



HUD MODERNIZATION SUCCESS STORIES

JUNE 2020

HUD has engaged in multiple efforts to modernize IT systems and business processes to enhance HUD mission delivery and generate efficiencies. HUD has developed the following prototype tools and processes through the Centers of Excellence (CoE) and other initiatives:

Office of Public and Indian Housing (PIH), Real Estate Assessment Center (REAC), Inspection Standards & Data for Voucher (ISDV) - Voucher Inspections (CoE prototype)

- Developed an extract, transform, and load (ETL) prototype that automatically prepares inspection data for daily analytics delivery and promotes the use of advanced methods (e.g., artificial intelligence, machine learning). In addition, developed initial analytics and visualization tools to realize the full value of inspection data.
- Benefit: Establishes an accessible, user-friendly analytics environment ISDV can use for reporting, exploratory analysis, data science techniques, and dashboard visualization. Reduces load time from hours to minutes, allowing the ISDV team to spend additional hours on actionable results. Enables enterprise-wide understanding of the physical conditions of housing units.

Office of Lead Control and Healthy Homes (OLHCHH) - HaLI Tool (CoE Prototype)

- Developed a Housing and Lead Index (HaLI) Tool, a geospatial mapping application to visualize the risk of lead paint in census tracts across the country. HaLI incorporates metrics from multiple sources, including a HUD-developed Deteriorated Paint Index to map and identify census tracts across the country expected to have a significant percentage of housing units with lead paint.
- Benefit: Creates a more objective and less time-consuming process for identifying areas of high lead risk. Improves the speed and targeting of lead remediation funds upon receipt. An internal facing tool will assist in more accurately quantifying lead paint risk across the country.

Office of the Chief Financial Officer and Office of the Chief Information Officer - Robotics Process Automation

- OCFO and OCIO have partnered over the past year to create the infrastructure needed to rapidly automate rote processes in a secure and efficient manner. OCFO has identified over 35 automation use cases for development for calendar year 2020.
- Benefits: Automating business processes will create efficiencies by speeding up processing times, increase accuracy through reductions in manual human error, improve employee morale through the reduction of data entry tasks, and increase compliance with controls and regulations.

Office of the Chief Financial Officer (OCFO) - Enterprise Risk Management

- OCFO, in collaboration with the Office of Community Planning and Development (CPD), is using data and data science to transform enterprise risk management. The team created the Argus platform which incorporates grantee performance risk indicators to develop a sentiment-based risk score for each grantee. The interface allows users to rapidly see an overall picture of the grant program's performance and it even allows one to drill down into understanding the specific variables that indicate why a grantee may be failing.



- Benefit: Reduces time for CPD staff to complete risk assessments per grantee to less than an hour, and under one-month lead time to receive the results of the analysis. HUD can realize a \$1.46 million dollar savings annually on manhours and more importantly the programs can confidently make decisions on prioritizing monitoring and mitigating risks.

Office of Single-Family Housing (SFH) – Forms-as-a-Service (FaaS) (CoE Prototype)

- Created Forms as a Service prototype that enables HUD programs to rapidly digitize their paper-based forms and integrate the data using an open Application Programming Interface (API).
- Benefit: Provides digital services for citizens and businesses when interacting with HUD, improves data quality and accuracy rates and reduces manual effort associated with forms processing and data rekeying.

Office of the Chief Financial Officer (OCFO) – Enterprise Financial Dashboard (CoE Prototype)

- Developed a proof-of-concept interactive dashboard using an industry-standard approach to visualize the movement of PIH financial data from appropriation to project-level outlays.
- Benefit: Presents a current and transparent flow of financial information to help OCFO understand the intricacies of transactions within the organization; also sheds light on important statistics such as funds obligated and funds remaining. Assists in identifying gaps and compliance monitoring.

Office of Single-Family Housing (SFH) – Intelligent Data Extraction (IDE) (CoE Prototype)

- Developed a prototype using a commercial Artificial Intelligence (AI)/Machine Learning (ML) solution to demonstrate conversion of FHA mortgage origination binders into actionable structured data. Every year HUD receives 1M+ mortgage binders from 2,500 lenders with each containing ~300 pages and without consistent format or structure with 1% manual audit coverage.
- Benefit: This capability enables higher quality post-origination compliance resulting from increased audit coverage for FHA loans. Furthermore, IDE reduces costs associated with processing and storage of paper records.

Office of Single-Family Housing (SFH) – Post-Payment Claims Auditing (CoE Prototype)

- Developed an extract, transform, and load (ETL) prototype with a composite scoring model to automate the claims audit selection process. Machine learning will be used to optimize the risk scores and ensure only high-risk claims are reviewed.
- Benefit: Introduces a more scientific-based approach to the audit identification process that decreases the team's workload and labor hours while increasing the amount of improper payments recovered.

Office of Chief Human Capital Officer (OCHCO) – Office of Program Management (OPMO) Awards (CoE Prototype)

- Developed an ETL process to automate verification elements. Incorporates a Natural Language Processing (NLP) component to automatically determine if the award justification meets OPMO's requirements.
- Benefit: Enables OCHCO to focus more labor hours on distributing awards and high-value OCHCO tasks, improves data integrity and quality by reducing human errors, and reduces the chilling effect of a long awards process.



HUD Enterprise-Wide Data Governance (CoE)

- Established a draft data governance framework and chartered a governance structure comprised of three entities: Office of the Chief Data Officer, Data Governance Steering Committee, and Data Stewards Advisory Group. Also completed data quality and data asset inventory pilot projects.
- Benefit: Introduces an enterprise-wide approach to data governance that, among other things, eliminates program office silos and duplicative efforts, creates a standardized taxonomy, improves data quality, and promotes data-driven decision making. Provides opportunities for identifying areas of improvement in data collection, data processing and the effective use of data.

Office of Chief Procurement Officer (OCPO) – Contracts Dashboard (CoE Prototype)

- Developed a proof-of-concept interactive dashboard using an industry-standard approach to visualize prime contracts related information at both an overview and detailed level.
- Benefit: Presents a current and transparent display of pertinent procurement information in a single location. Quickly sheds light on important figures such as contract value, contract statuses, and obligation amounts.

Customer Experience (CX) Advisory Board (CoE)

- Established and trained a CX Advisory Board with representatives from all HUD programs and offices. This Board is a best practice and critical to ensuring that CX initiatives incorporate program goals to enhance customer experience.
- Benefit: Assists in coordinating across all program areas and functional areas within the agency to identify, prototype, and launch new initiatives that will measurably improve CX scores.

Office of the Chief Financial Officer (OCFO) – Fixed Asset Module

- HUD Employees of OCFO, OCIO, OCPO, OA, and Treasury worked across their programmatic lines to modernize an old process by leveraging technology and applying process improvement techniques to establish accuracy and integrity in property records. The cross-functional team collaborated with stakeholders across the department to deploy the Oracle Fixed Asset Module (OFAM) at our shared service provider.
- Benefit: This fully automated process between the procurement system (PRISM) and the accounting system (Oracle) with electronic routing and approvals along with key built-in internal controls. In addition, the solution resolves a material weakness and strengthens our financial foundation.