HUD's Future Single Source of Truth: EDM

HUD's Enterprise Data Management (EDM) platform will be the "Single Source of Truth" for the agency. Though not fully operationalized enterprise-wide yet, EDM will capture core datasets in one platform and facilitate access across the agency. The technical architecture of EDM consists of:

- Data warehouses
- Data marts
- Big Data technologies such as HDInsight and Hadoop Cluster
- Extract, Transform, and Load (ETL) solutions
- Application Program Interfaces (APIs)

Some benefits of a fully operationalized EDM include:

- Understanding of data quality and awareness of potential gaps
- Reports and dashboards to support quick decision making
- Empowered business users with self-service tools to find data they need
- Reduced administrative overhead to compile data and respond to questions
- Elimination of manual data and analysis work

EDM is a repository for various datasets that are considered

- key to HUD's mission, and therefore important for broad access by other authorized HUD users who might want to integrate them into analysis, and
- of sufficient quality that their incorporation into evidence-based decision making is logical.

Once sufficiently established and populated, developing tools to facilitate access to EDM is necessary in order to fully leverage EDM's data assets.

Accessing Data in EDM

Various options exist to retrieve data from EDM, and access to data in EDM need not be restricted to a single option. Users accessing data for different purposes may prefer to do so differently. The DA CoE recommends HUD consider the following options depending on the range of end users leveraging EDM data:

- *Business Intelligence (BI) Tools*
    - Access is obtained via pre-defined or custom queries which can produce various output formats
    - Users can explicitly run reports on-demand, or reports can be automatically sent to registered users on a periodic basis
    - Utilizing BI tools in EDM is beneficial for two main reasons:

        - to take advantage of consistent, regularly updated, and integrated data
        - to expedite the reporting process as the architectural separation between transaction processing and analysis significantly improves performance
- *Online Analytical Processing (OLAP)*
    - A powerful technology for data discovery with capabilities for limitless report viewing, complex analytical calculations, and predictive modeling
    - OLAP provides the following benefits
        - Offers the opportunity to analyze and explore data interactively through a multidimensional model.
        - While users of reporting tools essentially play a passive role, OLAP users are able to start a complex analysis session actively, where each step is the result of the outcome of preceding steps.
- *Dashboarding*
    - Similar to BI tools, another method used for displaying information stored on EDM that enables users to filter and drilldown data as needed
    - Dashboarding provides the following benefits
        - Displays a real-time overview of trends pertaining to mission related or strategic goals
        - Enables users to quickly gain insights and respond to inquiries
        - Facilitates a consistent understanding of data trends, through simple visualizations of complex data that are delivered continuously
- *Mobile Devices*
    - Provide instantaneous access to canned reports and descriptive statistics through a data connection on a mobile device
    - The current administration is spearheading a digital transformation motivated by these requirements
    - Mobile devices provide the following benefits
        - Increasingly data will need to be instantly available whenever and wherever anyone needs it.
- *Web Applications*
    - Utilize web applications on the internet to retrieve data from EDM
    - Web applications can use the Java Database Connectivity (JDBC) API to access relational databases in EDM
    - Web Applications provide the following benefits
        - No installation required

- Can be accessed by anyone, anywhere in the world with an internet connection