# COMMONWEALTH OF PENNSYLVANIA

# HEALTH & HUMAN SERVICES DELIVERY CENTER

# INFORMATION TECHNOLOGY GUIDELINE

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| Name of Guideline: | Number: |
| **Doing Business with Database** | GDL-Database002 |
| Domain: | Category: |
| Data | Data Modeling |
| Date Issued: | Issued by Direction Of: |
| **03/26/2008** |  Greg StaubChief, Database Operations**Health & Human Services Delivery Center**  |
| Date Revised: |
| 05/15/2020 |

**Abstract:**

 The Health and Human Services Delivery Center (HHS DC) Technology Service Office (TSO) directs the management of information for the Departments of Health (DOH), Human Services (DHS), Aging (PDA), Drug and Alcohol Programs (DDAP) and Military and Veterans Affairs (DMVA).

**General:**

This document details when, why, and how to engage the Database Design and Database Operations within the Health and Human Services Delivery Center (HHS DC) Technology Service Office (TSO) specifically for the Department of Human Services (DHS) applications. Also detailed are the review of the documents needed for a Database Request, the sequence of events, and an overview of the various Health and Human Services Delivery Center (HHS DC) review boards and Database’s role on these boards.

**Guideline:**

***Overview of HHS DC review processes***

The HHS DC review process for DHS applications consists of two review boards with specific areas of focus: the Architecture Review Board (ARB), the Technical Review Team (TRT) and Change Management Unit (CMU). Database is a member of each of these review boards but does not own the agendas.

The Architecture Review Board wants to know how the solution will be implemented, doesthe project comply with HHS DC standards, and how the solution impacts infrastructure. The purpose of this board is to reuse existing solutions when possible, ~~to~~ ensure that the project follows HHS DC standards, and ~~to~~ identify potential problem areas. The ARB reviews major architecture changes, verifies the HHS DC strategic technical vision is maintained and that proposed solutions are supported and understood by HHS DC. It also seeks to leverage common enterprise business processes within technology initiatives and is a forum for communicating business changes and lessons learned. By participating in the ARB, Database gains an understanding of the application and then can better determine the effects of the application on the database structure and infrastructure.

The Technical Review Team consists of one representative from each HHS DC domain. It researches, tests, and evaluates solutions to determine if they meet HHS DC needs. The TRT also arranges technical briefings to explain/demonstrate new, emerging technologies as well as those currently being developed.

The Change Management Unit (CMU) focuses on proposed Production (PRD) environment implementation dates, which sections are required to support implementation, and the scope of the implementation.

The Change Management Unit reviews all changes to the following Change Domains:

• Operations

• Server Team

• Exchange/enterprise

• Database

• Network

• Telephony

• QA/Applications

***Requesting Support from Database***

The request process for Database support is initiated by the requesting supervisor or track lead who sends a Request for Database Services or Database Access and the appropriate attachments to a Service Now (SNOW) ticket. Requests for Database Services require an Application Release number and attachments as required by the processes outlined below. Requests for Database Access must contain instructions for user roles. Please use a separate SNOW ticket for Request for Database Access for each user.

Internal assignment occurs within Database to the respective Unit Chief and subsequently to the appropriate Database Administrator (DBA).

Each application team supported by Database has an internal designated member who reviews/ensures the database design, integrity and data administration standards and who need to be updated on all design session efforts and decisions.

***Data Model Review Process***

The team on any new application (or applications going through significant enhancements) presents their data model to the Database team for review. A Data Model Review occurs prior to the start of coding and before migration to the next testing environment. This allows modifications agreed upon in the data model review to be incorporated while minimizing the need for duplication of effort.

The application team determines a point in development to present the logical data model to the Database team. Once this determination is made, the application team schedules a meeting through the Database Coordinator. The Data Model Review includes members responsible for data integrity, design and data administration. The application team prepares an outreach presentation, Erwin Data Model using the Erwin template, and Data Administration Spreadsheet (RDMS requests only). These artifacts are to be sent to the Database team prior to the data model review. Application teams should expect the Database team to suggest changes at this meeting. If issues are significant or if Database requests a follow-up meeting, an additional data model review meeting is held prior to migrating from the SAT environment.

The following list identifies discussion points for the Data Model Review. Additional items may be identified during the review process.

- Indexing - Availability Requirements - Volumetrics - Key Contacts

- Purge Criteria - Backup Requirements - Server Details - Data Model

- Data Source - Interfaces w/ additional applications

- User Roles - Record Retention Requirements - Required Policies

Data models are completed using Erwin Data Modeler and include both the logical and the physical models, data type, database name, English name, descriptions, physical names, business rule, length, nulls allowed, relationships, etc. An Erwin template with the pre-defined, user properties is available through Data Administration or on the [Data Domain](http://mydhs/hhs-it-dc/busandtechstandards/datadomain/index.htm) page.

The Data Administration Spreadsheet is generated from the data model by Data Administration except for mainframe changes which submit the Data Administration Spreadsheet along with the Request for Database Services SNOW ticket.

The Health and Human Services Delivery Center currently has a combination of dedicated desktop and 2 Windows virtual servers with ERwin Data Modeling software installed. Check with Data Administration to see what server is assigned to your work group.

***Capacity Plan Reviews***

Capacity plans must be submitted on a quarterly basis. In the event of major application enhancements or variations from the norm in previous plans, capacity plans are presented to the Compute Section which are then shared with Database. Capacity plans forecast the infrastructure/hardware resources required to support a given application. Data is derived by measuring the business impact on the server, network, database, etc. Capacity plans forecast future infrastructure impacts of an application based on assumptions regarding expected business trends. They must include database size, number of users, data retention, purge requirements, system availability requirements and backup strategies.

***Load Test Review***

Major application releases must be load tested prior to production implementation. Load tests simulate the anticipated number of users, transaction volumes, throughput, response times, Central Processing Unit (CPU) utilization of the database server and processor time of the web server against established service level objectives for performance. Should the transactions fail, there is time to fix problems and retest in the load test environment without adverse impact to production systems. Waivers may be granted in the case of minor releases or applications by submitting a request to the Database Operations Chief and the TSO Compute Service Delivery Chief with the business reason for the waiver documented.

The Database team enables automatic workload repository and Structured Query Language (SQL) counters (whichever is applicable) prior to a load test. Database also establishes and restores baselines as needed. Following application load tests, Database is to receive an analysis of the test results (resource consuming queries, database CPU, etc). Each application team needs to run multiple silo tests (at least one baseline and one peak silo test). In addition, each application team is required to run at least one integrated test and prepare an overview presentation. Database reviews results of all tests upon notification of a valid load test.

***Code Review / Execution Plans***

It is strongly recommended that all new packages and stored procedures go through a code review with Database as early as possible in the lifecycle of the project.

Execution plans are run by the application team prior to submitting code for review.

***Data Fix Process***

In order to initiate the data fix process, application teams must send a Request for Database Services SNOW ticket, Program Office Approval, the SQL Script, the Log File from the Test For Production (TFP) run, and instructions for executing the script in Production (PROD). Data Fix Scripts are run on normal PROD maintenance window schedule (Tues/Thurs morning). Emergency data fixes require Program Office justification to be run during the day. Scripts updating large amounts of data should be submitted to the Change Management Board (CMB) for review.

SQL requires the RFC approval email be attached to the Snow Request for all PRD along with a log file of successful script in a lower environment.

**Implementation Logistics**

***Implementation Playbook – Database Provides Input and Implementation Support***

An implementation playbook is required for major application deployments, infrastructure changes, or data changes. The initiating section performing the upgrade, patch or migration or application team deploying software is responsible for writing the playbook and coordinating meetings to review the playbook. The implementation playbook defines tasks, duration, dependencies, owners, and contingency plans. The impact to other applications is identified such as: application downtime, cross-application validation requirements, and cross-application rollback/recovery procedures. Include conference calls throughout the plan to allow for status updates and client go/no-go decision making. The playbook is written for TFP to mimic production and contain a recovery or rollback strategy in event of no-go decisions at critical milestones. The playbook is to be prepared and implementation logistics meetings scheduled at least 4 weeks prior to go-live date.

***Lessons Learned***

This process is owned by application team. Lessons learned review sessions follow within one week of completing implementations in production. Lessons learned are to be communicated with appropriate stakeholders and processes that facilitate success are identified and reviewed. The application team defines opportunities for improvement and action items for future implementations.

**Review of HHS DC Business and Technical Standards**

Prior to any development activity, read Business and Technical Standards on the intranet at <http://mydhs/hhs-it-dc/busandtechstandards/index.htm> or [MyDHS](http://mydhs/hhs-it-dc/busandtechstandards/index.htm). Business and Technical Standards are also on the internet at <https://www.dhs.pa.gov/providers/Providers/Pages/Business%20and%20Tech%20Standards/Business-and-Technology-Standards.aspx>

On the intranet on the left side, and on the internet on the right side, hover over Business and Technical Standards to link to the 12 domains. Understanding DHS standards will facilitate software development process by getting things done right the first time.

When creating the data model, application teams use the Data Administration Data Dictionary Search (on left side of the MyDHS web site, click Business and Technical Standards, Data Domain, Data Administration Standards, Data Administration Data Dictionary Search) and the Data Administration Abbreviation Search(on left side of the MyDHS web site, click Business and Technical Standards, Data Domain, Data Administration Standards, Data Administration Abbreviation Search)web pages in order to obtain standardized data items and abbreviations.

**Refresh Schedule:**

All guidelines and referenced documentation identified in this standard are subject to review and possible revision annually or upon request by the HHS Delivery Center Domain Leads.

**Guideline Revision Log:**

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| **Change Date** | **Version** | **Change Description** | **Author and Organization** |
| 03/26/2008 | 1.0 | Creation | Database |
| 09/20/2010 | 2.0 | Reviewed and Updated | L. Steele and P. Gillingham |
| 08/02/2016 | 2.1 | Updated. | P.Gillingham and Database |
| 05/15/2020 | 3.0 | Updated content. Organization names, Header and added Service Now language. | Glenn McDonel |