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| **HEALTHeLINK**  **Cost/Price Proposal** | **Proposal: HeL-Netspective-2023-001**  Expiration Date: November 30, 2023 |  |
| **Point of Contact:**  Raphael V P  Email: raphael-paily@netspective.in  **https://www.netspective.com/** | **Summary Description:** Ingestion, Storage and Presentation of AD meta data and scanned PDF documents. | |

## ****Scope****

Netspective Communications LLC (here on referred to as Netspective) appreciates the opportunity to support HEALTHeLINK (here on referred to as HeL) for the ingestion, storage and presentation of Advance Directive (AD) meta data and scanned PDF documents.

Advance Directives (here on referred to as AD) information in the following formats given to Netspective, will need to be ingested, stored, and presented as views in a unified data infrastructure in HEALTHeLINK’s Data Analytics Platform (DAP).

1. Meta data such as source of AD section in the CCD, date activated etc.
2. Scanned PDF documents will need to be stored as is in the database. The meta data in the message wrapper within PDF will also need to be stored.
   1. We can use traditional PDF metadata extraction tools like PDF (there are free versions and paid versions)
3. Netspective to explore integrating PDF content extraction (text data from scanned PDFs) and content reasoning using large language models and AI APIs such as OpenAI.
4. Investigation of possible tools for the extraction of text data from scanned PDF documents.

## ****Approach****

*Development*

HeL will provide sample meta data files, which are CCD(XML) files which will be used by Netspective to create the required Data Vault entities like hubs, satellites, and views. These samples are expected to contain all the fields that will need to be extracted by Netspective. HeL will also provide sample PDF files which will be used by Netspective for loading the files as well as the associated PDF meta data into the database in the associated hubs and satellites.

*UAT*

After development, Netspective will provide scripts that can be deployed by HeL in the DAP test environment for testing and verification. This can be done in several iterations so that it is available for HeL to test and provide feedback instead of waiting for the whole completed deliverable.

*Production*

After testing and verification, Netspective will provide the scripts that can be deployed by HeL in the DAP production environment. Updates to the production environment will also be provided by Netspective.

## ****Key Assumptions****

Netspective has considered the following assumptions for this proposal -

* De-identified meta data and PDF sample files containing all the fields that need to be extracted will be provided by HeL.
* Scanned PDF and it associated meta data will be stored as is. The scanned PDF will not be parsed at this point of time.
* All the fields as well as the format of the data to be presented in the views will be provided by HeL. Any required transformations needed to data will be provided by HeL.
* The data from the views (combination of scanned PDF data as well as AD meta data) will be provided by Netspective. However, the aggregation of the data from the views along with the data from third party sources like eMOLST, ADVault(myDirectives) and other AD registries is out of scope.
* Querying or ingestion of data from eMOLST, ADVault(myDirectives) and other AD registries is out of scope.
* The HeL team will be available for clarifications as and when required at a reasonable notice.
* HeL will provide timely decisions on requirements and artifacts. Any changes to outputs or scope defined in the approved deliverables will constitute a Change Management procedure.
* The efforts have been estimated based on the current scope identified and it can vary depending on the scope change.
* Netspective will provide weekly status report which will include hours used and task completion percentage (HEALTHeLINK to provide template).
* Netspective will submit code for HEALTHeLINK peer review as requested.
* Netspective will follow HEALTHeLINK’s Systems Development Life Cycle (SDLC) Processes.
* Netspective will use HEALTHeLINK’s code repository and associated policies.
* Netspective will submit code to HEALTHeLINK’s application security testing tool (Veracode) and remediate any issues identified.
* Netspective will identify required access that is needed by HEALTHeLINK.
* Netspective will follow HEALTHeLINK’s Off-Shore Policies and Procedures (ex. No PHI shared off-shore).
* Netspective will identify a main point of contact for HEALTHeLINK.
* Netspective will identify an escalation point of contact for HEALTHeLINK.
* Netspective will notify HEALTHeLINK of any issues identified and provide a remediation plan and impacts on timeline.

## ****Effort Estimate****

**Timeline:** November 2023 through April 2024

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|  | Optimistic | Pessimistic | Confidence |
| Objective 2: Demonstrate Advanced FHIR for the HIE/Interoperability Use Case |  |  |  |
| Activity 4 - Health Information Exchange/Interoperability Case |  |  |  |

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| Investigate options for extracting data from PDF documents (traditional PDF metadata extraction tools like PDFtk) | 30 | 40 | 80% |
| If deemed necessary, explore integrating PDF content extraction and content reasoning using large language models and AI APIs such as OpenAI. **Hours for this option is not added in the total hours below.** | 40 | 250 | 25% |
| Ingest CCD files and extract AD meta data information from CCD document | 24 | 40 | 80% |
| Ingest scanned image PDF document and PDF meta data | 16 | 40 | 80% |
| Develop code to create Data Vault entities (Hubs, Satellites, etc.) to store AD information to Data Vault | 20 | 30 | 80% |
| Extend the HIE data analytics platform (DAP) to support ingestion and storage of AD data | 40 | 60 | 80% |
| Prepare technical documentation for the mapping and transformation of AD data and develop scripts to create the required views for presenting the data | 40 | 80 | 80% |
| Conduct validation and testing | 40 | 60 | 80% |
| Development and testing of deployment scripts for UAT and production environments | 20 | 40 | 80% |
| Project management and coordination | 40 | 60 | 80% |
| **Total** | 270 | 450 |  |

## ****Resources and Rates****

* Fractional Advisory CTO
  + Low (3 to 5 hours a month) if no major issues encountered
  + If deemed necessary due to more issues encountered than expected, we might need additional 5 to 10 hours during a month
* Project Manager
* Developers
* DevOps
* QA/QC

**Invoicing**

* **Netspective will provide a monthly invoice and a statement detailing the number of hours dedicated to each task listed above.**

## ****Deliverables****

* IaaC scripts for deployment of the UAT/Production environments.
* Scripts for data ingestion, storage, and presentation of AD data for ONC ACP Project