Exhibit 12 – Data Conversion & Validation

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Revision History

Date	Author	Version	Change Reference
05/07/2020	Rahul Bhosle	001	Initial Document

Quality Review

Name	Role	Date

1 Data Conversion and Validation Plan

Having a properly planned data and document conversion approach that identifies the activities, roles and responsibilities, functional approach, and execution flow has a significant impact on the likelihood of a successful conversion. Data and document conversion for the DHHS LIS will require a well-planned, multistep process to convert the data from the source legacy systems to the Accela Civic Platform database.

GCOM's Data Conversion Plan deliverable will detail the methods and processes to execute the required data conversions from the legacy systems to the LIS system. This will include the identification of all legacy applications for a Release, all master data elements, and the data governance approach to be employed.

In the following sections, GCOM provides our proposed approach for designing, developing, implementing, and maintaining the Data Conversion Plan, which includes the Data and Document Conversion Strategy to be used in transitioning or converting historical legacy data records for licensing, certification, incident and complaint, and their associated documents into the new enterprise solution.

We also provide an overview of Unit Testing, Mock Conversion (MOC) runs, Data Reconciliation standards, and the approach to be utilized in testing the various data conversion iterations executed to systematically convert and validate the data for the new enterprise system.

1.1 Data Conversion Complexity and Challenges

Managing and utilizing multiple systems presents many challenges in data management, as it is complex and requires integration of disparate datasets. It is costly and inefficient to manage and maintain. Also, the user experience is confusing and cumbersome given the need to access information from different systems.

There are thirteen different databases with 60 million records and 655 tables in use across the Agency to store the licensing, certification, and incident and complaint data. The data are scattered across L2K, Oracle, and MS-Access databases. Moving data from multiple systems into one is always complex and challenging. The complexities and challenges include:

- Data Transformation – Every system stores data in a certain way. If a source system is using an outdated data storage format, then a logical transformation is required to convert and store the data in a modern database like Oracle or MS-SQL.
- Data Normalization – Different source systems, different data formatting (e.g., 'Nebraska vs 'NE', etc.) and unique data may cause cases in which the same data resides in multiple systems with different data formatting and there is no link between them. Data normalization is the process of going through the legacy systems and finding all the places where one piece of data is stored, ensuring it is only stored once, or grouping multiple instances of the same data within a single master database.
- Data Conditions – Some of the data an agency needs to move may have been created many years or even decades ago using systems and applications that are no longer supported and in repositories that have not been consistently checked for accuracy or compatibility. Consequently, even if the data can be mapped to the new platform, it may not be possible to move it to where it needs to go.

- Insufficient Documentation – Sometimes the data mapping task is made more difficult because there is minimal or no documentation for most of the legacy systems identified.
- Proprietary Legacy System – A proprietary nature of legacy systems can make it very difficult to use standard tooling in order to connect to data repositories, understand the information that is housed there, and efficiently pull the information into the new platform.

1.2 Data Conversion Approach

GCOM has extensive experience garnered from numerous system integration projects in planning, designing, and executing data and document conversion. Our experience includes data conversion from source system platforms such as mainframes, flat files, Microsoft Access, DB2, Sybase, MySQL, SQL Server, Oracle, and Accela Civic Platform. We have migrated data sets ranging in size from megabytes to terabytes, with table counts ranging from 20 tables to 3000+ tables.

Data conversion is planned and executed throughout the project lifecycle. The diagram below summarizes key data conversion and validation activities during each phase of the GEM software development lifecycle.

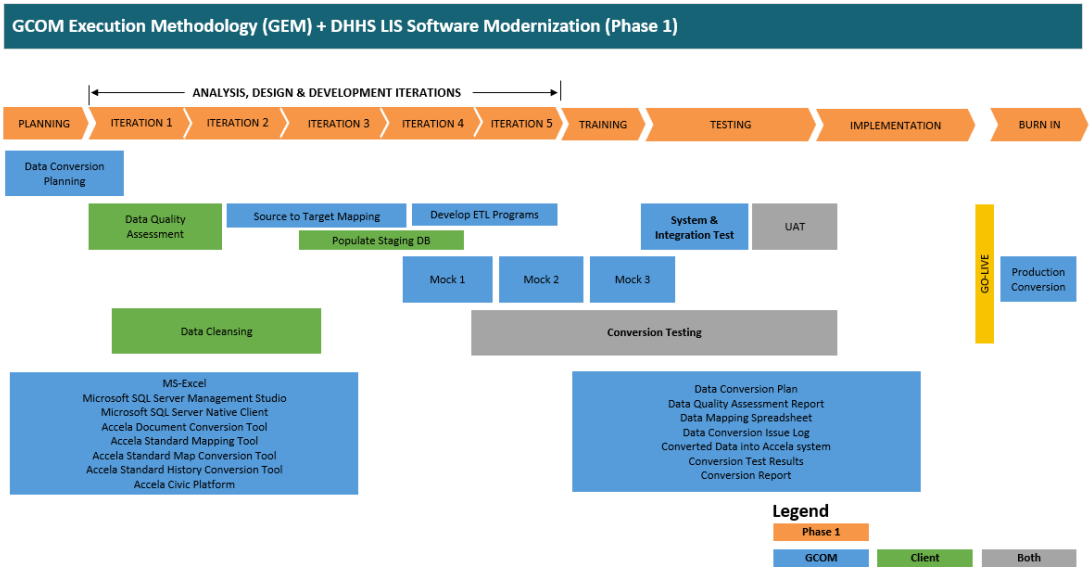

Figure 1 Data Conversion Methodology Phase 1

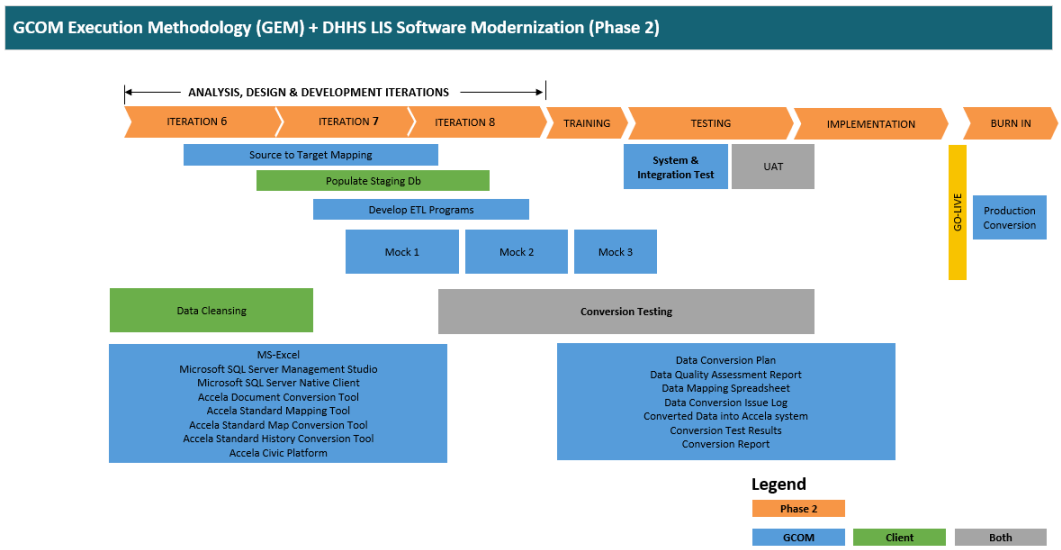

Figure 2 Data Conversion Methodology Phase 2

At a high level, the data conversion process begins with planning followed by the analysis of the legacy systems to identify data elements required to populate the common hub database and / or the Accela Civic Platform database. The identified legacy data will be extracted from the source system into staging database(s), which will undergo analysis for data quality and identifying and correcting inconsistencies including missing, duplicated, corrupted, or invalid data. When data cleansing is complete, the next important step is to mask the confidential data, if any. The data conversion team will follow a data privacy policy and direction from DHHS LIS team to identify the types of data that fall under the category of confidential data and will mask those data accordingly. Any data sets that are needed for the 'TO BE' Accela Civic Platform system will be mapped to Accela Civic Platform's Standard Map tables (and Views).

The Accela Conversion tools will perform data integrity checks and validations at this point to confirm Accela Civic Platform's internal database constraints are met. Data that fails to load or is rejected will be reported and additional runs of the process will be adjusted to correct the issues. To further test, validate, and enhance the process, the data conversion will be run through a series of mock conversions (dry-runs of a typical conversion) to confirm that data conversion produces results as expected and any potential issues are identified and addressed before loading the data into the succeeding environment in the process, especially to the Production environment.

1.2.1 Planning

During the requirements gathering and validation phase, GCOM will work with DHHS LIS data migration leads and business owners to develop a Data Conversion Plan. The Data Conversion Plan elaborates the conversion scope, roles and responsibilities, processes and tools, conversion mock and testing plan, and the entry and exit criteria for the Production conversion. As part of the Data Conversion Plan, requirements for a data conversion environment are assessed and designed. GCOM then works with the infrastructure team to standup the conversion environment. Detailed activities involved in this stage will be:

- Define conversion end goals.
- Define high level conversion requirements.

- Define data security and privacy requirements in line with Client policies.
- Determine possible risks, constraints, assumptions, and dependencies.
- Identify stakeholders for the conversion and define their roles and responsibilities.
- Create a failover plan, risk mitigation plan, and a testing plan.
- Identify critical success factors.

Based on all the above, we chart out a conversion project plan with timeline, dependencies, resources, and sequence of process steps from initiation to closure in discussion with the DHHS LIS stakeholders.

1.2.2 Analysis

Following planning, the data conversion process continues with the analysis of the legacy system(s) to identify the data elements required to populate the Accela Automation database.
The data analysis for the conversion consists of the following steps:

- Understanding the data requirements
- Identifying the source systems for conversion related to each phase
- Identifying the source system objects
- Identifying the data set relevant for conversion
- Assessment of data quality
- Identifying the objects in the legacy staging database that need to be converted

The Data Analysis process requires the GCOM and DHHS LIS teams to confirm the source systems for conversion. The GCOM Conversion team will meet with the SMEs for each of the systems (identified by DHHS LIS) to gather the data related to Licensing, Certification, Inspection, and Incidents and Complaints. Currently there are different technology stacks for the legacy source systems – MS Access, and Oracle SQL Server systems. DHHS LIS will extract the data from these legacy systems and address any character length issues, data type discrepancies, duplicates and / or corruption, and then upload the data into a MS-SQL Server database titled Legacy Staging. The Legacy Staging database will be used as the source database for the DHHS LIS Phase 1 and 2 conversions. The following table shows the database systems that are part of LIS conversion scope:

Table 1 Database systems that are part of the LIS Conversion Scope

Database Systems	Business Objects
System Automation's License 2000 (Oracle)	Provider application and certification, stored data about facilities, fees, inspections, etc. Record Incident and Complaint, etc.
Approximately twelve (12) Access/Excel databases	Licensing information.
The federal government's Aspen Central Office	Import licensure data on a daily basis
94 microfilm rolls with up to1500 pages of records (Optional service)	Document migration
25,000 pages of Board meeting minutes and associated files Optional service)	Document migration

As mentioned above, the identified legacy data will be extracted from the source system into the Legacy Staging database, which will undergo analysis for data consistencies including missing or invalid data. On this engagement, GCOM will identify the data requiring cleansing to achieve conversion success. As such, Team GCOM will complete the data quality assessment and document all the data quality findings, issues,

and recommendations into a comprehensive Data Quality Assessment report to share and review the results of the data quality assessment with the DHHS LIS technical and business team members. This assessment identifies key data elements such as contacts, address, and other account attributes. Instances of duplicate data are found using a variety of data analysis and data quality tools such as Informatica Power Center and IBM Data Stage. Data quality improvement opportunities are identified and prioritized. GCOM assumes that source data cleansing will be performed by the DHHS LIS or IS&T team. A combination of database actions and manual interventions are typically used to improve legacy data quality. These can include options such as de-duplicating contacts, enriching legacy address data, and / or completing case records.

1.2.3 Design

Once the Data Conversion Plan is approved and the new system data model is in an advanced design stage, Team GCOM and the DHHS LIS conversion team will conduct JAD sessions to begin the source to target data mapping process. An assumption for the new system data model is in an advanced design stage when configuration design is completed and all data fields are finalized.

Data mapping activities include:

- Mapping of old to new fields (transformation)
- Elimination of implicit fields
- Determine data pattern for cleansing
- Establish single reference for each record / field (in case of multiple values for a same element across different tables, which table / field value is the master)
- Develop conversion process business rules.

1.2.4 Development

Once the source to target mapping is complete, the client team begins developing data extracts for legacy data and is responsible for sharing the same in the mutually agreed file formats or a transient conversion schema. In the case of document conversions, the client team begins developing document extraction and is responsible for sharing the metadata in the agreed format, which will be used to associate existing documents to converted target system records.

In parallel, GCOM develops extract, transform and load (ETL) programs that will migrate data from the Legacy Staging database to the new system. The ETL programs include transformation rules, apply business rules that break ties to arrive at correct information, handle exceptions, and generate exception reports. Our conversion programs optimize data loads to minimize downtime during the Production cutover. Our conversion programs often require development of temporary data stores used to combine, cleanse, and transform the data. Unit Testing of each program will take place during this process. The unit level jobs and programs that are created and tested will be combined into job flows that are tested as integrated components.

GCOM has included separate environments for all conversion development and testing activities in our planned approach.

1.2.5 Testing

Three mock data conversions are performed to test the data migration ETL programs and procedures. During this activity the team will complete testing of the migration routines from beginning to end and correct any defects found in the mock data conversion. Client team members are asked to jointly validate the mock conversions. Joint testing helps to verify that the migrated data is compliant with the designed mapping and transformation logic. A variety of reports and metrics are used to help validate conversions; these include row count reports, transaction type reports, and various data summary and record count reports. Mock conversions are validated in the data conversion environment. Identified conversion defects are analyzed and referred to either the development team for mitigation in the conversion program or the client business team for manual data cleansing. Low volume conversion errors and those errors that cannot be addressed through automation are addressed through manual data cleansing. The data conversion environment can be either a database instance or the full system depending on the status of the new system development at the time of the mock conversion. User Acceptance Testing and Performance Testing is performed with successfully converted data.

1.2.6 UAT and Go Live

After the mock conversions and User Acceptance Testing is complete, the client provides a formal acceptance of the data conversion process. This must proceed the Go / No-Go Production release decision. During the implementation activity GCOM will perform the final Production conversion, resolve any discrepancies, allow the DHHS LIS team to perform a final validation and move the migrated data to the Production environment. It is likely that the System Retirement Policies will dictate that the legacy systems be retired at this time.

1.3 Roles and Responsibilities

The table below represents the preliminary responsibility assignment matrix (RAM) for data conversion and validation activities. Key tasks and activities are listed in each row. For each activity, the responsible, accountable, consulted, and informed roles are distributed between the relevant conversion and validation process teams. This RAM along with our proposed scope of work informs our staffing plan and delivery assumptions.

Table 2 Preliminary Responsibility Assignment Matrix

R= Responsible, A=Accountable, C=Consult, I=Inform	GCOM	DHHS LIS Governance	DHHS LIS Program	DHHS LIS Project Team	DHHS LIS IT Team
Availability of the hardware and virtualized environment.	R	I	I	A	A/R
Database policies, procedures, and controls.	C/I	I	I	I	A/R
Building and loading of Legacy staging schema in agreed format with legacy data, including any mainframe, Access or other non-MSSQL data into MS-SQL format.	C/I	I	I	I	A/R
Perform cleanup of legacy data. Research conversion defects that	C/I	I	I	A	R

R= Responsible, A=Accountable, C=Consult, I=Inform	GCOM	DHHS LIS Governance	DHHS LIS Program	DHHS LIS Project Team	DHHS LIS IT Team
require case research in the legacy system.					
Perform data analysis, data quality analysis / assessment to identify areas of needed improvement and map essential data sources within existing applications.	R/A	I	I	C	A/R
Identify master file (golden record) to reduce the segmentation of data entities.	R	I	I	C	A
Plan, Design and Execute data extraction from legacy systems in a mutually agreed format.	A	I	I	C	R
Extract, Transform and Load (ETL) functions of existing systems data to the new system. This is to include creation of test plans, test scripts, and testing sufficient for the successful load of legacy data into the new system.	R	I	I	C	A
Develop a data and document conversion plan and schedule.	R	I	I	C	A
Develop data conversion routines.	R	I	I	C	A
Conduct three mock conversions.	R	I	I	C	A/R
Produce reports of likely duplicate records.	R	I	I	C	A
Assist in extracting and transforming / mapping during the data conversion.	A	I	I	C	R
Test data and document conversion tool in accordance with the implementation and roll out strategy.	R	I	I	C	A
Run data and document conversion software in accordance with the implementation and roll out strategy, converting all data to the production system.	R	I	I	C	A
Determine with Department assistance the legacy system source data fields and the new system's target data fields for all legacy system data elements.	R	I	I	C	A
Approve source to target	C/I	I	I	A	R

R= Responsible, A=Accountable, C=Consult, I=Inform	GCOM	DHHS LIS Governance	DHHS LIS Program	DHHS LIS Project Team	DHHS LIS IT Team
mapping.					
Develop data relationships from the legacy system to the new system.	R	I	I	C	A
Identify missing data (i.e., data needed by the new system but unavailable from existing systems).	R	I	I	C	A
Develop data conversion test reports.	R	I	I	C	A

1.4 Deliverables and Work Products

The table below describes the deliverables related to data conversion:

Table 3 Deliverables Related to Data Conversion

Work Product or Deliverable	Description
Data and Document Conversion and Validation Plan	The Data Conversion Plan describes the roles and responsibilities, key data conversion planning, design, development, testing and validation activities, and tool sets to be used for data conversion. The plan will define all conversion implementation and validation tasks and steps as well as the process for maintaining the Plan itself.
Data Quality Assessment Report	Results summary of the data quality assessment. This will contain details regarding the exceptions and failed data records, if any.
Data Cleansing Report	Results summary of the data cleansing assessment. This will contain details regarding the data records exceptions, resolutions, and fixes, if any.
Source to Target Mappings	This will be the final source to target data mappings document.
Data Conversion Mock 1 Report	Result summary of the initial data migration mock run. This will contain details regarding the timing, exceptions, and failed data records, if any, along with the overall status of conversion. Both GCOM and DHHS LIS team execute data conversion testing of this mock run.
Data Conversion Mock 2 Report	Result summary of the second data migration mock run. This will contain details regarding the timing, exceptions, and failed data records, if any, along with the overall status of conversion. Both GCOM and DHHS LIS team execute data conversion testing of this mock run.
Data Conversion Mock 3 Report	Result summary of the final data migration mock run. This will contain details regarding the timing, exceptions, and failed

Work Product or Deliverable	Description
	data records, if any, along with the overall status of conversion. Both GCOM and DHHS LIS team execute data conversion testing of this mock run.
Production Conversion Report	Result summary for the final data conversion. This will contain details regarding the exceptions and failed data records, if any, along with the overall status of conversion.

1.5 Data Conversion Risks and Mitigations

Data conversion is always one of the most critical tasks on a large project. Therefore, GCOM makes sure to plan it carefully, including planning and employing formal Risk Management to and throughout the conversion process. As such, GCOM's data conversion methodology helps to reduce data conversion risks. The table below outlines the common data conversion risk and mitigations we have learned from previous similar engagements:

Table 4 Common Data Conversion Risk and Mitigations

Data Risks	Risk Strategy
Failing to engage the lines of business and business users at the outset	GCOM's work plan includes DHHS LIS teams during data analysis, design, and migration activities including approval before starting actual migration work.
Absence of data governance policies and organizational structure	GCOM will work with the DHHS LIS team to define the governance structure to identify who has rights to create, approve, edit, or remove data from the system.
Poor data quality in a legacy system	As part of Analysis, GCOM will be doing an "as-is assessment" before design and development of data-migration jobs.
Neglecting to validate and redefine business rules	GCOM will work with the DHHS LIS Data Analysis team to make sure that the business rules of the new system match with the legacy data, and to define appropriate conversion logic to meet the business rules.
Failure to validate and test the data migration process	GCOM has allocated resources and time for data testing, validation, and migration cycles to the project plan and schedule.

1.6 Detailed Data Conversion Approach

This section describes the specific approach Team GCOM will take throughout the conversion process. This adds the next level of detail to the outline of the steps from the GCOM Execution Methodology (GEM) defined in the previous section.

1.6.1 Implementation Approach

The data conversion implementation approach will follow the releases as well as development and configuration sprints. The DHHS LIS does have development sprints, which will be followed by Production releases. The data conversion team will follow the development sprints to analyze the system and keep ready for conversion. The legacy systems that will be analyzed, profiled, cleaned, converted, and loaded into the Accela Civic Platform system prior to each Production release are identified in the approved Implementation Plan.

In preparing our RFP response, GCOM conducted initial analysis and found that multiple systems or databases are being used for licensing and certification and incident and complaint management within the same facility type.

GCOM is assuming that professional, provider, client information, and other common primary data may be in use across multiple systems but stored separately in each system. Also, all these primary data may not be in sync or tied to a single source and therefore become duplicates. In situations such as this, it becomes complex to identify the one system or database that should server as primary. Team GCOM will coordinate with the DHHS LIS team to identify any such system, database, or entity to understand and identify the best source of primary data (system of record) with some link or reference to other systems, sub-systems, or databases. Please see the figure below which provides a sample analysis showing when similar data is present in multiple systems:

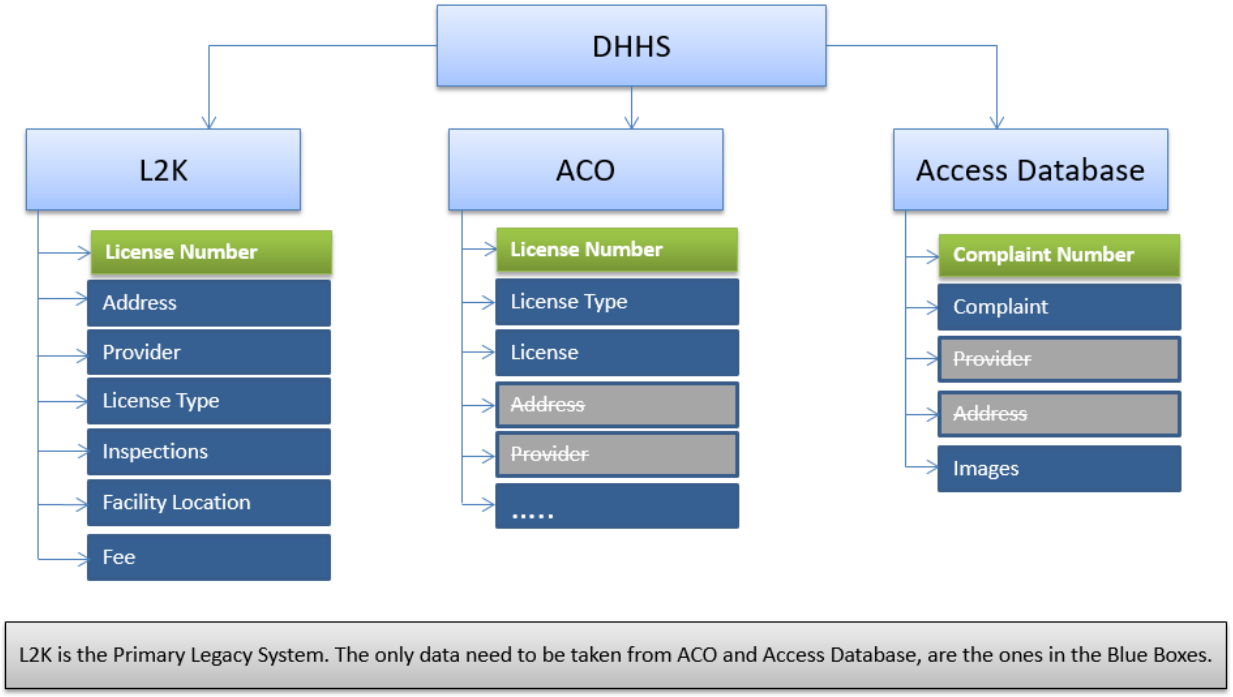

Figure 3 Sample Legacy Systems and Function Objects

During data conversion analysis and development activities, Team GCOM will coordinate with the DHHS LIS team to create the Master professional and Master Provider Index to define the single place of reference for Licensing and Certification, and Incident and Complaint management data in the DHHS LIS solution. All records that will be loaded into and created in the DHHS LIS solution will refer to this common Index data.

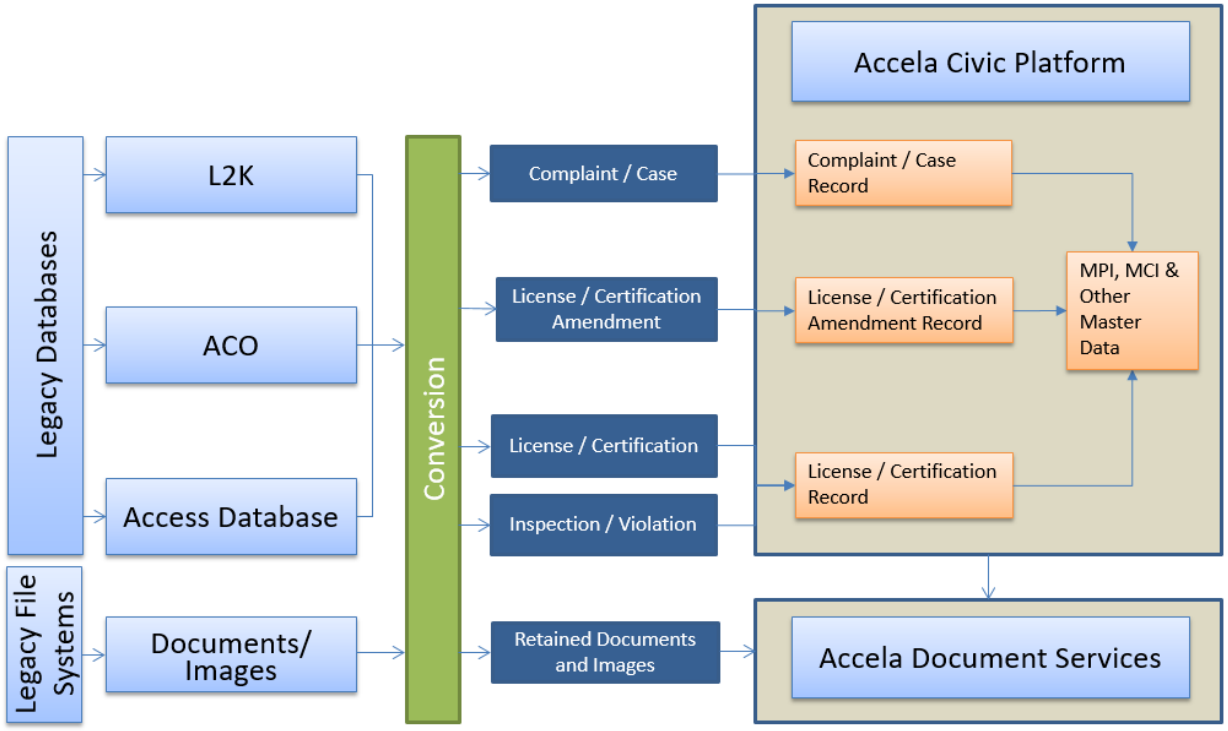

Figure 4 Mapping Legacy Record to Accela Record

As shown in the figure above, based on the business requirements, a record type from a legacy system can be associated with a record in Accela Civic Platform (e.g., Complaint, Investigation or Case), or multiple record types from a legacy system can be consolidated within a record. For example, an inspection can be part of a license or certification record as the Accela licensing module does have an entity to hold all inspection data.

1.6.2 Functional Approach

The diagrams below depict the specific steps Team GCOM will take throughout the conversion process and cover the data flow for license, certification, incident and complaint information, documents / images, and associated metadata. The diagrams are followed by descriptions of the process steps.

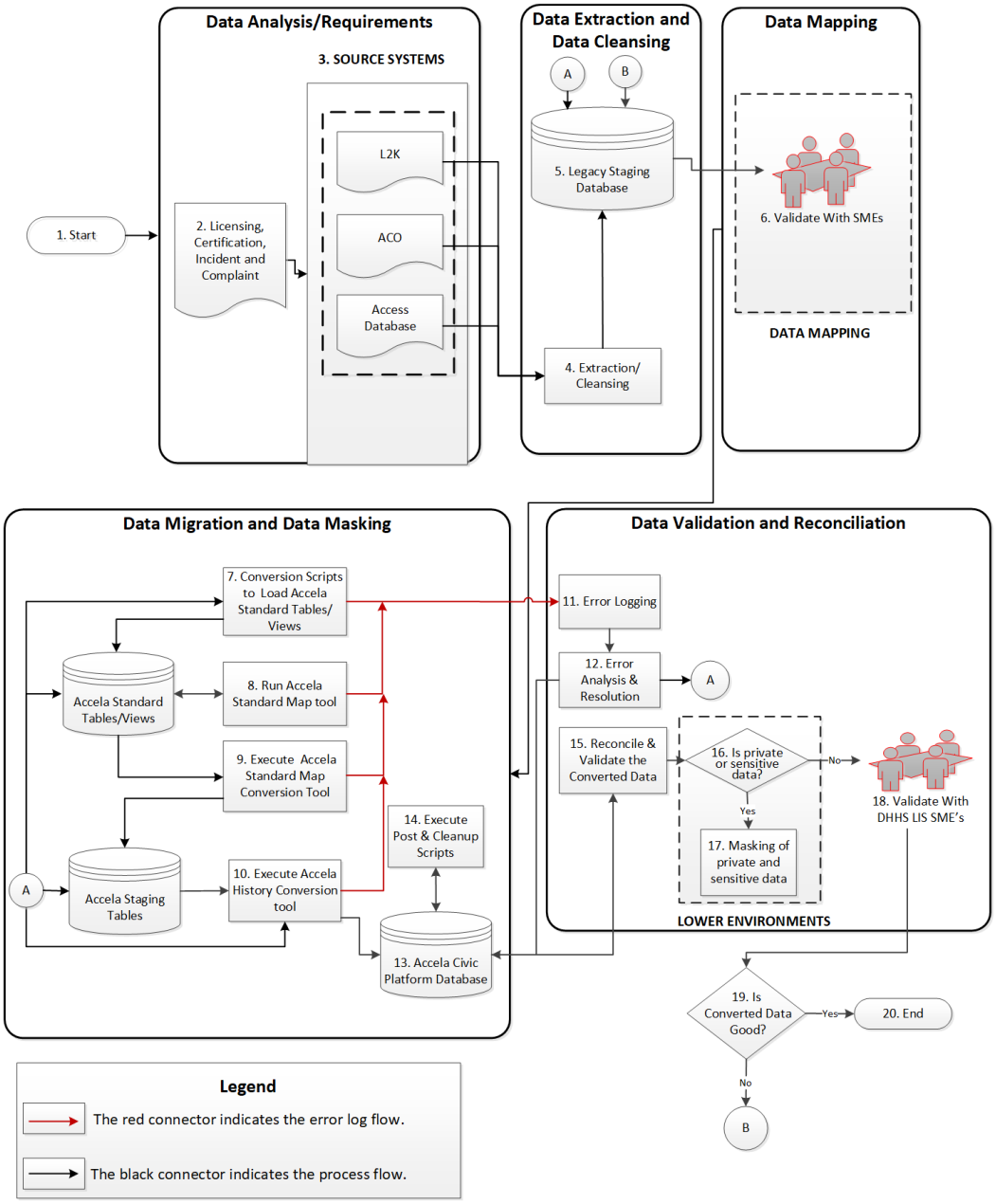

Figure 5 Functional Approach Process Flow – Data Conversion

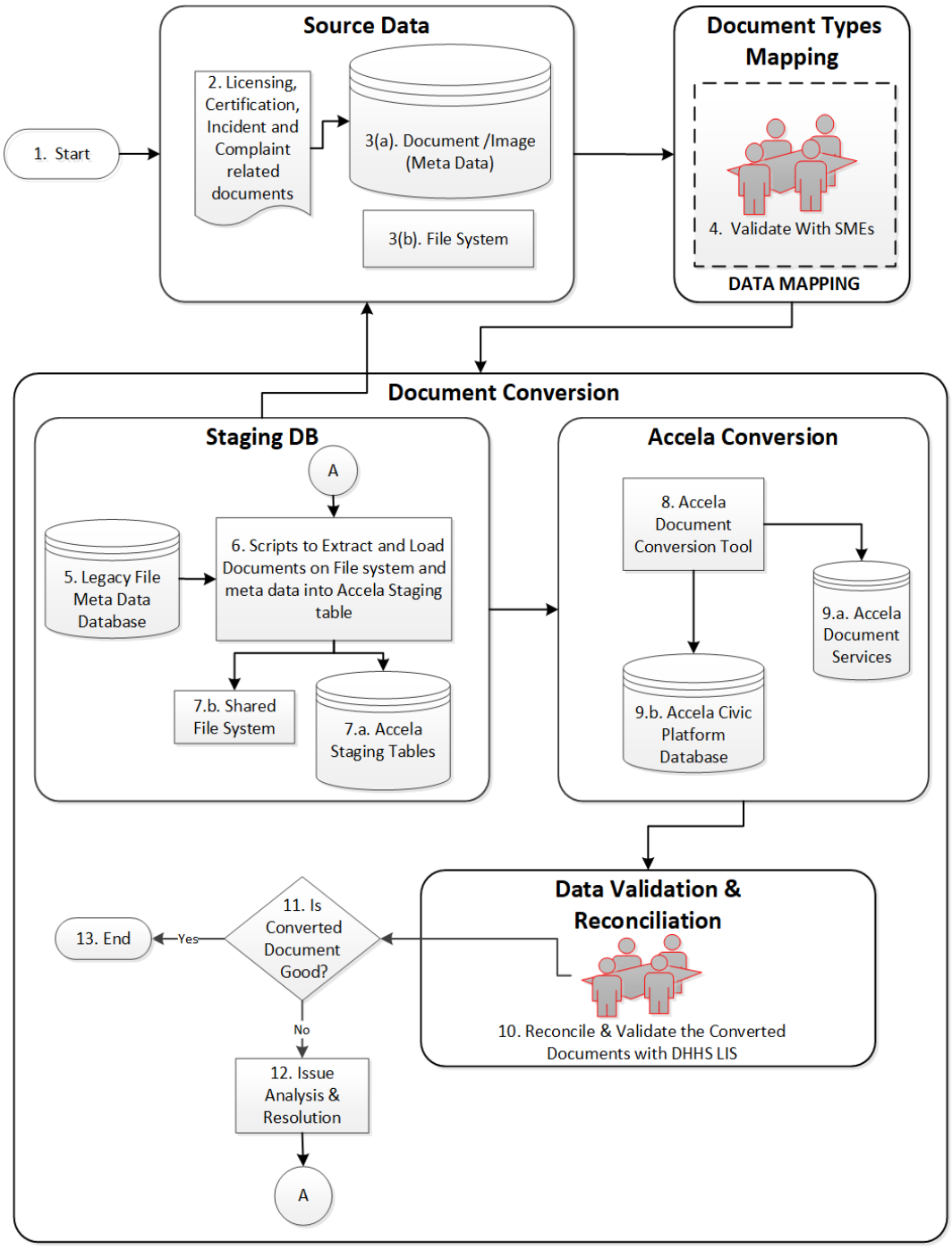

Figure 6 Functional Approach Process Flow – Document Conversion

1.6.2.1 Data Analysis and Requirements

Please refer to section '1.2.2 Analysis' above for data analysis and requirement.

1.6.2.2 Data Extraction and Cleansing

In the Data Extraction step the legacy data will be extracted from the source databases. This extracted data will be profiled and cleansed and imported into the SQL Server Legacy Staging database. The Legacy Staging database will be used as the source for the conversion process. Data extraction will be done by restoring the backup of the legacy databases or developing data transfer routines. In the Data Extraction step for documents / images, the legacy documents / images will be imported into a shared file system, and the metadata into a legacy file metadata database.

Team GCOM will use the Legacy Staging database to begin the analysis and quality assessment, and to determine what data cleansing is required. During quality assessment Team GCOM will document all the data quality findings, issues, and recommendations into a comprehensive Data Quality Assessment Report to share with the DHHS LIS IT team. This report will include issues such as missing information (e.g., missing fee / payment information or record type identifier) as well as field value formats (e.g., date field format). The DHHS LIS database team will extract and cleanse the data of any character length issues, data type discrepancies, duplicates, or corruption and then share a cleansed version of the legacy database dump in MS-SQL Server format. GCOM will restore the dump and use the Legacy Staging as the source database for data conversion development.

The Legacy Staging database will be a standalone database not connected with any live system and must remain static until a complete cycle of the conversion process is finished. This will help in reconciliation, validation, and testing to ensure that the converted data matches the source data in the Legacy Staging database. The data in the Legacy Staging database will be refreshed on an as-needed basis after a conversion execution cycle is completed. Team GCOM will work with the DHHS LIS IT and Business teams to refresh the data.

Documents, associated images, and metadata (file type, file name, and file location) will be extracted, transformed, and loaded into the Legacy File Meta Data database and Accela Staging table. The Accela Document Conversion tool will read metadata from the Accela Staging table including extracted files to update the key table to tie from Accela license records with the documents / images in the Accela Document Services (ADS).

1.6.2.3 Data Mapping

Once the data has been extracted, cleansed, and loaded into the Legacy Staging database, data mapping will be performed to the Accela Staging tables. The Accela Standard History Conversion tool will move the data from the Accela Staging tables to the Accela Civic Platform database.

The Conversion Data Mapping document will contain the mapping between the Legacy Staging source database and the Standard Map schema of Accela, and then to the Accela Civic Platform database. Specific business rules will be captured that are required to be applied during conversion. The Conversion Data Mapping document will define the specifications for the records to be converted. A set of minimum required fields, which are defined by the Accela Civic Platform database and / or Accela configuration settings, must be converted from the source database to the Accela Civic Platform. For example, the License Number and License Type fields are required fields for a license record. If any of the minimum required fields are missing, the conversion process will halt and not proceed until the issue is addressed.

See Figure 7 below for a sample of the Conversion Data Mapping document format. The format will be an Excel spreadsheet that displays the fields and the tables from the Legacy Staging database that will be mapped, the Accela standard map fields to which legacy fields from staging are mapped, and the mapping rules that are applied. Team GCOM will lead the data mapping effort, validate the data, and perform any data transformation and / or standardization.

Legacy Staging Database						Accela Standard Map Database						Accela Civic Platform Database						Business Rules	Transformation Rule	Constraint
Table Definiti	Table Name	Column Name	Column Datatypi	Column Length	Column Descriptic	Table Definiti	Table Name	Column Name	Column Datatypi	Column Length	Column Descriptio	Table Definitio	Table Name	Column Name	Column Datatypi	Column Length	Column Description			
License Details	LICENSE_TBL	LIC_CERT_ID	VARCHAR2	30	License or Certificate Number	License base table	AATABLE_PERMIT_HISTORY	PERMITNUM	VARCAHR2	30	License Number	Application or license record base table	B1PERMIT	B1_ALT_ID	VARCHAR2	30	Accela Unique Record ID		Convert the legacy license# in original format	
License Details	LICENSE_TBL	LIC_STATUS	VARCHAR2	30	License or Certificate Status	License base table	AATABLE_PERMIT_HISTORY	TT_STATUS	VARCAHR2	30	License Status	Application or license record base table	B1PERMIT	B1_APPL_STATUS	VARCHAR2	30	License Status	If LIC_STATUS = "In Review" then "Under Review"		
License Details	LICENSE_TBL	LIC_EXP_DATE	DATE		License or Certificate Expiration Date	License base table	AATABLE_PERMIT_HISTORY	LIC_EXPIRATION_DATE	DATE		License Expiration Date	License Expiration Details	B1_EXPIRATION	B1_EXPIRATION_DATE	DATE		License Expiration Date			Bring only those licenses which are not expired.

Figure 7 Sample Conversion Data Mapping Document

Figure 8 below explains the conversion data mapping process. Team GCOM will generate the Conversion Data Mapping document for the Legacy Staging database, using the conversion data mapping format shown in Figure 7. In addition, the GCOM team will work closely with the DHHS LIS team and SMEs to complete the mapping document, validate the data, identify any and all needed data transformation and / or standardization, and determine what data cleansing is required. The SMEs will decide which fields are to be mapped. The resulting Validated Data Mapping document will then be distributed for review and approval by the DHHS LIS team.

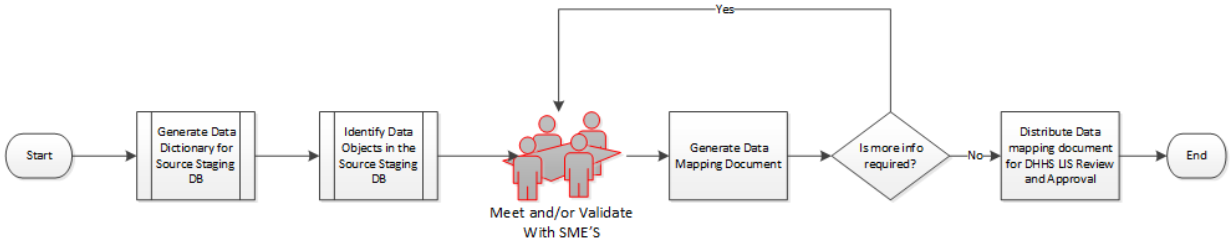

Figure 8 Conversion Data Mapping Process

The data cleansing will be based on business requirements. If any of the data is not available in a legacy system, then Team GCOM will work with DHHS LIS SMEs to either map the missing fields or find a default value. These determinations will be made on a case-by-case basis.

1.6.2.4 Data Conversion and Masking

The Data Conversion phase of the process consists of transforming and loading the data into transformation tables, loading the data into the Accela standard tables, preparing the tables for consumption by the Accela data conversion process, and finally, the Accela conversion tools loading the data into the Accela Civic Platform database.

Document Conversion consists of transforming and loading the metadata into transformation tables and then into Accela Document Services using the Accela Document Conversion Tool.

It must be noted that a set of prerequisites must be met in order to complete the data conversions. For instance, a stable configuration must exist. As such, the following rules apply:

- The configuration details of To Be record types must be planned and documented prior to conversion data mapping.
- Configuration of reference data must be completed. The Accela Data Mapping Tool is dependent on this.

The Data Conversion phase includes multiple steps:

1. Development of conversion scripts (like T-SQL) to convert data from the source database to transformation tables and then to Accela Standard tables. Conversion scripts will be written to transform and map data from Legacy Staging, as per the Data Mapping document, to the transformation tables.
2. Convert applicable metadata related to document / images to the appropriate Accela tables / fields and to the Accela Document Services. Also, establish a link between the Accela record and the document available in the Accela Document Services.
3. The use of the Accela Standard Mapping Tool to map the legacy reference data from the staging schema to Accela configured values. Data will be mapped using the Accela Data Mapping Tool, which is used to map legacy data into Accela Civic Platform. This allows for certain types of transactional mappings, such as mapping record type values used in transactions to configured Accela values. For example, the legacy License Type “Child Care Program” will be mapped to the Accela configured license type “Child Care Program”. Other examples include record status, Custom Fields, and Custom Table.
4. The use of the Accela Standard Mapping Conversion Tool to copy data from the Accela Standard tables to the Accela Staging tables. During this process the tool uses the mapping information created during Step 2.
5. The use of Accela History Conversion Tool to convert and load the data from the Accela Staging tables to the Accela Civic Platform database.

The Accela Staging tables are designed so that multiple legacy data sources can be uploaded into them. Then the standard legacy conversion is executed once to load all data into the Accela Civic Platform database. This allows all interdependencies between data sources to be resolved within the staging areas without worrying about the database constraints in the Accela Civic Platform database. This is the recommended approach (see Figure 9 below)

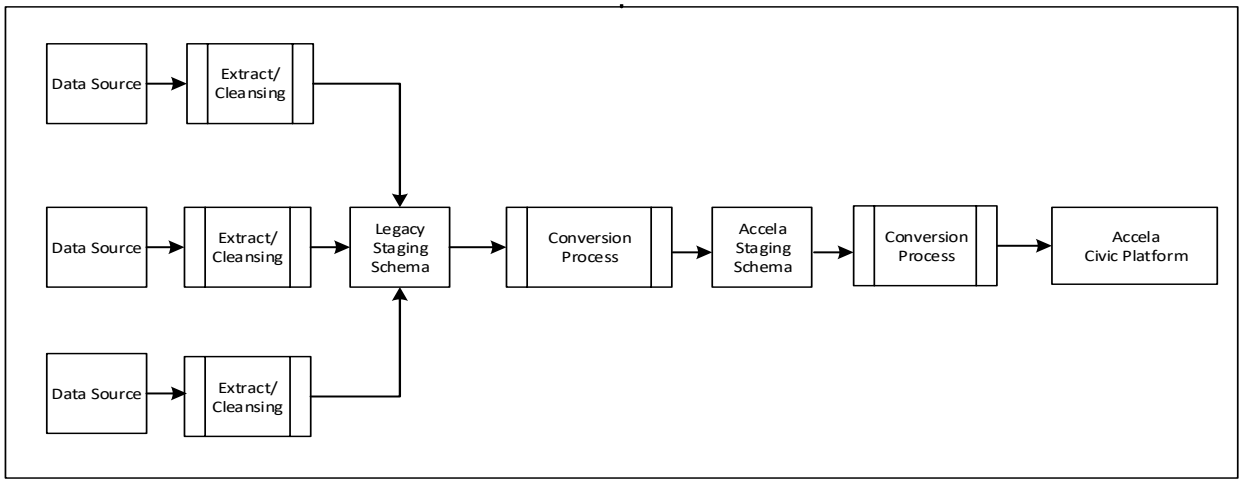

Figure 9 Recommended Conversion Approach

The transactional tables will be converted into Accela Civic Platform as defined and accepted by DHHS LIS within the Data Conversion Plan and the associated Business Rule definitions from the standard map tables. Data transformation will occur within the Accela conversion process as field-to-field; that is a single field from the source is mapped to a single field in the target.

The Accela Conversion Tool rejects data that fails data integrity, such as an incident record without an associated license record, or if the legacy data does not comply with the Accela configuration values. All migration process jobs will log any errors encountered into a log file. This log file will be reviewed / analyzed at the end of each conversion execution cycle. Data that fails to load to Accela Civic Platform, or are rejected by the conversion tools, will be analyzed and fixed and additional conversion runs will be adjusted to correct these issues. Team GCOM will work to correct conversion issues and may request help from the DHHS LIS team, as needed, to correct data quality issues.

To further test, validate, and enhance the process, the conversion process will be run through a series of mock conversions (dry-runs of a typical conversion) to confirm that data conversion behaves as expected, and any potential issues are identified and addressed before the final cutover load into the Production environment. Before the final cutover load into Production, the legacy data will be locked down and set in read-only mode. Three mock conversion runs, including a final mock run, pre-live test and User Acceptance (using Production data volumes), are planned before the final Production cutover conversion.

Mock conversions are dry runs of the conversion activities in a non-Production environment and will be performed in the Staging (UAT) environment. Mock conversion runs will be used to test data migration, and complete necessary data reconciliation in preparation for Production conversion. After successful mock conversions have been validated and all process and data corrections are accepted within the UAT environment, the Production conversion process is ready to begin.

The plan for the Production conversion run will depend on what was learned from the mock conversions. The statistics from the mock conversions will provide a detailed timeframe for all the steps needed to complete the conversion execution.

This will guide how much time will be required to complete the final conversion run. If the total time required for conversion execution falls within the range of the limited cutover timeframe, we will migrate all the source data in one process. Otherwise we will plan for an incremental data load. The plan will be drafted once we complete the mock conversions successfully and analyze the results.

To comply with the DHHS LIS stated requirement, data masking will be performed in the lower environments only, such as the Test and Staging environments. Data masking will be performed on the columns in Accela Civic Platform tables that have been identified by the DHHS LIS team as private and containing sensitive data that needs to be masked for security. This data masking will be done before the data is released to the end users for testing.

1.6.2.5 Data Validation and Reconciliation

During the Data Validation and Reconciliation phase of the conversion process the Reconciliation Report will be compiled. This report will track the conversion of records from the legacy systems into Accela Civic Platform, and will consist of counts from the various phases, details of errors, and rejections generated during these phases. For example, if there are 1,000 address records to be converted, the Reconciliation Report will show how many address records are processed in each step of the conversion process.

Any difference in the counts in any of the steps will then be analyzed to identify the issue and develop a resolution. The issue will either be corrected immediately, and that step of the process rerun, or it will be corrected before the next run. This will be determined on a case-by-case basis, based on the severity of the issue, impact on the downstream process for the current run, as well as the volume of records impacted by the issue.

Data validation tasks include unit testing, spot-checks of data, and spot-checks of data in tables using Accela Civic Platform and the legacy systems. Spot-checks of data will include checking to ensure all the fields were populated, as per the Data Mapping document, and that the data is in the correct format; whereas the spot-check using Accela includes looking up a converted record in Accela Civic Platform and then comparing the same record in the legacy system to ensure the data are displayed correctly.

Any errors will be reviewed, and necessary actions will be taken to resolve them. All data must be corrected before the final mock run. Production Conversion will not start until signoff on the final mock run. This means that if a set of records does not get converted, then we will have to run another full conversion process to load those records.

In the context of data reconciliation and validation, please note that after the Production Conversion (one-time conversion) any errors, other than those caused by data quality issues, can and will be fixed with post Go Live scripts. Records that failed due to data quality (like Duplicate Data, Data type mismatch, Data Missing in certain target fields, Data type length, referential integrity, etc.) will need to be analyzed on a case-by-case basis. This is yet another reason and rationale to focus adequate attention on data cleansing and mock conversion testing.

1.6.2.6 Execution Approach

This section shows the process flow of the steps the GCOM conversion team will take throughout the conversion process. This adds the next level of detail to the outline of the steps from the previous section.

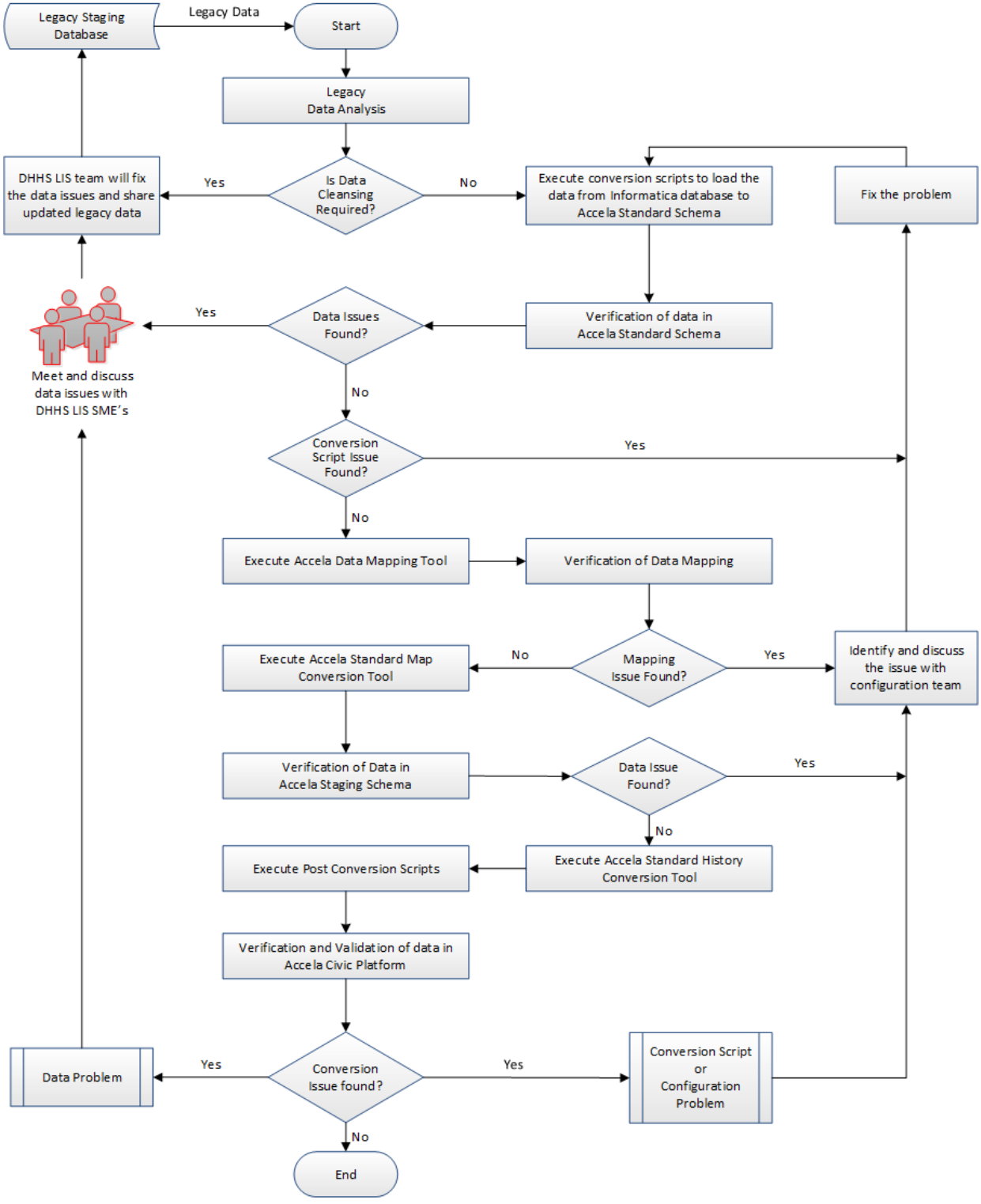

Figure 10 Process flow of the steps the GCOM conversion team will take throughout the conversion process

1.7 Technical Approach

The Data Conversion Technical Approach section provides an overview of the planned conversion instances and tools.

1.7.1 Development Approach

The Conversion Development environment consists of multiple loading scripts, transformation scripts, processes, and a shared database server with multiple databases. The Legacy Staging database will have the Phase 1 and Phase 2 licensing, certification, and incident and complaint related legacy data and a second database, named Accela Conversion Schema, will contain the transformation tables, Accela standard tables, and the Accela staging tables.

T-SQL in SQL Server will primarily be used for conversion scripts. The conversion scripts will read Legacy Staging data and map them as per the Data Mapping document, and then load the transformation tables in the Accela Conversion Schema database.

Another set of conversion scripts will perform additional transformation tasks, if needed, and load the Accela standard tables. Examples of transformation tasks are creating application records for inflight licenses, converting reference contact records, creating links between Agency and agency branch, etc. Accela conversion tools will be used to move data from the Accela standard tables to the Accela staging tables and then into Accela Civic Platform tables.

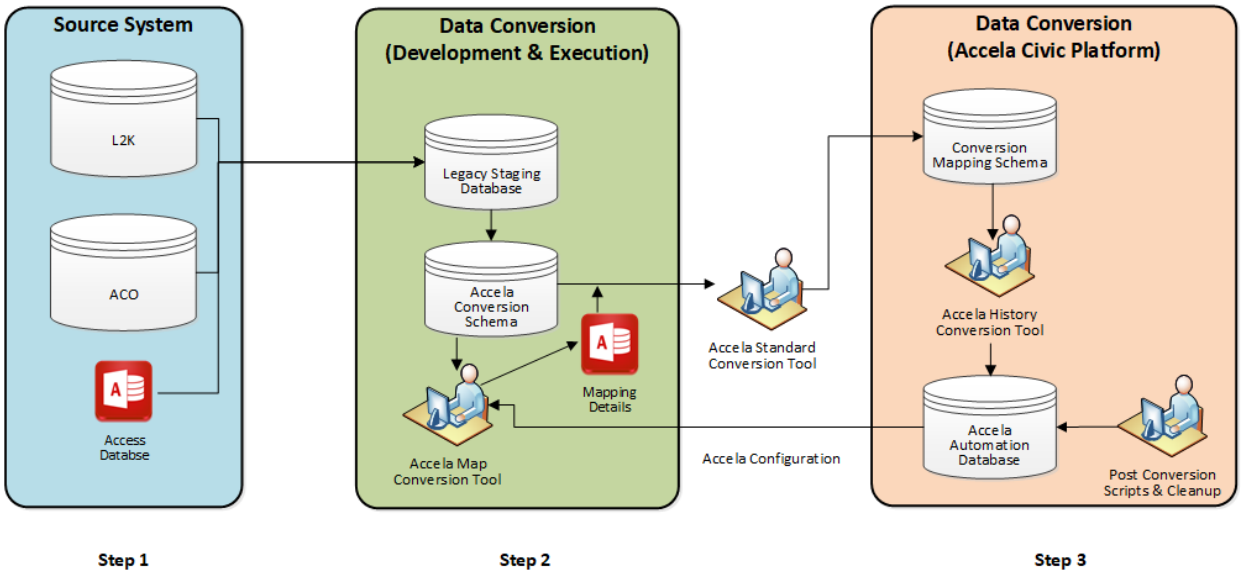

Figure 11 Development Approach

All post-conversion scripts, and all cleanup activities will be executed directly on the Accela Civic Platform database to handle any conversion, insert, or update that is outside the scope of the Accela Conversion Tool.

The Accela Civic Platform instance is comprised of the Accela Database, Accela Automation instance, Accela Document Services, and supporting software and tools. A summary of the environment is included in this section.

1.7.2 Accela Conversion Tool

The Accela Conversion Tools must be installed on a location that has access to the source system database, target system database, and Accela Document Services. The tables below list the tools / documents used during the conversion process, including Accela Conversion tools.

Table 5 Tools and Documents Used During the Conversion Process

Phase	Software and Tools Required
Data Analysis / Requirements	Microsoft SQL Server Management Studio Microsoft SQL Server Native Client MS Excel
Source Data and Document Extraction and Cleansing	To be completed by the client as this step is being performed by the client.
Data Mapping	Data Mapping Spreadsheet Microsoft SQL Server Management Studio Microsoft SQL Server Native Client Accela Standard Map conversion tool
Data Conversion and Data Masking	Accela Standard History Conversion Tool Accela Standard Map Conversion Tool Accela Data Mapping Tool Accela Document Conversion Tool Microsoft SQL Server Management Studio Microsoft SQL Server Native Client
Data Reconciliation	MS Excel Microsoft SQL Server Management Studio Microsoft SQL Server Native Client Accela Civic Platform Accela Document Services Legacy Native Applications

Table 6 Conversion Tools and Software/ Tools Required

Conversion Tools	Software and Tools Required
Accela Mapping Tool Accela Standard Conversion Tool Accela History Conversion Tool Accela Document Conversion Tool	Windows XP SP3 or later operating system MS-SQL Server Native Client 10.0 MS-SQL Server Management Studio Microsoft.Net Framework 3.5 or higher SQLCMD Utility Microsoft ACE OLEDB Driver

Conversion Tools	Software and Tools Required
	MS-Access Local Administrator access to machine Local area network access to source and destination databases

1.8 Testing Approach

This section describes the overall data conversion testing approach. There are three types of testing – manual testing, automated testing, and mock runs. All issues identified during data conversion testing will be logged, reviewed, analyzed, and rectified.

1.8.1 Manual Testing

Manual data conversion testing includes unit testing, visually validating data fields to confirm the data converted correctly, and end-user testing using the converted data. Team GCOM will perform unit testing during the conversion steps to validate the data mapping by verifying that all the fields are populated, as per the Data Mapping document. An example is to ensure that Field License Number is mapped accurately to Field B1_ALT_ID (Record# in Accela) and verifying that the data did convert to Field B1_ALT_ID as expected.

This will be performed for every mapped field at the record level, except for sample records. It is important to identify data records in the legacy system that will enable such record-level manual validation. A combination of different records across different record types will be used to have a solid cross-section of data validation during this stage. This will further validate the outcomes of the conversion; however, it will only validate to the point that data is mapped and did reach the target system.

In addition to the GCOM Conversion Team conducting unit testing, the DHHS LIS business users / SMEs will also be involved in testing and validating the results of the conversion, given that business users are familiar with the data and what to expect. The SMEs and / or business users are required to validate the converted data. The time commitment required for such testing typically varies by data complexity.

The plan for data testing is to have business users and SMEs of the data from legacy systems perform spot-checks and detailed validation within the Accela Civic Platform User Interface. This will include looking up the same records in both the legacy system and Accela Civic Platform and then comparing them side-by-side.

Throughout unit and QA testing of data conversion, Team GCOM will follow the approved defect management process to manage data conversion issues. As SMEs and business users log issues, the data path will be analyzed in reverse order to identify which step in the conversion process was the cause of the issue. For example, if an issue is identified as missing data, the team will investigate to determine if the data converted to Accela Civic Platform but did not display properly. If the data is not in Accela Civic Platform, the team will investigate the Accela staging tables to determine if the data was provided; then move farther back in the process to determine if the data was provided in the legacy data. If the data exists in the legacy system, then the conversion jobs will be run again.

1.8.2 Automated Testing

There are two main components of the data conversion automated validation approach.

1. The Conversion team will develop programs / queries that will generate record counts at each step of the conversion process. These counts will be used to validate the converted data. The record counts will be compared with the previous step and any difference in the counts will be reviewed and analyzed.
2. The Accela Data Conversion Tool will log any issues that arise during the conversion process. These issues will be analyzed to find the root cause.

In addition to these steps, the Accela Conversion Tool will enforce data integrity internally. For example, a fee record without a license record will not be converted and will generate an error.

1.8.3 Mock Conversion Run

A minimum of three mock conversion runs are scheduled for each release and environment (Dev, Test, UAT). Team GCOM and the DHHS LIS IT team will participate in conversion mock run tests to validate the data conversion effort and will identify / address data conversion issues in a timely manner. Team GCOM will lead the mock runs while the DHHS LIS team will provide support as needed, and DHHS LIS SMEs / business users will participate in validating the conversion test results.

The mock runs will be used for validating the conversion process and to establish conversion run-time statistics for the future runs, including the Production cutover run. Once the converted data passes the validation and is approved by DHHS LIS, the conversion process is considered validated and the data is ready for the Production run.

Initial data load testing will be done before the Mock 1 run start. There are three mock runs. After the first mock run, we will address all the errors before executing the next mock run. Before Mock 3, all errors should be corrected or accepted by the SMEs as exceptions.

Key objectives of the mock conversions include:

- Determining baseline load rates and execution durations and validating the conversion sequence
- Identifying any additional needs and issues for data cleansing, code, extract, and design enhancements
- Validate the process within the Dev, Test, and UAT environments prior to running in the Production environment
- Perform data validation and reconciliation in all four environments

The following are the entry and exit criteria for the mock conversion runs.

1.9 Entry Criteria

Table 7 Entry Criteria for Mock Conversion Runs

Number	Area	Description
1	Data from legacy database is extracted and uploaded to Legacy Staging	Refresh source data in Legacy Staging database.
2	Configuration Migration is confirmed	Confirmed configuration is migrated to conversion environment. (Dev, Test, Stage or Production).
3	The Data Mapping document is approved	Data Mapping document is approved by DHHS LIS business owners
4	Conversion development is completed	Conversion development is completed and unit tested.
5	Detailed Conversion Mock Run Plan is developed	Activities relevant to the current Mock Run are identified. This document will list the status of all open issues reported from previous mock run. Each issue should be either resolved or accepted as an exception by business users before starting the next mock run.
6	Production Conversion execution	Based on the mock conversions execution, the Production data conversion will be executed and validated.

1.10 Exit Criteria

Table 8 Exit Criteria for Mock Conversion Runs

Number	Area	Description
1	Conversion programs are executed and completed	All data is loaded from source to Staging, from Staging to Standard Map, and from Standard Map to Accela Civic Platform tables
2	Open items for mock conversion errors are resolved	This will list the resolutions of all open errors identified during mock run
3	Business validation of converted records are completed	Business owners of conversion data sources will review converted data that appears in the source system
4	Document Conversion execution steps.	Create document for all needed steps including the scripts to load data, Accela conversion tool steps, and post-conversion scripts.
5	Detailed Conversion Mock Run Plan is updated	Conversion Mock Run Plan is updated to incorporate adjustments identified during mock activities and run times

In each of the mock conversions, an established set of test cases will be used to confirm that data was migrated correctly. Mock Conversion Run 1 will primarily be used to identify defects and complete a start-to-end conversion run with the full volume of data to be converted. Note that Mock Conversion Run 1 will take longer than the actual conversion as it will require several stops and starts to address the defects. This is typical of the process and will be planned for as such.

Data that fails to load or that is rejected will be reported, and the next mock run will be adjusted to correct these issues. Mock Conversion 2 will be a more defined process as it will have fewer errors as compared to Mock Conversion Run 1. Subsequent mock runs objectives are to project the timing, determine how to manage the process and error handling, meet data accuracy and acceptance criteria, and provide data for User Acceptance Testing (UAT). After acceptance within the UAT testing environment by DHHS LIS, GCOM will initiate and complete the full Production data conversion using the accepted conversion process as validated above.

1.11 Conversion Assumptions

The following are the initial assumptions for data conversion activities in DHHS LIS:

- Accela configuration will be defined and in a stable state before mock conversions begin.
- Legacy Data extraction, sharing of data in the mutually agreed file formats or a transient conversion schema and cleansing will be done by DHHS LIS staff. The GCOM conversion team will work with DHHS LIS to provide the data mapping and data format.

GCOM will be able to use the existing tools (ex. Informatica) available within GCOM and DHHS LIS (if any) for data analysis, cleanup, MDM, and ETL functions.