	State of South Carolina Request for Proposal	Solicitation Number: Date Issued: Procurement Officer: Phone: E-Mail Address:	5400008582 10/10/2014 DONNA J. POTTS, CPPB 803-896-6389 dpotts@mmo.sc.gov

DESCRIPTION: **Data Governance Framework & Master Data Management (MDM) Solution**

USING GOVERNMENTAL UNIT: **SC Department of Health & Environmental Control**

The Term "Offer" Means Your "Bid" or "Proposal". Unless submitted on-line, your offer must be submitted in a sealed package. Solicitation Number & Opening Date must appear on package exterior. See "Submitting Your Offer" provision.

SUBMIT YOUR OFFER ON-LINE AT THE FOLLOWING URL: http://www.procurement.sc.gov and/or
SUBMIT YOUR SEALED OFFER TO EITHER OF THE FOLLOWING ADDRESSES:

MAILING ADDRESS:	PHYSICAL ADDRESS:
B&CB, Div. of Procurement Services, ITMO 1201 Main Street, Suite 600 Columbia SC 29201	B&CB, Div. of Procurement Services, ITMO 1201 Main Street, Suite 600 Columbia SC 29201

SUBMIT OFFER BY (Opening Date/Time): **11/10/2014 by 14:30:00** (See "Deadline For Submission Of Offer" provision)

QUESTIONS MUST BE RECEIVED BY: **10/24/2014 by 13:00:00** **Send questions to dpotts@mmo.sc.gov** (See "Questions From Offerors" provision)

NUMBER OF COPIES TO BE SUBMITTED: **SEE INSTRUCTIONS ON PAGE THREE (3)**

CONFERENCE TYPE: **Pre-proposal conference** DATE & TIME: **10/22/2014 at 10:00 a.m.** (As appropriate, see "Conferences - Pre-Bid/Proposal" & "Site Visit" provisions)	LOCATION: **DHEC 2600 Bull Street, Board Room, 3420 (Board Room), Columbia, SC 29201.**
AWARD & AMENDMENTS	Award will be posted on **12/08/2014**. The award, this solicitation, any amendments, and any related notices will be posted at the following web address: http://www.procurement.sc.gov

You must submit a signed copy of this form with Your Offer. By submitting a proposal, You agree to be bound by the terms of the Solicitation. You agree to hold Your Offer open for a minimum of ninety (90) calendar days after the Opening Date. (See "Signing Your Offer" and "Electronic Signature" provisions.)

NAME OF OFFEROR Executive Information Systems (EIS) (full legal name of business submitting the offer)		Any award issued will be issued to, and the contract will be formed with, the entity identified as the Offeror. The entity named as the offeror must be a single and distinct legal entity. Do not use the name of a branch office or a division of a larger entity if the branch or division is not a separate legal entity, i.e., a separate corporation, partnership, sole proprietorship, etc.
AUTHORIZED SIGNATURE R. Patrick Krause (Person must be authorized to submit binding offer to contract on behalf of Offeror.)		TAXPAYER IDENTIFICATION NO. 52-2198860 (See "Taxpayer Identification Number" provision)
TITLE Vice President (business title of person signing above)		STATE VENDOR NO. 7000038535 (Register to Obtain S.C. Vendor No. at www.procurement.sc.gov)
PRINTED NAME R. Patrick Krause (printed name of person signing above)	DATE SIGNED 11/10/2014	STATE OF INCORPORATION Virginia (If you are a corporation, identify the state of incorporation.)

OFFEROR'S TYPE OF ENTITY: (Check one) (See "Signing Your Offer" provision.)

___ Sole Proprietorship ___ Partnership ___ Other_____

X Corporate entity (not tax-exempt) ___ Corporation (tax-exempt) ___ Government entity (federal, state, or local)

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(Return Page Two with Your Offer)

HOME OFFICE ADDRESS (Address for offeror's home office / principal place of business)	NOTICE ADDRESS (Address to which all procurement and contract related notices should be sent.) (See "Notice" clause)
6901 Rockledge Drive Suite 600 Bethesda, MD 20817	R. Patrick Krause 6901 Rockledge Drive Bethesda MD, 20817 (301)581-1099 (301)581-2573 Area Code - Number - Extension Facsimile PKrause@execinfosys.com E-mail Address
PAYMENT ADDRESS (Address to which payments will be sent.) (See "Payment" clause) X Payment Address same as Home Office Address ____Payment Address same as Notice Address **(check only one)**	ORDER ADDRESS (Address to which purchase orders will be sent) (See "Purchase Orders and "Contract Documents" clauses) X Order Address same as Home Office Address ____Order Address same as Notice Address **(check only one)**

ACKNOWLEDGMENT OF AMENDMENTS

Offerors acknowledges receipt of amendments by indicating amendment number and its date of issue. (See "Amendments to Solicitation" Provision)

Amendment No.	Amendment Issue Date	Amendment No.	Amendment Issue Date	Amendment No.	Amendment Issue Date	Amendment No.	Amendment Issue Date
1	10/31/2014						

DISCOUNT FOR PROMPT PAYMENT (See "Discount for Prompt Payment" clause)	10 Calendar Days (%)	20 Calendar Days (%)	30 Calendar Days (%)	_____Calendar Days (%)

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End of PAGE TWO

November 12th, 2014

Donna J. Potts, CPPB
South Carolina Department of Health and Environmental Control (SC DHEC)
B&CB, Division of Procurement Services, ITMO
1201 Main Street, Suite 600
Columbia, SC 29201

Dear Ms. Potts:

EIS and its subcontractor, SAS, appreciate the opportunity to respond to the State of South Carolina Department of Health and Environmental Control's (SC DHEC) Request for Proposal 5400008582 for a Data Governance Framework and Master Data Management (MDM) Solution. EIS is pleased to offer the SAS Master Data Management solution, which will pull and cleanse data, ultimately creating a golden record within this agency and building a robust foundation for analytics. SAS' Analytic offerings will then empower SC DHEC to utilize this Single Source of Truth (SSOT) to ensure strategic initiatives and assist SC DHEC with their compliance with federal and state regulatory laws. SC DHEC will benefit from EIS and SAS' extensive experience with other MDM and data analytic implementations.

EIS acknowledges receipt of Amendment 1 to the RFP.

R. Patrick Krause is the individual authorized to sign contracts on behalf of EIS, and his contact information including email address is provided below. Please send all notices relative to the contract to R. Patrick Krause.

Our team is excited by the opportunity to partner with SC DHEC by providing a unique MDM and analytics solution that will allow this agency to continue their mission of protecting public health, coastal resources, and the state's land, air and water quality.

Sincerely,

R. Patrick Krause

R. Patrick Krause, Vice President
PKrause@execinfosys.com
(301) 581-1099

TECHNICAL PROPOSAL

SAS Data Governance Framework and Master Data Management (MDM) Solution

South Carolina Department of Health and Environmental Control (SC DHEC)

November 12th, 2014

THE POWER TO KNOW.

Contact Info

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Account Executive
(919) 531-1257
Albert.Blackmon@sas.com

EIS Contact:
R. Patrick Krause
Vice President
(301) 581-1099
PKrause@execinfosys.com

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B. Executive Summary

EIS commends SC DHEC on initiating a data governance framework and MDM solution

The South Carolina Department of Health and Environmental Control (SC DHEC) is a large agency with many diverse program areas to manage. As the agency modernizes its operations to better serve the citizens of South Carolina, it is taking a critical step in establishing a data governance framework across the agency and implementing this framework through a master data management solution. Data integration, quality, and management are the cornerstones of reliable information that, in turn, will make compliance efforts more efficient and reporting and analytics more robust.

EIS' proposed solution will allow SC DHEC to create a golden record or single source of the truth

For many of SC DHEC's program areas, the agency has an operational system that contains data on the agency's customers. The disparity of these operational systems has led to numerous challenges in both information management and compliance. Medical companies with multiple locations that have multiple sites at each location with multiple individuals for those sites have made it difficult for the agency to uniquely identify the correct information for permitting, billing, and inspections. A data governance strategy combined with a master data management solution will map SC DHEC's existing data sources to create processes and policy to form a golden record or single source of the truth, for all relevant entities.

SAS has been a leader in data integration, quality, management, and governance for over 38 years

SAS has made data a priority for 38 years because we realized from our inception that organizations cannot make data driven decisions with our analytics if their data is unreliable. SAS provides a unique perspective to organizations modernizing systems because our solutions address every stage of an organization's journey from data migration, data quality, and data management to analytics and reporting. Unlike other vendors, our analytics are infused into our data tools to ensure our customers have reliable golden records. Further, our suite of technology is all SAS. SC DHEC will never run the risk of technology that is difficult to integrate, contains glitches from disparate updates, or is comprised of a blend of products that worked in 2014 but won't work in 2030.

EIS has provided a high-level hardware architecture to meet the needs of SC DHEC's project

For SAS' proposal, we are suggesting a development, test, and production environment. Each of these environments can be virtualized as specified in the Solicitation. A high-level view of the architecture of each environment is provided in the Technical Response Section 5(e). Based on the information that SC DHEC has provided, the following hardware allocation is recommended:

Production Environment

- SAS Metadata - 4 Core with 24 GB of RAM (100 GB of Storage)
- Data Management – 16 Core with 128GB of RAM (1 TB of Storage)

- SAS Mid-Tier – 4 Core with 32GB of RAM (Total 1.6TB of storage)
- SAS Analytic Compute Server – 8 Core with 64GB of RAM (1 TB of storage)
- SAS VA/VS Server – 16 Core with 256GB of RAM (1.2TB of storage)

Test Environment

- SAS Metadata - 2 Core with 12 GB of RAM (100 GB of Storage)
- Data Management – 4 Core with 32GB of RAM (200GB of Storage)
- SAS Mid-Tier – 2 Core with 16GB of RAM (Total 100GB of storage)
- SAS Analytic Compute Server – 4 Core with 32GB of RAM (200GB of storage)
- SAS VA/VS Server – 8 Core with 128GB of RAM (400GB of storage)

Development Environment

- SAS Metadata - 2 Core with 12 GB of RAM (100 GB of Storage)
- Data Management – 8 Core with 64GB of RAM (500GB of Storage)
- SAS Mid-Tier – 4 Core with 32GB of RAM (Total 100GB of storage)
- SAS Analytic Compute Server – 4 Core with 32GB of RAM (500GB of storage)
- SAS VA/VS Server – 16 Core with 256GB of RAM (800GB of storage)

SAS resources will bring past experience and best practices to bear this opportunity

In addition to market-leading technology, SAS believes that its people are a key factor of customer success. Within our Advanced Analytics Lab for State and Local Government, SAS has over 400 individuals with Master's and Ph.D.'s that have helped government agencies, just like SC DHEC, solve large data management problems to create a solid foundation for compliance, reporting, and analytics.

We truly appreciate the opportunity to discuss our approach to Data Governance and our Master Data Management Solution with you. We look forward to continuing the conversation.

EIS looks forward to future discussions around this opportunity

Upon award, SC DHEC will contract with EIS as the Prime Contractor, which contracts will include an End User License Agreement for Commercial Off the Shelf Software and a Service Level Agreement. EIS will enter into a subcontract with SAS for the performance of all of the services described in this Technical Proposal. EIS, as the Offeror and Prime Contractor, assumes full responsibility for the performance of SAS, its subcontractor, as required by the Terms and Conditions of the RFP.

C. Technical Proposal

1. Objectives

1. ***Develop and implement an Agency Data Governance and Management Policy via team input from SCDHEC IT and Program Area constituents.***

EIS will direct SAS to provide the following services in order to develop and implement an Agency Data Governance and Management Policy.

a. ***Define policies which conform and compliment standard cyber security policy design related to information risk management, designation of data as to criticality, confidentiality, and protection. (NIST 800-53, FISMA, etc.)***

SAS will create Data Classification Policies via team input from SC DHEC IT, Program Area constituents, and SAS Data Governance consultants utilizing industry and SAS best practices. These policies will describe the data classifications and establish the appropriate security level of protection for each data type identified in accordance with state and federal regulations. SAS, will collaborate with the agency to determine the relative criticality, confidentiality, and protection of specific data elements, including consultation with SAS security experts to ensure the appropriate level of security and conformance with established security standards such as NIST 800-53, FISMA, etc. SAS will use this determination to form an agency-wide information risk management policy within SC DHEC.

In addition, SAS' MDM solution will allow the agency to monitor compliance against the developed policies through event based business rule monitoring. Furthermore, the appropriate Data Stewards can act within the confines of the Data Governance program for refinement of policies or recommendations for new policies as future compliance efforts mandate.

b. ***Define policies which implement current industry best practices in Data Management and Governance***

SAS will co-define with SC DHEC polices that implement industry and SAS best practices. These policies will be created as part of our assessment of DHEC's current data management environment. One of the key business differentiators of SAS Data Governance and Management is that our consultants use industry best practices but also customize policies that are specific to the agency. Other vendors may deliver canned polices without understanding the environment but SAS believes that working as a team with the customer helps establish useable policies that fit the organization's needs. Establishing initial policies with the new data stewards and data governance organization helps establish a data governance culture and puts in place the processes and skills to grow data governance maturity after SAS has left. This method also helps establish and train the data governance organization and accelerates the process of establishing data governance.

SAS takes under consideration a wide variety of factors when establishing Data Governance and applies a real world approach to all aspects of the program including Data Stewardship. After conducting a SWOT

analysis, SAS will determine the best method of Data Stewardship based on business and cultural considerations. SAS has implemented four primary types of Data Stewardship models with the following orientations: data (subject area), business function or organizational unit, process, and application or system-facing data stewards. A fifth model, project-based data stewardship, is a short-term model that's not recommended (or practical) long-term. Finally, SAS does not implement Data Governance for the sake of data governance; SAS works with the agency to build a robust foundation for reporting and analytics to help the organization move to data-driven decisions.

c. *Deliver approved Policies for the Agency*

SAS will deliver approved policies to the agency, including data governance, operating procedures, process definitions and templates including standing agenda, intake process and prioritization approach used for policy creation and approvals SAS will help identify policy working groups that contain the experts and stakeholders for the policy domain and work as a team to create the appropriate policy content. A policy guide's execution has to be specific to the regulations, laws, and culture of SC DHEC. SAS delivers the tools, processes, framework, and the coaching for SC DHEC to implement a working data governance organization and from that foundation, SAS can collaboratively deliver policies to operationalize the Master Data Management solution. Once the data governance organizations are in place and policies are outlined, SAS will deliver a document with the approved policies and established stakeholders as part of a heavy collaboration with SC DHEC.

2. *Develop Business Processes for Data Governance and Management including business work flows and the necessary roles/responsibilities for the ongoing operational structure to support Data Governance and Management.*

a. *Recommendations for a phased approach for implementation and staffing requirements will be included.*

The SAS Data Management Masterplan™ and Launch will establish the foundation for successful Data Governance and deliver a custom data governance master plan for SC DHEC that includes a phased approach. SAS will deliver recommended business processes, workflows, staffing recommendations with roles and responsibilities as part of this service. SAS will also provide consulting services to initiate the implementation of data governance and policy creation. This will ensure the adoption and success of the Data Governance program, MDM program, metadata, and the data quality initiatives.

The Data Management Masterplan will deliver an organizational design and roadmap (in the form of a PowerPoint presentation) that represents a customized collection of tactics your organization can use to initiate and sustain a robust data governance program as part of this phased approach.

- Defined an organizational blueprint for Data Governance
- Data Governance rollout, communications and training strategy
- Identified key risks and considerations
- Policy and Standards recommendations
- Recommended key data governance functions (e.g. councils or stewardship teams), associated roles and responsibilities, and rules of engagement with existing organizations or processes

b. *Provide industry references which support the conclusion that the recommended processes are best practices (i.e. Gartner reviews, etc.)*

SAS is a leader in establishing data management best practices and SAS is in alignment with best practices from organizations such as 'The Data Governance Institute' and 'Data Management Association' (DAMA). Independent, third-party evaluators have rated SAS' Master Data Management tools very highly. Gartner positions SAS as a Leader in the Gartner Magic Quadrant for Data Integration Tools. SAS was named a strong performer in the Forrester Wave™: Data Governance Tools, Q2 2014 report. The SAS team will bring this wealth of experience and best practices to collaborate with SC DHEC to create Data Governance policies.

Industry Leaders

Throughout the industry, SAS is known as a leader in data management specialists, and the company's partners and senior consultants are regularly asked to write and speak for industry-leading organizations. SAS experts have authored articles that have appeared in magazines and industry journals, including *Oracle Magazine*, *Information Week*, *Teradata Magazine*, *CIO* Magazine, *Intelligent Enterprise*, *Information Management, the Chicago Tribune*, *The Washington Times*, *Computerworld,* and *Newsweek.com*.

The acclaimed books *e-Data* and *The CRM Handbook* were both written by Baseline Partner, Jill Dyche, now Vice President of SAS Best Practices. *The CRM Handbook* (Addison Wesley, 2002) is the best-selling book on the topic of Customer Relationship Management. Jill has co-authored her third book with Baseline Partner Evan Levy. ***CUSTOMER DATA INTEGRATION: REACHING A SINGLE VERSION OF THE TRUTH*** (John Wiley & Sons, 2006) is the first book on the topic of CDI and MDM. Baseline also published the first-ever e-Book on Data Governance, *Maps, Mechanics, and Morals When Launching Your Data Governance Initiative* (2010).

Our partners also serve as judges for the following industry best-practice awards:

- The Intelligent Enterprise RealWare Awards
- The Data Warehousing Institute Best Practice Leadership Awards
- TechTarget SearchDataManagement.com Vendor Leader Awards
- CRM Magazine CRM Market Awards (Data Quality, Campaign Management, and Data Integration categories)

3. *Deliver a data mapping which inventories all current DHEC transactional systems which defines the "master" data source and provides configuration mappings.*

SAS will develop source to target data mappings as part of the MDM Implementation. These mappings are developed after the business and data requirements have been completed. There is often additional data beyond what is required to complete a master record that support the MDM business objectives and that data would also be part of the mappings and data model. SAS will create a data model for the target database based on the MDM requirements and will create source to target data mappings that provide data lineage from source to target with the required data quality, data migration, and data integration specifications. These mappings then become the input to the design and coding phase.

Leverage the current DHEC system/configuration diagrams.

SAS will leverage current SC DHEC documentation and diagrams when possible to expedite the project. SAS will review the existing system/configuration diagrams during Phase 1 as part of preparation for implementation in Phase 2.

a. *Propose Data Stewards (organization) based on current use profiles.*

A key deliverable of the Data Management Masterplan described in detail in the document section below titled, "Detailed Description of SAS Services" will be an organizational design with staffing recommendations with roles and responsibilities for all data governance and data management positions including data stewards. The data steward stewards will have job descriptions that delineate their responsibilities and authority. A pragmatic approach for data stewardship selection is to use subject matter experts from the business organizations to provide for some of the stewardship functions. The SAS DM Masterplan looks at the current data management needs and organizational capabilities and recommends the best fit data steward organizational model.

SAS takes under consideration a wide variety of factors when establishing Data Governance and applies a real world approach to all aspects of the program including Data Stewardship. After conducting a SWOT analysis SAS will determine the best method of Data Stewardship based on business and cultural considerations. SAS has implemented four primary types of Data Stewardship models with the following orientations data (subject area), business function or organizational unit, process, and application or system-facing data stewards. A fifth model, project-based data stewardship, is a short-term model that's not recommended (or practical) long-term.

In practice, hybrid models are often employed that promote enterprise-oriented stewardship while utilizing the strengths and orientation of the current organization. For example, an organization may assign customer-data stewards for each process that creates or maintains customer data. Within each model, multiple data stewards may be assigned to a given "domain". For example, an organization may have multiple data stewards for party data segregated by sub-entities or a process or functional orientation. The data stewardship model that a program begins with often evolves over time as data governance and stewardship capabilities mature and initial workloads are addressed.

b. *Include a data dictionary, meta data definitions, and relationships between the current transactional application configurations.*

SAS will include a data dictionary, meta data definitions, and relationships between the current transactional application configurations. SAS will collect business metadata to be included in the data dictionary (BDN) as part of requirements phase and the logical data model creation. SAS recommends that a metadata policy be created that identifies who is responsible for the collection, maintenance, and storage of metadata. The data stewards are often a key resource for metadata. This effort will configure metadata for all libraries, sources and targets as well as ETL job flows, as well as capturing data linage and data relationships.

i. *Identify all current data utilized (example: spreadsheets, databases or applications), any related manuals or documentation, and the technologies and infrastructure supporting those systems.*

SAS will capture all data sources for MDM in the source to target data mapping specifications. The SAS MDM Implementation will capture physical metadata for each source system. This effort will capture metadata about each data source such as name, description, owner, type of data, frequency of updates, etc.

ii. *Assess data redundancies between applications systems.*

SAS can help to discover several types of possible data redundancies. First, we can find duplicate records in the same table. Next, we could find duplicate records in different tables. Finally, we can find records that have the same information represented differently. Our data profiling helps find these redundant records; we work with the data experts to make the rules for managing these redundant records; then we implement rules to eliminate duplicates, and select the best (surviving) record to be available in the MDM hub.

iii. *Assess data quality.*

SAS will provide a detailed assessment of the quantity, complexity, and quality found in the source data. In order to complete the data profiling service, SAS will need SC DHEC to provide extracts from all sources containing master data elements (full name, address, phone, email, company, etc.).

The expected outcomes from the data quality assessment are:

- A Data Assessment Narrative document providing a broad description of the data quality issues discovered in the individual sources.
- A Data Quality Summary Findings document with details on data quality issues in each source at the individual element data level.
- An executive-level presentation of the findings.

iv. *Map existing data to new data dictionary for shared master data components (see diagram 1 of this solicitation).*

The MDM implementation will capture and store both business and physical metadata in a data dictionary.

c. *Offeror will present results onsite and provide digital copy of all findings.*

SAS will have presentations and reviews at key milestones and deliver digital copies of all deliverables and findings.

4. *Procurement of an MDM tool including licensing for DHEC users.*

a. *Tool will include a variety of commonly utilized analytic toolsets.*

SAS' proposed solution includes both a Master Data Management (MDM) solution and a robust set of analytic tools. Combining the MDM Solution with this tool set will allow the agency to cover the analytical life cycle of

data extraction to data management to reporting to analytical modeling to model refinement. SAS is unique in that the MDM Solution, with its data quality foundation, can feed directly into analytic tools resulting in high-quality results and trustworthy data-driven decisions.

For 38 years, SAS has been a leader in the data collection and data integration industry. In fact, SAS has engineered more native database interfaces (access engines) than any competitor in the market. Since 1976, SAS experts have integrated data, ensured its quality, and, frequently, employed a master data management strategy. We have hundreds of employees dedicated to gathering and organizing every type of data source. SAS data management and analytic experts will apply their experience to standardize the integration efforts and reduce the overall project costs for the SC DHEC.

SAS has consistently been positioned in the Leaders Quadrant of the Gartner Magic Quadrant for products such as data quality, enterprise business intelligence and data mining. Not only is SAS the largest vendor in the overall data mining market, we have the most established track record of customer successes. Gartner cites our strength being due to our wide set of tool-based capabilities along with our expanding numbers of packaged solutions. SAS is the overwhelming leader in the advanced analytics market with 35.4% market share, dwarfing sales of the other named advanced analytics providers' whose combined market share was only 22.3 percent of the 2013 market. (IDC, July 2014).

b. *Tool will provide delivery options such as executive dashboards.*

SAS' MDM Solution and analytical toolset will provide SC DHEC with a robust set of delivery options that include the capability to create executive dashboards. These dashboards and other delivery options will provide the agency numerous ways to create data visualizations and reports, including some methods that leverage in-memory analytics.

c. *Tool will provide easy to use query capabilities and operate from the standard DHEC desktop configuration.*

SC DHEC will be able to access SAS' MDM Solution and the analytical toolset from standard agency desktops. These tools will provide SC DHEC the capability to query the agency's data through an intuitive interface with multiple ways to build queries that include through SAS code and point-and-click.

d. *All tools will meet DHEC security requirements for access for on or offsite utilization.*

SAS Software provides a variety of security configuration options. SAS Remote Managed Services will work with SC DHEC to configure the SAS software appropriately for access and offsite utilization.

e. *All tools will interact and interface with the current DHEC portfolio for transactional data for the key master data selection.*

Data interoperability is a strength of the SAS MDM solution. SAS can easily be configured to interoperate with ODBC and flat file data extracts. SAS Remote Managed Services will work with SC DHEC Database Administrators (DBAs) to configure these data connections.

f. *Provisions for ongoing data communications, quality assurance and delivery.*

The SAS MDM solution includes a unified Web-based console**.** This console is used to monitor data quality jobs, and view data issues and governance activities.

5. *Implementation of the MDM tool with the current enterprise shared data portfolio on DHEC's internal infrastructure.*

a. *Telephone support for one (1) year after implementation for technical issues.*

Included in EIS' first annual period of its software license is twelve months of technical support. For support following the initial twelve months, please see our pricing response that offers extended support options. SC DHEC can use any of the following methods to report problems to SAS Technical Support staff:

- **Telephone support.** Your users can call (919) 677-8008 for Technical Support to report trouble or a problem. Each call is answered by an Assistant Technical Support Analyst, who will direct your call to an analyst who specializes in the area of your problem. Telephone support is provided weekdays for new questions: 9:00 a.m. to 8:00 p.m., Eastern Standard Time. Limited support is available between 5:00 p.m. and 8:00 p.m. for questions with an assigned tracking number. For critical problems after normal support hours, callers are directed to one of our world-wide support centers in North America, Europe, or Asia/Pacific, thus providing 24-hour "follow the sun" support. Note that after-hours support is limited to critical problems.
- **Web and E-mail.** Through our World Wide Web site (http://support.sas.com) users can report problems to Technical Support and receive a response via e-mail or phone, update existing problem entries, and review problem status. Our Electronic Mail Interface to Technical Support (EMITS) is available for users without web access to report problems, obtain information, update problems, and check on problem status through e-mail. Once a problem is reported to Technical Support electronically, a tracking number is assigned, and the problem is handled in the same manner as problems reported by telephone, with the exception that most correspondence about the problem is then conducted via e-mail.
- **Problem submittal via fax.** Customers can also submit technical issues or questions via fax to (919) 531-9449. When using fax, please provide complete customer contact information (including site number), a complete description of the issue/problem, and an indication as to severity.

SAS Technical Support will provide telephone support for the SAS products, as defined above. Additionally, with the Remote Managed Service relationship (as proposed), a team of experts can also actively monitor your SAS solutions from our operations center 24 hours a day, 365 days a year, responding to incidents, and taking the lead in co-managing your SAS solutions. You retain your access and control, but with the added benefits of SAS Solutions OnDemand customer support, best practices, and issue resolution processes. Together we anticipate, identify, and resolve issues faster, more accurately, and less expensively with greater visibility. SAS' enterprise-class support provides the necessary foundation for you to successfully run your solution. Solutions are hosted and made available 24/7, with a 99 percent uptime guarantee.

Remote Managed Services offer a team of SAS System Administrators, Database Administrators, Information Technology experts, and Certified Project Management Professionals to assist administration, monitoring,

incident resolution, reactive problem management, service level management, standard changes, and optimization. SC DHEC can leverage these resources along with their own IT staff in tandem with SAS Technical Support.

Remote Managed Services can be offered to SC DHEC as long as it continue to renew maintenance of the Software.

b. *Configuration of the MDM analytics tools.*

SAS Remote Managed Services (RMS) provides initial installation and ongoing services to configure the software as well as ongoing management and monitoring of the SAS environments. This will provide SC DHEC with a turn-key, in-house SAS environment, which will allow SC DHEC to leverage the best practices from our hosted SAS Solutions on Demand (SSOD) operations. This will provide the agency an enhanced level of operational, administrative, and maintenance services, resulting in improved system uptime and performance. Additionally, technical and analytical resources are shared between hosted and RMS customers, so there will be opportunities to recognize some efficiencies, given SSOD's familiarity with SC DHEC data and processes through the Certificate of Need and Health Inspections project. With RMS, SAS is able to provide the same level as service and support to SC DHEC as you experience in your hosted environment with SAS.

With respect to compliance with any security policies related to the RMS, upon award SAS and SC DHEC will review relevant SAS and SC DHEC security policies and procedures and mutually agree to the security standards applicable to the performance of the RMS.

6. *Data reconciliation for key master data elements defined in diagram one (1) of the solicitation.*

a. *Recommendations for any additional key master data elements discovered during data mappings.*

SAS will use the results from the requirements phase and the identified MDM use cases for the data to identify the data elements required for the master data records and any other data requirements. When the source to target data mappings are developed, SAS will use the data quality assessment and the data model to determine if all the required data is available for the target data model.

b. *Recommendation for key master data sourcing.*

SAS will use results from the requirements phase and the identified MDM use cases for the data to identify the data elements required for the master data records and any other data requirements. SAS will make recommendations based on the MDM use cases and business requirements and the data quality assessment of identified source systems. Data Profiling will also determine if additional data elements should be included or if those elements selected are not reliable enough to use in the definition of the master record.

c. *Data "cleansing" of agreed upon key master source data with analytical tools and external third party products for specific data types (address, locations, etc.).*

SAS will run data through SAS data cleansing, standardization, address validation, and zip+4 geo-coding processes. This process will utilize data management best practices and SC DHEC specific business rules combined with customized filtering and standardization schemes developed in the data preparation phase. No third party software requiring separate licensing is included in the SAS MDM solution.

d. *Provisioning of "cleansed" data for use as a data source to DHEC for analytics use including the transformation, validation, verification and consolidation of duplicate data.*

SAS will create one or more standard output files, along with documentation, that will allow any subscribing system to intake that output file for its use. SAS best practice is for one set of standard files to be created for provisioning and each subscribing source system filter the rows and columns for the specific content they require. This reduces the number of files being created and the long-term maintenance issues.

e. *Delivery of a single master data record set which will be governed by DHEC policies which includes data input from existing DHEC transactional systems which have been verified and serve as the single, authoritative repository of enterprise shared data for the agency.*

SAS' solution for SC DHEC is comprised of the tools necessary to achieve the RFP objectives. This includes a single view of the person and company, improving data quality across the organization and eliminating duplicate information across disparate systems while providing the foundation for long term goals of expanded reporting and advanced analytics. Data quality to ensure that the MDM hub is seen as the authoritative repository is the first critical step of this effort. An initial phase will focus on profiling and modeling SC DHEC source data to support the near term development of a single view of the person and company.

7. Training to support ongoing operations for the Data Management and Governance program.

Data Management Masterplan and Launch service will:

- Develop Data Governance training and communications plans and collateral
- Help facilitate initial Data Governance meetings and the policy creation process to train the new Data Governance organization
- Support and/or facilitate initial Data Governance kick-off meetings
- Provide training in the delivered data governance processes and framework

In addition to the training supported through the Data Management Masterplan and Launch, after the SAS solution implementation additional tool specific training is recommended to ensure SC DHEC users are harnessing the full power of our solution. We have provided our recommended training below in response to requirement 7.b. and the specific training fees can be found in our separate pricing response.

a. *Training for the agency program organizations which include the Policy, Processes, and MDM tool capabilities.*

The SAS Data Management Masterplan and Launch service will include training around policy and processes. Specifically during the Data Management Masterplan and Launch, knowledge transfer around the

data governance processes recommended to be put in place and the policy creation and approval process will be accomplished. SAS will provide training for the MDM tool in the following course that is included as part of this proposal:

- SAS Master Data Management – This course covers how to operate and administer the SAS Master Data Management solution. From entity resolution to data remediation, the material will cover the breadth that is necessary to make both admins and end-users proficient.

b. ***Technical training for the agency program organizations on the use of the MDM tool.***

Training and knowledge transfer are an integral part of the SAS MDM delivery methodology. SAS' approach ensures that the SC DHEC staff will know how to support and extend the solution's capabilities once the consulting team has completed their assignments. In order to protect SC DHEC's investment in the SAS solution, aggressive transfer of knowledge regarding system configuration, custom development, and support activities will be ongoing throughout the project lifecycle.

SAS understands that training is a very important element of executing an information strategy through a Master Data Management Solution. As part of this proposal, SAS is including the following courses that will be given on-site at the agency:

1. **SAS Platform Administration: Fast Track** – This training course provides accelerated learning for those students who will administer the platform for SAS Business Analytics.

2. **SAS Data Integration Studio: Fast Track** – This course is for platform administrators who need to administer SAS Data Integration Studio.

3. **SAS Analytics Training** – This course is for users who do not have SAS programming experience but need to access, manage, and summarize data from different sources, and present results in reports and graphs. This course focuses on using the menu-driven tasks in SAS Enterprise Guide, the point-and-click interface to SAS, to create queries and reports.

4. **SAS Visual Analytics: Fast Track** – This course teaches how to explore data and build reports using SAS Visual Analytics. You will learn how to build queries in SAS Visual Data Builder and you will also learn to utilize SAS Visual Analytics Administrator.

5. **SAS Master Data Management** – This course covers how to operate and administer the SAS Master Data Management solution. From entity resolution to data remediation, the material will cover the breadth that is necessary to make both admins and end-users proficient.

After these courses are provided in Phase III of the project, SAS will provide refresher courses during Year 2 in the form of 2 day workshops. These workshops will be held once per quarter.

As part of SAS' training offering, SAS advocates a "train-the-trainer" approach, whereby SAS consulting resources will train a core team of the SC DHEC organization's users on system functionality usage, and those SC DHEC resources assume responsibility for training the rest of the SC DHEC user community.

As the project moves into later stages, more knowledge will be transferred from the SAS consulting team to the SC DHEC organization's project team members. Through this process of active participation, training, and knowledge transfer, the SC DHEC team will become proficient in the use of the solution and the ability to maintain an in-house capability.

Future training options outside of this proposal include the development of a comprehensive training program adapted to SC DHEC's specific needs through computer-based, and/or instructor-based courses, as well as trainers' kits. Training is available at the SAS main training center in Cary, NC, as well as at facilities throughout the U.S. (including one conveniently located in Charlotte, NC). SAS can also provide formal classroom training on-site at a SC DHEC facility depending on SC DHEC's specific training needs and resource availability. Below, SAS has provided descriptions of the flexible training formats available to SC DHEC below in response to Training requirement d.

c. *Technical training for IT.*

Training for the Master Data Management solution will be provided via consulting services knowledge transfer during implementation. Knowledge transfer sessions are not intended to take the place of formal software training recommended above and it is expected that SC DHEC responsible for the ongoing operation of the MDM technology would participate in the required SAS training classes.

As part of this proposal, SAS is offering five (5) training courses for 15 users as outlined in the Pricing Proposal. The courses that SAS has included as part of this proposal will help SC DHEC's IT resources become proficient in both the Master Data Management and Analytical tools that are included. The included courses will cover the entire analytical life-cycle from data management to model management.

d. *Types of training options to include in-house, web-based, and train-the-trainer.*

Training for the Data Governance solution will be provided via consulting services knowledge transfer during the Data Governance Launch. Additionally, as part of this proposal, training for the included software solution will be conducted through the following five courses (to be held on-site at DHEC):

1. **SAS Platform Administration: Fast Track** – This training course provides accelerated learning for those students who will administer the platform for SAS Business Analytics.

2. **SAS Data Integration Studio: Fast Track** – This course is for platform administrators who need to administer SAS Data Integration Studio.

3. **SAS Analytics Training** – This course is for users who do not have SAS programming experience but need to access, manage, and summarize data from different sources, and present results in reports and graphs. This course focuses on using the menu-driven tasks in SAS Enterprise Guide, the point-and-click interface to SAS, to create queries and reports.

4. **SAS Visual Analytics: Fast Track** – This course teaches how to explore data and build reports using SAS Visual Analytics. You will learn how to build queries in SAS Visual Data Builder and you will also learn to utilize SAS Visual Analytics Administrator.

5. **SAS Master Data Management** – This course covers how to operate and administer the SAS Master Data Management solution. From entity resolution to data remediation, the material will cover the breadth that is necessary to make both admins and end-users proficient.

Beyond these courses, SAS can provide a combination of in-house, web-based, and train-the-trainer that can be purchased for additional fees. The following are examples of SAS training formats:

Public Training

SAS Institute-certified instructors and consultants regularly teach scheduled SAS public training courses throughout the United States at 32 SAS Institute training facilities. This provides an interactive training experience with a comprehensive curriculum of more than 200 courses that address all aspects of SAS software. Each course combines lectures, software demonstrations, hands-on computer workshops, and course notes that result in the best learning experience possible. The classroom settings allow for interaction with a live SAS instructor at a SAS Training Facility. The student will be a part of larger group, where other SAS customers can be present.
For more information, visit http://support.sas.com/training/us/

On-Site Training

On-site services provide users with the opportunity to train in a private training environment. On-site training is designed specifically for organizations that need group SAS software training, flexible training schedules, and lower employee travel costs. On-site courses combine lectures, software demonstrations, hands-on computer workshops, and course notes that result in the best learning experience possible. The classroom setting is a private setting for up to 15 students which allows for interaction with a live SAS instructor, organized specifically for the customer that can either be at the customer site or in a SAS Training facility. Training center rental fees are additional to the cost of course fees. For more information, visit http://support.sas.com/training/us/onsite.

Live Web Training (see also Private Live Web Training option below)

Live web training allows users to attend classes without ever leaving their offices and saving them the added expense and time of traveling to a training center. SAS' Live Web classes complement our instructor-led training curriculum. Using a Web browser and telephone, you have access to a software expert who will guide your learning and answer your questions in real-time.

Live Web training is taught via the Web with two live instructors interacting with the students, as well as constant technical support if needed. This option is most cost effective for those not located close to a SAS training facility. For more information, visit http://support.sas.com/training/elearn/lw/.

Private Live Web Training

Train with your colleagues, no matter where you're located! Private Live Web training allows users to train a large, geographically dispersed audience. Half-day sessions optimize your schedule. Interaction is real-time

with an instructor and classmates. Private Live Web training also eliminates travel time and expenses. Software is accessed through a Virtual lab, no need to have it installed on your PC.

Self-Paced e-Learning (SPEL)

SPEL allows you to learn SAS at your own pace and convenience. All you need is access to the web and a standard web browser, and the product is hosted on the SAS site and accessible 24/7. SPEL is licensed via the web for individuals or groups for one year. SPEL lessons and courses are available for SAS programming (beginning to intermediate and advanced), SAS certification, SAS Business Intelligence, SAS Enterprise Guide, and Data Integration.

Benefits to SPEL:

- Enable more people to learn
- Cater to different learning styles
- Serve as new or refresher training
- Deliver consistent, effective training
- Reduce travel and time away from the office
- Users can focus on learning the topics they need, when they need them

For more information, visit http://www.sas.com/apps/elearning/elearning_category_welcome.jsp

Mentoring Services

Mentoring Services allows users to learn with a coach by their side. This private training can be scheduled to follow an onsite course to get more comfortable with what they learned in class or set up to provide private training on topics you want most. For more information, visit http://support.sas.com/training/options/#s1=5

Detailed Description of SAS Services

This proposal of services is intended to meet all the objectives of SC DHEC. The services are packaged according to common objectives and the ability to proceed as separate work tracks.

Data Management Masterplan™ and Launch

These two SAS services will execute on ***Objective #1*** *"Develop and implement an Agency Data Governance and Management Policy,"* ***Objective #2*** *"Develop Business Processes for Data Governance and Management,"* ***Objective #3.b*** *"Propose Data Stewardship Organization," and the* ***Objective #7*** *objectives focused on training for the Data Management and Governance program. Specific MDM tool training will be covered by the MDM training services described elsewhere. The DM Masterplan and Launch activities would occur in Phase 1 and complete Phase 1 tasks #1 and #2.*

SAS believes that Data Governance and Data Management are key success factors for data projects and for enterprise success. The SAS Data Management Masterplan and Launch will establish the foundation for successful Data Governance and Management and deliver a custom data governance master plan for SC DHEC. SAS will then provide follow on consulting services to initiate the implementation of data governance and policy creation. This will ensure the adoption and success of the Data Governance program, MDM program, metadata, and the data quality initiatives.

SAS believes that effective information-enabling programs like Data Governance must be discretely designed based on each organization's incumbent skills, strategic needs, culture, existing organization structures, ownership issues, and other factors.

Data Management Masterplan™ Details

SAS DM Masterplan service will support SC DHEC in the establishment of Data Governance with the goal of identifying immediate data governance and data management needs and developing processes and policies to support those needs.

The SAS DM Masterplan development begins with Business Discovery in which we conduct structured stakeholder interviews and use them as the basis to identify discrete business capabilities to be supported by data governance. This approach allows business and technology stakeholders to clearly communicate their challenges and needs in a manner that can support the development of a comprehensive execution plan that meets the immediate and long term needs of SC DHEC.

SAS uses Business Discovery as an opportunity to gain an understanding of the organization's current understanding or perception of Data Governance, determine/validate drivers for data governance, understand incumbent skill sets, gauge the existence of key roles, and to weigh the cultural impact of data governance rollout. Outputs from this phase will also help frame messaging for different audience groups as the Data Governance program is expanded.

Business Discovery Objectives

- Summary of key Data Governance drivers, issues and concerns identified during stakeholder discovery
- High-level Data Governance/Data Management focus areas in support of the current strategic initiatives
- SAS observations and key findings
- Identified issues and risks to Data Governance deployment

Business Discovery Key Activities

- Meet with SC DHEC sponsor(s) for initial input on stakeholder participants and to gain their perspective on current governance priorities, challenges and capabilities
- Review SC DHEC's strategic and tactical business objectives
- Review and analyze business, process and technical artifacts gathered as input to the project
- Conduct primary Business Discovery interviews with identified stakeholders and SMEs, primarily those that are stakeholders in the project
- Perform a high-level assessment of SC DHEC's incumbent governance capabilities and organizational culture
- Document key risks and issues - including organizational considerations to be considered in enabling implementation of a Data Governance program
- Meet with SC DHEC sponsor(s) to review initial observations and findings

DM Masterplan™ Creation

During the DM Masterplan SAS will utilize input from Business Discovery, along with our knowledge of what works in practice, to develop a Data Governance strategy and organizational framework customized for your organization's unique challenges and cultural considerations and aligned to the specific needs of SC DHEC.

Ultimately, the DM Masterplan will deliver an organizational design and roadmap (in the form of a PowerPoint presentation) that represents a customized collection of tactics your organization can use to initiate and sustain a robust data governance and management program.

DM Masterplan Objectives

- Data Governance Organization Framework including:
  - Business processes
  - Staffing recommendations
  - Roles/Responsibilities
- Data Governance Program Roadmap including:
  - Prioritization of a Data Governance initiation activities to support key challenges
  - Key activities and timeline for instantiating the Data Governance organization
  - Key activities and timeline for developing associated program collateral including definition of core Data Governance processes, communication and training plans
  - Steps for expanding the reach of the Data Governance program beyond the current project
- Initial Data Governance Program Charter defining key objectives, goals and guiding principles

- Data Governance Communications and Training Approach

DM Masterplan Key Activities

- Identify a core working group of key stakeholders to support Data Governance program planning
- Identify the best fit Data Governance approach for your organization
- Define a Data Governance charter documenting the program's key objectives, goals and guiding principles
  - Note: The Data Governance Charter is intended to be a "living document" that is maintained and extended over time as the program matures
- Define an custom organizational blueprint for Data Governance, including key data governance functions (e.g., councils or stewardship teams), associated roles and responsibilities and rules of engagement with existing organizations or processes
- Identify recommendations for enhancing supporting capabilities including, but not limited to:
  - Data management improvements (data quality and correction processes, metadata support, data stewardship) in IT
  - Organizational (IT and business) capabilities and enhancements to support data management (e.g., data architecture, data quality, data administration, data stewardship, metadata management, etc.)
- Create a Data Governance Program Roadmap by aligning activities to initiate a robust data governance function against ongoing strategic initiatives
- Identify key work streams and related activities, dependencies and resource requirements
- Vet and finalize the proposed DM Masterplan with the core working group
- Present DM Masterplan to key stakeholders and executives, as identified by SC DHEC's engagement sponsor(s)

Data Governance and Management Program Launch

During this phase, SAS will support your organization in standing up and initial execution of the Data Governance Program as defined by the program roadmap. ***(Objective 1 and 2)***

Launch Objectives

Objectives from this phase will be refined during the Data Management Masterplan with SC DHEC and typically include, but may not be limited to:

- Approved program charter ***(Objective 2)***
- Data Governance training material ***(Objective 7)***
- Data Governance program operating procedures and templates ***(Objective 2)***
- Data Governance process workflows ***(Objective 2)***
- Data Governance program communication plan ***(Objective 2)***
- Data Governance program metrics ***(Objective 2)***
- Operational program working groups reflective of the program framework ***(Objective 2)***
- Project planning and artifact development/definition support for the initial data project that falls under Data Governance that may include but is not limited to: ***(Objective 1 and 2)***

- Data governance policies
- Data quality and remediation process
- Metadata collection policy and process

Launch Key Activities

Key activities for this phase will be refined during the DM Masterplan phase and typically include, but may not be limited to:

- Develop Data Governance training and communications plans and collateral
- Develop Data Governance operating procedures, process definitions and templates including standing agenda, intake process and prioritization approach
- Facilitate initial Data Governance meetings and the policy creation process
- Facilitate the identification of Data Governance participants and initial Data Governance program activities including, for example, Data Governance Council kickoffs, data stewardship training and so on
- Identify a core working group of key stakeholders to support ongoing Data Governance program planning
- Support and/or facilitating initial Data Governance kick-off meetings
- Support the initial Data Governance project

Data Governance Service Assumptions

- Conformance to time frames is contingent on client participation, and stakeholder sessions or interviews being scheduled in advance of any on-site work.

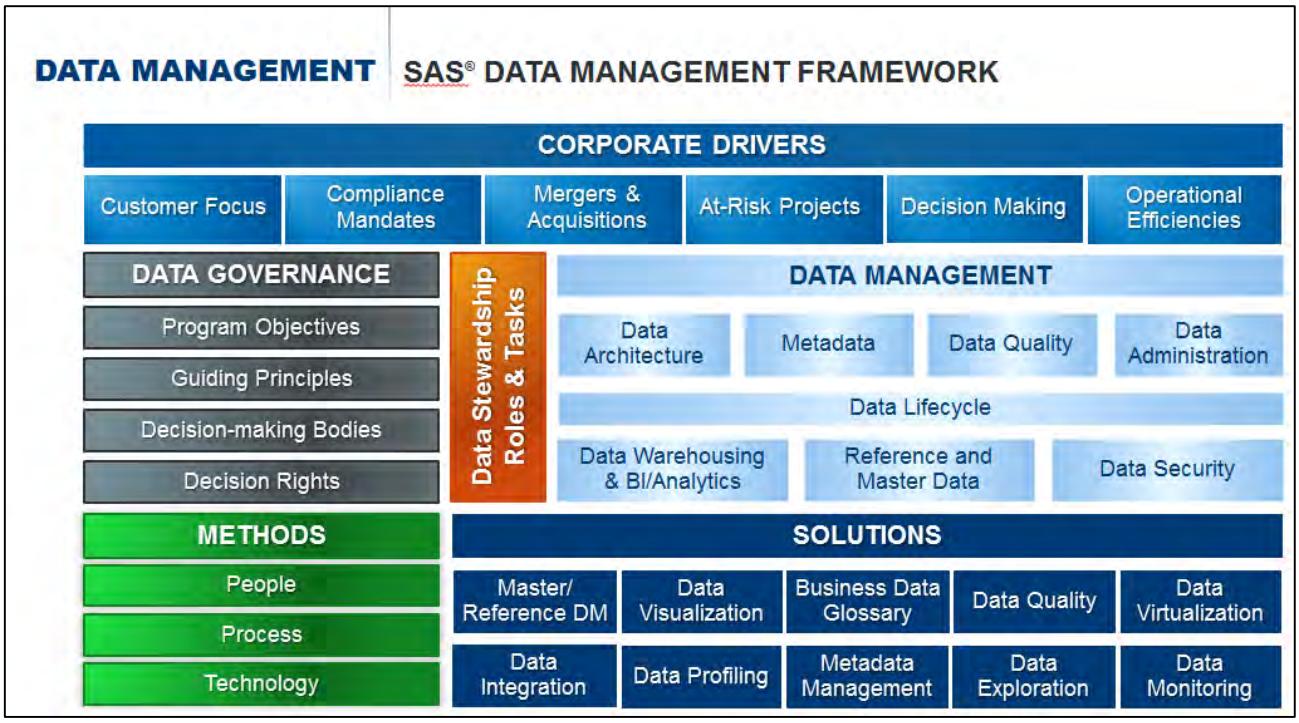

Figure 1: SAS Data Governance and Management Framework

Master Data Management Launch and Implementation

This SAS service will execute on **Objective 3 and 6 and is Phase Two (II) – System Implementation.**

SAS has a standard approach and methodology for systematically implementing MDM. It starts with discovery and assessment of the business, functional, and data requirements for MDM. Understanding the requirements from the start limits risk while being mindful of the client's existing investments in the project. The goal is to leverage the existing knowledge while at the same time making recommendations where appropriate for changes to ensure the MDM implementation meets the objectives and remains flexible and scalable for the business.

SAS MDM will enable SC DHEC to identify, link and reconcile data from various sources for a unified and trusted view of core data assets, and to make that data consumable by other enterprise applications. It will also enable SC DHEC to manage and evolve that information over time, so that processes expand as data use grows. The SAS MDM solution will give SC DHEC the capability to develop a master data management program to achieve a consistent view of statewide data and implement more effective processes.

SAS MDM Features:

- Multi-domain data model - Create master data domains for party (citizen, customer, student, etc.), organization, site, supplier, product, asset, or other data elements
- Metadata discovery and data profiling - Begin the MDM deployment with a solid understanding of the health of incoming data - and jump-start your MDM project
- Entity resolution and matching - Engage a patented data matching engine to create and maintain a master record
- Data stewardship - Control the master data hub, as well as the processes and workflows that govern the creation of master data, through an intuitive, business-focused interface
- Data quality improvement - Utilize SAS best-of-breed data quality technology to standardize and rationalize data during the MDM data lifecycle
- Hierarchy management - Manage inter-related data elements, such as tiered and networked hierarchical structures. Creating hierarchies enables powerful reporting and analytics down the road. An example of a hierarchy that SC DHEC may want to consider for the inspections data:
  - Business
  - Facility (one business may have multiple facilities)
  - License (one facility may have multiple licenses)
  - Inspection (one facility may have multiple licenses)
  - Inspector (which inspector performed the inspection)
- Survivorship - Validate master data representations through entity definition, resolution, best record selection/ editing, and the creation of a universal identifier
- Data integration - Engage batch and real-time data integration processes to manage the master hub repository
- Reporting - Monitor the master repository and the MDM process through interactive dashboards and scorecards
- Data lifecycle management - Manage the entire data management process, including data loading, data updating, and data management

The next implementation step of a data integration project is to get a good understanding of the data you have. This understanding comes from using the SAS MDM tools for Data Profiling. A data profile is created for each data source, and is used to make subsequent decisions around cleansing and standardization rules. The data profile can be thought of as a Data Quality assessment – it helps you understand how trustworthy your data is and identifies areas that need improvement. After the data profiling, the next step is to create a logical data model that communicates to the business the data required, the relationships between the data, and the hierarchies and their relationships to the data. The data model and profiles will help guide subsequent data mapping, data quality, and data integration phases of the project.

Objectives of the implementation phase:

- Clear and complete understanding of the detailed requirements
  - Business Requirements
  - Operational Requirements
  - Functional Requirements
  - Data Requirements
- Data Governance and Data Stewardship integration into the project
  - Whose definition of master data
  - Whose data quality rules
  - Whose business definition to use
  - Whose data
- Identification of relevant entities and attributes for the master records
- Identification of data elements outside of the Master Data that are needed to support the business requirements such as preferences, account information, transaction history or summary data
- Development of a data model showing how the data is integrated and stored is communicated to the stakeholders. The data model will help guide the subsequent data mapping, data quality and data integration design phases of the project.
- Definition of business metadata for each data attribute in the data model **(Objective 3.c)**

SAS will develop use cases to help define requirements and facilitate the integration testing and user acceptance testing phase. The requirements may evolve somewhat during the mapping and data quality phases and SAS will include time to re-validate the requirements prior to the build phase**.**

After the requirements and the data model have been signed off on the data mapping and data quality phase will begin. **This corresponds to the Objective #3 and 6.** This work involves:

- Develop a physical data model suitable for the target database from the Logical Data Model created in the previous phase
- Map source data elements to the target data model and associated business metadata
- Create a source to target data mapping document for each source system that defines how the data will move from source to the target. This would include physical metadata, data quality rules, data integration rules, and data transformation rules.

- Analyze data quality of the source data to assess data quality issues and data redundancies. Profiling will determine if additional sources or data elements should be included or if those elements selected are not reliable enough to use in the definition of the master data records.
- Recommend additional data sources and master data elements
- Develop data quality and cleansing business rules

MDM process design focuses on Matching and Survivorship. The best practice approach for designing the process to create a master record goes beyond just design. It involves actually building processes to ensure the best result. The approach includes three steps: preparation, cleansing/validation, and matching. These steps will be performed iteratively until the business and data stewards sign off on the data quality and the matching process. This is an agile approach that reduces rework time in latter phases. Last, as part of the MDM process design, data integration jobs will be designed to extract and pre-process the source data to be input into the data quality process and integrate and orchestrate the execution of the matching and survivorship processes.

Matching

Data will be run through the matching process multiple times in an iterative approach to enable the validation of the established business rules as well as the incorporation of new rules based on conditions discovered in the review process. In addition, the need for new cleansing rules may become apparent as duplicate groups are evaluated.

Survivorship

Once the matching rules have been created to bring duplicate records together, a survivorship process will be created to identify which data from that group of records will make up the “golden” record. Survivorship rules can be at a record level (such as data coming from the system that has priority over other sources) or a column level (such as selecting the email address that was most recently updated record). In most cases, there is a combination of both record-level and column-level survivorship rules employed to create the final golden record.

ETL Design

Data integration jobs will be designed to extract and pre-process the data to be input into the data quality process and integrate and orchestrate the execution of the data quality processes. In addition, data integration jobs will be developed to populate the physical data model implemented. Data integration jobs will need to be designed for any interfaces required with the source systems. All jobs will be documented as part of the data integration design document. Considerations during the ETL design phase will need to be given to change data capture for the source systems and versioned updates of the target tables.

The above processes will ensure data reconciliation for the key master data elements and their data quality (**Objective 6a, b, c, d).**

Other processes required to provision the data for analytics would be designed **(Objective 6.d)**. This would include the creation of a standard output file with documentation that any subscribing system could intake for its use. The build process will develop the jobs required to load and process the data. This would include data quality processes, matching and survivorship and data integration.

Summary of MDM tasks to support the objectives:

- Identify systems of record for master data
- Identify master data attributes
- Identify hierarchies and groups
- Identify relationships
- Identify data quality issues and cleansing rules
- Set data quality goals
- Identify match and merge rules
- Identify survivorship rules

Unit testing, integration testing, and user acceptance will be based on the signed-off requirements and use case scenarios. The User Acceptance test cases and requirements are the responsibility of SC DHEC to define.

- All code and process will be unit tested by the developer. This will include all data profiling, cleansing, validation, and matching rules developed.
- Integration testing involves executing the all of the job flows end-to-end and ensuring the system is performing in accordance with the design and requirements.

User testing will be performed by SC DHEC. SAS support during this portion of the project includes:

- Based on use case scenarios provided by SC DHEC, SAS would facilitate creating a user test plan for execution by SC DHEC. This test plan would include sample SQL to be executed against the master data tables populated with test data. SAS MDM tool reporting on matches and survivorship will also be used to measure results.
- Once SC DHEC has executed the user test plan and documented results, SAS would review the results and support any corrections or modification required to address issues identified during the testing where jobs were not performing as designed and documented in the data integration design document.

Desired Outcomes of the Overall Project

- ***Data Management and Governance Policy and Processes are implemented for use within the Agency.***

  SAS believes successful Data Management and Governance is a long lasting program and not a project. The methodology described in the Data Governance Masterplan and Launch is designed to ensure that a custom data governance master plan is created for SC DHEC that fits its organizational needs and capabilities. SAS will provide follow on consulting services to initiate the implementation of data governance (Data Governance Launch service) following the priorities set out in the master plan. This will ensure the adoption and success of the SC DHEC master data, metadata, and the data quality initiatives. SAS, through consulting and its technology, will prepare the agency for the on-going effort of data management and governance through all of the deliverables mentioned.

- ***A Master Data Management tool is implemented for DHEC use.***

  SAS will deliver its Master Data Management Solution and a suite of analytical tools that will support SC DHEC in implementing a Data Governance framework. SAS' MDM Solution is built upon a Data Quality foundation ensuring high-quality data for analytics and trustworthy data-driven decisions.

  Combined with the policies and processes that create a culture of data governance within DHEC, SAS' MDM tool will become a part of the day-to-day operations in the agency. As these policies and procedures are implemented, compliance efforts will be made more efficient and reporting will become more robust. These efficiencies will allow the agency's staff to have more time to devote to serving SC DHEC's customers and the citizens of South Carolina.

- ***Enterprise data has been verified and implemented as an authoritative set for shared use by the agency and is serving as source by interfacing with the appropriate transactional systems for ongoing operational use.***

  SAS MDM will enable SC DHEC to identify, link and reconcile data from various sources for a unified and trusted view of core data entities, and to make that data consumable by other enterprise applications. It will also enable SC DHEC to manage and evolve that information over time, so that processes expand as data use grows. The SAS MDM solution will give SC DHEC the capability to develop a master data management program to govern consistent data, achieve a historical view of statewide data and implement more effective processes. The solution roadmap presented in this document is a combination of SAS software, services, and training and will deliver on the desired outcome of authoritative enterprise data that can be used by operational and analytical systems.

Proposed Implementation Timeline

DHEC intends to accomplish this implementation in as a phased-in approach as outlined below:

Phase One (I) – Policy, Process, and Inventory definition. (3 months)

1. ***Develop an Agency Data Governance and Management Policy via team input from DHEC IT and Program Area constituents.***

2. ***Develop Business Processes for Data Governance and Management including business work flows and the necessary roles/responsibilities for the ongoing operational structure to support Data Governance and Management.***

   Once this section of the project is completed, there will be an exercise to revise timeline and scope for the project, performed by SAS and the client if any major changes are necessary.

   Change Management refers to a process for the parties to agree on a change or modification to the scope of Services, and "Change Order" refers to the document reflecting the change or modification. Requests by Customer or SAS for such changes will be made in writing to the other party (SAS Project Manager or Customer Project Manager). SAS will prepare the Change Order, which will contain the following information:

   - A description of any additional work to be performed and/or any changes to the performance required of either party
   - A statement of the impact of the work or changes on the Services and the project schedule
   - The estimated timetable to complete the work specified in the Change Order
   - The estimated time and cost of any additional work associated with the Change Order

   Any change order which materially impacts the project duration, scope of work, contractor responsibilities, or total project costs, will require mutual agreement between both parties before changes are executed.

3. ***Deliver a data mapping which inventories all current DHEC transactional systems which defines the "master" data source and provides configuration mappings.***

Phase Two (II) – System Implementation: (6 months)

1. ***Procurement of an MDM tool including licensing for DHEC users. (Estimated as 10 administrators, 100 "power users," and unlimited users within the agency for viewing only)***

2. ***Implementation of the MDM tool with the current enterprise shared data portfolio on DHEC's internal infrastructure.***

3. ***Configuration of the MDM tool Analytics for Shared DHEC data.***

4. ***Implementation of an authoritative master data set for enterprise shared data which interfaces with current transactional systems and provides ongoing support for data monitoring including accuracy and validation actions.***

Phase Three (III) Post Implementation Support: 3 months (Training)

1. ***Training to support ongoing operations for the Data Management and Governance program.***

   a. ***Training for the agency program organizations which include the Policy, Processes, and MDM tool capabilities.***

   b. ***Technical training for the agency program organizations on the use of the MDM tool.***

   c. ***Technical training for IT.***

Phase Four (IV) System Maintenance and Support: ***One (1) year maintenance and support with the option to renew for up to six (6) years total***

1. ***Annual licensing for MDM tool including licensing for DHEC users.***

2. ***MDM system tool upgrades.***

3. ***Phone support for one (1) year.***

Business Location and Travel

This MDM solution will be configured and installed at DHEC, 2600 Bull Street, Columbia, SC 29201. Any travel related expenses incurred by the offeror will be the sole responsibility of the offeror.

SAS Proposed Implementation Timeline

This is a high level timeline based on the RFP content. Timeline and engagement activities will be refined and finalized in conjunction with SC DHEC when the project is initiated. A detailed project plan with tasks, resources, and milestones will be created and used to manage the project. The final project plan may be different from the shown timeline but will more accurately reflect the needs and realities of the project. The project plan will create a baseline and SAS will work with SC DHEC to manage any changes to the project milestones and timelines.

Preliminary Project Schedule

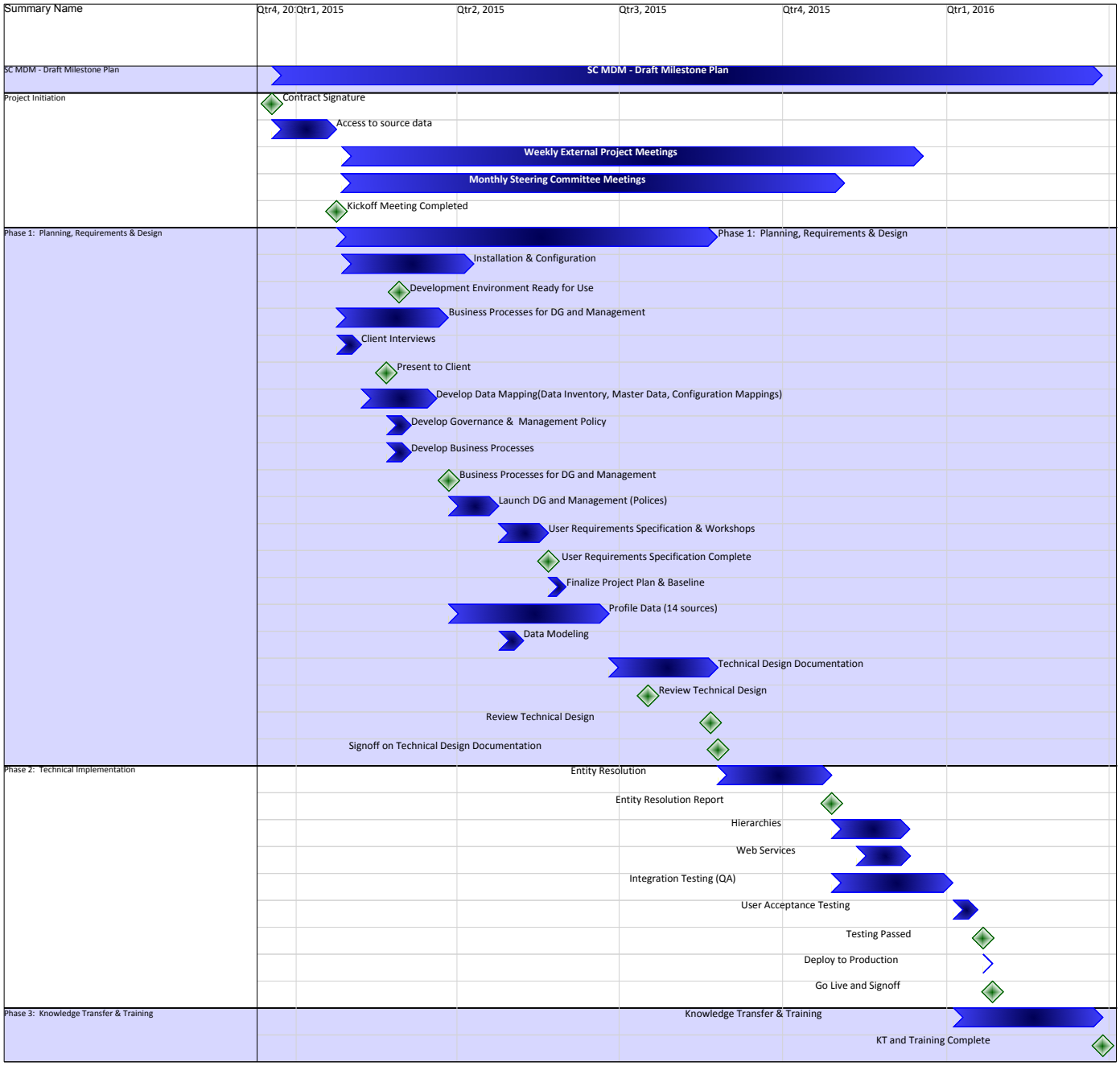

Figure 2: SAS' Proposed Implementation Timeline for SC DHEC

The timeline above differs slightly from the timeline suggested in the RFP. SAS' experience shows that one of the most likely areas of project delay is access to the data. The timeline above includes installing the software in parallel with the activities in Phase 1 to accelerate access to the data. In addition, the suggested Phase 1 asks for a data mapping and inventory. The mapping and inventory process will be improved through the use of the SAS MDM toolset, so the software installation has been moved from a suggested Phase 2 activity to a Phase 1 activity.

SYSTEM SPECIFIC REQUIREMENTS

The MDM platform must:

1. ***Integrate with the agency's security and reporting tools to provide fine-grained access to data and reliable data quality metrics.***

   SAS will integrate with the agency's security and reporting tools to provide the fine-grained access to data and reliable data quality metrics.

2. ***Handle complex data hierarchies (capable of modeling complex B2B and B2C hierarchies).***

   SAS MDM comes with pre-modeled data hierarchies that support major entities such as Customer, Organization, Product, and Address. They also support configuration for custom scenarios and more complex data hierarchies.

3. ***Automatically generate changes to service-oriented architecture (SOA) services when new attributes, entities or sources are updated in the data model.***

   SAS MDM can auto-generate modifications to web services when new attributes, entities or sources are updated in the data model.

4. ***Integrate with third party cleansing tools and or services.***

   SAS MDM integrates with provided third-party services, such as address validation, and other services through web service calls.

5. ***Provide a history of all changes to master data and a lineage of how data was changed captured in metadata.***

   SAS MDM can be configured to retain all history of operations on data in the application. Data Lineage is a standard and essential part of this capability.

6. ***Synchronize master data across operational and analytical applications to support real-time compliance and reporting.***

   SAS MDM is designed to synchronize data across all applications in the data architecture in either batch or real-time and will be configured to do so at SC DHEC.

7. ***Provide rules based processing and consolidation to deliver an authoritative data source as the Golden record.***

   SAS MDM is designed to integrate data from various sources to construct a "Golden Record" as well as retaining linkage to the source systems for complete lineage reporting. Rules based processing for entity matching and survivorship is fully supported.

8. ***Create reconciled single source of truth for key data elements across federated databases in the enterprise domain.***

   SAS MDM is designed to integrate data from various sources to construct a "Golden Record" as well as retaining linkage to the source systems for complete lineage reporting. More detail is provided in the SAS White paper "Enhancing SAS® Master Data Management (MDM) Deployments with SAS® Federation Server", which has been included in SAS Appendix A.

9. ***Provide data visualization tools to monitor, profile, and identify data inconstancies and compliance to data policies.***

   SAS MDM has extensive dashboard and reporting capabilities integrated into the product, and also can be used as a data source for sophisticated analytical tools such as SAS Visual Analytics.

Specific technical and operational requirements:

- ***Operate in a virtual server environment running VMware on Dell PowerEdge blade servers and Compellent SAN storage with Microsoft SQL Server 2012, R2 relational database management systems.***

  SAS MDM is capable of operating in a virtual server environment and accessing non-local disks, remote servers and virtually all relational database management systems including Microsoft SQL Server 2012 R2.

- ***Ability to integrate data from various relational database management systems and platforms: IBM DB2 v9.5.0.10 on AIX, Oracle 11G on AIX, and Microsoft SQL 2003 server and higher.***

  SAS MDM handles virtually all aspects of operating system and database connectivity using native driver service availability through REST and SOAP/HTTP (Web Service) calls. Additionally SAS provides out of the box drivers for: Btrieve, DB2, dBaseFiles, FoxPro 3.0, Greenplum, Informix, MySQL, Oracle, Postgres, OpenEdge, Salesforce, Microsoft SQl Server, SyBase, Teradata, TextFile and XML. IBM DB2 v9.5.0.10 on AIX, Oracle 11G on AIX, and Microsoft SQL 2003 server and higher are included. SAS MDM can also take advantage of SAS Federation Server for federating data and SAS accelerators for in-database functionality.

- ***GIS 10.1 (or higher) workstation and server geographic information systems software.***

  SAS provides the SAS Bridge for ESRI which is compatible with ArcGIS 10 SP5 and higher.

- ***The software must function with DHEC client workstations running the Windows 7.0 or higher operating system without having the .NET framework installed compatible with the Internet Explorer, Chrome, and Safari web browsers. Support for additional operating systems and browsers, such as MacOS, Linux, FireFox, etc., is desired.***

  SAS MDM supports virtually all operating systems and browsers including Windows 7.0 and higher. SAS' MDM Solution supports a number of browsers including Internet Explorer, Firefox and Chrome. The .NET framework will not be installed on SC DHEC's desktop clients.

- ***The web component must run using the IIS 8.0 and must meet all State of South Carolina mandated 508c web accessibility requirements for any public facing modules. (URL: http://accessibility.sc.gov)***

  SAS MDM can run via proxy through IIS 8.0.

  The extent of compliance to Section 508 varies by product, and SAS provides Section 508 compliance information as requested by customers. Upon request, EIS will provide the Government Voluntary Product Accessibility Templates (VPATs) concerning the degree to which the licensed SAS products supports the Section 508 Accessibility Standards. EIS' sole obligation with regard to any requirements herein relating to accessibility is to provide the aforementioned VPATs. However, as accessibility requirements, standards and methodologies evolve, customers can be assured that they will continue to have access to the most current product evolution made available by SAS in our efforts to meet current and future accessibility requirements for our customers with disabilities.

  SAS is a leader in providing software products that are accessible to people with disabilities. Section 508 of the U.S. Rehabilitation Act of 1973, as amended, mandates that when the federal government purchases most electronic information and technology (EIT), including software applications, it must ensure that the EIT provides access to, and use of, information or data to federal government employees with disabilities that is comparable to the access provided to federal government employees without disabilities. Moreover, under the act, the federal government is also obligated to ensure that members of the public who have disabilities are able to access information and data in a way that is comparable to the access provided to citizens without disabilities.

  EIS and SAS understand how important Section 508 is to our customers worldwide. We recognize that universal design and accessibility are good business strategies. Recently, *Accessible Content* magazine cited SAS - along with IBM, Microsoft and Canon - as a company that realizes that accessibility compliance benefits a broad customer base. In the article, "Edge Out the Competition," the author states, "These companies use their investment in accessibility products and services as a competitive edge to win business every day. They have embraced building accessibility into their products as a good business practice."

- ***System authentication must be implemented via Active Directory (AD) single sign-on for internal agency users.***

  SAS MDM can take advantage of system authentication through Active Directory (AD) single sign-on.

- ***The delivered software must be certified to be free of security vulnerabilities that potentially would lead to remote code execution and other security breaches on DHEC servers and workstations.***

  SAS solutions offer security and vulnerability-free frameworks and components.

- ***If third party software is included in the offeror's solution, the RFP must identify the software and its manufacturer, detail the function of the software and justify the inclusion of the third party software over an integrated solution. Any third party software or utilities integrated into the program must be included and licensed as part of the system in perpetuity. The contractor is responsible for***

negotiating and accepting any licensing agreement with the third party as well as responsible for software upgrade integration and maintenance costs.

No third party software requiring separate licensing is included in the SAS MDM solution.

TECHNICAL SPECIFICATIONS

Technical Specifications include General System Requirements and Specific System Requirements.

In responding to the Technical Proposal, Offerors are highly encouraged to include a detailed explanation of responses for every feature and function offered. However, the State recognizes that not all Offerors will be able to provide all features and functions described herein.

The Offeror is also requested to provide details on additional features and functions, exclusive of the specified needs that may be requested, which may provide a value-added benefit. In the event that it is decided that such features, functions, or other considerations do provide a value-added benefit, the State reserves the right to give additional consideration to the value-added benefits.

3. SYSTEM REQUIREMENTS

Requirements set forth in this section are MANDATORY. Responses to this section will be Yes/No responses only. Only those responding "YES" to all items will be evaluated further. Offerors must complete and submit responses to the System Requirements listed below. Failure to respond 'yes" to any of the requirements listed below or failure to provide responses will deem the bidder's response "non-responsive".

******This questionnaire shall be considered as part of the specifications for the software system and is an integral part of the Offeror's response to this RFP.***

☑Yes □ No	Integration with Standard Database Solutions The solution integrates with and leverages current systems such as SQL Server, DB2, and Oracle 11G in place at DHEC.
☑Yes □ No	Data Consolidation: The solution consolidates data across multiple solutions that will include data feeds, data management applications, and other solutions it connects to and will provide a single view of data records.
☑Yes □ No	The solution allows the setting of match thresholds by source and use.
☑Yes	The solution supports IP range, role-based AD, and agency- based security access to the data.

□ No	
☑Yes □ No	The solution must be able to resolve data discrepancies in the data received across multiple solutions based on the rule set that has been defined.
☑Yes □ No	The solution has manual override for authorized users to resolve improper matches (and mismatches) and to preserve the override for that data record for future use.
☑Yes □ No	The solution provides an audit log [who, what, where, when, and why] of all manual updates to data.
☑Yes □ No	The solution has an auditing mechanism to log and record the source of each activity related to the data including the distinct records that were used to arrive at the master record.
☑Yes □ No	The solution shall maintain both an historical record of all derived master records and associated detailed records.
☑Yes □ No	The solution has the ability to resolve to one (1) single record through multiple unique identifiers from different solutions.
☑Yes □ No	The solution shall automatically recognize and protect PII data. It should also capture audit logs for PII data that has been viewed, modified, and delete.
☑Yes □ No	The solution has a Service Oriented Architecture (SOA) that interfaces with a Service Bus by receiving and transmitting data through XML.
☑Yes □ No	The solution shall meet industry, NIST, and FIPS security standards as required.
☑Yes □ No	The solution shall easily and seamlessly integrate with solutions that are a part of the DHEC enterprise architecture.
☑Yes □ No	The system will meet scalability standards for both data size as well as demand for data.

☑Yes □ No	The solution shall connect to data stored in SOAP, REST, WSDL, and UDDI structures and any other industry standard formats.
☑Yes □ No	Solution must have a platform that establishes an interoperability layer that supports interactions among components via a variety of protocols (HTTP/HTTPS, XML, SOAP, Internet Inter-ORB Protocol [IIOP], .NET remoting, message-oriented middleware [MOM] protocols, file transfer protocols [FTP/SFTP], JMS/MQ, RDBMS, REST, WSDL, UDDI, etc.) and interaction styles (request/reply, conversational, publish and subscribe, asynchronous messaging, etc.).
☑Yes □ No	The solution must have features that enable in-flight message manipulation, such as transformation (typically XML-based), intelligent routing, naming and addressing, and dynamic service virtualization.
☑Yes □ No	The solution supports designing the service interfaces, the rules (transformation, routing), the orchestration (virtualization flows), and the adapter configurations required to implement services
☑Yes □ No	The proposed solution must support access and control for information exchange and provide support of business applications to enforce access controls.
☑Yes □ No	The proposed solution must support error handling, provide capability to send alerts to notify team members of failed processes, and possess ability to send alerts based on non-receipt of files or messages.
☑Yes □ No	The system will look for number of outliers in the number of times items appear in an attribute.
☑Yes □ No	The solution will use thresholds for matching and will identify records that are matches, records that are unique, and records that need manual inspection to determine match status
☑Yes □ No	The system must recognize duplicate records and provide a facility for identifying, merging, or resolving duplicates before they are accepted into the system.
☑Yes □ No	The system must cleanse common address attributes like name, address, state, city, and postal code using included patterns and reference data. The system should leverage any trusted source to standardize and enrich data.
☑Yes □ No	The system must provide validation libraries certified by relevant authorities such as the U.S. Post Office.

☑Yes □ No	The system must provide a mechanism by which updates to all validation libraries are delivered and applied.
☑Yes □ No	The system will parse unstructured and structured address data, will standardize address elements, will format postal addresses, and will facilitate the process of address validation.
☑Yes □ No	The system must have complete event tracking for all events including user name, date, and time.
☑Yes □ No	The system must have a multi-user interface capable of managing scheduled jobs, activating unscheduled tasks, monitoring and reporting on current tasks, and leveraging performance reporting for metrics.
☑Yes □ No	PII (Personally Identifiable Information): The solution should automatically recognize, protect, and log PII data, changes, views, etc.
☑Yes □ No	The system must have the ability to interpret the meaning of text fields based upon the matching of characters strings against a knowledge base. In addition, the system shall have the ability to customize that knowledge.
☑Yes □ No	The solution shall be able to provide simple search and identification of data records.
☑Yes □ No	The solution can identify data records through probabilistic and partial search mechanisms with a toolset of solution rules and data-based rules set by DHEC.

Items in this section are preferred but not mandatory. Responses to this section will be Yes/No responses only.

☑Yes □ No	Is the solution either a Modifiable Off The Shelf (MOTS) or Commercial off the Shelf (COTS) system?
☑Yes □ No	If Yes to MOTS/COTS, can the system be configured to the complexity level that is imperative for agency business procedures? (This includes relationships of entities/facilities/registered equipment, permits across program areas, compliance, enforcement)

☑Yes □ No	Does the solution integrate with Microsoft Office 365, SharePoint, FileNet, and other data warehousing solutions? If yes, please list what it can be **EIS Response:** SAS MDM can integrate with virtually any data source regardless of its location. This includes Microsoft Office 365, SharePoint, FileNet and other data warehousing solutions.
☑Yes □ No	Does the proposed software provide facilities for user-defined matching rules?
☑Yes □ No	Does the proposed software provide facilities for user-defined deduplication rules?
☑Yes □ No	Does the software provide facilities for user-defined identification analysis?
☑Yes □ No	Does the software facilities for user-defined data quality rules?
☑Yes □ No	Does the software enable users to define the data profiling process using an intuitive interface?
☑Yes □ No	Does the proposed software automatically identify data quality issues using statistical analysis?
☑Yes □ No	Does the proposed software automatically identify data quality issues using fuzzy matching to discover duplicate content?
☑Yes □ No	Does the proposed software automatically identify data quality issues through validation of user-defined business rules and formats?
☑Yes □ No	Does the software provide data profiling functions to inspect data for user-defined Errors?
☑Yes □ No	Does the software provide data profiling functions to inspect data for User-defined Inconsistences?

☑Yes □ No	Does the proposed software provide the ability to specify an inheritance behavior on any data object in your data model?
☑Yes □ No	Does the proposed software provide attribute inheritance to work on a "cascading relationships"?
☑Yes □ No	Does the proposed software provide the ability to initial Data instance to create child instance hat inherits from each other?
☑Yes □ No	Does the proposed software provide each Data instance inherits from its parent?
☑Yes □ No	Does the proposed software allow avoidance of data duplication?
☑Yes □ No	Does the proposed software provide any instance to overwrite inherited values?
☑Yes □ No	Does the proposed software provide ability to delegate rights to roles & users on each Data instance?
☑Yes □ No	Does the proposed workflow product require an application server?
☑Yes □ No	Does the proposed system export to XML?
☑Yes □ No	Is process data maintained internally as XML by the proposed system?
☑Yes □ No	Does the proposed system act as a Web-enabled Services platform to request, broker, and deliver Web services?
☑Yes	Does the proposed solution use a staged database system so that changes can be backed out when an issue is identified?

□ No	
☑Yes □ No	Proposed software supports one (1) or more of the following standards, Please indicate which one(s) are supported. Hypertext Markup Language (HTML) ☑ Yes ☐ No Document Type Definitions (DTDs) ☑ Yes ☐ No Extensible Markup Language (XML) ☑ Yes ☐ No Extensible Stylesheet Language Transformation (XSLT) ☑ Yes ☐ No XML Schemas ☑ Yes ☐ No Java Server Pages (JSP) ☑ Yes ☐ No Web Service Definition Language (WSDL) ☑ Yes ☐ No
☑Yes □ No	Software supports one (1) or more of the following Business Process Management (BPM) standards. Please also indicate which one(s) are supported. WARIA ☑ Yes ☐ No WfMC ☑ Yes ☐ No BPMi ☑ Yes ☐ No WfXML ☑ Yes ☐ No UDDI ☑ Yes ☐ No
☑Yes □ No	The solution is able to manage the data through effective and efficient: data collection data aggregation data matching data transformation and standardization data checking (QA) data storing

	data sharing
☑Yes □ No	The solution provides mechanisms for bulk processing of issues similar to the manual override requirement.
☑Yes □ No	The solution supports data standards such as Web Services, XML, CSV, TIPS, and any possible Federal standards that may be required.
☑Yes □ No	The solution is synchronized with the changes that happen to any of the data records on any of the participating solutions through both batch and real-time mechanisms.
☑Yes □ No	The solution provides a workflow analysis and diagram for each tool to demonstrate how the tool will be used and the interaction points for additional tools.
☑Yes □ No	The solution has modular and reusable services and components.
☑Yes □ No	The solution has a flexible architecture that can easily incorporate changes (modify and create datasets quickly) and new features.
☑Yes □ No	The solution connects to a variety of delimited flat files such as .csv, .txt, or .xls, as well as XML and JSON formats,
☑Yes □ No	The system provides interface connections for legacy and non-relational database systems.
☑Yes □ No	The proposed solution has infrastructure tooling that enables users to represent semantic models, identify model-to-model relationships, and execute the necessary translations to reconcile data with differing semantic models.
☑Yes □ No	The proposed solution provides for performance monitoring tools that can be used with the product (built-in or third party).
☑Yes □ No	The solution supports common bi-directional interface modalities including generic web services or APIs.

☑Yes □ No	The solution enables users to modulate the sensitivity of matching algorithms by assigning weights.
☑Yes □ No	The solution provides the ability to profile data in existing databases without the need to extract, move the data, or create a repository of results.
☑Yes □ No	The solution provides the ability for users to drill down into individual data sources and view specific records using a data viewer tool.
☑Yes □ No	The solution stores the results of a data profiling analysis in a data repository so that the history of data quality can be viewed and the improvement or degradation in data quality can be tracked.
☑Yes □ No	The solution provides the ability to profile data in existing databases without the need to extract the data, move the data, or create a repository of results.
☑Yes □ No	The system provides functionality for the configuration and execution of rules and schemes to identify related data entities
☑Yes □ No	The system provides the ability to weight, prioritize, and tune matching rules (for example, to optimize the frequency and number of potential matches or the "tightness" or "looseness" of matching) so that one attribute may have more priority over another in any given record.
☑Yes □ No	The system uses probabilistic, deterministic, and custom algorithms for finding, matching, merging, linking, and deleting relationships and duplicates within the data.
☑Yes □ No	The solution provides strategies for matching very large data sets using techniques such as blocking keys (AKA bucketing or pre-matching). The product should provide tools for setting up and activating these techniques.
☑Yes □ No	The solution assigns tasks to a cross-functional team to help mitigate match results or address specific records that do not comply with data quality rules.
☑Yes □ No	The system enables administrators to assign tasks to a cross-functional team.
☑Yes	The system provides a data steward console for resolving data conflicts and entering missing data

□ No	elements.
☑Yes □ No	The system enables users to visually review whether two records match if there is uncertainty in the matching algorithms.
☑Yes □ No	The system supports a cross-functional team with an easy-to-use web-based work environment.
☑Yes □ No	The system offers an open metadata repository shared across all data sources.
☑Yes □ No	The system offers automated bi-directional synchronization of metadata across multiple instances of the tools and data sources.
☑Yes □ No	The system provides automated discovery and acquisition of metadata from various data sources, applications, and other tools
☑Yes □ No	The system provides a case management approach to data cleansing that will facilitate multi- select assignments, disallow assignment to users without case/alert permission, support multiple links in a single attribute, support links in comments, permit control to view alerts, import and export filters, and provide quick option to delete all cases.
☑Yes □ No	The system has a dashboard system that can be customized for data sets that show trend analysis and error reporting. The dashboard should be easily configurable without requiring external programming.
☑Yes □ No	The solution provides the ability to split text fields by matching character strings against packaged knowledge bases of terms, names, and more.
☑Yes □ No	The solution is able to consolidate data across multiple solutions that will include data feeds, data management applications, and other solutions it connects to and will provide a single view of data records.
☑Yes □ No	Does system support use of predefined reports created by an administrator?
☑Yes	Does system allow security/password-administrator to assign user level permissions?

□ No	
☑Yes □ No	Does system have a system of online Help menus, modifiable as needed, for both the users and the administrators?
☑Yes □ No	Does system have query ability (based on security authorization) for departmental or global view?

4. SPECIFIC SYSTEM REQUIREMENTS

System Software Application Questionnaire

All application questions must be answered with only one (1) of the responses listed below:

F	=	Fully provided "out of the box" *
M	=	Provided with modification **
C	=	Custom development required **
TP	=	Third party software **
R	=	Provided with reporting tool **
NA	=	Not available **

*** To be illustrated at demonstration**

**** Please explain in detail**

******This questionnaire shall be considered part of the specifications for the software system and is an integral part of the offeror's response to this RFP.***

Data/Data Relationships

Capabilities: Please choose one (1) response from the System Software Application Questionnaire as shown on Page 33 to indicate whether system currently provides/supports each of the following:	
F	Ability to ID (company, facility, person, location, site, permit,) information for all types of facilities (ID, location, description and type for environmental, health, controlled substance, coastal and environmental health facilities) across multiple transactional systems.

F	Owner/responsible party and contact information (name, tax ID, phone, FAX, Email, address, and other information such as multiple contacts, multiple addresses or phone numbers and established relationships between entities).
F	Established relationships between entities (permits across program areas, compliance and enforcement information, parent company with multiple sites or subsidiaries).
F	Analysis, monitoring, laboratory, assessment and modeling information (results, determination, scenarios, parameters must be exchangeable).
F	Identification of system inconsistencies across the enterprise domain.
F	Ability to monitor data domains for compliance with data policies.
F	Utilize data validation sources to correct data.
F	Ability to map agency wide systems.
F	Ability to display company, facility data according to specific parameters (thematic display).
F	Store and retrieve legacy information (legacy records, history files, metadata).

Security

Capabilities: Please choose one (1) response from the System Software Application Questionnaire as shown on Page 33 to indicate whether system currently provides/supports each of the following:	
M	Security (rights and/or password control) at menu level. **EIS Response:** EIS can direct SAS to restrict access based on user role.
F	Security (rights and/or password control) at data (field) element level.
F	Centralized security for all modules.
F	Unique user id/password combination for each user.
F	Security based user interface to support revision and modification of an established business process and ability to maintain a version history of the previously established business process.
F	Identify and log attempted illegal access at place of occurrence and at system level.
M	Self-service for resetting password.

	EIS Response: EIS will rely on SC DHEC's existing active directory to meet the requirement above.
M	Automatic expiration of password with prior warning. **EIS Response:** EIS will rely on SC DHEC's existing active directory to meet the requirement above.
F	Track, record and timeout illegal attempts at system access.
F	Maintain transaction log (audit history with time stamp six (6) digits after second) for any changes (including edits and deletions) for the entire system.
F	Maintain a system access (log in/out history by client, server and database locations) with time stamp in seconds.
F	Automatic log off when no activity for a set (administrator configured) period of time.
F	Maintain/enforce security process to allow appropriate approval before facility/permit's legal name changes due to merger or change of legal ownership.
F	Ability to limit access to a minimum of these functions (Inquire, Delete, Add, Update).
F	Ability to limit access to a minimum of these levels (Screens, Reports, Applications, Menus, Fields).

Licensing: Please choose one (1) response from the System Software Application Questionnaire as shown on Page 33 to indicate whether system provides each of the following:

F	Software licenses based on sites.
N/A	Software licenses based on number of users. If license is based on number of concurrent users at one (1) time, please explain the message/notification system advising users when maximum number of user logins is reached. **EIS Response:** EIS' software licensing for this opportunity is not based on number of users. EIS is happy to provide a software license for unlimited users; however, the hardware recommendations will not scale to unlimited users.
M	Perpetual site license with unlimited access (based on number of agency users). If yes, please provide details. **EIS Response:** EIS is happy to provide a software license for unlimited users; however, the hardware recommendations

	will not scale to unlimited users.

Future Releases: Please provide as much detail as possible.

F	Describe how minor updates and revisions to your system are distributed (regular intervals, emergency releases, etc.). Please include details on this process. **EIS Response:** SAS' versioning and patch management process encompasses: ➢ Feature Releases – These releases contain significant design and functionality enhancements. Feature releases for mature products are generally made available annually, however, release schedules are subject to revision and cannot be guaranteed. ➢ Maintenance Releases – These releases contain additions to existing functionality and minor enhancements and updates and are available every between major releases. These releases contain small additions of functionality and bug fixes. Maintenance releases may include: • Defect fixes, including hot fixes and limited impact bug fixes • Business motivated, limited impact new features • Localization corrections and updates (i.e. translated versions) • Documentation corrections and updates • Support for major third party software releases (database, application server, operating system, java virtual machine) ➢ Zap/Patch – In exceptional cases, a zap or patch may be written for critical problems. If a zap or patch is necessary, it will be provided via the SAS Notes or made available electronically. Maintenance releases and hotfixes are updated on an ongoing basis as necessary. Major releases, generally occur every 18-24 months.
F	Describe the process by which it is determined what modifications/patches are included in a new revision. **EIS Response:** Provided SC DHEC opts to continue software maintenance under is software license, maintenance or software enhancements for the SAS system is provided through replacement executable modules or "hot fixes." Availability of "hot fixes" is announced on our Technical Support web site (http://support.sas.com/ts). Customers can be notified of the availability of "hot fixes" via e-mail by subscribing to our TSNEWS-L mailing list. In exceptional cases, a zap or patch may be written for critical problems. If a zap or patch is necessary, it will be provided via the SAS Notes or made available electronically.
	If DHEC signs an ongoing maintenance agreement, will there still be additional fees for minor updates? For major updates? Please provide cost estimate based on similar agreements with other customers. **EIS Response:**

	Under a remote managed services model, SAS, as EIS' subcontractor, patches servers as quickly as possible for critical vulnerabilities based on a risk assessment. The timing of the application of the patches depends on the security vulnerability, the assessed business and technical risk, and how quickly an outage can be scheduled, if required. The need to implement a patch is formally communicated to the customer by the SAS project manager or technical account manager. Implementation of the patch is also tracked, including the specification of which customer-hosted servers and services are affected as well as the scheduling of any required outages. Major updates can be included under a customer care agreement in out years of the contract. SAS would install the software as part of the Remote Managed Services agreement. The integration and configuration of the system may require additional consulting services for data migration and or customization that may result in additional fees. These efforts are reviewed and planned jointly between customer and SAS, and managed via the mutually agreed upon change control process. EIS' software licensing agreement provides for maintenance of the Software without need for execution of a separate maintenance agreement.
	Describe current and future development activities and plans. Include estimated delivery dates. **EIS Response:** Please see SAS' response above for details on feature, maintenance and zap/patch releases. Below please find more specific information on the MDM future development activities and plans. Next release themes – Q1 2015 <u>Enhanced Hub Content Design and Management Capabilities</u> ➢ MDM 4.2 which includes: • Source system management GUI for simple, streamlined source system content ingestion and target publication management • Integrated reporting interface with default reports and ability to create custom reports on hub content • Ability to recluster hub records after contributor retirement • Ability to model specific relationship types using attributes on relationships ➢ Data Remediation 2.2 which includes: • Ability to create ad-hoc remediation issues • Overview dashboards to see status of remediation queue ➢ Data Management Platform 2.6 which includes: • New cross-field matching capability for more nuanced record matching <u>Expanded Metadata Management and Governance Policy Enforcement</u> ➢ Business Data Network 3.1 which includes: • Centralized business data glossary with integrated workflow for role-based content management • Ability to associate business metadata with technical metadata ➢ Lineage 3.1 which includes: • Common lineage viewer for all SAS products and solutions (including MDM hub data)

	• Ability to visualize SAS and non-SAS metadata and relationships from a single interface Big Data Integration ➢ Data Management Platform 2.6 which includes: • New ODBC drivers for accessing data in Hadoop via Apache Hive and Cloudera Impala Future plans - targeting additional release of MDM in Q4 2015

DELIVERY/PERFORMANCE LOCATION -- SPECIFIED (JAN 2006)

After award, all deliveries shall be made and all services provided to the following address, unless otherwise specified: South Carolina Department of Health and Environmental Control (DHEC) 2600 Bull Street, Columbia, SC 29201. [03-3030-1]

EIS has reviewed this requirement and will comply.

DELIVERY DATE -- PURCHASE ORDER

All items shall be delivered in accordance with the implementation timeline addressed on page twenty-four (24) after receipt of purchase order.

EIS and SAS have reviewed the timeline provided by SC DHEC on page twenty-four of the RFP and we agree to deliver all deliverables within the timeframe of the SC DHEC timeline. In order to ensure the project stays on track and on-time, SAS has noted in our proposed timeline response above, a few deliverables that will be delivered in a different phase than initially indicated. Any such changes are based on SAS' best practices and previous experience designing and implementing MDM and Analytic solutions. SAS, as subcontractor to EIS, has included a more detailed implementation timeline, which incorporates our project management best practices and adheres to the timeframes in SC DHEC's original timeline. Per the Pre-bid Questions included in Amendment 1, SAS is willing to revisit the timeline per SC DHEC's answer.

INSTALLATION (JAN 2006)

Contractor shall install all items acquired pursuant to this contract as follows: Cost for installation to be provided for information purposes only as additional services. If DHEC chooses a proposed solution where the application is to be installed on DHEC premises the installation will be at the DHEC location and within the timeline specified on the purchase order. [3-3050-1]

EIS has reviewed this requirement and will comply.

SERVICE LEVEL AGREEMENT

Offeror must provide a copy of the standard service level agreement (SLA) associated with their response. The SLA must address both migration and transition deliverables, and ongoing service level commitments. The SLA must include financial incentives/awards provided to DHEC if respondent or provided solution does not meet SLA performance commitments.

EIS has provided a copy of its Service Level Agreement as Appendix D.

SOFTWARE LICENSE AGREEMENTS

The highest ranked responsive and responsible offeror must be able to negotiate the EULA within thirty (30) calendar days after the State completes the responsive and responsibility verification. The negotiations of the EULA will be completed before the Intent to Award is issued. Please refer to Attachment A as an example of the SOUTH CAROLINA STANDARD AMENDMENT TO END USER LICENSE AGREEMENTS FOR COMMERICAL OFF-THE-SHELF SOFTWARE SINGLE AGENCY.

Additionally the State reserves the right to negotiate the service level and software license agreement submitted for review.

EIS has submitted with its response as Appendix E the software license agreement for review by the State. EIS agrees to negotiate the Software License Agreement within 30 calendar days after the State completes the responsible and responsibility verification.

SUPPORT/MAINTENANCE

Maintenance is required as outlined in the specifications. One (1) year of phone/onsite visits are included as follow up to production implementation.

Included in EIS' initial licensing fee is twelve months of maintenance, version upgrades, and support to include:

- Updates to software and documentation
- Software patches and bug fixes
- Help with system configuration problems, end-user problems, and with other aspects of using the proposed software system

All problems reported to technical support are initially handled by a technical support analyst who works with you to identify and (in many cases) solve your reported problem. If the problem is not resolved during the primary contact, the analyst assigns a tracking number to the problem and does additional research or might pass it to a specialist.

SAS maintains outstanding customer satisfaction through real-time technical support and a variety of self-help resources. SAS customers receive a full suite of support services at no extra charge, including skilled telephone technical support and unlimited, around-the-clock online technical support. Our online customer support center provides always-on access to a wealth of technical support, reference information, educational resources and communities. Knowledge-sharing is continuously available through regular seminars, Webcasts and an expansive selection of training courses.

TECHNICAL SUPPORT -- INCLUDED (JAN 2006)

Upon request, contractor shall provide technical assistance or service. Such service shall be available within eight (8) hours by phone and twenty-four (24) hours for onsite support following request. [03-3075-1]

SAS' technical support model will meet the agency's support requirements. SC DHEC can use any of the following methods to report problems to SAS Technical Support staff:

- **Telephone support.** Your users can call (919) 677-8008 for Technical Support to report trouble or a problem. Each call is answered by an Assistant Technical Support Analyst, who will direct your call to an analyst who specializes in the area of your problem. Telephone support is provided weekdays for new questions: 9:00 a.m. to 8:00 p.m., Eastern Standard Time. Limited support is available between 5:00 p.m. and 8:00 p.m. for questions with an assigned tracking number. For critical problems after normal support hours, callers are directed to one of our world-wide support centers in North America, Europe, or Asia/Pacific, thus providing 24-hour "follow the sun" support. Note that after-hours support is limited to critical problems.
- **Web and E-mail.** Through our World Wide Web site (http://support.sas.com) users can report problems to Technical Support and receive a response via e-mail or phone, update existing problem entries, and review problem status. Our Electronic Mail Interface to Technical Support (EMITS) is available for users without web access to report problems, obtain information, update problems, and check on problem status through e-mail. Once a problem is reported to Technical Support electronically, a tracking number is assigned, and the problem is handled in the same manner as problems reported by telephone, with the exception that most correspondence about the problem is then conducted via e-mail.
- **Problem submittal via fax.** Customers can also submit technical issues or questions via fax to (919) 531-9449. When using fax, please provide complete customer contact information (including site number), a complete description of the issue/problem, and an indication as to severity.

SAS will work with SC DHEC to meet onsite support requests. Within 24 hours of a request our consultants can schedule an onsite visit.

Maintenance must include version upgrades and technical support. Please specify maintenance details.

SAS' versioning and patch management process encompasses:

- **Feature Releases** – These releases contain significant design and functionality enhancements. Feature releases for mature products are generally made available annually, however, release schedules are subject to revision and cannot be guaranteed.
- **Maintenance Releases** – These releases contain additions to existing functionality and minor enhancements and updates and are available every between major releases. These releases contain small additions of functionality and bug fixes. Maintenance releases may include:
  - Defect fixes, including hot fixes and limited impact bug fixes
  - Business motivated, limited impact new features
  - Localization corrections and updates (i.e. translated versions)
  - Documentation corrections and updates

- Support for major third party software releases (database, application server, operating system, java virtual machine)

- **Zap/Patch** – In exceptional cases, a zap or patch may be written for critical problems. If a zap or patch is necessary, it will be provided via the SAS Notes or made available electronically.

Maintenance releases and hotfixes are updated on an ongoing basis as necessary. Major releases, generally occur every 18-24 months.

Maintenance, hotfix releases and major updates are included as part of the remote managed services, if additional data migration, or customization services are not necessary. SAS will jointly review the impact of such changes. If additional configuration or integration efforts are required, additional fees may apply.

TRAINING (JAN 2006)

Upon request of DHEC, contractor shall provide training within thirty (30) days after notification, at the specified DHEC facility. [03-3080-1]P

SAS understands that training is a very important element of executing an information strategy through a Master Data Management Solution. SAS will schedule and provide training within thirty (30) days after the agency notifies SAS with a need for training. As part of this proposal, SAS is including the following courses that will be given on-site at the agency:

1. **SAS Platform Administration: Fast Track** – This training course provides accelerated learning for those students who will administer the platform for SAS Business Analytics.

2. **SAS Data Integration Studio: Fast Track** – This course is for platform administrators who need to administer SAS Data Integration Studio.

3. **SAS Analytics Training** – This course is for users who do not have SAS programming experience but need to access, manage, and summarize data from different sources, and present results in reports and graphs. This course focuses on using the menu-driven tasks in SAS Enterprise Guide, the point-and-click interface to SAS, to create queries and reports.

4. **SAS Visual Analytics: Fast Track** – This course teaches how to explore data and build reports using SAS Visual Analytics. You will learn how to build queries in SAS Visual Data Builder and you will also learn to utilize SAS Visual Analytics Administrator.

5. **SAS Master Data Managem**ent – This course covers how to operate and administer the SAS Master Data Management solution. From entity resolution to data remediation, the material will cover the breadth that is necessary to make both admins and end-users proficient.

SAS will administer these courses during Phase III of the proposed timeline; additionally, SAS will offer quarterly refreshers at no additional costs during the 2nd year of the contract. These refresher courses will be held for 2 days per session at a mutually agreed upon date and time during the first year following implementation.

Should the agency desire additional training opportunities, SAS has a diverse selection of courses to compliment the included training that can be purchased for additional fees and scheduled within 30 days of notice to SAS.

5. For all support services and guarantees offered provide details regarding:

a. Maintenance

Under the Remote Managed Services (RMS) model proposed, SAS will perform remote installation of hot fixes provided by SAS Technical Support division applicable to the then-current release of the Software installed on the System. Installation of new releases of the Software by SAS may require additional data migration or customization services, which would need to be mutually planned for and agreed to with SC DHEC. Any additional services will be managed through a mutually agreed upon change management process.

SAS tracks all preventative maintenance via its issue tracking applications. SAS provides maintenance for the SAS system through replacement executable modules, or hot fixes, that might be supplied individually or in bundles. The availability of hot fixes is announced on the Technical Support Hot Fixes Web page (ftp.sas.com/techsup/download/hotfix/hotfix.html) and via e-mail by subscribing to our TSNEWS-L mailing list (support.sas.com/community/rss/).

b. Expected response times

SC DHEC always has the ability to make the first call to the SAS Project Manager or Technical Account Manager assigned to the SC DHEC relationship, and in this case, the same response metrics below would apply. SAS Technical Support is typically the way that SAS customers report incidents or problems. The average hold time for customers who call us is less than 30 seconds, and more than 70 percent of questions that come in are resolved within 24 hours. SAS provides unparalleled, award-winning technical support 24 hours a day, 7 days a week via telephone, e-mail, or the SAS Web site (www.sas.com) through SC DHEC's annual renewal of software maintenance.

Under the remote managed services model that is proposed, it is recommended that the State first call or email SAS Technical Support to report a problem. All problems reported to SAS Technical Support are initially handled by a consultant who will work with SC DHEC to identify and (in many cases) solve the problem. If the consultant cannot resolve the problem on primary contact, he/she assigns a tracking number and does additional research on the problem or passes it to a specialist. If the problem is related to a product feature or is due to user inexperience, for instance, then SAS Technical Support will respond and close out the issue. The following link highlights SAS technical support response times, http://support.sas.com/techsup/support.html#hours.

If the reported problem is due to on premises infrastructure, consulting efforts, or software updates, then the issue will be immediately reported to SAS Solutions on Demand. The following response times are outlined in Appendix D for Remote Managed Services as provided by SAS Solutions on Demand.

Operational Incident Severity Level	Description
Blocker	Set this when: The issue directly impacts Customer by blocking development and/or testing work for multiple Users, or Customer's production environment cannot run. Result: Target Operational Incident Response Time is within thirty (30) minutes. Once a Blocker ticket has been entered in the Issue Tracking System by SAS or Customer, emails are sent to the Operational Incident reporter, the SAS representative to whom the ticket has been assigned, [SSO] IT Support, [SSO] SAS Administration, [SSO] Database Administration, [SSO] Oncall, [SSO] DrugDev Oncall and [SSO] Project Management every ten (10) minutes until the assignee acknowledges the ticket as In Progress. Monthly Operational Incident Response Time Objective: 90% within thirty (30) minutes.
Critical	Set this when: The issue relates to a loss of data, the inability of an individual User to access the System, or potential impact to a key deliverable or deadline. Result: Target Operational Incident Response Time is within four (4) hours on SAS Business Days. Monthly Operational Incident Response Time Objective: 90% within four (4) hours on SAS Business Days.
Major	Set this when: The incident is impacting a User's ability to perform a task without a critical deadline. Result: Target Operational Incident Response Time is within one (1) SAS Business Day. Monthly Operational Incident Response Time Objective: 90% within 1 SAS Business Day.
Minor (Default)	Set this when: This is the default setting for most issues, where the timeframe is not critical. The issue relates to a minor loss of functionality or a task, or problem that needs to be addressed or tracked. Result: The issue should be reviewed weekly and updated as progress occurs. Monthly Operational Incident Response Time Objective: 90% within one (1) week.
Trivial	Set this when: There is a cosmetic problem in a document or interface such as

	misspelled words or misaligned text. Result: The issue should be reviewed weekly and updated as progress occurs Monthly Operational Incident Response Time Objective: 90% within next business week.

c. Warranties and Guarantees (functional, performance, and quality of workmanship)

Any warranty offered is contained in the Service Level Agreement and the End User Licensing Agreement submitted with this response.

d. Standard Service Level Agreement (SLA)

The SAS Solutions OnDemand SLA is 99%, and SAS engineers our remotely managed solutions to maintain this SLA, as described in the attached Service Level Agreement in Appendix D.

e. Provide recommendation hardware configuration and architecture to operate the software. Note: While the recommended hardware configuration and architecture to operate the software is required as a part of this solicitation, the hardware purchase will not be part of this solicitation, but will be purchased from the State of South Carolina Statewide contract.

Below SAS has provided a very high-level hardware configuration and architecture for SC DHEC. Actual hardware and network configurations will depend on several factors. Some of these factors include software licensed, preferred platform, size of data, number of users, number of concurrent users, user behavior, budgetary constraints, etc. The SAS Enterprise Excellence Center is a dedicated team that works with our customers and hardware partners to determine optimal architecture recommendations given the answers to these questions provided by SC DHEC. During project initiation, a more detailed recommendation can be provided to SC DHEC following this architecture analysis exercise. Figures 3-5 below, provide samples for the production, test and development environments and contain sample server sizings and allocated storage. Our flexible architecture options can be configured to leverage investment in current IT standards.

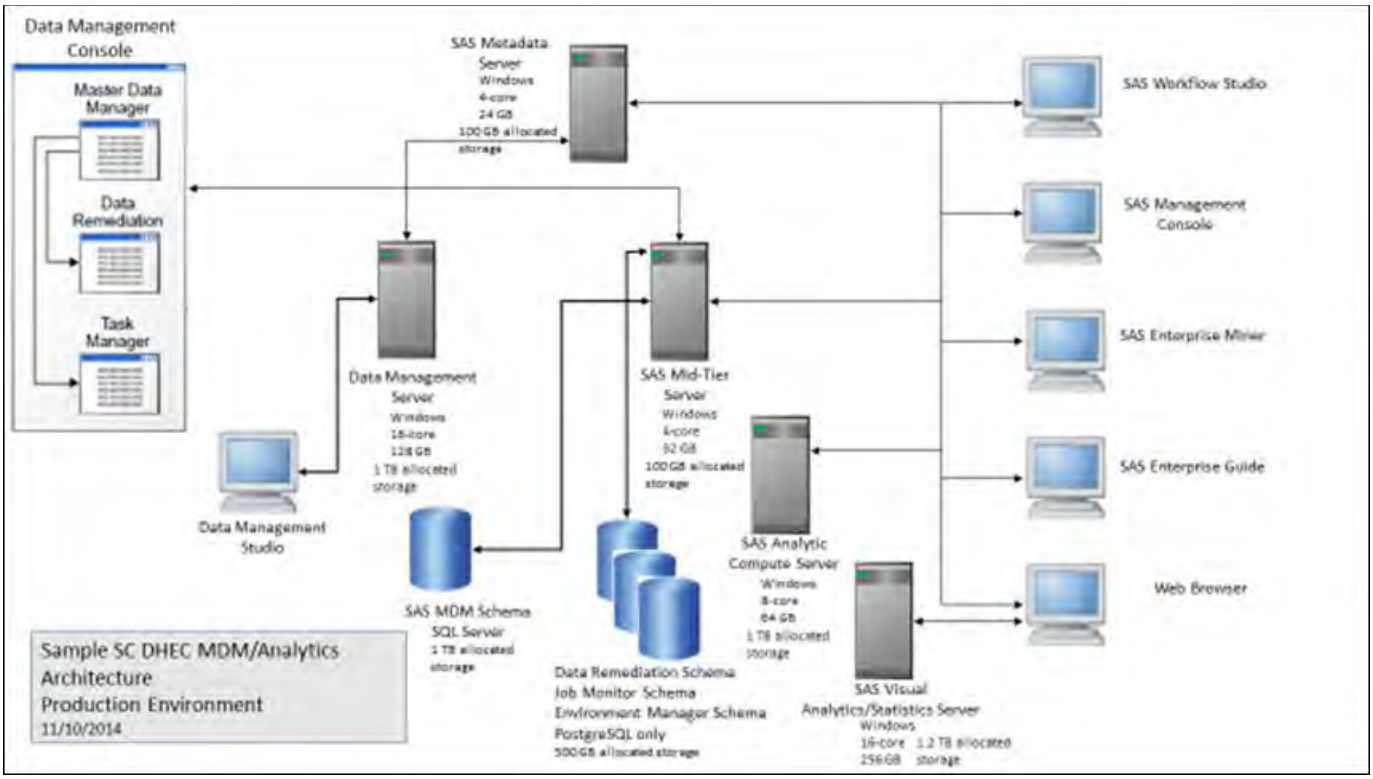

Figure 3: SC DHEC Production Environment Architecture Diagram – Based on current known information, this represents a sample architecture to scale to the current needs of the production implementation.

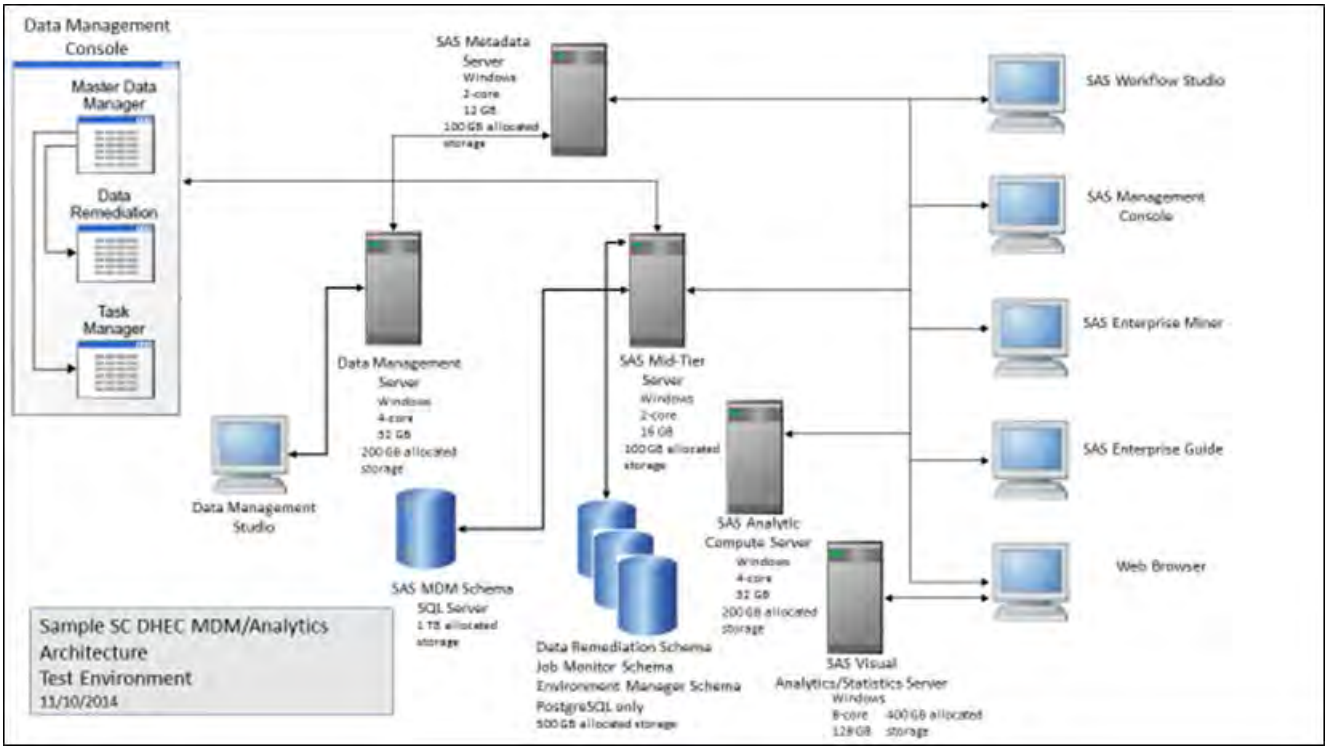

Figure 4: SC DHEC Test Environment Architecture Diagram - Based on current known information, this represents a sample architecture to scale to the current needs of the test environment. Test environment deployments are typically 25% of production capacity.

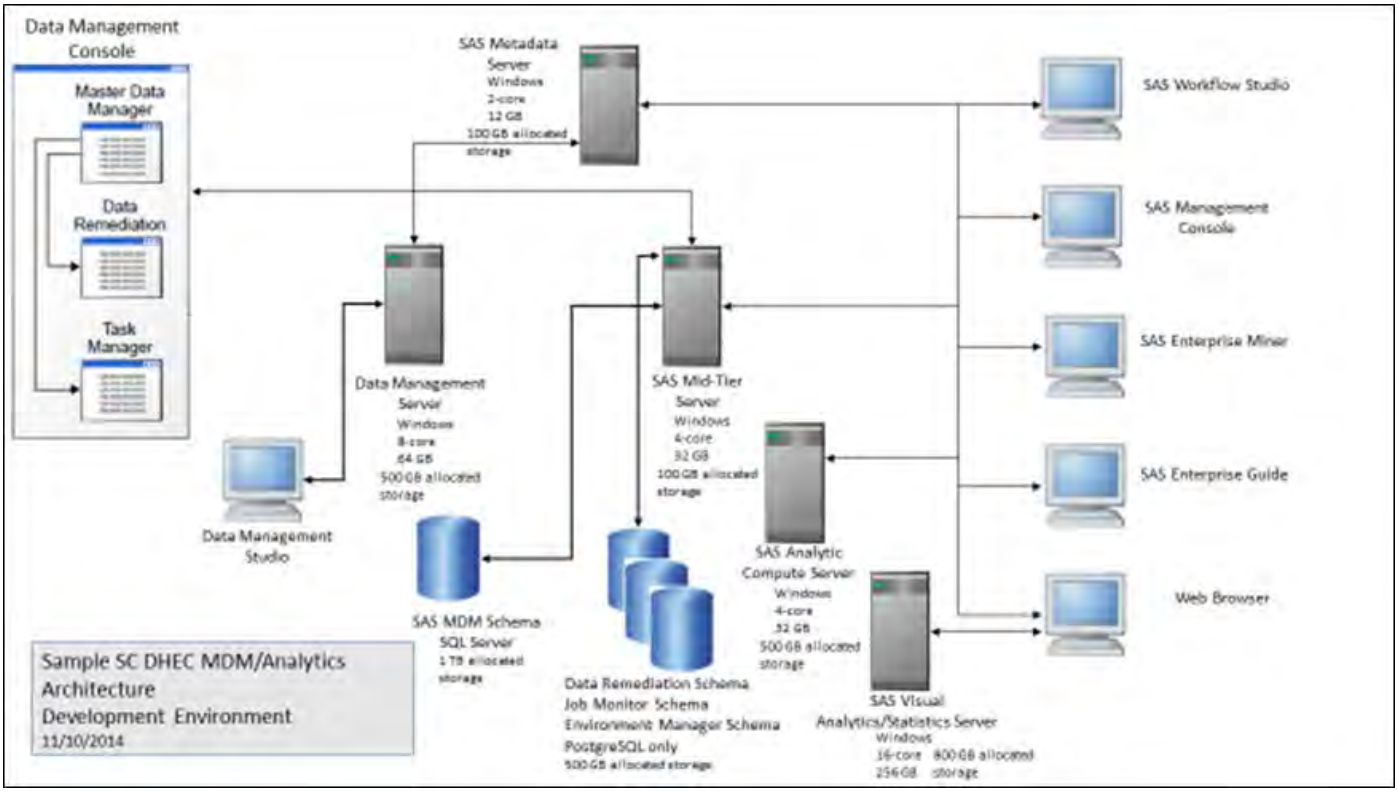

Figure 5: SC DHEC Development Environment Architecture Diagram - Based on current known information, this represents a sample architecture to scale to the current needs of the development environment. Development environment deployments are typically 50% of production capacity.

f. Indicate third-party software packages required for services to function correctly (i.e. libraries, data quality, data integration, and security) and should indicate if DHEC, itself or a third party service provider will be responsible for purchasing and maintaining licenses.

No third party software requiring separate licensing is included in the SAS MDM solution.

g. Product upgrades and new version releases planned and annual expectations for ongoing upgrades and version release schedules.

SAS' versioning and patch management process encompasses:

- **Feature Releases** – These releases contain significant design and functionality enhancements. Feature releases for mature products are generally made available annually, however, release schedules are subject to revision and cannot be guaranteed.
- **Maintenance Releases** – These releases contain additions to existing functionality and minor enhancements and updates and are available every between major releases. These releases contain small additions of functionality and bug fixes. Maintenance releases may include:
    - Defect fixes, including hot fixes and limited impact bug fixes
    - Business motivated, limited impact new features
    - Localization corrections and updates (i.e. translated versions)
    - Documentation corrections and updates

- Support for major third party software releases (database, application server, operating system, java virtual machine)

➢ **Zap/Patch** – In exceptional cases, a zap or patch may be written for critical problems. If a zap or patch is necessary, it will be provided via the SAS Notes or made available electronically.

Maintenance releases and hotfixes are updated on an ongoing basis as necessary. Major releases, generally occur every 18-24 months.

h. Indicate any source code which will be provided to the agency at the conclusion of the implementation. Define specific code sets and format to be provided.

EIS is providing a license to COTS software, and therefore, no source code is being provided following implementation. The State will have the right to continue to use the Software provided throughout the term of the license.

i. Define the "exit" strategy for the agency if at some point the software license agreement is dissolved. Include details on data ownership and migration to a format which will be supplied to the agency.

SC DHEC will continually retain ownership of any of its data and will have a perpetual license to the software.

6. *Provide architecture diagram demonstrating installation and integration of all products in an enterprise environment. Should include depiction of where products reside in relation to firewalls, DMZ, and redundant servers/virtualization at the failover site. The diagram should show best industry practices.*

The proposed solution consists of several logical servers deployed on virtual machines with varying capacities for each environment. Solution clients interact with the solution mid-tier and server tiers described in Figures 3-5 above. Solution-supporting databases also exist within the logical solution environment. The network communications between these components is over industry standard protocols using standard ports, where applicable, or well-defined port ranges for specific components. Communications from solution components to existing SC DHEC resources (e.g. operational databases, authentication mechanisms) are also over defined ports or ranges and standard firewall practices can be employed.

With the proposed Remote Managed Services implementation, connectivity to the solution environment is typically supported via VPN access with standard firewall and security practices also employed.

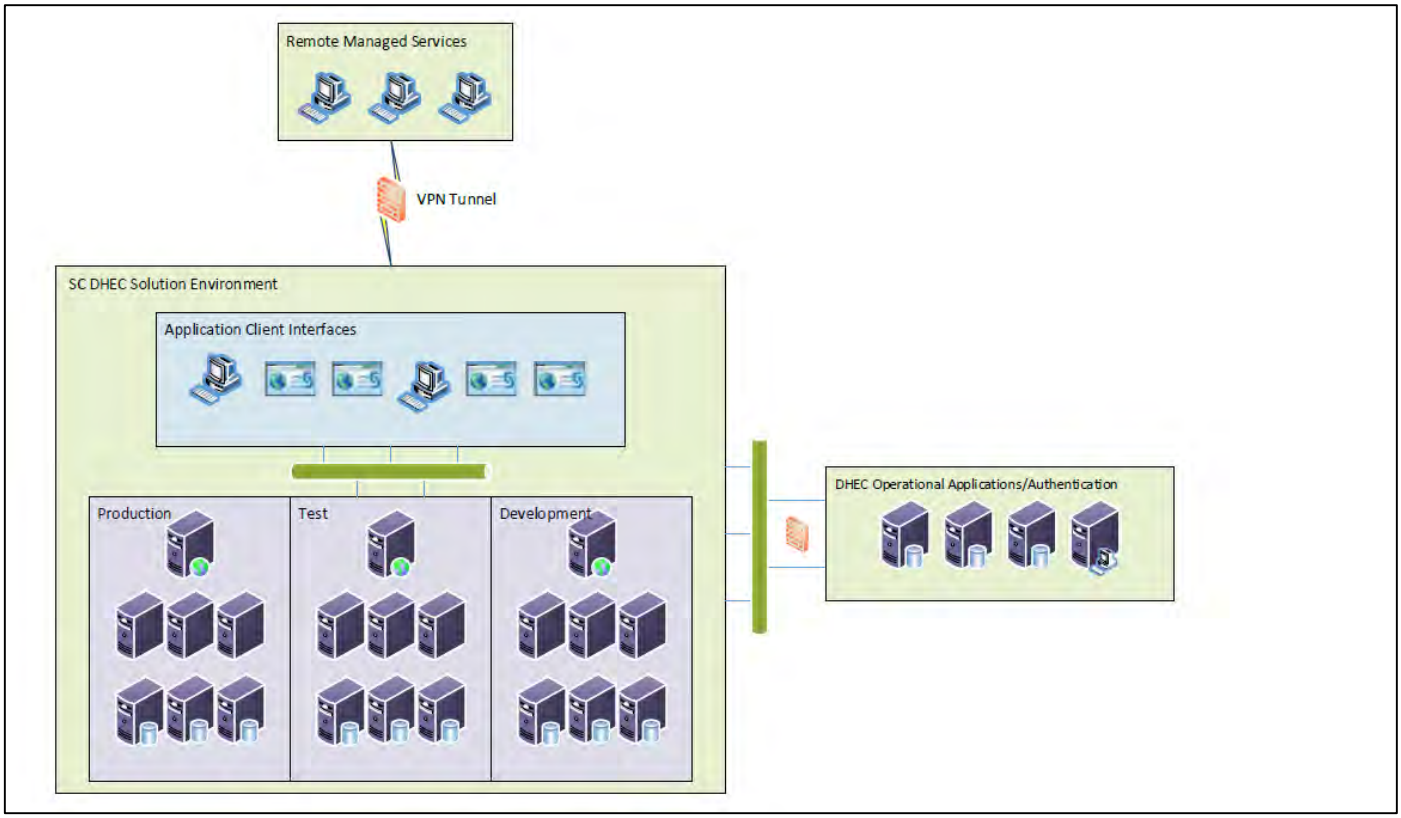

Figure 6: Solution architecture requirements and integration

7. Provide Resumes` for proposed consultants including skillset definitions for all key personnel who will deliver consultant services as outlined in this solicitation. Resumes must include at a minimum the individual's name, current and past positions and titles, years of experience, degree information, and the anticipated role in this project. Approval of any consultant change is required by DHEC during the entire project.

The resumes for SAS' proposed consultants, included in SAS Appendix B, represent the expertise we have available. Specific consultants for this project will be assigned based on actual requirements of the project, scheduling, and other commitments.

SAS consulting services team members performing implementation services have received extensive training on SAS practices and procedures. When possible, we attempt to build our teams using consultants who have previously worked together. This further extends the benefits of our team approach.

Project Team Qualifications and Experience

SAS approaches each development project as a partnership with its clients. Therefore, we anticipate that the project team will include people from both SAS and SC DHEC, who will have direct involvement with the project.

Once the details and schedule for this project are finalized, we will assemble our initial project team. The SAS project team will include:

- Data Governance and Management business consultants – Consults with SC DHEC to understand and define Data Governance and DM needs.
- Technical Architect – Oversees the design of application architecture and ensures components.
- Project Manager – Tracks the progress of the project, leads meetings, and manages scope. The SAS project manager works closely with the SC DHEC project manager.
- Account Manager – Initiates project and defines initial scope.
- QA Specialist – Verifies proper functionality of the project against the objectives using industry best practices.
- Documentation Specialist – Organizes written documentation, provides consistency across the documents, and edits documents.
- ETL developer – Implements data management processes.

Everyone assigned to this team will have the education and experience necessary to perform their related duties. SAS strives to hire and retain the best employees in the industry. Our consultants have bachelors, masters, and doctorate degrees in such areas as computer science, statistics, operations research, and business administration. They also are experienced in detailed consulting operations, applications development, system analysis and design, and project management.

Project participants from SC DHEC should include:

- Project Manager – Tracks the progress of the project, serves as a single point of contact (although team members always contact each other directly), and ensures the right people are on the project. The SC DHEC project manager works closely with the SAS project manager.
- Data Stewards – Provides subject matter expertise on source data. Each data concept, such as Customer, Company, etc, should have a data steward assigned to that concept. One person can be the data steward for multiple data concepts. The data steward is very familiar with the data and is able to describe where the data comes from, how it is manipulated, how it is accessed, and any security rules around the data. Frequently, separate stewards are assigned to focus on business usage/definition and technical implementation. Data stewards are responsible for coordinating the definition and usage of all data in the system.
- Technical staff – Provides technical support for the administration and use of SAS software. SAS will provide a training package for use of the software. SC DHEC will designate who will attend training.
- Project Sponsor – Holds the ultimate decision making ability for the program and provide strategic direction and support for the program. Generally a high level leader.
- Project Steering Committee members – Meets once a month with the project team to monitor project progress and assist in making any high level decisions.
- UAT Testers – Verify the solution functionality meets SC DHEC's requirements. UAT Testers are frequently also data stewards.
- Users – SC DHEC may want to periodically poll users throughout the project to verify the project will meet their needs, or help make decisions on how to best help them.
- DBA – SC DHEC is providing a SQL database that will be used as part of this project. The SC DHEC DBA will be primarily responsible for database administration activities.

For many of the project participant types above, one person can fulfill multiple roles.

Data Management Consulting Resumes

The consulting team will be made up of senior level management consultants from the SAS Data Management Consulting practice. Each member of the team has a minimum of 10 years of experience in Data Management best practice and solution delivery across industry verticals. The resumes for Steve Putman and Robert Stone in SAS Appendix B are reflective of the profile of SAS resources.

SAS cannot guarantee the availability of specific consultant staff until a signed contract is in place. The resumes of the assigned actual consultants will be provided prior to the start of the engagement.

8. The Technical Proposal shall not include any price/cost information. Offeror's are to use Section VIII. Price/Proposal to provide price/cost information. This section is to be submitted separately.

EIS understands and has provided all pricing in our Pricing response.

a. However, information such as data concerning labor hours and categories, materials, subcontracts and so forth, shall be considered in the Technical Proposal (with no cost noted) so that the Contractor's understanding of the Scope of Work may be evaluated.

EIS understands and will provide descriptions only in the Technical response with all costs provided only in the Price response.

D. Qualifications and Experience

1. V. Qualifications

V. QUALIFICATIONS

QUALIFICATION OF OFFEROR (JAN 2006)

To be eligible for award of a contract, a prospective contractor must be responsible. In evaluating an Offeror's responsibility, the State Standards of Responsibility [R.19-445.2125] and information from any other source may be considered. An Offeror must, upon request of the State, furnish satisfactory evidence of its ability to meet all contractual requirements. Unreasonable failure to supply information promptly in connection with a responsibility inquiry may be grounds for determining that you are ineligible to receive an award. S.C. Code Section 11-35-1810. [05-5005-1]

EIS understands the above qualification of Offeror and will comply as necessary.

QUALIFICATIONS -- MANDATORY MINIMUM (JAN 2006)

(a) In order to be qualified to receive award, you must meet the following mandatory minimum qualifications: Offeror must have a minimum of five (5) years' experience providing similar services and deliverables for government or private entities.

SAS meets the minimum five years' experience of providing similar services and deliverables for government and/or private entities. The SAS MDM solution for the SC DHEC is built on a solid foundation of our proven off-the-shelf technologies for data management, data quality, analytics and reporting, which we have been providing to government and private entities for over 38 years. SAS has provided numerous examples of our specific customers and experience in response to additional SC DHEC requirements below.

(b) The Procurement Officer may, in his discretion, consider (1) the experience of a predecessor firm or of a firm's key personnel which was obtained prior to the date offeror was established, and/or (2) any subcontractor proposed by offeror.

EIS acknowledges this statement.

(c) Provide a detailed, narrative statement providing adequate information to establish that you meet all the requirements stated in subparagraph (a) above. Include all appropriate documentation.

SAS, as subcontractor to EIS, has provided a narrative statement to subparagraph a above.

[05-5010-1]

QUALIFICATIONS -- REQUIRED INFORMATION (JAN 2006)

In order to evaluate your responsibility, offeror shall submit the following information or documentation for the offeror and any subcontractor, if the value of subcontractor's portion of the work exceeds 10% of your price (if in doubt, provide the information):

(a) Include a brief history of the offeror's experience in providing work of similar size and scope.

EIS is SAS' authorized government reseller of SAS Software and is authorized to license SAS Software to SC DHEC. EIS subcontracts all, consulting services, hosting services and training directly to SAS; therefore, the below offeror's experience response represents the history/experience of SAS.

Leader in Big Data & Data Management Technologies:
For 38 years, SAS has been a leader in the data collection and data integration industry. In fact, SAS has engineered more native database interfaces (access engines) than any competitor in the market. Since 1976, SAS experts have integrated data, ensured its quality, and, frequently, employed a master data management strategy. We have hundreds of employees dedicated to gathering and organizing every type of data source. SAS data management and analytic experts will apply their experience to standardize the integration efforts and reduce the overall project costs for the SC DHEC.

SAS has consistently been positioned in the Leaders Quadrant of the Gartner Magic Quadrant for products such as data quality, enterprise business intelligence and data mining. Not only is SAS the largest vendor in the overall data mining market, we have the most established track record of customer successes. Gartner cites our strength being due to our wide set of tool-based capabilities along with our expanding numbers of packaged solutions. SAS is the overwhelming leader in the advanced analytics market with 35.4% market share, dwarfing sales of the other named advanced analytics providers' whose combined market share was only 22.3 percent of the 2013 market. (IDC, July 2014).

With the industry's only truly integrated data integration, data quality, and MDM platform, SAS has the ideal platform to help the SC DHEC advance its efforts as a leading force in state government by deploying a modern, high-speed, secure, web-based master data management system.

The SAS MDM solution for the SC DHEC is built on a solid foundation of our proven off-the-shelf technologies for data management, data quality, analytics and reporting. Included in the SAS MDM solution for SC DHEC are capabilities from the following proven, industry leading technologies:

- SAS Enterprise Data Integration
- SAS Data Quality
- SAS Data Governance
- SAS Master Data Management

Independent research firm Forrester cited SAS and SAS/DataFlux as a Leader in Enterprise Data Quality and recognized SAS as a leader for Enterprise ETL and Business Intelligence Platforms.

While almost any vendor in the data management space will have similar technologies, there are particular capabilities that SAS will bring to bear for the SC DHEC that no other vendor can match:

- Market-leading data quality and data management solutions that provide highly flexible file format data management consistent with the stringent requirements of data security and data validation
- Unique identity resolution algorithms for creating validated indexes for entities such as vehicle registrations, citizen details, service centers, and more.
- Data integration and data integrity algorithms to automatically uncover data submission anomalies, provide targeted feedback, and increase the efficiency of the data management process over time. Included in the SAS solution are cutting-edge de-duplication and other technologies to identify quality/validation issues and alert SC DHEC.
- Automated data structuring algorithms that will automatically segment the data warehouse into data marts that restrict variables, uniquely identifiable information, enforce minimum cell size, and implement other specified criteria necessary to fulfill the data access/security requirements for that user or for participating systems.
- Comprehensive data security management and use monitoring that manages all user access to data and reporting, logging all user interactions on the system. Included in our solution is our proven methodology used by hundreds of SAS customers.
- A full range of support and training services necessary to implement and manage the solution in coordination with the SC DHEC staff and to help bridge the gap between public policy and analytic insight.

> Forrester has also cited SAS as the leader in Big Data Predictive Analytics Solutions. Q1 2013

Moreover, SAS' unmatched capabilities in analytics will provide a plethora of opportunities to not just bring the state data together for a single view, but also to do more with the data once it is consolidated. Our recommended solution provides not only best practices and advanced methods, but also advanced reporting capabilities that allow an operations team to explore MDM performance further or for a planning team to understand how to gain more insight from the data and drive change.

(b) Your most current financial statement, financial statements for your last two (2) fiscal years, and information reflecting your current financial position. If you have audited financial statements meeting these requirements, you must provide those statements. [Reference Statement of Concepts No. 5 (FASB, December, 1984)]

In a separately sealed envelope, on a separate CD labeled EIS Financial Information, and uploaded into the SC Procurement site as a file labeled EIS Financial Information, EIS has provided two years of audited financial statements, 2013 and 2012, to meet the above requirements.

In a separately sealed envelope, on a separate CD labeled SAS Financial Information, and uploaded into the SC Procurement site as a file labeled SAS Financial Information, subcontractor SAS has provided two years of audited financial statements for the years ended December 31, 2013 and 2012.

(c) A detailed, narrative statement listing the five (5) most recent, comparable contracts (including contact information) to include two (2) state examples which you have performed and the general history and experience of your organization. No more than two (2) pages should be used per project described. Provide references for those projects to include: Contact name, Job Title, Governmental Entity or Business, Address, Phone Number, Current e-mail Address.

EIS is SAS' authorized government reseller of SAS Software and is authorized to license SAS Software to SC DHEC. EIS subcontracts all, consulting services, hosting services and training directly to SAS; therefore, all of the references provided below represent work done by subcontractor SAS.

SAS has been committed to developing analytical and intelligence software to support local, state and federal government as well as other industries for more than 30 years. Hundreds of organizations rely on SAS technology to support and enhance their intelligence-led operations. SAS has worked closely with many federal, state, and commercial customers including the following:

SAS References:

1. North Carolina Office of the State Controller

Client's Name: Danny Bell, Director, NC CJLEADS

Address: 3512 Bush Street - MSC 1410, Raleigh, North Carolina 27699 – 1410

Phone Number: (919) 707-0400

E-mail: danny.bell@nc.gov

Contract Performance Period: 2009 to Present

Location of Services: Services deployed remotely in Cary NC – on site services will be provided as required

Services Provided:

In 2008, the North Carolina General Assembly initiated the Criminal Justice Integration Program with the mandate to create a statewide crime analysis system designed to save time, money and lives. The criminal justice data integration pilot project, referred to as CJLEADS (Criminal Justice Law Enforcement Automated Data Services), was established to deliver timely, complete and accurate information to law enforcement and those working within the criminal justice system in order to improve their ability to make decisions that impact public --

CJLEADS has two primary objectives:

- To provide a comprehensive overview of an offender through a single application.
- To provide an "offender watch" capability to alert criminal justice professionals when an offender has a change in status within the criminal justice system.

Challenged with obtaining a comprehensive view of individuals with prior criminal records, including potentially dangerous offenders, law enforcement, and criminal justice officials in the State of North Carolina needed an efficient, integrated application to provide quick access to accurate offender information. To replace the manual process of integrating historical criminal data from multiple systems, reduce the risk of overlooking critical data and improve the information needs of law enforcement agencies, the state of North Carolina's Office of State Controller worked with SAS to develop the Criminal Justice Law Enforcement Automated Services (CJLEADS) application.

"The strong, collaborative relationship between SAS and the state of North Carolina has been critical to the development of CJLEADS. SAS' knowledge of key technology and best practices, combined with a flexible, iterative design approach, enabled us to meet the tight, legislatively mandated deadline."

Danny Bell, Project Director, NC Office of State Controller

"CJLEADS is a tool to support criminal justice officials with making quicker and more effective decisions," says Danny Bell, Project Director, NC Office of State Controller. "CJLEADS brings together disparate criminal justice data to help create a more rounded profile of offenders and provides a single source of information from a variety of criminal justice organizations—including court, warrant, probation, parole and local jail information—which agencies can access securely via the web."

With the new system, authorized criminal justice professionals can log in to the application through a secure, web-based interface to perform searches. Search results on individuals are displayed as summaries, which can be clicked on to view more detailed data, such as an individual's criminal background. In addition, automated messages can be requested to monitor an individual's legal status changes.

"Because SAS hosts CJLEADS, the state was able to focus on design and business requirements, rather than procurement and installation of a technical infrastructure," explains Bell. "With shrinking state budgets, leveraging existing computing capabilities and technical support resources was an economical and efficient way to establish the new application environment."

"CJLEADS is highly scalable. Initially supporting 3,000 users, it will grow to support some 33,000 criminal justice professionals," he continues. "Based on improved access to information, the state estimates a savings of $7 million annually. SAS brought considerable resources to this project and demonstrated a vested interest in public safety. SAS' expertise in data integration and analytics, as well as strong security controls of the technical environment, application access and authentication, was critical due to the complexity and sensitivity of the data."

Bell says the greatest challenge developing CJLEADS was data quality and the lack of common data identifiers from disparate sources. "Significant time and effort was spent developing consistent business rules to accurately match multiple system records for one individual. Because critical decisions are made based on information in CJLEADS, accurate data integration was pivotal to the project's success."

2. Florida Department of Education

Client's Name: Andre Smith

Assistant Deputy Commissioner of Data Systems, Florida Department of Education

Address: 325 W Gaines St, Rm 1444, Tallahassee, FL 32399

Phone Number: (850) 245-0428

E-mail: andre.smith@fldoe.org

Services Provided:

FLDOE gathers data from universities, college and K-12 schools for legislative reporting, educational effectiveness reporting and research use. They needed an enterprise-level data processing environment as well as improved governance and shared metadata for accurate reporting and integration across 67+ sources. With the SAS Master Data Management solution, Florida DOE was able to create persistent unique identifier that tracks student from K-12 to college and beyond. They were also able to establish enterprise governance policies and processes and deliver a single view of student and staff to internal users.

3. County of Los Angeles

Client Name: Dr. Ali Farahani, Los Angeles County Chief Data Officer

Address: 350 S. Figueroa Street, Suite 188, Los Angeles, CA 90071

Primary Contact Number: (213) 253-5634

E-mail: afarahani@cio.lacounty.gov

Services Provided:

Los Angeles County has been a user of SAS for at least 30 years and is one of our largest public sector clients. Currently, the County is using SAS for a variety of advanced analytics, reporting, and data management applications including the following:

- The Services Integration Branch within the county's Office of the Chief Executive Officer uses a SAS solution to integrate data from eight different county departments (including all three health departments) for reporting and analytics for the purposes of policy analysis and coordination of benefits.
- SAS is used in the County's Departments of Health Services (DHS), Mental Health (DMH), and Public Health (DPH) for a variety of reporting and analytical purposes. The Department of Mental Health in particular uses the SAS Enterprise Business Intelligence solution for the purpose of analyzing and reporting on a wide range of its health financial and clinical data.
- The Department of Public and Social Services (DPSS) uses an advanced SAS solution to apply analytics technologies to detecting fraud in the administration of the county's child care and in-home supportive

services program. This system has been in place for over three years and is widely regarded as a highly advanced and innovative application of analytics technology in the public sector.

4. Texas Parks and Wildlife

Client Name: John Barry Taylor, Data Analyst

Address: Inland Fisheries Division, Texas Parks and Wildlife

4200 Smith School Road, Austin, TX 78745

Phone: (512) 389-4338

E-mail: john.taylor@tpwd.texas.gov

Services Provided:

Texas Parks and Wildlife needed new ways to target new customers, enhance marketing, and increase operational efficiencies to improve service delivery. To achieve those crucial insights, Texas Parks and Wildlife turned to SAS for business analytics and optimization. The result was the License Utilization and Revenue Enhancement System (LURES), a comprehensive analytics application that provides a 360-degree view of the customer – parks, hunting, fishing, boating, magazine subscriptions and more. Texas Parks and Wildlife has been able to expand the demand for and use of its wide array of natural resources, waterways, hunting and fishing licenses, magazine subscriptions, and more. They have also used SAS to dramatically reduce times required to produce management reports and reconciliations. For more information, please see http://www.sas.com/success/tpwd.html.

5. National Science Foundation

Client Name: Jorge Linares, Branch Chief

Address: 4021 Wilson Blvd, Stafford II - 705.07, Arlington, VA 22230

Phone: (703) 292-8390

E-mail: jlinares@nsf.gov

Services Provided:

NSF is the funding source for nearly a quarter of all federally supported basic research conducted by US colleges and universities. Like many government agencies, NSF needed to provide more insight into its spending and better quantify its efforts and research. To build an analytic platform to derive such insights, NSF first needed to build a foundational data management layer. This realization sparked an enterprise data warehouse initiative. The first area the EDW initiative will address is the Grants Management Branch, which needed to provide greater insight into its grants process. SAS Data Management Standard provided the option to meet NSF's immediate data integration and data quality needs. NSF will use SAS to pull together its financial, merit review, research, organizational and survey data – all from multiple systems and in multiple formats.

(d) A list of every business for which offeror has performed, at any time during the past three (3) year(s), services substantially similar to those sought with this solicitation. Err on the side of inclusion; by submitting an offer, offeror represents that the list is complete.

Below please find a list of all State and Local businesses for which SAS has performed similar services to those sought in this RFP:

Account Name
ARKANSAS DEPT OF HUMAN SERVICES
BEXAR COUNTY TX
BUREAU OF TENNCARE
CA DEPT OF HEALTH CARE SERVICES
CA DEPT OF JUSTICE
CA EMPLOYMENT DEVELOPMENT DEPT
COMMONWEALTH OF KENTUCKY
COMMONWEALTH OF KENTUCKY - DEPARTMENT OF REVENUE
COMMONWEALTH OF KY CHFS OFF OF TECH SVCS
DC GOVERNMENT-OFFICE OF RESEARCH & ANALYSIS
DC OFFICE OF TAX & REVENUE
FLORIDA AGENCY FOR HEALTH CARE ADMINISTRATION
FLORIDA DEPT OF EDUCATION
IL HEALTHCARE & FAMILY SERVICES
KS DEPARTMENT OF WILDLIFE & PARKS
LA COUNTY
LA DIVISION OF ADMINISTRATION
LOS ANGELES COUNTY CA DEPT OF MNTL HLTH

MA EXECUTIVE OFFICE OF TRANSPORTATION/RMV
MD COMPTROLLER OF THE TREASURY
MI DEPARTMENT OF COMMUNITY HEALTH
MI DEPARTMENT OF HUMAN SERVICES
MN DEPARTMENT OF HEALTH
MN OFFICE OF ENTERPRISE TECHNOLOGY
MN.IT SERVICES/ MN DEPT OF HUMAN SERVICES
NC DEPARTMENT OF HEALTH & HUMAN SERVICES
NC DEPARTMENT OF PUBLIC INSTRUCTION
NC DEPARTMENT OF REVENUE
NC DEPARTMENT OF STATE TREASURER
NC DEPARTMENT OF TRANSPORTATION
NC EDUCATION LOTTERY
NC OFFICE OF THE STATE CONTROLLER/NCFACTS
NC OFFICE OF THE STATE CONTROLLER/NCGDAC
NEW YORK CITY DEPARTMENT OF FINANCE
NEW YORK CITY NY OFFICE OF THE MAYOR
NY STATE HEALTH CLUSTER/DOH/NARC
OK DEPARTMENT OF WILDLIFE CONSERVATION
SAN BERNARDINO COUNTY CA DBH
SC DEPARTMENT OF HEALTH & ENIVRONMENTAL CONTROL
SD DEPARTMENT OF TRANSPORTATION

STATE OF MICHIGAN
TENNESSEE-LABOR & WORKFORCE DEVELOPMENT
THE NORTH CAROLINA JUDICIAL DEPT/CJLEADS
TOWN OF CARY NC
TX DEPARTMENT OF PARKS & WILDLIFE/ ACS
TX DEPARTMENT OF TRANSPORTATION
VA OFFICE OF COMPREHENSIVE SERVICES
VERMONT INFORMATION TECHNOLOGY LEADERS, INC.
WI DEPARTMENT OF REVENUE

(e) List of failed projects, suspensions, debarments, and significant litigation.

To the best of our knowledge and belief, EIS has not had a failed project, suspension, debarment, or significant litigation.

[05-5015-1]

1. ***Multiple installations of MDM solution (in use) by government agencies. Please list.***

   Please see the list provided above in response to requirement 1D.

2. ***Ability to demonstrate data mapping and enterprise architecture capabilities, analytic capabilities, data migration, and data feed components.***

   A major US investment management firm (Capital Group), engaged SAS to help evaluate the Business Intelligence and Analytics program. SAS' consultant engaged in interviewing the senior management and key stakeholders as well as evaluating the existing state of decision support and business intelligence landscape for the client. Once the SAS team had completed its engagement, we were able to read out our findings to the client. One key benefit was an inventory of siloed data systems and over 300 spreadsheets being used for reporting. The client was then able to analyze these one-off systems and decide which ones to keep, integrate or retire. SAS helped create an enterprise architecture recommendation for their business intelligence and analytical capability needs. SAS Data Integration Studio and SAS Data Federation Server are key components of any enterprise architecture that requires data migration and data integration.

3. ***Ability to demonstrate data validation and initial data cleansing, data profiles, standardization, monitoring, verifications, and executive dashboards.***

The NC Office of the State Controller uses SAS to consolidate information across all criminal justice entities to create an offender centric view of all offender information. Data sources span multiple branches and agencies of state government, local courts, jails and arrest data, and select federal information. Using SAS technologies the data is cleansed, standardized, and monitored for data quality. Using the SAS Web Studio data quality history and trends can be easily managed by the data stewards and executive level summary reports created. The system provides robust search and watch capabilities so that any criminal justice professional can get accurate and timely offender information at the touch of a button.

4. ***Implementation of data governance framework throughout the entire organization.***

SAS Data Management Consulting engaged with a major financial institution in two 10-week engagements over the course of 15 months, starting in late 2012, to design and implement a data governance framework for the Customer Modeling group. This engagement included interviews with all levels of the organization, the identification of Guiding Principles for the Governance program, designation of staff roles and responsibilities, the development of a roadmap for implementation, and integration with the enterprise Data Governance organization. Implementation of the Data Governance framework included collaborative design of policies and processes, development of metrics to measure program effectiveness, and initial kickoff of all levels of the governance framework within the organization. All levels of the organization understood their roles and supported the rollout of the program, resulting in a highly successful implementation.

5. ***The Offeror must disclose any and all judgments, pending or expected litigation, or other real or potential financial reversals, which might materially affect the viability or stability of the organization, or state that no such condition is known to exist.***

To the best of our knowledge and belief, there are no judgments, pending or expected litigation, or other real or potential financial reversals against EIS or SAS that would materially affect the viability or stability of the organization.

6. ***Offeror must provide a complete list of any lawsuits or pending legal actions, which affect or may affect the Offeror, which have taken place during the past twenty-four (24) months. The list should include any lawsuits where the Offeror may not be a party, but Offeror is aware that a discovery request or an issue in the lawsuit involves the e-permitting solution being proposed to DHEC under this solicitation. The list should include the status and the disposition of the action.***

   Offeror shall identify if it is or has ever been suspended/debarred from doing business with the Federal Government or any other governmental entity.

There are no lawsuits or pending legal actions against EIS or SAS which affect or may affect the Offeror and which have taken place during the past 24 month. To the best of our knowledge, neither EIS nor SAS has ever been suspended or debarred from doing business with the Federal Government or any other governmental entity.

7. ***The Procurement Officer may, in his discretion, consider one (1) the experience of a predecessor firm or of a firm's key personnel which was obtained prior to the date offeror was established, and/or two (2) any subcontractor proposed by offeror.***

EIS acknowledges this statement.

8. ***Provide a detailed, narrative statement providing adequate information to establish that you meet all the requirements stated in subparagraph (a) above. Include all appropriate documentation.***

EIS has provided a narrative statement to subparagraph a above

9. ***An offeror's failure to meet these minimum prior experience requirements will cause their proposal to be considered non-responsive and their proposal will be rejected.***

EIS acknowledges this statement.

SUBCONTRACTOR -- IDENTIFICATION

If you intend to subcontract, at any tier level, with another business for any portion of the work and that portion either (1) exceeds 10% of your cost, (2) involves access to any "government information," as defined in the clause entitled "Information Security," if included, or (3) otherwise involves services critical to your performance of the work (err on the side of inclusion), your offer must identify that business and the work which they are to perform. Identify potential subcontractors by providing the business name, address, phone, taxpayer identification number, and point of contact. In determining your responsibility, the state may contact and evaluate your proposed subcontractors.

Upon award, SC DHEC will contract with EIS as the Prime Contractor, which contracts will include an End User License Agreement for Commercial Off the Shelf Software and a Service Level Agreement. EIS will enter into a subcontract with SAS for the performance of all of the services described in this Technical Proposal. EIS, as the Offeror and Prime Contractor, assumes full responsibility for the performance of SAS, its subcontractor, as required by the Terms and Conditions of the RFP.

SAS Institute Inc.
100 SAS Campus Drive
Cary, NC 27513
(919) 677-8000

Tax identification number: 56-1133017

Point of Contact: Albert Blackmon, Account Executive
Albert.Blackmon@sas.com
(919) 531-1257

2. Corporate Overview

a. *Offeror Identification and Information*

Provide the full company or corporate name, address of the company's headquarters, entity organization (corporation, partnership, proprietorship), state in which the Offeror is incorporated or otherwise organized to do business, year in which the Offeror first (1st) organized to do business, whether the name and form of organization has changed since first (1st) organized, and Federal Employer Identification Number. Number of employees.

Executive Information Systems (EIS), a Limited Liability Corporation (LLC), was founded in 1999 to serve as the exclusive reseller for SAS Institute, Inc. (SAS) within the Federal, state and local government marketplace. EIS is a SWaM certified business founded in the State of Virginia. EIS' is located at 6901 Rockledge Drive, Suite 600 Bethesda, Md., 20827-0076. EIS' Federal Employer Identification Number is 52-2198860.

EIS provides outbound and inside sales, business development, contract management, and back office functions to support for SAS' government sales efforts. EIS offers the entire catalog of SAS Institute software, software maintenance, consulting services and training under a variety of Federal and State procurement contracts including GSA contract GS-35F-0170K. These agreements provide our government customers with pre-negotiated contract terms and pricing discounts, both of which allow for a more efficient procurement process.

EIS subcontracts all software licensing, software maintenance, consulting services, hosting services and training directly with SAS. Due to the nature of this arrangement, all EIS customers will receive transparent access to the same world-class level of service and support offered by SAS to their direct customers.

SAS Institute Inc. is headquartered at 100 SAS Campus Drive, Cary, North Carolina. SAS is a subchapter S corporation. SAS is the largest privately held software company in the world with record 2013 revenue of $3.02 billion. With consistent revenue growth and profitability since it was founded in North Carolina in 1976, SAS has the depth of resources to sustain excellence in product development and customer support. SAS has more than 13,000 employees – in more than 56 countries and 400 SAS offices, which provide local support for implementations.

SAS serves more than 65,000 government, university, and business sites in 140 countries. SAS solutions are used extensively by all 50 state governments, all 15 federal departments and approximately eighty-five percent (85%) of federal sub-agencies and quasi-governmental affiliates. Ninety percent (90%) of the overall Fortune 500 are SAS customers. SAS' Federal Employer Identification Number is 56-1133017.

b. *Change of Ownership*

If any change in ownership or control of the company is anticipated during the twelve (12) months following the proposal due date, the Offeror must describe the circumstances of such change and indicate when the change will likely occur. Any change of ownership to an awarded contractor will require notification to the State of South Carolina ITMO Procurement Manager.

EIS does not anticipate any change in ownership or control of the company during the twelve months following the proposal due date.

c. *An overview of your business units/service lines and the products and services offered.*

SAS has been in the business for 38 years and our longevity is a testament to our superior software and customer service. Our mission is to deliver superior software and services that give people the power to make the right decisions.

As a leader in business analytics, organizations and businesses have relied on SAS' solutions to provide answers to complex business problems. Our solutions are built by SAS, with SAS and are crafted to support business challenges specific to each sector. While government customers are our second largest sector, we have considerable presence in banking, financial services, education, energy and utilities, health care, life sciences, services, retail, manufacturing, as well as a few others sectors. As we provide solutions for the challenges in these diverse sectors, we have the unique opportunity to share our knowledge across sectors, applying capabilities and techniques in one sector to similar problems in others.

The SAS State and Local Government (SLG) Practice is exclusively focused on assisting state, county and municipal governments in the United States solve their business problems by providing solutions based on the foundation of data management, analytics and visualization. SAS has also made an investment in our SLG customers through the creation of the Advanced Analytics Lab (AAL) for State and Local Government. Initiated by SAS CEO Dr. Jim Goodnight in August 2007, the Advanced Analytics Lab (AAL) is the premier advanced analytic consulting group at SAS. The mission of the AAL is to develop innovative analytical processes and techniques, using SAS software, to solve our customers' complex business problems. The AAL can provide an end-to-end solution from handling raw data to performing advanced analytics, including data quality, master date management, and documentation, as part of our Solution Delivery Methodology.

d. *Products, solutions, and intellectual capital that you offer our specific industry, in particular those related to the scope of this RFP.*

SAS has been working with government organizations since its inception in 1976, starting with the United States Department of Agriculture. Since then, the need for data management, analytics and visualization have been the foundation that has helped government organizations make better decisions, based on better insights. Government is a unique industry in that it has vast and diverse "lines of business", more than most private organizations except for perhaps the largest conglomerates. These lines of business include education, healthcare, social services, transportation, regulation, environmental and natural resources, criminal justice, public safety, tax and revenue, economic development, along with many others.

SAS' Advanced Analytics Lab (AAL) and State and Local Government Practice have worked over many years to provide governments solutions that detect and prevent fraud, waste and abuse in healthcare and social services, promote targeted outcomes in education, health and social services, reduce criminal and juvenile recidivism, monitor air and water, close the tax gap, create jobs, reduce traffic fatalities, along with many, many others. These solutions are built on the core capabilities of data management, analytics and

visualization, by hundreds of data scientist and developers with exposure to challenges that governments face in these area. SAS brings both the data scientists and their experience to this project.

Relevant to this RFP, many of the solutions SAS delivers begins with an effective data management and Master Data Management strategy. To address the problems mentioned above, SAS has often integrated data from multiple disparate sources and resolved the entities into a single "master record". Methods and algorithms vary based on application, but the entity list includes all of the entities in scope of this RFP (company, person and address). SAS' work in this area, across industries has allowed us to develop, market and implement SAS Enterprise Data Integration, SAS Data Quality, SAS Data Governance and SAS Master Data Management products that deliver the requirements set forth.

3. Data Management Overview

Provide an overview of offeror's data management services capabilities, including:

a. ***The number of years that offeror has provided data management services.***

With over 100,000 cumulative staff years in the delivery of SAS solutions and over 44,000 customers, SAS offers the experience of the largest concentration of domain and industry thought leaders in the world of business intelligence and predictive analytics. SAS is also committed to solving the most complex business challenges facing the industry today.

SAS offers the global reach and its commitment to solving critical customer issues and driving customer value, while offering local support to SC DHEC. Our proximity to South Carolina will reduce overall project costs.

For the SC DHEC opportunity, we are proposing Remote Managed Services that will be performed by the SAS Advanced Analytics Lab (AAL), which is the premier advanced analytic consulting group at SAS. The AAL is uniquely qualified to solve complex customer problems through advanced analytics. The minimum education level in AAL is a Master's degree in a quantitative field. All members have a minimum of 10 (and up to 30) years of experience in solving customer's high-end business problems using advanced analytics. The SAS Advanced Analytics Lab has numerous analytics experts who can explain the models, scoring criteria, and other details to customers.

Specifically, SAS Data Management Consulting helps organizations of all sizes achieve business objectives in the areas of data warehousing, data integration, business analytics, and data governance. We not only apply expertise in systems and data to achieve breakthroughs for our clients, we do so with the understanding that fundamental components of the business—methods, skill sets, and project planning—are included and indeed integral to success.

Years of Experience

SAS primarily employ's senior analysts and architects with a minimum of 15 years of experience. Our senior team members average 20 years of experience and have deep experience in multiple technologies and industry verticals.

Industry Awards

Our clients—including CheckFree, JEA, AARP, and Microsoft—have won several industry best-practice awards.

Thought Leadership

Our senior consultants are recognized industry experts that regularly publish and speak at industry and vendor conferences.

Business Value Focus

SAS doesn't believe in technology for technology's sake. Each activity is well defined based upon end user and business needs. SAS also understands that implementation-in-a-vacuum is an unnecessary risk.

Rigorous Standardized Methodologies

In our 38 years in business, we have developed a range of methodologies, architectural templates, and best practices to help both our consultants and clients accelerate their work.

Establishing Client Self-Sufficiency

Our focus for success is making our clients self-sufficient. Our job isn't just writing code or integrating data. The job's not done until the client staff is self-sufficient.

b. ***The number of active clients in the area of data management services.***

As described in more detail above, SAS provides services to over 44,000 customers.

c. ***Examples of the types of Enterprise Resource Planning (ERP), Modifiable Off The Shelf (MOTS), Customizable Off The Shelf (COTS), and/or MDM applications that offeror currently supports.***

SAS supports all major ERP vendor offerings, MOTS packages, and COTS packages at the database level. SAS offers a comprehensive MDM software suite, including state-of-the-art data cleansing, standardization, and ETL technologies in one easy-to-use package.

d. ***Examples of all technologies offeror currently supports.***

SAS supports all major database platforms, such as Oracle, Microsoft SQL Server, and IBM DB2. SAS also supports many types of flat-file access as well. SAS can integrate with most major software through a variety of protocols, such as XML, SOAP, Web Services, Java, and REST.

e. *Citations from independent market analysts (Gartner, IDC (International Data Corporation), Forrester, etc.) regarding offeror's ability to deliver data management services.*

SAS is a leader in establishing data management best practices and SAS is in alignment with best practices from organizations such as 'The Data Governance Institute' and 'Data Management Association' (DAMA). Independent, third-party evaluators have rated SAS' Master Data Management tools very highly. Gartner positions SAS as a Leader in the Gartner Magic Quadrant for Data Integration Tools. SAS was named a strong performer in the Forrester Wave™: Data Governance Tools, Q2 2014 report.

Industry Leaders

We are considered specialists, and the company's partners and senior consultants are regularly asked to write and speak for industry-leading organizations. We have authored articles that have appeared in magazines and industry journals, including *Oracle Magazine*, *Information Week*, *Teradata Magazine*, *CIO* Magazine, *Intelligent Enterprise*, *Information Management, the Chicago Tribune*, *The Washington Times*, *Computerworld,* and *Newsweek.com*.

The acclaimed books *e-Data* and *The CRM Handbook* were both written by Baseline Partner Jill Dyche, now Vice President of SAS Best Practices. *The CRM Handbook* (Addison Wesley, 2002) is the best-selling book on the topic of Customer Relationship Management. Jill has co-authored her third book with Baseline Partner Evan Levy. ***CUSTOMER DATA INTEGRATION: REACHING A SINGLE VERSION OF THE TRUTH*** (John Wiley & Sons, 2006) is the first book on the topic of CDI and MDM. Baseline also published the first-ever e-Book on Data Governance, *Maps, Mechanics, and Morals When Launching Your Data Governance Initiative* (2010).

Our partners also serve as judges for the following industry best-practice awards:

- The Intelligent Enterprise RealWare Awards
- The Data Warehousing Institute Best Practice Leadership Awards
- TechTarget SearchDataManagement.com Vendor Leader Awards
- CRM Magazine CRM Market Awards (Data Quality, Campaign Management, and Data Integration categories)

f. *Data management services delivery methodology and any related unique tools and accelerators that are offered to customers.*

The SAS Data Governance and Management service creates a complete picture of your data management environment, then focuses on the problem areas. After an initial kickoff workshop our methodology starts with an extensive Discovery Phase where we interview key data stakeholders to gain an understanding of the organization's current understanding or perception of data governance, determine/validate drivers for data governance, understand incumbent skill sets, gauge the existence of key roles, and to weigh the cultural impact of data governance rollout. Consultants will analyze the issues, make connections, and isolate the key areas that require focus. A strategy roadmap is delivered with key recommendations along with tactical plans to provide immediate steps for data governance implementation and improvements.

Accelerators are SAS Data Management Framework, workflow and policy templates and our experience in data governance implementations across many types of organizations. SAS delivers a customer organizational framework for data governance, process, organizational interaction system and rules of engagement all designed around your organization's unique culture and objectives.

See section "Detailed Description of SAS Services" for a full description of the Data Governance and Management service methodology and deliverables.

g. *Quality Assurance: Testing plans, automated testing, test vs. production environments, QA process/methodology.*

SAS' Quality Management Methodology (QMM) encompasses both quality control and quality assurance tasks. SAS quality control focuses on verifying that the product satisfies the evaluation criteria agreed upon by the client and the project team, and finding defects in our software products. SAS quality assurance focuses on analyzing our existing methods for effectiveness and efficiency, and continuously improving them. SAS' QMM includes the following: **1) Test, 2) Text Execution, 3) Inspection Activities, 4) Quality Assurance Tasks, and 5) Software Metrics.**

Test

Rigorous test planning and inspections throughout the product life cycle help ensure that errors are found and fixed before a system is delivered to a client. Testing activities are usually performed in the reverse order of the development activities. A total of five types of test plans might be created for a given project – acceptance test plan, on-site test plan, system test plan, integration test plan, and unit test plans.

Test Execution

The next steps all involve using the test plans to perform the actual tests. These include unit and integration test results, system test results, acceptance test results.

Inspection Activities

The QMM has four internal inspection points during the requirements, design, and build phases:

- System Requirements Review (SRR), done at the end of the requirements phase
- Preliminary Design Review (PDR), done at the end of the architectural design phase
- Critical Design Review (CDR), done at the end of the detailed design phase
- GUI and Code Walk-throughs, done throughout the build phase

Quality Assurance Tasks

Quality assurance tasks involve on-going evaluations of the software development activities and the resulting software products. Quality assurance tasks do the following:

- Assure each required task is being performed in accordance with the contract and with the project management plan
- Assure each deliverable required by the contract exists and has undergone quality control tasks, including testing, inspections and editorial review and revisions
- Assure the development process and the software products follow the standards established by the methodology

- Collect and analyze metrics for assessing the quality of the current project and for providing feedback to improve the processes of the methodology

Software metrics

Software metrics provide the information we need to make decisions based on actual performance data. The metrics are tied specifically to portions of the Solutions Development methodology; they monitor our efforts and procedures. Project metrics can be reviewed to give us the ability to make better predictions about cost, schedules, and resources. Problem areas can be identified with measurable results that will enable us to continually improve our processes.

Software Promotion

The EIS proposal recommends using 3 environments – DEV, TEST, and PROD. SAS, as provider of the Software, maintains a rigorous methodology around promoting software from DEV to TEST, and finally to PROD. Every change that gets promoted from DEV to TEST must have a corresponding Jira (online issue tracking software) ticket that says why the change is being made and what changes are being made. Developers make changes in the DEV environment, then testers verify those changes in the DEV environment and promote the code to the TEST environment. It is in the TEST environment that UAT (User Acceptance Testing) occurs. Access to the TEST environment is usually limited to those people who are performing the User Acceptance Testing. Changes build up in the TEST environment until release day – at which point the TEST environment is duplicated to the PROD environment. Hotfixes are accommodated by marking the Jira ticket as a 'hotfix', and these changes are promoted independently through the DEV, TEST, and PROD environments.

h. *Ability to offer different service models (staff augmentation, co-sourcing, full sourcing, etc.).*

SAS has extensive experience in providing various service models for data management and analytics projects, each adapted to meet the unique and evolving needs of our customers. When customers have limited in-house analytic expertise and for customers who want to deploy their SAS solutions rapidly, SAS provides Cloud Analytics delivered as software as a service (SaaS) and enterprise hosting for customers worldwide. For more than a decade, SAS Solutions OnDemand has established a successful track record of providing organizations with state-of-the-art outsourced applications, as well as the subject-matter experts to manage them. The subject-matter experts can work directly with SC DHEC staff via Remote Access or can augment SC DHEC's staff at the agency.

For organizations that desire a hosted solution within their own technical environment, an evolution of our cloud analytics offering is Remote Managed Services (RMS). RMS is the proposed solution throughout this RFP for SC DHEC's MDM implementation. RMS leverages the standards and best practices used within the SAS Solutions OnDemand group to supplement the experience of your in-house staff. This approach allows SAS to anticipate, identify and resolve issues accurately, efficiently, and cost effectively, freeing up your staff's IT cycles to focus more on core business priorities. The RMS model ranges from simple environment monitoring to collaboration with SC DHEC's staff to both administer the system and build analytical reports and models for the agency.

Finally, SAS provides a traditional professional services delivery model, which can range from the most simplistic requirements such as product installations to complete business transformation efforts which require more strategic consulting. With this traditional arrangement, SAS can provide Full Time Employee product experts to assist in the ongoing development and/or management of your SAS solutions. Many federal government customers take advantage of this option as a way of more cost effectively maintaining their SAS solutions.

i. *Ability to provide related services such as Level one (1) Help Desk support.*

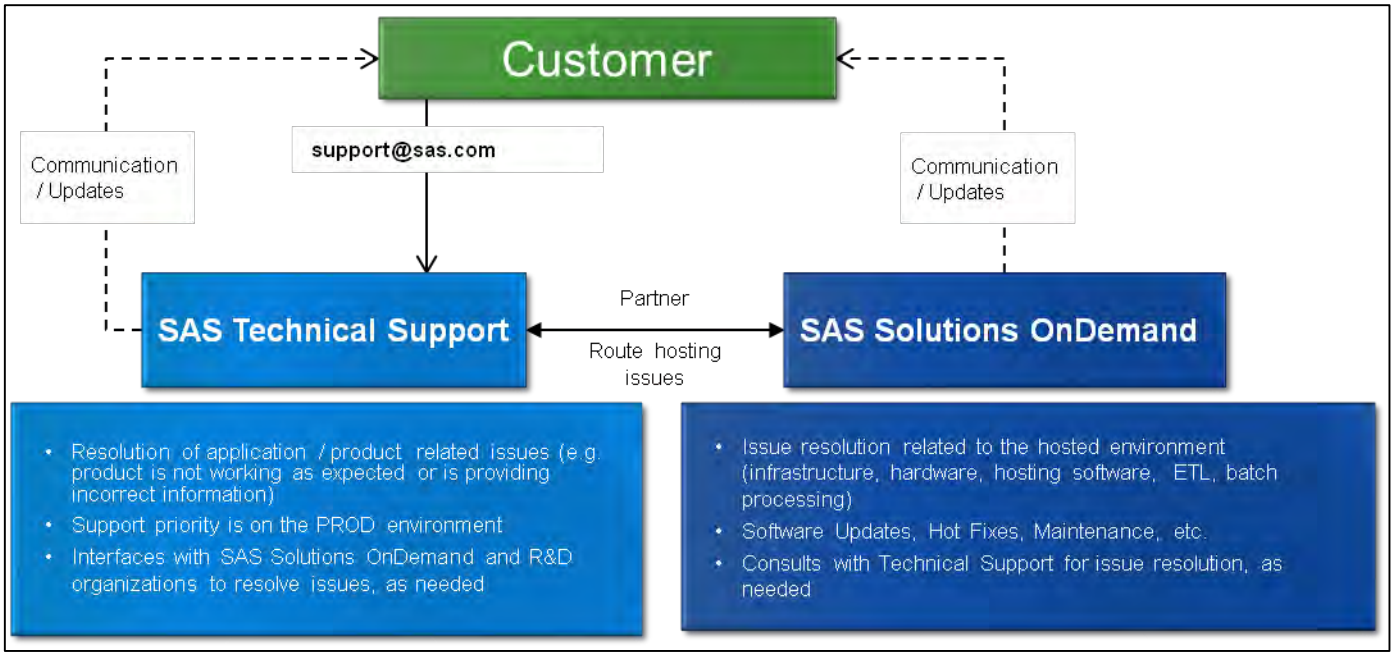

Figure 7: Customer communication diagram for Remote Managed Services offering.

Under the remote managed services model that is proposed, it is recommended that the State first call or email SAS Technical Support to report a problem. SAS provides unparalleled, award-winning technical support 24 hours a day, 7 days a week via telephone, e-mail, or the SAS Web site (www.sas.com) through SC DHEC's annual renewal of software maintenance.

All problems reported to SAS Technical Support are initially handled by a consultant who will work with SC DHEC to identify and (in many cases) solve the problem. SAS resolves 60% of incoming problems on first contact with our customers.

If the consultant cannot resolve the problem on primary contact, he/she assigns a tracking number and does additional research on the problem or passes it to a specialist. If the problem is related to a product feature or is due to user inexperience, for instance, then SAS Technical Support will respond and close out the issue. The following link highlights SAS technical support response times, http://support.sas.com/techsup/support.html#hours .

If the reported problem is due to on premises infrastructure, consulting efforts, or software updates, then the issue will be immediately reported to SAS Solutions on Demand. The following response times are outlined

in Appendix D for Remote Managed Services as provided by SAS Solutions on Demand. Additionally, SC DHEC always has the ability to make the first call to the SAS Project Manager or Technical Account Manager assigned to the SC DHEC relationship, and in this case, the same response metrics below would apply.

Operational Incident Severity Level	Description
Blocker	Set this when: The issue directly impacts Customer by blocking development and/or testing work for multiple Users, or Customer's production environment cannot run. Result: Target Operational Incident Response Time is within thirty (30) minutes. Once a Blocker ticket has been entered in the Issue Tracking System by SAS or Customer, emails are sent to the Operational Incident reporter, the SAS representative to whom the ticket has been assigned, [SSO] IT Support, [SSO] SAS Administration, [SSO] Database Administration, [SSO] Oncall, [SSO] DrugDev Oncall and [SSO] Project Management every ten (10) minutes until the assignee acknowledges the ticket as In Progress. Monthly Operational Incident Response Time Objective: 90% within thirty (30) minutes.
Critical	Set this when: The issue relates to a loss of data, the inability of an individual User to access the System, or potential impact to a key deliverable or deadline. Result: Target Operational Incident Response Time is within four (4) hours on SAS Business Days. Monthly Operational Incident Response Time Objective: 90% within four (4) hours on SAS Business Days.
Major	Set this when: The incident is impacting a User's ability to perform a task without a critical deadline. Result: Target Operational Incident Response Time is within one (1) SAS Business Day. Monthly Operational Incident Response Time Objective: 90% within 1 SAS Business Day.
Minor (Default)	Set this when: This is the default setting for most issues, where the timeframe is not critical. The issue relates to a minor loss of functionality or a task, or problem that needs to be addressed or tracked. Result: The issue should be reviewed weekly and updated as progress occurs.

	Monthly Operational Incident Response Time Objective: 90% within one (1) week.
Trivial	Set this when: There is a cosmetic problem in a document or interface such as misspelled words or misaligned text. Result: The issue should be reviewed weekly and updated as progress occurs Monthly Operational Incident Response Time Objective: 90% within next business week.

j. ***Multiple physical locations and/or contractors, if applicable).***

SAS solutions are used at more than 65,000 sites in over 140 countries – including all 50 state governments and 90 of the top 100 FORTUNE Global 500® companies – to develop more profitable relationships with customers and suppliers; to enable better decisions; and to move forward with confidence and clarity. More than 13,000 SAS employees – in more than 56 countries and 400 SAS offices – provide local support for global implementations. SAS has a presence and training facilities located in both Charlotte and Atlanta, which would be convenient for SC DHEC.

4. Data Management (Government)

Provide an overview of data management services capabilities, including:

a. ***Number of current, past, or on-going governmental clients for which offeror has provided MDM solutions.***

Please see the list provided above in response to requirement 1D.

- ***Examples of business rules, plan review and workflow processes incorporated.***

The criminal justice data integrated in the CJLEADS project goes through a rigorous set of business rules and workflow processes to ensure appropriate records are matched. Records are initially standardized (such as formatting all addresses, phone numbers, and ssns). All records are initially matched based on name, address, ssn, drivers license, and birth date. “Fuzzy” matching is used to allow for numbers that are not keyed in properly, and variance in names, way beyond what a soundex can do (for example, Richard, Rich, Ricardo, Dick, Dicky, Riccardo, and Richie all can match). Then records are joined based on rules provided by the data stewards to ensure records which match certain reliable IDs are matched. Then records are split based on rules to ensure no entity has 2 different reliable IDs. These rules were developed through an iterative process of analyzing the matched records to see how each affected the other fields that were not used for matching. Part of the ongoing ETL processes automatically analyzes these reports and will trigger a problem report in the Jira ticketing system for human investigation if there is significant deviation. Tickets are assigned a priority and have built-in workflows based on the reason for opening the ticket. The CJLEADS project maintains well-defined development processes and quality in order to maintain extremely high levels of uptime. Everyone on the project is very proud of this uptime and are aware that this helps make the people

of North Carolina safer by facilitating better decision making by the criminal justice professionals across the state.

- ***Experience with application interface tailored to user type. Include information on development methodology to support multiple user types as well as security based on approved level of access.***

  The CJLEADS project defines 17 different user roles (law enforcement, judge, magistrate, clerk, district attorney, juvenile justice, auditor, etc.), and the user role you are in determines which fields and which records you are allowed to see in the system. For example, the auditor role has the ability to look at reports on what queries users are running. Security is maintained at the database level through the use of views and virtual private databases to help ensure that people who do not have authorization to see data have no way to see it. The application undergoes stringent security testing with each release to verify there can be no breach of data.

- ***Number of active users, by type.***

  The CJLEADS project has 7 business analysts, 8 developers and over 27,000 web-based end users.

- ***Examples of mobile and mobile device technologies integrated.***

  The CJLEADS project provides an Adobe Flash based front end for desktop users; and an HTML5 based front end for mobile users (iPad, iPhone, Android). In addition, audit data is available through the Visual Analytics interface, which also includes an iPad app for mobile access.

b. ***Percentage of projects successfully implemented on-time, on-budget, on-scope and within expected quality for the last five (5) years.***

With a better than 98% renewal rate, SAS loses few of our over 44,000 customers. Of the customers who choose to terminate their licenses, few are dissatisfied with our products. SAS customers include many multi-national companies using our software worldwide across disparate systems with hundreds of users. A large number of these customers consider their use of SAS software to be a competitive advantage. Therefore, non-disclosure agreements prevent us from revealing customer names and project details unless we receive permission to do so.

Several customer success stories have been provided in response to requirements above and more are available at sas.com/success.

- ***Any pending litigation or projects terminated prior to implementation.***

  EIS nor SAS have any pending or current litigation that would affect our relationship with South Carolina Department of Health and Environmental Control (SC DHEC). Like any large company, actions have been brought against us, but none are expected to have a material impact on our operations. To the best of our knowledge, EIS has not had any projects terminated prior to implementation.

5. Quality and Productivity Overview

Provide an overview of offeror's approach to program/delivery quality and how clients benefit from productivity/efficiency gains, including:

j. ***Certifications that offeror overall or individual delivery locations possess such as ISO (International Organization for Standardization) and CMMI (Capability Maturity Module Integration).***

Quality is very important to SAS and we currently hold 5 ISO certifications. For more details around our quality measures and specifics on our ISO certifications please review our quality imperative paper that can be found in the following link, www.sas.com/qualitypaper.

The European Commission's Directive on Data Protection went into effect in October of 1998 to establish an "adequacy" standard for privacy protection. The U.S. Department of Commerce, in consultation with the European Commission, developed a "Safe Harbor" framework to provide the information an organization should need to evaluate – and then join – the Safe Harbor. Considered the 'Gold Standard' of data privacy, the Safe Harbor framework creates bridge between the different privacy approaches of the US and EU and a streamlined means for U.S. organizations to comply with the data protection law. SAS is pleased to be Safe Harbor certified and using the seal of TRUSTe, the world's largest privacy seal program. EU-based companies highly value this certification.

SOC 2 Report--- Report on Controls at a Service Organization Relevant to Security, Availability, Processing Integrity, Confidentiality or Privacy are intended to meet the needs of a broad range of users that need information and assurance about the controls at a service organization that affect the security, availability, and processing integrity of the systems the service organization uses to process users' data and the confidentiality and privacy of the information processed by these systems . These reports can play an important role in:

- Oversight of the organization
- Vendor management programs
- Internal corporate governance and risk management processes
- Regulatory oversight

Similar to a SOC 1 report (which focuses on controls for financial reporting) there are two types of report: A type 2, report on management's description of a service organization's system and the suitability of the design and operating effectiveness of controls; and a type 1, report on management's description of a service organization's system and the suitability of the design of controls. Use of these reports is generally restricted.

The SOC 3 Report--- Trust Services Report for Service Organizations are designed to meet the needs of users who need assurance about the controls at a service organization that affect the security, availability, and processing integrity of the systems used by a service organization to process users' information ,and the confidentiality, or privacy of that information, but do not have the need for or the knowledge necessary to make effective use of a SOC 2 Report. These reports are prepared using the AICPA/Canadian Institute of

Chartered Accountants (CICA) Trust Services Principles, Criteria, and Illustrations for Security, Availability, Processing Integrity, Confidentiality, and Privacy.

An independent Certified Public Accountant firm, PricewaterhouseCoopers, completed an onsite audit. The audit is completely annually.

k. *How regularly offeror performs internal audits of projects or delivery centers (SAS70 – Statement on Auditing Standards).*

It is the policy of SAS Solutions OnDemand to maintain an Internal Project Audit Program that includes evaluation and continuous improvement of our processes and procedures. The purpose of the Internal Project Audit Program policy is to formally establish and provide guidance for an independent audit function that evaluates SAS Solutions OnDemand projects' adherence to SAS Solutions OnDemand Quality Management System (QMS) policies and procedures, as well as compliance with regulatory requirements needed to retain current certifications (for example: SOC 2/3).

Benefits of the Internal Project Audit Program include:

- Assess system and process effectiveness
- Confirm remediation of problem findings
- Identify areas for improvement
- Verify compliance to the SAS Solutions OnDemand's QMS

An audit schedule is maintained that is approved by the SAS Solutions OnDemand Quality Management System Board. Regular audits are conducted of logical access, physical access, and training. Additional audits are scheduled based on risk and can be associated with an operational process, project or entire program.

Examples of how productivity/efficiency gains are identified and implemented for offeror's data management services clients.

Included in this proposal is a Return on Investment (RoI) analysis for the Data Governance and MDM Solution. SAS will work with the agency after Phase 3 is complete to calculate an RoI for the project. The DM ROI Assessment details how data management technologies, organizational changes and supporting best practices have distinct and measurable business value and provides a customized set of key financial metrics to support data management investments.

SAS' Master Data Management solution helps organizations create efficiencies, and, therefore, time in a number of ways. First, as data is reconciled into it "Golden Records" reporting and analysis become more consistent and robust, saving hours of verification and research on answers that are provided. The data that is used to create reports has been cleaned and monitored before it can ever be leveraged for reporting. The benefit of a firm foundation for reporting and analytics cannot be overstated. As DHEC implements data governance and begins to trust the agency's data, reporting and advanced analytics will provide insight that will help the agency to help its customers in new ways as insight emerges.

As an example, a large automotive service and part retailer in the US leveraged the SAS MDM solution to solve a specific issue around cross-store retail fraud. The CFO of the retailer identified a $5M annual loss as a result of incomplete customer data related to service and part warranty. The Point of Sale systems stored customer data and associated warranty data in each store location. Data silos made it quite difficult for store management to determine the validity of warranty claims for work performed or parts purchased in a different store location. The client chose SAS MDM to synchronize all customer records and associated warranty information. The data was trickle fed to the locations via an Enterprise Service Bus. For the rare times that the data wasn't fully synchronized for example a same day claim a real-time customer lookup is available. After implementing SAS MDM the store managers had information from over 700 store locations in 35 states and Puerto Rico and were able to stop the fraudulent claims as well as to better serve their client base on all channels.

In addition to a firm foundation for reporting and analytics, SAS' MDM Solution helps organizations with compliance requirements. As data is updated, SAS' MDM Solution with configured business rules can monitor the agency's compliance with federal regulations. Should the agency fall out of compliance, DHEC staff is notified immediately and proper action can be taken. Finally, SAS' MDM solution can create efficiencies in SC DHEC's billing processes. As sites with facilities are identified via a "Golden Record," the appropriate name and address can be immediately surfaced to provide billing information. This billing information can be cross-referenced with AR/AP data to ensure that the agency is optimizing its billing activities.

Along with SAS' MDM Solution, it's delivery through Remote Managed Services provides a comprehensive, proactive approach to managing, monitoring, and protecting your SAS solutions, which will create numerous efficiencies for the agency. Built on the principles of co-management and out-tasking for routine and administrative activities, this service empowers your in-house staff to anticipate, identify, and resolve issues accurately, efficiently, and cost-effectively. This frees up your IT cycles, allowing you to focus more on core business priorities.

SAS Remote Managed Services leverage the standards and best practices used within the SAS Solutions OnDemand group, SAS' Cloud division, to supplement the experience of your in-house staff to anticipate, identify and resolve issues accurately, efficiently, and cost effectively, freeing up your IT cycles to focus more on core business priorities.

E. Risk Mitigation Plan

Risk mitigation plan should be specific to the potential of a security breach due to faulty system design or system failure due to denial of service to the public for use due to ineffective design or scalability of the system for state wide use.

An IT Security Risk Assessment jointly owned by SAS IT/Security and SAS Solutions OnDemand is completed annually and approved by management. Follow-up items/remediation is tracked via online ticketing system. In addition, a risk assessment is completed for every SAS Solutions OnDemand project. The risk assessment seeks to assess people, process, security and technical risks associated with the project. Once defined, the risks are then accepted, transferred or mitigated. Mitigation plans are documented as appropriate.

G. Additional Services

***Additional Services (for information purposes only):* Identify any additional services that may be offered to the State. These services will not be part of the evaluation but will be for informational purposes only. Additional Services may be part of the contract at the sole discretion of the State. Also, indicate the price or fee, associated with these services, if any (in the business/cost proposal portion).**

1. On-Site Program Director

As organizations form strategies around information management and move to data-driven decisions, SAS has found that a strong leader can greatly improve the success of large data management and analytics projects. This leader should have experience with information technology, analytics, and project management. SAS has helped these organizations by providing individuals who act as On-Site Program Directors. These individuals help the agency manage large-scale projects and create visions and planning on how to reach those goals. An On-Site Program Director at SC DHEC could be of great value to the agency in leading the Data Governance and MDM project along with helping the agency become a data-driven culture.

2. Disaster Recover and Redundant Systems

Through SAS Solutions OnDemand, SAS' Cloud Division, SAS offers a variety of redundant systems for IT organizations. From Enterprise Hosting to Software-as-a-Service, SAS is poised to offer a number of cloud services, including disaster recovery. Should SC DHEC be interested in a redundant system for any of its existing operational systems, SAS could host the agency's data or applications in our data center in Cary, North Carolina or through another of our hosting partners.

3. The SAS Fraud Framework

SAS is a recognized leader in helping both public and private sector clients prevent fraud, waste, and abuse. Our unique, hybrid analytic approach uses multiple techniques – automated business rules, predictive modeling, text mining, exception reporting, network link analysis, etc. – to uncover suspicious behavior and stop fraudulent transactions before they're completed. Precise targeting dramatically reduces false positives, ensuring that the vast majority of valid transactions continue without delay. Currently, the agency has a hosted implementation of the SAS Fraud Framework that is licensed for risk-scoring of health facilities that are due for inspection. This license could be expanded to include additional modules to help the agency address a wide range of issues.

4. SAS' Prescription Drug Monitoring Solution

As a potential module for SC DHEC's existing SAS Fraud Framework license, SAS' Prescription Drug Monitoring Solution is especially relevant to SC DHEC given its role in prescription drug use. Prescription drug abuse has reached epidemic proportions in the United States. According to the US Centers for Disease Control and Prevention, drug overdose death rates in the United States have more than tripled since 1990. In 2008, more than 36,000 people died from drug overdoses, and most of these deaths were caused by prescription drugs. The SAS Fraud Framework for Prescription Drug Monitoring is being used in New York and California to modernize and streamline PDMP's in those states

5. The SAS Advanced Analytics Lab for State and Local Government

The SAS Advanced Analytics Lab (AAL), which will be providing the Remote Managed Services proposed above, additionally develops innovative analytical processes and techniques to address critical government issues – including fraud, waste, abuse, tax collection, public safety, and education. The AAL analysts have a minimum education level of a master's degree in a quantitative field. Most hold doctorates, and all have between 10 and 30 years of experience. The AAL can develop an analytical workbench at a customer site or at SAS, where we can collaborate on creating and running analytic models and ensure that results meet the state needs. After designing analytical work products for repeatable processes, the AAL funnels feedback to SAS R&D for developing and improving solutions for state and local governments. This may be another additional service that SC DHEC considers after working with SAS on the data governance and master data management project proposed above.

6. On-Going Data Management Consulting

SAS offers the following additional Data Management Consulting services that may also be beneficial for SC DHEC to consider:

- Data Governance
  - Data Governance Advisory Series
  - Data Management
  - Data Strategy
  - Enterprise Data Quality Assessment
  - Business Intelligence Assessment/Portfolio
  - Big Data Portfolio

After phase three is completed, SAS can help SC DHEC accelerate return on investment (ROI) through expert-to-expert services and by supporting the ongoing adoption of the new technology. These services may include automating processes, adding new data feeds, creating custom reports and analytics, explaining the inner workings of the technology, configuration changes, incorporating new scope requests, adding new groups or users, and demonstrating tricks-and-tips of the application. While these services are important factors in the success of the solution, they may be outside the initial project scope and/or timeline.

Finally, SAS offers Customer Care Agreements (CCAs) to help customers get continued value by leveraging SAS expertise in a variety of areas. In some cases, a CCA would allow SC DHEC to budget for ad hoc assistance from SAS in advance of the need. In other cases, a CCA may include dedicated FTE's for purposes of staff augmentation. Whatever the case, a CCA allows SAS to stay closely aligned with SC DHEC & ensure your customer satisfaction.

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SAS Appendix A – Enhancing SAS Master Data Management (MDM) White Paper

On the following pages, please find SAS' White Paper on Enhancing SAS Master Data Management for SC DHEC review.

Enhancing SAS® Master Data Management (MDM) Deployments with SAS® Federation Server

WHITE PAPER

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Introduction

In the past decade, as the volume and complexity of data have grown, organizations have turned to master data management (MDM) solutions to bring a more coherent view of customers, products, assets and other data domains. MDM systems focus not only on accessing the data in disparate systems but also on how to bring it together using various matching and cleansing techniques – and finally how to persist the data in a consolidated hub. To do this, MDM technologies require access to a multitude of data sources that are invariably in different locations and different states of completeness.

Data federation, or data virtualization, technologies have also become more pervasive during the same time frame. These technologies provide the ability to view data from multiple sources through an integrated, virtual data view. While the data remains stored in existing sources, multiple systems can "see" integrated data that appears as a single view, even though this is a virtual view of data in the originating sources.

While these two technologies seem very similar, they are actually different and highly complementary. Organizations often implement MDM and data federation technologies in isolation, without regard to the potential power of using the two in tandem. This paper will explore two scenarios where using SAS® MDM technology and SAS® Federation Server together can enhance the overall capabilities of information when addressing typical master data management requirements. The first scenario deals with SAS MDM **data acquisition**, and the second explores **data provisioning** for systems downstream from SAS MDM.

NOTE: The DataFlux qMDM technology is now part of the SAS MDM technology solution. For customers who have licensed DataFlux qMDM, the terminology of SAS MDM can be used synonymously with DataFlux qMDM.

Data Acquisition

Standard SAS® MDM Deployment

A typical MDM project has three or more data sources that contain similar, but not identical, data. There is often a batch "load and update" aspect to populate and refresh the master repository as well as a near-real-time transaction component to provide more immediate updates between the batch loads. In both cases, the basic functionality for SAS MDM is to link data deemed to represent the same entity (customer, patient, asset, etc.) from the different systems into a unified view. The process addresses data quality problems and creates a new "golden record" to represent unique entities discovered using advanced data matching techniques.

The challenge for most MDM systems is that the standard data jobs used to load, update, match and cleanse data are template-driven. Each MDM project will define entities slightly differently because of business requirements and, more importantly, due to varied source system data structures. For each data structure, both data jobs and processes (based on standard templates) need to be manipulated to access the source data correctly. Furthermore, the source data is usually in different systems, requiring lots of data connectivity configurations inside what are normally very static data jobs.

Because source data is in different locations, in a standard SAS MDM project, every client and server has to have the different locations defined for its environment. With several instances of Data Management Studio (the SAS MDM client) working alongside several Data Management Servers (the SAS MDM server), the number of connections can grow quite quickly.

In a standard master data management project, data integration work such as data joins and data unions is typically done within the data processing jobs on the server tier. Data Management Studio (the SAS MDM client) provides a drag-and-drop interface to manipulate data so that it can be presented in a way that feeds the SAS MDM process effectively. While it is true that some projects try to do more work on the database side for performance reasons, this will mean that SAS MDM-specific database SQL scripts or database objects need to be created by a database administrator. If these queries span multiple databases, there will be additional challenges to manage database components in the same way components would be managed.

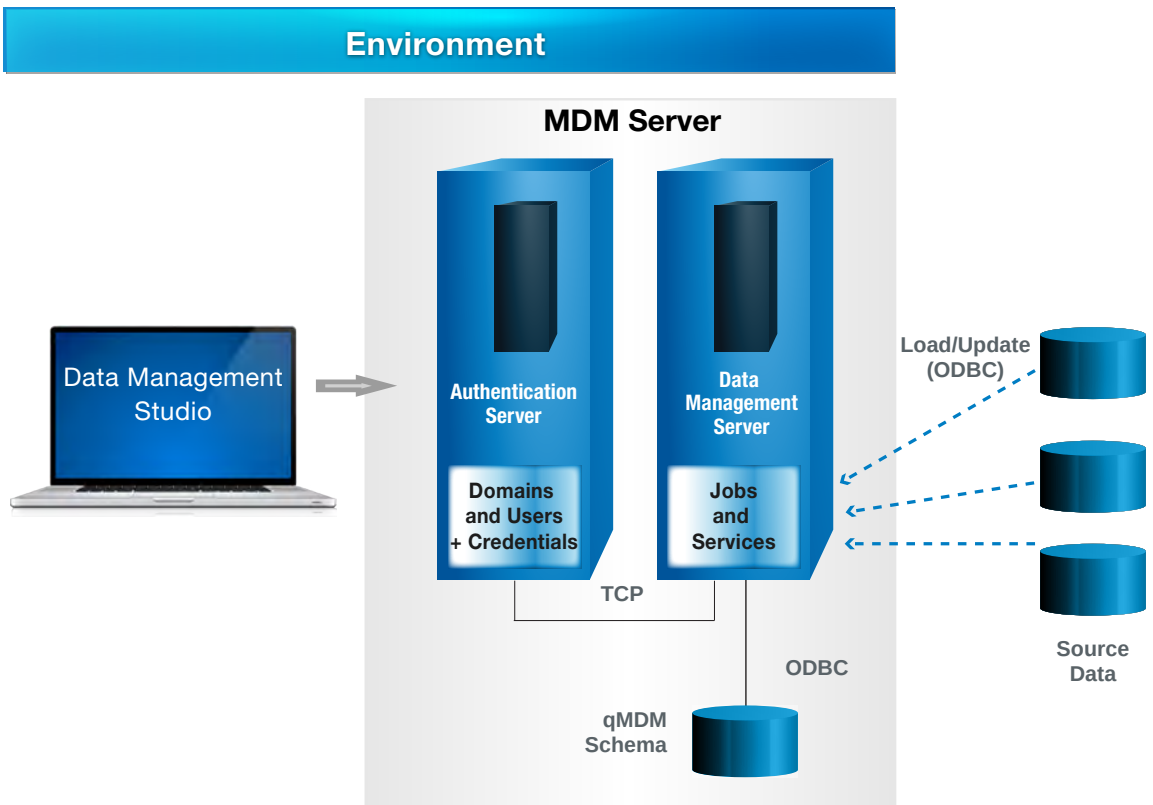

Figure 1: A standard deployment of SAS MDM.

Combined SAS® MDM and SAS® Federation Server Deployment

Given the challenges of working with multiple data sources in standard load and update processes, it makes sense to exploit the unique capabilities of SAS® Federation Server. Of course, SAS Federation Server may not be needed when working with small data sources that require only a few simple joins for data integration tasks. However, for many MDM projects, there are often five to 10 data sources to integrate – with volumes ranging from 2 million to more than 50 million records. These types of project requirements suggest that SAS Federation Server can be a useful addition to the MDM mix.

To enhance connectivity to multiple unique data sources, SAS Federation Server can perform heterogeneous joins across multiple data sources and expose this as a view to SAS MDM jobs. Integration of SAS Federation Server into a SAS MDM environment provides the following capabilities:

- Single view creation.
- Managed security.
- Threaded processing and efficient SQL processing.
- Scheduled data caching.

Single view creation

The main advantage of using SAS Federation Server with SAS MDM is the removal of data access and data integration work from standardly generated SAS MDM data jobs. Ideally, the jobs generated from SAS MDM templates should be dynamic only in the sense that they adapt to the entity definition, match rules and data quality rules built by the user. The work needed to accept new data sources and potentially join them can be moved outside of the SAS MDM jobs with only a standardized reference to the consolidated source data left in the data job.

This can be accomplished by simply replacing the generated data input node in standard entity load jobs with a reference to a SAS Federation Server view. All data access and data integration can be done using SAS Federation Server SQL tooling. To SAS MDM jobs, the view looks just like any other single data source.

Managed security

Federation Server provides a single location to manage access to data sources and data views. Rather than specifying data connections independently on all clients and servers, it can be done in one place. Data services, shared logins, data source names (DSNs) and authorizations can all be defined in the SAS Federation Server environment, making it easy to coordinate and manage data access for all interested users and groups.

Threaded processing and efficient SQL processing

By using SAS Federation Server for a virtual view of the data, SAS MDM can take advantage of a few other important features. Performance can be increased through the use of a native database driver, which is often faster than traditional ODBC access. Additionally, by accessing data through SAS Federation Server, organizations get automatic threading of processes, which allows transformation and integration work to be done in parallel. For SAS MDM load jobs that process millions of records in a limited time frame, any threading of data access and data integration is a boon.

With the SAS Federation Server, there is an embedded federated SQL processor (FedSQL) that can query database metadata to optimize how SQL operations are performed. Creating an efficient query plan is the specialty of the FedSQL processor. Rather than requiring code to acquire this same logic (for example, choosing to use a hash join or a merge join technique), these optimizations can be implemented in a single location that can be used by all applications. The FedSQL processor also works closely with the data access drivers to push down as much SQL processing as possible to each underlying data store, taking full advantage of the processing power of large database environments.

Scheduled data caching

Defining the location of your source system is obviously a critical part of an MDM implementation. There are also benefits to scheduling when updated data should be pulled from that source system. Timed data caching of source data from the SAS Federation Server can make the right data available to SAS MDM at the right time.

For example, suppose SAS MDM needs to process source system updates every weekend. The view supplying the update can be composed of information from several systems brought together through some SQL logic. SAS Federation Server could set up caching so that data is accessed and integrated ahead of the SAS MDM update process. Then, when it is time to perform the actual data update in the MDM environment, the data is ready for consumption.

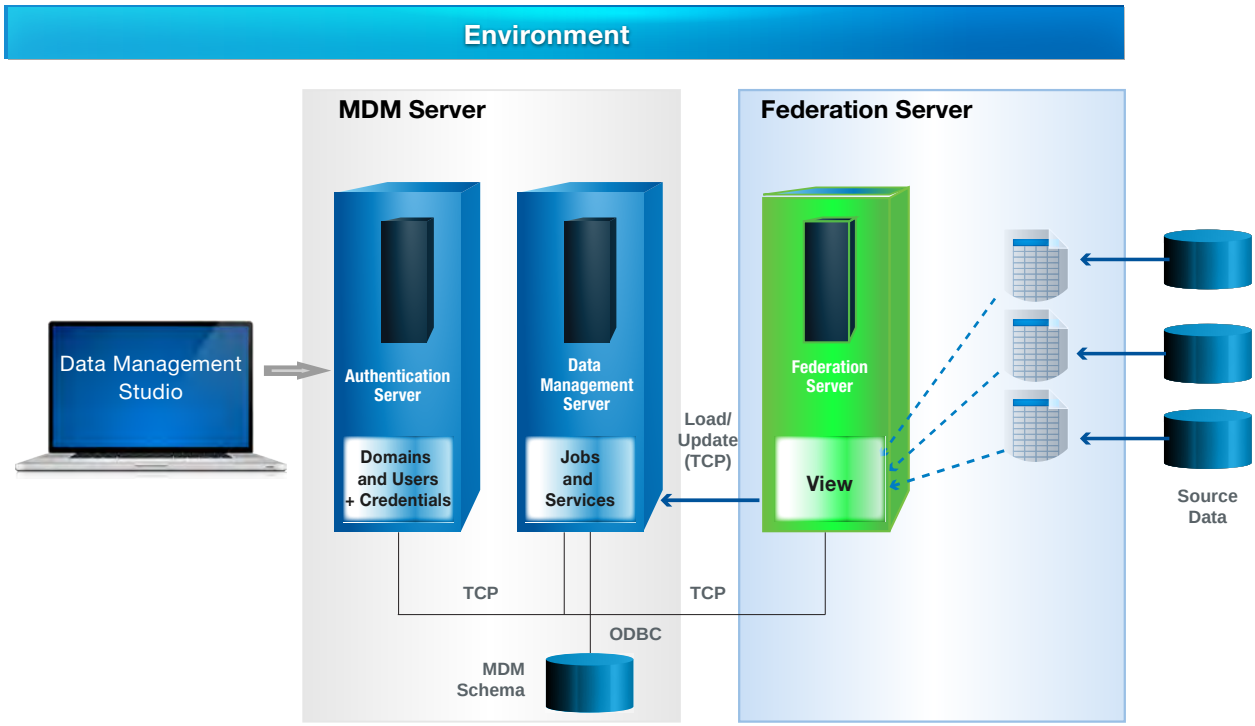

Figure 2: SAS MDM deployment with SAS® Federation Server.

Data Provisioning

Standard SAS® MDM Deployment

A common requirement for MDM projects is to make master data available to external systems (reporting, analytic, operational, etc.). Typically this is done for SAS MDM projects through:

- Direct access of a SAS MDM managed database.
- Web services through Data Management Sever.
- Batch data movement jobs invoked through Data Management Server.
- Programmatic access through custom code.

Let's focus on the direct access of the SAS MDM schema, which is a common approach because SAS MDM provides tables and views meant for easy consumption. In addition, most organizations have skilled technicians who are comfortable writing SQL code to access master data from within the different systems in an IT environment.

There are a few drawbacks to this data access method. First, control of access to the master data in the MDM database is left up to database administrators. This may be acceptable in many cases, but some organizations would prefer access control that is configurable by certain business users or data stewards. This is related to requirements for access control to reside in a layer removed from creating access credentials on the database for every new user or group.

Second, in many MDM projects, a key requirement is that certain data elements must not be available to all users or systems. While SAS MDM provides support for a variety of use-case scenarios, it can fall to a database administrator to create special views that obfuscate data appropriately. This can be unwieldy to manage on a per login basis.

Third, often master data in the SAS MDM schema needs to be combined with data from other systems before it can be consumed by downstream applications. The SAS MDM studio client and the SAS Federation Server can support this type of data integration, but this method doesn't solve the dilemma previously described for controlling data access. Other technologies could be used to perform this task, but you could then be introducing systems to your MDM environment that are not as tightly integrated as you might like.

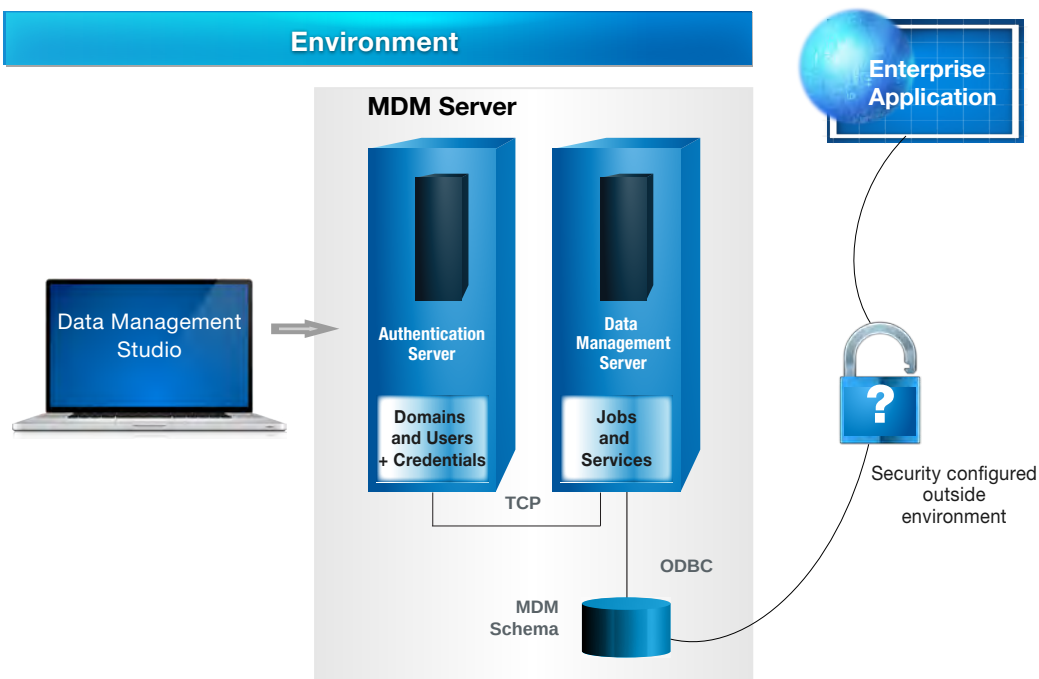

Figure 3: SAS MDM with indeterminate external data access.

Combined SAS® MDM and SAS® Federation Server Deployment

Inserting SAS Federation Server into the SAS MDM environment solves many of the issues related to provisioning data to downstream enterprise applications. The most important aspects explored are:

- JDBC and ODBC access.
- Security.

JDBC and ODBC access

Many enterprise systems can access data in widely used databases such as Oracle or Microsoft SQL Server through a combination of native access or packaged database drivers. For data sources that don't use a common database, the SAS MDM schema has to be exported to other formats so it can be consumed more easily.

SAS Federation Server provides standard ODBC and JDBC interfaces to access data from sources that an enterprise application may not ordinarily access. Many applications can consume data using ODBC and JDBC database drivers, but not all systems have proper access to the database systems used with SAS MDM. SAS Federation Server provides an alternative access method. For example, users can combine data from several Oracle database systems and present that information as a view accessible through a generic ODBC connection to a system that doesn't have the ability to access Oracle directly.

Security

The benefits described in the data acquisition scenario mentioned above help to provide a level of managed security when combining SAS MDM and SAS Federation Server. Data services, shared logins, DSNs and authorizations can be defined and managed in SAS Federation Server, making it the single location from which to control access to a myriad of data sources that might be used for an MDM project.

Also, an important aspect of many MDM projects is granular control over the data elements that are available to various users and groups. Some users may have permission to access personally identifying information such as government-supplied identifiers, while others may not have the same clearance. If requirements differ across the many systems that request "golden record" data from SAS MDM – and direct access of the data is required rather than through a SAS MDM job or service (where field-level data masking can be enforced) SAS Federation Server can create specific views of data for downstream systems that might have different policies for working with sensitive information.

Data elements can be omitted from standard SAS MDM tables and views by defining the proper data layout in SAS Federation Server. Data elements can be hidden by column, row or both, allowing subtle control of sensitive data made available to other enterprise systems.

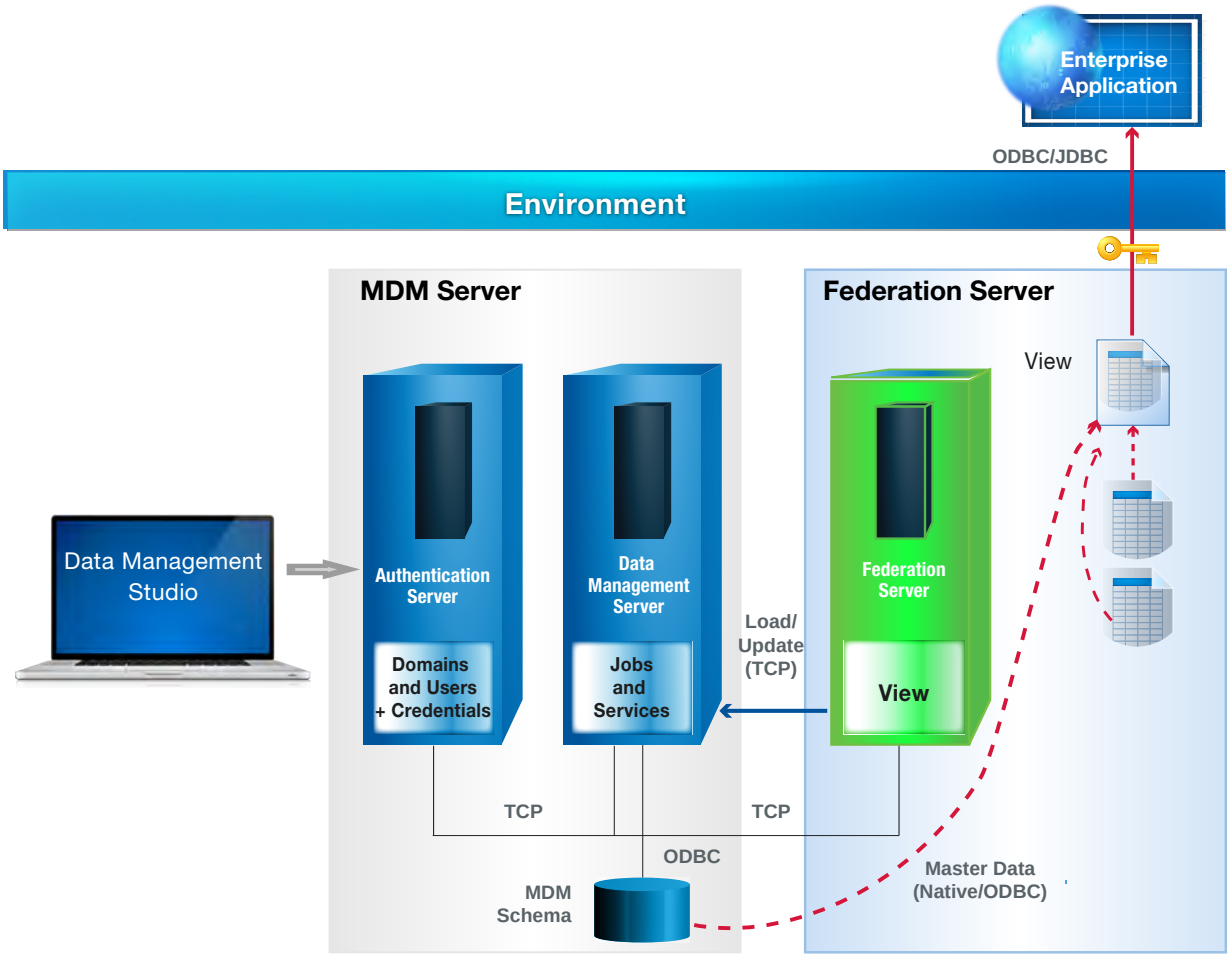

Figure 4: SAS Federation Server as a data access gateway.

Summary

This paper explored two scenarios using SAS® Federation Server with SAS® MDM to meet master data management requirements and provide an approach to MDM that uses the latest data virtualization technologies. With these two technologies working in tandem, organizations can establish data acquisition and data provisioning approaches that can lead to a more effective MDM program from the outset.

Before beginning an MDM program, a thorough review of project requirements (including minimum projected data volumes, a count of unique data sources, system integration targets and security concerns) should allow you to determine if SAS Federation Server is right for a given MDM project. Consult SAS for information on SAS Federation Server and SAS MDM and how these two technologies can work together to help meet your MDM project requirements.

About SAS

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions, SAS helps customers at more than 60,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW®.

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SAS Appendix B – Proposed Project Team Resumes

On the following pages, please find resumes for the proposed project team.

Robert W. Stone, Data Management Consultant

FUNCTIONAL ROLES

- BI Architect
- Data Warehouse Architect
- Data Quality / Data Governance Lead
- Project Lead
- Managing Consultant
- Data Modeler
- ETL Technical Lead
- MDM Architect

DATABASES

- Teradata
- Oracle
- MS SQL Server
- DB2

LANGUAGES

- SQL, C
- Visual Basic
- XML

TOOLS

- Erwin
- Informatica
- Business Objects
- Microstrategy
- Microsoft
- DataFlux / SAS

OPERATING SYSTEMS

- Windows
- Unix
- AIX

INDUSTRIES

- Financial Services
- IT Services
- Insurance
- Pharmaceutical
- Public Administration
- Retail
- Healthcare
- Telecommunications

Robert Stone has over 25 years of comprehensive experience working with IT and Business organizations to improve information systems and processes. Proven ability to work with customers to identify and solve roadblocks to improving data management and implementation processes. Robert has broad work experience in working with business and IT leaders, skilled in data architecture, data governance, business requirements, project management, data modeling, data quality processes, business process modeling, ETL architecture, and BI application development.

Summary of Experience

- Multiple data governance and data management projects working with business and technical teams to assess current practices and to recommend the best solution that works for the client's environment
- Experience working with large companies, within their culture and understanding their data environments, skilled in working with both IT and business users in understanding common data issues and making actionable recommendations
- Technical and project lead for several enterprise data warehouse implementations, including SAKS Fifth Avenue, RBC, and Aegon Insurance from business requirements to final user acceptance.
- BI and Data Warehouse Architect responsible for all phases of implementation including data modeling, data quality processes, application design, and ETL data sourcing and integration design.
- Master Data Management data architecture and process design most recently two years at Saks Fifth Avenue for their customer master and new enterprise data warehouse.

Professional Education

- B.S. Business & Computer Science, University of West Florida
- U.S. Navy 8 years, Navy IT technical schools and leadership training

Certifications

- Master CBIP Leadership & Management
- Master CBIP Business Analytics
- Master CBIP Data Analysis & Design
- Certified Data Management Professional (DAMA)
- Certified RDMS Developer
- Teradata Certified Implementation Specialist
- Teradata Certified SQL Specialist
- Teradata Certified Professional
- ICCP Institute for Certification of Computing Professionals Certified Computing Professional
- Multiple U.S. Navy certifications in Management and IT

CANCER CARE ONTARIO

Worked with IT leadership to develop a data governance program. Cancer Care Ontario is a government agency responsible for driving quality and continuous improvement in disease prevention and screening, the delivery of care for cancer, chronic kidney disease, as well as access to care for key health services. They serve as a collector and repository of Ontario health care data.

Evaluated the existing data governance framework and plans against industry best practices and developed a data governance roadmap, data governance charter, and supporting data governance policy and standards documents required to initiate and sustain data governance and data stewardship.

KAISER PERMANENTE

Kaiser Permanente is one of the nation's largest not-for-profit health plans, serving more than 9 million members. The project was to create a Data Management Operating Plan that would be used to prioritize data governance and data management improvement initiatives within Kaiser. Robert worked with the Director of Data Governance and the Director of Enterprise Architecture to assess the current environment and to ensure that current enterprise strategies, on-going IT projects and initiatives were addressed by a robust data management and data governance roadmap. The operating plan created focused on data quality, master data management, data governance, data lifecycle and data management best practices.

UNION BANK

Union Bank had a corporate goal to grow to a national bank and understood that data management was a key driver for this strategic objective. Robert was the technical lead in assessing Union Bank's enterprise data architecture and the data management processes to determine gaps in capabilities. The project required interviewing IT and business stakeholders and the review of several lines of business data warehouses environments and federated IT organizations to make recommendations on how best move forward to align business and IT around data management best practices. Robert worked closely with the Enterprise Data Architect to make relevant and actionable recommendations to senior management.

CITIZENS BANK

Six month project to assess and make recommendations on how the bank (a leading North East regional bank) could improve their capabilities and maturity around data management to support the bank's strategic growth initiatives. Activities included data governance assessment, recommendations, and moving forward roadmap. Business Intelligence and enterprise data warehouse assessment, recommendations, and moving forward roadmap. A business Intelligence application line of business needs assessment and implementation of a BI application intake and governance process (BI Portfolio). Master Data Management recommendations. The engagement required interviewing dozens of

employees in IT and many lines of business and working closely with the executive sponsors of the project.

BCD Travel (Retail)

Responsible for the design and implementation of the new Enterprise Data Management (EDM) organization to initially support MDM implementation. Conducted interviews and assessed the current organizational capabilities. Created EDM policies and best practice standards for metadata, data management, data modeling, and data security. Created EDM roadmap and MDM project plan.

Environments
- Teradata

Development Tools
- IBM DataStage
- DataFlux Data Quality
- Erwin 7

SAKS FIFTH AVENUE (Retail)

Responsible for the design and development of a new enterprise data warehouse with a focus on creating a design that would integrate multiple customer information sources to create a master data repository for customer that would enable all accounts and customer activity to be reported on for each unique customer. Primary role was technical lead and data architect for the project. Responsible for logical and physical data models, data quality, and designing the master customer data model and source integration design. Profiled data sources using DataFlux (SAS).

Nationwide Insurance (Insurance)

BI Architect responsible for the analysis and assessment of the existing infrastructure and making recommendations for improving the capabilities of Nationwide's marketing business analytics environment.

- BI as a Service architecture & recommendations
- Data Integration architecture & recommendations
- Data Management recommendations

Amgen (pharmaceutical)

Managing Consultant responsible for analysis of business requirements and development of a logical data model to support a pricing and reimbursement data mart to support business analytics of Amgen's worldwide sales activities.

Environments
- Oracle
- SQL Server

Development Tools
- Erwin

- Data Model development & recommendations
- Business Requirements recommendations
- Project Plan development

Aegon Investment Division (Insurance)

The company's ten year old data warehouse had grown brittle and inflexible as more and more source systems were added to the original design with no data management. Robert was brought in to lead the development of a new data warehouse with a focus on data quality.

Environments
- Oracle
- Microsoft

Development Tools
- Informatica
- Microsoft SSAS
- Erwin

- Managing Consultant, technical lead, and data warehouse architect for the project to implement a new data warehouse for analytical reporting for all Aegon financial investments.

- Worked with the data management group to implement data management best practices
- Designed data quality audit and control process.
- Developed conceptual and logical data models for financial investments analytics data warehouse.
- Trained employees in best practices for business and data requirements.
- Designed ETL data integration processes and best practices

Managing Consultant and lead analyst for conducting Business Analytics and data environment assessment prior to the data warehouse implementation.

Conducted interviews, assessed data warehouse environment, data models, reporting, and SDLC processes, and made recommendations to the IT steering committee and senior management.

Environments
- Teradata

Development Tools
- Informatica
- Data Flux Data Quality

QUINTILES TRANSNATIONAL CORP. (HEALTHCARE)

Project was to create a Master Data Management system to cleanse, match, and integrate clinical research data maintained by many operational applications around the world. Lead technical consultant responsible for modeling and data analysis.

- Developed the logical data model to support the master data management database.
- Profiled source data using DataFlux
- Developed matching logic using DataFlux

Environments
- Teradata
- SQL Server

Development Tools
- Ascential DataStage
- Erwin
- Microsoft SSIS

ROYAL BANK CANADA (CENTURA)

Managing Consultant for project that was focused on developing a new data warehouse for all US operations of Royal Bank of Canada. Activities included:

- Developed enterprise financial logical and physical data model to support cross-functional business analysis for all US banks.
- Gathered business requirements and held review sessions. Created final requirements and specification documents which included business, data, and functional requirements.
- Worked with IT staff in both Toronto and Raleigh to design data quality processes and data profiling methods to ensure data quality and metadata was part of the new design
- Design and built new ETL system to support integration of data to/from the new data warehouse

Environments
- SQL Server

Development Tools
- Microsoft SSIS
- Erwin

MICROSOFT (RETAIL)

Project Technical Lead for business intelligence and data warehouse redesign for the Customer Services Business Unit. The BI environment at Microsoft had evolved over a period of time as a series of disparate data marts each containing data representing a different set of numbers. Robert was retained

to work with the existing IT team to bring best practices to reengineer the BI environment to support an enterprise view of data. Activities included:

- Trained business and IT staff on business and data requirements methods and best practices
- Developed new BI architecture methods that included data modeling, physical database design, and design review activities.
- Coached IT staff to leverage data profiling methods as part of both design and ETL monitoring activities.
- Augmented Microsoft's SDLC with new requirements process and templates focused on BI.

Project Technical Lead for team responsible for conducting a BI Scorecard for Microsoft Customer Services Business Unit. Conducted interviews, assessed data warehouse environment and processes, and made recommendations to management on how best to move forward to create a world-class data warehouse environment.

CHECKFREE (FINANCIAL)

Project Technical Lead for team responsible for the ETL design and development for financial payment subject area on a DB2 data warehouse using Informatica.

Environments
- DB2

Development Tools
- Informatica
- Erwin

- Designed and wrote new Informatica ETL workflows.
- Technical lead for the design of new data quality process.
- Introduced data profiling tool as a means of conducting ETL QA and data acceptance testing.

Team member responsible to help determine and prioritize business strategies and objectives in context of implementing a customer behavior driven email marketing system based on their DB2 enterprise data warehouse.

- Worked with key stakeholders to develop business and technical requirements; activities included identifying and interviewing stakeholders, reviewing business documents, driving out key themes and priorities, validating findings with stakeholders, and developing recommendations for next steps.
- Reviewed the data warehouse physical model and the current marketing requirements and made database design and ETL recommendations for bringing external ASP data into the data warehouse for reporting on customer behavior.

The technical lead for the design of an Enterprise Data Warehouse at CheckFree. This DB2 system encompasses all customers, partners, and their associated transactions. Activities included:

- Conducted business requirements interviews to establish business objectives, information requirements and to capture the data requirements, data definitions, and business rules required to deliver the information required to meet the business goals. Trained client in requirements best practices.

- Designed the new logical model for the Enterprise Data Warehouse. Conducted JAD sessions and business review sessions.
- Worked with the DBA team to translate the logical model into a physical model. Reviewed physical model for design optimization and functional testing of the business requirements.

The technical lead for a Data Warehouse Business Discovery project to help determine and prioritize business strategies and objectives in context of implementing an Enterprise Data Warehouse.

- Interviewed wide range of company personnel from developers to Senior Management.
- Completed assessment of application tools, software development life cycle processes and the existing data mart physical and logical models.

Environments
- Teradata
- Oracle Financials

Development Tools
- Informatica
- Microstrategy
- Erwin

ALBERTSON'S INC. (RETAIL)

Project Technical Lead responsible for application design and development for a new financial management and analysis system for Albertson's Finance organization.

- Worked with management to establish direction, resource requirements, and schedule. Coached project management on data warehouse development methodology.
- Developed the MicroStrategy BI application and metrics used by the "Power Users" to create account receivables and payable financial reports.
- Worked with data modeling team to establish physical database design to integrate/migrate data from Oracle Financials system into data warehouse.

Environments
- Oracle
- Oracle Financials

Development Tools

Erwin

DECISIONPOINT APPLICATIONS, INC. (FINANCIAL)

Technical lead of a team responsible for the conversion of an Oracle Financials database stored in DecisionPoint's proprietary "star" schema format into a 3rd normal form environment. This method enabled the database to more easily support subject area augmentation as well as implementation on other database platforms (e.g. Teradata).

- Developed a 3rd normal form (ER) logical model supporting the 7 subject areas and 1000+ data elements.
- Constructed initial physical database design including data type selection and secondary index identification.

STATE OF IOWA DEPARTMENT OF CORRECTIONS

Project lead and technical lead for the Iowa Department of Corrections Teradata data warehouse. Robert was asked to provide solutions to persistent performance and data accuracy issues and to resolve ETL and Business Objects design issues.

Environments
- Teradata

Development Tools

- Teradata ETL Utilities
- Business Objects
- Erwin

- Worked with the Director for the Department of Corrections and the state's project manager to review the business and technical issues and developed solutions in a collaborative fashion.
- Conducted an in-depth analysis of problem context and existing business requirements. Created a gap analysis for existing database design and recommended design changes to senior management.
- Enhanced the logical and physical database design, designed and wrote new Teradata ETL and created a new Business Objects universe design.

Environments
- SQL Server

Development Tools
- Ascential DataStage
- Erwin

SMITH+NOBLE (RETAIL)

BI Architect consultant working with the CFO focused on developing data warehouse and decision support applications for mail order / catalog retailer. Job responsibilities focused on developing the reporting and data infrastructure to provide end user access to enhanced business analytic capabilities.

NEW YORK DEPARTMENT OF HEALTH

Technical lead for the design and delivery of financial management analysis reporting for state welfare department. This project focused on the migration and enhancement of a reporting suite developed in Oracle's Discoverer to Hummingbird's BI Query.

- Migrated the design for 2400+ attributes and 60+ tables from Oracle to Teradata.
- Developed business discovery and requirements gathering documentation to support the migration and enhancement of the end user applications.

Environments
- Teradata

Development Tools
- Hummingbird Reports

UTAH DEPARTMENT OF HEALTH

Working with the State of Utah IT department, Robert was responsible for the design and development of complex reports for Medicare reporting using Hummingbird's BI/Query reporting tool.

- Developed complex Teradata SQL queries for over 30 Medicare financial reports.
- Enhanced logical data model and physical database design to support additional requirements.

Environments
- Teradata

Development Tools
- Business Objects
- Erwin

MICHIGAN FAMILY INDEPENDENCE AGENCY

Technical lead for implementing a statewide Teradata data warehouse for electronic benefits including the electronic food stamp program. Responsibilities focused on all phases of data warehouse design and implementation. Provided technical and management best practices to the development team.

- Developed the logical model and physical database design for the recipient, payment, and program subject areas of the data warehouse.

- Responsible for design and best practices for the ETL architecture and data integration processing for multiple sources systems loaded daily onto the Teradata platform.

Trained IT staff on administration and report development. Trained over 100 end-users on Business Objects Web Intelligence reporting tool and on the data content of the DW.

CONNEX

Robert worked with Siemens (the primary contractor) to help the largest Romanian telecommunications provider implement a new enterprise data warehouse. Robert was the team lead and focused on providing implementation guidance, recommendations for data management, and leadership to an inexperienced data warehouse development team.

BELL SOUTH.NET

Lead consultant for developing business intelligence applications for tracking internet usage and adoption rates. Focused on decision support, data warehouse, and data mart solution delivery.

- Developed DSS Agent dimensional models and reports. Reports were used to determine subscriber growth, turnover, promotion tracking, and product growth.
- Developed logical database model for new Mid-Market data mart. New Sybase data mart will support business reports used to track Internet and Intranet product sales and revenue.

Environments
- Teradata

Development Tools
- Microstrategy
- Erwin

BELL SOUTH BUSINESS SYSTEMS

Leader of the application development group for Marketing BI on the Teradata data warehouse. Responsible for developing new marketing and sales analysis applications for understanding the customer behavior within southeast region.

- Lead teams responsible for design, development, testing, and delivery of 10 Decision Support applications (on Oracle and Teradata) with multiple version releases in a nine state region.
- Established technical architecture for Reporting and OLAP application.
- Developed numerous development infrastructure tools and practices: software distribution, trouble tracking, source code control, release management, testing, etc.

Steve Putman, Data Management Consultant

FUNCTIONAL ROLES

- Data Management Consultant
- Enterprise Data Architect
- Integration Programmer
- Project Manager

DATABASES

- Oracle
- SQL Server
- DB2 UNIX
- Teradata

LANGUAGES

- SQL
- PHP
- HTML
- XML/RDF
- Java, JavaScript

BI/DW TOOLS

- SAS DM Studio
- IBM Ascential
- Business Objects
- Informatica
- Talend

OPERATING SYSTEMS

- HP-UX
- Mac OS X
- Red Hat Linux
- Sun Solaris
- Windows

INDUSTRIES

- Education
- Financial Services
- Insurance

CLIENT LIST

- Apollo Group
- Nationwide Insurance
- Saks Fifth Avenue
- TD Bank
- CBRE
- Hallmark
- NBC Universal

Steve Putman has over 25 years of experience supporting information-driven initiatives for large enterprises. He has extensive experience in a variety of front-end development tools, as well as relational database design and administration, and is extremely effective in project management and leadership roles. Steve is a recognized thought leader in data quality, data governance, and master data management, along with enterprise data warehouse architecture and semantic web technology. Prior to joining SAS, he owned his own software and consulting company.

Summary of Experience

- Led Data Governance and Technical assessments focusing on tactical improvement and strategic vision in the financial and media industries
- Developed and maintained data integration solutions for major retailers and a major commercial real estate company
- Led effort to design and implement a financial capital attribution model that saved significant staff time and increased accuracy of the solution for a major insurer
- Led design and implementation team in general financial reporting solution that efficiently processed over 30 million rows per month for a major mortgage lender
- Led several development teams in successfully implementing CRM solutions under tight deadlines in pharmaceuticals, customer service, and enterprise software fields
- Designed Human Resources, Financial, and CRM data warehouses and data marts to present data in the most efficient way to end users for major insurers, mortgage lenders, and computer manufacturers

Professional Education

- B.S. Business Administration (Finance), California State University, Sacramento, CA
- B.S. Economics, California State University, Sacramento, CA

Certifications

- Customer Relationship Management, PeopleSoft Enterprise

Publications

(for complete list see page 5)

- Nevala, Kimberly and Putman, Steve. *"The Data Governance eBook."* Information Management, February 2010
- Multiple blog postings, SAS Institute

Environments

- Informatica PowerCenter
- Teradata 13
- MicroStrategy

DATA MANAGEMENT ADVISORY SERVICES

Participated in conducting 2-3 day Advisory services on the subjects of Data Management, Data Governance, and Master Data Management.

- United States Golf Association, Far Hills, NJ
- BanColombia, Medellin, Colombia

GOBERNACION DE CUNDINAMARCA

Participated in an analysis of Data Governance issues in relation to the collection of vehicle taxes for the Department of Cudinamarca, Colombia. Interviews of major stakeholders were conducted, common themes were organized, and a roadmap for implementing a Data Governance was delivered to the client.

- Conducted and documented fifteen interviews with system stakeholders
- Organized observations and interviews into themes and a roadmap for Data Governance program execution
- Documented and presented findings to the client team

TD BANK

Participated in the implementation of the Data Governance program that was specified in the previous Data Governance Roadmap engagement, described below.

- Conducted and documented follow-up interviews with key players
- Participated in creation of Data Governance Charter, Operating Manual, Organizational Structure, Operating Policies, and Metrics, in concert with TD Bank Enterprise Data Governance group
- Provided training materials to key players

CANCER CARE ONTARIO

Assisted in installing SAS Data Quality Advanced in a Microsoft Server 2008 Virtual Machine environment.

- Provided guidance during installation process
- Provided an installation run book for future installations

NBCUNIVERSAL

Led a technical assessment of a data warehouse system in the Advertising Sales division of this major media corporation. Major stakeholders were interviewed for their perceptions of the current state of the solution as well as visions for the future. Recommendations were formulated based on these conversations.

- Conducted and documented sixteen interviews with system stakeholders
- Performed fit/gap analysis against industry best practices
- Formulated recommendations based on areas of improvement
- Documented and presented findings to the client team

TD BANK

Participated in an analysis of Data Governance issues in relation to an existing SAS Modeling installation for the Marketing Analytics division of the bank. Interviews of major stakeholders were conducted, common themes were organized, and a roadmap for implementing a Data Governance program in conjunction with modernizing the modeling environment was delivered to the client.

- Conducted and documented sixteen interviews with system stakeholders
- Organized observations and interviews into themes and a roadmap for Data Governance program execution
- Documented and presented findings to the client team

HALLMARK

The project involved profiling existing datasets to determine the efficacy of existing duplicate matching rules and the exposing of potentially more efficient rules for determining record duplicates between two existing CRM systems. The project also demonstrated data matching and MDM concepts by integrating a third data set into the environment.

- Profiled two multi-million record data sets for data quality and unfound matched records
- Integrated a third data set to demonstrate MDM concepts
- Documented and presented findings to the client team

CBRE

The project supported the migration of customer data as part of an upgrade to a Microsoft Dynamics CRM installation, as well as adding additional functionality to data migration and real-time data capture. Participated in requirements specification, solution design, programming, and testing.

- Designed, coded, and maintained solutions for On-Demand, Migration, and Real-Time processes
- Educated client on concepts of data quality and data integration
- Assisted in environment configuration and instance migration

SCOTIABANK

The project involved vendor selection for an enterprise Customer Master Data Management solution, Participated in data and business analysis, vendor relationships, and test data preparation.

- Prepared test data set with random errors introduced to test product effectiveness in handling bad data
- Assisted in producing and gathering results from test cases and vendor questionnaires
- Facilitated vendor presentations

Environments

- Microsoft Windows Server
- DataFlux DM Studio 2.1
- Microsoft SQL Server 2008 R2

Developmental Tools

- DataFlux DM Studio 2.1

Environments

- AIX v5.3
- Ascential DataStage
- Teradata V13

Developmental Tools

- Ascential DataStage
- Teradata SQL Administrator

SAKS FIFTH AVENUE

The project involved the construction of a Single View of the Customer (SVC) marketing data warehouse from several data sources. The ETL Lead position is responsible for auditing and sequencing existing development, analyzing and identifying inconsistencies in job execution to ease maintenance, and loading the Test/Production database with data for the initial business data audit.

- Determination of production job scheduling and load order
- Loading of initial data audit data set into Test and Production databases
- Coordination of development standardization activities as result of initial data load
- Documentation of operational metadata, load procedures and development best practices

Environments

- SUSE Linux
- Teradata V12

Developmental Tools

- Teradata SQL Administrator
- Talend Profiler

NATIONWIDE INSURANCE

The project involved the creation of new functionality and maintenance of existing data loading code. Participated in data analysis, modeling, and integration program creation in support of an existing reporting structure. Trained client on data management, logical/physical data modeling, and integration best practices. Initiated project management of business requirements and data analysis for large-scale data warehouse design and implementation project.

- Data analysis, profiling, and provisioning using best practice techniques
- Data integration code creation, testing, and implementation
- Assisted in tailoring and implementing project methodology

Environments

- Golden Gate
- Informatica
- Oracle 10g
- Solaris OS

APOLLO GROUP

The project involved the production of a Business Intelligence Scorecard to determine the maturity level of the existing organization and identify areas of improvement from a technical perspective. Analysis of the current state of the client's reporting and analysis infrastructure.

- Interviewed over 20 business and technology staff members to get a complete picture of the client's business intelligence infrastructure
- Participated in the preparation of a thorough presentation with the findings of the interviews, fit/gap with industry best practices, and recommendations for further action
- Presented findings to key stakeholders

Environments

- Business Objects
- Oracle 10g
- Solaris OS

AMGEN

The project involved the analysis of an existing report generated in Microsoft Excel and the requirements and potential costs of automating the report. Performed data analysis and produced business requirements for automation of spreadsheet-based reports for Clinical business area.

- Interviewed business and technical personnel to gain complete context of requirements

- Produced documentation of report requirements and development costs for automation of the report

Environments

- HCM/EPM 8.9
- PeopleSoft
- Solaris OS

AMERICAN ELECTRIC POWER

Engaged to provide client education on the architecture and capabilities of PeopleSoft HCM Warehouse to determine the relative fit of the application within the AEP information technology infrastructure.

- Performed fit/gap analysis against existing reporting requirements
- Performed fit/gap analysis of physical architecture of PeopleSoft EPM against the existing data warehousing environment

Environments

- Red Hat Linux
- MySQL 5.5

Development Tools

- SQL

THE PORTAL TREE

Served in a dual role as database specialist and software engineer.

- Successfully completed database design, report design and generation, and user interface design and coding

Environments

- Ascential DataStage
- Business Objects XI
- Fin/HCM/EPM 8.9
- Oracle 9i
- PeopleSoft
- Solaris OS

Development Tools

- Ascential DataStage
- Business Objects XI
- PeopleTools

THE HARTFORD

Initially engaged to provide subject matter expertise for Financial group; retained to provide design and development oversight to Human Resources and Life Insurance groups. Provided data warehouse architecture and business intelligence strategy assistance to these groups within the Corporate IT Services group.

- Led application integration and strategic warehouse architecture development
- Developed and delivered integrated meta-data strategy and meta-data repository database application
- Completed data flow analysis and extensive data modeling
- Analyzed the effect of PeopleSoft EPM 8.9 upgrade on existing processes and reporting
- Analyzed the impact of integrating the Human Resources warehouse into existing Financials warehouse instance.
- Subject matter expert on all facets of PeopleSoft EPM, including tools such as Ascential, Business Objects, and WebFocus
- Consulted with business units outside of existing warehouse subject areas for possible integration with existing instance

Environments

- IBM AIX Unix
- PeopleSoft Fin/HCM/EPM 8.8
- Oracle 9i
- Business Objects

Development Tools

- Ascential DataStage
- Business Objects XI
- PeopleTools

COUNTRYWIDE FINANCIAL

Engaged to provide subject matter expertise and development oversight to Financial group. Provided architecture guidance and support for the PeopleSoft EPM data warehousing system.

- Led application integration and strategic warehouse architecture development
- Supported end-to-end development processes from requirements through deployment
- Served as subject matter expert on all facets of PeopleSoft EPM
- Provided functional direction and team leadership to project team

PUBLICATIONS

(continued from page 1)

- Putman, Stephen. *"IS a Data Steward a Data Scientist?"* SAS.com Magazine, Second Quarter, 2014. http://www.sas.com/en_us/news/sascom/2014q2/Is-a-data-steward-a-data-scientist.html
- Multiple blog postings, SAS Institute, http://blogs.sas.com/content/datamanagement/author/steveputman/
- Putman, Stephen and Nevala, Kimberly. *"The Data Governance eBook."* Information Management, February 2010 / SAS Institute, August 2013.
- Putman, Stephen. *"Dashboard Editors Streamline 'Busy' Dashboards and Spur User Adoption"* BusinessWeek (podcast), February 2010. http://whitepapers.businessweek.com/detail/RES/1265898638_838.html
- Putman, Stephen. *"CDI and MDM Are Broken, Part 2*," The Data Administration Newsletter, Volume 12, Issue 9, September 2008. http://www.tdan.com/view-articles/8046
- Putman, Stephen. "*Performance Tuning Considerations for Decision Support Systems*," The Data Administration Newsletter, Volume 12, Issue 5, May 2008. http://www.tdan.com/view-articles/7172
- Putman, Stephen. "*CDI and MDM Are Broken, Part 1,*" The Data Administration Newsletter, Volume 1, Issue 42, October 2007. http://www.tdan.com/view-articles/6122

CLASSES PRESENTED

- "Designing and Implementing Data Governance Programs," MDM & Data Governance Summit, Toronto, ON, June 2013 / New York, NY, October 2013
- "Data Governance," CIMA Education Conference, Colorado Springs, CO, August 2013
- "Pieces and Parts of MDM," DataFlux IDEAS, Las Vegas, NV, October 2012
- "Social Media Data Management," DataFlux IDEAS, Las Vegas, NV, October 2012
- "Data Governance Executive Overview", Minnesota Digital Government Summit, St. Paul, MN, July 2012
- "Using Data Management Technology to Take Advantage of Linked Data", DGIQ Conference, San Diego, CA, June 2012

Daniel Jahn, Senior Development Manager

Experience

Senior Development Manager, SAS Institute 1993-Present

- **Senior Technical Architect – Reliability**
- **Senior Technical Architect – Criminal Justice**
- **Senior Technical Architect – Interoperability and SOA**
- **Developer – Integration Technologies**
- **Developer – Motif User Interface**

Senior Software Engineer, Data General. 1988-1993

Projects

- CJLEADS: Technical Lead
  - Large Criminal Justice data integration and data management project hosted by SAS with over 27,000 Web users across the state of NC.
  - Integrates 112 data sources using data cleansing, standardization, and clustering.
  - Mobile (iPhone, Android, iPad) & desktop devices
- South Carolina DHEC Certificate of Need (CON) and Inspections
  - HTML5 Web application takes CON applications
- SAS Research & Development
  - Implemented Service Oriented Architecture
  - Specialized in Interoperability (Web services, Message Queues, COM, CORBA, LDAP,

Education

University of Wisconsin – Madison – 2 Majors

- Electrical and Computer Engineering with Computer Engineering Option
- Computer Science

ITIL Certified

Papers and Presentations

- Tips and Techniques for Analytic Web Services (with Brad Klenz)
- Using SAS(r) Business Intelligence Web Services and PROC SOAP in a Service-Oriented Architecture
- Creating Web Services Using SAS® Analytics (with Brad Klenz)
- Web Services: The Door is Open, All are Welcome
- Service Oriented Architectures: Going from Buzz to Business
- Defining Service Oriented Architecture
- SAS Server Logging and Management
- Integrating SAS in a Web Services Architecture
- Integrating with .NET: Patterns for Leveraging SAS in Microsoft's Strategic Architecture (with Steve Jenisch)
- Building Digital Dashboards with SAS® Integration Technologies (with Steve Jenisch)
- Developing an Open Client in Visual Basic

Sandi Baker, Principal Software Developer

Experience

Principal Software Developer, SAS Institute	2004-Present
Senior Development Tester, SAS Institute/DataFlux Corp.	1997-2004
Technical Support Analyst, SAS Institute	1991-1997
Help Desk Consultant, North Carolina State University	1988-1991

Projects

- CJLEADS: ETL Development
  - Large Criminal Justice data integration and data management project hosted by SAS with over 27,000 Web users across the state of NC
  - Integrates 112 data sources using data cleansing, standardization, and clustering
  - Data is refreshed nightly
- South Carolina DHEC Certificate of Need (CON): Development
  - HTML5 Web application accepts CON applications from the public and provides ability for DHEC to review
- Blue Cross Blue Shield of Florida: ETL Development
  - Integrate 6 large data sources and refresh data on a weekly basis
  - Integrate data into SAS Marketing Automation and SAS E-mail Marketing
- Citibank: ETL Development
  - Data cleansing, standardization and clustering of credit card merchant data
- SAS Research & Development
  - Specialized in SAS/GIS, SAS DI Studio, SAS Data Quality and DataFlux products
- SAS Technical Support
  - Specialized in SAS on Mainframe hosts, SAS/Share, SAS/GIS and SAS/Graph products

Education

North Carolina State University

- B.S. Computer Science

Certifications and Awards

- SAS Certified Base Programmer SAS9
- SAS Certified Advanced Programmer SAS9
- SAS Certified Processional – Business Intelligence V6
- SAS Certified Professional – SAS Core Concepts V8
- DataFlux Employee of the Year 2002

Kay Thompson Meyer, State and Local Industry Consultant

Experience

Principal Industry Consultant **May 2014 – Present**

SAS State and Local Government

- Provides pre-sales and implementation support to the State and Local Government practice to assist government agencies in defining and implementing enterprise analytic solutions. Leverages experience from over 18 years in state government work to provide consultation in data and process governance, data sharing and integration, and analytic solution design, development, implementation and deployment. Provides guidance for strategic vision and implementation of enterprise centers of analytics for government including development of mission and objectives, policy, procedures, and approach, and leadership and agency support.

Program Director, Government Data Analytics Center (GDAC) **December 2008 – May 2014**

North Carolina Office of the State Controller

- Led in the strategic visioning, definition and implementation of an enterprise data integration and analytics program for the State of North Carolina. Managed the development of program mission, objectives, governance and performance considerations to facilitate the use of the State's data for analysis to support key business decisions. Established strong working relationships with more than ten partner agencies to understand business objectives and manage the design, development and implementation of effective business solutions to support the enterprise.
- Led the development of the State's first integrated criminal justice system - CJLEADS. Built strong working relationships with key project sponsors, data source agencies, SAS and the criminal justice end user community to define system requirements to develop an offender-centric, secure, fully integrated web-based system. Developed the business policies, procedures and governance for the application. Directed an aggressive 18-month statewide deployment plan. CJLEADS was implemented on schedule for a total cost of $25.5 million, approximately 9% under budget, and supports 27,000 criminal justice professionals statewide. CJLEADS won several awards including 2011 InformationWeek Government IT Innovator, 2011 Computerworld Honors Laureate, 2012 Council of State Government Innovations Award, and finalist for the NASCIO 2011 Recognition Award.
- Directed the formation of the State's first enterprise fraud, waste, and improper payment detection program – NC FACTS. Developed governance and security strategies with SAS to facilitate the design and development of fraud solutions initially in the areas of unemployment insurance fraud and workers' compensation insurance compliance. NC FACTS development and deployment is ongoing for three major fraud solutions.
- Directed the development of the State's enterprise reporting and analytics solutions program. Led the team in identifying enterprise policies and procedures to support statewide analytics including Master Data Management, governance, security, auditing, project prioritization and funding. GDAC is currently developing and implementing two significant reporting and analytics solutions.
- Managed a $16 million annual budget including monitoring and approval of expenditures and annual development and justification of budget requests. Effectively managed program during times of budgetary constraints by identifying creative and cost effective solutions to meet the program's needs.

- Managed a team of 27 personnel including business analysts, business support technicians, technical and lead resources. Built the team from two resources to 27 by justifying the business need for positions, defining position descriptions, roles and responsibilities, ensuring available budget resources, posting and hiring team members.
- Represented the GDAC program to State leaders and the North Carolina General Assembly. Authored quarterly reports to the legislature to provide status on program progress and activities. Presented to multiple legislative committees, government task forces, councils, and commissions to share the GDAC mission and objectives and to identify areas where the GDAC could support the State's business needs.
- Managed GDAC contract and relationships with SAS, including the development of three enterprise contracts, annual Statements of Work, and contract outcome reviews to ensure resources were appropriately focused on results that met the State's business objectives.

Business and Technology Applications Specialist, NC OSC **July 2005 – December 2008**

- Managed the day-to-day operations of the North Carolina Accounting System (NCAS) Decision Support System (DSS) data warehouse including the daily creation of over 200 multi-dimensional cubes and 1,400 reports for 1,100 users statewide. DSS provides data and reporting capabilities to produce the federally mandated NC Comprehensive Annual Financial Report (CAFR). Performed data and process analysis and design, creation of Oracle queries, stored procedures, and views, design, development and maintenance of multi-dimensional cubes and reports using Cognos Transformer, Impromptu, PowerPlay and ReportNet tools. Implemented the Cognos web portal for cube and report delivery.

Consultant to North Carolina Office of State Controller **February 1997 – July 2005**

Ciber, Inc

- Acted as the Lead Analyst and Developer in the development of the client server based DSS data warehouse. Defined business data and process requirements. Developed Informatica data transformation jobs, logical and physical database design, Sybase queries and stored procedures and Cognos multi-dimensional cubes and reports. Managed the migration the DSS data warehouse from Sybase to Oracle to improve and optimize production job streams. Migration improved nightly production job streams by nearly 40%.

Consultant to State of North Carolina Department of Transportation **September 1994 – February 1997**

Ciber, Inc and Keane, Inc.

- Acted as the Lead System Analyst during the Requirements Definition phase of a system development project for NC DOT. Facilitated Joint Application Development (JAD) sessions with client to document current process and data definitions, as well as leading business process re-engineering activities to define system requirements.
- Acted as the Lead Technical Architect in developing database design, screen design, business rule definition, and security requirements. Supervised six application developers in data modeling, GUI design and Rapid Application Development (RAD) sessions. Wrote the Technical Design Approach for the project.

Information Systems Developer, Mobil Oil Corporation **July 1987 – June 1994**

- Acted as an Information Engineering Consultant providing data modeling and analysis and design expertise to development teams working in Mobil Oil's initial data warehousing projects.
- Acted as Production System Analyst to provide production support and develop management information reporting in a FOCUS system for the Mobil Pricing and Supply department.

Education

B.S. in Management Information Systems and Marketing, McIntire School of Commerce, University of Virginia, Charlottesville, VA, May 1987

M.B.A. Financial Analysis and Investments, The George Washington University, Washington, D.C., December 1991

Skills

Strategic planning, financial and budgetary planning and management, vendor and contract management, data and project governance, systems development project management, extensive skills in business requirements development, system design, development, testing, and deployment, strong programming and database experience, data integration, warehousing and analysis, strong working knowledge of technical design, security and user authentication, strong communications and collaboration skills.

Working knowledge of SAS analytic tools. Experience with Informatica, Cognos, Oracle, SQL Server, MS Office, MS Project

SAS Appendix C – Service Provider Security Assessment Questionnaire

On the following pages, please find the completed and signed Service Provider Security Assessment Questionnaire.

Service Provider Security Assessment Questionnaire

Instructions: I. Attach additional pages or documents as appropriate.
II. As used in this Questionnaire, government information shall have the meaning defined in the clause titled "Information Security."

1. Describe your policies and procedures that ensure access to government information is limited to only those employees/Contractors who require access to perform your proposed services.

SAS Solutions OnDemand has a *Data Classification and Handling Policy* which all employees within SAS Solutions OnDemand or with system access must read and acknowledge every six months. Formal training is conducted annually. The policy requires that all restricted data should be viewed only by those workers authorized to work on it. Authorized workers should take appropriate and reasonable safeguards to protect such data from unauthorized viewing.

2. Describe your disaster recovery and business continuity plans.

SAS has a robust Continuity of Business (COB) Program. SAS' COB methodology is applied corporate wide utilizing standardized templates and processes for response and recovery planning. SAS applies an "all-hazards" BCM planning approach. Typical plan components include disaster notification/escalation process, roles and responsibilities of response and recovery staff, internal and external call lists, alternative work location information (typically other SAS-owned properties or employee homes), application and system dependencies, critical third party supplier information, and recovery strategies for loss of technology (e.g. where appropriate, critical functions will utilize manual workarounds), loss of facility (e.g. staff can work from alternate locations), loss of people (e.g. critical function services can be provided from staff in other geographic locations), and loss of key suppliers or partners.

Plan owners are instructed to update their plans "as needed" but are minimally prompted by the COB Program office to update their plans every six months. Once a year plan owners participate in a formal maintenance cycle that qualifies functional changes that should be incorporated into their plan, and prompts staff training and component testing. Typical plan changes may include updates to call trees, infrastructure dependencies and recovery strategies. Results of the maintenance cycle are incorporated into the function's annual review with top management.

SAS Solutions OnDemand Business Resumption Plan is updated and tested annually. Our customers' services are covered by both the SAS Solutions OnDemand and SAS Corporate Continuity of Business programs. For additional information, please see the Continuity of Business White Paper.

3. What safeguards and practices do you have in place to vet employees and Contractors who have access to government information?

SAS HR Hiring Policies include verification of background check for both contractors and employees prior to hiring. Background checks are conducted by a third party. Employees sign an employment agreement that includes confidentiality language. Contractors have contract language that covers their security guidelines and sign an NDA prior to work.

4. Describe and explain your security policies and procedures related to use of Contractors/sub-contractors.

SubContractors are required to complete Hosting Policies and Process training as well as the Data Classification and Handling / Privacy training if they have access to customer data. Third party suppliers/subcontractors must have legally binding agreements with SAS. These agreements include non-disclosure language as well as compliance with applicable policies (for example: training and security). Customer and regulatory requirements are also cascaded down to supplier agreements, as appropriate.

5. List any certifications that you have that demonstrate that adequate security controls are in place to properly store, manage and process government information (for example, ISO or SSAE certifications). Will these certifications be in place for the duration of the contract? Will you provide the state with most recent and future audit reports related to these certifications?

SAS maintains Service Organization Controls (SOC) 2 and 3 certification issued by a third party auditor. SAS also has annual third party pen testing performed by a third party. SAS Solutions OnDemand has been successfully audited by TRUSTe and has attained Safe Harbor certification.

6. Describe the policies, procedures and practices you have in place to provide for the physical security of your data centers and other sites where government information will be hosted, accessed or maintained?

Not applicable. This solution will be housed in a customer provided data center. For information around the controls SAS has in place for SAS data centers, please see the SAS Solutions OnDemand/SAS Information Technology Hosting Policies and Processes.

7. Will government information be encrypted at rest? Will government information be encrypted when transmitted? Will government information be encrypted during data backups?

Data is not encrypted at rest. Data is encrypted in transit and during and on backups.

8. Describe safeguards that are in place to prevent unauthorized use, reuse, distribution, transmission, manipulation, copying, modification, access or disclosure of government information.

The SAS Solutions OnDemand Data Classification and Handling Policy prevents employees from downloading restricted or confidential data from the customer-specified SAS Solutions OnDemand servers.

9. What controls are in place to detect security breaches? Do you log transactions and network activity? How long do you maintain these audit logs?

Access to the firewalls is restricted to secure shell connections from specified SAS networks and authorized users. Access logs from these devices are recorded to a central syslog server. IDS/IPS is actively monitoring and blocking the hosting network.

SAS Solutions OnDemand deploys data loss prevention (DLP) software, as appropriate, on SAS end client machines with access to hosting environments to protect customer data from download or loss. The DLP software monitors data traffic and sends alerts to security and management when a violation of the SAS Solutions OnDemand Data Classification and Handling Policy occurs.

10. How will government information be managed after contract termination? Will government information provided to the Contractor be deleted or destroyed? When will this occur?

Termination services may be discussed during negotiations and could involve certificate of destruction or data transfer or relocation of solution to onsite customer data center (additional fees required).

11. Describe your incident response policies and practices.

All SAS Solutions OnDemand employees and their delegates are responsible for promptly reporting to the Compliance teams or directly to GIS suspected or known security events, including an observed or suspected security weakness in the SAS Solutions OnDemand hosting environment. A confidential security incident ticket is immediately created and assigned to GIS on-call staff for risk-based assessment and classification. They are initially assigned the role of SIRT lead.

As appropriate, additional notification is provided to SAS Legal, the SAS Solutions OnDemand project managers, or SAS Solutions OnDemand technical account managers, who contact customers or appropriate regulatory agencies to communicate security incidents that directly affect their service or systems. Notification timing may be dictated by customer agreement terms and applicable regulations.

Additional details are found in the SAS Solutions OnDemand/ IT Security Incident Response Team Process available during an onsite audit with an NDA. The Security Incident Response Team Process is tested annually.

12. Identify any third party which will host or have access to government information.

Not Applicable.

Offeror's response to this questionnaire includes any other information submitted with its offer regarding information or data security.

SIGNATURE OF PERSON AUTHORIZED TO REPRESENT THE ACCURACY OF THIS INFORMATION ON BEHALF OF CONTRACTOR:

By: _____ *
(authorized signature)

Margaret Gill
(printed name of person signing above)

Its: Contracts Manager
(title of person signing above)

Date: November 10, 2014

*This Service Provider Security Assessment Questionnaire is being executed by SAS Institute Inc., as subcontractor providing the Services described in Request for Proposal 5400008582 on behalf of Executive Information Service, LLC.

SAS Appendix D – SAS' Service Level Agreement (SLA)

On the following pages, please find SAS' Service Level Agreement for SC DHEC review.

Form of Service Level Agreement

Service Level Agreement ("Agreement")

South Carolina Department of Health and Environmental Control ("Customer")
Customer name Street address City, State, ZIP

In exchange for Customer paying the charges and any applicable taxes arising under this Agreement, EIS agrees to provide the services described below, which include both Remote Managed Services ("RMS") and implementation services (the "Implementation Services" and together with the RMS, the "Services") including, if applicable any deliverables ("Deliverables") and a limited license to any Deliverables consisting of computer code and/or documentation ("Work Product"). Work Product is not considered to be information provided to the State and shall not be owned exclusively by the Customer or the State. The parties agree that EIS is authorized to subcontract all of the Services to SAS Institute Inc. ("SAS"). This Agreement is effective upon the last dated signature below ("Effective Date") but governs Services performed prior to the Effective Date.

Section A: Provisions Applicable to RMS:

1. Definitions. Capitalized terms have the meanings contained in this Section 1 or within the text throughout this Agreement.
   - 1.1. Application Monitoring Software means software specified by EIS, or its subcontractor SAS, required to collect data to verify the availability and performance of the System.
   - 1.2. Customer Materials means all data, authentication credentials, software, or other materials, including, but not limited to, Prerequisite Software and Application Monitoring Software, but excluding the Software, required for use in the System.
   - 1.3. Customer Marks means Customer's trademarks, service marks or trade names that are reproduced or displayed in the System.
   - 1.4. Issue Tracking System means the system specified by EIS or its subcontractor SAS used to report, track and monitor issues associated with the Software and/or System.
   - 1.5. Prerequisite Software means any third party software required for use with the Software as defined at http://support.sas.com/resources/thirdpartysupport/index.html.
   - 1.6. Software means the SAS software licensed by EIS to Customer as described on Exhibit 2 hereto.
   - 1.7. System means Customer's hardware, network and associated operating system software installed on Customer's premises as they operate together to provide the environment(s) where the Software operates.
   - 1.8. System Outage – means any period of unavailability of the System.
   - 1.9. Term shall be as described in Section A. 10 hereof.
2. Remote Managed Services. During the Term, EIS will cause SAS to perform Remote Managed Services as described below for the environment(s) licensed as described on Exhibit 2 hereto. For the avoidance of doubt, Remote Managed Services does not include services for the support of hardware, operating system or any other Customer infrastructure. Unless otherwise agreed by the parties, all Remote Managed Services will be performed from SAS facilities remote from Customer premises.
3. SAS Responsibilities.

   EIS will cause SAS to perform the following:
   - 3.1. SAS will perform initial remote installation and configuration of the Software on the System using a mutually agreed upon installation and configuration method.
   - 3.2. SAS will provide a pre-installation checklist to the Customer.
   - 3.3. SAS will provide remote day-to-day operational support for the Software.
   - 3.4. SAS will use the Application Monitoring Software to monitor the Software and System and collect metrics for service level management, event management, incident management, problem management and change management.

3.5. SAS will perform remote installation of Software hot fixes provided by SAS' Technical Support division applicable to the then-current release of the Software installed on the System. Installation of new releases of the Software may require additional services subject to execution of a separate services agreement between the parties and payment by Customer of additional fees. Any data migration or customization services required as the result of installation of Software hot fixes or new releases are not included as part of Remote Managed Services and, if performed, will be provided as additional services subject to execution of a separate services agreement between the parties and payment by Customer of additional fees. Any such additional services will be managed through a mutually agreed upon change management process.

4. Customer Responsibilities.

4.1. Facilities and Personnel.

4.1.1. Customer will provide, at no charge to EIS, the required System to support the Software as defined in the Software system requirements document or specification provided by SAS.

4.1.2. Customer will provide, at no charge to EIS, adequate facilities, personnel, resources and equipment to support the Software that meet or exceed the environmental and operational instructions provided by the applicable equipment manufacturer.

4.1.3. Customer will conduct periodic security scans of the System and will take other reasonable security precautions to protect against the introduction of malware and computer viruses and to prevent unauthorized access to and usage of the System.

4.1.4. Customer will provide, at no charge to EIS, a Windows based terminal server for connection into the System. Customer must install related third party tools, or enable SAS to install such third party tools, including, but not limited, Putty, Winscp, or xWindows server and any other third party tools as instructed by SAS. The terminal server must provide access to SAS via virtual private network ("VPN") tunnel to enable SAS to provide Remote Managed Services for the Software including access from Port 80 and 443 to SAS, access from SAS to terminal server Port 3389 and, for Linux based installations, access from SAS to Port 22.

4.1.5. Customer will enable necessary ports to facilitate Application Monitoring Software as specified by SAS in the installation requirements.

4.1.6. Customer will make available to SAS the initial System environment within thirty (30) days of the date Customer signs this Agreement. Customer will make available to SAS any additional System environment(s) on a schedule to be mutually agreed upon between Customer and SAS. Any delay by Customer in providing any System environment may result in work stoppage, resource redeployment and unplanned delays, none of which shall be considered a breach by EIS of the Agreement. Any such delay may also result in additional fees payable by Customer.

4.1.7. Customer will provide, at no charge to EIS, adequate internal System space for continuous operation of the Software.

4.1.8. Customer will provide, at no charge to EIS, adequate connectivity to provide direct, dedicated, persistent site to site VPN ("Site-to-Site VPN") access as approved by SAS enabling SAS to access the System to perform the Remote Managed Services in accordance with SAS VPN policies and standards.

4.1.9. Customer will acquire a license for and will perform installation and configuration of any required Prerequisite Software and Application Monitoring Software.

4.1.10. Customer will download and make available to SAS the SAS Software Depot to enable SAS to perform remote installation of Software on the System.

4.1.11. Customer will download, upload or transfer files either to the System or to SAS that are required for installing hot fixes, supporting installation validation and reviewing System and Software logs for problem resolution purposes.

4.1.12. Customer will use the Issue Tracking System to report any issues associated with the Software or System.

4.1.13. Customer will provide to SAS System logging or reporting diagnostic data, and network diagnostic data, to enable SAS to review System activity and performance.

4.1.14. Customer will provide reasonable access to Customer's subject matter experts.

4.1.15. Customer will provide all necessary storage to support the data on in the System.

4.2. IT Service Management. EIS and Customer will mutually agree upon processes to support event management, incident management, problem management and change management. Customer agrees not to make changes to the System or the Software, including but not limited to changes to firmware or system configuration or installation of hotfixes or updates, without prior agreement from EIS or its subcontractor SAS via the established change management process. Changes to the System or Software without prior agreement from EIS or its subcontractor SAS may result in additional fees and may lead to outages, and unplanned delays which in no event shall be considered a breach by EIS of the Agreement.

4.3. Backups. Customer will be responsible for all backups of the System, Software and Customer Materials on a regular basis. Customer will provide SAS with access to such back-ups as needed to enable SAS to perform the Remote Managed Services. Customer will undertake appropriate backup, removal, verification and protection of any Software programs, databases and removable storage media.

4.4. Customer Materials.

4.4.1. Customer will be responsible for: (a) providing SAS, in a mutually agreed upon format, all Customer Materials; (b) providing SAS all data sources and business rules necessary for input into the System; and (c) providing any Customer Marks that are to be reproduced or displayed in the System.

4.4.2. Customer grants EIS a non-transferable, non-exclusive, royalty-free license to use the Customer Materials and Customer Marks solely for the purpose of performing the Remote Managed Services. Where the Customer Materials include software or other materials licensed by Customer from a third party, Customer must obtain: (a) a license from the provider of the software or materials for EIS and its subcontractor SAS to use such software or materials to perform the Remote Managed Services, and (b) prior written approval from EIS or its subcontractor SAS before such software or materials may be used in conjunction with the System. Title to Customer Materials and Customer Marks remains with Customer or its licensors at all times.

4.4.3. If the Customer Materials require EIS or its subcontractor SAS to qualify the System, SAS must first approve such qualification activities in writing prior to using the applicable Customer Materials with the System. Customer will direct each provider of such Customer Materials to provide to SAS, upon request from SAS or Customer, appropriate information to enable SAS to qualify the System as integrated with the Customer Materials. Additional fees may apply for any such qualification of Customer Materials, processes and related activities.

4.4.4. EIS will have no obligation to provide any support, maintenance or upgrades pertaining to Customer Materials. Customer is solely responsible for providing or arranging for the provision of all such services, including ongoing qualification. Customer is responsible for providing or arranging for the provision of all upgrades for Customer Materials, including up-to-date virus protections, and will coordinate the timing of same with SAS. No warranties of indemnities made by EIS in the Agreement will apply to Customer Materials.

4.4.5. If EIS or its subcontractor SAS is unable to process Customer Materials as a result of the unavailability of the Customer Materials, SAS will notify Customer and Customer will make available to SAS the Customer Materials or the corrected Customer Materials, as applicable. Unavailability of Customer Materials includes, but is not limited to: (a) Customer's failure to make available the Customer Materials to SAS in a timely manner; (b) Customer's providing corrupt, improperly formatted, incomplete or nonfunctional Customer Materials; or (c) Customer's altering the Customer Materials. SAS will process the Customer Materials or corrected Customer Materials as soon as commercially practicable after they are made available, and will process any subsequently available Customer Materials sequentially thereafter, as applicable. SAS will notify Customer once any delays in the availability of the Software or System related to Customer Materials are resolved. Any unavailability of the System or the Software resulting from Customer Materials shall not be considered a breach by EIS of the Agreement.

4.4.6. EIS, through its subcontractor SAS, reserves the right to disengage and take Customer Materials offline in the event of any emergency situation, or any threat or perceived threat to the System related to the Customer Materials. Any resulting adverse performance impact to the System attributable to any such disengagement shall not be considered a breach by EIS of the Agreement.

4.5. Customer Representation.

4.5.1. Intellectual Property Representation. Customer represents: (a) that it has the right to license the Customer Materials and the Customer Marks to EIS; (b) it has obtained from the applicable provider of the Customer Materials the right for EIS to use the Customer Materials as required for the performance of the Remote Managed Services; and (c) that Customer's use of the Customer Materials complies with all applicable license terms, terms of use and other usage terms as set forth by the providers of such materials.

4.5.2. Compliance Representation. Customer represents that the publication, transmission, and receipt of all Customer Materials complies with all applicable local, state, and federal laws and regulations, including, without limitation, laws relating to trademarks, copyrights, defamation, consumer protection, personal privacy, and false or deceptive trade practices.

5. System Access Privileges. Customer will grant SAS remote access to the System as needed to enable SAS, as subcontractor to EIS, to perform the Remote Managed Services. Customer will also grant SAS reasonable on-site access to Customer's data center and System as may be necessary to enable SAS, as subcontractor to EIS, to perform any Remote Managed Services which cannot be performed remotely. Where required, Customer will provide elevated access permission, including, but are not limited to, sudo to root privileges for mutually agreed upon commands.

6. Maintenance Outages.

6.1. System Maintenance Outage. Subject at all times to Section 4.2 (IT Service Management), Customer may conduct system maintenance services that will result in System Outage ("System Maintenance Outage."). The System will be unavailable to Customer and to SAS during a System Maintenance Outage. Customer will use reasonable efforts to notify EIS and its subcontractor SAS at least seven (7) days prior to a planned System Maintenance Outage.

6.2. Facility Maintenance Outage. Customer or EIS, through its subcontractor SAS, may conduct locally planned or globally planned routine or preventative facility maintenance services at its facilities that may result in System Outage ("Facility Maintenance Outage.") The System may be unavailable to Customer and to SAS during a Facility Maintenance Outage. Each party will use reasonable efforts to notify the other party and SAS at least seven (7) days prior to a planned Facility Maintenance Outage affecting the System.

6.3. Software Maintenance Outage. EIS will cause SAS to conduct Software maintenance that may result in System Outage and/or Software Outage ("Software Maintenance Outage"). EIS, through its subcontractor SAS, will use reasonable efforts to notify Customer at least seven (7) days prior to any planned Software maintenance that may result in a Software Maintenance Outage.

7. Force Majeure. Except for Customer's obligations to pay fees, neither party shall be liable to the other party for any failure or delay in performance caused by reasons beyond its reasonable control including, but not limited to, restrictions of law, regulations, orders or other governmental directives, labor disputes, acts of God, third-party mechanical or other equipment breakdowns, fire, explosions, fiber optic cable cuts, interruption or failure of telecommunication or digital transmission links, Internet failures or delays, cyber-attacks on information or information systems, storms or other similar events.

8. Disclaimer of Actions Caused by, or Under the Control of, Customer or Third Parties. Neither EIS nor SAS exercise control over the flow of information to or from the System, SAS' network, or other portions of the Internet. Such flow depends in large part on the performance of Internet services provided or controlled by Customer or third parties. At times, actions or inactions of such third parties can impair or disrupt connections to the Internet or portions of such connections. Although at all times during the Term EIS will cause SAS to use commercially reasonable efforts to take all actions it deems appropriate to remedy and avoid such events, EIS cannot guarantee that such events will not occur. **ACCORDINGLY, EIS DISCLAIMS ANY AND ALL LIABILITY RESULTING FROM OR RELATED TO ALL SUCH EVENTS AND ANY OTHER ACTIONS OR INACTIONS CAUSED BY OR UNDER THE CONTROL OF CUSTOMER OR A THIRD PARTY.**

9. Service Level Agreement for Remote Managed Services. The Service Level Agreement for the Remote Managed Services is described in Exhibit 1 which is attached hereto and incorporated herein.

10. Term of RMS. The RMS shall be provided during the initial one year license term of the Software and during any continued one year annual period Customer elects to pay for the maintenance renewal for the Software and RMS. Customer may not receive RMS if it fails to renew maintenance of the Software. If Customer fails to pay for any maintenance renewal period during the term of the license to the Software, RMS shall automatically terminate and shall not be provided in the future if Customer elects to reinstate maintenance unless mutually agreed to by the parties. EIS at its option may determine not to renew the RMS for any subsequent annual renewal period and will provide notice of such at least thirty (30) days prior to any renewal period.

11. Fees. The Fees for the RMS shall be included in the license fee for the initial one year period of the license and shall be included in the maintenance renewal fees for subsequent renewals.

12. Invoicing. For fees due related to the RM, EIS will invoice Customer approximately thirty (30) days prior to the beginning of the annual renewal period. Payment is due net thirty days.

Section B. Provisions Applicable to Implementation Services:

1. **Services and Ownership of Work Product**

EIS grants Customer a nonexclusive, nontransferable, non-assignable, royalty-free license to use any Work Product only with the SAS software ("Software") with which the Work Product operates and only for as long as Customer maintains a license for such Software ("License"). Ownership of the Work Product, including any intellectual property embodied therein, and any techniques, skills, concepts or know-how that are utilized or developed while performing the Implementation Services remains with EIS or its subcontractor SAS. Nothing herein shall be construed as granting Customer a license to any SAS Software, which shall be licensed separately pursuant to a license agreement between EIS and Customer.

2. **Description of Services and Acceptance Process**

2.1 Description of Implementation Services. EIS will provide the Implementation Services as more fully described below. The Implementation Services will be provided on a Fixed Price basis. As used herein, the term "Fixed Price" means a pre-defined project model where EIS provides Services for a set fee within the estimated time period identified below. The Implementation Services will not include continued support or maintenance of any Deliverable or Work Product unless such support or maintenance is detailed below.

Description of Implementation Services:

[TO BE MUTUALLY AGREED TO UPON AWARD AND PRIOR TO EXECUTION OF AGREEMENT]

2.2 Acceptance Process. Each party agrees to respond to the other in a timely fashion when acceptance of a Deliverable is pending. After delivery, Customer will accept or reject a Deliverable within ten (10) business days. Failure to reject a Deliverable within this time frame will constitute acceptance of the Deliverable. Notice of Customer's rejection of the Deliverable shall be provided to SAS in writing and shall specify the nature and scope of the deficiencies. In the case of rejection of the Deliverable, the parties agree to adhere to the following timeframes whenever reasonably possible in order to meet the schedule set forth above: SAS will use reasonable efforts to respond to Customer within five (5) business days after receipt of the rejection notice describing the manner and timeframe in which SAS proposes to correct any deficiencies, or by actually correcting the deficiencies. In the former case, Customer will use reasonable efforts to accept SAS' proposal for correcting any deficiencies within five (5) business days after receipt of SAS' proposal. Upon SAS' delivery of the corrected Deliverable, Customer will use reasonable efforts to accept the Deliverable within five (5) business days. If Customer does not accept a Deliverable or SAS' proposal for correcting any deficiencies, EIS may terminate the Implementation Service.

3. **Additional Services**

Any mutually agreed upon services beyond the Implementation Services described herein shall be performed pursuant to a separate agreement or an amendment to this Agreement. Additional fees shall apply to the performance of any such additional services.

4. **Implementation Services: Fixed Fee, Progress Payments, Travel and Living Expenses, Invoicing**

[TO BE MUTUALLY AGREED TO UPON AWARD AND PRIOR TO EXECUTION OF AGREEMENT]

4.1 Implementation Services Fixed Fee and Progress Payments.

Deliverables	Progress Payment	Payment Due Date
1.	1.	
2.	2.	
3.	3.	
Total Fixed Fee:		Populate this cell if Customer will be invoiced only upon completion of the Services.

4.2 Travel and Living Expenses. Travel and living expenses are included in the Fixed Fees above.

4.3 Invoicing. For any Implementation Services fees due, EIS will invoice Customer according to the listed payment due dates or as otherwise specified herein.

5. **Change Management**

"Change Management" refers to a process for the parties to agree on a change or modification to the scope of Implementation Services, and “Change Order” refers to the document reflecting the change or modification. Requests by Customer or EIS, or its subcontractor SAS, for such changes will be made in writing to the other party. EIS will prepare the Change Order, which will contain the following information:

a. A description of any additional work to be performed and/or any changes to the performance required of either party.
b. A statement of the impact of the work or changes on the Implementation Services and the project schedule.
c. The estimated timetable to complete the work specified in the Change Order.
d. The estimated time and cost of any additional work associated with the Change Order.

EIS, or its subcontractor SAS, will provide the proposed Change Order to Customer's project manager for review, and if additional fees will be charged, EIS will provide the proposed amendment to this Agreement. Customer’s project manager will respond in writing to the proposed Change Order within five (5) business days. Each party must agree in writing to the Change Order. Pending such written agreement (and if additional fees will be charged, execution of the associated amendment), EIS will continue to direct SAS to perform as if such Change Order had not been requested or recommended. If Customer provides its acceptance of the proposed Change Order in writing and, if applicable, executes the proposed amendment, EIS will direct SAS' project manager to update the project plan to reflect the change(s).

Section C. General Provisions Applicable to All Services.

1. **Confidential Information**

SAS agrees to use reasonable efforts to prevent any Confidential Information from being revealed to third parties for a period of three (3) years from the date of disclosure. As used herein, the term "Confidential Information" shall mean only that information of Customer provided to SAS in connection with and related to the Services. This restriction does not apply to information which is: (1) generally available to the public; (2) released by Customer without restriction; (3) independently developed or acquired by SAS; or (4) known to SAS prior to receipt from Customer. In the event the Confidential Information must be disclosed pursuant to judicial order or requirement of law, SAS shall make reasonable efforts to notify Customer of such order or requirement. For the purposes of this Section, SAS' subsidiaries and subcontractors performing Services shall not be deemed "third parties." No proprietary source code or individually identifiable information will be disclosed under this Agreement.

To the extent that the parties enter into a Business Associate Agreement allowing EIS to access Protected Healthcare Information, the terms of such Business Associate Agreement are incorporated herein as if fully stated herein and subject to the terms of this Agreement.

2. **Termination**

Either party may terminate this Agreement if there is a material breach of their terms by the other party provided such breach is not cured within thirty (30) days of the breaching party's receipt of written notice from the other party. This right to cure does not apply to breaches that threaten to cause or have caused damage to or loss of all or part of EIS' or its licensors intellectual property rights.

3. **Warranty; Disclaimers and Limitation of Liability**

With respect to the Implementation Services, EIS warrants it has the right to license any Work Product to the Customer. The exclusive remedy for breach of this warranty is set forth in Section C.4. EIS further warrants that the Implementation Services shall be provided by qualified personnel and in accordance with the requirements set forth in this Agreement. The exclusive remedy for breach of this warranty is refund of fees paid for the Implementation Services at issue. The foregoing warranties to not apply to the RMS. Any warranty provided with respect to RMS are set forth on Exhibit 1 hereto.

3.1 **EIS disclaims all other warranties, express or implied, with respect to the Work Product or theServices provided hereunder or the results obtained, including without limitation any implied warranties or conditions of merchantability or fitness for a particular purpose and those arising by statute or otherwise in law or from a course of dealing.**

3.2 **With respect to the Services, EIS is not liable for any loss of profits or for special, consequential, incidental, indirect, reliance, punitive or exemplary damages, either in contract or tort, whether or not the possibility of such damages was disclosed to EIS or could have been reasonably foreseen by EIS.**

3.3 In no event shall EIS' liability for all claims for damages of any kind related to the Implementation Services, including direct damages, exceed the amount Customer paid for the Implementation Services or Work Product at issue. Customer acknowledges this limitation of liability is reasonable in light of Customer's ability to limit its exposure to damages through involvement in the Implementation Services provided by EIS and by testing any Work Product delivered by EIS.

3.4 In no event shall EIS' liability for all claims of damages of any kind related to the RMS, including direct damages, exceed the aggregate of the fees paid for the Software, or the maintenance renewal of the Software, during the twelve (12) month period immediately preceding the date when the claim arose.

3.5 If the limitations of liability contained in this Section C.3 should be held unenforceable, the parties agree to set an amount for liquidated damages for any and all liability which may arise under this Agreement to the amount Customer paid for the Implementation Services or Work Product hereunder. The parties agree this amount is reasonable in light of possible damages which may occur and the difficulty in assessing those damages. This provision shall not be considered a penalty.

3.6 The limitations of liability contained in this Section C.3 do not apply to EIS' indemnification obligations set forth in Section C.4.

4. **Indemnification**.

Customer agrees to promptly notify EIS in writing of any claim made against Customer for: (a) copyright, patent, trade secret or other intellectual property rights violation relating to the Work Product; or (b) bodily injury, death or damage to tangible property, excluding damage to software or files, arising solely from actions for which EIS is legally responsible. Customer further agrees to allow EIS to control the litigation or settlement of any such claim and to cooperate with EIS in the investigation, defense and settlement thereof. Provided Customer complies with this Section, EIS shall indemnify Customer for such claim by paying for the costs and attorneys' fees Customer incurs at EIS' direction and any judgment finally awarded against Customer or settlement approved by EIS. Customer may participate at Customer's own expense. If such claim in (a) above is made, or, in EIS' opinion is likely to be made, then EIS, at its option, may: (1) modify the Work Product, (2) obtain rights for Customer to continue using the Work Product; or (3) terminate the license for the Work Product at issue and refund the then-current fee paid for the Services at issue. Customer agrees to abide by EIS' decision and, if appropriate, install a different Work Product or stop using the Work Product. This indemnification obligation does not apply to the extent that: (i) the claim is based on Customer's specifications, or (ii) the claim is based on Customer's combination of the Work Product with other software, or modification to the Work Product, if such claim would not have been made but for the combination or modification.

5. **Insurance**

During the term of this Agreement, EIS will cause SAS will keep the following insurance policies in force:

5.1 Workers Compensation -- Statutory (in the amounts required by applicable state statutes);

5.2 Employer's Liability -- $1,000,000 per occurrence; bodily injury by accident or disease, including death;

5.3 Commercial General Liability -- $1,000,000 combined limit per occurrence, bodily injury, personal injury and property damage, including blanket contractual liability; and

5.4 Automobile Liability (if vehicles are brought on Customer's premises or used in performance of the Services) -- $1,000,000 combined limit per occurrence; bodily injury and property damage covering owned, non-owned and hired vehicles.

SAS will provide a Memorandum of Insurance upon request as evidence of this coverage.

6. **General Terms; Complete Agreement**

6.1 EIS' and SAS' employees are acting as employee of an independent contractor and not as Customer's employees.

6.2 Force Majeure. Except for Customer's obligations to pay EIS' invoices, neither party shall be liable to the other party for any failure or delay in performance caused by reasons beyond its reasonable control including, but not limited to, restrictions of law, regulations, orders or other governmental directives, labor disputes, acts of God, third-party mechanical or other equipment breakdowns, fire, explosions, fiber optic cable cuts, interruption or failure of telecommunication or digital transmission links, Internet failures or delays, cyber attacks on information or information systems, storms or other similar events.

6.3 This Agreement is governed by South Carolina law and constitutes the complete and exclusive statement of the parties about the Services, which supersedes all prior communications relating to its subject matter. Additional or conflicting terms on any current or future Customer purchasing documents are rejected.

6.4 This Agreement can be modified only in an amendment that specifically references this Agreement and is signed by an authorized signatory of the parties.

Accepted by:

Customer:	South Carolina Department of Health and Environmental Control	SAS Institute Inc.
By	_____	By _____

Authorized signature	Authorized signature
Name (type or print)	Name (type or print)
Title	Title
On Date	On Date

lg03.0022/18AUG14 SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.

Exhibit 1
To
Service Level Agreement for Remote Managed Services

1. Definitions.
   1.1. Business Day means 9:00 AM to 5:00 PM, Eastern United States time, each of Monday, Tuesday, Wednesday, Thursday, and Friday, except when any such day occurs on a holiday observed by SAS or Customer.
   1.2. Monthly Software Availability Percentage means a measurement of Software availability on the System expressed as a percentage and calculated as follows:

$$\frac{\text{(Total Monthly Hours – System Outage – Software Outage)}}{\text{(Total Monthly Hours – System Outage)}} = \text{Monthly Software Availability Percentage}$$

   1.3. Operational Incident means an unplanned interruption or reduction in Software in a production environment. Operational Incidents include only those incidents reported by Users using the Issue Tracking System.
   1.4. Operational Incident Response Time means the amount of time between when an Operational Incident is reported by Customer in the Issue Tracking System for a production environment and when that Operational Incident is marked or commented in the Issue Tracking System as In Progress by SAS.
   1.5. Planned Outage means any outage or unavailability of the Software and/or System resulting from a System Maintenance Outage, Facility Maintenance Outage or Software Maintenance Outage or any other outage conducted at the mutual agreement of the parties.
   1.6. Service Credit means an amount, calculated as set forth in Section 3.2 (Calculation of Service Credits) below, payable by SAS to Customer as a result of SAS' breach of the Service Level Warranty.
   1.7. Software Outage - means any period of unavailability of the Software, excluding any such period of unavailability due to System Outage, a Planned Outage, Customer Materials or any outage beyond SAS' reasonable control.
2. Service Level Agreement for Remote Managed Services.
   2.1. Operational Incidents. Customer will serve as first line response for all User reported Operational Incidents. Customer will promptly notify SAS using the Issue Tracking System in the event of an Operational Incident Customer is unable to resolve and will provide all relevant information about the Operational Incident to enable SAS to comply with its obligations hereunder. SAS will monitor the Issue Tracking System and will determine SAS' compliance with the Operational Incident Response Time Objectives. Customer acknowledges and agrees that SAS' accurate measurement of Operational Incident Response Time Objectives depends upon Customer following Issue Tracking System ticket classification guidelines.
   2.2. Monthly Software Availability. Customer shall provide and maintain a persistent Site-to-Site VPN connection between the production System and SAS' data center operations to enable SAS to monitor the Software and the System. SAS will monitor the Software and the System and determine Software Outage and System Outage and will calculate Monthly Software Availability Percentage. If SAS is unable to access the Software as a result of System Outage, SAS will notify Customer and Customer will make the System available to SAS as soon as commercially practicable. Customer shall notify SAS once any delays in the availability of System are resolved. SAS will administer the Software as soon as commercially practicable after the System is made available. SAS shall notify Customer once any Software Outage has been resolved.
   2.3. Service Level Warranties; Warranty Disclaimers; Applicability.
      2.3.1. Service Level Warranty for Incident Response Time. SAS warrants that it will use all reasonable efforts to meet the Monthly Operational Incident Response Time Objectives set forth below. Customer's sole and exclusive remedy for any noncompliance by SAS with this warranty is set forth in Section 3 (Service Credits) below.

Operational Incident Severity Level	Description

Blocker	• **Set this when:** The issue directly impacts Customer by blocking development and/or testing work for multiple Users, or Customer's production environment cannot run. • **Result:** Target Operational Incident Response Time is within thirty (30) minutes. Once a Blocker ticket has been entered in the Issue Tracking System by SAS or Customer, emails are sent to the Operational Incident reporter, the SAS representative to whom the ticket has been assigned, [SSO] IT Support, [SSO] SAS Administration, [SSO] Database Administration, [SSO] Oncall, [SSO] DrugDev Oncall and [SSO] Project Management every ten (10) minutes until the assignee acknowledges the ticket as In Progress. • **Monthly Operational Incident Response Time Objective:** 90% within thirty (30) minutes.
Critical	• **Set this when:** The issue relates to a loss of data, the inability of an individual User to access the System, or potential impact to a key deliverable or deadline. • **Result:** Target Operational Incident Response Time is within four (4) hours on SAS Business Days. • **Monthly Operational Incident Response Time Objective:** 90% within four (4) hours on SAS Business Days.
Major	• **Set this when:** The incident is impacting a User's ability to perform a task without a critical deadline. • **Result:** Target Operational Incident Response Time is within one (1) SAS Business Day. • **Monthly Operational Incident Response Time Objective:** 90% within 1 SAS Business Day.
Minor (Default)	• **Set this when:** This is the default setting for most issues, where the timeframe is not critical. The issue relates to a minor loss of functionality or a task or problem that needs to be addressed or tracked. • **Result:** The issue should be reviewed weekly and updated as progress occurs. • **Monthly Operational Incident Response Time Objective:** 90% within one (1) week.
Trivial	• **Set this when:** There is a cosmetic problem in a document or interface such as misspelled words or misaligned text. • **Result:** The issue should be reviewed weekly and updated as progress occurs • **Monthly Operational Incident Response Time Objective:** 90% within next business week.

2.3.2. Service Level Warranty for Monthly Software Availability. Commencing ninety (90) days after the System is available for production use, SAS warrants that it will use all reasonable efforts to ensure that the Monthly Software Availability Percentage will be no less than ninety-nine percent (99%) during each calendar month. Any Software Outage occurring as a result of System Outage shall not count against the Monthly Software Availability Percentage and shall not be deemed a breach of this warranty. This warranty applies only to the extent that (a) Customer maintains a persistent Site-to-Site VPN connection between the production System and SAS' data center operations; (b) monthly System Outage is less than five percent (5%); and (c) SAS employees or representatives are the sole administration resources designated in the SAS Open Metadata Repository ("OMR"). Customer's sole and exclusive remedy for any noncompliance by SAS with this warranty is set forth in Section 3 (Service Credits) below.

2.3.3. Warranty Disclaimers. **WITH RESPECT TO THE REMOTE MANAGED SERVICES, SAS DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ARISING AS A RESULT OF CUSTOM OR USAGE IN THE TRADE OR BY COURSE OF DEALING.**

SAS MAKES NO WARRANTY THAT THE SOFTWARE OR THE SYSTEM WILL OPERATE ERROR-FREE OR WITHOUT INTERRUPTION OR THAT ANY DATA TRANSMISSIONS TO, FROM, OR THROUGH THE SYSTEM WILL BE COMPLETELY SECURE.

2.3.4. Applicability. The Service Level Warranties apply to Customer's production environment only. The Service Level Warranties will not apply to Operational Incidents attributable to: (a) a System Outage; (b) a Planned Outage; (c) telecommunications lines; (d) a Force Majeure event; (e) Customer's failure to comply with its obligations under Section 4 (Customer Responsibilities) of Attachment A; (f) Customer's equipment and/or third party equipment not within the sole control of SAS or its representatives; (g) any actions or inactions of Customer or any third parties; (h) conditions within Customer's data center; (i) any modification to the Software by anyone other than SAS, its parent company, if applicable, its subsidiaries or its subcontractors; (j) any modifications to the System made without SAS' approval; (k) any services other than the Remote Managed Services; (l) the Customer Materials or (m) any condition which cannot be reasonably resolved through SAS' remote access to the System.

3. Service Credits.

3.1. Application of Service Credits. Services Credits apply to Customer's production environment only. SAS will provide Customer with one (1) Service Credit for any calendar month in which SAS fails to meet the Monthly Operational Incident Response Time Objective for Blocker Severity Level or Critical Severity Level Operational Incidents for Customer's production environment and/or for any calendar month in which SAS fails to comply with the Service Level Warranty for Monthly Software Availability for Customer's production environment provided Customer requests each such Service Credit within seven (7) days of the end of such calendar month. Customer's failure to request a Service Credit within such timeframe will result in forfeiture of the Service Credit for that month. Any Service Credits payable to Customer will be applied to reduce the immediately succeeding invoice arising hereunder, unless the Service Credit is due in the final period of the Term, in which case SAS will refund to Customer the amount available as a Service Credit.

3.2. Calculation of Service Credits. Service Credits, if any, will be calculated on a monthly basis. Each Service Credit will be equal to the greater of (a) a percentage, as specified in the table below, of the Remote Managed Services fees for the then-current annual period or (b) One Thousand Dollars ($1,000.00), up to a maximum of Two Thousand Five Hundred Dollars ($2,500.00). If, in a given month, Customer is due a Service Credit for SAS' breach of both the Service Level Warranty for Operational Incident Response Time and the Service Level Warranty for Software Availability, the Service Credits will be calculated cumulatively and will count as one (1) Service Credit provided, however, that in no event shall the total Service Credit due for any month exceed Two Thousand Five Hundred Dollars ($2,500).

Service Level Warranty	**Service Credit Percentage**
Failure to meet Monthly Response Time Objective for a Blocker Severity Level or Critical Severity Level Operational Incident	0.5%
Monthly Software Availability Percentage 99% or above	No Service Credit
Monthly Software Availability Percentage 98% or above, but less than 99%	1%
Monthly Software Availability Percentage 97% or above, but less than 98%	1.5%
Monthly Software Availability Percentage 96% or above, but less than 97%	2.5%
Monthly Software Availability Percentage Less than 96%	5%

3.3. Maximum Service Credits. Notwithstanding anything contained in Section 3.2 (Application of Service Credits) above to the contrary, the maximum number of Service Credits available to Customer will be four (4) for each annual period.

3.4 Termination for Breach of Service Level Warranties. Customer may terminate the Remote Managed Services for cause and without penalty in the event Customer receives a total of four (4) Service Credits during any annual Software license period and SAS has exceeded the Monthly Incident Response Time Objective for a Blocker Severity Level or Critical Severity Level Operational Incident for Customer's production environment and/or has failed to comply with the Service Level Warranty for Software Availability for Customer's production environment in any subsequent calendar month during such annual Software license period, provided Customer notifies SAS of its intention to terminate within five (5) days of the end of such subsequent calendar month.

Exhibit 2
To
Service Level Agreement
Software

Software and Subcomponents[1]		Applicable Pricing Metric, Number of Authorized Units[2]	Operating System[3]	Authorized Hardware (CPU/Server Manufacturer, Model type/Serial No.)[3]
Software:	SAS MDM Advanced	Capacity Based Solution Test and Development	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS MDM Advanced DataFlux Studio	PC Use (5)	To be defined by Customer in writing	To be defined by Customer in writing
	SAS MDM Advanced DataFlux Administrator	PC Use (1)	To be defined by Customer in writing	To be defined by Customer in writing
	SAS MDM Advanced DataFlux Server	Installs (2)	To be defined by Customer in writing	To be defined by Customer in writing
	SAS Data Management Quality Knowledge Base Locale for English	Site License	To be defined by Customer in writing	To be defined by Customer in writing
	SAS Data Management Contextual Extraction LanguagePack for English	Site License	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Data Management Enrichment	Software Package License	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS DataPack for US Address Verification	Site License Enrichment Data Use Terms	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS DataPack for US Street Level Geocode	DataPack Capacity Based Geocode Data Use Terms	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Office Analytics	Bundle Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Statistics - Non-Distributed Mode	Processor Core Based (16)	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Analytics - Non-Distributed Mode	Processor Core Based (16)	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing

Software:	SAS Analytics Pro	Bundle Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Enterprise Miner	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Enterprise Miner Personal Client	PC Use (5)	WX6	
Software:	SAS Text Miner	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Text Miner Personal Client	PC Use (5)	WNDW	
	SAS Text Analytics Language Support for English	Not Applicable	Not Applicable	To be defined by Customer in writing
Software:	SAS Model Manager - Non-Distributed Mode	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Office Analytics	Bundle Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Statistics - Non-Distributed Mode	Processor Core Based (16) Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Analytics - Non-Distributed Mode	Processor Core Based (16) Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Analytics Pro	Bundle Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Enterprise Miner	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing

Subcomponents:	SAS Enterprise Miner Personal Client	PC Use (5) Development Only	WX6	
Software:	SAS Text Miner	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Text Miner Personal Client	PC Use (5) Development Only	WNDW	
	SAS Text Analytics Language Support for English	Not Applicable	Not Applicable	To be defined by Customer in writing
Software:	SAS Model Manager - Non-Distributed Mode	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Office Analytics	Bundle Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Statistics - Non-Distributed Mode	Processor Core Based (16) Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Analytics - Non-Distributed Mode	Processor Core Based (16) Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Analytics Pro	Bundle Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Enterprise Miner	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Enterprise Miner Personal Client	PC Use (5) Test Only	WX6	
Software:	SAS Text Miner	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing

Subcomponents:	SAS Text Miner Personal Client	PC Use (5) Test Only	WNDW	
	SAS Text Analytics Language Support for English	Not Applicable	Not Applicable	To be defined by Customer in writing
Software:	SAS Model Manager - Non-Distributed Mode	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing

SAS Appendix E – EIS Software Licensing Agreement

On the following pages, please find EIS' Software Licensing Agreement.

Licensing Agreement Number _____

EIS Software Licensing Agreement

1. License Grant; Authorized Use. EIS grants Licensee a nonexclusive, nontransferable and nonassignable license to use the Software identified on Exhibit C hereto with the operating systems to be designated by the Licensee in writing pursuant to these Terms.

(a) As applicable, desktop and server based Software provided under these Terms will be authorized to operate for fifty (50) years.

(b) As applicable, mainframe software licensed under these Terms is licensed on an annual basis. The mainframe software may be renewed at the mutual agreement of the parties. The first license period will be for twelve (12) months.

(c) Following the initial 12-month period hereunder, (i) licenses for mainframe Software will be renewed on an annual basis subject to the then applicable license fees available from EIS or other fees mutually agreed upon by the parties and (ii) maintenance for desktop and server Software will be renewed on an annual basis subject to the then applicable maintenance fees available from EIS or other fees mutually agreed upon by the parties.

2. Territory. The Software may be installed, used and accessed in the United States of America ("Territory"). Standard license rights allow Licensee to install, use and access the Software within and from a single Territory. However, as an accommodation to Licensee, EIS authorizes Licensee to permit Users (as hereinafter defined) to travel outside the Territory with Software licensed for use on personal computer Authorized Hardware (as hereinafter defined) for up to a total of three (3) months during each annual license period.

3. Users. Only Licensee's employees and contractors who are located in the Territory and who are performing work solely for the benefit of Licensee's operations in the Territory (collectively, "Users") may access and use the Software and the related on-line documentation made available with each license of the Software (the "Documentation"). However, Licensee may permit employees and contractors located outside the Territory to access the Software and Documentation solely to perform activities related to the technical support and maintenance of the Software and the Authorized Hardware provided Licensee allows such access only through a secure remote connection to Licensee's Authorized Hardware. Upon reasonable request, Licensee will identify any such contractors to EIS by name and address.

4. Processing Data Through the Software. Licensee may process only the following types of data through the Software: (a) Licensee's data derived from Licensee's operations in the Territory, excluding aggregated data from other sources, except and only to the extent such aggregated data is used solely in support of Licensee's operations in the Territory; (b) data purchased, licensed or leased from a third party by Licensee; and (c) publicly available data (for example, national census data) (collectively, "Permitted Data"). Licensee may not process any data, including Permitted Data, through the Software in a data service provider, application service provider, solution service provider or marketing service provider arrangement, nor in any similar arrangement for which Licensee provides results derived from use of the Software to third parties nor may Licensee use such results for the benefit of third parties.

5. Report Access. EIS recognizes that Licensee may create reports using the Software that Licensee makes available to parties other than Users who may or may not be located in the Territory ("Report Access"). Such Report Access shall not be deemed to be outside the license rights granted under this Agreement as long as: (a) the reports are static (that is, a party other than Users cannot manipulate the results or customize the reports) and (b) the reports have been created using Permitted Data.

6. Other Uses of the Software. Licensee is not granted any usage rights beyond those specifically listed herein. Licensee may not use the Software or Documentation (a) to create a commercial offering or product directly or indirectly competing with an offering or product from SAS, or (b) for the benefit of any person or entity where such use may result in the creation of a commercial offering or product directly or indirectly competitive with an offering or product from SAS.

7. Authorized Hardware. Licensee shall only install software on authorized hardware ("Authorized Hardware") identified to EIS in writing running a SAS supported operating system. Authorized Hardware must be hardware located on Licensee's premises.

8. Components. Software components may be used only through the Software with which they are bundled and Licensee may not use or deploy any individual component outside such bundle or as a replacement for other SAS software.

9. Product Authorization Code. Licensee may allow Users to access only Software licensed to Licensee for which Licensee receives a Product Authorization Code. Licensee shall not allow Users to install or attempt to use other products contained on media received pursuant hereto. The "Product Authorization Code" is a component of the Software that enables the Software to operate for the applicable license period and is not an attempt to repossess, trigger any lock, halt operations, or erase or alter data or programs with regard to the Software. At each new license period, or if required as a result of changes in Authorized Hardware or Software, Licensee must apply a new Product Authorization Code to keep the Software operating. EIS is not required to provide the Product Authorization Code if Licensee is in breach of these Terms. Licensee may allow only Users to access the Product Authorization Code. Licensee acknowledges and agrees that the Product Authorization Code is the confidential and proprietary information of EIS or EIS' licensors.

10. Back-up Installations. Licensee may install the Software on back-up hardware that is inactive or dormant ("Back-up Hardware"). If Licensee wishes to implement a back-up system with Software that is operable or active, additional fees may apply. In the event the Software installed on the Authorized Hardware fails to operate due to unforeseen natural or human-induced events, Licensee may activate the Back-up Hardware until the failure can be rectified. Licensee must contact EIS prior to activating the Back-up Hardware to request a Product Authorization Code that will enable the Software to operate on the Back-up Hardware.

11. Copying. Licensee may copy the Software only for (a) disaster recovery and back-up purposes, as permitted pursuant to Section 10 hereof, and (b) installation of personal computer Software authorized hereunder. All copies remain the property of EIS' licensors. Licensee may deliver a copy of the Software to a disaster recovery contractor to perform temporary disaster recovery work for Licensee. Licensee shall give EIS the name and address of the disaster recovery contractor before delivery and EIS will provide such information to EIS' licensor. The identical copyright notices and any other proprietary rights notices found on the original Software media must be reproduced on all copies authorized under this Section.

12. Title; Source Code. Title to the Software and its Documentation remains with EIS' licensors at all times. Copyright notices and other proprietary rights notices in the Software shall not be deleted or modified. These Terms do not transfer any ownership rights. Source code from which the Software object code is derived ("Source Code") is not being provided and is a trade secret of EIS' licensors to which access is not authorized. Neither Licensee nor any other User shall reverse engineer, reverse assemble or decompile the Software or in any way attempt to recreate the Source Code, except and only to the extent applicable laws specifically prohibit such restriction.

13. Third Party Payments. When a third party is designated by Licensee to pay fees and administer orders under the Terms, EIS will send invoices and its standard notices regarding fees only to such third party, and all payments due under the Terms will remain Licensee's ultimate responsibility. Authorization for a third party to administer orders and pay license fees creates no other relationship between EIS and the third party. The third party is not authorized to access the Software or to act on Licensee's behalf with respect to the Agreement or its administration, other than to issue orders and pay fees.

14. Software Maintenance. As long as Licensee pays maintenance fees, in the case of desktop and server based Software, or license fees, in the case of mainframe Software, EIS will use reasonable efforts, either by telephone or electronically, to help Licensee solve specific problems with installation or use of the Software within the Territory as documented at the support link at support.sas.com, which may be updated from time to time. It may not be possible for EIS to solve all problems or correct all errors in the Software. From time to time, EIS may make available, and Licensee agrees to use reasonable efforts to install, new releases, updates and corrective code. During ongoing Software development, EIS may add, change or delete individual components or functionality in new releases. Such Software modifications shall be subject to the terms hereof. If Licensee chooses not to install the most current release of the Software, the level of technical support may diminish over time. EIS' obligations in this section are subject to the following: Licensee shall: (a) when requesting technical support, notify EIS of any modifications to the Software not made by EIS, or at the direction of EIS; and (b) establish technical contacts with knowledge about the Software and Licensee's use of the Software who will be qualified to provide EIS with information necessary for EIS to diagnose and remedy any problems with the Software. Failure to comply with these terms may result in longer response and resolution times.

15. Limited Warranties and Representations.

15.1 Warranty.

15.1.1 EIS warrants that it has the right to license the Software and Documentation to Licensee. The exclusive remedy for breach of this warranty, and any other warranty related to the intellectual property rights in the Software, is set forth in the Indemnification section hereof.

15.1.2 EIS warrants that each commercially available release of the Software shall substantially conform to its Documentation including any updates thereto, and that the Software and the media on which it is installed shall be free of software viruses when received by Licensee. As the exclusive remedy for breach of these warranties, EIS, at its option, shall: (a) repair the Software; (b) replace the Software; or (c) terminate the Software license and refund the fees paid for the Software at issue during the then-current annual period.

15.2 Warranty Disclaimers. EIS AND ITS LICENSORS DISCLAIM ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING AS A RESULT OF CUSTOM OR USAGE IN THE TRADE OR BY COURSE OF DEALING. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EIS DOES NOT WARRANT OR REPRESENT THAT THE SOFTWARE WILL RESULT IN COMPLIANCE, FULFILLMENT OR CONFORMITY WITH THE LAWS, RULES, REGULATIONS, REQUIREMENTS OR GUIDELINES OF ANY GOVERNMENTAL AGENCY. THIRD PARTY SOFTWARE EMBEDDED IN THE SOFTWARE IS PROVIDED "AS IS."

16. Exclusions of Damages; Limitation of Liability.

16.1. Exclusions of Damages. NEITHER LICENSEE NOR EIS IS LIABLE FOR SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL, PUNITIVE, OR RELIANCE DAMAGES (ARISING IN TORT, CONTRACT OR OTHERWISE), EVEN IF THEY HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. EIS IS NOT LIABLE FOR ANY CLAIM AGAINST LICENSEE BY ANY PARTY RELATING TO USE OF THE SOFTWARE, EXCEPT AS SET FORTH IN THE INDEMNIFICATION SECTION OF HEREOF. THE PARTIES MAKE THESE EXCLUSIONS IN CONSIDERATION OF THE FEES PAID AND LICENSES GRANTED.

16.2 Limitation of Liability. THE TOTAL AMOUNT LICENSEE MAY RECOVER FOR ALL CLAIMS RELATING HERETO IS LIMITED IN THE AGGREGATE TO THE FEES PAID FOR THE SOFTWARE AT ISSUE DURING THE RELEVANT ANNUAL LICENSE PERIOD.

16.3 Applicability. This section does not apply to the indemnification obligations in the Indemnification section hereof or to either party's violation of the other's intellectual property rights. The limitations in this section shall apply even if any of the remedies provided in the Limited Warranties and Representations section hereof fail of their essential purpose. Some jurisdictions do not allow limitations of liability or exclusions for incidental or consequential damages, so certain provisions of this section may not apply to Licensee; however, they apply to the greatest extent permitted by applicable law.

17. Indemnification. Provided Licensee uses the Software consistent with the terms and conditions of the Agreement and complies with this section, EIS will defend and indemnify Licensee, as described below, with respect to any claim made against Licensee for: (a) copyright, patent, trade secret or other intellectual property rights violation relating to the Software; or (b) bodily injury, death or damage to tangible property, excluding loss of or damage to software or data, arising solely from actions for which EIS is legally responsible. Licensee agrees to promptly notify EIS in writing of any such claim, to allow EIS to control the litigation or settlement of any such claim and to cooperate with EIS in the investigation, defense and settlement thereof. EIS shall indemnify Licensee by paying for the costs and attorneys' fees Licensee incurs at EIS' direction and any judgment finally awarded against Licensee or settlement approved by EIS. Licensee may participate at Licensee's own expense. If such claim in (a) above is made or, in EIS' opinion, is likely to be made, then EIS, at its option, may: (1) modify the Software; (2) obtain rights for Licensee to continue using the Software; or (3) terminate the license for the Software at issue and refund the then-current annual fee paid for such Software, but in no event shall termination relieve EIS from its obligation to defend and indemnify Licensee as set forth herein. Licensee agrees to abide by EIS' decision and, if appropriate, install a different version of the Software or stop using the Software. This indemnification obligation does not apply to the extent: (i) a claim is based on Licensee's combination of the Software with other software, or modification to the Software, if such claim would not have been made but for Licensee's combination or modification; or (ii) as of the date the claim arose, Licensee had not installed the latest version of, or update to, the Software as instructed by EIS prior to such date, if such claim would not have been made if the update or latest version had been installed.

18. Representations by Licensee. Licensee represents it shall (a) implement procedures to verify accuracy of data input and output while using the Software, and (b) inform all parties authorized to use the Software of the relevant terms hereof and any related user documentation, and be responsible for their adherence to such terms. Licensee agrees that the Software will not ensure compliance with laws.

19. Export and Import Restrictions. EIS hereby notifies Licensee that United States export laws and regulations apply to the Software. Licensee agrees to comply with these and other applicable export and import laws and regulations. The parties expressly agree to exclude herefrom the United Nations Convention on Contracts for the International Sale of Goods.

20. Termination. EIS or Licensee may terminate the Software license for a breach of the Agreement if not cured within thirty (30) days of the breaching party's receipt of the non-breaching party's written notice. EIS may terminate the Agreement immediately for any violation by Licensee of EIS' intellectual property rights. Obligations in the Agreement that by their nature are continuing will survive termination or expiration. Upon termination of each Software license hereunder, or when a User or disaster recovery contractor is no longer authorized to access the Software, Licensee agrees to reclaim, delete, and destroy the Software at issue, along with any related Documentation.

21. General.

21.1 Severability. If a court of competent jurisdiction finds any part hereof unenforceable, that part is excluded, but the remainder of the terms shall remain in full force and effect.

21.2 Audit. Upon fifteen (15) business days' notice to Licensee, EIS will have the right to conduct an on-site audit during Licensee's normal business hours to verify compliance with the terms and conditions hereof. Licensee shall cooperate with EIS by: (a) making applicable records available; (b) providing copies of the records requested; and (c) directing all agents to cooperate. If the audit reveals that Licensee owes additional license fees, Licensee shall pay the amounts owed and EIS' reasonable expenses in conducting the audit.

21.3 Injunctive Relief. Breach of EIS' or its licensors' intellectual property rights will lead to damages not adequately remedied by an award of money; therefore, EIS may protect those intellectual property rights through temporary restraining orders or injunctions, without the obligation of posting bond.

22. Escrow Agreement. Attached hereto as Exhibit 1 is the License Agreement Source Code Escrow and the necessary amendment thereto authorizes the escrow of the Source Code for the Software for the benefit of the Licensee. Exhibit 1 is incorporated into this EIS Software Licensing Agreement and made a part hereof.

Accepted by:

Licensee: _____	**Executive Information Systems LLC**
By _____	By _____
Authorized signature	Authorized signature
_____	_____
Name (type or print)	Name (type or print)
_____	_____
Title	Title
On _____	On _____
Date	Date

Exhibit 1
License Agreement Source Code Escrow

(EIS is the authorized government reseller of SAS Software. Therefore the License Agreement Source Code Escrow will be executed by EIS, the Licensee and SAS Institute Inc.)

SAS Institute Inc.

Licensing Agreement No. _____

AMENDMENT NO.
TO
LICENSING AGREEMENT
SOURCE CODE ESCROW

Customer name and address: _____ ("Customer")

_____

_____

WHEREAS, Executive Information Systems, LLC ("EIS"), SAS Institute Inc. ("SAS") and Customer desire to modify the Licensing Agreement referenced above (the "License Agreement"), in consideration of further benefits to each;

NOW, THEREFORE, notwithstanding any provisions to the contrary contained in the Licensing Agreement or amendments thereto, the parties hereby agree as follows:

1. The recitals set forth above are incorporated into this Amendment.

2. The terms of this Amendment shall apply only to the SAS software licensed under the Licensing Agreement and any Amendments signed by Customer ("Software"). If any agencies affiliated with Customer are authorized users under the Licensing Agreement or sign separate Licensing Agreement for the license of SAS software, such affiliates must sign a separate source code escrow amendment and pay the applicable fees in order to obtain the escrow rights as set forth herein. Notwithstanding the foregoing, this Amendment does not apply to SAS software licensed by the Customer that is hosted by SAS.

3. Upon payment by Customer of the SAS escrow fees for the current license period, SAS shall place the source code for the latest version of the Software (the "Source Code") in escrow with Iron Mountain Intellectual Property Management, Inc. (formerly DSI Technology Escrow Services, formerly Fort Knox Escrow Services, Inc.), 2100 Norcross Parkway, Suite 150, Norcross, Georgia 30071 ("IMIPM"), to be held and furnished to Customer by IMIPM under the terms and conditions set forth in the *Two-Party Escrow Agreement* made as of the 26th day of March, 2001, as modified by *Amendment to Escrow Service Agreements by and between Iron Mountain Intellectual Property Management, Inc. and "Depositor" and any other party agreeing to the terms of the Agreements (the "Amendment")* last dated March 12, 2009, (collectively "Escrow Agreement") copies of which are attached to this Amendment as Exhibit A and made a part hereof. Customer hereby agrees to be bound by all provisions of such Escrow Agreement; provided, however that SAS shall have no obligation to provide the source code to third party materials included in the Software. EIS will invoice and Customer agrees to pay SAS' then-current escrow fees on an annual basis in order for the terms of this Amendment to continue in effect. Neither EIS, SAS nor IMIPM

will have any obligation to Customer under this Amendment if Customer fails to pay the escrow invoices.

4. For the purposes of the Escrow Agreement, all references to Producer or Depositor shall be understood and agreed to refer to SAS, all references to Fort Knox shall now be understood and agreed to refer to IMIPM, and all references to Licensee and Beneficiary shall refer to Customer.

5. The final sentence of the Preliminary Statement of the Two-Party Escrow Agreement is deleted.

6. SAS may, upon sixty (60) days prior written notice to Customer, designate another depository to hold the Source Code in escrow, provided such other depository agrees to provide Customer terms no less favorable than those provided under this Amendment.

7. Customer agrees that the Source Code released to Customer pursuant to the terms and conditions set forth herein shall be used by Customer only during the term of the Licensing Agreement under which the Software is licensed and solely for the purposes of maintaining and supporting the Software for use as permitted under the Licensing Agreement. Upon expiration or termination of such Licensing Agreement, Customer shall, at the option of SAS, its assigns or successors, either immediately (a) return all copies of the Source Code to SAS or its assigns or successors, or (b) destroy all copies of the Source Code and certify such destruction in a writing signed by an officer of Customer. Ownership of the Source Code shall remain with SAS, its assigns or successors, or SAS' licensors at all times. Customer further acknowledges and agrees that the Source Code contains SAS trade secrets and Customer shall keep the Source Code in the strictest confidence. The obligation of confidentiality is binding in perpetuity or for the maximum period permitted by law and, as such, survives the term of the Licensing Agreement.

8. Customer shall provide contact information for communications and notices to Customer regarding Source Code escrow under this Amendment below. Customer is responsible for notifying SAS of any changes to the contact information.

   Contact Name (Individual or Department):

   Address (City, State and Zip Code):

   Phone Number:

   Fax Number:

Except as herein modified, all terms and conditions of the Licensing Agreement and its Amendments and the Escrow Agreement remain in full force and effect.

Accepted by:
Executive Information Systems, LLC

By _____
Authorized signature

_____
Name (type or print)

_____
Title

Customer: _____

By _____
Authorized signature

_____
Name (type or print)

_____
Title

On _____
Date

SAS Institute Inc.

By _____
Authorized signature

_____
Name (type or print)

_____
Title

On _____
Date

lg30.0001/10FEB2011

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.

License Agreement No. _____

EXHIBIT A

to

AMENDMENT NO. _____

TO

LICENSE AGREEMENT

SOURCE CODE ESCROW

Two-Party Escrow Agreement

This Two-Party Escrow Agreement ("Agreement") is made as of this 26 day of March, 2001, by and between SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513 ("Producer") and Fort Knox Escrow Services, Inc. ("Fort Knox").

Preliminary Statement. Producer intends to deliver to Fort Knox a sealed package containing magnetic tapes, disks, disk packs, or other forms of media, in machine readable form, and the written documentation prepared in connection therewith, and subsequent updates or changes thereto (the "Deposit Materials") for the computer software products (the "System(s)"), all as identified from time to time on Exhibit B hereto. From time to time Producer may agree to deliver the Deposit Materials to certain licensees of the System(s) upon the occurrence of a certain event or events described in this Agreement or an agreement between Producer and Licensee (each such event being referred to as a "Release Event"). The agreement between Producer and Licensee describing the Release Event(s) is referred to in this Agreement as the "License Agreement."

Now, therefore, in consideration of the foregoing, of the mutual promises hereinafter set forth, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. Delivery by Producer. Producer shall be solely responsible for delivering to Fort Knox the Deposit Materials as soon as practicable. Fort Knox shall hold the Deposit Materials in accordance with the terms hereof. Fort Knox shall have no obligation to verify the completeness or accuracy of the Deposit Materials.

2. Licensee List. From time to time Producer may deliver to Fort Knox a list of licensees of the System(s) who are entitled to receive certain portions of the Deposit Materials (or a copy thereof) upon the occurrence of one or more of the Release Events ("Licensee List"). Producer shall deliver the Licensee List to Fort Knox in the manner described in paragraph 13 (i), by faxing such a list to Fort Knox or by means of electronic communication. On the effective date of Producer's delivery to Fort Knox of a new Licensee List, any and all prior Licensee Lists shall be superceded in all respects by the new Licensee List. Producer shall be solely responsible for including on the Licensee List those persons and entities who are entitled to receive the Deposit Materials upon the occurrence of a Release Event. The term "Licensee" as used in this Agreement shall only refer to those licensees of the System(s) that are listed on the then-current Licensee List that has been delivered by Producer to Fort Knox in the manner described in this Section 2. A person or entity that was previously listed on a Licensee List, but who is not listed on the current Licensee List shall not be considered a "Licensee" for purposes of this Agreement. The initial Licensee List, as of the Effective Date, is attached hereto as Exhibit C. If Producer removes a licensee of the System(s) from the Licensee List, then Producer shall be solely responsible for notifying such licensee of such removal.

3. Duplication; Updates.

(a) Fort Knox may duplicate the Deposit Materials by any means in order to comply with the terms and provisions of this Agreement, provided that the Licensee to whom a copy of the Deposit Materials is to be delivered pursuant to the terms hereof shall bear the expense of duplication.

(b) Producer shall deposit with Fort Knox any major releases related to the Deposit Materials by delivering to Fort Knox an updated version of the Deposit Materials ("Additional Deposit") as soon as practicable after such releases have been approved for production release by Producer. Fort Knox shall have no obligation to verify the accuracy or completeness of any Additional Deposit or to verify that any Additional Deposit is in fact a copy of the Deposit Materials or any major release thereof.

4. Notification of Deposits. Simultaneous with the delivery to Fort Knox of the Deposit Materials or any Additional Deposit, as the case may be, Producer shall deliver to Fort Knox a written statement specifically identifying all items deposited and stating that the Deposit Materials or any Additional Deposit, as the case may be, so deposited have been inspected by Producer and are complete and accurate. Fort Knox shall, within ten (10) business days, send notification to Licensee that it has received from Producer any version of the Deposit Materials.

5. Delivery by Fort Knox.

5.1 Delivery by Fort Knox to Licensees. Fort Knox shall deliver the Deposit Materials, or a copy thereof, to a Licensee only in the event that:

(a) Producer notifies Fort Knox to effect such delivery to a Licensee or Licensees at a specific address or addresses, the notification being accompanied by a check payable to Fort Knox in the amount of one hundred dollars ($100.00); or

(b) Fort Knox receives from any Licensee:

(i) written notification that Producer has ceased business or has otherwise ceased, due to liquidation or dissolution, to market and support the System(s) licensed pursuant to a license agreement between Licensee and Producer ("License Agreement")

(ii) evidence satisfactory to Fort Knox that Licensee has previously notified Producer of such event in writing;

(iii) a written demand that the Deposit Materials be released and delivered to Licensee;

(iv) a written undertaking from the Licensee that the Deposit Materials being supplied to the Licensee will be used only for the purposes of maintaining and supporting the licensed System(s) for use of such System(s) as permitted under the terms of the License Agreement;

(v) specific instructions from the Licensee for this delivery; and

(vi) an initial check payable to Fort Knox in the amount of one hundred dollars ($100.00).

(c) If the provisions of paragraph 5.1(a) are satisfied, Fort Knox shall, within five (5) business days after receipt of the notification and check specified in paragraph 5.1(a), deliver the Deposit Materials in accordance with the applicable instructions.

(d) If the provisions of paragraph 5.1(b) are met, Fort Knox shall, within five (5) business days after receipt of all the documents specified in paragraph 5.1(b), send to Producer a photostatic copy of all such documents. Producer shall have thirty (30) days from the date on which Producer receives such documents ("Objection Period") to notify Fort Knox of its objection ("Objection Notice") to the release of the Deposit Materials to a Licensee and to request that the issue of Licensee's entitlement to a copy of the Deposit Materials be resolved in accordance with the following provisions:

(i) If Producer shall send an Objection Notice to Fort Knox during the Objection Period, the parties shall first endeavor to resolve the matter by mediation under the Commercial Mediation Rules of the American Arbitration Association. The mediator shall be selected by the Regional Office of the American Arbitration Association in closest

geographic proximity to Producer's U.S.A. headquarters and shall be knowledgeable regarding the computer industry. Should the matter remain unresolved 60 days after appointment of the mediator, it shall be submitted to, and settled by arbitration by, a panel of three (3) arbitrators selected as follows. Producer and Licensee shall each select an arbitrator within sixty (60) days after written notice of arbitration is served and the selected arbitrators shall name a third arbitrator within sixty (60) days after such arbitrators are selected by such parties. If any of the three arbitrators remain unselected after the time period specified in this paragraph 5.1(d) (i), such arbitrators shall be selected by the Regional Office of the American Arbitration Association described above, subject to the qualifications specified in this paragraph. The arbitrators shall apply North Carolina law without regard to choice of law provisions, except that in no event shall the North Carolina International Commercial Arbitration Act apply. The arbitrators shall be knowledgeable regarding the computer software industry. The place of arbitration shall be in the State of North Carolina, U.S.A., and the English language shall be used in the arbitral proceedings. The decision of the arbitrators shall be binding and conclusive on all parties involved, and judgment upon their decision may be entered in a court of competent jurisdiction. All costs of the arbitration incurred by Fort Knox, including reasonable attorneys' fees and costs, shall be paid by the against which the arbitration decision is rendered.

(ii) Producer may, at any time prior to the commencement of arbitration proceedings, notify Fort Knox that Producer has withdrawn the Objection Notice. Upon receipt of any such notice from Producer, Fort Knox shall reasonably promptly deliver the Deposit Materials to the Licensee in accordance with the instructions specified in paragraph 5.1(b)(v).

(e) If, at the end of the Objection Period, Fort Knox has not received an Objection Notice from Producer, then Fort Knox shall reasonably promptly deliver the Deposit Materials to the Licensee in accordance with the instructions specified in paragraph 5.1(b)(v). All parties agree that Fort Knox shall not be required to deliver the Deposit Materials until all such fees then due Fort Knox have been paid.

5.2 Delivery by Fort Knox to Producer. Fort Knox shall release and deliver the Deposit Materials to Producer upon termination of this Agreement in accordance with paragraph 8(a) hereof.

6. Indemnity. Producer shall indemnify and hold harmless Fort Knox and each of its directors, officers, agents, employees and stockholders (individually referred to as a "Fort Knox Indemnitee") absolutely and forever, from and against any and all claims, actions, damages, suits, liabilities, obligations, costs, fees, charges, and any other expenses whatsoever, including reasonable attorneys' fees and costs, that may be asserted against any Fort Knox Indemnitee in connection with this Agreement or the performance of Fort Knox or any Fort Knox Indemnitee hereunder ("Claims") except where such Claims result from the negligence or willful misconduct of any Fort Knox Indemnitee.

7. Disputes and Interpleader.

(a) Excepting disputes relating to the delivery of the Deposit Materials by Fort Knox to Licensee under paragraph 5.1(d) above, in the event of any dispute between any of Fort Knox, Producer(s) and/or any Licensee(s) relating to delivery of the Deposit Materials by Fort Knox or to any other matter arising out of this Agreement, Fort Knox may submit the matter to any court of competent jurisdiction in an interpleader or similar action.

(b) Fort Knox shall perform any acts ordered by any court of competent jurisdiction, without any liability or obligation to any party hereunder by reason of such act.

8. Term and Renewal.

(a) The initial term of this Agreement shall be two (2) years, commencing on the Effective Date hereof (the "Initial Term"). This Agreement shall be automatically extended for an additional term of one year ("Additional Term") at the end of the Initial Term and at the end of each Additional Term hereunder unless, on or before ninety (90) days prior to the end of the Initial Term or an Additional Term, as the case may be, either party notifies the other party that it wishes to terminate the Agreement at the end of such term.

(b) In the event of termination of this Agreement in accordance with paragraph 8(a) hereof, Producer shall pay all fees due Fort Knox and shall promptly notify all Licensees that this Agreement has been terminated and that Fort Knox shall return to Producer all copies of the Deposit Materials then in its possession.

(c) In the event of termination of this Agreement in accordance with paragraph 9(b) hereof, Fort Knox shall destroy the Deposit Materials and Producer shall promptly notify all Licensees that this Agreement has been terminated.

9. Fees. Producer shall pay to Fort Knox fees in accordance with Exhibit A as compensation for Fort Knox's services under this Agreement.

(a) Payment. Fort Knox shall issue an invoice to Producer following execution of this Agreement ("Initial Invoice"), on the commencement of any Additional Term hereunder, and in connection with the performance of any additional services hereunder. Payment is due upon receipt of invoice. All fees and charges are exclusive of, and Producer is responsible for the payment of, all sales, use and like taxes. Fort Knox shall have no obligations under this Agreement until the Initial Invoice has been paid in full by Producer.

(b) Nonpayment. In the event of non-payment of any fees or charges invoiced by Fort Knox, Fort Knox shall give notice of non-payment of any fee due and payable hereunder to the Producer and, in such an event, the Producer shall have the right to pay the unpaid fee within ten (10) days after receipt of notice from Fort Knox. If Producer fails to pay in full all fees due during such ten (10) day period, Fort Knox shall give notice of non-payment of any fee due and payable hereunder to the Licensee(s) and, in such event, the Licensee(s) shall have the right to pay the unpaid fee within ten (10) days of receipt of such notice from Fort Knox. Upon payment of the unpaid fee by either the Producer or the Licensee(s), as the case may be, this Agreement shall continue in full force and effect until the end of the applicable term. Failure to pay the unpaid fee under this paragraph 9(b) by both Producer and the Licensee(s) shall result in termination of this Agreement.

10. Ownership of Deposit Materials. Fort Knox and Producer recognize and acknowledge that ownership of the Deposit Materials shall remain with Producer at all times.

11. Bankruptcy. Producer acknowledges that this Agreement is an "agreement supplementary to" the License Agreement as provided in Section 365 (n) of Title 11, United States Code (the "Bankruptcy Code"). Producer acknowledges that if Producer as a debtor in possession or a trustee in Bankruptcy ("Bankruptcy Trustee") in a case under the Bankruptcy Code rejects the License Agreement or this Agreement, Licensee may elect to retain its rights under the License Agreement as provided in Section 365 (n) of the Bankruptcy Code. Upon written request of Licensee to Producer or the Bankruptcy Trustee, Producer or such Bankruptcy Trustee shall not interfere with the rights of Licensee as provided in the License Agreement, including the right to obtain the Deposit Material from Fort Knox in accordance with the terms of this Agreement.

12. Miscellaneous.

(a) Remedies. In no event will Fort Knox and its directors, officers, agents, employees and stockholders be liable for any incidental, indirect, special, exemplary or consequential damages, including but not limited to, damages (including loss of data), costs or expenses (including legal fees and expenses), whether foreseeable or unforeseeable, that may arise out of or in connection with this Agreement. In no event will the collective liability of Fort Knox and its directors, officers, agents, employees and stockholders for any damages, costs, or expenses (including legal fees and expenses) incurred by Producer or any other person exceed one hundred thousand dollars ($100,000) under this Agreement, provided however that the foregoing limitation shall not apply to such damages, costs, or expenses arising out of or resulting from the gross negligence or willful misconduct of Fort Knox, its directors, officers, agents, employees and/or stockholders.

(b) Natural Degeneration; Updated Version. In addition, the parties acknowledge that as a result of the passage of time alone, the Deposit Materials are susceptible to loss of quality ("Natural Degeneration"). It is further acknowledged that Fort Knox shall have no liability or responsibility to any person or entity for any Natural Degeneration. For the purpose of reducing the risk of Natural Degeneration, Producer shall deliver to Fort Knox a new copy of the Deposit Materials at least once every three years.

(c) Permitted Reliance and Abstention. Fort Knox may rely and shall be fully protected in acting or refraining from acting upon any notice or other document believed by Fort Knox in good faith to be genuine and to have been signed or presented by the proper person or entity. Fort Knox shall have no duties or responsibilities except those expressly set forth herein.

(d) Independent Contractor; No Third Party Beneficiary. Fort Knox is an independent contractor, and is not an employee or agent of either the Producer or any Licensee. No Licensee is a party to this Agreement, and no Licensee shall have any rights hereunder, including, without limitation, any rights as a third party beneficiary. Producer shall make no representation to any Licensee that is inconsistent with this paragraph 13(d).

(e) Amendments. This Agreement shall not be modified or amended except by another agreement in writing executed by the parties hereto; provided, however, that Producer may, in Producer's sole discretion, change the Licensee List attached hereto as Exhibit C by delivering a revised Licensee List to Fort Knox in the manner described in Section 2.

(f) Entire Agreement. This Agreement, including all exhibits hereto, supersedes all prior discussions, understandings and agreements between the parties with respect to the matters contained herein, and constitutes the entire agreement between the parties with respect to the matters contemplated herein. All exhibits attached hereto are by this reference made a part of this Agreement and are incorporated herein.

(g) Counterparts; Governing Law. This Agreement may be executed in two (2) counterparts, each of which when so executed shall be deemed to be an original and both of which when taken together shall constitute one and the same Agreement. This Agreement shall be construed and enforced in accordance with the laws of the State of North Carolina.

(h) Confidentiality. Fort Knox will hold and release the Deposit Materials only in accordance with the terms and conditions hereof, and will maintain the confidentiality of the Deposit Materials.

(i) Notices. All notices, requests, demands or other communications required or permitted to be given or made under this Agreement shall be in writing and shall be delivered by hand or by commercial overnight delivery service which provides for evidence of receipt, or mailed by certified mail, return receipt requested, postage prepaid, and addressed as follows:

(i) If to Producer:
to the address listed on the signature page hereof

(ii) If to Fort Knox:

Fort Knox Escrow Services, Inc.
2100 Norcross Parkway
Suite 150
Norcross, Georgia 30071 USA
E-Mail: info@fortknoxescrow.com
Attn: Contracts Administrator

If delivered personally or by commercial overnight delivery service, the date on which the notice, request, instruction or document is delivered shall be the date on which delivery is deemed to be made, and if delivered by mail, the date on which such notice, request, instruction or document is received shall be the date on which delivery is deemed to be made. Any party may change its address for the purpose of this Agreement by notice in writing to the other parties as provided herein.

(j) Survival. Paragraphs 6, 7, 9, 10 and 12 shall survive any termination of this Agreement.

(k) No Waiver. No failure on the part of any party hereto to exercise, and no delay in exercising any right, power or single or partial exercise of any right, power or remedy by any party will preclude any other or further exercise thereof or the exercise of any other right, power or remedy. No express waiver or assent by any party hereto to any breach of or default in any term or condition of this Agreement shall constitute a waiver of or an assent to any succeeding breach of or default in the same or any other term or condition hereof.

[THE REMAINDER OF THIS PAGE IS
LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF each of the parties has caused its duly authorized officer to execute this Agreement as of the Effective Date.

Fort Knox Escrow Services, Inc.

By: _____

Title: CHRISTIAN DODDER, ACCOUNT EXECUTIVE

Producer

By: _____

Print Name: John G. Boswell

Title: Corporate Secretary

Address: SAS Campus Drive

Cary, North Carolina 27513

Phone: 919-677-8000

Fax: 919-677-8177

E-Mail: **John.Boswell@sas.com**

Attention:

Billing Information:

Attention: Patricia L. Brown

Purchase Order:

Address: SAS Campus Drive

Cary, North Carolina 27513

Phone: (919) 677-8000

Fax: (919) 677-8177

E-mail: Patricia.Brown@sas.com

EXHIBIT B

B1. **Product Name:** _____
Version #: _____

Prepared/Confirmed by: _____
Title: _____ Date: _____

Signature: _____
Type of deposit:

____ Initial Deposit
____ Update Deposit to replace current deposits
____ Other (please describe)_____

Items Deposited:

	Quantity	Media Type	Description of Material
A)	____	_____	_____
B)	____	_____	_____
C)	____	_____	_____

B2. **Product Name:** _____
Version #: _____

Prepared/Confirmed by: _____
Title: _____ Date: _____

Signature: _____
Type of deposit:

____ Initial Deposit
____ Update Deposit to replace current deposits
____ Other (please describe)_____

Items Deposited:

	Quantity	Media Type	Description of Material
A)	____	_____	_____
B)	____	_____	_____
C)	____	_____	_____

IRON MOUNTAIN

AMENDMENT TO ESCROW SERVICE AGREEMENTS (the "Agreements")
by and between
IRON MOUNTAIN INTELLECTUAL PROPERTY MANAGEMENT, INC. ("IMIPM") and
"DEPOSITOR" and any other party agreeing to the terms of the Agreements (the "Amendment")

CUSTOMER NAME: **SAS Institute Inc.** ("DEPOSITOR")	**Agreements:** **Effective date of March 26, 2001:** Account numbers: 7547, 21638, 21640, 21644, 21645 and 28498 **Effective date of April 15, 2004:** Account numbers: 7547, 15948, 21644, 28498, 32160 and 34017 (Account number is for IMIPM reference only. The Amendment shall apply to all accounts governed by the Agreement)	**COMPANY NUMBER 9398**
Primary Contact: **Bonnie Keith**	**E-mail: bonnie.keith@sas.com**	
Street Address: 100 SAS Campus Drive, Building T	**City: Cary State: NC Zip: 27513**	
Tel: (919) 531-7206	**Fax:**	

This Amendment is hereby entered into by and between **DEPOSITOR** and Iron Mountain Intellectual Property Management, Inc. ("IMIPM").

WHEREAS, IMIPM and the **DEPOSITOR** entered into an agreement on the Agreement Effective Date; and,

WHEREAS, IMIPM requires the terms and conditions be amended as a condition of its renewal of the Agreement and these amended terms and conditions shall apply to any party enrolling to the Agreement hereafter;

NOW, THEREFORE, in consideration of the promises and mutual covenants contained herein, and for other good and valuable consideration, receipt of which is hereby acknowledged, the parties herby agree to amend the terms and conditions of the Agreement as follows:

1. In the event the Agreement references Data Securities International, Inc. or DSI Technology Escrow Services, Inc. ("DSI") or Fort Knox or Source File as the escrow agent, all of whom are now known as Iron Mountain Intellectual Property Management, Inc. or IMIPM, all references in the Agreement, if any, to DSI, Fort Knox or Source File shall now be understood and agreed to refer to IMIPM.

2. The Agreement is hereby modified by deleting in its entirety any and all language referencing indemnification, if any, and adding the following:

   General Indemnity.

   Subject to Section 3 and 4 herein, each Party shall defend, indemnify and hold harmless the others, their corporate affiliates and their respective officers, directors, employees, and agents and their respective successors and assigns from and against any and all claims, losses, liabilities, damages, and expenses (including, without limitation, reasonable attorneys' fees), arising under this Agreement from the negligent or intentional acts or omissions of the indemnifying Party or its subcontractors, or the officers, directors, employees, agents, successors and assigns of any of them.

3. The Agreement is hereby modified by deleting in its entirety any and all language referencing limitation of liability, if any, and adding the following:

   Limitation of Liability.
   NOTWITHSTANDING ANYTHING ELSE IN THIS AGREEMENT , ALL LIABILITY, IF ANY, WHETHER ARISING IN CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, OF ANY PARTY TO THIS AGREEMENT SHALL BE LIMITED TO THE AMOUNT EQUAL TO ONE YEAR OF FEES PAID OR OWED TO IRON MOUNTAIN UNDER THIS AGREEMENT. IF CLAIM OR LOSS IS MADE IN RELATION TO A SPECIFIC DEPOSIT OR DEPOSITS, SUCH LIABILITY SHALL BE LIMITED TO THE FEES RELATED SPECIFICALLY TO SUCH DEPOSITS. THIS LIMIT SHALL NOT APPLY TO ANY PARTY FOR: (I) ANY CLAIMS OF INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR TRADEMARK; (II) LIABILITY FOR DEATH OR BODILY INJURY; (III) PROVEN THEFT; OR (IV) PROVEN GROSS NEGLIGENCE OR WILLFUL MISCONDUCT.

4. The Agreement is hereby modified by deleting in its entirety any and all language referencing consequential or indirect damages, if any, and adding the following:

Consequential Damages Waiver.

IN NO EVENT SHALL ANY PARTY TO THIS AGREEMENT BE LIABLE TO ANOTHER PARTY FOR ANY INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST DATA OR INFORMATION, ANY COSTS OR EXPENSES FOR THE PROCUREMENT OF SUBSTITUTE SERVICES, OR ANY OTHER INDIRECT DAMAGES, WHETHER ARISING IN CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE EVEN IF THE POSSIBILITY THEREOF MAY BE KNOWN IN ADVANCE TO ONE OR MORE PARTIES. THIS WAIVER SHALL NOT APPLY TO ANY PARTY FOR (I) ANY CLAIMS OF INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR TRADEMARK OR (II) LIABILITY FOR DEATH OR BODILY INJURY.

5. The Agreement is hereby modified by deleting in its entirety any and all language, if any, referencing the inspection of material received by Iron Mountain from Depositor to be stored with Iron Mountain under the Agreement ("Deposit Material") and adding the following;

IMIPM will conduct a visual deposit inspection upon receipt of any Deposit Material and associated Exhibit B and provide notice by electronic mail, telephone, or regular mail to the Depositor and Beneficiary of all Deposit Material that is accepted and deposited into the escrow account under this Agreement. If IMIPM determines that the Deposit Material does not match the description provided by Depositor represented in Exhibit B hereto, Iron Mountain will provide Depositor with notice by electronic mail, telephone, or regular mail of such discrepancies. IMIPM will work directly with the Depositor to resolve any such discrepancies prior to accepting Deposit Material. OTHER THAN IMIPM'S INSPECTION OF THE DEPOSIT MATERIALS, AS DESCRIBED ABOVE, IMIPM SHALL HAVE NO OBLIGATION REGARDING THE ACCURACY, COMPLETENESS, FUNCTIONALITY, PERFORMANCE OR NON-PERFORMANCE OF THE DEPOSIT MATERIALS.

6. The Agreement is hereby modified by deleting in its entirety any and all language, if any, referencing Iron Mountain providing status reports or updates of escrow account activity and replacing it with the following:

IMIPM shall provide to Depositor and Beneficiary access to the Iron Mountain real-time, on-line portal to view data and documentation relative to this Agreement. Upon request, IMIPM will provide ad hoc status reports to Depositor and Beneficiary.

7. In the event that any terms and conditions contained herein are in conflict with the terms and conditions set forth in the Agreement, the terms and conditions set forth in this Amendment shall be deemed to be the controlling terms and conditions.

8. All other terms and conditions of the Agreement remain unchanged and are in full force and effect. This Amendment may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument. The last date noted on the signature blocks of this Amendment shall be the Amendment Effective Date.

BK LEGAL

IN WITNESS WHEREOF, each of the undersigned has executed this Amendment or caused this Amendment to be duly executed on its behalf as of the Amendment Effective Date.

"DEPOSITOR"	IRON MOUNTAIN INTELLECTUAL PROPERTY MANAGEMENT, INC.
Individual Signing: [print name] sas Patricia L. Brown, Deputy General Counsel, SAS Institute Inc.	**Individual Signing: [print name]** Mary K English
Signature: Patricia L. Brown	***Signature:*** Mary K English
Title:	**Title:** Director, Operations
Signing Date: MAR 0 4 2009	**Signing Date:** 3/12/09

Approved as to Form and Legal Content:
Iron Mountain Legal Department
Barbara O'Neil Smith
Barbara O'Neil Smith, Senior Contracts Specialist
Date: January 27, 2009

Lg100.50.CCC136/19AUG14

Licensing Agreement Number: _____

Software List

Executive Information Systems, LLC ("EIS") 6901 Rockledge Drive Suite 600 Bethesda, Md., 20827-0076 Tel: 301-581-8594- Fax: 301-581-2573 http://www.execinfosys.com	

Customer Name: Health and Environmental Control, Department of South Carolina ("Customer")	
Street Address: 2600 Bull Street	
City, County, State, Zip Code: Columbia, (Richland), SC 29201-1708	Country (the "Territory"): United States
Taxpayer ID Number:	Currency Type: United States dollar (USD)

Software and Subcomponents[1]		Applicable Pricing Metric, Number of Authorized Units[2]	Operating System[3]	Authorized Hardware (CPU/Server Manufacturer, Model type/Serial No.)[3]
Software:	SAS MDM Advanced	Capacity Based Solution Test and Development	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS MDM Advanced DataFlux Studio	PC Use (5)	To be defined by Customer in writing	To be defined by Customer in writing
	SAS MDM Advanced DataFlux Administrator	PC Use (1)	To be defined by Customer in writing	To be defined by Customer in writing
	SAS MDM Advanced DataFlux Server	Installs (2)	To be defined by Customer in writing	To be defined by Customer in writing
	SAS Data Management Quality Knowledge Base Locale for English	Site License	To be defined by Customer in writing	To be defined by Customer in writing
	SAS Data Management Contextual Extraction LanguagePack for English	Site License	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Data Management Enrichment	Software Package License	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS DataPack for US Address Verification	Site License Enrichment Data Use Terms	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS DataPack for US Street Level Geocode	DataPack Capacity Based Geocode Data Use Terms	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Office Analytics	Bundle Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Statistics - Non-Distributed Mode	Processor Core Based (16)	To be defined by Customer in writing	To be defined by Customer in writing

Software:	SAS Visual Analytics - Non-Distributed Mode	Processor Core Based (16)	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Analytics Pro	Bundle Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Enterprise Miner	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Enterprise Miner Personal Client	PC Use (5)	WX6	
Software:	SAS Text Miner	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Text Miner Personal Client	PC Use (5)	WNDW	
	SAS Text Analytics Language Support for English	Not Applicable	Not Applicable	To be defined by Customer in writing
Software:	SAS Model Manager - Non-Distributed Mode	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Office Analytics	Bundle Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Statistics - Non-Distributed Mode	Processor Core Based (16) Development Only	To be defined by Customer in writing	To be defined by Customer in writing

Software:	SAS Visual Analytics - Non-Distributed Mode	Processor Core Based (16) Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Analytics Pro	Bundle Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Enterprise Miner	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Enterprise Miner Personal Client	PC Use (5) Development Only	WX6	
Software:	SAS Text Miner	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Text Miner Personal Client	PC Use (5) Development Only	WNDW	
	SAS Text Analytics Language Support for English	Not Applicable	Not Applicable	To be defined by Customer in writing
Software:	SAS Model Manager - Non-Distributed Mode	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Development Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Office Analytics	Bundle Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Visual Statistics - Non-Distributed Mode	Processor Core Based (16) Test Only	To be defined by Customer in writing	To be defined by Customer in writing

Software:	SAS Visual Analytics - Non-Distributed Mode	Processor Core Based (16) Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Analytics Pro	Bundle Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS Enterprise Miner	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Enterprise Miner Personal Client	PC Use (5) Test Only	WX6	
Software:	SAS Text Miner	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS Text Miner Personal Client	PC Use (5) Test Only	WNDW	
	SAS Text Analytics Language Support for English	Not Applicable	Not Applicable	To be defined by Customer in writing
Software:	SAS Model Manager - Non-Distributed Mode	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Subcomponents:	SAS/ACCESS Interface to (TBD)	Not Applicable	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing
Software:	SAS/ACCESS Interface to (TBD)	Capacity Based Test Only	To be defined by Customer in writing	To be defined by Customer in writing

1. Pricing metrics, operating systems and/or Authorized Hardware for subcomponents which differ from that of the Software with which they are associated are listed in the column that corresponds to the applicable subcomponent. Unless otherwise noted, subcomponents listed here are included in the Software license fee for the Software product with which they are licensed or provided.
2. The pricing metric is used to derive license fees; for example, but without limitation, Capacity Based, Total Users, PC Use, etc. as described below. Certain pricing metrics contain additional terms that pertain to Customer's use of the Software.
3. Customer must provide Operating System and Authorized Hardware information to EIS prior to shipment of Software.

1. **Pricing Metrics**. The pricing metrics described herein apply to the Software and any Software subcomponents listed above. For the avoidance of doubt, only those pricing metrics listed above apply to the Software and Software subcomponents licensed hereunder.

   (a) **Capacity Based** - The Software license fee is based on the total processing power of the Authorized Hardware on which the Software is installed. With respect to server hardware, processing power includes each processor core contained within the Authorized Hardware. With respect to mainframe hardware, processing power is based on Millions of Instructions Per Second ("MIPS").

   (b) **Processor Core Based** - The Software license fee is based on the total number of processor cores contained within a single item of Authorized Hardware. If the Authorized Hardware is a single server, the Software license fee is based on the total number of processor cores contained within that single server. If the Authorized Hardware is a single partition of a server, the Software license fee is based on the total number of processor cores contained within that single partition and Customer must use software or other technological means, as specified by the server manufacturer, to limit, at all times, the partition to no more than the licensed number of processor cores.

   (c) **PC Use** - The Software license fee is based on the greater of either (i) the total number of Users (not concurrent) authorized to access the Software or (ii) the total number of personal computers on which the Software will be installed and available for processing on the designated operating system.

   (d) **Enrichment Data Use Terms** - All data necessary to use the Software (collectively, the "Enrichment Data") is licensed to Customer on an annual, non-exclusive, revocable basis. SAS makes no representation or warranty as to the availability of updates to the Enrichment Data. Notwithstanding anything to the contrary contained herein, the license for all or any part of the Enrichment Data is subject to termination by SAS on thirty (30) days prior written notice to Customer in the event SAS' licensor terminates the license for such Enrichment Data ("Enrichment Data Termination"). In the event of an Enrichment Data Termination, Customer must (i) terminate its use of, and delete and destroy, the affected Enrichment Data on or before the date provided by SAS in such written notice and (ii) upon request from SAS, provide SAS with a certification of the deletion and destruction of the affected Enrichment Data signed by an authorized officer of Customer. In the event of an Enrichment Data Termination, provided Customer has complied with its obligations hereunder, SAS will refund to Customer a prorated portion of the license fees paid by Customer for the then-current term for the affected SAS DataPack software. In such event, Customer may also terminate the license for the applicable SAS Enrichment software and SAS will refund to Customer a prorated portion of the license fee paid by Customer for that Software for the then-current annual license period. The Enrichment Data may be used only in conjunction with, and under the same terms and conditions as, the corresponding SAS Enrichment software. Customer must terminate its use of, and delete and destroy, all Enrichment Data if the license therefor is not renewed for any reason. Customer may not use the Enrichment Data (y) with any products, systems, or applications installed or otherwise connected to or in communication with vehicles capable of vehicle navigation, positioning, dispatch, real time route guidance, fleet management or similar applications; or (z) with or in communication with any positioning devices or any mobile or wireless-connected electronic or computer devices, including without limitation, cellular phones, palmtop and handheld computers, pagers and personal digital assistants. If the Enrichment Data is being licensed by or on behalf of the United States government or any other entity seeking or applying rights similar to those customarily claimed by the United States government, the Enrichment Data is a "commercial item" as that term is defined at 48 C.F.R ("FAR") 2.101 and is licensed in accordance with the terms and conditions of this Agreement. THE SOFTWARE MAY CONTAIN OR PROVIDE ACCESS TO DATA LICENSED TO SAS BY THIRD PARTY VENDORS ("THIRD PARTY DATA") AND PROVIDE ACCESS TO SERVICES AND DATA PROVIDED BY THIRD PARTIES (COLLECTIVELY, "THIRD PARTY SERVICES"). THIRD PARTY DATA, THIRD PARTY SERVICES, AND ACCESS THERETO ARE PROVIDED TO CUSTOMER "AS IS" WITHOUT ANY WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT, OR ARISING AS A RESULT OF CUSTOM OR USAGE IN THE TRADE OR BY COURSE OF DEALING. SAS DISCLAIMS ANY WARRANTY AS TO (A) THE CONTINUED CERTIFICATION OF THE SOFTWARE BY ANY THIRD PARTY OR (B) THE CONTINUED AVAILABILITY OF ANY DISCOUNT PROVIDED FROM USE OF THE SOFTWARE. SAS DISCLAIMS ANY AND ALL LIABILITY IN CONNECTION WITH CUSTOMER'S USE OF THE THIRD PARTY DATA AND THIRD PARTY SERVICES. THE DISCLAIMERS HEREIN DO NOT APPLY TO ANY THIRD PARTY SOFTWARE ACTUALLY EMBEDDED WITHIN THE SOFTWARE, BUT APPLY IN ALL RESPECTS TO ANY THIRD PARTY DATA SUPPLIED WITH, CONTAINED IN, OR ACCESSED THROUGH THE SOFTWARE. THE PROVISIONS OF THIS PRICING METRIC SHALL TAKE PRECEDENCE OVER ANY CONFLICTING TERMS IN THIS AGREEMENT.

   (e) **Solution Test and Development** - The license granted hereunder authorizes Customer to implement a single configured installation of the Software in one (1) production environment, one (1) test environment and one (1) development environment. Customer may use the Software installed in the production environment for Customer's internal production purposes ("Production Environment"). Customer may use the Software installed in the test environment solely for the purpose of testing the Software and Software applications and code prior to installation in Customer's Production Environment ("Test Environment"). Customer may use the Software installed in the development environment solely for the purposes of developing and creating applications and code with the Software for use in Customer's Production Environment ("Development Environment"). Customer must identify in writing the Authorized Hardware for the Production Environment, the Test Environment and the Development Environment. The operating system for the Test Environment and the Development Environment must be the same as the operating system for the Production Environment. The Test Environment and Development Environment shall be used only for the test and development purposes described above and shall at no time be used for production purposes or as a fail-over system.

   (f) **Site License** - Customer's use of the Software is dependent upon Customer's licensing, under the Agreement, certain other SAS software ("Prerequisite Software"). Customer may install the Software on, and/or access the Software from, any Authorized Hardware, located at a single physical site, for which Customer has licensed the Prerequisite Software.

(g) **Software Package License** - Customer's use of the Software is dependent upon Customer's licensing, under the Agreement, certain other SAS software ("Prerequisite Software"). Customer has licensed, or is licensing under this Supplement, the Prerequisite Software as part of a collection of SAS software licensed by SAS as a defined bundle or solution ("Software Package"). Customer may install the Software on, and/or access the Software from, any Authorized Hardware, located at a single physical site, on which Customer has installed the Prerequisite Software licensed to Customer as part of the Software Package. Customer may use the Software only in conjunction with the Prerequisite Software licensed to Customer as part of the Software Package even if Customer has licensed the Prerequisite Software separate from the Software Package.

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(j) **Bundle Capacity Based** - The Software license fee is based on the total processing power of the Authorized Hardware on which the Software is installed. With respect to server hardware, processing power includes each processor core contained within the Authorized Hardware. With respect to mainframe hardware, processing power is based on Millions of Instructions Per Second (“MIPS”). The Software is licensed as a bundle of technology and not an "integrated solution." Accordingly, the server-based Software components in the bundle may be used alone or with the other components bundled with the Software.

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(l) **Development Only** - Customer shall use the Software solely for development purposes to create applications and code on the listed Development Authorized Hardware running the operating system identified on the Supplement ("Development Environment") and subject to the following: (a) Customer must currently maintain a separate production license for the same applicable production SAS software ("Production Software") under the same operating system as the Development Environment; and (b) if the Production Software license fee is based on hardware capacity, the listed Development Authorized Hardware must have the same or lower SAS classification rating as the Authorized Hardware on which the Production Software is installed. Customer agrees that the Software shall at no time be used (i) in a production environment or fail-over system; or (ii) in a test environment. The license to use the Software in the Development Environment shall automatically terminate upon expiration or termination of Customer's license for the Production Software.

(m) **Test Only - Customer shall use the Software solely for the purposes of testing the Software and testing Software applications and code developed in a licensed production or development environment, prior to installation in Customer’s production environment ("Test Environment") and subject to the following: (a) Customer must currently maintain a separate production license for the same Software ("Production Software") under the same operating system as the Test Environment and (b) if the Production Software license fee is based on the capacity of the hardware, the listed Test Environment Authorized Hardware must have the same or lower SAS classification rating as the Authorized Hardware on which the Production Software is installed. Customer agrees that the Software installed in the Test Environment shall at no time be used (i) in a production environment or fail-over system; (ii) to create, edit or modify applications or code; or (iii) for any software or application development. The license to use the Software in the Test Environment shall automatically terminate upon expiration or termination of Customer's license for the Production Software.**

SAS Appendix F – Assumptions

General Assumptions

- SC DHEC will provide any available data dictionaries, entity diagrams, code books, or anything else required to consume and interpret source data
- Customer provides data in a mutually agreed upon format. If data sources change in the duration of this project, then additional fees may apply.
- Customer will provide data within 20 business days of contract signature.
- The project team will leverage SAS hosted online collaboration tools for issue tracking, account requests, change management and documentation delivery.
- Customer will assign a Project Manager to work with the SAS Project Manager to coordinate Customer related activities related to this Contract.
- Changes to requirements stated in this proposal after the Contract is signed will be managed through the change control process and must be approved in writing by Customer.
- Customer will make available resources to assist with business questions, application construction, data modeling, database administration, and IT functions. Customer will also make available content experts to validate functionality, usability, and accuracy of results.
- Customer will make every reasonable effort to fully execute the UAT Quality Plan within a two week time frame.
- Modifications to existing Customer systems is not included in the scope of this engagement.
- Customer and SAS will mutually agree on scheduled data refreshes, based on the availability of each data feed.
- Customer provides delta changes in production data feeds, if possible.
- SAS' scope of work is based on the quantity of source systems and schematic as described/represented in the Figure 1 on page 20 of the RFP.
- A Customer project sponsor will be available on a regular basis to meet with the SAS team for progress updates.
- Conformance to time frames is contingent on client participation, and stakeholder sessions or interviews being scheduled in advance of any on-site work.
- Prior to the project kickoff, the SAS team will conduct one or more planning calls with Customer project sponsors.

Remote Managed Services (RMS) Assumptions

- Estimate is for application administration hours for 3 environments, per architecture specifications in RFP response.
- SAS must evaluate the system requirements to verify hardware and storage specs meet requested usage.
- SAS will be responsible for the maintaining/installing the SAS Software only. SAS will not be responsible for maintaining third party software associated with hardware operating systems, RDBMS, or other Customer systems.
- Single Sign-On is based on standard web authentication integrated with customer authentication domain and/or host authentication.

- Monitoring Integration: SAS expects customer to set up a site to site VPN connection to allow for monitoring and to meet SLA and incident response time in the contract.
- Service hours are based on meeting SLA and Service Level Response times as outlined in order form.