

Cloudwick's Amorphic Data Cloud for AWS powers a clinical information platform to improve COVID-19 patient outcomes



Case Study

Executive Summary

An “infodemic” of content has been created with the volume of data available from peer reviewed studies and journal papers related to SARS-COV2 pandemic and other epidemics like SARS, and from other areas of medical concern as well. The search for and consumption of medical data is often difficult and time consuming for the front-line clinicians, especially those who generally have little time to treat COVID-19 patients, let alone find relevant clinical information.

PanSurg has been created to tackle this problem head-on and solve the problem through **REaltime Data Synthesis and Analysis (REDASA)**, leveraging cutting-edge AWS technologies such as Amazon Kendra and Amazon SageMaker to help ingest, search, curate and consume the data. REDASA aims to disseminate clinical guidance to the clinicians treating COVID-19 patients and to improve outcomes for the patients by making data readily 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, with clinical data - such as patient case information - and non-clinical data such as news feeds both growing at a fast pace.



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 aims to be a global collaborative to 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 the rapid development of clinical guidance and assessment of risk, providing answers, for example 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 Cloudwick’s Amorphic Data Cloud for AWS (Amorphic) to ingest, process and index a huge amount of unstructured data. The data is processed natively in Amorphic through an automated pipeline using the AWS Comprehend service, which makes data searchable through keywords and extracted entities. Amorphic then utilizes the Amazon OpenSearch service to enable search across the corpus of unstructured data.

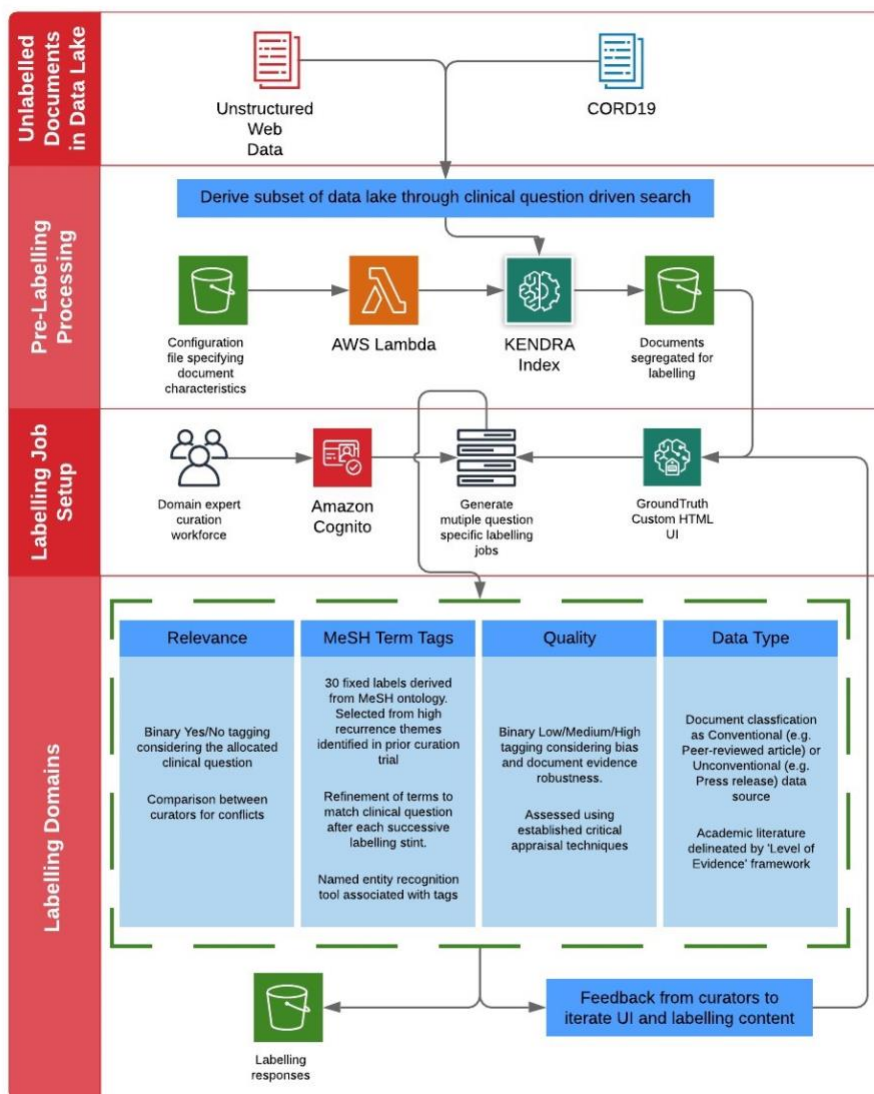
Amorphic allows the PanSurg curation team to further search data using Amazon Kendra, which has been integrated within the Amorphic Data Cloud and allows the use of Natural Language Processing (NLP) to ask questions on the indexed data. The ability to manually curate data using the external MeSH tags has been also provided; these tags are treated as metadata and are made searchable through the Amorphic Data Cloud.

Amorphic 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

The Amorphic Data Cloud’s ability to make data great volumes of structured and unstructured data searchable - even to the degree that data can be search using natural language - has simplified the way healthcare professionals access and engage with critical clinical and non-clinical data to treat their patients during this recent and still ongoing pandemic.

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 powers more agile, innovative, and cost-effective cloud data and analytics solutions. Cloudwick's Amorphic Data Cloud simplifies data access by making all data on AWS searchable, shareable, and analyzable, so organizations can gain deeper insights from their data. Cloudwick's Professional Services provides organizations with trusted, high impact data and analytic migration and modernization outcomes.

Founded in 2010 in Newark, CA, Cloudwick serves customers throughout the US, EMEA, and APAC.

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