US Geological Survey (USGS)
Community for Data Integration (CDI)
Request for Proposals (RFP)

For Fiscal Year 2013

Issue Date: September 5, 2012

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Overview

The Community for Data Integration (CDI) represents a dynamic community of practice focused on advancing scientific data and information management and integration capabilities within the United States Geological Survey (USGS).

Since 2009, CDI has funded a variety of projects that support the overarching goal of data integration (*https://my.usgs.gov/confluence/display/cdi/Proposals*). USGS and other researchers conduct monitoring, assessment, and research activities that generate data assets, which through the application of business, computational, and analytic processes and technologies are converted into information that contributes to our understanding of the Earth's physical and biological systems. It is within this context that data management and integration occurs and where the CDI operates (Figure 1).

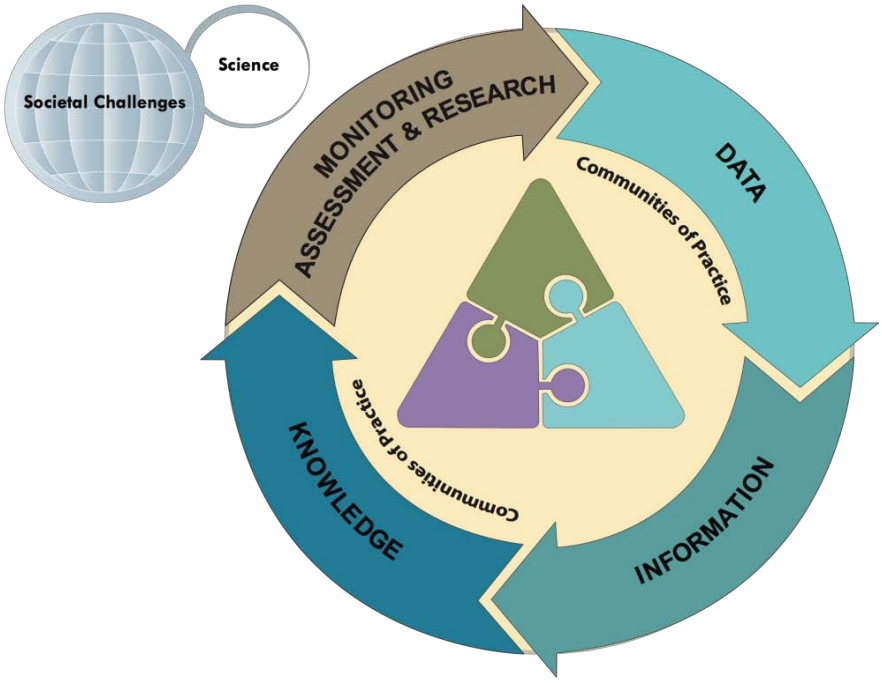


Figure 1: Overview of CDI Operational Context.

CDI Science Support Framework (SSF)

In 2012, the CDI Coordinators (*Appendix A*) developed a Science Support Framework (SSF) (Figure 2, *Appendix B*) that categorizes and relates the activities and processes through which research data flows and within and upon which the CDI operates. It is these categories that provide the focus and a framework for coordination and integration of current and future CDI-funded projects. A more detailed explanation of the CDI SSF categories and the direction of data flow through the framework are included as *Appendix B*.

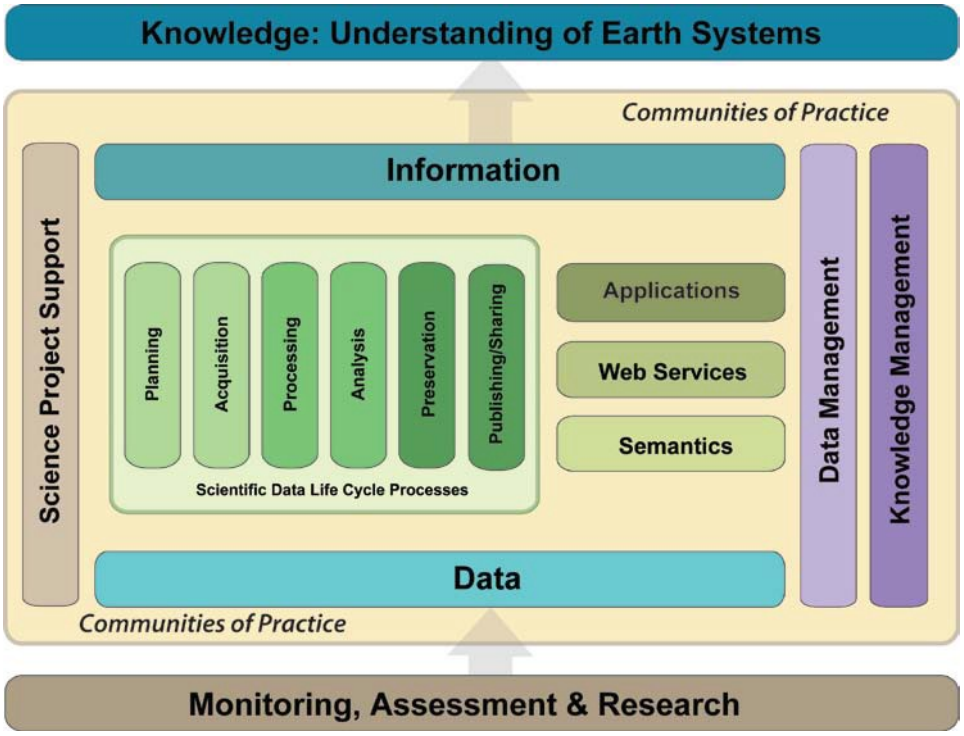


Figure 2: CDI Science Support Framework (SSF)

Data assets flow vertically through the SSF from a base of monitoring, assessment, & research through the Scientific Data Life Cycle (SDLC) processes, with the aid of applications, Web services, and semantics. These information products are the primary means by which the USGS contributes to knowledge and understanding of the Earth's physical and biological systems. These flows are managed within the context of the individual science projects that they support.

The horizontal elements in the SSF represent the "what" of the CDI: products and tools, the things that mediate and contribute to the discovery and effective use of scientific data in systematic research.

The vertical elements in the SSF represent the "how" of the CDI: the processes, the implementation of standards and best practices, and the interactions among people, data, and technology necessary to achieve data integration.

Proposal Submission Categories

In the past, CDI projects have focused on data integration for interdisciplinary research, innovative data management, and potentially cutting edge technology. In FY2013, CDI projects will develop and implement data integration products and processes in the context of four main SSF categories: Management, Policy & Standards; Computational Tools and Services; Data & Information Assets; and Community Innovations. Proposals may address multiple aspects of the SSF. But they must be submitted and will be evaluated in the context of at least one of the four main SSF categories.

SSF Category 1: Management, Policy and Standards

Data Management includes data and metadata standards and policies and occurs in all phases of the SDLC from planning and data acquisition through scientific research to finished information products. Knowledge Management involves the creation, standardized documentation, and organization of artifacts

describing or encapsulating knowledge using tools such as Simple Knowledge Organization Systems (SKOS) Vocabularies and information modeling, resulting in the creation of reusable knowledge bases.

Proposals submitted under the Management, Policy and Standards category (SSF1) should have a primary objective to advance data and knowledge management, policies, standards, and best practices. They may involve the development, application and/or testing of data integration processes, protocols, and products that are or result in improved or more effective data integration management, policies, and standards.

Examples of processes and products include data stewardship best practices; development, implementation or application of the SDLC (specific elements or as a whole); knowledge management tools or processes; or development, implementation and/or testing of data integration standards, governance, and policy.

SSF Category 2: Computational Tools and Services
Computational Tools and Services include SDLC processes, tools, and services that move data through the SDLC, related human and machine interactions, and interactions with data through technology. Detailed descriptions of each of the SDLC processes illustrated as vertical elements in the CDI SSF (Figure 2) are as follows:

- *Planning* – A documented sequence of intended actions to identify and secure resources and gather, maintain, secure, and utilize data assets;
- *Acquisition* – The series of actions for collecting or adding to data assets;
- *Processing* – A series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use;
- *Analysis* – A series of actions and methods performed on data that help describe facts, detect patterns, develop explanations, and test hypotheses;
- *Preservation* – Actions and procedures to keep data for some period of time; to set data aside for future use; and
- *Publishing/Sharing* – To prepare and issue, or to disseminate data or information products.

Horizontal elements in the SSF (Figure 2) representing the 'what' of the CDI are also encompassed under SSF Category 2 and include:

- *Applications* – human readable data services and user interfaces to data driven applications.
- *Semantics* – that categorize or describe data so that they can be reliably discovered and unambiguously interpreted by humans and machines such as Machine Readable Metadata, Semantic Mediation for Data Integration & Discovery, ontologies and vocabularies, and World Wide Web Consortium Standards.
- *Web Services* – that include machine to machine data exchange, SOAP[2], REST[3], SPARQL[4] EndPoints, and other protocols and services.

Proposals submitted under the Computational Tools and Services category (SSF2) should be primarily technical in scope. This may include development of applications, Web services, semantics, or combinations of technologies centered upon the advancement of data discovery and integration.

Examples of technological solutions, tools and services include software applications, Web services, data discovery tools, models, semantic services and tools, cyber-infrastructures, data brokers, and visualization tools.

SSF Category 3: Data and Information Assets
The horizontal elements of Data and Information (assets) in the CDI SSF represent what SDLC Processes, Data Management, and Knowledge Management processes operate on. USGS data and information assets may include:

- *Data* (e.g., raw data, databases, metadata, and linked open data i.e. RDF[1])
- *Information* or derived/interpreted information products in the broad sense (e.g., published or shared maps, reports, datasets); and
- *Knowledge* of all types and in all forms – recorded, organized, and preserved in the form of various artifacts. Knowledge can then be improved; shared across groups, organizations, and domains; and reused to support individual and group learning and research.

Proposals submitted under the Data and Information Assets category (SSF3) should be aimed at creating or improving data and information products. They may involve or result in the development, application and/or testing of data and information assets that support, facilitate or improve data integration and the transition from data to information to knowledge.

Examples of data and information assets include persistent archives, data registries, catalogs, datasets, metadata, derived information products, knowledge bases, vocabularies and/or ontologies.

SSF Category 4: Community Innovation
Sometimes effective and efficient data management and integration requires novel, innovative approaches and application of new or existing tools and services, in ways outside of their originally intended purposes.

Proposals submitted under the Community Innovation category (SSF4) should show true potential for advancing the CDI and its data integration efforts. They may involve or result in the development, application and/or testing of unique data and information assets, tools or services that are not comfortably accommodated under or defined by SSF categories one through three and demonstrate novel, innovative approaches and solutions for data integration; or the development of new unique tools and services for data management and integration. Both prototype and immediately deployable solutions will be considered.

Proposal Submission under Multiple SSF Categories
Although a proposal may generate products relevant to more than one SSF category, applicants are required to choose the single most applicable SSF category under which to submit their proposal and specify it on the cover sheet (*Appendix C*). Proposal narratives must clearly align with the requirements of the SSF category selected by the applicant(s). Proposals will be evaluated in the context of the applicant(s)' specified SSF category.

In order to be evaluated under more than one SSF category, applicants must submit separate proposal packages for each SSF category they have selected. The narrative of each proposal package must align with the requirements specific to the respective SSF category.

In the event that the same project is described in proposal packages that were submitted separately under multiple SSF categories, successful applicants will receive only one award through the SSF category under which the proposal was most favorably evaluated. The same project cannot be awarded under more than one SSF category.

The same team of people may submit entirely different proposals under a single or multiple SSF categories. If multiple proposals submitted by the same team of people are successful, the applicants may receive more than one award under separate SSF categories.

Submission of proposal packages under more than one SSF category and with the clear intent to using multiple awards of CDI funds as a significant source of individuals' day-to-day salary coverage is unacceptable and will result in the immediate disqualification of all affected proposal packages and individuals involved.

Award Amount(s)

USGS funding for CDI projects varies from year to year and is directly influenced by the overall USGS budget. CDI projects have been funded in part by USGS since fiscal year (FY) 2009. In FY10 $500,000 were provided by the Bureau to fund CDI projects; while in FY11 we received our cumulative request for $227,700. In FY12, total funding for CDI projects came to $479,053. The amount that will be available to fund CDI projects in FY13 is expected to fall within the range of funding for previous years. Based on available funding and budgetary priorities, as well as number and breadth of proposals submitted, efforts will be made to ensure even and fair distribution of funding to proposals across the CDI SSF categories.

It is our goal for FY13 to fund at least one CDI project under each CDI SSF category. Applicants are encouraged to request funding up to the maximum amount appropriate to support and complete their proposed project. There is no fixed ceiling for CDI project funding but requests for higher amounts will receive more scrutiny. All proposal budgets will be carefully analyzed for efficient allocation of funds to federal and contracting salary, travel, product development and delivery, and any other specified expense categories.

Eligibility and Expectations

Personnel and Participation

Any USGS Mission Area, Program, Center, Office or duty station and their partner(s) are encouraged to apply.

All proposals must specify the involvement of at least one USGS employee as a principal investigator.

Personnel may be involved in more than one prospective or existing CDI project.

Participation in a CDI Working Group (*http://my.usgs.gov/confluence/display/cdi/Home*) is highly encouraged, but not required.

Proposals that increase the diversity of expertise represented among CDI participants are also encouraged.

Partnerships and Collaboration

Partnerships or collaboration with other organizations or other USGS administrative units and networks (e.g. Science Data Coordinators Network, US National Phenology Network, etc.) to leverage resources are encouraged but not required. Partnerships, both formal and informal, among organizations are seen as primary building blocks for the CDI.

The use of collaborative tools and technologies approved by the Department of the Interior such as WebEx remote desktop sharing, teleconference audio-bridges, myUSGS Confluence, SharePoint and other remote collaboration tools and services is strongly encouraged to minimize costs and to share and preserve project records and other artifacts.

All CDI projects funded in FY13 will be required to maintain collaboration pages in the CDI online community supported by myUSGS Confluence (*http://my.usgs.gov/confluence/display/cdi/Home*). CDI Coordinators and Working Group leads will provide assistance in setting up user accounts and creating CDI project pages.

Budgetary Considerations

There is no fixed ceiling for maximum proposal funding amounts but proposals requesting higher amounts are

likely to receive more scrutiny. The maximum amount available for funding all CDI projects varies from year to year. In FY10, a total of $500,000 was available to fund CDI projects and in FY11 $227,700 was available. CDI projects completed in FY12 were funded at a total amount of $479,053 (see also *Award Amount(s)*).

In-Kind Contributions
All proposals must include a 30-50% in-kind match of the amount of CDI funding being requested. In the past, successful proposals included substantial in-kind resources and used the Bureau cost share funding as an augmentation to extend the scope of a given project. * The USGS Core Science Systems Mission Area will contribute in-kind funding for federal staff salary to support CDI projects.

USGS Contracting Staff
Proposal authors who intend to include USGS contracting staff in their CDI project implementation team must first check with the Contracting Officer's Representative (COR) to ensure that the work is within the scope of the contract. Proposal authors must include a clear statement in their proposal indicating that they have checked with and received confirmation from the COR regarding USGS contracting staff participation in their CDI project implementation team.

Phased or Multi-Year Projects
Funding of successful proposals that describe single or first phases of projects does not guarantee funding of subsequent project phases. However, applicants may include explanation for how they intend to fund and/or complete subsequent project phases, acknowledging that said funding may not be derived from the CDI.

Travel Support
Proposal budgets should include allocation of travel funds (estimated amounts are sufficient) for in-person participation by at least one project representative in at least one CDI annual event or meeting. Subject to USGS conference guidance and regulations, CDI annual meetings have so far been held in Denver, CO. Occasional CDI promotional events may also be held at USGS Headquarters in Reston, VA.

Timeline

CDI projects must be scheduled for completion by August 31, 2013 and allow time for generating final reports and meeting end of fiscal year budget (September 2013) and other CDI deadlines (Table 1). Recognizing that the timing of USGS funding awards varies from year to year, timelines may include delivery deadlines described in terms of *time from date of* award rather than specific calendar dates.

Nov 2, 2012	Dec 7, 2012	Mar 31, 2013	May 2013	June/July 2013	Aug 31, 2013	1st week Sept 2013	Sept 30, 2013	Dec 15, 2013
Deadline: Proposal Submission	Successful Proposals Announced	Funding Awarded	TNM*/CDI Annual Meeting	CDI Exposé (DataBlast)	**Deadline:** Final Deliverables	Progress Reports	End of FY13 Announce FY14 RFP**	**Deadline:** CDI Annual Report

* The National Map.
** Request for Proposals.

Table 1: Draft FY13 CDI Proposal and Project Timeline

Completion of a CDI funded project includes completion and delivery of all outputs or products including

unofficial (e.g., white papers, internal USGS-only documentation, presentations) and official (e.g., numbered series, peer-reviewed) USGS publications. In the case of formal publications, evidence that publication-related funding has been obligated and/or a publication has been accepted or is in the final stages of review by the USGS Information Product Delivery System (IPDS) and/or a peer reviewed journal, will be accepted as an indication of a publication's imminent completion; and as completion of a CDI project deliverable if the evidence is submitted by September, 30 2013.

Because CDI projects are funded with one year money that is usually released from the budgetary process in March, project teams should plan projects or project phases that can be reasonably completed in a 3-6 month time frame i.e. the time remaining between release of funds and the end of the fiscal year.

Timelines should also allow time for preparation (e.g. posters, PowerPoint presentations, etc.) and participation by at least one project representative remotely or in person in at least one CDI annual event or meeting; a CDI Exposé (DataBlast); in each monthly CDI Coordinator teleconference; and in at least one end of year progress reporting meeting or teleconference (Table 1).

Product Delivery

All products resulting from CDI projects should be freely shared, without charge or restriction, with or made available to the CDI, the broader USGS community, and beyond as appropriate. Publicly available tools and services resulting from CDI projects will be viewed favorably. Unrestricted sharing of projects with the USGS (to the extent permitted by any commercial or other license agreements) is required.

Products and publications resulting from CDI projects may be published or posted on public Web sites and online collaboration and data asset sharing sites hosted by USGS (e.g. ScienceBase) and other organizations, subject to USGS product and publication release guidelines and requirements. Reference or linkage to these products and publications must also be included on the collaboration pages set up for each CDI project in the CDI online community (*http://my.usgs.gov/confluence/display/cdi/Home*).

Digital/Electronic Products - CDI projects are encouraged to develop and deliver all software applications and digital technology products that are as inclusive and as freely available as possible. Software applications, digital technology products, snippets of code etc. should be non-proprietary and where appropriate, registered with DOI-approved or USGS (e.g. GitHub) or broadly (nationally, internationally) recognized professional consortia, registries, or repositories. Proposals should indicate plans and procedures for achieving this.

Metadata - All data assets and information products must be documented using recognized metadata standards as appropriate (e.g. Federal Geographic Data Committee – FGDC, Dublin Core, etc.). Said metadata records must also be registered and indexed in DOI-approved or USGS or broadly recognized metadata clearinghouses e.g. CSAS Metadata Clearinghouse, Data.gov. Proposals must indicate which products will be accompanied by metadata records and how and where those metadata records will be registered and maintained. Proposals should also indicate any data assets that will be used in the course of the project that have existing metadata records and either provide a direct reference (e.g. URL or unique identifier) or explanation for where they may be found and accessed.

Publications – CDI projects are strongly encouraged to include completion of at least one official USGS publication such as a fact sheet or open file report as part of their project deliverables. Proposals indicating plans for employing official USGS publication and media outlets such as the USGS blogs (*http://communities.usgs.gov/blogs/*), Weekly Issues Reports (formerly the 'Highlights' - *http://internal.usgs.gov/communications/highlights/*), press releases, podcasts and other approved social media channels for communicating and promoting their project and its deliverables throughout the fiscal year will be viewed favorably. All official USGS publication products resulting from CDI-funded projects

must be submitted to the USGS IPDS and produced in accordance with USGS publishing and review guidelines.

Official USGS publications resulting from CDI projects may be published in digital and non-digital format according to USGS guidelines and requirements. Unofficial publications resulting from CDI projects should be shared with or made available to the CDI, the broader USGS community, and beyond as appropriate. CDI project pages maintained in the CDI online community supported by myUSGS Confluence may be used to deliver both unofficial and official USGS publications resulting from CDI projects (see *Partnerships and Collaboration*).

Final Report

All CDI projects will be required to contribute to the CDI Annual Report, which will be delivered on **December 15, 2013.** Project contributions should consist of a summary of the project and its results and deliverables. Contributors are also encouraged to include any quotes or anecdotes from partners or clients; or real world use cases that demonstrate the value of the CDI project and its products to CDI, to USGS, and to science.

Sustainability

Proposals must include a plan or well-developed ideas for how the project or its products might achieve long-term sustainability where appropriate. Supporting documents may include letters of support from collaborators and/or clients that may benefit from and/or go on to use products and services resulting from and after the completion of your CDI project.

Funding of successful proposals that describe single or first phases of projects in FY13 does not guarantee funding of subsequent project phases. However, applicants may include explanation for how they intend to fund and/or complete subsequent project phases, acknowledging that said funding may not be derived from the CDI.

General Evaluation Criteria

In addition to the above criteria, proposals submitted through this process should consider how the project and/or its product(s) address several criteria including:

- delivering an immediate benefit to solve an existing data integration challenge;
- creating an infrastructure that can be scaled or leveraged across disciplines;
- demonstrating a methodology and/or solutions architecture that can be repeated/replicated for other data or research projects;
- creating an environment that allows future innovative applications to access USGS data;
- contributing to interdisciplinary scientific decision making;
- providing a benefit to scientists;
- promoting standards and best practices for data management; and
- relevance to, benefit to, or complimentary to other SSF categories, elements, or CDI projects.

Proposal should also clearly explain the value of any important or unique datasets or data assets involved.

Datasets Used/Impacted/Exposed

Project resulting in or based upon innovative integration, use, or exposure of USGS and other datasets of particular uniqueness and/or scientific value will be considered favorably. If specific datasets will be used, directly impacted, improved upon, or exposed for discovery, analysis, visualization or other applications as part of the proposed project, provide a list of these datasets by their title (if they have one – create a brief but descriptive title if necessary) and include the temporal extent, geographic extent, and number of records for each dataset as applicable/available (see *Appendix C* for examples). Describe the value of these datasets or their subsequent use in the proposed project including impacts on data management processes, overcoming data management challenges,

exposing novel dataset characteristics or applications etc.

Context - Geographic/Geologic/Ecosystem/Habitat/Taxonomic/Other

Proposals involving or benefiting research or data integration in regard to a particularly valued geographic or geological region, ecosystem, habitat or other recognized unit or research interest, should describe this context by listing up to three important contexts that may benefit from the results or funding of this project e.g. overcoming a challenge associated with integrating climatic, habitat, socio-economic, and species occurrence and abundance data, and visualizing the distribution and resiliency of endangered grassland species populations on public lands from various data sources.

Context may also be accompanied by inclusion of or references to relevant lists such as of species or taxonomic groups, geologic formations or phenomenon, geographic phenomenon, hydrological units etc. Explain why this context is important or valuable, helps answer a scientific challenge, or provides a good use case for solving a specific challenge associated with data integration.

Proposal Formatting

Size and Formatting

Proposals will be accepted in digital format only as a single Microsoft Word or Portable Document Format (PDF) file not to exceed a total uncompressed file size of 10 Mb. Proposals consisting of multiple files or compressed collections of files such as .zip files will not be accepted. Proposals exceeding the maximum file size limit will not be accepted.

Proposals should be formatted to standard letter size (8.5" W by 11" L), with graphics embedded directly in the document. All proposals should be no more than 3000 words in length (about 6 pages, single-spaced, using mainly Times New Roman 11 point font), not including the cover sheet, pages with graphical elements, and appendices. Narrative (body) text must be rendered in Times New Roman 11 point font, excluding headings which must be formatted bold and 12 point.

All pages following the Cover sheet (including appendices) must be numbered.

Graphical Elements

All graphics, photos, illustrations, tables, graphs, and charts must be embedded directly in the proposal document and be specifically referenced at least once in the narrative (body) of the proposal. All graphics must be accompanied by a caption that describes or explains the graphic.

Large Meeting Package

Any proposal that includes travel and/or a meeting, conference, workshop or gathering of 15 or more people (regardless of organizational affiliation) must include a draft large meeting approval package in the appendix of their proposal. Sample documents, guidance, and templates can be found on the USGS SharePoint installation at: *https://collaboration.usgs.gov/aei/conf/Conference%20Related%20Travel/Forms/AllItems.aspx* (*Accessible only to USGS Active Directory account holders). The Core Science Systems Mission Area also requires its personnel, to include a Correspondence Brief (see example in *Appendix D*).

Contact Jennifer Carlino (*jcarlino@usgs.gov*, 303.202.4260) or Elizabeth Sellers (*esellers@usgs.gov*, 703.648, 4385) with any questions or for additional guidance regarding large meeting approval packages.

Proposal Submission

Proposals should be submitted as an email attachment to *cdi@usgs.gov* by **5 pm Pacific Time on Friday November 9, 2012**. Proposal submitters will receive a confirmation email within 24 hours of submission.

If you do not receive a confirmation email, have difficulty submitting your proposal, or have extenuating circumstances that prevent you from submitting a digital version of your proposal as an email attachment by the specified deadline please contact Jennifer Carlino (*jcarlino@usgs.gov*, 303.202.4260) or Elizabeth Sellers (*esellers@usgs.gov*, 703.648.4385).

For answers to questions not addressed in these instructions, please contact Jennifer Carlino (*jcarlino@usgs.gov*, 303.202.4260) or Elizabeth Sellers (*esellers@usgs.gov*, 703.648.4385).

Proposal Review Process

Proposals will be reviewed in the order in which they are received. They will be considered based on the completeness of proposal narrative, meeting of stated basic eligibility (including submission and formatting requirements), completeness and accuracy of budget, in-kind match, and other SSF category requirements. Budgets and timelines will be evaluated for reasonableness and appropriateness to the CDI SSF as well as to project goals outlined in the proposal.

Proposal reviewers will evaluate and score each proposal using the narrative evaluation factors described below (see *Scoring* and *Proposal Guidance*). Through a peer consensus process, proposals will be ranked according to merit.

The selected proposals will be submitted to the CDI executive sponsors Kevin Gallagher (Associate Directory, USGS Core Science Systems), Linda Gundersen (Director, USGS Office of Science Quality and Integrity) and Cheryl Morris (Director, USGS Core Science Analytics and Synthesis) for final approval.

Proposal Review Panel

Proposals will be reviewed by a panel consisting of a peer group of professionals that are knowledgeable in data management, information technology, and other relevant disciplines in the context of the CDI. Any and all effort will be made to include broad disciplinary representation and expertise among the reviewers. If necessary, the reviewers may consult with subject experts not otherwise included in the main reviewing team.

Conflicts of Interest

The CDI recognizes that due to its collaborative nature and broad participation across the USGS and its partners, there is potential for overlap and conflicts of interest to occur or be perceived among members of the FY13 CDI Proposal Review Panel and proposal authors. Any and all efforts will be made to prevent the occurrence of such conflicts in all CDI activities including proposal review.

Proposal authors participating in the FY13 CDI Proposal Review Panel may not review their own proposals; and may not review other proposals submitted under the same SSF category as their own proposal. Prospective members of the FY13 CDI Proposal Review Panel will be asked to sign and submit a Conflict of Interest Statement and Certification (*Appendix F*).

Scoring

The proposal narrative will be evaluated and scored by the FY13 CDI Proposal Review Panel. Following the cover sheet all narratives should be divided into sections with clearly denoted headings for summary, scope, technical approach, expertise, commitment to effort, budget, timeline, and appendices. Each narrative section has been allocated a specific number of points against which it will be scored (Table 2). A total score of 100 points is possible. General guidelines for what each narrative section should contain are defined below. See *Proposal Narrative Guidance* for specific narrative requirements.

Narrative Section	Point Value
Summary	0
Scope	25
Technical Approach	25
Expertise	25
Commitment to Effort	15
Budget	5
Timeline	5
Appendices	0
TOTAL SCORE	100

Table 2: Proposal Scoring

Notification and Award

Both successful and unsuccessful applicants will be notified on or **by 5 pm Pacific Time on Friday December 7, 2012**. Release of CDI funds to successful applicants will occur in early spring of 2013, subject to FY2013 USGS budgetary deadlines and constraints. Proposals that are deemed inappropriate for funding under the CDI (e.g. new data collection, etc.) will be returned without review.

Contacts

Jennifer Carlino, *jcarlino@usgs.gov*, 303.202.4260
Elizabeth Sellers, *esellers@usgs.gov*, 703.648.4385

Proposal Narrative Guidance

Cover Sheet Contents (0 points)

The cover sheet will aid reviewers and the review process by allowing them to easily distinguish between proposals and see each proposal's basic elements at a glance. Provide a cover sheet that includes the primary CDI SSF Category under which the proposal is being submitted; the title of the project; the names, organizational affiliation, mailing address, phone number, and email address for up to two project leaders or principal investigators (other personnel and their contact information can be listed under Expertise); abstract; total funding amount requested; total in-kind funding proposed; list of specific datasets used/impacted/exposed; and an indication of geographic/geologic/ecosystem/habitat type, taxonomic or other context if applicable. An example cover sheet is provided in *Appendix C*.

* If some of the requested cover sheet contents will only duplicate information already provided in the abstract, those cover sheet contents may be excluded.

CDI SSF Category
Indicate the primary CDI SSF category under which the proposal is being submitted. Reference the CDI SSF Category by its full label e.g. CDI SSF Category: Management, Policy and Standards. If applicable, indicate any other CDI SSF categories this proposal is being submitted under.

Abstract
Provide a 200-250 word abstract that briefly summarizes the project's value or importance in the context of research science and data management/integration and its relevance to the CDI SSF. Include statements regarding assumptions or hypotheses that will be tested or data management/integration challenges that will be addressed. Describe any results, outcomes or products that will be generated by the project and their value or application to research science or data management/integration.

Specific Datasets Used/Impacted/Exposed
If specific datasets will be used, directly impacted, improved upon, or exposed for discovery, analysis, visualization or other applications as part of the proposed project, provide a list of these datasets by their title (if necessary, create a brief but descriptive title) and include the temporal extent, geographic extent, and number of records for each dataset as applicable/available (see *Appendix C* for examples).

Context - Geographic/Geologic/Ecosystem/Habitat/Taxonomic/Other
If the proposed project targets or will benefit research or data integration in regard to a specific geographic or geological region, ecosystem, habitat type or other recognized unit, describe this context by including a list of up to 3 (see *Appendix C* for examples). See also *Context* under General Evaluation Criteria.

Type of Product(s) Generated
Include a basic listing of the types of products that will be generated as a result of the project, including both ancillary and final deliverables e.g. mobile application, fact sheet, GIS shape file, GIS data layer, desktop data entry application, online data entry application, online data cleaning application, USGS Blog article or press release etc.

Summary (0 points)

The summary will repeat but provide more details about the information provided on the cover sheet including the following:

a) Introduction and background
b) CDI SSF Category (if applicable, indicate any other CDI SSF Categories this proposal is being submitted under)
c) Project Title
d) Names, organizational affiliation, mailing address, phone number, and email address of all Project Leaders or Principal Investigators (including those listed on the cover sheet)
e) Names, organizational affiliation, mailing address, telephone number and email address for all personnel involved (other than the Project Leads and/or Principal Investigators)
f) Collaborating organizations including the name and details (as in d above) of at least one point of contact for each
g) Names and details (as in d above) of any other relevant personnel or points of contact
h) Detailed description of geographic/geologic/ecosystem/habitat/taxonomic/other context of the project and its importance or value if applicable.

Proposals with incomplete summaries may be disqualified.

Scope (25 points)

Describe the project, its steps, goals, milestones, partners/participants, products, and outcomes. To demonstrate how well the proposal authors understand the premises of the CDI, describe how the project contributes to the CDI, its purpose and goals, and contributes to the CDI Science Support Framework. Explain the impacts of the project on the research needs and goals of the USGS e.g. through better data integration, application of more effective or efficient techniques, etc. Explain how the project will support, improve, or otherwise contribute to USGS science.

Note that as stated under the *Timeline* in the Eligibility and Expectations section of this document, CDI projects must be completed by August 31, 2013. With respect to scheduling, cost control, and other related project management concerns, the applicant(s) must identify any anticipated implementation challenges and describe how the project will address or overcome them. Include an analysis of the scope of work against the requested funding.

As a final requirement of scope, indicate how and where the results or products generated by the project will be published, promoted, and/or released for use to and by the CDI, USGS, and others (see *Product Delivery*).

The proposal evaluation will be based on the comprehensiveness and feasibility of the project scope.

Technical Approach (25 points)

Outline the steps, methodologies, technologies, and resources to be utilized in implementing the project. This includes facilities, technologies and associated platforms and hardware/software requirements, and other equipment and supplies supporting the project and/or its outputs or products. Indicate the project implementation approach using these materials and methodologies. Proposals will be evaluated on the degree to which applicants comprehend the tasks and procedures necessary to accomplish project objectives. Proposals demonstrating innovative, special or highly unique techniques for accomplishing the project objectives will be viewed favorably.

Project Experience (25 points)

Describe experience that would lead to a successful proposal. Identify specific individual(s) roles, qualifications and skills represented in the project team.

Evaluation will be based on how completely and fully the narrative addresses experience, and special qualifications and skills possessed for successful completion of the proposed project by the end of the performance period.

Curriculum vitaes of each or specific project team members may be included as appendices.

Commitment to Effort (15 points)

Describe the extent to which project results, products, and the data/metadata created will continue or be sustained after the performance period, e.g. metadata creation resource established, Web presence, or other sustainable measures.

Evaluation will be based upon the extent that the applicant will continue to support implementation of the project or products beyond the award period. Memoranda of Understanding (MoU) and/or letters of support/commitment may be included as appendices and will be considered in the evaluation.

Projects may include learning about and further exploring new technologies and ideas as deliverables and any resulting products may be experimental prototypes or other products not intended for continued support. In this case, describe why the project deliverables will not require or were not intended for long term sustainability; and how they will contribute to or result in beneficial outcomes or other items of value within the context of this Request for Proposals.

See also *Sustainability* under Eligibility and Expectations.

Budget (5 points)

Please provide a detailed budget for the project using Table 3. Include at least the following categories of information, separating the CDI funds from the in-kind match:

1) Salaries and Wages (see also *Budgetary Considerations*)
2) Fringe Benefits
3) Field Expenses
4) Other Direct Cost Line Items
5) Total Direct Charges
6) Indirect Charges (Overhead)

An example budget is also included in *Appendix E*.

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"

1. SALARIES (inc. number of hours and hourly rate):

Personnel	$	$
	$	$
	$	$
	$	$
Contract Personnel	$	$
	$	$
	$	$
	$	$
Total Salaries:	$	$

2. FRINGE BENEFITS:

Personnel	$	$
	$	$
	$	$
	$	$
Contract Personnel	$	$
	$	$
	$	$
	$	$
Total Fringe Benefits:	$	$

3. TRAVEL EXPENSES*:

Per Diem	$	$
Airfare	$	$
Lodging Cost	$	$
Vehicle Cost	$	$
Mileage	$	$
Other travel expense(s)	$	$
Total Travel Expenses:	$	$

4. OTHER DIRECT COSTS: (itemize)

Equipment (inc. software, hardware, etc.)	$	$
Supplies	$	$
Training	$	$
Publications	$	$
Office supplies	$	$

Communications Costs (inc. publications, domain registration fees, etc.)	$	$
	$	$
	$	$
Total Other Direct Costs:	$	$
Total Direct Costs:	$	$
Indirect Cost (%)	$	$
GRAND TOTAL:	$	$

*Noting the Bureau's goal of reducing travel by 30% in FY13.

Table 3: Budget

Timeline (5 points)

Provide an estimated timeline describing major and minor project phases, milestones, and deadlines as applicable and including any relevant procurement deadlines. Assume that funding will be awarded no later than March 30, 2013 and reference specific months or dates within FY2013 or in terms of *time from date of award* e.g. 3 weeks after date of award. *CDI projects must be scheduled for completion by August 31, 2013 to allow time for generating final reports and meeting end of fiscal year deadlines in September 2013.

Proposals may reference future timeline expectations beyond FY13 if they provide additional context and relevance to the project and its impacts.

See also *Timeline* under Eligibility and Expectations.

Appendices (0 points)

Appendices may include additional materials such as letters of support, curriculum vitaes of all personnel involved, draft large meeting approval package, or any other materials relevant to the explanation of the project. * In preparing appendices attention should be paid to the size and formatting requirements (see *Proposal Formatting*).

APPENDIX A – CDI Coordinators

Barbara Poore (CDI Citizen Science Working Group)

Dave Blodgett (Lead: CDI Technology Stack Working Group - *https://my.usgs.gov/confluence/display/cdi/Technology+Stack+Working+Group*)

Jennifer Carlino (*CDI Facilitator; CDI Data Management Working Group)

Terry D'Erchia (Branch Manager, Science Data Management, Core Science Analytics and Synthesis (CSAS))

John Faundeen (CDI Data Management Working Group - Best Practices Focus Group)

David Ferderer (CDI Data Management Working Group)

Janice Gordon (Lead: CDI Semantic Web Working Group - *https://my.usgs.gov/confluence/display/cdi/Semantic+Web+Working+Group*)

David Govoni (CDI Citizen Science Working Group)

Lakegan Harris (*CDI Facilitator)

Heather Henkel (Co-Lead: CDI Data Management Working Group - *https://my.usgs.gov/confluence/display/cdi/Data+Management+Working+Group*)

Megan Hines (Lead: CDI Citizen Science Working Group - *https://my.usgs.gov/confluence/display/cdi/Citizen+Science+Working+Group*)

Vivian Hutchison (Co-Lead: CDI Data Management Working Group)

Cheryl Morris (*CDI Executive Sponsor; Director, USGS Core Science Analytics and Synthesis (CSAS))

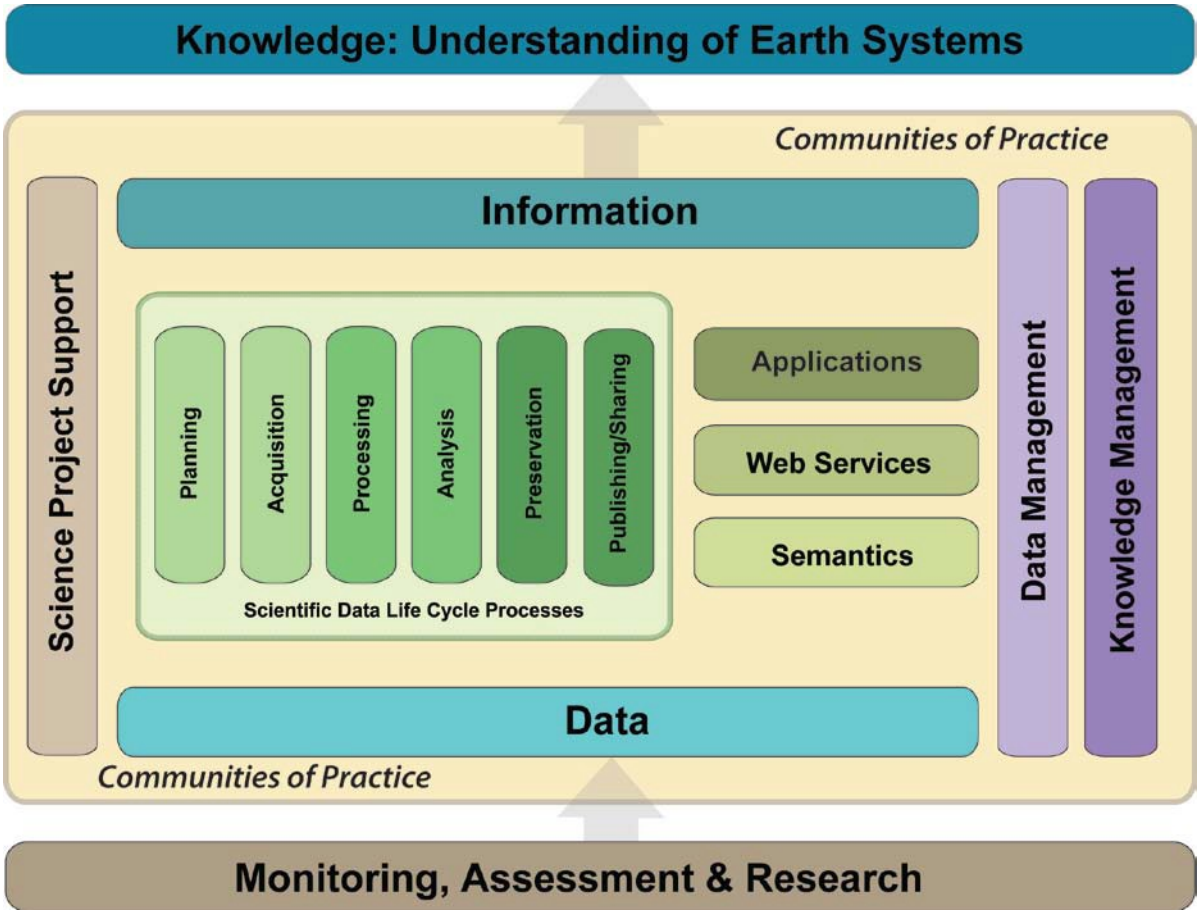
Elizabeth Sellers (*CDI Facilitator; CDI Citizen Science Working Group)

Steven Tessler (CDI Citizen Science and Data Management Working Groups)

Roland Viger (Lead: CDI Data Themes Working Group) *https://my.usgs.gov/confluence/display/cdi/Data+Themes+Working+Group*)

APPENDIX B – CDI Science Support Framework (SSF)

The CDI SSF provides a conceptual architecture that illustrates how the CDI contributes to Bureau-level data integration efforts; and defines how current and future CDI projects fit within the framework.



USGS Data Assets Flow through the CDI Science Support Framework. USGS data assets flow vertically through the SSF from a base of monitoring, assessment, & research through the Scientific Data Life Cycle (SDLC) processes, applications, Web services, and semantics. The assets are transformed into information products that benefit from data and knowledge management and also increase knowledge and understanding of the Earth's physical and biological systems. Data assets flow horizontally through the SSF from and through science projects to data and knowledge management, too.

The horizontal elements in the SSF represent the "what" of the CDI: products and tools, the things that contribute to the advancement of scientific data and that lead to the development of knowledge and understanding of the Earth's systems.

The vertical elements in the SSF represent the "how" of the CDI: the processes, the implementation of standards and best practices, and the interactions among people, data, and technology used to achieve data integration.

Individual Framework element descriptions:

Science Inputs (brown elements)

***Monitoring, Assessment, & Research*:** USGS scientists conduct monitoring, assessment, and research that generates data assets. Through the application of business, computational, and analytical processes and technologies, these assets are

converted into information products that can be shared with other researchers, stakeholders, and citizens to increase our knowledge and understanding of the Earth's physical and biological systems.

***Science Project Support*:** Successful science projects encompass a range of activities represented in the SDLC. At each step in the cycle, researchers and data stewards rely on an array of sophisticated tools and services for data, information and knowledge discovery, acquisition, integration, management, and sharing.

Communities of Practice (tan element)

Communities of practice are the foundation for CDI and all its products – the communities of people working towards the goal of advancing scientific data and information management and data integration across the USGS.

Data & Information Assets (blue elements)

USGS assets include **Data** (e.g., raw data, databases, and linked open data (RDF[1])); **Information** or derived/interpreted information products in the broad sense (e.g., published or shared maps, reports, datasets); and **Knowledge** of all types and in all forms — recorded, organized, and preserved in the form of various artifacts. Knowledge can then be improved; shared across groups, organizations, and domains; and reused to support individual and group learning and research.

Computational Tools & Services (green elements)

Scientific Data Life Cycle processes include tools and services that move data through the SDLC, human and machine interactions, and interactions with data through technology.

Detailed descriptions of SDLC Processes:

- **Planning** – A documented sequence of intended actions to identify and secure resources and gather, maintain, secure, and utilize data assets;
- **Acquisition** – The series of actions for collecting or adding to data assets;
- **Processing** – A series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use;
- **Analysis** – A series of actions and methods performed on data that help describe facts, detect patterns, develop explanations, and test hypotheses;
- **Preservation** – Actions and procedures to keep data for some period of time; to set data aside for future use; and
- **Publishing/Sharing** – To prepare and issue, or to disseminate data or information products.

Semantics convert raw data into data that can be interpreted by machines: Machine Readable Metadata, Semantic Mediation for Data Integration & Discovery, Ontologies/Vocabularies, and World Wide Web Consortium Standards.

Web Services include machine to machine data exchange, SOAP,[2] REST,[3] SPARQL[4] EndPoints, and other protocols and services.

Applications include human readable data services and user interfaces to data driven applications.

Management, Policy, & Standards (purple elements)

Data Management includes data and metadata standards and policies and occurs in all phases of the Data Life Cycle from scientific research to finished information products.

Knowledge Management involves the creation, standardized documentation, and organization of knowledge using tools such as SKOS[5] Vocabularies and information modeling, resulting in the formation of knowledge bases.

[1] Resource Description Framework
[2] Simple Object Access Protocol
[3] REpresentational State Transfer
[4] SPARQL Protocol and RDF Query Language
[5] Simple Knowledge Organization Systems

APPENDIX C – Example Cover Sheet

CDI SSF Category: Management, Policy and Standards
Submitted under other CDI SSF Categories?: (*specify*)

A Semantic Standard and Tool for Integrating Mineral Deposit Data from Rock, Soil, Water, and Plant Analyses.

Applicants/Principal Investigator(s):
Graham Granule, USGS Oregon Water Science Center, 2130 SW 5th Ave, Portland, OR 97201. Ph (503) 251-3200 Email *ggranule@usgs.gov*
Sandy Lake, Utah State University, Mineral Deposits Laboratory, 0900 Old Main Hill Rm 164, Logan, Utah 84322-0900. Ph (435) 797-1189 Email *slake@usu.edu*

Abstract:
[200-250 word block of text here.]

Total funding amount requested: $25,000
Total in-kind funding: $12,000

Datasets:
USGS National Geologic and Soil-Based Copper Survey, 1943-present, contiguous US, ~1.3 million; National Park Service Lichen-Indicated Selenium Deposition, 1993 – 2003, Nevada, 538,000; Environmental Protection Agency HUC Mineral Concentrations, 1987-present, non-contiguous US, 984,000.

Geographic/geologic/ecosystem/habitat/taxonomic/other context:
US national, karst formations

Type of Product(s) Generated:
Mobile application, GIS Data Layers

APPENDIX D – Example CSS Correspondence Brief

CORRESPONDENCE BRIEF

DTS **#:**
Date: June 13, 2012

Subject:

Request approval to hold the USGS Citizen Science Workshop on September 11-13, 2012 Denver, Colorado.

Background:

The purpose of the meeting is to facilitate communication and coordination among USGS scientists and key external partners to raise awareness of citizen science activities within the agency and to address the benefits and challenges of incorporating citizen science into research at the USGS. Citizen science plays a role in enhancing the data needed to address scientific and societal questions as noted by the Director in her quote from the USGS Press Release on the National Phenology Network …"we could turn the more than six billion people on the planet into components of our scientific observing system," said USGS Director Marcia McNutt. "We could make giant leaps in science education, improve the spatial and temporal coverage of the planet, lower the cost of scientific data collection, and all while making ordinary citizens feel a part of the scientific process."
(http://www.usgs.gov/newsroom/article.asp?ID=3195)

Summary:

The U.S. Geological Survey's (USGS) Core Science Analytics and Synthesis Program (CSAS) in collaboration with the Community for Data Integration (CDI) is requesting approval to hold the USGS Citizen Science Workshop. The workshop provides an opportunity for face to face exchange among citizen science researchers, technology specialists, and program managers who haven't met before, but as a group can help incorporate citizen science data and information using best practices and innovative technologies to enhance USGS science. Results from this workshop will include projects that might span multiple Mission Areas or Geographic Areas; making available USGS tools, including new mobile applications, and those supporting field observations and data collections; and documenting innovative techniques, such as whether mining data from social media can improve interdisciplinary scientific decision making. The workshop report will be published to include the results as well as address best practices, identify tools and technologies, and provide recommendations for improvements to the USGS volunteer handbook

Correspondence has been coordinated with:
Jennifer Carlino, CDI Coordinator, 303-202-4260

Reviewed and Approved by:

_____
Cheryl Morris, Director, Core Science Analytics and Synthesis Program (303) 202-4774

Approved by:

_____
Mark Naftzger
Deputy Associate Director, Core Science Systems

Approved by:

_____
Kevin T. Gallagher
Associate Director, Core Science Systems

APPENDIX E – Example Budget

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. SALARIES:		
Personnel		
John Doe, (Assistant Deputy Director & CIO), 50 hrs at $65/hr	$	$3,250
Jane Smith (GIS Manager), 125 hrs at $57/hr	$	$7,125
Summer Intern, 50 hrs at $37/hr	$	$1,850
Contract Personnel		
XYZ Collins (Streets/Addresses Data Mgr), 125 hrs at $48/hr	$	$6,000
Contractor Services (see explanation below)	$19,000	$
Total Salaries:	$19,000	$18,225
2. FRINGE BENEFITS:		
Personnel		
State Personnel (51%)	$	$6,235
Total Fringe Benefits:	$	$6,235
3. FIELD EXPENSES:		
NSGIC Mid-Year Travel - Estimate: $425 registration, $1500 air, $850 hotel, $125 meals, $100 taxi	$3,000	$
State GIS Conference		
Airfare for 4 people	$1,000	$
Lodging Cost for 4 rooms @ $100/night	$400	$
Per Diem – 4 people for 4 days @ $25.00	$200	$
Vehicle Cost	$100	$
Total Field Expenses:	$4,700	$
4. OTHER DIRECT COSTS: (itemize)		
Workshop Room Rental	$200	$
Equipment Rental, Videographer	$1,000	$
Publications	$50	$
Office supplies	$50	$
Training	$	$
Communications Costs - WebEx for additional participants	$100	$
Total Other Direct Costs:	$1,400	$
Total Direct Costs:	$25,100	$24,460
Indirect Cost (9.9%)	$2,485	$
GRAND TOTAL:	$27,585	$24,460

APPENDIX F – Example Conflict of Interest Statement and Certification

FY13 CDI Proposal Review Panel
Conflict of Interest Statement and Certification

Name: _____

Conflict of Interest Statement
Your designation as a FY13 CDI Proposal Review Panel member requires that you make USGS and CDI aware of any real conflicts, or the appearance of conflicts of interest you may have with any CDI funding applicants or institutions. If you have an affiliation or financial connection with an institution or individuals submitting an FY13 CDI proposal that might be construed as creating a conflict of interest, please describe any possible conflicts below.

The nature of the possible conflict of interest will determine your participation in discussions and voting for FY13 CDI proposals.

A conflict of interest may include one or more of the following. Please note that this is not an exhaustive listing.

- You are a CDI co-principal investigator.
- The CDI principal investigator is a recent former student or mentee.
- You are a consultant or co-author on the CDI proposal you have been asked to review.
- You are at the same institution as the CDI project's principal investigator or co-principal investigators.
- You are involved in or work for the same USGS Program, Science Center, Office, etc. of the CDI project's principal investigator or co-principal investigators.
- You are involved in the same CDI Working Group(s) as the CDI project's principal investigator or co-principal investigators.
- The proposed CDI project would directly benefit you, your work, or your products.
- You are being considered for employment with the Principal Investigator or his or her organization or USGS Program, Science Center, Office, etc ..
- You are a recent employee of the CDI project's principal investigator or his or her organization or USGS Program, Science Center, Office, etc..
- You have recently co-authored a paper with the CDI project's principal investigator.

Please fill out this form noting any possible conflicts for FY13 CDI proposals submitted for review by the panel.

If you have no conflicts of interest, please write ***None*** below, and sign and date this form.

I have a conflict of interest, potential conflict of interest, or the appearance of a conflict of interest with the following applications:

	Application #	Institution/PI	Nature of Conflict
1.			
2.			
3.			
4.			

Signamre: _____ Date: _ _ _ _ _ _