

Unlocking the Power of NLP In Pathology Casefinding



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Agenda

- ERS Company Overview
- ERS / HLA Global Partnership Overview
- HLA Global Company Overview
- What is NLP?
- Overview of Reportability Solution
- CRStar Work Queue Demonstration
- Conclusion
- Q&A

ERS, a Health Catalyst Company - Overview

- Focused exclusively on our Cancer Registry solution for 35 years
- Focused on Cancer Program Management and Data Analytics
- Partnered with cancer centers to help meet and exceed their goals and objectives
- Dedicated to Quality Management, Statistical Research and Innovation
- An experienced team of ODS-C and software developers with extensive cancer registry and standards expertise



ERS / HLA Global Partnership

- Partnership leverages HLA-Global's award winning clinical NLP technology
- Solution addresses a key need for cancer registries
- Collaboration allows ERS to offer a fully automated pathology reportability solution for casefinding
- Increases efficiency and productivity in the cancer registry vs a manual method
- High accuracy with active learning to improve case identification
- Remarkably cost effective compared to other solutions
- Health systems report a quick ROI



HLA Global Company Overview

- HLA–Global specializes in the Natural Language Processing (NLP) of cancer clinical documents to enable the extraction of relevant cancer data items
- The company was established in 2015 with a sole focus on solving the problem of cancer data identification, analysis, extraction, and coding
- We merge our expertise in Clinical Natural Language Processing, Clinical Data Analytics and Agile Software Engineering methods to produce scalable solutions to solve the needs of healthcare organizations and agencies
- HLA-Global has a successful track record of delivering cancer NLP projects to organizations such as the California Cancer Registry and Centers for Disease Control (CDC)

What is Natural Language Processing (NLP)?

NLP is a technology that gives computers the ability to interpret, analyze, and comprehend human language.

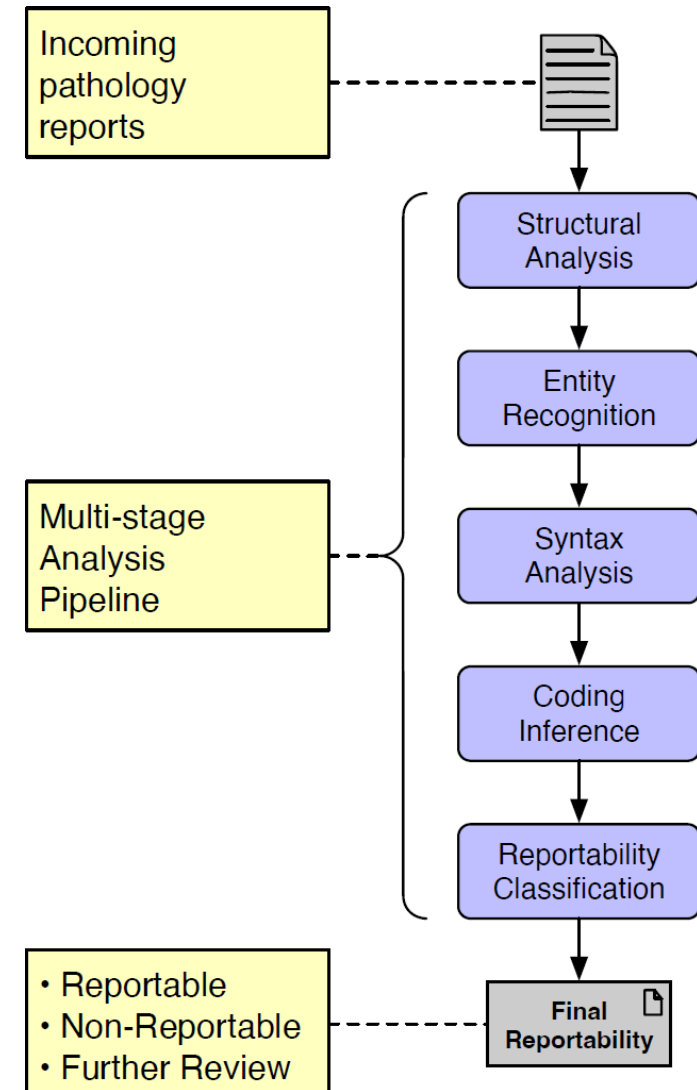
Examples of Types of NLP

1. Text Mining: string analysis of texts
2. Deep Learning: Using string processing and machine learning to classify target content
3. Generative AI: Searching and generating answers using the most common phrases and sentences on the Internet about the topic of your query
4. Statistical NLP – what HLA-Global does (see next slide)

Statistical NLP

HLA-G's Deep Understanding is a Multi-layer Pipeline:

1. Structural Analysis – identifying document sections.
2. Entity recognition – identifying all the clinical concepts referred to in a report no what how expressed.
3. Syntax Analysis – to understand negation (e.g. not a cancer)
4. Coding inference – using coding rules to determine reportability
5. Reportability classification – allocating the appropriate reportability result with the highest confidence.



NLP Reportability Solution Overview

The HLA-Global Reportability Service is a document processing service that analyzes electronic pathology reports that are in free text format. It extracts information to determine the properties of cancer to identify its reportability status:



Reportable

The report contains a reportable cancer



Non-Reportable

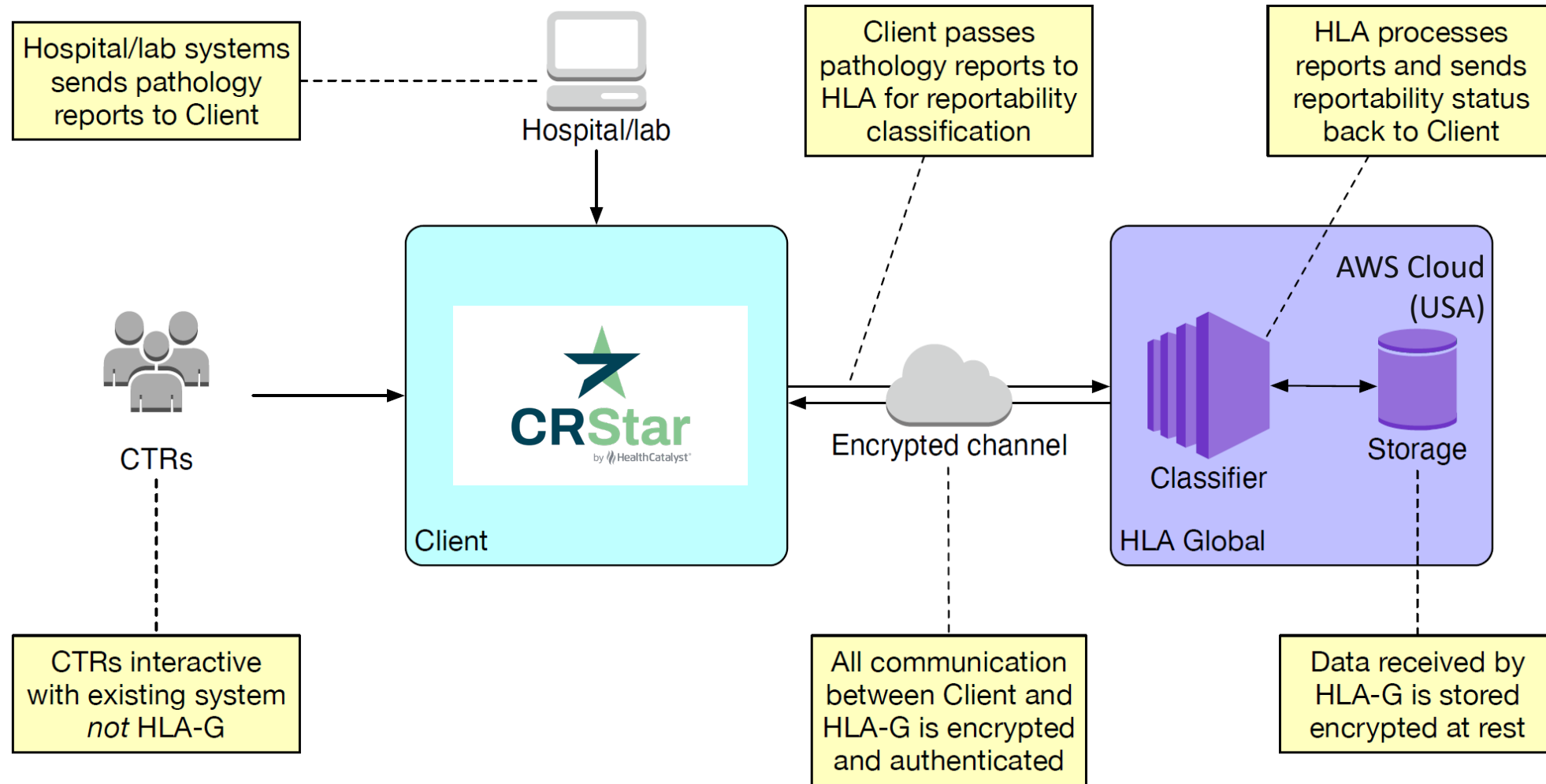
The report contains a non-reportable cancer (or is not a cancer report)



Needs Further Review

The report requires further manual analysis

NLP Reportability Solution Overview



CRStar Work Queue

Work Queue

| SSN | MRN | Last Name | First Name | Middle Name | DOB | Hospital Code | Path Nbr | Final Diagnosis | NLP Status | Assessment Status | Reviewed |
|-------------|----------|-----------|------------|-------------|------------|---------------|------------|---|------------|---|-------------------------------------|
| 286-40-6669 | 29966872 | Scarlet | Tyler | | 02/19/1949 | 01 | UC23-37611 | OPERATIVE DIAGNOSES Operation/Specimen: A: Prostate, right medial anterior, needle biopsy B: P | Reportable | <input checked="" type="radio"/> Reportable <input type="radio"/> Non Reportable <input type="radio"/> Reportable with Deletion | <input checked="" type="checkbox"/> |
| 285-66-6324 | 56734521 | Edberg | Rayray | A | 07/11/1956 | 01 | UC23-2250 | FINAL CYTOPATHOLOGICAL DIAGNOSIS Statement of Adequacy: Satisfactory for evaluation. Interpretati | Reportable | <input type="radio"/> Reportable | <input type="checkbox"/> |
| 284-90-3565 | 52845482 | Poole | Lawrence | | 02/11/1954 | 01 | UC23-38827 | OPERATIVE DIAGNOSES Operation/Specimen: A: Prostate, right medial apex, needle biopsy B: Prost | Reportable | <input type="radio"/> Reportable | <input type="checkbox"/> |
| 282-70-6663 | 62111030 | Kemper | Trisha | | 01/30/1963 | 01 | UC23-37221 | OPERATIVE DIAGNOSES Operation/Specimen: A: Left breast, 3:00, N, 11 mm, ultrasound guided needl | Reportable | <input type="radio"/> Reportable | <input type="checkbox"/> |
| 286-66-6341 | 63536544 | Mackie | Art | | 02/09/1944 | 01 | UC23-2699 | FINAL CYTOPATHOLOGICAL DIAGNOSIS Interpretation: POSITIVE FOR MALIGNANT CELLS. Non small cell | Reportable | <input type="radio"/> Reportable | <input type="checkbox"/> |
| 283-66-6029 | 14471234 | Downey | Joline | | 06/18/1937 | 01 | UC23-3554 | FINAL CYTOPATHOLOGICAL DIAGNOSIS Statement of Adequacy: Satisfactory for evaluation. Interpretati | Reportable | <input type="radio"/> Reportable | <input type="checkbox"/> |

1 25 items per page

Refresh

Reviewed All Approve Reviewed

Patient Details

Patient Information

Name: Tyler Scarlet SSN: 286-40-6669
 DOB: 02/19/1949 Sex: 1 Current Address: 8532 NORTH DR
 MBI: Email:

| S/A | Flag | Site | Seq | Hosp Class | Diagnosis Date | Topo | Lat | Hist | MRN | Accession Number |
|----------------------|------|------|-----|------------|----------------|------|-----|------|-----|------------------|
| No records available | | | | | | | | | | |

Pathology Text:

OPERATIVE DIAGNOSES Operation/Specimen: A: Prostate, right medial anterior, needle biopsy B: Prostate, right medial mid, needle biopsy C: Prostate, right medial posterior, needle biopsy D: Prostate, right medial base, needle biopsy E: Prostate, right lateral anterior, needle biopsy F: Prostate, right lateral mid, needle biopsy G: Prostate, right lateral posterior, needle biopsy H: Prostate, right lateral base, needle biopsy I: Prostate, left medial anterior, needle biopsy J: Prostate, left medial mid, needle biopsy K: Prostate, left medial posterior, needle biopsy L: Prostate, left medial base, needle biopsy M: Prostate, left lateral anterior, needle biopsy N: Prostate, left lateral mid, needle biopsy O: Prostate, left lateral posterior, needle biopsy P: Prostate, left lateral base, needle biopsy Q: Prostate, ROI 1, needle biopsy R: Prostate, ROI 2, needle biopsy

PATHOLOGICAL DIAGNOSIS: A. Prostate, right medial anterior, needle biopsy: Small focus of adenocarcinoma (5% involvement) with perineural invasion. B. Prostate, right medial mid, needle biopsy: Prostatic adenocarcinoma, Gleason score 4=8 (Grade Group 4), involving 40% of the length of one core. C. Prostate, right medial posterior, needle biopsy: Prostatic adenocarcinoma, Gleason score 4=7 (Grade Group 3), involving 70% of the length of one core. Percentage of Gleason pattern 4 = 70%. Intraductal carcinoma is present. D. Prostate, right medial base, needle biopsy: Prostatic adenocarcinoma, Gleason score 3=7 (Grade Group 2), involving 50% of the length of one core.

Exit

CRStar Suspense File

This screenshot shows the 'Patient' section of the CRStar Suspense File form. It includes fields for patient demographics such as Race (99), Family History (Fam Ca Hist), Usual Occupation (Usual Occ), Usual Business Industry (Usual Bus Ind), and Comments. It also features a table for medical records with columns for S/A, Flag, Site, Seq, Hsp, Class, Diagnosis Date, Acc Nbr, and Med Rec Nbr. A 'New Primary' button and 'Date of Last Contact' field are also visible.

This screenshot shows the 'Diagnosis Text' section of the CRStar Suspense File form. It displays a detailed medical history and diagnosis for a patient with a prostate cancer diagnosis. The text includes operative and pathological diagnoses, Gleason scores, and descriptions of the tumor's location and extent. A red arrow points from the 'Diagnosis Text' field to the 'Text' button at the bottom of the form.

- Patient Demographics
- Site
- Hospital
- Diagnosis Date
- Medical Record Number
- First Contact Date
- Admit Date
- Discharge Date
- Casefinding Source
- Pathology Number
- Pathology Text
- Diagnosis Comments (topography code and description)

The Broader Picture

- Precision Cancer Registries
 - Advocated by the CDC at NAACCR2023
- Computer assisted coding for productivity gain
- Automated case identification
 - Pathology
 - Radiology
 - EHR
- Synoptic report – data item extraction

In Conclusion

- The NLP reportability solution for pathology addresses a key need for cancer registries
- High accuracy with active learning to improve case identification
- This fully automated solution increases efficiency and productivity and helps drive concurrency
- Registries will see remarkable cost effectiveness compared to other solutions
- Health systems report a quick ROI

Come see us in Indianapolis April 24-27, 2024



Stop by Booth # 201, 300 (ERS/CRStar)
and
210 (HLA-Global)



Q&A

Contact Us



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