

Enterprise Data Governance (EDG) Initiative Quarterly Report

As Required by Rider 216

Article II, HHSC, 2018-19

General Appropriations Act



TEXAS
Health and Human
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1. Overview

The Health and Human Services Commission (HHSC) submits this report to the Legislative Budget Board and the Office of the Governor, State of Texas, as stipulated in Rider 216 of the 2018-19 General Appropriations Act (Article II, HHSC, 85th Legislature) regarding the development of an enterprise data governance program for health information:

“Enterprise Data Governance (EDG). *Included in the amounts appropriated above in Strategy L.1.2, Information Technology (IT) Oversight & Program Support, is \$6,740,700 in All Funds (\$920,175 in General Revenue) in fiscal year 2018 and \$6,420,700 in All Funds (\$888,175 in General Revenue) in fiscal year 2019 for development and implementation of the Enterprise Data Governance project.*

HHSC shall submit quarterly reports to the Legislative Budget Board and the Governor reflecting actual expenditures, cost savings, and accomplishments implementing the Enterprise Data Governance project. The report shall include a detailed plan for the project, a proposed schedule of expenditures, and the status of implementation for a comprehensive Medicaid focused Enterprise Master Data Management System, Metadata Repository, and Information Management Program. Additionally, the report shall include detailed strategies developed and implemented by HHSC to restrict the Enterprise Data Governance project to those items presented and approved by the Eighty-fifth Legislature, 2017.”

2. Plan and Strategy

2.1. Detailed Plan

The EDG project is operating on an approved implementation advance planning (IAPD) document through 2022, with annual gateway approvals from the Centers for Medicare and Medicaid Services (CMS). The EDG team identified, and CMS approved, five project tracks to implement the overall Medicaid-focused EDG solution. Each track is composed of a set of phases. All five tracks will persist beyond the biennium.

Below are the project plans and approach details for each of the five EDG project tracks:

- Data and information management track (DIM)
- Data quality and standards track (DQS)
- Metadata and reference data management track (MRDM)
- Data architecture track
- Data and information controls track (DIC)

Data and Information Management Track

The purpose of the DIM track is to implement an enterprise master data management (MDM) system for use across the Health and Human Services (HHS) system.

Key functions of the MDM system are as follows:

- **Data Acquisition:** This capability acquires data from various sources containing similar data sets.
- **Data Standardization:** This capability ensures that master data conforms to data standards adopted by the EDG Council.
- **Data Mastering and Data Governance:** Data mastering includes data matching, merging, and retaining relevant information from various systems to form a single version of a matched record. Identity resolution across source systems requires data governance, the activity of an organizational structure that guides the alignment and implementation of enterprise data management policies and processes.

- **Data Publishing:** Master records need to be integrated with HHS systems and data-driven business processes. The data publishing capability allows integration of golden records as needed by existing processes in HHS.

Overall Solution:

Implement a Medicaid focused MDM system. MDM is the organization, management, and distribution of corporately adjudicated, high-quality information with widespread use in the organization. The DIM track encompasses the implementation of a Medicaid focused HHS system-wide system that manages data and information for HHS use. Primary among these systems is the system that creates and manages mastered domain data, the HHS insights platform.

Use the MDM layer as a hub to measure, manage, and increase data quality in critical HHS data assets.

Data Quality and Standards Track

The quantitative measurement of data quality is imperative to improve said data. The DQS track ensures that the HHS system can measure the data quality within key HHS systems and make necessary recommendations to improve data quality through the creation of data standards. Continuous monitoring of data quality within mastered data domains is a key requirement and an integral part of the EDG program.

Overall Solution:

EDG's Data Quality process includes the following key components:

- Data profiling
- Data remediation
- Data monitoring

Collectively, the key components of the data quality process are cyclical in nature and will be required to be repeated while profiling and remediating data quality issues for any given source system.

DQS will include profiling data sets from HHS systems to identify data anomalies and issues that adversely affect the business processes that the system is supporting. The DQS track is divided into four phases to ensure the measurement of data quality for all Medicaid systems. Systems prioritized based on requirements from projects on the Medicaid Information Technology and Architecture (MITA)

roadmap will be added to each DQS phase and each phase will deliver key capabilities for these systems.

Metadata and Reference Data Management Track

Metadata refers to that data within the HHS system that provides information about data and information elements. Developed systems typically use reference data for context to codes. Examples of reference data include county codes and respective references, region codes, and International Classification of Diseases (ICD)-10 codes.

Metadata and Reference data for systems within HHS are generally inconsistent and do not conform to any HHS system data management standard. Issues arising from lack of metadata and reference data standards become evident during data integration or data consolidation, resulting in poor data quality in reports and systems that lack HHS system alignment.

The MRDM track alleviates challenges arising from different standards, definitions, and reference codes by collecting information from disparate source systems, storing that information in a centralized repository (a Metadata Repository for metadata and reference data management repository for adopted HHS system reference standards), and governing the creation, use, and maintenance of such data using EDG policies and processes.

Metadata management activity falls into three broad categories:

Collect: This activity allows collection of metadata/reference data from transactional systems. Collection also includes the capture of changes to already collected metadata/reference data. During the implementation phase of the project, HHS intends to collect all business and technical metadata and relevant reference data.

Govern: Governance is the activity in which data stewards will analyze the collected metadata/reference data for discrepancies and recommend standards. The EDG Council determines the priority given to metadata/reference data domains required by Medicaid systems and CMS-approved Medicaid projects on the MITA roadmap.

Store / Publish: This activity will allow storage and publication of metadata/reference data sets. Storage serves the important function of acting as the “hub” for metadata/reference data domains. Scope includes implementing necessary solutions to ensure the EDG Council can govern reference data and publish for multiple HHS system uses via a single, controlled interface.

Overall Solution:

Implement a data asset repository (DAR) to collect comprehensive data asset information across HHS (as mandated by Sunset Advisory Commission report, July 2015, Issue 7). A data asset is any kind of information that contains valuable records. It can be a database, a document, or any type of information managed as a single set. Large HHS systems generally comprise multiple types of data assets, which are usually migrated as a logical set, when systems are modernized and/or replaced. Ensure ease of accessibility and updated access for HHS data subject matter experts to the DAR. Ensure data assets, technical and business metadata are widely available, searchable, and viewable in a browser. Where possible, technical and business metadata created within other tracks should be linked to quality metadata.

In addition, implement a technical metadata repository to create visibility of HHS system data models and provide search capabilities within system entities and attributes.

Data Architecture Track

Data architecture is a key EDG competency that is beneficial in identifying and maintaining data and information assets within the HHS system. The primary goal of data architecture is to ensure key Medicaid-focused data domains are identified, defined, and managed appropriately within the HHS system. Additionally, this track is responsible for creating and maintaining a conceptual and a logical data architecture that aligns with the Texas HHS business architecture as referenced through the MITA framework. As a result, activity within this track aligns closely with MITA to identify improvements in data architecture that will affect business processes.

Overall Solution:

Develop and implement data governance processes to increase HHS competence and maturity in enterprise information management. Integrate governed HHS reference data and data quality metrics into MDM tools as the project deploys in HHS under the guidance of EDG Council and EDG Steering Committee. Implement reference data standards for HHS that data stewards, who must be able to explain the utility of data beyond their program area, can use. Data analysts and business interface designers can employ reference data mapped to the HHS system standard to standardize analytic output. Operational system architects and portfolio managers can use the same reference standards to provide long-term HHS system

alignment and interoperability goals to their operational systems as they are maintained/replaced.

Data and Information Controls Track (DIC)

The DIC track of the EDG program serves two basic purposes. First, it helps in managing the EDG program by clearly understanding the increased efficiencies associated with the program through the identification, definition, creation, and implementation of various controls and metrics required. Further, it helps in identifying and monitoring various data controls like data security and data access for key data domains identified as part of the EDG program.

Overall Solution:

Leverage the decision structure of the EDG Council to prioritize the creation of widely accepted data quality metrics. Utilize existing workgroups to adopt access and publication standards that control access to implemented repositories. Inform EDG Council of version roadmap options for implemented applications.

2.2. Detailed Strategy

This section details the strategies developed and implemented by the HHS system under the five identified project tracks.

Data and Information Management Track (DIM)

Previously Delivered (fiscal year 2016-17)

- Designed and implemented release 1 and release 2 of the HHS Insights platform, creating tools and processes that provide the capability to identify, resolve, and harmonize critical provider and member identities across multiple HHS systems. HHS insights platform is the name of HHS system's MDM platform.
- Created policies, processes, and standards to establish master data records and manage mastered identity data within member and provider data domains.

Expected Outcomes (fiscal year 2018-19)

(See Section 3 for accomplishments linked to this track).

- Create measurement tools, define processes, and ensure that people (data stewards) are coordinated for management of provider and member master data.
- Improve data quality of provider and member identity and critical attribution, with price of non-conformance valued directly within business processes that depend on the attribution.
- Increase visibility of providers and members as they enter, exit, and move between agency programs.

Data Quality and Standards Track (DQS)

Previously Delivered (fiscal year 2016-17)

- Data profiling of eight HHS data sources within data acquisition processes for the HHS Insights Platform, which allows automated measurement of critical data quality by source. The eight data sources are:
 - ▶ Texas Integrated Eligibility Redesign System
 - ▶ NorthSTAR
 - ▶ Compass21
 - ▶ MAXIMUS
 - ▶ NE Provider
 - ▶ Vendor Drug Program
 - ▶ Client Assignment and Registration System Operational Data Store
 - ▶ Premiums Payable System
- Defined identity exception processes and training content for use by subject matter experts, and future data stewards, in order to allow manual decisions regarding unresolved identity duplication.

Expected Outcomes (fiscal year 2018-19)

(See Section 3 for accomplishments linked to this track).

Increasing HHS data quality requires tools, processes, and human resources, all orchestrated to work together. The MDM tools implemented in previous phases are operational. During federal fiscal year 2019, new data quality processes (exception management and data quality measurement) will leverage MDM tools. Existing business processes to perform data quality and metadata management tasks will

utilize embedded data stewards, using capabilities now available on the HHS insights platform. The EDG Council will publish a set of data quality metrics and goals to provide guidance to HHS system data stewards in this biennium.

- Select and adopt critical data quality metrics for provider attribution, member attribution, and operational source data quality (EDG program staff to propose list for adoption by EDG Council).

For example, these could include (but are not limited to):

- ▶ Percentage of data assets by departmental area with no identified business owner
 - ▶ Trended measures of identity data quality (e.g. percentage of members by program with unresolvable physical addresses)
 - ▶ Trending of managed care encounters (by managed care organization (MCO), by service type) with known defects
- In conjunction with identified data stewards (embedded within Center for Analytics and Decision Support (CADS), Medicaid/Children's Health Insurance Program (CHIP), and Access and Eligibility Services) design HHS system dashboards within the HHS Insights platform that are capable of tracking and trending critical HHS data quality metrics, with defined relationships to identified business goals.

Metadata and Reference Data Management Track (MRDM)

Previously Delivered (fiscal year 2016-17)

- Initial implementation of DAR was exposed for data entry and browsing via Microsoft SharePoint.
- Initial implementation of HHS metadata repository to store and browse technical metadata and HHS system data model (within informatica metadata manager).
- Technical system metadata and updated data models for 27 major HHS systems readily available via a single, trusted location in the HHS metadata repository.
- Change management processes and policies defined with the EDG Council's support to establish an effective change management framework to collect source system metadata changes to support the continuous updating of the HHS metadata manager and DAR by data asset owners and subject matter experts.

Expected Outcomes (fiscal year 2018-19)

(See Section 3 for accomplishments linked to this track).

- During fiscal year 2019, the EDG Steering Committee will refactor the EDG Council to reflect the major organizational changes within HHS that have taken place between August 2016 and September 2017. In particular, the EDG Council will have representation on all HHS IT governance Councils and will be creating project-oriented, cross-functional workgroups in order to address known issues of data management and data quality across Texas HHS.
- High completion rate of fully described HHS data assets by agency and department as measured and tracked by DAR score-carding within SharePoint. Sunset Report Issue 7 specifically mandates this data asset management.
- Acquire technical system metadata and updated data models for all major HHS systems, provisioning them within a readily available, trusted, and secure location.
- Implement change control processes that will allow governance for reference data collected from disparate source systems within HHS to update and/or replace system metadata at appropriate times in system development lifecycles. This will require establishing interaction between the EDG Council and the HHS IT governance structure.
- Refresh and enhance technical metadata from all major HHSC Medicaid source systems.

Data Architecture Track

Previously Delivered (fiscal year 2016-17)

In previous phases during fiscal year 2016-17, the EDG project identified, and the EDG Council approved, two critical data domains, largely based on their impact on MITA: member and provider. The EDG team, in collaboration with the EDG Council and HHS subject matter experts, has previously completed various EDG activities for each of these domains. These include:

- Providing an easily understood definition for both member and provider data domains.
- Identifying attributes that will help uniquely identify Medicaid member and provider records across disparate systems within HHS.
- Collecting metadata and related reference data (for 27 HHS systems) for member and provider domains.

Expected Outcomes (fiscal year 2018-19)

(See Section 3 for accomplishments linked to this track).

- There will be a re-chartering of a cross-functional EDG Council and the creation of data governance workgroups. The EDG Steering Committee may invite state agency partners outside the HHS system that share major data exchange processes with the HHS system (e.g. Department of Family and Protective Services for foster care processes in Medicaid) as ex officio participants in the EDG Council.
- Creation of policies and procedures for governed reference data and governed master data.
- Controlled publication of all governed reference values within HHS insights (the MDM hub discussed within DIM on page 5).
- Establishment of data stewardship as a practice within HHS business processes.
- Identification of low utility, duplicate, or irrelevant data interfaces and exchanges.
- Identification of high-value, trusted interfaces and exchanges to promote their intentional re-use.
- Creation and ongoing maintenance of a conceptual and a logical data architecture that aligns with the Texas HHS business architecture as referenced through the MITA framework. As a result, data architecture within EDG will work very closely with the MITA team to identify business processes that data architecture will affect.
- Development of EDG program in partnership with the new IT governance model to determine critical areas of the HHS information architecture, both as-is and strategic to-be, which will be related to previous MITA information architecture deliverables, including the 2015 state self-assessment.
- Using previously established definitions of “member” and “provider”, as well as previously collected system metadata, to create enterprise conceptual and logical enterprise models for identity and reference data in these domains.
- EDG Council working groups will use additional standards for technical architecture documentation to further establish data management alignment across IT governance processes. These include data modeling and data dictionary standards, change management notification, and data stewardship reporting processes.
- The EDG Council will adopt recommendations for uses of published member and provider “best version of the truth” records to an Oracle repository. Once implemented, this repository will allow data analysts and system operations subject matter experts’ mass access to mastered records. HHS envisions this data structure and/or services architecture as the foundation for subsequent HHS projects that will enable HHS system analytics. Data exchange

processes can use this repository as a key component to improve data quality of member and provider identity and attribution within existing HHS operational systems.

Data and Information Controls Track

Previously Delivered (fiscal year 2016-17)

Not applicable. This track begins in federal fiscal year 2018.

Expected Outcomes (fiscal year 2018-19)

(See Section 3 for accomplishments linked to this track).

- The EDG Council will engage in a partnership planning model with IT Governance, the Office of the Chief Technology Officer (and others within the Office of the Chief Information Officer) to define critical metrics of success for EDG.

Additionally, the EDG Council will adopt policies and procedures that govern:

- Provisioning of access to the HHS master data repository (MDR) and associated metadata repositories. The HHS MDR and associated metadata repositories were previously developed and implemented in other tracks and will be expanded throughout fiscal year 2018-19.
- The EDG Council will publish adopted reference code standards for analytic use.
- Authorization of standard reference values (previously adopted) for use in standardization of HHS system analytics. (This creates standards that will specify several fundamental requirements for a future HHS system analytic strategy.)
- Informatica tools will be updated to use reference data management (RDM) data governance workflow capabilities (available within Informatica 10.3.)

3. Accomplishments

Accomplishments for the EDG project reported below are within the defined categories of activities associated with that project.

3.1. Accomplishments and Risks by Activity Track

Data and Information Management Track (DIM)

Accomplishments:

- ▶ Established a framework for data stewardship to be used in training data stewards in HHS. This framework is now operating via data stewards in EDG, who profile and manage provider data sources as master records are stored in the MDM solution.
- ▶ Data stewards within the EDG program are now using data profiling and data scorecard tools to measure data quality and manage provider identity exception data across a diverse set of provider sources. (The next challenge is to embed these tools and processes in key business areas as directed by data governance.

Risks:

- ▶ *Delay in establishment of EDG Council may delay data stewardship training and socialization processes.* The EDG Executive Steering Committee is meeting and approaching charter adoption. However, the EDG Council, where most data governance workgroup activity will occur, is not yet refactored. Ideally, data stewards should work directly within business processes to define and remediate non-conforming data attributes. Provider data stewards now working within the EDG program and are ready to train willing partners in business areas identified by EDG Council. However, delay in chartering the EDG Council will likely delay the start of this activity beyond the next quarter.
Planned Mitigation: In advance of EDG Council chartering, the EDG team will implement data quality tools in CADS, particularly in processes that are likely to be affected by near-term strategic initiatives (e.g. PMES).

- ▶ *Delay in IT - EDG partnership planning activity.* The EDG program has not yet begun engagement in a partnership planning model with IT Governance, the Office of the Chief Technology Officer (and others within the Office of the Chief Information Officer) to define critical metrics of success for EDG (beyond the program's already established business use cases). The onboarding of a new CIO and CTO in fiscal year 2019 may trigger changes in existing IT Governance processes, and the chartering of an EDG Council must also be accomplished in order to provide coordination of data management processes, particularly between CIO and the Chief Data and Analytics Officer. This activity is unlikely to be completed in this fiscal year but is likely to redefine duties and responsibilities under Circular 049, Office of the Chief Data Officer.
Planned Mitigation: In advance of EDG Council chartering, the EDG Executive Steering Committee, the Chief Data and Analytics Officer, and the Office of the CIO can plan a new draft of Circular 049, to ensure that duties and responsibilities are congruent with any planned changes to the HHS IT Governance model.

Data Quality and Standards Track (DQS)

Accomplishments:

- Completed implementation activities in three sprints, focused on infrastructure development for data quality measurements, application development in MDM, and resolution of data quality issues in provider attribution.
- Completed the data quality profiling and exception management process training for the EDG team's data stewards.
- Developed a comprehensive training desk and exception management process for future data quality tool users. Now being used by data stewards in the EDG program, these tools will be used to train embedded data stewards across the HHS system, under the direction of the EDG Council.

Risks

Delay in establishment of EDG Council may delay identification of business-requirements related to data quality definition. The EDG Executive Steering Committee is meeting and now approaching charter adoption. However, the EDG Council, where most data governance workgroup activity will occur, is not yet refactored. In a healthy data governance program, data stewards

should work directly within business processes to define, identify, and remediate data quality issues. Provider data stewards are now working within the EDG program and are also prepared to train willing partners in business areas identified by EDG Council. However, delay in chartering the EDG Council will likely delay the start of this activity beyond the next quarter.

Planned Mitigation: In advance of EDG Council chartering, the EDG core team will plan to work with specific business partners, subject to their availability, in order to assist them in developing data quality requirements specific to their areas, and in training them using existing data quality tools and defined processes. The EDG core team has previously identified analysts in business areas who can be important contributors to data quality measurement and data management improvement.

Metadata and Reference Data Management Track (MRDM)

Accomplishments:

- The EDG program adopted a maturity framework to score the metadata maturity of a given data asset. This framework will result in a dashboard of measures related to metadata maturity, to provide standards maturity goals. In future quarters, this dashboard will help direct the EDG Council to target HHS human resources needed to improve metadata within those data assets most closely linked to strategic priorities.
- The Metadata Repository supports discovery and user-directed browsing of HHS metadata and data models in a single standard user-interface. In this quarter, the EDG program added or enhanced technical and business metadata from the following six major systems:
 - ▶ Clinical Management for Behavioral Health Services
 - ▶ Vision21 Institutional Reimbursement
 - ▶ Provider Management Database
 - ▶ Compass21
 - ▶ Claims Management System
 - ▶ Encounters Operational Data Store
- The DAR supports discovery and user-directed browsing of HHS data assets for all users via SharePoint. In this quarter, the EDG program added the following three major assets to the DAR:
 - ▶ Premiums Payable System
 - ▶ Integrated Business Information System
 - ▶ Compass21 – Provider Sub Model

Risks:

- *Delay in EDG Council formation is delaying user adoption of implemented tools.* Metadata repository and metadata browsing are important capabilities that enable analytic and operational understanding of data assets. They are also absolutely foundational for well-designed analytic architectures. The EDG team should be reliant on a regularly functioning EDG Council to direct onboarding and training to areas of greatest expected benefit

Planned Mitigation: Several CADS users have been on-boarded to use these tools, but they are relevant to many other business and IT processes also. This on-boarding will be expanded to all CADS SMEs involved in analytics process. Training and on-boarding can also be offered to any other analytics units outside CADS who wish to use these tools.

Data Architecture Track (DA)

Accomplishments:

- The EDG team has implemented a published master provider data structure. This provides an initial “best version of the truth” record set to an Oracle repository. Data exchange processes can now use this data as a key component to improve provider data quality in operational and analytic systems. Official adoption and further development of published master provider data awaits EDG Council activity in future quarters.
- The EDG team completed participation in business process meetings associated with the MITA State Self-Assessment and partnered with the data architects in the HHS Office of the CTO in formation of a data management strategy for the MITA Information Architecture plan.

Risks: Delay in EDG Council re-factoring may delay full adoption of data architecture plans: Many of the EDG team work-products that have been developed (including strategic plans, conceptual and logical models, proposed data management processes, data control standards, etc.) are awaiting adoption by an operative EDG Council. Although the EDG Executive Steering Committee has been formed and is nearing charter adoption, the workgroups within the EDG Council may not form soon enough to officially adopt these work products within fiscal 2019.

Planned Mitigation: The EDG team will finalize all work-products that require adoption, vet these with the [Chief Data and Analytics Officer](#) and other in the Office of Performance, and propose a priority ranking for discussion and adoption that the EDG Council may act upon as soon as it is chartered.

Data and Information Controls Track (DIC)

Accomplishments

- ▶ Provider MDR was published in this quarter for internal agency use. This new data structure is accessible for all agency users to obtain views of mastered provider data. TMHP (the current system of record for acute care providers) also has secured network access to this new data structure.
- ▶ The PMES vendor, CNSI, was on-boarded in April of this quarter. CNSI has already engaged EDG SMEs in early project planning phases to determine EDG's role in consolidation of provider history and provider identity data. Provider MDR has already consolidated provider history for many of the data sources on the PMES planned roadmap, and the provider MDR will be an important source of consolidated provider identity data for this implementation.
- ▶ CADS analytics teams are assessing Provider MDR for use in ad hoc analytic processes. It is likely that additional provider attribution will be necessary for some kinds of analyses. (These new requirements will be addressed in future sprint planning.)
- ▶ Informatica tools are now in the process of being updated to Informatica version 10.3 in order to provide increased data governance workflow and reference data capabilities in that version. Development and Test environment upgrades to 10.3 were completed in May 2019. The Production environment is on track to be updated in the next activity period.
- ▶ 23 tables of standard reference codes have been prepared and logically mapped to each HHS system that the master data solution is currently acquiring data from. These standard reference tables are planned for an implementation in CADS in FY 2020 in order to help streamline and ensure consistency in ad hoc reporting work-products.

Risks:

Member master data processes: Much progress has been made in publishing mastered provider data for HHS use. However, publication and use of mastered member records is expected to be much more complex due to high data volume of both historical transactions and associated master record exceptions. Also, the business value cases for master member data use is linked to the PMAS initiative for a future analytic architecture.

Planned Mitigation: The EDG core team will meet with Access and Eligibility Services and the PMAS planning team to vet proposed requirements for retention of member master history. Sprints in the next quarter and in 2020 are being planned to segment member history, to dispose of MDM exception backlogs where appropriate, and to widen member attribution to support existing member data analytic use cases.

4. Expenditures

4.1. Schedule of Expenditures and Actual Expenditures

The table below provides the schedule of expenditures (forecast), actual expenditures (expended), and remaining balance for the fiscal year 2018-19 biennium.

Rider 216 - Quarterly Reporting - EDG

For the FY2019 2nd Quarter

Capital Expenditures as of January 31, 2019

Table 1 - Enterprise Data Governance

Rider 216 Reporting Categories	AY 2018 Forecast	AY 2018 Expended GR	AY 2018 Expended FED	AY 2018 Expended AF	AY 2018 Balance	AY 2019 Forecast	AY 2019 Expended GR	AY 2019 Expended FED	AY 2019 Expended AF	AY 2019 Balance
EDG Contracted Services	\$5,100,000	\$135,351	\$1,218,162	\$1,353,513	\$3,746,487	\$4,780,000	\$134,885	\$1,213,963	\$1,348,848	\$3,431,152
Software	\$32,586	\$0	\$0	\$0	\$32,586	\$34,110	\$0	\$0	\$0	\$34,110
Software Licensing / Maintenance	\$849,142	\$208,193	\$624,580	\$832,773	\$16,369	\$848,257	\$9,911	\$29,734	\$39,646	\$808,612
Hardware	\$77,400	\$8,815	\$26,446	\$35,262	\$42,138	\$77,400	\$4,446	\$13,339	\$17,786	\$59,614
Data Center Services	\$681,572	\$110,880	\$332,639	\$443,519	\$238,053	\$680,933	\$56,584	\$169,751	\$226,335	\$454,598
Enterprise Data Governance	\$6,740,700	\$463,240	\$2,201,827	\$2,665,067	\$4,075,633	\$6,420,700	\$205,826	\$1,426,788	\$1,632,614	\$4,788,086

Table 2 - Enterprise Data Governance Appropriated Funds

	AY 2018 Forecast	AY 2018 Expended GR	AY 2018 Expended FED	AY 2018 Expended AF	AY 2018 Balance	AY 2019 Forecast	AY 2019 Expended GR	AY 2019 Expended FED	AY 2019 Expended AF	AY 2019 Balance
Total	\$6,740,700	\$463,240	\$2,201,827	\$2,665,067	\$4,075,633	\$6,420,700	\$205,826	\$1,426,788	\$1,632,614	\$4,788,086
Appropriated Funds	\$6,740,700	\$920,175	\$5,532,525	\$6,452,700	N/A	\$6,420,700	\$888,175	\$5,532,525	\$6,420,700	N/A
Difference	\$0	\$456,935	\$3,330,698	\$3,787,633	N/A	\$0	\$682,349	\$4,105,737	\$4,788,086	N/A

4.2. Year-to-Date Expenditures

The table below provides year-to-date budget and expenditures for EDG initiatives.

Year-to-Date Budget & Expenditures

Budget and Expenditures as of ***April 30, 2019***

Table 3 - Adjusted Appropriated Funds with MOF

	AY2012	AY2013	AY2014	AY2015	AY2016	AY2017	AY2018	AY2019
General Revenue	\$ 318,257	\$2,601,088	\$207,894	\$10,352,835	\$4,263,565	\$6,297,166	\$920,175	\$888,175
Federal Funds	\$2,853,399	\$16,928,199	\$1,719,440	\$44,351,851	\$31,247,878	\$36,224,116	\$5,820,525	\$5,532,525
Total	\$3,171,656	\$19,529,287	\$1,927,334	\$54,704,686	\$35,511,443	\$42,521,282	\$6,740,700	\$6,420,700

Table 4 - Expenditures by LBB OOE

Object of Expense	AY2012	AY2013	AY2014	AY2015	AY2016	AY2017	AY2018	AY2019
2001 - Professional Fees and Services	\$1,098,798	\$574,463	\$1,054,886	\$3,064,902	\$4,213,606	\$2,619,899	\$1,797,032	\$1,575,183
2003 - Consumable Supplies	-	-	\$68	\$53	-	\$ -	\$ -	\$ -
2004 - Utilities	-	-	-	-	-	\$34,890	\$35,262	\$17,786
2007 - Rent - Machine and Other	-	-	-	-	-	\$ -	\$ -	\$ -
2009 - Other Operating Expense	\$ -	\$788	\$88,917	\$678,415	\$53,476	\$ 2,545,405	\$832,773	\$39,646
5000 - Capital Expenditures	-	-	-	\$5,500,000	-	\$ -	\$ -	\$ -
Grand Total	\$1,098,798	\$575,251	\$1,143,871	\$9,243,370	\$4,267,082	\$5,200,193	\$2,665,067	\$1,632,614

Table 5 - MOF on Expenditures

	AY2012	AY2013	AY2014	AY2015	AY2016	AY2017	AY2018	AY2019
EDG -General Revenue	109,880	57,643	127,769	1,851,120	456,845	789,440	463,240	205,826
EDG - Federal Funds	988,918	517,608	1,016,102	7,392,249	3,810,236	4,410,753	2,201,827	1,426,788
sub-total EDG	1,098,798	575,251	1,143,871	9,243,370	4,267,082	5,200,193	2,665,067	1,632,614

Table 6 - Outstanding Encumbrances

	AY2012	AY2013	AY2014	AY2015	AY2016	AY2017	AY2018	AY2019
General Revenue	-	-	-	-	-	-	\$27,130	\$177,355
Federal Funds	-	-	-	-	-	-	\$242,303	\$1,561,980
Total	-	-	-	-	-	-	\$269,433	\$1,739,335

Table 7 - Informational Dollars (non-capital)

	AY2012	AY2013	AY2014	AY2015	AY2016	AY2017	AY2018	AY2019
General Revenue	-	-	-	\$113	\$ -	411	951	-
Federal Funds	-	-	-	\$1,021	\$ -	411	951	-
Total	-	-	-	\$1,135	\$ -	822	1,902	-

5. Status

Table 8 - EDG Implementation Phase

Project Milestones	Planned Start Date mm/dd/yyyy	Actual Start Date mm/dd/yyyy	Planned Finish Date mm/dd/yyyy	Actual Finish Date mm/dd/yyyy	Percentage Complete
EDG Implementation Phase:	04/06/2015	08/20/2015	03/31/2022	-	57%

Table 9 - Medicaid Focused Enterprise Master Data Management System

Project Milestones	Planned Start Date mm/dd/yyyy	Actual Start Date mm/dd/yyyy	Planned Finish Date mm/dd/yyyy	Actual Finish Date mm/dd/yyyy	Percentage Complete
Data and information management Phase 1 – EMDM member/provider select systems with limited capabilities	04/06/2015	08/20/2015	08/31/2016	08/31/2016	100%
Data quality and data standards Phase 1 – metric definition, implement solution, and profiling	04/06/2015	08/20/2015	08/31/2016	08/31/2016	100%
Data and information management Phases 2-4	05/01/2016	09/22/2016	03/31/2022	-	50%
Data quality and data standards Phases 2-4	07/01/2017	09/22/2016	03/31/2022	-	50%

Table 10 - Metadata Repository

Project Milestones	Planned Start Date mm/dd/yyyy	Actual Start Date mm/dd/yyyy	Planned Finish Date mm/dd/yyyy	Actual Finish Date mm/dd/yyyy	Percentage Complete
Metadata management phase 1 – collect and publish metadata for various systems	04/06/2015	08/20/2015	02/28/2017	02/28/2017	100%
Metadata management phase 2 – implement change control process	05/04/2015	10/15/2015	02/28/2017	02/28/2017	100%
Metadata management phase 3	04/01/2017	03/01/2017	11/30/2018	11/30/2018	100%
Reference data management phase 1	01/01/2018	10/01/2018	09/29/2020	-	25%

Table 11 - Information Management Program

Project Milestones	Planned Start Date mm/dd/yyyy	Actual Start Date mm/dd/yyyy	Planned Finish Date mm/dd/yyyy	Actual Finish Date mm/dd/yyyy	Percentage Complete
Data architecture phase 1	01/01/2017	07/16/2018	07/13/2020	-	36%
Data and information control phase 1	03/04/2019	03/04/2019	03/31/2020	-	7%
Data architecture phase 2	04/02/2020	-	03/31/2022	-	0%
Data and information control phase 2	04/04/2019	04/04/2019	03/31/2022	-	3%

Appendix A. **Glossary**

Term / Acronym	Definition
AY	Assessment Year
CMS	Centers for Medicare and Medicaid Services
DAR	Data Asset Repository
DIC	Data and Information Controls
DIM	Data and Information Management
DQS	Data Quality and Standards
EDG	Enterprise Data Governance
EMDM	Enterprise Master Data Management
FY	Fiscal Year
HHS	Health and Human Services
HHSC	Health and Human Services Commission
IAPD	Implementation Advance Planning Document
IAPD-U	Implementation Advance Planning Document Update (Federal)
IT	Information Technology
LBB	Legislative Budget Board
MDM	Master Data Management
MITA	Medicaid Information Technology and Architecture
MRDM	Metadata and Reference Data Management
RDM	Reference Data Management