Memorandum of Understanding with Department of Information Technology for Business Services Provided by Government Data Analytics Center (GDAC) – Request for Approval

Board of Trustees Meeting

December 20, 2016

A Division of the Department of State Treasurer
Contract Approval Required by Statute

North Carolina General Statutes §135-48.22 and §135-48.33(a) require that the BOT approve all Plan contracts with a value over $500,000.

The estimated cost of this contract is $1,442,674.
Background & Context

Prior to transitioning to the Department of State Treasurer (DST), the State Health Plan held data on its own server and used the State’s enterprise license for SAS software to develop its data warehouse.

Following the Plan’s move to DST, the then recently formed Government Data Analytics Center (GDAC) was engaged to facilitate a transition of the hosted data repository into a much broader statewide platform hosted by SAS.

• Pursuant to statute §143B-1385(b)(1), the purpose of the GDAC is to utilize public-private partnerships as part of a statewide data integration and data sharing initiative and to identify data integration and business intelligence opportunities that will generate greater efficiencies in, and improved service delivery by, State agencies, departments and institutions.

• Pursuant to statute §143B-1385(b)(4)(a) all State agency business intelligence requirements, including any planning or development efforts associated with creating business intelligence capability, as well as any master data management efforts, shall be implemented through the GDAC.
<table>
<thead>
<tr>
<th>Current Scope of GDAC Footprint Within State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NCAS</strong></td>
</tr>
<tr>
<td>Purchasing Card Transactions</td>
</tr>
<tr>
<td>Payment Data</td>
</tr>
<tr>
<td>Vendor Data</td>
</tr>
<tr>
<td><strong>State Health Plan</strong></td>
</tr>
<tr>
<td>Medical Claims Data</td>
</tr>
<tr>
<td>Pharmacy Claims Data</td>
</tr>
<tr>
<td>Provider/Member Data</td>
</tr>
<tr>
<td><strong>Dept. of Commerce/Division of Employment Security</strong></td>
</tr>
<tr>
<td>Eligibility/Benefit Payment Data</td>
</tr>
<tr>
<td>Employer Wage/Tax Data</td>
</tr>
<tr>
<td>Case Management Data</td>
</tr>
<tr>
<td>QCEW-Quarterly Census of Employment &amp; Wages</td>
</tr>
<tr>
<td><strong>Division of Motor Vehicles</strong></td>
</tr>
<tr>
<td>Driver License Data</td>
</tr>
<tr>
<td>Vehicle Registration Data</td>
</tr>
<tr>
<td><strong>BEACON</strong></td>
</tr>
<tr>
<td>Employee and Position Data</td>
</tr>
<tr>
<td>Employee Earnings Data</td>
</tr>
<tr>
<td><strong>Secretary of State</strong></td>
</tr>
<tr>
<td>Corporate Registration Data</td>
</tr>
<tr>
<td>UCC Data</td>
</tr>
<tr>
<td><strong>Industrial Commission</strong></td>
</tr>
<tr>
<td>Workers Comp Insurance Data</td>
</tr>
<tr>
<td><strong>DHHS-Center for Health Statistics</strong></td>
</tr>
<tr>
<td>Vital Records – Deceased Data</td>
</tr>
<tr>
<td>Medicaid Claims Data</td>
</tr>
<tr>
<td>Social Services Data</td>
</tr>
<tr>
<td><strong>Other – External Sources</strong></td>
</tr>
<tr>
<td>Bank of America P-card Data</td>
</tr>
<tr>
<td>Social Security Death Master File</td>
</tr>
<tr>
<td><strong>Criminal Justice (CJLEADS)</strong></td>
</tr>
<tr>
<td>DPS – Prison Data</td>
</tr>
<tr>
<td>DPS – Probation Data</td>
</tr>
<tr>
<td>DPS – Local Jail Data</td>
</tr>
<tr>
<td>AOC – Criminal Court/Warrants</td>
</tr>
<tr>
<td>Domestic Violence Protective Orders</td>
</tr>
<tr>
<td><strong>DMV – Web Services (person and vehicle)</strong></td>
</tr>
<tr>
<td>DOJ – Concealed Handgun Data</td>
</tr>
<tr>
<td>DOJ – Sex Offender Registry</td>
</tr>
<tr>
<td>Wildlife – Web Service</td>
</tr>
<tr>
<td><strong>Future—Federal Hot Files and Criminal Incident based data</strong></td>
</tr>
<tr>
<td><strong>Office of State Budget Management</strong></td>
</tr>
<tr>
<td>Budget and Expenditures Data</td>
</tr>
</tbody>
</table>
Plan Data Analytics: Our Mission & Vision

**Mission**
By adopting a comprehensive approach to data analytics, the State Health Plan will systematically leverage health information assets to provide valuable insights allowing for leadership to make informed, data driven business decisions in support of the overall Plan strategic and operational priorities.

**Vision**
To become a leader and visionary in health care data analytics, whereby an analytics culture and mindset is prevalent throughout Plan. The more data assets that are leveraged, the more insights about our members’ health and experience as well as our performance can be derived by applying data science and advanced modeling methods, in real or near real time.
Plan Data Analytics: Our Journey

It is a journey, not a destination…

Competitive Advantage

Degree of Intelligence

Beginner

Spreadsheets
Data Repository
Basic, Static Reporting
• What happened?

Operational

Data Governance
• What is the best result with actions to achieve?
Data Governance Strategy
• What will happen next?
Data Management and Data Quality
• How many, how often?
Query Drill Down
• Where is the problem or issue?
Ad-hoc Reports

Advanced

Forecasting
• What if the trend continues?
Data Governance Instituted
Predictive Modeling
• What is the best result with actions to achieve?
Analytical Data Mart
Leveraging Big Data
• New data sources
• Unstructured data sources
Statistical Analysis
• Why is this happening?
Alerts
• What action is needed?
Automated Reporting
Scalability & Performance

Evolving Insights

Ongoing optimization
Prescriptive Modeling
• What is the best result with actions to achieve?
Analytics culture is prevalent within SHP
Widespread usage and high adoption rates
Embedded in strategy

Visionary

Ad-hoc Reports

North Carolina State Health Plan
FOR TEACHERS AND STATE EMPLOYEES

A Division of the Department of State Treasurer

6
Plan Data Analytics: Our Process

**From Issue Identification to Desired Outcomes**

1. **Identify Issues**
   - Identify the most pressing issues that would benefit from analytical modeling and develop the use case, i.e., Fraud, Waste & Abuse.

2. **Data To Leverage**
   - Identify all of the data sources to leverage, structured and unstructured.
   - “4 V’s” of data: Volume, Variety, Velocity, Veracity

3. **Applied Analytics**
   - Apply the right analytic tools and technologies to drive sustainable outcomes, i.e., SAS, Hadoop, machine learning.

4. **Insights Revealed**
   - Analyze the data and patterns within the data will reveal key insights and predictors that will enable better and faster data-driven decision making.

5. **Take Action**
   - Make the leap to adoption by through the integration of insights revealed into the decision making processes.

6. **Desired Outcomes**
   - Realize the advantages of the outcomes, i.e., enhanced cost savings, member satisfaction, and member experience.
How We Will Get There, By Function

GDAC, SAS and Analysts within each section of the Plan

Data Governance, Data Management and Data Analytics

Data Management
  - Data Architecture, Analysis & Design
  - Database Administration
  - Data Security Management
  - Metadata Management
  - Data Warehousing & BI
  - Reference & Master Data Management
  - Data Quality Improvement
  - Unstructured Data Management

Non-EDW Content & Document Management

Quality Assurance & Project Coordination

Analytics & Data Science
  - Data Analysis
  - Data Intersections & Insights
  - Forecasting
  - Statistical Analysis
  - Predictive Modeling & Analytics
  - Optimization
  - Prescriptive Modeling & Analytics

Use Cases
  - User Stories & Requirements
  - Business, Process & Functional Analysis

North Carolina State Health Plan

A Division of the Department of State Treasurer
• GDAC and SAS provide expertise and augment Data Analytics section, as do Analysts within each section of the Plan.
• **Purpose:** The Plan and the GDAC, leveraging the relationship with SAS, will continue the partnership to support advancing the Plan’s data management and advanced analytics strategy. The work efforts will focus on two primary projects: Healthcare Data Model (HCDM) & Extract, Transform and Load (ETL) and the Visual Analytics (VA) Healthcare Analytics Framework (HAF).
SAS Healthcare Data Model & ETL Project

- Enrich existing Enterprise Data Warehouse (EDW) to focus on current and new data assets. Complete the requirements, design, development and implement the SAS Healthcare Data Model (HCDM) to be leveraged across various Plan vendor data. Initially, the HCDM will be populated with tables that will include:
  
  - Medical Claims
  - Providers
  - Pharmacy Claims
  - Member Eligibility
Plan Data Assets

Current Plan Vendors
- BCBSNC
- Humana
- United Healthcare
- Express Scripts, Inc.

Upcoming identified data sources
- CVS Caremark
- Benefitfocus

Future data sources
- Medcost
- Cobraguard
- Active Health Management
- NC Hospital Association
- First Data Bank
- Other
SAS Visual Analytics HAF Project

- **Purpose**: Implement a population health management dynamic visual reporting solution using SAS Visual Analytics to assist the Plan with data driven decision making capabilities relative to the health and experience of our members as well as the financial stability of the Plan. Develop useful analytical models to support the strategic plan and Plan priorities.

**Phase 1**
- Population Health Management Dynamic Visual Analytics Reports
- **Deliverables:**
  - Member Analysis Report
  - Drug Analysis Report
  - Site of Service Report
  - Super Utilizer Report

**Phase 2**
- Vendor, Provider & Strategic Plan Dynamic Visual Analytics Reports
- **Deliverables:**
  - Vendor Dynamic Report
  - Provider Dynamic Report
  - Strategic Plan Dynamic Report

**Phase 3**
- Initial Predictive and Prescriptive Modeling
- **Deliverables:**
  - Advanced analytical models to be developed based on business issues identified, requirements and use cases developed from focus groups
HCDM & ETL High Level Estimated Timeline

Integrate New Data Sources
(CVS and BenefitFocus)

Use New Data, Phase Out Old
(with Modernized Environment)

Begin Parallel Testing
(Maintain Environment)

Retire Existing Environment

QA New Data And ETL
-Feb

Profile New Data, Develop Tables/Views
-Mar

Develop ETL for Current Data Sources

DQ Checks, Modify ETL, Validate DEV and TEST
-May

UAT, QA TEST, Load PROD, Knowledge Transfer

Utilize Environment
-Jun-Jul

SHP Sandbox, UAT, Signoff PROD
-Aug-Sep

Revise Documentation, QA, UAT, Resolve Issues
Population Health Management Jan-Mar

Population Health Management dynamic visual analytic reports. Includes BCBS, UHC, Humana, and ESI

Start Vendor Report
Launch Provider Report

Start Predictive Modeling

Launch Strategic Plan

Launch Vendor Report

Jan
Feb
Mar
Jun
Jul
Aug
Sep
Oct-Nov
Jan

Complete VA Install on DEV
Start setup VA on TEST, PROD
Start Provider Report

Plan staff recommends approval of the MOU with GDAC beginning January 4, 2017, with an expected cost as follows:

- HCDM & ETL Scope: $300,000
- VA HAF Scope: $850,000
- VA HAF Hosting: $292,674
- Total Cost: $1,442,674