distribution (TDDS)**

#### **Scope:**

- TDDS will be maintained as operational file download capability
- Investigations will be performed to analyze use of SUN Thumper for delivering tiled data sets instead of the SL8500.

#### **Deliverables:**

- Operational TDDS capability with existing data sets
- Additional data sets as space permits loaded to TDDS
- Plan for utilizing cheap disk solution for TDDS instead of SL8500 dependence.

#### **Schedule:**

- Work will be ongoing throughout FY10.

#### **Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.

### **Task 7.3 – Publish WCS & WFS**

#### **Scope:**

- Open GIS Standards for WCS and WFS will be implemented on Seamless to enable test services for NED, Orthoimagery (High Resolution, NAIP, and DOQs), and Boundaries.

#### **Deliverables:**

- WCS and WFS map services for NED, Orthoimagery (High Resolution, NAIP, and DOQs), and Boundaries. Initially in a test configuration with minimal server capacity with the potential for later expansion.

#### **Schedule:**

- Work will be ongoing throughout FY10.

**Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.

## **Project DJ3 – Digital Data Products – Elevation**

### **Task 5.7 – Expand 1/9 NED Nationwide**

#### **Scope:**

- The National Elevation Data Set has resolutions of 1 arc second, 1/3 arc second, and 1/9 arc second. The finest resolution data is now being more widely populated as more LIDAR data is received. This activity expands the area covered by the map services and data download services from Seamless to include the data expected to be added to the NED 1/9 data set during FY10.

#### **Deliverables:**

- Coordinate with the Topo Project to obtain the new NED 1/9 data as it is produced.
- Load the NED 1/9 data to Seamless.
- Enable map services and data downloads for the new areas.
- Ensure that the elevation tools work properly with the new areas.

#### **Schedule:**

- Work will be ongoing throughout FY10.

#### **Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.

## **Project C54 – Information Access**

### **Task 1 – USGS Geography Web Support**

#### **Scope:**

- The IADD project task for USGS Geography Web Support is responsible for supporting the external Geography Home Page at <http://geography.usgs.gov>. This includes working with USGS Geography HQ personnel to add new content and tools to the site as well as normal maintenance.
- The USGS Geography sites are hosted at EROS by the IADD project. Support provided includes operating servers, providing Internet access, complying with all DOI mandated IT security, staffing software and hardware engineering tasks, and adding requested enhancements to the site. Tasks for FY10 include:

#### **Geography:**

- Maintenance of current website
- Adding Current News and Events
- Geography Science Information Entry Form
- Geography Science Information Entry Search Tool
- Image Slideshow
- Create Geography individualized RSS from USGS Feeds
- Re-design of current website
- Statistics of website traffic
- Events Calendar
- Create customized search tool for Geography since current home page is a portal, a customized search tool will improve users satisfaction

#### **Deliverables:**

- Support for featured science and other articles posted to the web site.
- Support for the RSS feed for news articles.
- Customized search capability
- Database support and tool maintenance for the Basis+ project database interface.
- Normal web maintenance for the site including compliance with Visual Identity and 508 rules.
- Compliance with all C&A and DOI security requirements.
- Quarterly reports detailing statistics of website traffic.
- Enhancements to website as requested by Geography staff.

**Schedule:**

- Work will be ongoing throughout FY10.

**Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.
- Telecons with Geography staff as requested.

## Task 2 – USGS LRS Web Support

### Scope:

- The USGS LRS Web Support is responsible for providing web hosting and maintenance for the LRS Remote Sensing site at <http://remotesensing.usgs.gov> and the Land Imaging site at <http://www.landimaging.gov>. This includes working with USGS Geography HQ personnel to add new content and tools to the site as well as normal maintenance.
- The USGS LRS sites are hosted at EROS by the IADD project. Support provided includes operating servers, providing Internet access, complying with all DOI mandated IT security, staffing software and hardware engineering tasks, and adding requested enhancements to the sites. FY10 tasks include:

#### Remote Sensing:

- Maintenance of current website
- Adding Current News and Events
- Create LRS individualized RSS from USGS Feeds
- Create Archive of Featured Science
- Pecora Information
- Re-Work of Publications for LRS
- Statistics of website traffic

#### Land Imaging:

- Maintenance of current website
- Additional content additions and re-work of website
- Statistics of website traffic

### Deliverables:

- Support for featured science and other articles posted to the web site.
- Support for the RSS feed for news articles.
- Support for Pecora Conference
- Database support and tool maintenance for the Basis+ project database interface.
- Normal web maintenance for the site including compliance with Visual Identity and 508 rules.
- Compliance with all C&A and DOI security requirements.
- Quarterly reports detailing statistics of website traffic.

**Schedule:**

- Work will be ongoing throughout FY10.

**Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team

### Task 3– WFDSS Hosting

#### Scope:

#### WFDSS On-going Operations and Maintenance Phase - Roles and Responsibilities

What and Who	FPA-WFDSS Operations	EROS
System Management and overall operation of the system	X	
User support <sup>1</sup>	X	
Operating System patches and support	X	
Applications and software support	X	
User account management	X	
Backups, as needed <sup>2</sup>	X	
Data content maintenance	X	
Security <sup>3</sup>	X (System)	X (Physical)
EROS Firewall (operational and remote Admin access requirements)	X	X
Facilities, environmental, power, UPS, etc.		X
WAN and LAN interconnect communications, cabling, and DNS operation		X
Emergency support	X	X
Vendor dispatching <sup>4</sup> (dispatched by FPA-WFDSS Operations)	X	
Notification of outages (Planned and unplanned)	X	X

Routine, day-to-day operations and maintenance will be the primary responsibility of FPA-WFDSS operations. EROS will aid with emergency support in the event a critical system failure occurs that requires nominal on-site intervention. Currently EROS supports only its networking infrastructure with 24x7 on-call network maintenance support during non-core business hours. Problems and resolutions requiring skills sets

<sup>1</sup> Resolution to user-registered problems, issues, and concerns, as in a HelpDesk role.

<sup>2</sup> Performing periodic system backups is the responsibility of FPA-WFDSS operations, however EROS recognizes that on-site manual intervention and continued communications may be required to mount, store, and manage these backup tapes. Tape media is the responsibility of FPA-WFDSS operations.

<sup>3</sup> Includes system configuration, network interface configuration, periodic security scans, resolution to detected vulnerabilities, audits, and or other items or configurations needed to meet USGS Security guidelines and requirements.

<sup>4</sup> FPA-WFDSS operations will initially contact vendor contract maintenance and initiate an on-site maintenance visit. Once EROS is contacted by FPA-WFDSS operations that a maintenance request has been initiated, EROS will in turn, coordinate with FPA-WFDSS and the vendor for an on-site visit to EROS as necessary.

other than network maintenance engineering are not supported after core business hours and typically wait till the next business day for resolution.

**During core business hours:** (M-F, 0730-1615 hrs CST, excluding holidays)

During core business hours and if an emergency exists requiring support, system and or database administration, platform engineering, security and or networking skills may be used on an “as-available and best effort basis”, as prioritized against other existing and pending EROS work.

**During non-core business hours:** (M-F 1615-0730 hrs CST, 24x7 weekend and holiday) During non-core business hours, only network maintenance engineering support will be utilized for 1<sup>st</sup> level emergency support and problem identification. Problem identification will be the primary focus of the on-call resource for non-network related issues, with resolution being the primary responsibility of FPA-WFDSS Operations. Any other skill requirements (i.e. system or database admin, platform maintenance, security, etc.) are outside the scope of this concept document and would require additional discussion agreement to implement.

1<sup>st</sup> level emergency USGS EROS technical support **does** include:

- Aiding with problem identification is primary and with nominal effort may include:
  - Aiding with resolution following a catastrophic event
  - Responding to an EROS or FPA-WFDSS Operations mandated emergency shutdowns
  - Performing visual inspections and network maintenance (if applicable)
  - Supporting contracted network or communication services that serve the whole of the USGS EROS
  - Supporting on-site dispatches or maintenance visits from FPA-WFDSS technical support contractors or FPA-WFDSS system maintenance vendors
  - Any reasonable and required communication with an appointed FPA-WFDSS operations technical contact supporting problem identification

1<sup>st</sup> level emergency USGS EROS technical support **does not** include:

- Routine day-to-day or normal system level maintenance or operations such as:
  - Performing operating system software updates and or security patching
  - Application software installations
  - User account and password maintenance
  - Performing or administrating system backups
  - Routine security readiness scans
  - Hardware, network or system maintenance, configuration and management of the FPA-WFDSS system components
  - User/HelpDesk-like support to the broader customer base of FPA-WFDSS
  - Other technical tasks associated with normal day-to-day operations unless they are requested in advance, negotiated, documented, and agreed upon by the sponsoring government parties.

**Problem Resolution:**

EROS technical support and assistance will focus towards aiding problem identification. Resolution efforts will be secondary and if required, performed on a “best effort” basis prioritized against pending and existing EROS workloads. Full technical resolution remains the final responsibility of the FPA-WFDSS and it’s contracted support elements.

**Other than emergency support:**

From time to time, one time special occurrences or scheduled maintenance events may require non-emergency EROS on-site technical support. These special requests for support should be communicated to the EROS ITS Manager or designee in advance, preferably with three working days notice. EROS work impacts in result to these requests can then be properly evaluated and options can be developed and communicated back to the requester prior to service request date.

**Notification of outages (planned or unplanned):**

Occasionally, EROS must plan for and perform facility, network, and telecommunication maintenance. Also, from time to time, EROS must respond to unplanned and critical service outages affecting facility, network, and telecommunication infrastructures and services. In accordance with established procedures, EROS will notify the FPA-WFDSS operations technical POC (Point of Contact) with advance notification (typically 3 business days) of any planned or scheduled facility, network, or telecommunication maintenance or scheduled service outage. For unplanned service outages, EROS will notify the FPA-WFDSS operations POC as soon as reasonably possible with the nature of the critical outage and the anticipated “return to service” time, if available.

**Response Time:**

Upon notification from authorized FPA-WFDSS personnel, EROS on-call Network maintenance staff will call back the contacting party within 2 hours of initial notification and be on-site within 4 hours of initial notification, if needed.

**Deliverables:**

- Quarterly status reports including all incidents and responses, budget, and upcoming plans
- Monthly security scans and resolutions, support for C&A processes as applicable and compliance with all C&A and DOI security requirements.

**Schedule:**

- Work will be ongoing throughout FY10.

**Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.

- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.

## Task 4 – FEMA Support

### Scope:

This work requested has been requested by the Federal Emergency Management Agency (FEMA) from the U.S. Geological Survey (USGS), Earth Resources Observation and Science (EROS). The Information Access and Data Distribution (IADD) project at EROS has been working with FEMA to host and deliver orthoimagery data for the flood mapping program. The data received to date from FEMA has been loaded to the IADD Image Server configuration. FEMA has now requested some additional tasks that will facilitate use of that and future data. This is a reimbursable agreement.

- **Layer Order Index**

An index layer will be created for IADD's ortho-imagery data holdings that describes the footprint of each IADD data layer. The attributes of the index layer would be something similar to:

SHP_ID	NAME	FEMA_WEIGHT	FEMA_SCALEMIN	FEMA_SCALEMAX	TNM_WEIGHT	TNM_SCALEMIN	TNM_SCALEMAX
1	LANDSAT	700	1:200000	1:99999999999	10	1:250000	1:300000
2	DOQQ	500	1:24000	1:2000000	9	1:10000	1:25000
3	Urban Areas	200	1:1000	1:24000	1	1:1	1:1000
4	StateLocal	100	1:500	1:10000	0	0	0

With this information, the Best-Available data can be determined by a client by a single spatial query. The query can return all intersecting indices with the weights and scales. Then the client would make use of this to determine how to combine separate WMS calls into a single map image/display.

The entire WMS url could also possibly be provided as an attribute. This possibility will be evaluated and implemented if feasible.

- **Seamless Downloads of FEMA-Only Data**

The Image Serve Raster Clip Engine will be tested with the FEMA-Only imagery. FEMA-Only Imagery will be added to the Seamless System to allow users to download the FEMA-Only data via the Internet.

Existing Image Server hardware will be augmented to provide additionally resources needed to support downloads from the FEMA services. Specifically 2 new Dell servers will provide 2 Image Service Providers (ISPs) Along with 2 Image Server licenses for the ISPs.

Finally, extra hard disk storage will be added to the Image Servers to provide space for the FEMA-Only data received during FY'09.

- **Viewer**

The IADD embeddable lightweight viewer will be used to provide an IADD-hosted interface to FEMA and IADD ortho-imagery. The viewer can be embedded into either a IADD (EROS) hosted website, or a FEMA-hosted website. The viewer will include the standard tools as well as a button to allow for Seamless download of data using a bounding box.

- **Data Management Support**

Many of the FEMA-Only layers have been delivered to IADD (EROS) with missing spatial-reference information as well as missing scene. IADD's Data Manager will work with a point of contact at FEMA (or designated contractor) to develop a pre-delivery checklist to be performed on imagery before it is delivered to IADD (EROS) for hosting.

- **Imagery Delivery Research Support**

IADD (EROS) has received an estimate from the primary imagery delivery vendor (ESRI) to investigate the best method for handling the very large number of imagery layers and how to host them so that simple viewers can easily include the layers using a single simply WMS call. This research may provide a solution using existing products, or may drive enhancements to products in near-future releases. FEMA would make a monetary contribution to the cost of this research project being requested by IADD (EROS).

**Deliverables:**

- A layer-order index for the existing IADD ortho-imagery holdings.
- Seamless downloads for the FEMA-only data hosted on Image Server
- Viewer based on the IADD "lightweight" viewer to allow viewing and downloading of Seamless ortho-imagery and FEMA-only imagery.
- Support by IADD's Data Management Specialist to help improve the quality of the FEMA-only data.
- FEMA and USGS supported research project with ESRI to investigate schemes for delivering large numbers of imagery layers as a single WMS map service.

**Schedule:**

- Work will be ongoing throughout FY10.

**Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team

## **Task 5 – Map & Data Services**

### **Scope:**

- The IADD project task Map & Data Services is a zero-based pass-through account which is used for all “repay” support for Science Activities hosted on the Seamless Server.
- Work for these projects includes updates and maintenance for their individual websites, tools and interactive maps, and hosting GIS data on Seamless. These science sites are all hosted on The Seamless Server at EROS.
- In addition, the TSSC is responsible for coordinating with Science Projects to ensure that their needs for data hosting and delivery, analysis tools, and web development activities are met.

### **Deliverables:**

- Load all science applications data in support of science activities at EROS and other USGS locations under project agreements with IADD to The Seamless Server and publish map services and provide downloads as requested. Develop and maintain web sites for these science activities that showcase their data with interactive maps and web tools.
- Develop specialized web sites including interactive maps and other interactive GIS tools for science partners as requested.
- Maintenance and updates to the science web sites.
- Loading and hosting science GIS data on The Seamless Server.
- Creation of new tools and interactive maps for these science sites.
- Normal web maintenance for the site including compliance with Visual Identity and 508 rules.
- Compliance with all C&A and DOI security requirements.

### **Schedule:**

- Work will be ongoing throughout FY10.

### **Communication:**

- Quarterly status reports will be submitted electronically after the end of each quarter highlighting accomplishments for that quarter.
- Reports will include budget update along with status.
- Weekly team status meetings chaired by the project chief and attended by the team.