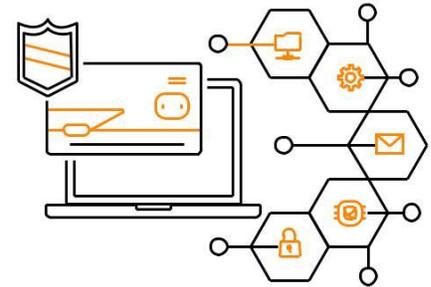


Case Study

Amorphic powers a clinical information platform to improve COVID-19 patient outcomes



Executive Summary

There is an infodemic that has been created with so much data available with the peer reviewed studies, journal papers related to SARS-COV2 pandemic and other epidemics like SARS, but the search and consumption of this data is often difficult for the front-line clinicians who generally have little time to treat COVID-19 patients. This problem still exists in other areas of medical ailments as well.

PanSurg has been created to tackle this problem head-on and solve the problem through **REaltime DAta Synthesis and Analysis (REDASA)**, leveraging some of the cutting-edge AWS technologies such as Kendra and SageMaker to help ingest, search, curate and consume the data. REDASA will aim to disseminate clinical guidance to the clinicians treating COVID-19 patients and aim to improve outcomes for the patients by making data available to the front-line staff.

Customer Challenge

PanSurg is a direct response to the threat the COVID-19 pandemic poses to patients with surgical pathology and the people that look after them. PanSurg is collaboration created by a group of clinicians, surgeons and academics from the Department of Surgery and Cancer and the Institute of Global Health Innovation, Imperial College London. The team has a wide experience in delivering projects aimed at transforming health for all through evidence-based innovation.

PanSurg collaboration with AWS and Cloudwick aims to address the following challenge: There is no established evidence-base for how to treat COVID-19 patients. The current 'evidence review and curation model' is not moving at the scale and speed demanded by the current crisis. However, data and learning are being generated continuously in the field, for example clinical - such as patient case information, and non-clinical such as news feeds.



About the customer

PanSurg is a direct response to the threat COVID-19 pandemic poses to patients with surgical pathology and the people that look after them. PanSurg.org is a group of clinicians, surgeons and academics from the Department of Surgery and Cancer and the Institute of Global Health Innovation, Imperial College London.

The group has wide experience in delivering projects aimed at transforming health through evidence-based innovation. PanSurg started in the UK but it needs to be a global collaborative reach its potential.

Testimonials

“Healthcare professionals are facing huge volumes of academic literature, public information and noise on COVID-19, making it challenging to extract key insights and translate these into best clinical practice. We are excited to collaborate with Cloudwick, MirrorWeb and Amazon Web Services to create a reliable, accurate information source with REDASA, for healthcare professionals seeking guidance during the pandemic.”

James Kinross

Clinical senior lecturer and lead for PanSurg

“This solution we are developing with PanSurg, and AWS Partner Network (APN) Partners, Cloudwick and MirrorWeb, combines the best of expert human review with AWS machine learning technologies.”

Dr Matthew Howard

International healthcare data science lead at AWS EMEA SARL

Source: ITPro.co.uk

There is an urgent need to capture, process and understand as much prospective data/information as possible to inform and improve clinical care of COVID-19 patients. This is to support rapid development of clinical guidance and assessment of risk, e.g. answers to critical questions such as given below:

- Should a patient be ventilated or not?
- Should a patient be operated on or not? (e.g. *what age should not operate, what comorbidities or disease severity mean not to proceed etc.*)?
- Who gets what COVID-19 treatment and when? (e.g., *what information/evidence are we starting to see, what patients react well to what treatments etc.*)

Solution Implemented

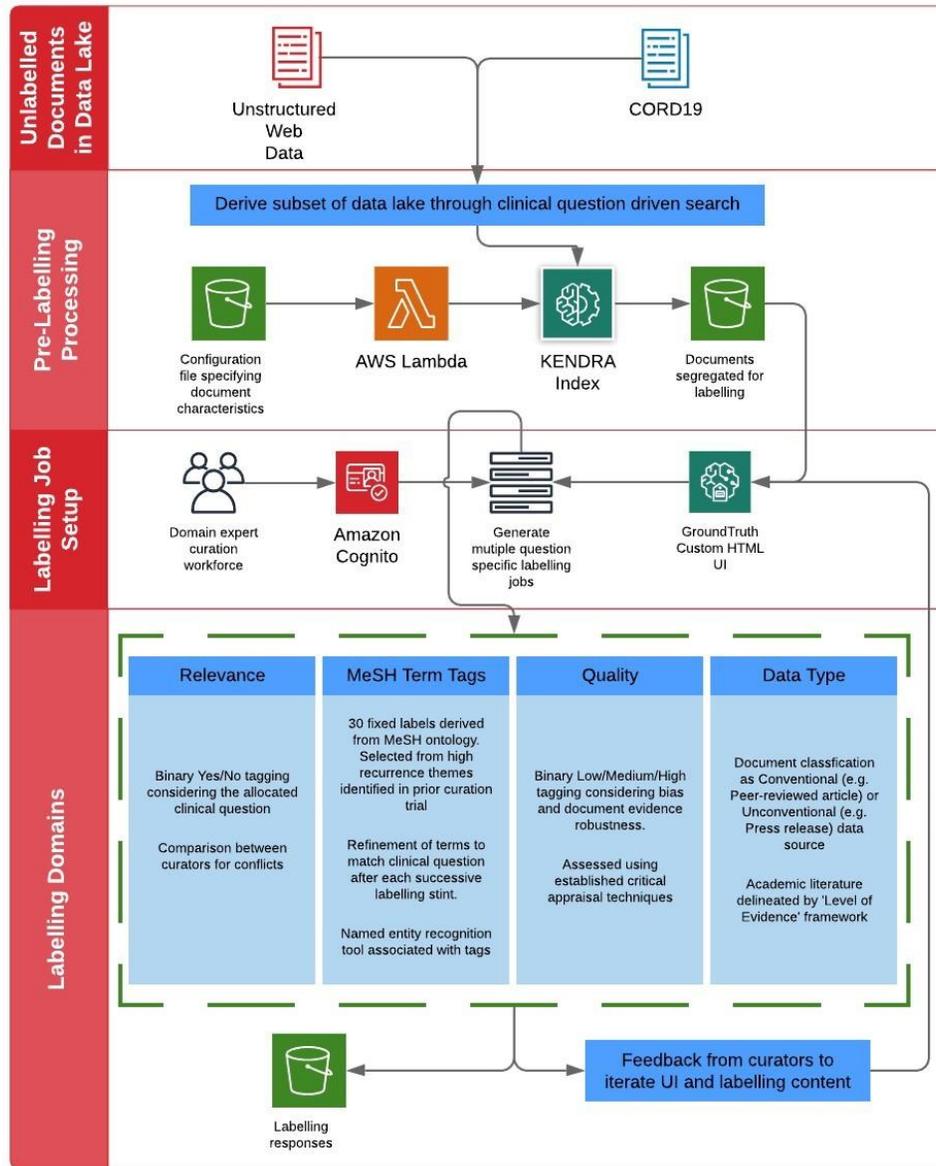
REDASA uses Amorphic Data Platform as a data lake and analytics platform to ingest, process and index a huge amount of unstructured data which undergoes an automated pipeline of comprehension using the AWS Comprehend service, making the data searchable through keywords and extracted entities. Amorphic utilises the AWS Elasticsearch service to enable the search across the corpus of unstructured data.

Amorphic also allows the PanSurg curation team to search data using AWS Kendra, which has been integrated within the Amorphic platform and further allows the use of Natural Language Processing (NLP) to ask questions on the indexed data. Further ability of manual curation of data using the external MeSH tags has been provided, which are treated as metadata and are made searchable on the Amorphic platform.

Also, the platform combines unstructured information from a wide variety of sources. Sources include:

- Clinical unstructured data: e.g., literature, case reports, letters
- Non-clinical unstructured: e.g., news feeds, social feeds
- Non-traditional sources: e.g., Multilingual medical peer-reviewed journals

Figure: Integrated workflow of the search index and data curation pipeline. A variety of high impact areas, both with and without consensus, amongst the scientific community between countries and health authorities.



About Cloudwick:

Cloudwick is an AWS certified Advanced Consulting Partner that specializes in building native data lakes that power faster, cheaper and more agile cloud analytics for IT, business users and data scientists.

Whether you need to migrate your analytics to the cloud, add decision automation to your business intelligence, improve customer experience with machine learning or want to build or buy a data lake, Cloudwick has a complete portfolio of services and solutions.

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