HUD Strategic IT – Market Research

Accelerating delivery of digital services for HUD modernization

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May 06, 2019

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Use case: Forms as a Service

- HUD maintains a library of over 951 paper forms, and receives millions of completed paper or scanned form submissions annually. HUD users need to recreate existing paper forms as adaptive forms, specify a schema that completed forms must comply with, and deploy them for completion by end-users.
- Based on the need, Cloud CoE conducted market research with the following criteria
  - ❑ Adaptive/responsive form design
  - ❑ Forms/rules editor with validations
  - ❑ Metadata, themes, API, multi-form submissions, and data integrations
  - ❑ Save and continue on multiple devices
  - ❑ Workflow support
  - ❑ Insights and e-signing integration
- The Cloud CoE evaluated POCs to demonstrate the technical feasibility of establishing FaaS with HUD-hosted applications using a commercial forms service (along with APIs).

Use case: Electronic Signature

- In addition to FaaS, the platform must provide or integrate with an electronic signature capability that permits signing users to affirm their identity and mark their assent in a manner consistent with applicable laws (e.g., eSIGN Act and UETA), regulations, and OMB guidance.
- Based on the need, Cloud CoE conducted market research with the following criteria
  - ❑ Store and access completed transactions securely in the cloud
  - ❑ Encrypted, tamper-resistant, and able to meet HUD security standards
  - ❑ Sign, store, return, and reject documents to the users
  - ❑ Responsive and mobile-friendly
  - ❑ HUD-user-customizable without needing developer support
  - ❑ Completely traceable
- The Cloud CoE evaluated POCs to demonstrate the technical feasibility of establishing digital signatures and eSignatures with HUD-hosted applications using a commercial eSign service (along with APIs).

Use case: Intelligent Data Extraction

- HUD Enterprise has millions of documents that need to be converted from paper-based documents into digital forms and to be automated.
- HUD needs to extract data from forms that may reside in PDF or similar document formats.
- Based on the need, Cloud CoE conducted market research on the following AI-based text extracting criteria
  - ❑ Read PDFs, images, scanned documents from various transmitting sources
  - ❑ Able to read typed, handwritten, and low-DPI structured and unstructured documents
  - ❑ Textual extraction into data sources with greater degree of accuracy
  - ❑ Able to classify, extract, validate, and deliver the data
  - ❑ Able to ingest, index, and search using search capability
  - ❑ Persist to HUD systems using Open API and/or connectors
- The Cloud CoE evaluated POCs to demonstrate the technical feasibility of establishing Intelligent Data Extractions with HUD-hosted sample applications using commercial IDE services.

Use case: Electronic Records Mgmt

- The FaaS and IDE solutions must integrate to provide HUD with machine-readable data in a secure, FedRAMP-compliant environment that can be retrieved and utilized easily and can feed into data analytics. Therefore, electronic records management must be considered when developing HUD's FaaS and IDE solutions.
- Based on the need, Cloud CoE conducted market research on the following electronic records management criteria
  - ❑ Simple, automated, and demonstrates compliance
  - ❑ Ease of use, compatible, support versioning and rollback etc.,
  - ❑ Able to classify, extract, validate and deliver the documents to storage systems
  - ❑ Support workflows and trigger automated actions for repetitive tasks
  - ❑ Support search, filter, suggest and Discover
  - ❑ Secured at multiple layers (or levels)
- Cloud CoE did not conduct any POC for the above services, but evaluated the options in theory.

Use case: Open API

- HUD Enterprise API gateway must be configured, using HUD's Mule ESB or the Azure API Gateway, to integrate all the new services, to facilitate data transfer between new forms data, electronic signatures, IDE data, records management information, and appropriate HUD systems of record.
- The data entered by users must be exposed through an open API for integration with HUD systems.
- Based on the need, Cloud CoE conducted market research on the following Open API criteria
  - ❑ Support easy and secure creation and deployment
  - ❑ Mostly REST-based (support SOAP if necessary)
  - ❑ Scalable and resilient
  - ❑ Support dashboard, metrics, reporting, discovery, and CI/CD
  - ❑ Support MISMO and other HUD data formats
- Cloud CoE evaluated a POC for the Azure services, but evaluated the other options only in theory.

Conclusions

- There is no single commercial application that simultaneously offers Forms as a Service, Electronic Signature, Intelligent Data Extraction, Electronic Record Management, and a HUD-appropriate workflow between these capabilities.
- There are a variety of commercial single or multi-point solutions that provide individual or combinations of some of the solutions listed above. The market is mature for these individual capabilities, and there are a variety of providers.
- In order to integrate existing commercial solutions into a holistic approach while also preventing vendor lock, it will be necessary to engage a system integrator to stitch together a best-of-breed approach to existing commercial solutions. Additionally, an integrator needs to develop an open API that allows for a flexible integration should any of the commercial services be exchanged for different commercial providers in the future.