County of Los Angeles
DEPARTMENT OF PUBLIC SOCIAL SERVICES
12860 CROSSROADS PARKWAY SOUTH · CITY OF INDUSTRY, CALIFORNIA 91746
Tel (562) 908-8400 · Fax (562) 908-0459

SHERYL L. SPILLER
Acting Director

May 15, 2012

The Honorable Board of Supervisors
County of Los Angeles
383 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, California 90012

Dear Supervisors:

APPROVE AMENDMENT NUMBER TWO TO AGREEMENT NUMBER 77217 WITH SAS INSTITUTE INC. FOR DATA MINING SOLUTION (ALL DISTRICTS - 3 VOTES)

CIO RECOMMENDATION: APPROVE (X) APPROVE WITH MODIFICATION ( ) DISAPPROVE ( )

SUBJECT

The Department of Public Social Services (DPSS), in collaboration with the Service Integration Branch (SIB) of the Chief Executive Office (CEO), seeks your Board's approval of Amendment Number Two to Agreement Number 77217 with SAS Institute Inc. (SAS) for Data Mining Solution (DMS), dated December 22, 2009 (Agreement). The implementation of DMS represents the realization of the initial Board motion on May 29, 2007 and vision of utilizing cutting edge technology, such as data mining and predictive analytics, to ensure and maintain the integrity of the County's public assistance programs. The purpose of Amendment Number Two is to expand the DMS technology, which combats fraud in the DPSS CalWORKs Stage 1 Child Care (CalWORKs) Program, to the In-Home Supportive Services (IHSS) Program (IHSS Project); and extends the maximum term of the Agreement for an additional two (2) years.

IT IS RECOMMENDED THAT YOUR BOARD:

Approve and instruct the Chairman to sign the attached Amendment Number Two to the DMS Agreement in order: (i) to expand the DMS technology currently utilized to detect and prevent fraud in the CalWORKs Stage 1 Child Care Program to the IHSS Program; and (ii) to extend the optional term of the Agreement (Extended Term) for the provision of DMS maintenance and support by two (2) additional years from two (2) years to four (4) years, all at the additional maximum Contract Sum

of $2,769,063 with an estimated net County cost (NCC) of $529,000.

The execution of this Amendment will increase the total maximum Contract Sum allocated for the term of the Agreement by $2,769,063 from ($4,230,937 to $7,000,000).

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

The primary purpose of this Amendment is to allow DPSS to engage SAS to expand the DMS technology developed under the Agreement for detecting and preventing fraud in the CalWORKs Stage 1 Child Care Program (Phase 1 of the Project) to also combat fraud in the IHSS Program (Phase 2 of the Project). Based on the success of the IHSS Pilot conducted by SAS pursuant to Amendment Number One to the Agreement, this can be accomplished by utilizing the existing DMS fraud detection infrastructure.

The IHSS Pilot produced a set of preliminary predictive models that were used to detect potential fraud in the IHSS Program, which provided a risk score for the randomly selected cases reviewed. Analysis of the representative sample of fraud referrals revealed the possibility for an annual cost avoidance of approximately $7 million, based on the ability of the DMS to generate new fraud referrals not readily detected by existing, manual IHSS investigative methods ($1.6 million), as well as to make fraud referrals much sooner than is currently possible ($5.4 million). An even larger cost avoidance and restitution dollar amount may be possible by applying the DMS to a larger percentage of cases with the highest fraud risk scores and leveraging additional fraud detection tools not utilized in the pilot.

The successful implementation of the DMS in the CalWORKs Stage 1 Child Care Program and the success of the IHSS Pilot has established a solid foundation for expanding DMS technology across other public assistance programs.

In its first ten (10) months of operation, the DMS system has produced 197 additional referrals for child care fraud investigations; 143 from front-end Triage review, plus an additional 54 referrals initiated directly by investigators upon review of other active investigations. Additionally, another 67 non-child care related referrals were initiated as a direct result of Triage review.

Investigations are currently being conducted on six (6) separate conspiracy allegations that were a direct result of data mining review by Investigative staff. As a result of the Social Network Analysis functionality, which is a component of the DMS technology, the County's Welfare Fraud Prevention & Investigation (WFP&I) section has uncovered two (2) conspiracy groups consisting of 16 cases, and done so significantly earlier than would have been the case using traditional fraud detection procedures. Additionally, the Triage team has been established with Designated Triage Workers (DTW) who review potential fraud alerts with high risk scores and triggers created by the DMS tool to determine if a referral will need to be made to WFP&I section or a notification generated that will inform eligibility staff of possible discrepancies on a participant's case due to unreported income. The disposition of such notices may result in one or more of the following outcomes: termination of benefits, overpayments, reduction in benefits, share of cost and/or fraud referral. So far, eligibility staff have processed and taken case actions on approximately 388 cases, as a result of these notifications from the DTWs.

Implementation of Strategic Plan Goals

This recommendation is consistent with the principles of the Countywide Strategic Plan, Goal 1: Operational Effectiveness: Maximize the effectiveness of processes, structure and operations to

support timely delivery of customer-oriented and efficient public services. Goal 2: Fiscal Sustainability: Strengthen and enhance the County's capacity to sustain essential County Services through proactive and prudent fiscal policies and stewardship.

Successful implementation of the IHSS Project will result in savings at the local, State, and federal levels and improve public confidence in the integrity of the IHSS Program. It is also consistent with DPSS' objective for maintaining the efficiency and effectiveness of departmental programs through expanded information technology and communications. The expansion of DMS to DPSS programs other than child care is also part of the DPSS Business Automation Plan.

FISCAL IMPACT/FINANCING

The execution of this Amendment will increase the total maximum Contract Sum allocated for the term of the Agreement by $2,769,063 from ($4,230,937 to $7,000,000).

For Fiscal Year (FY) 2011-12, the one-time IHSS DMS expansion license cost is approximately $536,000 which will be covered under the IHSS Anti-Fraud Plan funding with an estimated NCC of $268,000. Sufficient funding is included in the FY 2011-12 Adopted Budget.

For FY 2012-13, the total costs are estimated at $1,154,000, including an estimated NCC of $104,000. Sufficient funding is included in the Department's FY 2012-13 Recommended Budget. FY 2013-14 through FY 2015-16, the total costs are estimated at $1,744,000, including estimated NCC of $157,000. Sufficient funding will be included in the Department's annual budget request.

FACTS AND PROVISIONS/LEGAL REQUIREMENTS

Amendment Number Two will become effective upon Board approval. All terms and conditions, including information technology provisions included in the current Agreement, will continue to apply to the Agreement following execution of the proposed Amendment Number Two.

This Amendment was reviewed and approved by the CEO and County Counsel as to form. The Chief Information Office (CIO) concurs with this recommendation (CIO Analysis Attachment I).

CONTRACTING PROCESS

In response to your Board's motion of January 6, 2009, DPSS released a request for proposals (RFP) on July 8, 2009. The RFP solicited proposals from qualified vendors for the development, implementation, and maintenance of data mining technology to target fraud in the CalWORKs Stage 1 Child Care Program and establish a platform that can be leveraged to detect and prevent fraud in other public assistance programs.

SAS submitted the winning proposal. On December 22, 2009, your Board awarded SAS the contract for the development, implementation, maintenance, and support of the DMS technology to detect and prevent fraudulent activities among individuals and groups participating in the County's CalWORKs Stage 1 Child Care Program.

The Agreement was awarded for a period of two (2) years (Initial Term) with up to two (2) additional option years (Extended Term) for a total maximum Contract Sum of $4,230,937. The Agreement contains specific provisions allowing for the expansion of the DMS to public assistance programs

beyond CalWORKs, including the IHSS Program.

Following your Board's motion of August 17, 2010, your Board approved Amendment Number One to the Agreement on December 14, 2010 authorizing SAS to conduct a 90-day pilot for the IHSS (IHSS Pilot) at no cost to the County. The purpose of the IHSS Pilot was to assess the effectiveness of data mining technology in detecting and preventing fraud and to establish a platform that can be leveraged to prevent fraud in other public assistance programs.

Given the expected cost savings potential demonstrated by the IHSS Pilot, upon approval of Amendment Number Two by your Board, DPSS will work collaboratively with CEO/SIB and CIO to expand the DMS to include the IHSS Program.

In addition to the efficiencies gained by leveraging the existing DMS infrastructure, SAS provided a 30 percent reduction in software license fees and 30 percent reduction in professional services fees associated with the implementation of the IHSS Project.

IMPACT ON CURRENT SERVICES (OR PROJECTS)

The execution of Amendment Number Two (Attachment II) augments the DMS by expanding the technology to the IHSS Program to assist in fraud detection and prevention and is expected to result in new fraud referrals, earlier fraud detection, and increased efficiency, all leading to cost avoidance. The potential exists for additional cost avoidance, as the use of DMS technology is expanded to other public assistance programs.

CONCLUSION

Upon your Board's approval, the Executive Officer, Board of Supervisors is requested to return of three original signed copies of the Amendment and one adopted stamped Board letter to the Acting Director of DPSS.

Respectfully submitted,

Reviewed By:

SHERYL L. SPILLER
Acting Director

RICHARD SANCHEZ
Chief Information Officer

SLS:MS:af

Enclosures

c: Chief Executive Office
Acting County Counsel
Executive Officer, Board of Supervisors
Auditor-Controller
Chief Information Office
Internal Services Department
Chair, Information Systems Commission

RICHARD SANCHEZ
CHIEF INFORMATION OFFICER

Office of the CIO

CIO Analysis

Number:	DATE:
CIO 12-07	04/19/2012

APPROVE AMENDMENT 2 TO AGREEMENT NUMBER 77217 WITH SAS INSTITUTE INC. (SAS) FOR DATA MINING SOLUTION (DMS)

RECOMMENDATION:

☒ Approve ☐ Approve with modification ☐ Disapprove

CONTRACT TYPE:

☐ New contract ☐ Sole Source
☒ Amendment to Contract #: 77217 ☐ Other:

CONTRACT COMPONENTS:

☐ Software ☐ Hardware
☐ Telecommunications ☒ Professional Services

SUMMARY:

Department executive sponsor: Michael Sylvester, Assistant Director, Public Social Services

Description: Expands the use of SAS DMS technology to detect and prevent fraud in the In Home Support Services (IHSS) Program; and extends the Agreement term for two (2) years.

Contract Amendment amount: $2,769,063 Funding source: CalWORKS and IHSS Programs

☐ Legislative or regulatory mandate ☒ Subvened/Grant funded: 98%

Strategic and business analysis

PROJECT GOALS AND OBJECTIVES:

Use DMS technology to support the early detection and/or prevention of potential fraud in public assistance programs.

BUSINESS DRIVERS:

The IHSS pilot conducted as part of Amendment 1 identified that utilization of DMS technology could save an estimated $7 million in annual cost avoidance by generating and making new referrals much earlier to DPSS investigators.

PROJECT ORGANIZATION:

The DMS project has a formal governance structure comprised of DPSS executives, program staff, operations staff and fraud investigation staff.

PERFORMANCE METRICS:

The IHSS Program will be incorporated into the DMS solution with its CalWORKs Stage 1 Child Care (CalWORKs) Program's project metrics. The DMS Agreement also contains Service Level Agreement and Liquidated Damages for performance metrics that the contractor must meet. DMS system in the 10 months of operation has generated 197 additional referrals for child care fraud

	investigations; 143 from front-end Triage review; and 54 referrals initiated directly by investigators upon review of other active investigations. Additionally, another 67 non-child care related referrals were initiated as a direct result of Triage review.
	STRATEGIC AND BUSINESS ALIGNMENT: This project is consistent with the County Strategic Plan goals and Strategic Technology Directions for fiscal stewardship and maximizing effectiveness of the County's operations. It supports the recovery and/or the prevention of public assistance funds that were obtained fraudulently.
	PROJECT APPROACH: DPSS is using the DMS solution as a common technology platform to detect and prevent fraud in its public assistance programs. DPSS continues to expand the DMS solution to other public assistance programs whose pilot feasibility is found to be positive.
	ALTERNATIVES ANALYZED: No alternatives were explored. The Agreement contains specific provisions allowing for the expansion of the DMS to IHSS and to other public assistance programs.
Technical analysis	ANALYSIS OF PROPOSED IT SOLUTION: The DMS solution uses the SAS Fraud Framework for Government and incorporates SAS' data mining technology with Social Network Analysis, Predictive Analysis, rules management and forecasting techniques. SAS Business Intelligence is used to generate an information portal and reports to monitor and share information on fraudulent cases. The DMS solution is hosted at SAS' data center in North Carolina and is accessed securely by County staff.

Financial analysis	BUDGET: Contract costs One-time costs: Hardware..... $111,000 Software..... $536,256 Services ..... $370,920 Pool Dollars ..... $440,018 **Sub-total one-time costs: $1,458,194** Ongoing costs (FY12/13 thru FY15/16): Hardware..... $349,200 Software..... $787,835 Services ..... $173,834 **Sub-total ongoing costs : $1,310,869** **Total contract costs: $2,769,063** Other County costs: One-time costs: Hardware ..... $ N/A Software..... $ N/A Services (ISD) ..... $ N/A County staff (existing)..... $377,000 County staff (net new)..... $ N/A **Sub-total one-time County costs: $377,000** Ongoing costs (FY12/13 thru FY15/16): Hardware..... $ N/A Software..... $ N/A Services (ISD)..... $ N/A Services (Contractor) ..... $ N/A. County staff (existing)..... $552,000 County staff (net new)..... $ N/A **Sub-total ongoing County costs: $552,000** **Total Other County Costs: $889,000** The execution of this Contract Amendment will increase the Total Maximum Contract Sum for the term of the Agreement by $2,769,063 from $4,230,937 to $7,000,000. **Notes**: - One-time contract services includes $440,018 in contract pool dollars. - Other County project costs are based on Department estimates.

Risk analysis	RISK MITIGATION: 1. DPSS has improved IHSS project outcomes by conducting a proof of concept that revealed the solution feasibility in detecting/preventing fraud. 2. DPSS has mitigated risks for DMS solution implementation by providing executive sponsorship, stable project staffing, clear roles and responsibilities, full-time project management, and defined deliverables. 3. The Chief Information Security Officer reviewed the Amendment and did not identify any security risks or issues. 4. The Agreement clearly identifies the service levels and system performance metrics to be provided by SAS for the term of the Agreement.
CIO Approval	PREPARED BY: James R. Hall — 4-25-2012 James Hall, Sr. Associate CIO — Date
	APPROVED: Richard Sanchez — 5-1-12 Richard Sanchez, County CIO — Date

Please contact the Office of the CIO (213.253.5600 or info@cio.lacounty.gov) for questions concerning this CIO Analysis. This document is also available online at http://ciointranet.lacounty.gov/

Attachment II

AMENDMENT NUMBER TWO

TO

AGREEMENT

BETWEEN

COUNTY OF LOS ANGELES

AND

SAS INSTITUTE INC.

FOR

DATA MINING SOLUTION (DMS)

This Amendment Number Two is entered into this 15 day of May, 2012 by and between
the County of Los Angeles, a body corporate and politic (hereinafter "County"), and SAS Institute Inc., a North Carolina corporation (hereinafter "Contractor"), and amends that certain Agreement Number 77217 for Data Mining Solution (DMS) for Child Care Fraud Detection, dated as of December 22, 2009, as modified by all Amendments and Change Notices thereto, including without limitation by this Amendment Number Two (hereinafter "Agreement").

77217 SUPPLEMENT 2

WHEREAS, County and Contractor have entered into the Agreement for the design, development, implementation and maintenance of the Data Mining Solution for the Project (hereinafter "DMS"); and

WHEREAS, County has requested, and Contractor has agreed, to develop, implement and maintain a DMS for the In Home Supportive Services (IHSS) Project as part of Phase 2.

NOW THEREFORE, in consideration of the foregoing and pursuant to Paragraph 4 (Change Notices and Amendments) of the Base Agreement, County and Contractor hereby agree to amend the Agreement as follows:

1. The Agreement is hereby incorporated by reference, and all of its terms and conditions, including capitalized terms defined therein, shall be given full force and effect as if fully set forth herein.

2. As a result of this Amendment Number Two, the following definitions are added to Paragraph 1.3 (Definitions) of the Base Agreement amending such Paragraph 1.3:

   1.3.157 AMENDMENT TWO EFFECTIVE DATE

   As used herein, the term "Amendment Two Effective Date" shall mean the date of execution of Amendment Number Two to the Agreement by the authorized representative(s) of County and Contractor.

   1.3.158 IHSS PROJECT

   As used herein, the term "IHSS Project" shall mean DMS implementation, maintenance and support for the IHSS Program under Phase 2 in accordance with this Agreement, including Task 12 (IHSS Project) of Exhibit A (Statement of Work) and Exhibit D (System Maintenance).

3. As a result of this Amendment Number Two, the following definitions under Paragraph 1.3 (Definitions) of the Base Agreement have been deleted in their entirety and replaced with revised definitions amended to read as follows:

1.3.45 DATA MINING SOLUTION; DMS

As used herein, the terms "Data Mining Solution" and "DMS" shall have the same meaning as System and shall include all System Data, System Environment, System Software and the Pilots, developed or provided by Contractor to County in accordance with the terms of this Agreement.

1.3.84 PHASE 1

As used herein, the term "Phase 1" shall mean the initial stage of the Project consisting of the CalWORKs Stage One Child Care Program.

1.3.85 PHASE 2

As used herein, the term "Phase 2" shall mean the subsequent stage of the Project expanded to the DPSS programs beyond the CalWORKs Program.

1.3.86 PILOT

As used herein, the term "Pilot" shall mean any pilot project implemented by Contractor to demonstrate the feasibility of using data mining technology to detect and predict fraud, including DMS pilot and IHSS Pilot.

1.3.93 PROJECT

As used herein, the term "Project" shall mean DMS implementation, maintenance and support initially for the CalWORKs Stage One Child Care Program under Phase 1 and/or any other programs under Phase 2, the Pilots that may be provided by Contractor and utilization of the System Software, including the Baseline Software, by Contractor or County for developing solutions or models for any County programs, as further specified in this Agreement and Exhibits A (Statement of Work) and D (System Maintenance), including the Transition License.

1.3.116 SYSTEM

As used herein, the term "System" shall mean all System Environment, System Data, Internet Services, System Software, the Pilots and Optional Work Components described in this Agreement and, as otherwise agreed to by County and Contractor, collectively comprising the Data Mining Solution or DMS. Reference to the System may include one or more components or modules thereof or the entire System.

1.3.132 SYSTEM SOLUTION

As used herein, the term "System Solution" shall mean and refer to any of the solutions developed or designed by Contractor for County pursuant to this Agreement as part of the Core Application and under any previous or other current agreements with County relating to or concerning the Project and/or the Pilots, including but not limited to the Delegated Authority Agreement for Adult Linkages Project between the County of Los Angeles and SAS Institute Inc., dated August 27, 2007 (DAA Number AO-07-056), and shall include DQ&I Solution, Analytics Models and Baseline Interfaces.

4. Paragraph 4.3 (Amendments) of the Base Agreement is deleted in its entirety and replaced with revised Paragraph 4.3 amended to read as follows:

4.3 AMENDMENTS

Except as otherwise provided in this Agreement, for any change requested by County which affects the scope of Work, term, payments, or any term or condition included in this Agreement, a negotiated written Amendment to this Agreement shall be prepared and executed by each of County's Board of Supervisor's and Contractor's authorized representative. Notwithstanding the foregoing, the Director is specifically authorized to execute a negotiated written Amendment to this Agreement on behalf of County upon County's election to extend the scope of this Agreement beyond Phase 1 into Phase 2 based on the terms negotiated herein and in such Amendment. However, neither such authority nor County's engagement of Contractor to develop and implement any Pilot is a guarantee of any such Phase 2 Amendment.

5. First grammatical paragraph of Paragraph 5 (Scope of Work) of the Base Agreement is deleted in its entirety and replaced with revised grammatical paragraph of Paragraph 5 amended to read as follows:

5. **SCOPE OF WORK**

In exchange for County's payment to Contractor of the fees and any applicable taxes arising under the Agreement and invoiced by Contractor, Contractor shall on a timely basis (a) provide, complete, deliver and implement all Work set forth in this Agreement and in Exhibits A (Statement of Work) and D (System Maintenance), including, but not limited to, System Software License, System Hardware, System Implementation services, System Maintenance, Pilots and any Optional Work; (b) grant to County a limited License to any Work Product, as specified in Paragraph 10.1.5 (Work Product) and (c) grant ownership to County of the Components of the System Solution described in Paragraph 10.1.4 (System Solution), subject to the provisions of Paragraph 10.1 (System Ownership). Contractor shall perform all such tasks, subtasks, deliverables, goods, services and other Work in accordance with Exhibit A (Statement of Work) with all Attachments thereto and Exhibit D (System Maintenance) with all Schedules thereto at the applicable rates and prices specified in Exhibit B (Schedule of Payments) with all Schedules thereto.

6. The maximum term of the Agreement is extended by two (2) years by deleting Paragraph 7.2 (Extended Term) in its entirety and replacing it with the revised Paragraph 7.2 (Extended Term) amended to read as follows:

7.2 EXTENDED TERM

At the end of the Initial Term, County may, at its sole option, extend this Agreement for up to four (4) additional consecutive one (1) year terms (hereinafter "Extended Term"); provided that if County elects not to exercise its option to extend at the end of the Initial Term, or the Extended Term, the remaining option(s) shall automatically lapse. County shall be deemed to have exercised its extension option(s) automatically, without further act, unless, no later than thirty (30) days prior to the expiration of the Initial Term or the Extended Term, as applicable, County notified Contractor in writing that it elects not to extend the Agreement pursuant to this Paragraph 7.1.

7. The Maximum Contract Sum allocated for the term of the Agreement is increased by deleting Paragraph 8.1 (Maximum Contract Sum) in its entirety and replacing it with the revised Paragraph 8.1 (Maximum Contract Sum) amended to read as follows:

8.1 MAXIMUM CONTRACT SUM

The Contract Sum under this Agreement shall be the total monetary amount payable by County to Contractor for supplying all the tasks, subtasks, deliverables, goods, services and other Work required or requested by County under this Agreement. All Work completed by Contractor must be approved in writing by County in accordance with Paragraph 2.4 (Approval of Work). If County does not approve work in writing, no payment shall be due Contractor for that Work. The Contract Sum, including all applicable taxes, authorized by County hereunder shall not exceed Seven Million Dollars ($7,000,000) as further detailed in Exhibit B (Schedule of Payments), unless the Contract Sum is modified pursuant to a duly approved Amendment to this Agreement by County's and Contractor's authorized representative(s) pursuant to Paragraph 4 (Changes to Agreement). The Contract Sum under this Agreement shall cover the authorized payments for all System Components provided by Contractor, System Implementation services, System Maintenance and any Optional Work.

Contractor shall maintain a system of record keeping that will allow Contractor to determine when it has incurred seventy-five percent (75%) of the Contract Sum, including the Pool Dollars expenditures, authorized for this Agreement. Upon occurrence of this event, Contractor shall provide written notification to County's Project Director at the address set forth in Section I (County Key Personnel) in Exhibit G (Administration of Agreement). Notwithstanding the foregoing, Contractor's failure to provide such notification shall not constitute a material breach of this Agreement.

8. Paragraph 8.2 (System Implementation) of the Base Agreement is deleted in its entirety and replaced with revised Paragraph 8.2 amended to read as follows:

8.2 SYSTEM IMPLEMENTATION

Contractor shall provide System Implementation services in accordance with Exhibit A (Statement of Work), with all Attachments thereto, and the Base Agreement in exchange for County's payment of the applicable Implementation Cost. The Implementation Cost shall include all applicable License Fees, any and all cost of System Implementation and all Work provided by Contractor for any Pilots, including all tasks, subtasks, deliverables, goods, services and other Work set forth in such Exhibit A (Statement of Work), as specified in Exhibit B (Schedule of Payments). The System Implementation Cost shall not exceed the amount specified in such Exhibit B (Schedule of Payments).

9. The scope of Work for the Agreement is revised to include the IHSS Project by deleting Exhibit A (Statement of Work) in its entirety and replacing it with revised Exhibit A (Statement of Work), attached hereto as Attachment 1 and incorporated herein by reference.

10. The System Requirements are updated by deleting Attachment A.1 (System Requirements) in its entirety and replacing it with revised Attachment A.1 (System Requirements), attached hereto as Attachment 2 and incorporated herein by reference.

11. The Schedule of Payments is adjusted to account for the added IHSS Project Deliverables by deleting Exhibit B (Schedule of Payments) in its entirety and replacing it with revised Exhibit B (Schedule of Payments), attached hereto as Attachment 3 and incorporated herein by reference.

12. The amount of Pool Dollars allocated for this Agreement is adjusted by deleting Schedule B.1 (Optional Work) in its entirety and replacing it with revised Schedule B.1, attached hereto as Attachment 4 and incorporated herein by reference.

13. The System Performance Requirements are updated by deleting Exhibit D (System Maintenance) in its entirety and replacing it with revised Exhibit D (System Maintenance), attached hereto as Attachment 5 and incorporated herein by reference.

14. This Amendment Number Two shall be effective on the date of approval by County's Board of Supervisors.

15. Except as provided in this Amendment Number Two, all other terms and conditions of the Agreement shall remain unchanged and in full force in effect.

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IN WITNESS WHEREOF, Contractor has executed this Amendment Number Two, or caused it to be duly executed, and the County of Los Angeles, by order of its Board of Supervisors, has caused this Amendment to be executed the day, month and year first above written.

COUNTY OF LOS ANGELES

I hereby certify that pursuant to Section 25103 of the Government Code, delivery of this document has been made.

SACHI A. HAMAI
Executive Officer
Clerk of the Board of Supervisors

By _____
Deputy

By _____
CHAIRMAN, Board of Supervisors

CONTRACTOR: SAS INSTITUTE, INC.

By _____
Signature

_____
Print Name

SAS
Kevin Farrell
Manager
Contracts Administration
SAS INSTITUTE INC.

_____
Title

77217 SUPPLEMENT 2

ATTEST:
SACHI A. HAMAI
Executive Officer-Clerk, Board of Supervisors

By _____
Deputy

JIA LEGAL

APPROVED AS TO FORM:
JOHN F. KRATTLI
Acting County Counsel

By _____
VICTORIA MANSOURIAN
Deputy County Counsel

ADOPTED
BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES
30 MAY 15 2012

SACHI A. HAMAI
EXECUTIVE OFFICER

EXHIBIT A

STATEMENT OF WORK

FOR

DATA MINING SOLUTION (DMS)

REVISED UNDER AMENDMENT NUMBER TWO

MAY 2012

TABLE OF CONTENTS

1. INTRODUCTION AND OVERVIEW

This Exhibit A (Statement of Work) describes the tasks, subtask, deliverables and other Work ("SOW") to be provided by Contractor to County as part of the DMS Project, including System Implementation, System Maintenance and any Optional Work, which shall meet the requirements of this Agreement, including Attachment A.1 (System Requirements) and Exhibit D (System Maintenance). Contractor shall perform, complete, and deliver all Work, however denoted, as set forth in this SOW, or in any attached or referenced document in full compliance with the Agreement.

1.1 PROJECT BACKGROUND

County's Chief Executive Office ("CEO") and Department of Public Social Services ("DPSS") conducted a pilot ("Pilot") between May and November of 2008 to determine the business value of implementing data mining software for the purposes of detection and prevention of public assistance fraud. The application of data mining software was limited to three primary predictive models and the analysis applied only to DPSS' Stage 1 Child Care Program for CalWORKs participants. In order to demonstrate the predictive capacities of the data mining software, the pilot used DPSS' administrative records on child care providers between January 2001 and December 2007. The software's fraud analysis capability was demonstrated in three categories: (1) cases with characteristics placing them at a high risk for fraud; (2) cases showing significant anomalies; (3) potential fraud rings and collusion activities.

This DMS Pilot achieved an 85 percent accuracy rate in detecting collusive fraud rings. The results of the Pilot show that the use of data mining software as a fraud detection tool would have enabled cost avoidance in three areas: (1) new fraud referrals, resulting in an annual gross cost avoidance of at least $2.2 million; (2) early detection of fraud, resulting in an annual gross cost avoidance of $1.6 million; (3) increased efficiency, resulting in an annual gross cost avoidance of $3 million. The total annual gross cost avoidance in these areas would, therefore, have been at least $6.8 million. Furthermore, the results indicated that the cost avoidance could possibly increase with additional data sources and further utilization of additional predictive fraud detection models not included in the Pilot.

On January 6, 2009, County's Board of Supervisors passed a motion that directed the CEO to develop a strategy for the implementation of data mining technology to target fraud in the CalWORKs Stage 1 Child Care program. The CEO reported back to the Board with a recommendation to procure the necessary technology through a competitive procurement process. The DMS RFP released in response to the Board motion embodied County's effort to solicit competitive bids from potential vendors for data mining technology to target fraud in County's public assistance programs.

1.2 PROJECT OBJECTIVES

The general objective of this Project is to implement a technology solution ("DMS Solution"), which will assist in the detection and prevention of fraudulent activities among individuals or groups participating in County's public assistance programs, starting with Stage 1 Child Care Program for CalWORKs participants.

This Statement of Work consists of instructions, tasks, subtasks, deliverables, goods, services and other work (hereinafter "Work") and, unless specified otherwise, includes a Project Schedule. Capitalized terms used in this Statement of Work without definitions have the meanings given to such terms in the body of the Agreement. All Work under this Agreement shall be performed at the rates and fees set forth in Exhibit B (Schedule of Payments).

Contractor shall perform, complete and deliver all Work, however denoted, as set forth in this Statement of Work. Also defined herein are those Tasks and Subtasks that involve participation of both Contractor and County. Unless otherwise specified as an obligation of County, Contractor shall perform all Tasks and Subtasks and provide all Deliverables as defined herein. For the purpose of this Agreement, a Deliverable shall be deemed complete upon County's approval and acceptance thereof subject to the provisions of the Agreement, irrespective of the number of tries it takes Contractor to provide a successful Deliverable.

Contractor shall provide a comprehensive data mining fraud platform and solutions including the installation and configuration of the necessary data mining software, the provision of data quality and data integration solutions, the development of analytic models and the provision of other services to implement Los Angeles County's Data Mining Solution as necessary to meet the technical, functional and business requirements set forth in Attachment A.1 (System Requirements).

Unless otherwise specified herein, the Tasks, Subtasks and Deliverables in this Statement of Work are subject to the System Requirements and shall be subject to County approval, as set forth in Paragraph 5 (Scope of Work) of the Base Agreement.

2. INSTRUCTIONS

Contractor shall submit each Deliverable to County in one (1) or more hard cover 8 ½ by 11 inch three-ring binders, single sided sheets, 12 point Arial or New Times Roman font, with separated and partitioned sections as required.

Contractor shall submit each Deliverable and provide an electronic copy in the Microsoft Office Suite version specified by County.

3. SCOPE OF WORK

This section describes the primary Work that Contractor shall perform, which includes:

1. **Task 1 - Project Administration**
2. **Task 2 – Analyze System Requirements**
3. **Task 3 – System Setup**
4. **Task 4 – Implement System Software**
5. **Task 5 – System Testing**
6. **Task 6 – Final Acceptance**
7. **Task 7 - Training**
8. **Task 8 – System Documentation**
9. **Task 9 – System Maintenance**
10. **Task 10 – Optional Work**
11. **Task 11 – IHSS Pilot**
12. **Task 12 – IHSS Project**

To accomplish the Work, Contractor shall work collaboratively with key stakeholders, including Users and State and federal governments and other external agencies whose System Data will interface with the DMS.

TASK 1 – PROJECT ADMINISTRATION

Contractor shall establish a Project Office to provide full project management, planning, monitoring, supervision, tracking and control for all Project activities during the term of the Agreement. Contractor shall employ project management standards and practices in the performance of all Work.

SUBTASK 1.1 – DEVELOP PROJECT CONTROL DOCUMENT

Contractor shall review the System Requirements with County's Project Manager. Based upon that review, Contractor shall prepare a Project Control Document ("PCD") and submit it for written approval to County's Project Manager. Any subsequent significant modifications to the PCD shall be subject to the provisions of the body of the Agreement.

Contractor's Project Manager and County's Project Manager shall report Project status on a regular basis as required by County and shall participate in status meetings monthly, or as otherwise agreed to by County and Contractor.

DELIVERABLE 1.1 – PROJECT CONTROL DOCUMENT

Contractor shall provide the PCD, which, at a minimum, shall include the following information:

1. All Work described in this Statement of Work and elsewhere in the Agreement;
2. A Project Work Plan (in this Exhibit A "PWP"), developed in County-specified version of Microsoft Project, which shall include:
   a. All Deliverables, including those referenced in the Schedule of Payments,
   b. All Tasks, Subtasks, and other Work,
   c. Associated dependencies among Deliverables, Tasks, Subtasks and other Work,
   d. Resources assigned to each Deliverable, Task, Subtask and other Work;
   e. Start date and date of completion for each Deliverable, Task, Subtask and other Work,
   f. Proposed County review period for each Deliverable, and
   g. Proposed milestones;
3. Identification of all Contractor's Key Personnel;
4. A comprehensive Deficiency Management Plan (in this Exhibit A "DMP"), documenting the approach to Deficiency management, including methodology, recommended tool(s) and escalation process;
5. Approach to Project communications;
6. A comprehensive Risk Management Plan (in this Exhibit A "RMP"), documenting the approach to risk analysis (e.g., the evaluation of risks and risk interactions to assess the range of possible project outcomes), risk mitigation (e.g., the identification of ways to minimize or eliminate project risks) and risk tracking/control (e.g., a method to ensure that all steps of the risk management process are being followed and, risks are being mitigated effectively). The RMP shall have a clearly established process for problem escalation and shall be updated, as needed, through the term of the Agreement;
7. Initial identification of risks that may impact the timely delivery of the DMS, probability and potential impact, recommended mitigation strategy and impact of implementing any risk mitigation strategies;
8. Project staffing and resource management plan; and
9. Configuration and Change Management Plan (in this Exhibit A "CCMP"). Changes, in this context, refer to changing the functionality of or adding additional functionality (e.g., changes to the project scope) to any DMS Component. The approach shall ensure that the impacts and rationale for each change are analyzed and coordinated prior to being approved. The CCMP may vary from item to item, as determined by County's Project Director.

Contractor shall prepare a Project Work Plan in accordance with Subtask 1.1 – Develop Project Control Document, which shall update Exhibit C (Project Schedule) accordingly. The PCD shall provide for the System installation and configuration plan, including as it relates to the System Software and System Environment, implementation of the System Software, development of data quality and data integration tasks (also "DQ&I"), development of fraud detection models, development of the end-user Interfaces, system administration and security, technical support and knowledge transfer, and related Documentation. The PCD may be modified only if such modification has been approved in advance in writing by County's Project Manager.

SUBTASK 1.2 – PREPARE STATUS REPORTS AND CONDUCT CONFERENCES

Contractor shall provide ongoing Project administration, which shall include, but not be limited to, the following:

1. DMS monthly status reports; and
2. Updates to the PCD, including PWP and RMP.

Contractor's Project Manager shall provide full project management and control of Project activities. Contractor's Project Manager shall present to County's Project Manager a written Status Report (in this Exhibit A "Status Report") documenting Project progress, plans and outstanding issues. Contractor's Project Manager shall meet with or conduct a status update phone call with County's Project Manager on a weekly basis, or as otherwise agreed to by County and Contractor, to review Project Status Reports and any related matters. All variances shall be presented to County for approval at the status meeting. The first report shall be presented to County's Project Manager one (1) week following the Effective Date in a format approved by County.

This Subtask shall include, but not be limited to:

1. Project planning and direction;
2. Contractor staffing and personnel matters, including management of Contractor technical staff;
3. Evaluation of results and status reporting;
4. Incorporation of County's System Requirements, including all business, functional and technical requirements;
5. Incorporation of required software modification, if any; and
6. Management and tracking of all issues and their resolution.

Contractor's Project Manager and County's Project Manager shall report Project status on a regular basis and shall participate in monthly status meetings. The project and reporting system shall include, but not be limited to, the following components:

1. Kick off meeting;
2. Updated PCD; and
3. Status Reports and meetings or teleconferences.

The Project Status Reports prepared by Contractor's Project Manager pursuant to this Subtask 1.2 – Prepare Status Reports and Conduct Conferences shall be used as the mechanism for Contractor to report any Project risks or problems identified as part of the implementation process.

DELIVERABLE 1.2 – STATUS REPORTS AND CONFERENCES

Contractor's Project Manager shall prepare and present to County's Project Manager a written Status Report documenting project progress, plans, and outstanding issues. Contractor's Project Manager shall meet with or conduct a status update phone call with County's Project Manager at least monthly, or as otherwise agreed to by County and Contractor, to review these Project Status Reports and any related matters. All variances shall be presented for approval by County at the status conferences. The first report shall

be presented to County's Project Manager one (1) week following the Effective Date in a format approved by County.

SUBTASK 1.3 – ESTABLISH PROJECT OFFICE

Contractor shall establish and maintain throughout the term of this Agreement a local office to be utilized solely for the purpose of the Project and this Agreement ("Project Office"). Contractor shall provide necessary hardware, software and other equipment for the Project Office. In addition, Contractor shall meet the following minimum requirements:

A. Provide a Project Office within a forty (40) mile radius of the Chief Executive Office (CEO) - Service Integration Branch (SIB) located at 222 S. Hill Street, 5th Floor, Los Angeles, CA 90012;

B. Provide a Help Desk utilizing SAS' existing processes and procedures;

C. Provide conference facilities and ample space to conduct JAD sessions for Contractor development team and County use. These conference facilities shall include appropriate furniture and equipment such as white boards, PC projectors, and conference phones, etc.;

D. Provide dedicated space and equipment for training sessions and demonstrations;

E. Provide security, building maintenance, office management, heating and air-conditioning and parking for County staff, Contractor staff, Subcontractors, Joint Application Development (JAD) session participants and others as appropriate; and

F. Provide adequate electrical lines, isolated grounded data drops, phone ports, LANs and connectivity to the Los Angeles County Enterprise Network (LANet/EN), Internet access, County Intranet access, DPSS e-mail or other e-mail access using software versions which are compatible to County's current usage.

DELIVERABLE 1.3 – PROJECT OFFICE CERTIFICATION

Contractor shall certify to County, in writing on corporate letterhead, signed by Contractor's Project Director, that the Project Office has been established and meets all of the applicable Specifications in accordance with Subtask 1.3 – Establish Project Office.

SUBTASK 1.4 – PROVIDE WEB-SERVER HOSTING

Contractor shall provide web-server hosting for the Production Server ("Web-Server Hosting"). The Web-Server Hosting site for the Production Server shall be located within the forty-eight (48) contiguous United States. Contractor shall be fully responsible for securing and maintaining the Web-Server Hosting site throughout the term of this Agreement. Contractor shall provide necessary and be responsible for all hardware, software and other equipment for Web-Server Hosting.

DELIVERABLE 1.4 – WEB-SERVER HOSTING CERTIFICATION

Contractor shall certify to County, in writing on corporate letterhead, signed by the Contractor's Project Director, that the Web-Server Hosting site for the Production Server has been established and meets all applicable Specifications for the System.

TASK 2 – ANALYZE SYSTEM REQUIREMENTS

Contractor, with assistance and cooperation from County's Project Manager, shall analyze and validate the System Requirements for the implementation of the DMS for the prevention of fraud, including business, operational, functional, technical and other requirements relating to the System Requirements.

This Task includes, but is not limited to, the following:

A. Reviewing the current processes, System Requirements and all other pertinent material, which County may provide, that is related to County's public assistance programs, including the development of measure(s) of risk to distinguish suspicious activities from approved care and services;

B. Conducting clarification sessions with County's staff and County designated key Users of the System to ensure a mutual understanding of the System Requirements;

C. Understanding the business environment, organizational and Project objectives and requesting additional information, as appropriate, to ensure a thorough understanding of the System Requirements;

D. Providing and utilizing an environmentally safe and energy efficient System Hardware, for this Agreement;

E. Assessing the System Environment, security and networking requirements for the implementation of the DMS;

F. Establishing development, test and production environments necessary for the deployment of the DMS;

G. Assessing the System Hardware requirements for the Production Server Web-Server Hosting necessary for the implementation of the DMS;

H. Assessing the System Software for the implementation of the DMS;

I. Establishing a web enabled browser-based access ("Web Services") from County workstations, laptops and other devices;

J. Establishing security standards for the DMS that are consistent with County security requirements (e.g., those documented in the Los Angeles County Board of Supervisors Policy Manual, such as Policy Number 6.100 et seq.);

K. Identifying network security architecture, including approach, which provides single sign-on, minimizes password administration and optimizes security of the DMS data integrity and access;

L. Establishing Business Continuity approach, including the effect on the DMS performance requirements; and

M. Documenting the System general requirements, security requirements, operational requirements, technical requirements and minimum business requirements, including subject areas, information needs, user profiles, IT standards, processing, storage and response time requirements, personnel and resources available, data sources and source systems, data quality issues, security considerations, access profiles, dimensional models, load and update requirements, training needs and System architecture.

County staff will be participating in the System Requirements meetings and will be available to provide feedback to Contractor team during the Assessment and Requirements Document (in this Exhibit A, "A&R Document") review.

DELIVERABLE 2 – ASSESSMENT AND REQUIREMENTS DOCUMENT

Contractor shall provide an Assessment and Requirements Document, prepared by Contractor pursuant to Task 2 – Analyze System Requirements, that will address the specific implementation requirements of the DMS relating to all items listed in such Task 2 – Analyze System Requirements, including System Software, System Hardware, System Network accessibility, System security, data sources, data quality and data integration structure. The A&R Document will serve as the foundation for all Work to be performed by Contractor under the Agreement.

TASK 3 – SYSTEM SETUP

SUBTASK 3.1 – DEVELOP DESIGN SPECIFICATIONS DOCUMENT

Contractor shall work with County staff to create the Project design specifications document ("Design Specifications Document"), based on the requirements specified under Task 2 – Analyze System Requirements, and in the following areas:

1. Data Specifications (input/output sources);
2. Data profiling procedures;
3. Data quality design (standardization/validation/reduplication/matching logic);
4. Geo-coding and address verification procedures;
5. Data model and metadata environment design;
6. Data Repository;
7. Extract, Transform, Load (ETL);
8. Development of Predictive Data Mining Models;
9. Evaluation of Predictive Data Mining Models;
10. Deployment of Predictive Data Mining Models;
11. Deployment of End-User Interfaces;
12. Scheduling and security processes;
13. Technical architecture specification; and
14. Test Plans.

County will be responsible for ensuring that Contractor's team has complete access to appropriate County staff, facilities and information pertaining to data dictionaries, data models, network diagrams, etc. for all data sources, as well as providing feedback to Contractor's team during the Design Specifications Document review.

DELIVERABLE 3.1 – DESIGN SPECIFICATIONS DOCUMENT

Contractor shall submit the project Design Specifications Document, which will document and address the following:

1. All items under Subtask 3.1 – Develop Design Specifications Document and System Requirements specified in Task 2 – Analyze System Requirements;

2. Various data sources and relevant fields;
3. Periodicity of update;
4. Methodology to extract, transform and load the analytic data;
5. Scheduling of jobs to run automatically;
6. Data quality procedures;
7. Data integration procedures;
8. Physical and logical directory path locations;
9. Format library specifications, and update tools;
10. Predictive Data Mining Models;
11. End-User Interfaces; and
12. Security administration elements.

SUBTASK 3.2 – SPECIFY SYSTEM CONFIGURATION

Contractor shall specify and provide County with the recommended configuration Specifications for the System, including System Hardware, System Software, System Network and Third Party Software to be provided by Contractor, which shall be documented and updated in Attachment A.2 (System Configuration).

DELIVERABLE 3.2 – SYSTEM CONFIGURATION PLAN AND CERTIFICATION

Contractor shall provide a plan with the recommended configuration specifications for the System in accordance with Subtask 3.2 – Specify System Configuration. Contractor shall provide to County, in writing on corporate letterhead, signed by the Contractor's Project Director, certification that such System configuration shall meet all of the Specifications for the System, including all System Requirements, in accordance with such Subtask 3.2 – Specify System Configuration.

SUBTASK 3.3 – SETUP SYSTEM HARDWARE

Contractor shall install, configure and test all System Hardware at the Production Server Web-Server Hosting site in accordance with the System configuration Specifications provided by Contractor pursuant to Subtask 3.2 – Specify System Configuration.

DELIVERABLE 3.3 – SYSTEM HARDWARE CERTIFICATION

Contractor shall certify to County, in writing on a corporate letterhead, signed by the Contractor's Project Director, that all System Hardware has been installed, configured and tested, at the Production Server, Web-Server Hosting site and meets all of the Specifications for the System.

TASK 4 – IMPLEMENT SYSTEM SOFTWARE

SUBTASK 4.1 – INSTALL AND CONFIGURE SYSTEM SOFTWARE

Contractor shall install and configure the System Software, including Core Application with all Contractor-developed Baseline Interfaces, if any, and Third Party Software, in accordance with the System Requirements and the Specifications specified herein.

The installation and configuration tasks under this Subtask 4.1 – Install and Configure System Software shall include, without limitation:

1. Review of System Software configuration;
2. Installation of the System Software;
3. Initialization of the foundation repositories;
4. Initialization of the directory profile and hierarchy;
5. Installation of applicable client applications;
6. Configuring the installed System Software, initial security policies, initial environments and initial metadata repositories;
7. Performing validation tests using data selected by Contractor to verify proper functionality; and
8. Providing County's system administrator with installation knowledge transfer (in this Exhibit A "Knowledge Transfer"), describing the basic architecture, configuration and interaction of the System Software.

DELIVERABLE 4.1 – SYSTEM SOFTWARE CERTIFICATION

Contractor shall certify to County, in writing on a corporate letterhead, signed by Contractor's Project Director, that the System Software has been successfully installed and configured in accordance with Subtask 4.1 – Install and Configure System Software and is operating properly and meets all of the Specifications. Contractor shall prepare and deliver to County a certification report that shall include, without limitation, (i) the summary of the System Software installation and configuration process, including Knowledge Transfer, and (ii) the documentation on the System Software setup and basic troubleshooting.

SUBTASK 4.2 – DEVELOP DATA QUALITY AND INTEGRATION SOLUTION

Contractor shall work in conjunction with County staff to develop Data Quality and Integration solution (hereinafter "DQ&I") based on the Design Specifications Document, as agreed upon in Subtask 3.1 – Develop Design Specifications Document and as required hereunder to meet the System Requirements.

Development of the DQ&I Solution shall include without limitation the following activities:

1. Connecting/accessing to all types of data sources that will be available in different data formats including unstructured text documents and internet sources;
2. Defining, implementing and automating periodic extracts from the source systems based on latency requirements;
3. Profiling all data sources to analyze and assess the quality of data by identifying discrepancies and inaccuracies through outlier detection, statistical analysis, data validation, pattern analysis, frequency analysis, relationship analysis, business rule validation and metadata analysis;
4. Verification and cleansing of data based on the profiling results to improve the accuracy of data by correcting errors and discrepancies;
5. Standardizing data by transforming inconsistent data into one common representation by applying customized rules, parsing engines and standardization schemes; transforming data fields using data transformation libraries or user-written codes;

6. De-duplication of data to eliminate duplicate records by applying customizable sophisticated fuzzy matching techniques;
7. Developing match criteria between several data sources without unique identifiers using sophisticated customizable fuzzy matching algorithms and incorporating multinational data phonetics;
8. Creating and implementing rules based consolidation of matched client records to provide consistent information across data sources;
9. Enhancing data by verifying addresses and company names and geocoding all addresses to add X-Y coordinates for mapping purposes and calculating distances;
10. Creating seamless data quality and integration jobs through an interactive data quality and integration development environment utilizing a graphical user interface to automate the data integration process and design logical process workflows;
11. Integrating all data sources prepared by the DQ&I Solution into analytic data tables to be used by predictive data mining models of the fraud platform;
12. Completing social network analysis data preparation;
13. Generating a common knowledge base and documentation for data access, profiling, rules generation, data matching, consolidation and data integration through a common metadata environment; and
14. Managing the metadata environment through a common management interface.

DELIVERABLE 4.2 – DATA QUALITY AND INTEGRATION SOLUTION

Contractor shall work in conjunction with County staff to complete development of the DQ&I Solution based on the Design Specifications Document in accordance with Subtask 4.2 – Develop Data Quality and Integration Solution. Contractor shall also provide to County's Project Manager a written report documenting the results of the successfully developed DQ&I Solution, which will be available for User Acceptance Test (also "UAT"), as specified in Subtask 5.2 – Conduct User Acceptance Test.

SUBTASK 4.3 – DEVELOP PREDICTIVE DATA MINING MODELS

Contractor shall work in conjunction with County staff to develop Predictive Data Mining Models (also "Predictive Models" and "Analytics Models") based on the Design Specifications Document, as agreed upon in Subtask 3.1 – Develop Design Specifications Document and as required hereunder to meet the System Requirements.

Analytic Predictive Models shall include, but not be limited to:

- Predicting new program activities and developing measure(s) of risk to distinguish suspicious activities from approved cases;
- Earlier detection and prediction of new child care fraud referrals for clients and providers based on historical fraud patterns using data mining techniques;
- Identifying program information anomalies based on internal and external data sources; and
- Identifying new fraud rings by assessing colluding relationships within programs.

This task will involve the development of analytic models solution, which will include the following activities:

1. Creating a development environment where Predictive Models will be developed and built;
2. Developing and building Predictive Models using an easy-to-use graphical user interface that utilizes an interactive process flow environment and supports a complete documentation trail;
3. Accessing the analytic data tables to be used by the Predictive Models;
4. Exploring data sources using descriptive statistics with interactive plots;
5. Managing data tables interactively such as filtering outliers and merging datasets;
6. Sampling and partitioning data for the development of Predictive Models;
7. Selecting and transforming variables for Predictive Models;
8. Inputting missing values for selected model variables;
9. Employing customized data preparation and transformation tasks;
10. Employing numerous advanced data mining algorithms for structured data to build Predictive Models;
11. Comparing different predictive models using visual model assessment and validation metrics where predictive results are displayed side-by-side for easy comparison;
12. Determining model assessment and validation criteria for selecting optimal models;
13. Selecting Predictive Models based on assessment and validation criteria;
14. Generating scoring code for embedded deployment in the analytic data tables;
15. Managing the analytic environment through a common metadata environment;
16. Transforming data tables from the analytic data tables into a data structure suitable for service network analysis;
17. Applying analytic methods for identifying high risk elements in the service network of participants and providers;
18. Presenting service network structure in an interactive graphical user interface;
19. Developing text mining methods to incorporate unstructured text sources;
20. Developing forecasting and statistical analysis tools to predict fraud patterns and trends;
21. Querying specific high risk participants and providers based on the outcomes of the analytic models; and
22. Scoring analytic models and generates alerts on high risk participants and providers.

DELIVERABLE 4.3 – PREDICTIVE DATA MINING MODELS

Contractor shall work in conjunction with County staff to complete development of Predictive Data Mining Models in accordance with Subtask 4.3 – Develop Predictive Data Mining Models. Contractor shall also provide to County's Project Manager a written report documenting the results of the successfully Predictive Data Mining Models, which will be available for the UAT, as specified in Subtask 5.2 – Conduct User Acceptance Test.

SUBTASK 4.4 – DEVELOP BASELINE INTERFACES

Contractor shall work in conjunction with County staff to develop end-user Baseline Interfaces (also "Portals") based on the Design Specifications Document, as agreed upon in Subtask 3.1 – Develop Design Specifications Document and as required hereunder to meet the System Requirements.

Development of the Baseline Interfaces will include the following activities:

1. Developing the web-based end user interface to surface the results of the fraud analytics in various ways including:
   a. Information portal,
   b. Dashboards,
   c. Scorecards,
   d. Reporting interfaces,
   e. OLAP cubes,
   f. Data visualization interfaces, and
   g. Network visualization interfaces;
2. Integrating a case management interface to organize and collect information about fraud cases under investigation; and
3. Developing an Interface to keep the investigation history of all cases that can be queried easily by end-users.

DELIVERABLE 4.4 – BASELINE INTERFACES

Contractor shall work in conjunction with County staff to complete development of end-user Baseline Interfaces in accordance with Subtask 4.4 – Develop Baseline Interfaces. Contractor shall also provide to County's Project Manager a written report documenting the results of the successfully development of the end-user Baseline Interfaces, which will be available for the UAT, as specified in Subtask 5.2 – Conduct User Acceptance Test.

SUBTASK 4.5 – DEPLOY FRAUD SOLUTION PLATFORM

Contractor shall work in conjunction with County staff to deploy the fraud solution platform based on the Design Specifications Document, as agreed upon in Subtask 3.1 – Develop Design Specifications Document and as required hereunder to meet System Requirements.

Deployment of fraud solution platform will include the following activities:

1. Deployment of the fraud detection platform composed of all fraud solutions in a Test Environment;
2. Configuration of the management of all Predictive Models using a model management interface;
3. Configuration of System administration and access restrictions to analytic data tables for various user groups;
4. Configuration of the work flow environments for various user groups;
5. Presentation of alerts, risk scores, service networks and case details to end users in an integrated graphical user interface; and

6. System Access shall be provided on a 24 hours per day, 7 days per week, 365/366 days per year basis for the term of this Agreement.

DELIVERABLE 4.5 – DEPLOYED FRAUD SOLUTION PLATFORM

Contractor shall work in conjunction with County staff to successfully complete deployment and configuration of the fraud solution platform in accordance with Subtask 4.5 – Deploy Fraud Solution Platform.

TASK 5 – SYSTEM TESTING

This Task 5 – System Testing describes the System Tests to be conducted by Contractor, including the System Integration Test (also "SIT") and the User Acceptance Test ("UAT"). Each System Test shall be conducted at the conclusion of each major set of testing activities.

Contractor shall perform the following Work relating to System Tests during this Task 5 – System Testing:

A. Creating a Test Environment to execute all stages of System testing, including the SIT and the UAT;

B. Developing test plans for System Tests ("Test Plan(s)") and procedures for all stages of System Testing, including System Integration Test and UAT, that ensures all System Requirements and Specifications are being tested and verified;

C. Conducting the UAT to test all stages of System Implementation, evaluating results, correcting problems and re-testing; and

D. Developing, maintaining and executing the System, as applicable, at all stages of System Testing.

SUBTASK 5.1 – CONDUCT SYSTEM INTEGRATION TEST

System Integration Test ensures that all facets of the DMS work together as a cohesive whole. At the conclusion of this Subtask 5.1 – Conduct System Integration Test, Contractor shall have verified that the complete DMS operates in compliance with the System Requirements and the Specifications.

Contractor shall designate a test group to perform all testing. This test group shall include functional, operational, technical and training representatives, as needed, and may include County staff, as approved by County's Project Director.

Contractor shall develop the Test Plan in accordance with Deliverable 5.1.1 – System Integration Test Plan, which shall contain elements specific to the System Integration Test, including:

1. Thorough testing of all DMS Components;
2. Thorough testing of all DMS Interfaces, both internal and external, including host-to-host communications and end-user Baseline Interfaces; and
3. Verification of the correct generation of all errors messages, warnings or other messages as designed.

Contractor shall ensure that all processing environments utilized for a given test shall be restored to its original condition prior to the start of the given test, including all System

files and data that may be affected or changed during execution of the test. Contractor shall complete the System Integration Test performing the following tasks:

1. Performance and Load Testing – Contractor shall demonstrate that the DMS can successfully meet the System Performance Requirements under full load conditions.
2. Security Testing – Contractor shall demonstrate that the DMS can successfully meet all County security requirements.
3. Business Continuity testing – Contractor shall demonstrate that the DMS can successfully continue to operate as required by the Business Continuity provision of Exhibit D (System Maintenance).
4. Data Interface Testing – Contractor shall demonstrate that all Interfaces are working properly and adhere to the System Requirements and Specifications.
5. Cycle Testing – Contractor shall conduct cycle tests where each cycle processing is dependent upon previous processing in the DMS flow. Contractor shall conduct cycle tests to simulate the DMS operation in Production Use in accordance with the System Requirements and Specifications.
6. Reports Testing – Contractor shall verify the correct layouts, format and distribution of all DMS generated reports with supporting procedures.
7. End User Interfaces – Contractor shall demonstrate that end-user Baseline Interface meet the System Requirements and the Specifications.

At the end of System Integration Test, Contractor shall prepare Deliverable 5.1.2 – System Integration Test Results, summarizing the activities, types of tests, and test results. Deliverable 5.1.2 – System Integration Test Results shall include all technical materials, documentation and DMS generated output as required by County. Contractor shall present to County evidence that all Subtask 5.1 – Conduct System Integration Test related requirements have been met. Contractor shall prepare supporting documentation, conduct a review at a meeting with County and provide any appropriate demonstration(s) of DMS capabilities, including County participation in or observation of tests.

Contractor shall correct all Deficiencies prior to the start of Subtask 5.2 – Conduct User Acceptance Test, provided that County's Project Director has approved Deliverable 5.1.2 – System Integration Test Results.

DELIVERABLE 5.1.1 – SYSTEM INTEGRATION TEST PLAN

Contractor shall provide a Test Plan for System Integration Test, which shall include:

a. Scheduling and resources;

b. Tools, environments and controls to be used during the System Integration Test;

c. Entrance and exit criteria for System Integration Test;

d. Metrics to be used to evaluate System Integration Test results;

e. Name, description, objectives, intended audience and references of each specific test, including automated regression test;

f. Traceability of System Integration Test procedures to requirement(s) being tested;

g. Assumptions, issues and constraints; and

h. Instructions for conducting System Integration Test, including:

i. How to set up the test preconditions (e.g., configure/initialize the test environment),

i. How to perform the test steps,

ii. How to determine and document the actual test post-conditions,

iii. How to compare the actual and expected results from the test, and

iv. How to report the results of the associated test.

DELIVERABLE 5.1.2 – SYSTEM INTEGRATION TEST RESULTS

Contractor shall provide the System Integration Test Results summary report, which summarizes all activities, types of tests and results of the System Integration Test to allow County to assess the System Integration Test outcome, as further specified in and in accordance with Subtask 5.1 – Conduct System Integration Test.

This report shall include without limitation:

a. Summary of all tests conducted during System Integration Test;

b. Summary of results;

c. Summary of each Deficiency identified by Contractor or County, its corrective action status, date of completion of each correction and date of County's Project Director's approval of each correction; and

d. Justification for moving to the UAT.

County's Project Director's approval of this Deliverable 5.1.2 – System Integration Test Results is required prior to Contractor proceeding to Subtask 5.2 – Conduct User Acceptance Test.

SUBTASK 5.2 – CONDUCT USER ACCEPTANCE TEST

Contractor and County shall perform the System testing specified in the PWP as a User Acceptance Test and contained in this Subtask 5.2 – Conduct User Acceptance Test, including testing of System validation functionality. County's approval shall be required before a UAT is deemed complete.

County, with assistance from Contractor, will perform the UAT to verify that each System Component functions according to the System Requirements and the Specifications.

Upon completion of the UAT, County shall report any identified Deficiencies to Contractor. Contractor shall correct any Deficiencies revealed during the UAT and install corrections into the System. County shall verify that the corrected System functionality performs in accordance with the System Requirements and the Specifications. The UAT shall end when all Deficiencies have been resolved, and County has documented successful completion of the UAT.

The UAT shall include without limitation the following activities:

1. Development of limited System documentation/completeness;
2. Ensuring user interaction/comprehension level;

3. Ensuring that accurate data is being captured;
4. Ensuring that optimal solutions for fraud detection are developed; and
5. Ensuring that security plan is operational.

The UAT is a major Project milestone during which County, with the assistance of Contractor, comprehensively will test the DMS against the Specifications and the System Requirements to determine if the DMS is ready for System Implementation.

Contractor shall provide a recommended UAT Test Plan to include:

1. A description of proposed tests to be conducted during the UAT;
2. A description of tools, environments and controls to be used during the UAT;
3. A proposed test schedule;
4. A description of Contractor and County roles, responsibilities and resources needed to perform the UAT;
5. A proposed training plan and schedule for the UAT team;
6. A process for UAT problem reporting, tracking and resolution process;
7. A proposed approach for the correction of any Deficiencies identified by Contractor or County during the UAT; and
8. Execution of the Business Continuity Plan.

Contractor shall provide the above to County under Deliverable 5.2.1 – User Acceptance Test Plan.

Contractor shall provide tools, environment and controls to be used during the UAT. Contractor shall assist County in developing the UAT Test Plan to be prepared by County.

During the UAT, Contractor shall provide support to County, including configuration of the Test Environment, training on testing tools or processes for County UAT team, management of test results and performance of any corrective actions in the case of identified Deficiencies by Contractor or County. Contractor shall be responsible for installing any special software and/or making any other needed changes to ensure the DMS is ready for the UAT. Contractor shall provide any necessary tools to simulate DMS performance under operational conditions. County will record all UAT results, and Contractor shall prepare the reports that include a record of all successes, failures, and corrective actions taken by Contractor.

Contractor shall provide Deliverable 5.2.2 – User Acceptance Test Status Reports, which summarizes all aspects of the UAT performed during that week, including any Deficiencies identified by Contractor or County, those corrected and still outstanding. Reports shall be due every Tuesday for the entire period of the UAT. Contractor shall document the review and acceptance of test materials, activities and results at weekly meetings with County.

County will notify Contractor of any Deficiencies identified by County during the UAT. For each Deficiency identified by Contractor or County, Contractor shall provide a corrective action plan, which shall include:

1. Description of each Deficiency and its root cause;

2. Business processes, DMS functions and/or Interfaces impacted;
3. Description of all potential risks to the DMS, including System Implementation and mitigation strategy for the DMS;
4. Corrective action plan, test scenarios and implementation approach;
5. Schedule for completion of each corrective action and resources required or assigned;
6. Status of each corrective action; and
7. Approval procedures that require County's Project Director's approval of each correction.

Contractor shall schedule and participate in a meeting with County to review the results of the UAT and determine whether Contractor has met all County requirements for DMS design and development, including the System Requirements and the Specifications. UAT shall include execution of the Business Continuity Plan.

Contractor shall provide Deliverable 5.2.3 – User Acceptance Test Certification to County certifying that all known Deficiencies identified by Contractor or County have been corrected by Contractor, and that all corrections have been approved by County's Project Director. County's Project Director's approval of Deliverable 5.2.3 – User Acceptance Test Certification will indicate the completion of Subtask 5.2 – Conduct User Acceptance Test.

DELIVERABLE 5.2.1 – USER ACCEPTANCE TEST PLAN

Contractor shall provide a recommended UAT Test Plan in accordance with Subtask 5.2 – Conduct User Acceptance Test, which shall include:

a. Description of proposed tests to be conducted during the UAT;
b. Tools, environments and controls to be used during the UAT;
c. Proposed test schedule;
d. Contractor roles, responsibilities and resources in performing the UAT;
e. Training plan and schedule for the UAT team;
f. Deficiency reporting, tracking and correction process; and
g. Approach to correcting Deficiencies identified during the UAT.

DELIVERABLE 5.2.2 – USER ACCEPTANCE TEST STATUS REPORTS

Contractor shall provide User Acceptance Test weekly Status Reports throughout the UAT period in accordance with Subtask 5.2 – Conduct User Acceptance Test. Each such Status Report shall include:

a. Summary of all tests conducted during the UAT;
b. Summary of test results;
c. Summary of each Deficiency identified by Contractor or County, including for each such Deficiency:

i. Description of each Deficiency and its root cause,

ii. Business processes, DMS functions and/or Interfaces impacted,

iii. Description of all potential risks to the DMS or System Implementation and mitigation strategy for the DMS,

iv. Corrective action plan, test scenarios and implementation approach,

v. Schedule for completion of each corrective action and resources required/assigned,

vi. Status of each corrective action,

vii. Date of completion of each correction, and

viii. Date of County's Project Director's approval of each correction; and

ix. Documentation of the review of the previous week's report with County, including agenda, attendees, action items and supporting documentation.

DELIVERABLE 5.2.3 – USER ACCEPTANCE TEST CERTIFICATION

Contractor shall provide in accordance with Subtask 5.2 – Conduct User Acceptance Test a User Acceptance Test Certification of successful completion to County within ten (10) days after successful completion of the UAT, certifying that (i) all requirements traceability to all tests and test results have been verified, (ii) all Deficiencies identified by Contractor or County have been corrected by Contractor (iii) all corrections have been approved by County's Project Director, (iv) test results of the Business Continuity Plan, and (v) all other UAT–related activities have been completed.

Contractor shall also summarize all actions taken during UAT to correct each Deficiency identified by Contractor or County. The summary shall include for each Deficiency:

a. Description of each Deficiency and its root cause;

b. Business processes, DMS functions and/or Interfaces impacted;

c. Description of all potential risks to the DMS, System Implementation, and mitigation strategy for the DMS;

d. Corrective action plan, test scenarios and implementation approach;

e. Schedule for completion of each corrective action and resources required/assigned;

f. Status of each corrective action;

g. Date of completion of each correction; and

h. Date of County's Project Director's approval of each correction.

County Project Director's approval of this Deliverable 5.2.3 – User Acceptance Test Certification shall indicate the completion of Subtask 5.2 – Conduct User Acceptance Test.

TASK 6 – FINAL ACCEPTANCE

SUBTASK 6.1 – TRANSITION TO PRODUCTION ENVIRONMENT

Following the completion of the UAT and County's approval that the System meets the System Requirements and the Specifications, Contractor shall transition the System to the Production Environment by performing any tasks under Task 3 – System Setup, Task 4 – Implement System Software and Task 5 – System Testing, as applicable, in the Production Environment.

DELIVERABLE 6.1 – SYSTEM PRODUCTION USE

The System shall achieve Go-Live and be ready for Production Use when Contractor provides to County, and County approves, documented results certifying that the System was successfully transition to the Production Environment pursuant to Subtask 6.1 – Transition to Production Environment.

SUBTASK 6.2 – CONDUCT PERFORMANCE VERIFICATION

Following successful transitioning of the System to the Production Environment, County will monitor for Deficiencies and Contractor shall maintain the System in Production Use for a minimum of ninety (90) days. Upon occurrence of a Deficiency, Contractor shall correct such Deficiencies by re-performance pursuant to, and subject to the provisions of the body of the Agreement. The System shall achieve Final Acceptance if and when all Deficiencies identified during the ninety (90) day period have been corrected, even if the last correction occurs after such ninety (90) day period.

Commencing with Final Acceptance and continuing through the Warranty Period, any problems encountered by County in the use of the System shall be subject to the applicable System Maintenance terms under the Agreement.

DELIVERABLE 6.2.1 – PERFORMANCE VERIFICATION REPORT

Contractor shall provide to County the Performance Verification report, including supporting Documentation that the DMS complies with the System Requirements and the Specifications, including all System Performance Requirements, under full production load. Contractor shall conduct a review of Deliverable 6.2.1 – Performance Verification Report with County at a meeting scheduled by County and provide any County-requested demonstrations of the DMS including:

a. Summary of activities, results and outcomes;

b. Summary of each Deficiency identified by Contractor or County. The summary shall include for each Deficiency:

c. Description of each Deficiency and its root cause,

d. Business processes, DMS functions and/or Interfaces impacted,

e. Description of all potential risks to the DMS and mitigation strategy for the DMS,

f. Corrective action plan, test scenarios and implementation approach,

g. Schedule for completion of each corrective action and resources required or assigned,

h. Status of each corrective action,

i. Date of completion of each correction, and

j. Date of County's Project Director's approval of each correction;

k. Summary of lessons learned; and

l. Recommendations for any improvements to the DMS.

DELIVERABLE 6.2.2 – FINAL ACCEPTANCE

The System shall achieve Final Acceptance and shall be ready for Production Use by County in the Production Environment upon County's acceptance that all Deficiencies discovered during the ninety (90) day period have been corrected, even if such correction occurred beyond ninety (90) day period. Contractor shall provide the Certification of Performance Verification and Final Acceptance, certifying that the DMS complies with the System Requirements and the Specifications and documenting the review with County under Deliverable 6.2.1 – Performance Verification Report, including agenda, attendees, action items, and supporting documentation.

TASK 7 – TRAINING

SUBTASK 7.1 – PROVIDE TRAINING

Contractor shall prepare and implement a comprehensive System Training program, including any necessary training materials. The training program shall include training courses addressing project team training, end-user training and train-the-trainers for County's project team, end-users and trainers.

As part of System Training, Contractor shall provide the designated County groups with extensive working knowledge of the System Software capabilities, as well as training in the administration of the System Software. Training materials will only be provided to those County personnel attending the Training sessions.

County staff shall be responsible for system administration and on-going training to support the System. At the end of training, County's technical staff shall be able to do the following:

1. Understand the System and services methodology;
2. Configure the System;
3. Operate the System;
4. Manage the metadata environment;
5. Develop and run data quality solutions – profiling / transforming / matching / standardizing / un-duplicating / geocoding data sources;
6. Perform data integration tasks — ETL;
7. Run and evaluate Predictive Data Mining Models;
8. Run and evaluate service network analysis;
9. Manage data mining models;
10. Create and modify reports;
11. Modify end-user and other Baseline Interfaces; and
12. Administer the System, including setting up user security access profiles.

DELIVERABLE 7.1 – TRAINED COUNTY STAFF

For the purpose of conducting System Training, Contractor shall develop a detailed plan for training of County staff on the use of the System. Contractor shall deliver training classes and training materials consistent with the classes described in County-approved plan and certify in writing that all System Training as described in Subtask 7.1 – Provide Training has been successfully completed.

TASK 8 – SYSTEM DOCUMENTATION

SUBTASK 8.1 – PROVIDE SYSTEM DOCUMENTATION

Contractor shall prepare and provide County with System and user reference Documentation for the fraud solution platform and solutions utilizing the data mining procedures provided by Contractor under this Agreement. This Documentation shall provide County staff with a comprehensive reference source of System functionality, fraud solution components and all System Maintenance activities listed in Task 9 – System Maintenance.

DELIVERABLE 8.1 – SYSTEM DOCUMENTATION

Contractor shall provide County with Knowledge Transfer Documentation in accordance with Subtask 8.1 – Provide System Documentation. Contractor shall deliver this Documentation in an electronic format as required by County.

TASK 9 – SYSTEM MAINTENANCE

SUBTASK 9.1 – PROVIDE SYSTEM MAINTENANCE PLAN

Contractor shall work in conjunction with County staff to develop a plan for System Maintenance, including Maintenance Services and Support Services (in this Exhibit A "System Maintenance Plan"), covering ongoing operations, maintenance, support and administration of the System in accordance with Exhibit D (System Maintenance) to the Agreement. The System Maintenance Plan shall address, at a minimum, the following:

1. Backup – The analytic data and metadata environments should be backed up according to the post-deployment plan document;
2. Monitoring the fraud prevention platform environment; including job schedules, growth, back-up, restore, and user registration and utilization; acting as appropriate to maintain a stable, functioning environment for the fraud solution platform;
3. Measuring, managing and improving data quality;
4. Maintaining the analytic data tables;
5. Managing Predictive Model effectiveness by monitoring and assessing the performance of developed models in order to make adjustments continuously in response to changing behavior of parties committing fraud, or as a result of the availability of new information;
6. Providing a Business Continuity Plan pursuant to the Business Continuity Plan provisions of Exhibit D (System Maintenance);
7. Providing Change Management Plan;
8. Providing Performance Management Plan; and

9. Providing Project reporting plan, including schedule and structure of monthly status meetings and reports.

DELIVERABLE 9.1 – SYSTEM MAINTENANCE PLAN

Contractor shall prepare and provide a System Maintenance plan that will address the specific Maintenance Services and Support Services requirements of the DMS in accordance with and relating to all items listed in Subtask 9.1 – Provide System Maintenance Plan, including but not limited to monitoring, maintaining and managing and backing-up the fraud platform environment.

SUBTASK 9.2 – PROVIDE SYSTEM MAINTENANCE

Contractor shall provide System Maintenance, which shall include all goods and services necessary to manage, operate and support the DMS to comply with the System Requirements and Specifications and shall be provided during Support Hours for the term of the Agreement, as further specified in Exhibit D (System Maintenance). System Maintenance shall include Maintenance Services, consisting of Updates, as well as Support Services, which include, but are not limited to, help-desk support during Support Hours ("Help Desk"), as requested or required by County.

The System Maintenance services shall include, without limitation:

1. Support for all System Hardware necessary for the DMS;
2. Support of security and network activity and maintenance of Web Services;
3. Support for all System Software issues/problems;
4. Support for all System Software upgrades, updates, new releases, etc.;
5. Support for all System Software fixes, patches, etc.; and
6. Access to knowledgeable Contractor personnel (i.e., Help Desk) who can answer questions on the use of the System or provide analysis on solutions to operational problems, which County may encounter during Support Hours.

DELIVERABLE 9.2 – SYSTEM MAINTENANCE

Contractor shall provide System Maintenance in accordance with the terms of Subtask 9.2 – Provide System Maintenance, Exhibit D (System Maintenance) and the Base Agreement, which shall include, but not be limited to:

1. Providing and maintaining System Hardware, as appropriate;
2. Monitoring of security and network activity, and maintenance of Web Services;
3. Providing and maintaining System Software, as appropriate;
4. Providing Updates to System Software, as appropriate; and
5. Responding to Support Services requests made by County.

SUBTASK 9.3 – PROVIDE DMS TRANSITION

SUBTASK 9.3.1 – PROVIDE DMS TRANSITION PLAN

Contractor shall provide to County a plan for a smooth transition or transfer of the DMS, System Data and the DMS repository from Contractor's environment to the new environment of County or County-selected vendor ("Transition Plan") within thirty (30) days of completing Deliverable 6.2.2 – Final Acceptance. Contractor shall maintain and

update the Transition Plan annually for County's Project Director's approval and be able to provide an updated copy within thirty (30) days of County's request. Contractor shall keep the most current version of the Transition Plan in the DMS repository throughout the term of the Agreement. All work for the DMS transition shall be provided by Contractor in accordance with Exhibit B (Schedule of Payments). The Transition Plan shall, at a minimum, include:

1. Identification of resource requirements needed to transition, host and operate the DMS at County or County-selected vendor data center(s);
2. Identification of transition team roles and responsibilities;
3. Proposed timeline for completion of transition activities;
4. Training plan and training of County-specified persons for the transition of the DMS and System Data; and
5. Information and supporting documentation, as required by County, related to volumes, file sizes and growth trends.

DELIVERABLE 9.3.1 – DMS TRANSITION PLAN

Contractor shall provide to County and update the DMS Transition Plan in accordance with Subtask 9.3 – Provide DMS Transition.

SUBTASK 9.3.2 – PROVIDE DMS TRANSITION SUPPORT

Upon County's election to transition or transfer the DMS from Contractor's environment to the new environment of County or County-selected vendor, Contractor shall provide to County support to ensure success of such transition or transfer (hereinafter "Transition Support" or "DMS Transition Support") in accordance with the Transition Plan, as it may need to be updated. The DMS Transition Support shall be provided to County as Optional Work in the form of Professional Services (as described in Task 10 – Optional Work) in accordance with a mutually agreed upon Change Order and shall not exceed the Maximum Fixed Price allocated for the DMS Transition Support in Schedule B.1 (Optional Work).

As part of the DMS Transition Support, Contractor shall:

1. Update the DMS Transition Plan in accordance with the latest System Environment and the agreed upon Change Order;
2. Training County-specified personnel as specified in the Transition Plan;
3. Provide to County information and supporting documentation, as required by County, related to volumes, file sizes and growth trends;
4. Assist County the period of the DMS transition; and
5. Provide such other services as are necessary for the successful transition or transfer of the DMS from Contractor's environment to the new environment of County or County-selected vendor.

Contractor shall commence Transition Support at least ninety (90) days prior to expiration or termination of the Agreement or as otherwise specified in the applicable Change Order.

DELIVERABLE 9.3.2 – DMS TRANSITION SUPPORT

Upon County's election and mutual agreement to a Change Order, Contractor shall provide Transition Support in accordance with Subtask 9.3.2 – Provide DMS Transition Support.

TASK 10 – OPTIONAL WORK

SUBTASK 10.1 – PROVIDE SOFTWARE ENHANCEMENTS

Following Performance Verification and Final Acceptance, County may from time to time, during the term of this Agreement, submit to Contractor for Contractor's review written requests for Software Enhancements using Pool Dollars, including Customizations and/or Additional Software, for System enhancements not reflected in the System Requirements, including, but not limited to, addition, deletion or modification of the Application Software functions, Customizations, changes to current System outputs, new and modified reports, new screens and Additional Interfaces. In response to County's request, Contractor shall submit to County for approval a System Design Report (in this Exhibit A, "SDR") describing the particular Software Enhancements and a not-to-exceed Maximum Fixed Price to provide such Software Enhancements, calculated based on the Fixed Hourly Rate and other pricing terms set forth in the Schedule of Payments and elsewhere in the Agreement. County and Contractor shall agree on the Change Order developed using the SDR, which shall at a minimum include the tasks and deliverables to be performed, System Tests and warranty provisions, as applicable, and the Maximum Fixed Price for such Software Enhancements.

Any enhancements and/or modifications to System Requirements resulting from Software Enhancements shall be incorporated into, and become part of, the System Requirements. All Software Enhancements, once completed, shall become part of the System and shall not increase the Maintenance Fees allocated for the term of the Agreement.

DELIVERABLE 10.1 – SOFTWARE ENHANCEMENTS

Upon County's request for, and Contractor's agreement to provide, Software Enhancements, Contractor shall complete, test and install all Software Enhancements in accordance with Subtask 10.1 – Provide Software Enhancements and certify in writing that Software Enhancements meet the requirements of the applicable Change Order, including any required System Tests and System Requirements.

SUBTASK 10.2 – PROVIDE PROFESSIONAL SERVICES

County may from time to time, during the term of this Agreement, submit to Contractor for Contractor's review written requests for Professional Services using Pool Dollars, including Consulting Services and/or Additional Training, for services not included in System Implementation. In response to County's request, Contractor shall submit to County for approval a System Design Report (SDR) describing the particular Professional Services and a not-to-exceed Maximum Fixed Price to provide such Professional Services, calculated based on the Fixed Hourly Rate and other pricing terms set forth in the Schedule of Payments and elsewhere in the Agreement. County and Contractor shall agree on the Change Order developed using the SDR, which shall at a minimum include the tasks and deliverables to be performed, System Tests, standard of

services and warranty provisions, as applicable, and the Maximum Fixed Price for such Professional Services.

Any enhancements and/or modifications to System Requirements resulting from Professional Services shall be incorporated into, and become part of, the System Requirements. Any products of Professional Services, once completed, shall become part of the System and shall not increase the Maintenance Fees allocated for the term of the Agreement.

DELIVERABLE 10.2 – PROFESSIONAL SERVICES

Upon County's request for, and Contractor's agreement to provide, Professional Services, Contractor shall complete provide Professional Services in accordance with Subtask 10.2 – Provide Professional Services and certify in writing that the Professional Services meet the requirements of the applicable Change Order.

TASK 11 – IHSS PILOT

Upon County's notice to proceed, Contractor shall develop and implement the IHSS Pilot at no cost to County as provided in this TASK 11 – IHSS Pilot below. The purpose of the IHSS Pilot is to demonstrate the feasibility and benefits of using data mining technology for screening potential fraud. Working with the data sets prepared by County staff, Contractor shall apply advanced analytical models to assess the degree to which statistical analysis can reliably identify the characteristics of fraud. Target measures will include current indicators of potential fraud such as a fraud referral, current rule-based algorithms, and actual criminal charges and convictions. The outcome of the IHSS Pilot will be a set of preliminary predictive models that can be used by County to detect potential fraud, as well as measures of the associated cost avoidance resulting from use of those models.

The start and end dates pertaining to the IHSS Pilot shall be mutually agreed upon by the parties following execution of Amendment Number One to the Agreement. Contractor shall, to the extent possible, utilize the existing DMS Project resources for the IHSS Pilot. For purposes of clarity, the sole deliverable for the IHSS Pilot shall be this TASK 11 – IHSS Pilot, including Deliverable 11.1 – IHSS Pilot.

SUBTASK 11.1 – IMPLEMENT IHSS PILOT

Contractor's data mining Fraud Framework consists of software that is specifically designed to detect collusive patterns in entitlement programs, including the following:

- Ability to integrate data that requires highly-specific, cell-level validation
- Statistical models for assessing relative risk
- Reporting structures
- Configurable interface

Contractor shall use its Fraud Framework using the available data to assist County by doing the following:

- Scoring provider / consumer relationships for risk, based on irregularities
- Developing a more timely reporting system that draws investigators' attention to the most relevant risk factors for a particular case

- Integrating county and state data to provide a richer, clearer picture of a particular consumer / provider relationship
- Providing a framework that allows investigators to act on professional expertise, hunches, and other relevant leads in investigating provider / consumer relationships

Contractor shall implement the IHSS Pilot for County's Anti-Fraud Plan that will be configured to meet the needs of the social workers and investigators using the solution. The IHSS Pilot will include color-coded indicators of risk, pull-down menus for filtering data and search boxes for finding specific cases or groups of cases that match a particular pattern.

The IHSS Pilot reporting system will provide drillable access from many different vantage points:

- Working upward from individual cases or downward from case managers
- Working sideways through the data by provider or consumer
- Working across time, looking at any historical time period and into the future, based on predictive models of the future of provider / consumer relationships

The reporting tools also support point-and-click report generation for permanent documentation (in PDF format), as well as e-mail notification to investigators or case managers of sudden changes in risk status for a provider / consumer relationship.

Contractor's Fraud Framework analytical models will includes measures of the "red flags" called for in the Plan, identification of "Error Prone Profiles (EPP)", and data mining models for "evidence or characteristics of potential program violation". Contractor shall measure such risks based on the following:

- Provider level
- Provider / consumer relationship type
- Location of care and characteristics of the home (e.g., number in the household, residence type, living arrangement, or rooms)
- Disability category of the consumer (using functional index, SSI eligibility and other data)

As part of the collaborative effort in the IHSS Pilot, County staff will gather and prepare the necessary data as requested by Contractor. Such data will be provided to Contractor using a secure process that is consistent with other fraud projects currently underway with County. For the IHSS Pilot, County staff will provide such data in the data set format requested by Contractor, with appropriate key or ID match fields available to match the data sets for analytical purposes. To integrate these data, County will apply similar identity resolution processes and procedures that have proved effective with DMS Project for the CalWORKs program.

Table 1: Data for IHSS Pilot

DATA SOURCE	INFORMATION	QUANTITY	AVAILABILITY
CMIPS	Consumer and provider information and identifiers, including functional scores for consumers and characteristics of the home (e.g., household composition, residence type, living arrangement, or rooms)	All data back to 2002, including current data collected after the rules changed in 2009	Currently available
LEADER Fraud Cluster Data	All fraud activities in public assistance programs	More than 1M records going back to 1998	Currently available
IHSS Fraud Log	Case names, dates, investigation results, and amounts lost for 1,300 cases and, since August 2009, the reason for the referral	Data back to 2005	Currently available
State ITS file	Additional fraud case data with details on investigations	Equals number of cases prosecuted	State request submitted
Death Files	Identification of deceased individuals	Equals number of individuals diseased	Available October 2010
LEADER tables	Aid eligibility, income and personal identifiers, addresses, and relationships	Past three years	Currently available
MEDS	The MEDS data is the daily and quarterly interface between LEADER and MEDS. LEADER sends a file with all records to MEDS. MEDS matches the records and sends back a file to LEADER.		Currently in LEADER

DELIVERABLE 11.1 – IHSS PILOT

Using the data provided by County staff, Contractor shall apply advanced analytical and data mining techniques to develop models that can assess potential fraud risk as provided in Subtask 11.1 – Implement IHSS Pilot. The deliverable for the IHSS Pilot will consist of a mid-term presentation on the progress attained on the IHSS Pilot, as agreed to by the parties, and a final report documenting the potential applicability of one (1) or more of models described below in support of the three (3) success criteria listed below. Following delivery of the final report, Contractor shall conduct an oral presentation to County on the findings of the final report.

TABLE 2: Analyses for IHSS Pilot

MODEL	DESCRIPTION
Rule-based Models	The State currently has business rules used for the six major reports. Contractor shall replicate those, and any other current rules, and add additional data to those rules to determine the degree to which data mining can provide a clearer view of risk.
Outlier Models	Contractor shall model expected distributions of key metrics for consumer / provider pairs and assist in determining appropriate cut scores or levels for measuring unusual patterns.
Referral Prediction Model(s)	Contractor shall use available data and the referral target history to build statistical models to predict referrals.

Other analyses may also be conducted to evaluate the effectiveness of the current Death Match reporting system, using historical information to determine the amount of money that could have been saved had a more timely reporting system been in place.

There are two primary success criteria for this IHSS Pilot. First, Contractor shall work with County to identify the potential cost savings that would result from applying the three kinds of statistical models outlined in Table 2. Second, in support of the first goal, Contractor shall demonstrate how data mining methods can provide better models of fraud. Contractor shall demonstrate the benefits of using more precise statistical models of fraud risk by showing how improvements to current rule-based algorithms, outlier models, and referral prediction models can allow County to focus investigatory resources, reducing false positives and drawing more attention to cases more likely to involve fraud.

To quantify the success of the IHSS Pilot in terms of total annual gross cost avoidance, Contractor and County personnel will work together in order to determine the following:

1. The value of new, previously undetected fraud referrals.
2. The value of detecting currently known fraud referrals earlier (that is, prior to the date of referral to County).
3. The value of any efficiency gains from using the solution.

The goal of this IHSS Pilot is to provide County with some meaningful information and proof of the value that County will recognize if County elects to deploy the IHSS Solution more fully and across a wider set of data assets.

TASK 12 – IHSS PROJECT

SUBTASK 12.1 – MIGRATE DMS TO NEW PLATFORM

Contractor shall migrate the DMS, including all data application files, from the existing software platform to the platform required for the Implementation of the IHSS Project.

Contractor shall test and verify that the DMS platform, including all data application files, has been successfully migrated and is ready for Production Use.

DELIVERABLE 12.1 – DMS MIGRATED TO NEW PLATFORM

Contractor shall validate and certify in writing, to the satisfaction of County, successful migration of the DMS from the existing to the new software platform in accordance with Subtask 12.1 – Migrate DMS to New Platform.

SUBTASK 12.2 – IMPLEMENT IHSS PROJECT

Contractor shall implement the IHSS Project by performing and completing all Tasks and Subtasks and successfully providing all Deliverables under Tasks 1 – 9 in this Exhibit A, including, but not limited to, providing the applicable Project administration, System setup and implementation, conducting System Tests, achieving Go-Live and Final Acceptance, conducting Training, providing Documentation and performing System Maintenance.

DELIVERABLE 12.2 – IHSS PROJECT IMPLEMENTED

The IHSS Project shall be successfully implemented when the System, including the IHSS Project, achieves Final Acceptance and is ready for Production Use by County in the Production Environment, upon completion by Contractor and County's Acceptance of all Deliverables under Tasks 1 – 9 under this Exhibit A as they apply to the IHSS Project, including Deliverable 6.2.2 – Final Acceptance, all in accordance with Deliverable 12.2 – IHSS Project Implemented.

DATA MINING SOLUTION (DMS)

FOR

CHILD CARE FRAUD DETECTION

ATTACHMENT A.1 – SYSTEM REQUIREMENTS

Revised Under Amendment Number Two

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1. OVERVIEW OF SYSTEM REQUIREMENTS

This statement of System Requirements outlines the DMS overall business and technical requirements. Each of the functional and technical requirements listed shall support all of the DMS business processes.

The requirements below include the System's overall functional capabilities that the DMS shall support. At a minimum, these requirements will be used to track, test and monitor the overall System capabilities that shall consistently be met throughout the term of this Agreement.

Other systems and functional capabilities that are considered by County as enhancements or improvements to the System shall be addressed by Contractor at County's discretion during the maintenance and enhancement phases of this Agreement.

1.1 CONSTRUCTION OF TERMS

In construing the terms of this Attachment A.1, the following rules shall apply:

A. Singular nouns, and phrases incorporating them (e.g., referring to objects, persons, events, or otherwise), shall be construed to also include the plural except where reference to a single item is implied or necessary pursuant to the context of the word or phrase in question and except as otherwise expressly stated for particular defined terms set forth in Paragraph 1.3 (Definitions) of the Base Agreement. Plural nouns, and phrases incorporating them, shall be construed to also include the singular except where reference to multiple items is implied or necessary pursuant to the context of the word or phrase in question and except as otherwise expressly stated for particular defined terms set forth in Paragraph 1.3 (Definitions) of the Base Agreement.

B. Any use of the masculine gender shall be construed to include the feminine, and vice versa.

C. Examples provided by using words and phrases, such as "including", "include", "includes", or "e.g.", shall not be construed as limiting the term clarified thereby. For example, "including" shall be construed as "including, but not limited to."

D. References in this Attachment A.1 to federal, State, County and/or other governmental laws, rules, regulations, ordinances, guidelines, directives, policies and/or procedures shall mean such laws, rules, regulations, ordinances, guidelines, directives, policies and/or procedures as amended from time-to-time.

E. Unless expressly stated otherwise, all approvals, consents, or determinations by or on behalf of County under the Agreement, will be in writing, and may be given or withheld in the sole discretion or judgment of the person or entity authorized to provide or make such approval, consent, or determination.

F. The terms "Web page(s)", "page(s)", "screen(s)", and "window(s)" are used interchangeably and have the same meaning.

2. SYSTEM REQUIREMENTS

This Section 2 specifies System Requirements that Contractor shall meet in providing its Data Mining Solution (also "solution") and other Work during the term of the Agreement.

2.1 DATA ACCESS

1. The solution shall provide access to County files stored in industry standard platforms, including Windows, Linux, UNIX and mainframe systems.
2. The solution shall provide read/write/update access to relational database and all PC File formats, including text, Excel, Access and dbase files.
3. The solution shall have the capability to extend its read/write/update access to other third-party relational databases such as ORACLE, DB2 and Microsoft SQL Server.
4. The solution shall provide access to numerous forms of unstructured textual data, including PDF, ASCII text, HTML, XML and Microsoft Word.
5. The solution shall have the capability to access geo-spatial data such as ESRI and MapInfo that may be processed using GIS technologies.
6. The solution shall have Web crawling capabilities. Web crawling will provide the ability to extract useful information from unstructured web pages which can then be used to enhance fraud detection models.
7. The solution shall provide secure access with native interfaces by honoring and augmenting the native security of the target data sources.
8. The solution shall optimize performance and minimize network traffic by intelligently executing data access commands either locally or on the source database system.
9. The solution shall support the integration through industry standards, including ODBC, JDBC and OLE-DB.
10. The solution shall allow understanding, extracting and organizing metadata from any available data resource so that data can be organized logically across all data sources.
11. The solution shall maintain the metadata within a central Metadata Repository.
12. The solution shall be able to define, implement and automate periodic extracts from the source systems based on latency requirements.

2.2 DATA QUALITY

1. The solution shall provide data profiling that allows a complete assessment of all data sources by examining their structure, completeness, suitability and relationships using a user-friendly, easy-to-use interface.

2. The solution shall enable users to profile the source data and easily define processes that are repeatable and reusable to improve data quality through the user interface.
3. The solution shall profile all data sources to analyze and assess the quality of data by identifying discrepancies and inaccuracies and show trends and commonalities through statistical analysis, including outlier detection and frequency analysis.
4. The solution shall perform data validation by matching the data in source tables to their description by validating data patterns and formats.
5. The solution shall validate data and ensure that the data follows standardized patterns by identifying data redundancies, misspellings and duplications.
6. The solution shall uncover relationships across different data sources by discovering primary/foreign key, cross-table and cross-database relationships.
7. The solution shall be able to set up business rules for validating data and then as new data is processed and these rules are violated the system shall be capable of logging information about these business rules violations.
8. The solution shall provide a metadata analysis that can simplify projects by accurately grouping related data and excluding irrelevant data.
9. The solution shall provide a metadata analysis that can identify relationships and redundancies using fuzzy matching algorithms that compare filed names, types and formats.
10. The solution shall manage redundancies by cataloging them within a metadata repository and reporting them to the system administrator or user.
11. The solution shall analyze and prototype data quality cleansing processes and shall apply corrections to form an automatic data rationalization framework utilizing an easy-to-use graphical user interface.
12. The solution shall be able to consolidate data objects (e.g., households or clients) into identifiable groups using fuzzy matching techniques.
13. The solution shall automate data standardization processes, customizable standardization rules and schemes that will standardize client and company names and addresses.
14. The solution shall be able to parse data values such as name and address parts or any free-form text into component parts to identify individual data elements.
15. The solution shall be able transform data fields using data transformation libraries or user-written codes.
16. The solution shall be able to match and link dissimilar records from multiple sources by names, addresses, phone and social security numbers or any other field using algorithms that include fuzzy logic and multinational data phonetics.

17. The solution shall be able to eliminate duplicate records by applying customizable sophisticated fuzzy matching techniques.
18. The solution shall be able to personalize or customize the parsing, matching, standardization and identification algorithms and rules based on business requirements.
19. The solution shall be able to store the customized rules in a common and accessible knowledge base that can be shared by multiple developers.
20. The solution shall be able to assign greater weights to parts of a data string (like an address or business name) based on their relative importance in a match.
21. The solution shall provide an address verification system, certified by the US Postal Service, utilizing a fuzzy matching and data standardization technology that can automatically inspect every element of an address to ensure its validity, and then update invalid information to meet postal requirements.
22. The solution shall provide geocoding of all addresses to add X-Y coordinates for mapping purposes and calculation of distances.

2.3 DATA INTEGRATION

1. The solution shall provide an easy-to-use point-and-click visual design tool with configurable windows for building, implementing and managing data integration processes regardless of data sources, applications or platforms.
2. The solution shall provide an easy-to-manage, multiple-user metadata environment that enables collaboration on projects with repeatable processes and metadata that can be shared.
3. The solution shall provide a multiple-user, multiple-level design environment supporting collaboration so that multiple users can check-in and check-out of data integration jobs or tables without overwriting each other's changes.
4. The solution shall provide tools to visualize and understand metadata.
5. The solution shall enable metadata to be captured and documented throughout transformations and data integration processes, and to become available for immediate reuse.
6. The solution shall provide an extensive impact analysis of potential changes made across all data integration processes including tables or columns, jobs, and transformations that would be affected by a change in a selected table or column.
7. The solution shall provide the data lineage metadata management capability to validate processes by determining where data comes from, how it is transformed, and where it is going.
8. The solution shall provide a process designer to develop, build and edit data integration processes with drag-and-drop functionality eliminating programming.

9. The solution shall provide interactive debugging and testing of jobs during development and give full access to logs.
10. The solution shall provide the capability to connect to all types of data sources and data types, as well as operating systems and hardware environments, using both native access and industry standards access.
11. The solution shall provide a wizard-driven tool to access to source systems and register the physical layout of existing tables or metadata information.
12. The solution shall provide a wizard-driven interface to create new target tables by entering new metadata or accessing metadata about other tables/columns registered in a metadata repository.
13. The solution shall provide a wizard-driven interface to import or export metadata.
14. The solution shall provide a wizard-driven interface to design and execute Extract, Transform and Load (ETL) process flows which can be visualized as a process flow diagram.
15. The solution shall provide the capability to edit ETL process flows interactively.
16. The solution shall provide the capability of adding and editing user defined codes to the ETL process flow.
17. The solution shall provide a powerful and easy-to-use transformation wizard to generate transformations.
18. The solution shall have a rich array of predefined table and column-level transformations.
19. The solution shall include ready-to-use analytical transformations such as correlations and frequencies, distribution analysis and summary statistics.
20. The solution shall be able to create reusable and repeatable transformations that are tracked and registered in a common metadata repository.
21. The solution shall enable transformations to be executed interactively or scheduled to run in batch at set times or based on events that trigger execution.
22. The solution shall provide full SQL commands functionality to load data.
23. The solution shall be able to load data by appending, updating or refreshing.
24. The solution shall be able to optimize loading techniques with user-selectable options.
25. The solution shall have the ability to design, create and load OLAP cubes.
26. The solution shall provide the ability to run data integration jobs interactively or to schedule them through system administrator to run automatically.
27. The solution shall provide the capability to migrate, synchronize and replicate data among different operational systems and data sources.

2.4 ANALYTICS

2.4.1 Fraud Solutions

2.4.2 Data Mining Workbench

1. The solution shall provide an interactive model development environment utilizing an easy-to-use graphical user interface with process flow diagrams to construct predictive models.
2. The solution shall be scalable utilizing parallel processing with server based storage.
3. The solution shall be integrated with the data quality and integration solution through a common metadata environment.
4. The solution shall be able to register selected predictive models to a common metadata server.
5. The solution shall be accessed via a Web browser from a central server. No solution-specific software shall be installed on the end-user's computer.
6. The solution's process flow diagrams shall support XML diagram exchange that can be reused as templates.
7. The solution's interactive model development environment shall provide basic exploratory data analysis capabilities including histograms, sample statistics, scatter plots and outlier detection tools.
8. The solution's interactive model development environment shall support data partitioning for model assessment to create training, validation and test datasets.
9. The solution's interactive model development environment shall allow for assessment comparison of multiple modeling methods.
10. The solution's interactive model development environment shall provide missing value imputation methods.
11. The solution's interactive model development environment shall provide for input transformations including (but not limited to) binning transformation.
12. The solution's interactive model development environment shall provide an interactive transformation editor for customized transformations including interactions.
13. The solution's interactive model development environment shall allow for the development of multiple modeling methods including (but not limited to):
    - Linear, polynomial and logistic regressions;
    - Decision trees;
    - Neural networks;
    - Nearest neighbor methods; and

- Gradient boosting methods.

14. The solution's predictive modeling tool shall allow the user to balance model fit versus model complexity.
15. The solution's predictive modeling tool shall support forward, backward and stepwise variable selection techniques.
16. The solution's interactive model development environment shall provide dimension reduction capability including (but not limited to) variable selection and principal components techniques.
17. The solution's predictive modeling tool shall allow for multiple model assessments including accuracy, profit, loss, Kolmogorov-Smirnov, Gini, c-statistic, mean squared error, and likelihood.
18. The solution's interactive model development environment shall provide an assessment interface to compare and assess models in terms of various charts such as lift curves and ROC charts.
19. The solution's predictive modeling tool shall support re-sampling techniques, including (but not limited to) bagging and boosting.
20. The solution's interactive model development shall allow for the performance of unsupervised segmentation methods such as statistical cluster analysis or self-organizing map methods.
21. The solution's interactive model development shall include tools for sequence and association analysis.
22. The solution's interactive model development shall provide rules building capability.
23. The solution's predictive modeling development environment shall allow models to be periodically refreshed with new data.
24. The solution's interactive model development environment shall allow for the combination of multiple predictive models into a hybrid ensemble model.
25. The solution shall be able to implement predictive models by scoring datasets to assign fraud risk scores to each client and provider.
26. The solution shall provide interactive, batch or real-time scoring capability.
27. The solution shall be able to support PMML (Predictive Model Markup Language) Version 3.2.
28. The solution shall be customizable with the ability of adding tools and personalized code to augment predictive model building.
29. The solution's predictive modeling results shall be explainable to non-technical individuals.
30. The solution's predictive models shall show the primary factors yielding high risk scores for any client or provider. These factors will be required for investigators to conduct their investigations.

31. The solution's predictive models shall be easily integrated with other analytic tools such as social network analysis and text mining.

32. The solution's predictive modeling tools shall be supported by documentation and training sufficient to allow qualified individuals to produce usable models from prepared data within one week of first exposure to the model development environment.

33. The solution's predictive modeling development environment shall allow for the analysis summary via HTML or PDF reports.

2.4.3 Social Network Analysis

1. The solution shall provide an intuitive network visualization interface that will show a complete picture of clients, service providers, companies, addresses, and networks.

2. The social network solution shall allow for querying, based on data keys to be defined by County (e.g., case number, social security number, client index number, provider number, etc.) the source data to display individuals (clients) or entities (providers or employers) of interest and the linkages immediately surrounding them.

3. The social network solution shall allow for querying the displayed network diagram to locate an individual or entity of interest.

4. The social network solution shall indicate active cases (cases under investigation) with a special color or flashing mode that can be visualized on the networks.

5. The social networks solution shall be able to build new networks from a single client, provider or employer queried.

6. The social networks solution shall drill down further into underlying data for full client, provider, and company or address details, including other linked clients, providers and networks.

7. The social networks solution shall provide nodes (such as clients or providers) that are interactively linked to geo-spatial information and interactive maps to explore the location characteristics of these nodes instantaneously.

8. The social networks solution shall be easily modified to change the type or format of the information illustrated on the interface.

9. The social networks solution shall zoom in and out and pan right and left to visualize the full extent of networks interactively.

10. The social networks solution shall interactively show the evolution of networks over time to study how a specific network has been built and expanded over many months.

11. The social networks solution shall show provider and client charts to visualize their risk scores over time. These charts shall be overlaid for multiple providers/clients that are connected through a network.

12. The social networks solution shall produce independent and combined scores to assess overall risk scores for clients and service providers that

can be observed easily on the interface with the help of differential color grading.

13. The social networks solution shall produce combined scores for the full histories of clients and providers so that the evolution of their risk scores can be observed over time.
14. The social networks solution shall generate alerts based on the risk thresholds that are automatically routed to the appropriate personnel such as fraud investigators.
15. The social networks solution shall score associated networks using behavioral data (patterns, network growth rates, activity levels) and other data provided (current/previous addresses, contact numbers, employers).
16. The social networks solution shall provide an aggregated score at the network level to identify subtle or hidden relationships.
17. The social networks solution shall provide fraud investigators with information showing the interconnections between and detail case history on suspicious program participants and service providers, allowing for the reduction of false positives and identification of potential fraud.
18. The social networks solution shall apply complex analytic and statistical methods to identify high risk elements in the service network of participants and providers.
19. The social network solution shall subset large networks into smaller sub-networks based on community detection algorithms, anomaly detection rules and statistical measures of fraud risk.
20. The social networks solution shall employ advanced analytic and statistical methods such as associative cluster analysis and link analysis to generate social networks.
21. The social network solution shall allow for the expansion of the displayed network to include additional individuals and entities linked to those displayed.
22. The social network solution shall allow the investigator to group and label individuals and entities within the displayed network diagram and represent this grouping by a single object on the network diagram.
23. The social network solution shall allow for saving and loading a modified network diagram for later review and modification.
24. The social network solution shall be able to undo changes made to the diagram, including expansion, hiding and grouping entities displayed in the network diagram.
25. The social network solution shall be managed through a common metadata environment.

2.4.4 Text Mining

1. The solution shall provide a text mining platform with a self-documenting integrated interface for analyzing text (unstructured data) in conjunction with multiple related database (structured) fields.

2. The solution's text mining tool shall discover and extract knowledge from a wide variety of text document formats such as PDF, ASCII, HTML, and Microsoft Word.
3. The solution's text mining tool shall have Web crawling capability.
4. The solution's text mining tool shall have comprehensive text preprocessing capabilities, including strong parsing and automatic spelling detection features.
5. The solution's text analysis tool shall be able to eliminate uninformative (or common) words from unstructured text.
6. The solution's text analysis tool shall be able to create stem multiple forms of a word to a root form.
7. The solution's text analysis tool shall transform textual data into a usable, intelligible format by classifying text documents (e.g., Web pages, PDF, investigative notes) to predefined categories, finding explicit or hidden relationships or associations between documents, and clustering documents into categories using the following:
    - Text clustering algorithms;
    - Neural networks;
    - Memory-based reasoning;
    - Regression methods; and
    - Decision trees.
8. The solution's text mining tool shall integrate unstructured text data into the predictive modeling component with structured data.
9. The solution's text analysis tool shall include an interactive interface to explore concepts and relationships between documents, and to visualize complex hidden relationships between terms, phrases and entities (such as clients and provider names) and dynamically make modifications to enhance the analyses.
10. The solution's text mining tool shall automatically generate score code as models are built.
11. The solution's text mining tool shall be integrated to the data mining workbench.
12. The solution's text mining tool shall be managed through a common metadata environment.

2.4.5 Forecasting, Statistical Analysis and Data Visualization

1. The solution shall include tools for automatically creating forecast models of time-series data, including (but not limited to) ARIMA and seasonally adjusted exponential smoothing methods.

2. The solution's forecasting tools shall be able to generate and incorporate predictions of fraud rates into the predictive modeling, anomaly detection, and end-user interface components.
3. The solution's forecasting tools shall utilize an easy-to-use GUI and be easily managed through a common metadata environment.
4. The solution shall provide comprehensive set of tools to perform complex statistical analysis for all analytical needs.
5. The solution's statistical analysis tools shall include (but not limited to) analysis of variance, regression methods, categorical data analysis, multivariate analysis, survival analysis, cluster analysis, and power and sample size applications.
6. The solution shall provide powerful interactive statistical graphics for visual querying and data filtering and interactive data visualization.

2.5 END-USER INTERFACE

1. The solution shall provide the ability to display the results of the fraud analytics including, but not limited to an information portal, dashboards, simple user based reporting interfaces, OLAP cubes, network visualization and interactive graphical displays.
2. The solution's end-user interface shall be entirely web browser based, requiring no additional software components installed on the end-user's computer.
3. The solution shall feature an interface that will be able to provide results delivered by multiple data mining models.
4. The solution's end-user interface shall provide investigators with updates of their investigations by capturing and inserting text and images into case folders.
5. The solution's end-user interface shall be updatable and manageable in a way that is transparent to the end-user.
6. The solution's end-user interface shall provide tools that will assist investigators to organize and present their case investigations easily over time.
7. The solution's end-user interface shall enable investigators to explore connected cases investigated by other investigators.
8. The solution's end-user interface shall enable investigators to export data reports to a Microsoft PowerPoint presentation to be sent to their supervisors or to the District Attorney (DA).
9. The solution shall utilize report wizards to provide role-based, interactive end-user interfaces for report building and distribution on the web.
10. The solution shall distribute reports to different sets of users based on pre-defined criteria and schedules.
11. The solution's end-user interface shall allow the use of data from multiple sources and define custom calculations and filter combinations.

12. The solution's end-user interface shall provide the capability to create customized reports with powerful layout capabilities and to choose from a gallery of common, pre-defined layouts and templates for simple reporting.
13. The solution's end-user interface shall provide the dynamic capability to position and size graphs, tables, text, images, etc., with advanced layout and formatting capabilities.
14. The solution's end-user interface shall print reports to PDF, XML and HTML, and export data, formatted tables and charts to Excel.
15. The solution's end-user interface shall allow users the flexibility to create folders and subfolders where reports can be organized and shared with others or kept in private folders based on security settings.
16. The solution's end-user interface shall allow users to search for relevant reports by name, description, keywords and dates last saved.
17. The solution shall provide a web-based information portal with a browser-based interface to distribute and share information, data, applications and reports.
18. The solution's information portal shall be customizable using wizards and shall feature powerful search capabilities.
19. The solution's information portal shall be able to publish alerts to users through pre-defined and secure channels.
20. The solution's end-user interface shall provide customizable and interactive graphical or tabular dashboards enabling users to easily understand Key Performance Indicators (KPIs).
21. The solution's dashboards shall be a role-based, secure, and easy to administer and use.
22. The solution shall be able to integrate results with Microsoft Office products.
23. The solution shall be able to view and modify existing reports offline with native Office functionality. The solution shall also deliver results as RTF and HTML with Microsoft Word and deliver graphics results directly into Microsoft Word, Excel and PowerPoint in different graphical formats.
24. The solution shall provide visual query capabilities and Web-based wizards that enable users to easily access and query data from relational and multidimensional data sources.
25. The solution shall provide a powerful, multidimensional database designed to handle tens of millions of rows of business intelligence data.
26. The solution shall provide a GUI for easily building and maintaining OLAP cubes.
27. The solution shall provide zero-footprint; browser-based interactive interface exploring and analyzing OLAP cubes, including drilling up/down capabilities through hierarchies and expand/collapse for entire levels.

28. The solution shall be able to integrate results with ESRI and MapInfo for GIS applications, interactively explore geographical maps, and synchronize drill and display for map and table view.
29. The solution shall be able to visualize information from an OLAP data source in real time, enabling a zoom down to the level of individual houses on a road.
30. The solution's end-user interface shall be able to summarize and present data using a variety of highly customizable charts.
31. The solution's end-user interface shall provide highly interactive graphics to generate static or dynamic interactive (Java or ActiveX) charts and graphs.
32. The solution shall be able to generate graphs in a variety of static forms, including (but not limited to) Microsoft Windows bitmap and metafile, enhanced metafile, JPEG, GIF, TIF, PNG and PBM. The graphs shall be able to be exported in third-party applications like Microsoft Office Applications through interfaces or manually.
33. The solution's end-user interface shall be able to display analytic results in an interactive and visual manner, including interactive simulations, time-series modeling, and exploratory and predictive data analysis.
34. The solution shall provide a variety of alerts to users that will be triggered by high risk scores based on suspicious fraudulent activity and identified by the fraud detection models.
35. The solution's end-user interface shall allow users to retrieve all relevant information about the cases or providers flagged by the fraud platform.
36. The solution's end-user interface shall allow an investigator to incrementally save the state of an investigation and review the saved investigation history.
37. The solution's end-user interface shall provide supervisory personnel with reports summarizing the progress and outcomes of investigations.
38. The solution shall provide the ability to display fraud analytic results at a high level and then drill into the details behind the result summary.

2.6 TECHNICAL REQUIREMENTS

2.6.1 General Technical Requirements

1. The solution shall include components that are reusable and modifiable without reengineering.
2. The solution shall utilize components that are leap year compliant.
3. The solution shall utilize components that are current decade compliant.
4. The solution shall utilize components that are twenty-first (21st) century compliant, with the consistent use of four-digit years.

5. The solution shall utilize components that provide all dates and times in accordance with ISO 8601 for dates from January 1, 1900 to December 31, 2099.
6. The solution shall utilize components that are in compliance with Daylight Savings Time clock changes mandated by applicable federal, State, and local laws, rules, regulations, ordinances, guidelines, directives, policies, and procedures, including the Energy Policy Act of 2005.
7. Contractor shall provide written notification, including implementation recommendations, to County's Project Director of:
    a. Updates to the System Hardware as soon as each such update is available.
    b. Updates to the Commercially Available Software as soon as each such Update is available.
8. The solution shall utilize the latest or penultimate version of Commercially Available Software, as approved by County's Project Director.
9. The solution System Hardware shall support the latest or penultimate version of Commercially Available Software, as approved by County's Project Director.

2.6.2 System Administration

1. The solution shall have a single point of control for all system administrative tasks for the fraud platform.
2. The solution shall provide single easy-to-use interface to perform the administrative tasks required to create and maintain an integrated environment.
3. The solution's tools shall provide a single point of control for managing all processes including data quality, data integration, storage, end-user interface and analytics.
4. The solution's tools shall follow a wizard-driven approach for almost all tasks for easier use.
5. The solution shall have a central administrative capability to manage servers, databases, users and groups and their associated permissions.
6. The solution's tools shall manage the creation, replication and promotion of metadata repositories and manage all metadata as well as concurrent access to metadata.
7. The solution tools shall utilize an extensible plug-in architecture, allowing customization to support a wide range of administrative capabilities.
8. The solution shall provide a scheduler management facility to create job flows, job flow dependencies and schedules.
9. The solution shall allow system administrator(s) to view a list of all currently logged-on-users.
10. The solution shall include Web-based administration tools.

11. The solution shall allow the administrator to specify the maximum number of connections to the database(s).
12. The solution shall allow administrators to monitor status of all servers in a cluster.
13. The solution shall allow system administrators the ability to cancel a query or report.
14. The solution shall track end-user utilization by date, time and user ID and shall create a monthly summary and detailed report of all activities.

2.6.3 Analytic Model Management

1. The solution shall provide an analytic model management tool to effectively create, manage and deploy statistical, predictive, classification and analytical scoring fraud detection models.
2. The solution's analytic model management tool shall employ an easy-to-use graphical user interface to manage and deploy models—registering, testing and validating models.
3. The solution's analytic model management tool shall validate the scoring logic of models before exporting models to production by checking the performance against expected scoring results.
4. The solution's analytic model management tool shall register all versions of the analytic models (champion model and its challengers) together with their metadata, prerequisite data sources, event logging of all major actions, user-defined notes and supporting documentation in a central repository.
5. The solution's analytic model management tool shall monitor predictive models used in the production environment to ensure optimal predictive performance is maintained and under-performing models are updated or replaced.
6. The solution's analytic model management tool shall annotate and document predictive models including generating model performance and performance benchmarking reports using model assessment charts (like ROC, stability, lift and Gini charts) which are pushed across reporting channels.
7. The solution's analytic model management tool shall perform secure model storage and access administration with backup and restore capabilities, overwrite protection, event logging and user authentication/access privilege administration.

2.6.4 Security

1. The solution shall support security measures at the database, group and user levels and shall support multiple user roles. Security measures include access to functionality, access to data, program components and access to application processes.
2. The solution shall provide an audit history lets designers see which jobs or tables were changed, when and by whom.

3. The solution shall maintain an audit trail of all transactions.
4. The solution shall support secure remote administration.
5. The solution shall provide role-based permissions showing users only what they are authorized to see.
6. The solution shall have the capability to manage an access control template--a set of security measures that can be defined and then be assigned to a user or group, which establishes the default access controls for a metadata repository.
7. The solution shall have the capability to specify access controls for a metadata object, which define the permissions that users or groups are granted or denied for the object. Metadata objects include tables, application capability, users, groups, access controls define whether a user or group is allowed to perform actions on metadata object like create, read, update, delete.
8. The solution shall have the capability to create access control templates, which are named identity/permission patterns that can be applied to multiple metadata objects.
9. The solution shall have the capability to manage permissions, which represent actions that users can perform on metadata objects or the computing resources represented by the objects.
10. The solution security model must integrate with LDAP/Active Directory.
11. The solution shall, upon authentication, restrict users to only the information for which they are authorized.
12. The solution shall require users to log on to the system before receiving access to functionality or data.
13. The solution shall allow users to change their password at the sign-on screen or from a security screen within the system.
14. The solution shall disable the user's account and notify a system administrator upon three consecutive entries of an incorrect password.
15. The solution shall notify users of impending password expiration and prompt the user to change the password at sign-on if a user's password has expired.
16. The solution shall provide a means to log off a user if no activity has occurred after a specified period of time (e.g., five minutes).
17. The solution shall suspend a user ID if the user ID has not logged into the system for a specified number of days.
18. The solution shall not display the user's password in a readable format on the logon screen.
19. The solution shall not store a user's password in a readable format on a local computing device.

20. The solution shall force the user to immediately change his password when a default "starter" password is issued to the user by the system or by a security administrator.
21. The solution shall allow for the enforcement of password complexity rules by ensuring that the user's password is made up of characters, alphanumeric and special characters.
22. The solution shall retain a history of user passwords and shall not allow the same password to be re-used by a user.
23. The solution shall incorporate encryption into the application utilizing Secure Sockets Layers (SSL).
24. The solution shall track change history to determine who made changes and when the changes took place.
25. The solution shall support up to twenty (20) different user roles.
26. The solution shall provide notification to system administrators when a security event is detected.
27. The solution shall provide a graphic user interface (GUI) for system administrators to update security parameters while the system is online.
28. The solution shall provide capabilities for managing sensitive data (e.g., social security numbers (SSNs) or client identification number (CIN)).
29. The solution's Web product shall protect user ID and password information from transmission in clear-text.
30. The solution shall encrypt passwords sent over a network.
31. The solution shall employ traditional Web Safeguards:
    - Warning banners should be displayed prior to login;
    - Self–service account maintenance should employ strong password standards;
    - Page caching should be disabled to protect those using Internet cafes;
    - Site should not allow browser to pass information exchanges;
    - Default 5 minute inactivity timeout.
32. The solution shall categorize data that is transported, processed, or stored according to Federal Information Processing Standards (FIPS) 199 levels (Low, Moderate, or High) and shall comply with security controls for the data as specified in National Institute of Standards and Technology (NIST) Special Publication 800-53.
33. The solution shall comply with the Health Insurance Portability and Accountability Act (HIPAA) of 1996 to the extent and in the manner determined to be applicable and, at minimum, shall address the following:
    a. Standards for Electronic Transactions;
    b. Standards for Privacy of Individually Identifiable Health Information;
    c. Standards for Security.
34. The solution shall allow implementation of a Data Security Plan which satisfies State and Federal requirements including the Health Insurance

Portability and Accountability Act (HIPAA) of 1996 and State Administrative Manual (SAM), Section 4840 et seq., Information Technology Risk Management Policy.

35. The solution shall support compliance with Federal and State laws for data confidentiality, privacy, and disclosure including the HIPAA regulations stated in Section 5.2, W&IC §10850 Confidentiality of Individual Data, California Civil Code §1798.24 et seq., Confidentiality and Disclosure of Personal Information.

2.6.5 Audit

1. The solution shall provide auditing features to track transactions of end-users for five and a half year and the access to the audit trail file will be restricted.
2. The transaction audit log will include, at minimum, the following data elements for queries and reports:
   - User name;
   - User ID;
   - Agency;
   - Data and Time of Query;
   - Type of Query; and
   - Information Received.
3. The solution shall restrict access to user and system audit logs to authorized system administrators.
4. The solution shall provide a mechanism by which a system administrator can export selected transaction logs to an external file.
5. The solution shall generate random lists of transactions for agency audits.
6. The solution shall log all add/change, and delete activity to any configuration database.
7. The solution transaction log should be searchable by authorized administrative users by user name, user ID, agency, date, time and by a text string occurring anywhere within the original message.

2.6.6 Reliability, Scalability, Backups and Disaster Recovery

1. System Availability - The System shall be available ***ninety-nine percent (99%)*** of the time throughout the term of the Agreement. System Availability is defined as the percentage of time during the calendar month when the System and all of its Components are working in accordance with the Specifications, including System Requirements. System unavailability starts from the time that the System is not available and the problem is categorized as a Severity Level 1 or a Severity Level 2 Deficiency.
2. System Response Time - The System Response Time during the term of the Agreement shall be no greater than ***three (3) seconds***. Notwithstanding the foregoing, following a Go-Live, in the event County fails to procure the System Environment upgrade in order to meet System Environment

specifications recommended by Contractor consistent with the use of the System pursuant to the terms of the Agreement, the maximum allowable System Response Time during such period shall be ***five (5) seconds*** but only until County authorizes, and pays for, Contractor to upgrade the System in accordance with such recommended System Environment specifications, provided, however, that if County and Contractor determine that the five (5) second System Response Time is not achievable due to County not procuring the System Environment upgrade recommended by Contractor, then the parties shall mutually agree upon an alternate System Response Time requirement. System Response Time is defined as the interval of time elapsed from when a User submits a request at any workstation connected to the System until such time as the workstation fully displays the complete response and the User receives the results of the request. System Response Time excludes User Interface Time, defined as the time spent sending the request from the Web server and receiving the result of the request from the Web server back to the Web browser.

3. Contractor shall have available for utilization by County upon County's request and shall utilize tools capable of assessing and measuring the System's compliance with System Performance Requirements specified in the Agreement, including System Requirements.

4. Contractor shall provide as soon as possible, but in no event later than three (3) months following the Amendment Two Effective Date, and continue to provide during the term of the Agreement, on an on-going monthly basis the following detail documentation, listing out the utilization of the Production Server, processing time performance and utilization of the application by Users as follows:

    - Up/Down Time System Statistics by time and %
    - Utilization for each CPU, including Average, Minimum, Maximum by hour by day
    - Utilization for memory (physical) on each CPU, including Average, Minimum, Maximum by hour by day
    - Users on System, Average, Minimum, Maximum by hour by day
    - Disc Usage - Capacity, Used, Free, I/O profile (Would be good to get a good understanding of maximum capable I/O's, Average, Maximum on a historical basis)
    - Batch Processing; Job, run time, number of database reads, writes, historical trend
    - Database; table size, growth by month, historical trend

5. The solution shall be architected to support a System operation with System Availability of 7:00 am – 7:00 pm per day.

6. The solution shall backup the application and data daily. Transactional activity shall be maintained between backups so that the data can be recovered with no more than one hour loss of data.

7. The solution shall retain data for at least five and a half years.

8. The solution shall provide a disaster recovery plan, business continuity plan, and a hot site at a mutually agreed upon location that is in a different location than the deployed fraud platform.
9. The solution shall support server clusters and load balancing for scalability and failover.
10. The solution shall support automatic user re-routing should the active server fail.
11. The solution shall include a scalable platform for analyzing multi-terabyte data sets.
12. The solution shall provide automatic and manual control of caching to balance quick response with scalability.
13. The solution shall include system restart, recovery, and back-up procedures.

2.6.7 System Infrastructure

1. The solution shall include production, development and test environments.
2. The solution development and test environments shall support (minimum 10 users).
3. The solution's production environment shall initially support 200 users (200 concurrent).
4. The solution shall support/operate within Windows or Linux operating system.
5. The solution shall include a scalable platform.
6. The solution shall support parallel processing.
7. The solution shall support one or more of the following browsers. (Indicate versions supported)
   - Internet Explorer;
   - Netscape;
   - Mozilla;
   - Firefox; and
   - Other – identify.
8. The solution shall not require Java applets, ActiveX controls like the XML HTTP object, or any other plug-ins.
9. The solution shall not require the use of cookies on the client browser.
10. The solution shall not require any specific browser settings.
11. The solution shall support web service standards. (e.g., SOAP, WSDL, UDDI).
12. The solution shall include configurable caching that can be turned on or off.

2.6.8 Training and Documentation

1. The solution shall include a DMS Training Plan for system users.
2. The solution shall include development and delivery of training materials for DMS.
3. The solution shall include development and completion of specialized DMS training for County-specified staff.
4. The solution shall include Training Plans that describe the approach to training and the plans for ensuring satisfactory completion of the required training.
5. Contractor shall provide training resources, including instructors, facilities, and equipment, at a level necessary to support training quality and training schedule requirements.
6. Contractor shall employ a training methodology which ensures that training and training materials are effectively applied.
7. The solution shall support the training of various User groups, as determined by County.
8. The solution shall include orientation training to provide a general overview of DMS, including the graphical user interface (GUI) navigation methodology, technology and specialized training.
9. The solution shall include knowledgebase training to be used by County for training, policy, program, and business process clarification.
10. The solution shall include complete documentation describing how to use the system.
11. The solution shall include concise documentation of the system architecture, configuration and development tools.
12. The solution shall include online documentation and/or Help functions.
13. The solution shall include online documentation and/or Help functions which include search capabilities.
14. The solution shall include online documentation and/or Help functions which include the ability to "hotlink" to other pertinent Help topics within the Help document.
15. The solution shall include on online Handbook for reference by County-specified Users, with search capabilities.
16. The solution shall include online documentation and/or Help functions which shall be consistent with all other written materials produced by Contractor or County.
17. The solution shall include online documentation and/or HELP that can be viewed online and/or printed to a local printer as desired.

EXHIBIT B

SCHEDULE OF PAYMENTS

FOR

DATA MINING SOLUTION (DMS)

REVISED UNDER AMENDMENT NUMBER TWO

MAY 2012

TABLE OF CONTENTS

1. TOTAL PRICING SUMMARY

Exhibit B (Schedule of Payments) sets forth the pricing and payment terms for the Work to be provided by Contractor under this Agreement. The following Schedules are attached to and form a part of this Exhibit B:

Schedule B.1 – Optional Work

This Section 1 specifies the summary of the allocation of the pricing components that constitute the Contract Sum under the Agreement.

WORK DESCRIPTION	PHASE 1	IHSS PROJECT	TOTAL AMOUNT
System Implementation	$2,432,655	$1,018,176	$3,450,831
System Maintenance	$1,866,513	$731,648	$2,598,161
Optional Work (Pool Dollars)	$510,990	$440,018	$951,008
TOTAL CONTACT SUM	**$4,810,158**	**$2,189,842**	**$7,000,000.00**

2. PRICING BY YEARS

This Section 2 specifies for budgeting purposes the annual allocation of payments to be made by County to Contractor during the term of the Agreement segregated by the pricing components comprising the Contract Sum.

WORK DESCRIPTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	TOTAL AMOUNT
System Implementation	$2,432,655		$1,018,176				**$3,450,831**
System Maintenance		$555,782	$381,481	$489,717	$578,377	$592,867	**$2,598,161**
Optional Work (Pool Dollars)							**$951,008**
TOTAL	**$2,432,655**	**$555,782**	**$1,399,594**	**$489,717**	**$578,377**	**$592,867**	**$7,000,000**

3. SYSTEM IMPLEMENTATION – FIRM FIXED PRICE

This Section 3 includes the Deliverable amounts to be paid by County to Contractor for System Implementation.

3.1 PHASE 1

This Section 3.1 includes the Deliverable amounts to be paid by County to Contractor for System Implementation relating to the CalWORKs program, including any adjustments made as a result of eliminating the Back-Up Server requirement pursuant to Change Notice No. 02 to the Agreement and the revised amounts following such adjustments.

DELIVERABLE	EFFECTIVE DATE AMOUNT	BACK-UP SERVER SERVICE ADJUSTMENT	BACK-UP SERVER HARDWARE ADJUSTMENT	REVISED AMOUNT
1.1 - Project Control Document	$8,500.00			$8,500.00
1.2 - Status Reports and Conferences	$8,500.00			$8,500.00
1.3 - Project Office Certification	$2,100.00			$2,100.00
1.4 - Web-Server Hosting Certification	$2,100.00	-$336.00	$0.00	$2,100.00
2 - Assessment and Requirements Document	$61,500.00	-$3,075.00	-$7,181.00	$61,500.00
3.1 - Design Specification Document	$23,300.00			$23,300.00
3.2 - System Configuration Plan and Certification	$87,350.00			$87,350.00
3.3 - System Hardware Certification	$87,900.00	-$4,395.00	-$28,722.00	$87,900.00
4.1 - System Software Certification	$117,100.00			$117,100.00
4.2 - Data Quality and Integration Solution	$89,100.00			$89,100.00
4.3 - Predictive Data Mining Models	$137,900.00			$137,900.00
4.4 - Baseline Interfaces	$36,100.00			$36,100.00
4.5 - Deployed Fraud Solution Platform *	$1,552,705.00			$1,552,705.00
5.1.1 - System Integration Test Plan	$31,800.00	-$4,770.00	-$3,590.00	$31,800.00
5.1.2 - System Integration Test Results	$21,200.00	-$3,180.00	-$7,181.00	$21,200.00
5.2.1 - User Acceptance Test Plan	$12,700.00	-$2,540.00	-$3,590.00	$12,700.00
5.2.2 - User Acceptance Test Status Reports	$6,400.00	-$1,280.00	$0.00	$6,400.00
5.2.3 - User Acceptance Test Certification	$6,400.00	-$1,280.00	$0.00	$6,400.00
6.1 - System Production Use	$10,600.00	$0.00	-$3,590.00	$10,600.00
6.2.1 - Performance Verification Report	$10,600.00	$0.00	-$3,590.00	$10,600.00
6.2.2 - Final Acceptance	$12,700.00			$12,700.00
7.1 - Trained County Staff	$53,000.00			$20,000.00
8.1 - System Documentation	$42,400.00			$25,000.00
9.1 - System Maintenance Plan	$12,700.00			$12,700.00
9.2 - System Maintenance	$63,600.00			$35,700.00
9.3.1 - DMS Transition Plan	$12,700.00			$12,700.00
11.1 - IHSS Pilot	$0.00			$0.00
		-$20,856.00	**-$57,444.00**	
TOTAL	**$2,510,955.00**	**-$78,300.00**		**$2,432,655.00**

* Will be paid in four (4) quarterly installments in arrears, with first due three (3) months after the Effective Date and every three (3) months thereafter. For example, with the Effective Date of December 31, 2009, payments will be due on March 2010, June 2010, September 2010, December 31, 2010

3.2 IHSS PROJECT

This Section 3.2 includes the Deliverable amounts to be paid by County to Contractor for System Implementation relating to the IHSS Project under Phase 2 pursuant to Amendment Number Two to the Agreement under Task 12 (IHSS Project) of Exhibit A (Statement of Work), commencing with Subtask 12.1 (Migrate DMS to New Platform) and continuing with Subtask 12.2 (Implement IHSS Project) of Exhibit A (Statement of Work). Deliverable payments for Work under Deliverable 12.2 (IHSS Project Implemented) of Exhibit A (Statement of Work) shall be made in the form of Deliverables 1 through 9, as further provided below.

DELIVERABLE	DELIVERABLE AMOUNT	HOLDBACK AMOUNT (10%)	INVOICE AMOUNT
12.1 – DMS Migrated to New Platform	$58,972.00	$5,897.20	$53,074.80
12.2 – IHSS Project Implemented	AS PROVIDED UNDER DELIVERABLES 1 – 9 BELOW.		
1.1 - Project Control Document	$11,751.00	$1,175.10	$10,575.90
1.2 - Status Reports and Conferences	$30,200.00	$3,020.00	$27,180.00
1.3 - Project Office Certification	$0.00	$0	$0
1.4 - Web-Server Hosting Certification	$0.00	$0	$0
2 - Assessment and Requirements Document	$47,798.00	$4,779.80	$43,018.20
3.1 - Design Specification Document	$39,600.00	$3,960.00	$35,640.00
3.2 - System Configuration Plan and Certification	$101,805.00	$10,180.50	$91,624.50
3.3 - System Hardware Certification	$6,615.00	$661.50	$5,953.50
4.1 - System Software Certification	$2,125.00	$212.50	$1,912.50
4.2 - Data Quality and Integration Solution	$37,972.00	$3,797.20	$34,174.80
4.3 - Predictive Data Mining Models	$15,500.00	$1,550.00	$13,950.00
4.4 - Baseline Interfaces	$44,760.00	$4,476.00	$40,284.00
4.5 - Deployed Fraud Solution Platform *	$536,256.00	$0	$536,256.00
5.1.1 - System Integration Test Plan	$33,494.00	$3,349.40	$30,144.60
5.1.2 - System Integration Test Results	$24,800.00	$2,480.00	$22,320.00
5.2.1 - User Acceptance Test Plan	$1,326.00	$132.60	$1,193.40
5.2.2 - User Acceptance Test Status Reports	$1,470.00	$147.00	$1,323.00
5.2.3 - User Acceptance Test Certification	$550.00	$55.00	$495.00
6.1 - System Production Use	$573.00	$57.30	$515.70
6.2.1 - Performance Verification Report	$2,500.00	$250.00	$2,250.00
6.2.2 - Final Acceptance	$2,618.00	$0	$2,618.00
7.1 - Trained County Staff	$6,290.00	$629.00	$5,661.00
8.1 - System Documentation	$8,191.00	$819.10	$7,371.90
9.1 - System Maintenance Plan	$2,381.00	$238.10	$2,142.90
9.2 - System Maintenance	$0.00	$0	$0
9.3.1 - DMS Transition Plan	$629.00	$62.90	$566.10
TOTAL	**$1,018,176.00**	**-$47,930.20**	**$970,245.80**

* Will be due following the Amendment Two Effective Date and paid in accordance with the payment terms under the Agreement.

4. SYSTEM MAINTENANCE – FIRM FIXED PRICE

This Section 4 specifies the summary of the annual allocation of the Maintenance Fees, including Annual Fees and System Support Fees, over the term of the Agreement commencing with year 2 of the Agreement, to be paid by County to Contractor consistent with the applicable terms depending on the type of Maintenance Fees.

SYSTEM MAINTENANCE DESCRIPTION	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	MAXIMUM FEES
Annual Fees – Phase 1	$412,820.00	$310,280.00	$272,175.00	$283,608.00	$295,613.00	**$1,574,496.00**
System Support Fees – Phase 1	$142,962.00	$71,138.00	$77,917.00	$0.00	$0.00	**$292,017.00**
SUBTOTAL – PHASE 1	**$555,782.00**	**$381,418.00**	**$350,092.00**	**$283,608.00**	**$295,613.00**	**$1,866,513.00**
Annual Fees – IHSS Project	$0.00	$0.00	$133,625.00	$210,852.00	$213,337.00	**$557,814.00**
TOTAL - System Support Fees	$0.00	$0.00	$6,000.00	$83,917.00	$83,917.00	**$173,834.00**
SUBTOTAL – IHSS PROJECT	**$0.00**	**$0.00**	**$139,625.00**	**$294,769.00**	**$297,254.00**	**$731,648.00**
TOTAL	**$555,782.00**	**$381,418.00**	**$489,717.00**	**$578,377.00**	**$592,867.00**	**$2,598,161.00**

4.1 ANNUAL FEES

This Section 4.1 specifies the allocation of the Annual Fees, consisting of License Renewal Fees and Software Support Fees, over the term of the Agreement commencing with year 2 of the Agreement, to be paid by County to Contractor in accordance with Paragraph 8.4 (System Maintenance) of the Base Agreement annually in advance commencing on the first anniversary of the Effective Date, allocated by each year of System Maintenance.

SYSTEM MAINTENANCE DESCRIPTION	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	MAXIMUM FEES
System Hardware: Production Server – Phase 1	$111,906.00	$67,461.00	$18,600.00	$18,600.00	$18,600.00	**$235,167.00**
Third Party Software – Phase 1	$81,522.00	$24,910.00	$24,910.00	$24,910.00	$24,910.00	**$181,162.00**
Application Software – Phase 1	$219,392.00	$217,909.00	$228,665.00	$240,098.00	$252,103.00	**$1,158,167.00**
SUBTOTAL – PHASE 1	**$412,820.00**	**$310,280.00**	**$272,175.00**	**$283,608.00**	**$295,613.00**	**$1,574,496.00**
System Hardware: Production Server – IHSS Project			$72,000.00	$120,000.00	$120,000.00	**$312,000.00**
Third Party Software – IHSS Project			$8,000.00	$8,000.00	$8,000.00	**$24,000.00**
Application Software – IHSS Project			$53,625.00*	$82,852.00	$85,337.00	**$221,814.00**
SUBTOTAL – IHSS PROJECT	**$0.00**	**$0.00**	**$133,625.00**	**$210,852.00**	**$213,337.00**	**$557,814.00**
TOTAL	**$412,820.00**	**$310,280.00**	**$405,800.00**	**$494,460.00**	**$508,950.00**	**$2,132,310.00**

* The amount is based on an annual fee of $80,438.00, prorated over an eight month period. The actual amount invoiced by Contractor and paid by County will depend on the schedule of completion of System Implementation relating to the IHSS Project.

4.2 SYSTEM SUPPORT FEES

This Section 4.2 specifies the allocation of the System Support Fees over the term of the Agreement commencing with year 2 of the Agreement, to be paid by County to Contractor in accordance with Paragraph 8.4 (System Maintenance) of the Base Agreement monthly in arrears by payment of one twelfth of the annual amounts specified below, commencing one month following expiration of the applicable Warranty Period, projected by each year of System Maintenance.

SYSTEM MAINTENANCE DESCRIPTION	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	MAXIMUM FEES
Production Server: Infrastructure Hosting – Phase 1	$37,492.00	$27,453.00	$18,922.00			**$83,867.00**
Back-Up Server Adjustment – Phase 1	-$18,100.00	-$18,100.00	-$2,790.00			**-$38,990.00**
Help Desk Support (Technical and User)	$123,570.00	$61,785.00	$61,785.00			**$247,140.00**
SUBTOTAL – PHASE 1	**$142,962.00**	**$71,138.00**	**$77,917.00**	**$0.00**	**$0.00**	**$292,017.00**
Production Server: Infrastructure Hosting – IHSS Project			$6,000.00	$22,132.00	$22,132.00	**$50,264.00**
Help Desk Support (Technical and User) – IHSS Project				$61,785.00	$61,785.00	**$123,570.00**
SUBTOTAL – IHSS PROJECT	**$0.00**	**$0.00**	**$6,000.00**	**$83,917.00**	**$83,917**	**$173,834.00**
Infrastructure Network	$0.00	$0.00	$0.00			**$0.00**
Infrastructure/DR/Network/Storage	$0.00	$0.00	$0.00			**$0.00**
System Software – Application Modifications	$0.00*	$0.00*	$0.00*			**$0.00**
System Software – Replacement Products	$0.00	$0.00	$0.00			**$0.00**
System Software – Updates	$0.00	$0.00	$0.00			**$0.00**
TOTAL – SYSTEM SUPPORT FEES	**$142,962.00**	**$71,138.00**	**$83,917.00**	**$83,917.00**	**$83,917.00**	**$465.851.00**

* Moved to Section 7 (Pool Dollars) below.

5. OPTIONAL WORK FIXED HOURLY RATE

Contractor shall use the following Fixed Hourly Rates for quoting and providing Optional Work during the term of the Agreement, as applicable.

OPTIONAL WORK	FIXED HOURLY RATE
All Other Labor Resources except those listed below	**$175**
Jr. ETL Analyst	**$150**
Documentation Specialist QA Analyst	**$125**

Fixed Hourly Rate shall be used to calculate Maximum Fixed Price for Optional Work, which may be provided by Contractor during the term of the Agreement. Fixed Hourly Rate shall not increase during the term of the Agreement, as further specified in Paragraph 8.5 (Optional Work) of the Base Agreement.

6. LABOR RESOURCES

	YEAR 1			YEAR 2			OPTIONAL YEAR 3			OPTIONAL YEAR 4		
Staffing	**# of Persons**	**Hourly Rate**	**Annual Price**	**# of Persons**	**Hourly Rate**	**Annual Price**	**# of Persons**	**Hourly Rate**	**Annual Price**	**# of Persons**	**Hourly Rate**	**Annual Price**
Project Director - John Brocklebank	1	$225	$45,000	1	$0	$5,000	1	$0	$5,000	1	$0	$5,000
Project Manager - Jim Georges	1	$190	$114,000	1	$0	$30,000	1	$0	$30,000	1	$0	$30,000
Project Manager - Tom Ray	1	$150	$45,000	1	$0	$17,500	1	$0	$17,500	1	$0	$17,500
Key Personnel		$0	$0		$0	$0		$0	$0		$0	$0
Analytics Manager - Jin-Whan Jung	1	$200	$40,000	1	$200	$5,000	1	$200	$5,000	1	$200	$5,000
Analytics Consultant - Jay King	1	$175	$96,250	1	$175	$15,000	1	$175	$15,000	1	$175	$15,000
Analytics Consultant - Sanjay Arangala	1	$175	$70,000	1	$175	$12,000	1	$175	$12,000	1	$175	$12,000
Analytics Consultant - TBD	1	$175	$70,000									
IT Manager	1		$0									
SSO IT Consultant	1		$0									
ISD IT Consultant	1		$0									
SAS Administrator - Don Koch	1	$150	$97,500	1	$150	$3,500	1	$150	$3,500	1	$150	$3,500
ETL Consultant - Dave Kuhn	1	$150	$51,000	1	$150	$5,000	1	$150	$5,000	1	$150	$5,000
Documentation Specialist	1	$125	$50,000	1	$125	$2,000	1	$125	$2,000	1	$125	$2,000
Quality Assurance Manager	1	$125	$43,750	1	$125	$1,500	1	$125	$1,500	1	$125	$1,500
Quality Assurance Consultant	1	$125	$50,000	1	$125	$3,500	1	$125	$3,500	1	$125	$3,500
TOTAL			**$772,500**			**$100,000**			**$100,000**			**$100,000**

7. POOL DOLLARS

This Section 7 below specifies the amount of Pool Dollars allocated for the term of the Agreement.

POOL DOLLARS SOURCE / COMPONENT	AMOUNT
Amount on the Effective Date	$93,700
Back-Up Server Adjustment – System Implementation	$78,300
Back-Up Server Adjustment – System Maintenance	$38,990
Reallocated from Maintenance Fees – Application Modification	$300,000
Subtotal – Pool Dollars	**$510,990**
Increase – Amendment Number Two	**$440,018**
TOTAL AMOUNT – POOL DOLLARS	**$951,008**

The total amount of Pool Dollars allocated for the term of the Agreement includes (i) $375,000 as the minimum amount that County is required to expend prior to December 31, 2013 following Go-Live for Optional Work which shall include Software Enhancements, and (ii) $63,700 reserved for DMS Transition Support activities to be provided by Contractor pursuant to Subtask 9.3.2 (Provide DMS Transition Support) of Exhibit A (Statement of Work).

SCHEDULE B.1

OPTIONAL WORK

1. OPTIONAL WORK

The table below specified the agreed upon Maximum Fixed Price amounts for certain Optional Work components should County elect Contractor to provide such Optional Work components.

ITEM NO.	DESCRIPTION/TYPE	REQUEST DATE	DELIVERY DATE	COUNTY APPROVAL DATE	MAXIMUM FIXED PRICE
Deliverable 9.3.2	**DMS Transition Support**				**$63,700.00**
SUBTOTAL					**$63,700.00**

2. POOL DOLLARS

EVENT (Effective Date, Change Notice, Amendment)	EVENT DATE	ADJUSTED AMOUNT ("+", "-")	REMAINING AMOUNT
Effective Date	December 22, 2009		$93,700.00
Change Notice No. 02	June 2011	+ $417,290.00	$510,990.00
Change Order No. 4	January 2012	– $15,450.00	$495,540.00
Change Order No. 1	March 2012	– $14,550.00	$480,990.00
Change Order No. 2	March 2012	– $2,625.00	$478,365.00
Change Order No. 3		– $19,475.00	$458,890.00
Change Order No. 5		– $36,875.00	$422,015.00
Change Order No. 6		– $4,925.00	$417,090.00
Change Order No. 7		– $51,700.00	$365,390.00
Change Order No. 8		– $52,300.00	$313,090.00
Change Order No .9		– $86,650.00	$226,440.00
Amendment Number Two	May 2012	+ $440,018.00	**$666,458.00**

EXHIBIT D

SYSTEM MAINTENANCE

GENERAL

This Exhibit D sets forth the scope of, and Contractor's service level commitment regarding, the maintenance and operational support of the System, including, but not limited to, System Maintenance consisting of Maintenance Services and Support Services, correction of Deficiencies, Warranties and County's remedies for Contractor's failure to meet the service level commitment specified herein. Capitalized terms used in this Exhibit D without definition shall have the meanings given to such terms in the Base Agreement.

The following Schedules are attached to and form a part of this Exhibit D:

- Schedule D.1 – County Remote Access Policies
- Schedule D.2 – LA County Extranet IT Security Standards (Draft)
- Schedule D.3 – County of Los Angeles Agreement for Acceptable Use and Confidentiality of County's Information Technology Assets, Computers, Networks, System and Data (IT Confidentiality and Acceptable Use Agreement).

1. SCOPE OF SERVICES

1.1 DESCRIPTION

Contractor shall provide System Maintenance specified in the body of the Agreement and this Exhibit D, as more fully described below. System Maintenance shall include Maintenance Services and Support Services. System Maintenance shall commence in accordance with the provisions set forth in Paragraph 5.3 (System Maintenance) of the Base Agreement and shall continue for the term of the Agreement.

Contractor shall provide System Maintenance for the System from Contractor's business premises or at the County site, as necessary to fulfill its obligations under the Agreement.

1.2 DEFINITIONS

1. As used herein, the term "Downtime" shall have the meaning specified in Section 5.1 (Deficiency Credits).
2. As used herein, the term "Deficiency Credit(s)" shall have the meaning specified in Section 5.1 (Deficiency Credits).
3. As used herein, the term "Disabling Device(s)" shall have the meaning specified in 4.1 (General Warranties).
4. As used herein, the term "Scheduled Downtime" shall have the meaning set forth in Section 2.1.3 (System Hardware).
5. As used herein, the term "Support Hours" shall mean 7:00 a.m. to 7:00 p.m. Pacific Time daily.
6. As used herein, the term "System Upgrade" shall have the meaning set forth in Section 5.2 (System Performance Requirements and Deficiencies).

2. SYSTEM MAINTENANCE

2.1 MAINTENANCE SERVICES

2.1.1 UPDATES

Contractor shall provide Maintenance Services related to System Software (hereinafter "Maintenance Services"), including Updates, as described in this section below. Contractor shall provide Updates to Application Software to keep current with Contractor's hosting technology standards, industry standards, Third Party Software upgrades, enhancements, updates, patches, bug fixes, etc., in accordance with this Exhibit D, as coordinated with County's Project Manager.

Without limiting the other provisions of this Agreement, including, without limitation, this Exhibit D, such Updates shall be provided to County at least once every year, unless otherwise agreed to by County and Contractor. Contractor shall offer to County Updates, including, but not limited to, updates, enhancements, improvements and Version Releases of the Application Software, or any Component or module of such Application Software, and all Documentation related thereto promptly after the creation thereof.

Contractor shall notify County of all such Updates to the Application Software prior to the anticipated installation date thereof. Installation of each Update shall be subject to prior written or electronic approval of County's Project Manager. Contractor's provision and installation of such Updates to the Application Software shall be at no additional cost to County beyond any applicable Maintenance Fees. Any Updates necessary to remedy security problems in the Application Software (e.g., closing "back doors" or other intrusion-related problems), whether identified by Contractor, County or a third party, shall be provided to County within five (5) calendar days of Contractor's knowledge of the existence of such security problems, unless agreed to otherwise. County acknowledges that Contractor's software products require a product authorization code ("Setinit") issued by Contractor in order to operate, and such code is not a "security problem."

2.1.2 THIRD PARTY SOFTWARE

Maintenance Services additionally include ongoing maintenance of Third Party Software's compatibility with the Application Software. Prior to the installation of any Third Party Software, Contractor shall test the compatibility of each update to the Third Party Software with County's then-current Application Software and shall report its findings to County.

Contractor shall ensure that the Application Software is compatible with the required or critical updates to Third Party Software, including, without limitation, service and compatibility packs and security patches, within seven (7) calendar days or as soon as commercially reasonable after release of such update.

In the event it is determined that any required update is not compatible with the Application Software, Contractor shall provide County with a workaround to protect the integrity of the Application Software until such time as the Deficiency is corrected. Compatibility issues with Third Party Software will be subject to Section 3 (Correction of Deficiencies) of this Exhibit D below.

2.1.3 SYSTEM HARDWARE

Contractor shall repair, upgrade or replace System Environment Components, including System Hardware and System Network, but excluding County Hardware, during the term of the Agreement to comply with the System Requirements and the Warranties specified

in this Agreement and to support and be compatible with any Application Modifications, as necessary to comply with Contractor's System Maintenance obligations and Warranties specified in this Agreement.

2.1.4 SCHEDULED DOWNTIME

Unless agreed to otherwise in advance by County and Contractor, Contractor shall provide all Maintenance Services, including installation of Updates, during Scheduled Downtime. For the purpose of this Exhibit D, "Scheduled Downtime" shall mean all time that the System Software cannot be accessed due to scheduled maintenance including, but not limited to, preventative maintenance, updates, upgrades, scheduled reboots and restarts. Contractor shall work with County to determine a mutually agreeable time for Scheduled Downtime. As of the Effective Date, the Scheduled Downtime covers an outage window during the third weekend of each month from 7:00 a.m. EST Saturday – 7:00 p.m. EST Sunday.

2.2 SUPPORT SERVICES

2.2.1 HELP DESK

Contractor shall provide support services in respect of the System as described in this Exhibit D and this Agreement generally (collectively "Support Services"). As part of its Support Services, Contractor shall provide operational support for the System during the Support Hours, which shall include without limitation providing a point of contact for all System problems by maintaining a Help Desk. Such operational support shall include Support Services to correct any failure of the System and to remedy Deficiencies in accordance with Section 3 (Correction of Deficiencies) below to ensure that the System operates in accordance with the Specifications and the System Requirements, including, without limitation, System Performance Requirements. The Help Desk will respond with a plan for resolving each Deficiency and notify County's Project Manager.

2.3 BUSINESS CONTINUITY PLAN

Contractor provides for a Business Continuity Plan, which shall be made available to County at http://www.sas.com/corporate/continuity.pdf. Notwithstanding the provisions of Contractor's Business Continuity Plan, the terms of this Exhibit D, including without limitation Section 3 (Correction of Deficiencies) and Section 5 (Remedies), shall supersede and take precedence over any conflicting or inconsistent terms of such Business Continuity Plan, and Contractor shall remain subject to all applicable obligations and assessment of remedies as set forth in this Exhibit D relating to the correction of Deficiencies or any other System problems.

3. CORRECTION OF DEFICIENCIES

3.1 IDENTIFICATION OF DEFICIENCIES

The Deficiencies under this Agreement may be identified either as a result of Contractor's use of its own support system or discovered by County. Upon discovery of a Deficiency by County, County will report the Deficiency to Contractor's Help Desk for resolution in accordance with this Exhibit D.

The Severity Level of the Deficiency shall be assigned mutually by County and Contractor. Based on Contractor's proposed solution and/or workaround(s) for the Deficiency, County and Contractor may reevaluate and, escalate or downgrade the Severity Level of the Deficiency pursuant to Section 3.2.3 (Severity Level Adjustment) below. If a mutually agreed upon resolution cannot be reached, County will exercise

Dispute Resolution Procedure as specified in Paragraph 53 (Dispute Resolution Procedure) of the Base Agreement.

For purposes of this Agreement, the term Deficiency does not include any failure or delay in performance caused by reasons beyond Contractor's reasonable control, including, but not limited to, 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, storms, actions of County or its personnel or agents or other similar events.

3.2 RESOLUTION OF DEFICIENCIES

3.2.1 PROBLEM CORRECTION PRIORITIES

County and Contractor shall mutually assign one of the Severity Levels specified below to each incident of Deficiencies reported by County to Contractor's Help Desk and/or entered in Contractor's incident tracking system. Following report of a Deficiency from County, Contractor shall respond back to County within the prescribed "Response Time" specified below, while each such Deficiency shall be resolved within the specified "Resolution Time". If a mutually agreed upon resolution cannot be reached, County will exercise Dispute Resolution Procedure as specified in Paragraph 53 (Dispute Resolution Procedure) of the Base Agreement.

SEVERITY LEVEL	DESCRIPTION OF DEFICIENCY	RESPONSE TIME	RESOLUTION TIME
1 - Critical	Widespread System unavailability – Production System is down or any System Component is completely or functionally inoperable. Making a major operational impact to County.	One (1) hour	Eight (8) hours
2 - Major	Problem that substantially degrades performance of any Application Software component or materially restricts business; restricts use of one or more modules or features of Application Software to perform necessary business functions, but not entire Application Software. Users can use Application Software; but an important function of it is not available; operations are severely impacted.	Three (3) Business Hours	Twenty-four (24) Business Hours
3 - Minor	A problem that causes only a minor impact on the use of the Application Software. The problem can be easily circumvented. The problem can cause some functional restrictions, but it does not have a critical or severe impact on operations.	Five (5) Business Hours	Two (2) weeks
4 – Low Impact	This is a low impact problem and is not significant to operations or is related to education (e.g., general "how to" and informational Application Software questions, Documentation requests, understanding of reports or general "how to" create reports).	Two (2) Business Days	Earlier of (i) the next Version Release or (ii) 12 months of County's report thereof, beginning when County reports Deficiency to Contractor.

3.2.2 PROBLEM RESOLUTION PROCESS

For any Deficiency reported by County or discovered by Contractor, Contractor shall immediately commence corrective action. Contractor shall correct all Deficiencies within the Resolution Times specified above. Contractor shall also immediately commence to develop a workaround or a fix for any Deficiency of Severity Level 1.

Contractor shall provide the best level of effort to correct all Deficiencies, and in particular Deficiencies of Severity Levels 1 through 3. In the event that Contractor fails to correct a Deficiency within the prescribed Resolution Time, Contractor shall provide County with a written or electronic report that includes a detailed explanation of the status of such Deficiency, preliminary actions taken, detailed mitigation plans and an estimated time for completing the correction of such Deficiency. This process will be repeated until the Deficiency is resolved and approved by County's Project Manager. The parties will jointly cooperate during this period of time.

All Severity Level 4 Deficiencies shall be corrected by the earlier of (i) the next Version Release or (ii) twelve (12) months from County's report of such Deficiency, as specified above.

3.2.3 SEVERITY LEVEL ADJUSTMENT

County and Contractor may mutually agree to escalate or downgrade a Severity Level of a Deficiency if the Deficiency meets the definition of the Severity Level as escalated or downgraded. A Deficiency may also be mutually escalated by County and Contractor, if the Deficiency persists or re-occurs, as determined by County's Project Manager. At the time the Deficiency is escalated or downgraded, an appropriate timeline will be applied for resolution of such Deficiency in accordance with Section 3.2.1 (Problem Correction Priorities) above. If a mutually agreed upon resolution cannot be reached, County will exercise Dispute Resolution Procedure as specified in Paragraph 53 (Dispute Resolution Procedure) of the Base Agreement.

4. WARRANTIES

4.1 GENERAL WARRANTIES

Contractor represents, warrants, covenants and agrees that throughout the term of this Agreement:

1. Contractor shall comply with the description and representations (including, but not limited to, Deliverable documentation, performance capabilities, accuracy, completeness, characteristics, Specifications, configurations, standards, functions and requirements applicable to professional software design meeting industry standards) set forth in this Agreement, including Exhibit A (Statement of Work) with all Attachments thereto, including System Requirements and System Performance Requirements.
2. All System Components shall interface and be compatible with each other; and the System Components, when taken together, shall be capable of delivering all of the functionality as set forth in this Agreement (including, without limitation, the Recitals, System Requirements, System Performance Requirements and the Specifications).
3. Unless specified otherwise herein, the System shall be free from any and all material Deficiencies.

4. The level of System Maintenance services shall not degrade during the term of the Agreement.

5. Contractor shall not intentionally cause any unplanned interruption of the operations of, or accessibility to the System or any System Component through any device, method or means including, without limitation, the use of any "virus", "lockup", "time bomb", or "key lock", "worm", "back door" or "Trojan Horse" device or program, or any disabling code, which has the potential or capability of compromising the security of County's confidential or proprietary information or of causing any unplanned interruption of the operations of, or accessibility of the System or any System Component to County or any User or which could alter, destroy, or inhibit the use of the System, any System Component, or the data contained therein (collectively referred to for purposes of this Exhibit D as "Disabling Device(s)"), which could block access to or prevent the use of the System or any System Component by County or Users. Contractor represents, warrants and agrees that it has not purposely placed, nor is it aware of, any Disabling Device on any System Component provided to County under this Agreement, nor shall Contractor knowingly permit any subsequently delivered System Component to contain any Disabling Device. Contractor's Setinit is not a Disabling Device as defined herein.

   In addition, Contractor shall prevent viruses from being incorporated or introduced into the System Software or updates or enhancements thereto prior to delivery and installation thereof to County and shall prevent any viruses from being incorporated or introduced in the process of Contractor's loading of System Software, or updates and enhancements thereto, or being introduced in the process of Contractor's performance of on-line support. County acknowledges that Contractor is not necessarily the manufacturer of the virus protection software. County is solely responsible for virus protection measures on County's client devices and its County controlled network.

4.2 SYSTEM WARRANTIES

Contractor also represents, warrants, covenants and agrees that throughout the term of this Agreement:

1. While County is covered by System Maintenance, Contractor shall support all Application Software components in their respective then-existing architecture and for their respective then-existing Version Releases and the most recent prior two (2) Version Releases for the term of this Agreement.

2. System Software shall be fully integrated and interfaced as required by the System Requirements relating to Interfaces.

3. Application Software shall be fully compatible with the rest of the System Software Components and any County software operated by County on the County Hardware.

4. None of the Application Software requires execution by County of software licenses with third parties.

5. The System Components shall interface and be compatible with each other; and the System Components, when taken together, shall be capable of delivering all of the functionality and meeting all requirements as set forth in this Agreement

(including, without limitation, the Recitals, System Requirements and the Specifications).

4.3 SYSTEM PERFORMANCE

Contractor represents, warrants, covenants and agrees that the System shall meet the System Performance Requirements, including, but not limited to, those related to System Response Time and System Availability, as specified in Attachment A.1 (System Requirements) and Section 5.2 (System Performance Requirements and Deficiencies) of this Exhibit D below. All System Performance Deficiencies shall be deemed at a minimum as Severity Level 2 for the purpose of the correction of Deficiencies and other remedies.

5. REMEDIES

5.1 DEFICIENCY CREDITS

5.1.1 GENERAL

Credits shall accrue for Contractor's failure to timely correct any Severity Level 1, Severity Level 2 or Severity Level 3 Deficiency and/or for the occurrence of three (3) or more Severity Level 1 Deficiencies in any single calendar month (collectively and individually, "Deficiency Credit(s)").

Without limiting any other rights and remedies available to County, either pursuant to this Agreement, by law or in equity, County shall be entitled to Deficiency Credits in the event that either (i) Contractor fails to correct a Severity Level 1, Severity Level 2 or Severity Level 3 Deficiency (hereinafter "Downtime") within the timeframes set forth in Section 3 (Correction of Deficiencies) of this Exhibit D, or such longer period as agreed to by County and Contractor, or (ii) three (3) or more Severity Level 1 Deficiencies occur in any calendar month during the term of this Agreement.

Deficiency Credits shall not be assessed for Downtime occurring during mutually agreed upon scheduled or planned shut down of the System Hardware, Scheduled Downtime or Response Time testing.

5.1.2 ASSESSMENT OF DEFICIENCY CREDITS

1. If Contractor fails to correct any Severity Level 1, Severity Level 2 or Severity Level 3 Deficiency within the timeframes set forth in this Exhibit D, then in each instance, County may, in its sole discretion, assess Deficiency Credits in amounts per day for each day, or portion thereof, during which any Deficiency continues beyond the Resolution Time prescribed for the applicable Severity Level of such Deficiency, as set forth below:

   i. For Severity Level 1 Deficiencies, Five Hundred Dollars ($500) per day;

   ii. For Severity Level 2 Deficiencies, Three Hundred Dollars ($300) per day; and

   iii. For Severity Level 3 Deficiencies, One Hundred Dollars ($100) per day.

   The amount of time elapsed for the calculation of Deficiency Credits will be determined by the timestamp or other evidence issued by the Help Desk at such time as a service request is sent by County to Contractor.

2. If during any calendar month three (3) or more Severity Level 1 Deficiencies occur, then, in each instance, County may, in its sole discretion, assess Deficiency Credits in an amount equal to Five Thousand Dollars ($5,000).

3. Notwithstanding anything to the contrary set forth in this Exhibit D, (i) any Deficiency Credits accruing to County as a result of a Downtime or Deficiency shall be based upon its escalated or downgraded Severity Level, if applicable, assigned to such Deficiency in accordance with Section 3.2.3 (Severity Level Adjustment) of this Exhibit D; and (ii) the maximum amount of Deficiency Credits for any month of the term of the Agreement is Eight Thousand Dollars ($8,000).

Contractor shall be liable to County for Deficiency Credits in the amounts as specified above. Deficiency Credits, in any amounts, are not and shall not be construed as penalties and, when assessed, will be deducted from County's payment due to Contractor.

5.2 SYSTEM PERFORMANCE REQUIREMENTS AND DEFICIENCIES

Contractor shall during the term of the Agreement provide and maintain the System Performance Requirements as specified below and further described in the applicable sections of Attachment A.1 (System Requirements).

County and Contractor shall agree on the frequency and the timing of the System Performance Report to be provided by Contractor in accordance with Section 2.6.6 (Reliability, Scalability, Back-ups and Disaster Recovery) of Attachment A.1 (System Requirements).

System Performance Category	System Performance Requirement
System Availability	Ninety-nine percent (99%)
System Response Time	Three (3) seconds, excluding: ▪ Issues outside of Contractor's control ▪ Ad-hoc requests ▪ Backend processing Five (5) seconds but only during the period described immediately below.

Following a Go-Live, in the event County fails to procure the System Environment upgrade in order to meet System Environment specifications recommended by Contractor consistent with the use of the System pursuant to the terms of the Agreement and such failure leads to System Response Time issues, the parties agree (i) that the maximum allowable System Response Time shall be **five (5) seconds**, provided, however, that if County and Contractor determine that such System Response Time is not achievable, the parties shall mutually agree upon an alternate System Response Time requirement and (ii) to leverage the utilization statistics detailed in this Section 5.2 above, to determine the appropriate time for County to revisit the System Environment architecture. Based on the expanded use of the System Environment, the parties also agree that other architecture modifications may be required in order to maintain adequate System Performance, including System Response Time, but only upon agreement of the parties. Following County's procurement of the System Environment upgrade recommended by Contractor consistent with the use of the System, (i) the maximum allowable System Response Time shall revert back **to three (3) seconds** and (ii) Contractor shall be subject to the System

Performance obligations specified elsewhere in the Agreement, including this Exhibit D and Attachment A.1 (System Requirements).

In the event the System fails to meet the System Performance Requirements, including Response Times (hereinafter "System Performance Deficiency"), and upgrade, repair or replacement of any of the System Environment Components (hereinafter "System Upgrade"), including operating software, hardware and/or networking components, is necessary to remedy the Deficiency, Contractor shall perform the necessary System Upgrade at no cost to County during the term of the Agreement. Notwithstanding the foregoing, Contractor bears no responsibility to perform a System Upgrade to meet the System Environment specifications recommended by Contractor to cover the expanded use of the System contrary to the System Environment specifications recommended by Contractor, as specified in the first sentence of the preceding grammatical paragraph. Failure by Contractor to meet the System Performance Requirements specified herein shall entitle County to the Deficiency credits based on the applicable Severity Level as specified in Section 5.1 (Deficiency Credits).