

# K-Cloud

## A Technology Led Purpose Driven Oncology Platform

*Building Care Continuum using OpenEHR*

## About the presenter

- *Anand Jahagirdar*
- Principal Software Architect @ *Karkinos Healthcare*
- Over 20 years of experience with medical imaging and clinical data which include enterprise systems like PACS/VNA and CDSS, using DICOM, FHIR and openEHR
- Currently building a technology led purpose driven oncology platform to enable care continuum using OpenEHR standard
- [Anand.Jahagirdar@karkinos.in](mailto:Anand.Jahagirdar@karkinos.in)



# About Karkinos

- Karkinos Healthcare is a health technology platform that supports **integration of distributed cancer care**
- Karkinos is on a mission to provide an end-to-end care solutions where no person is deprived of care, for lack of **access or affordability**.

## Backed by



**Rakuten Medical**



## Karkinos 4D model



### Early Detection



**Diagnosis:**  
Democratizing  
Precision Oncology



**Delivery:** Integration of primary health and cancer care- care closer to home

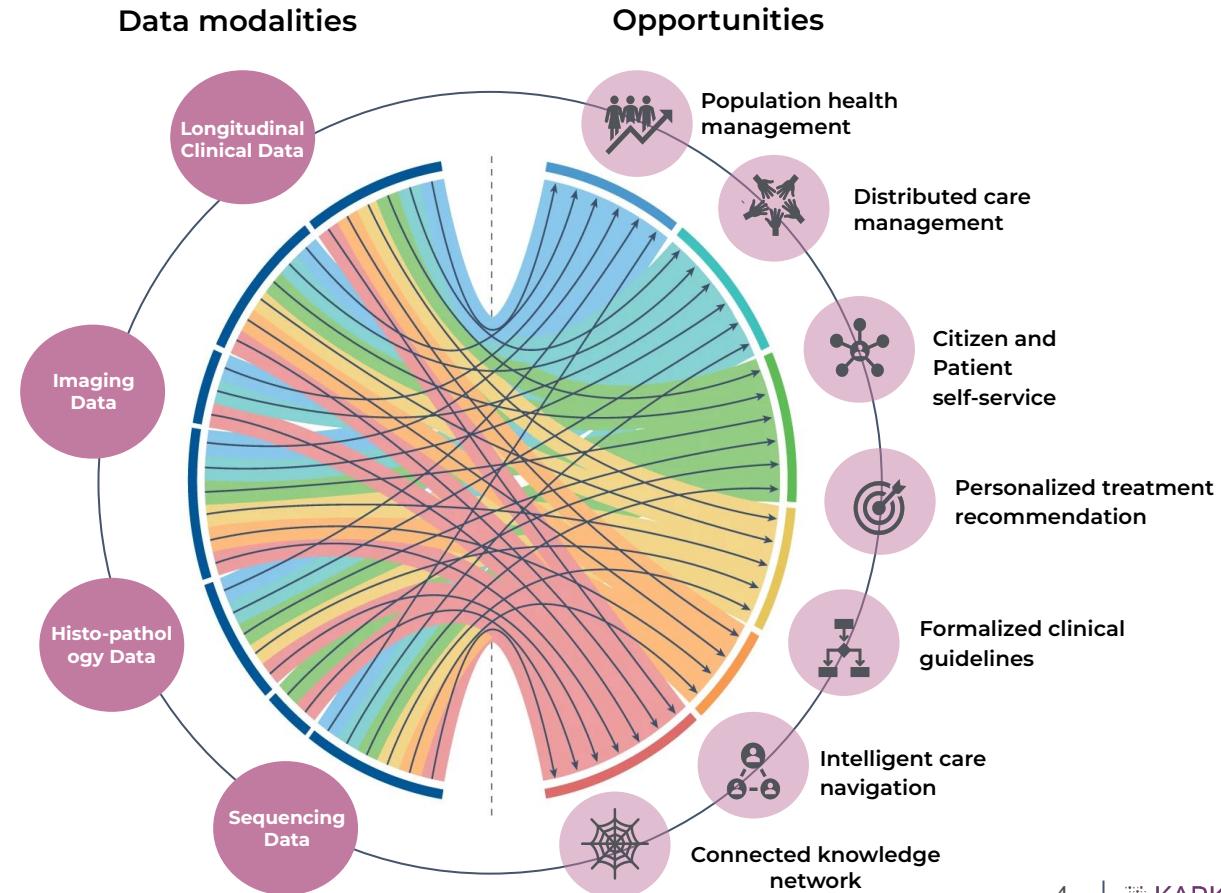


**Discover** new insights

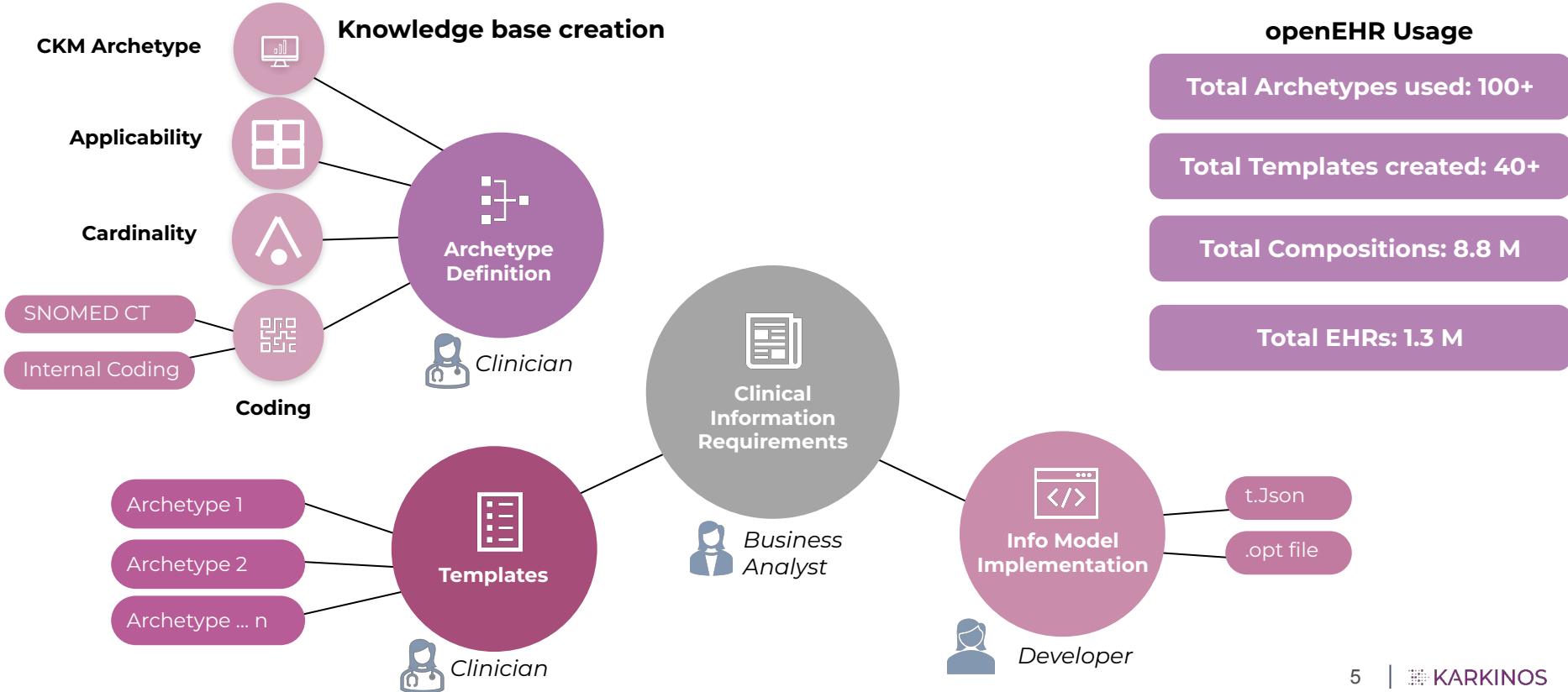
# K-Cloud - enabling multimodal clinical data repository

## Vision

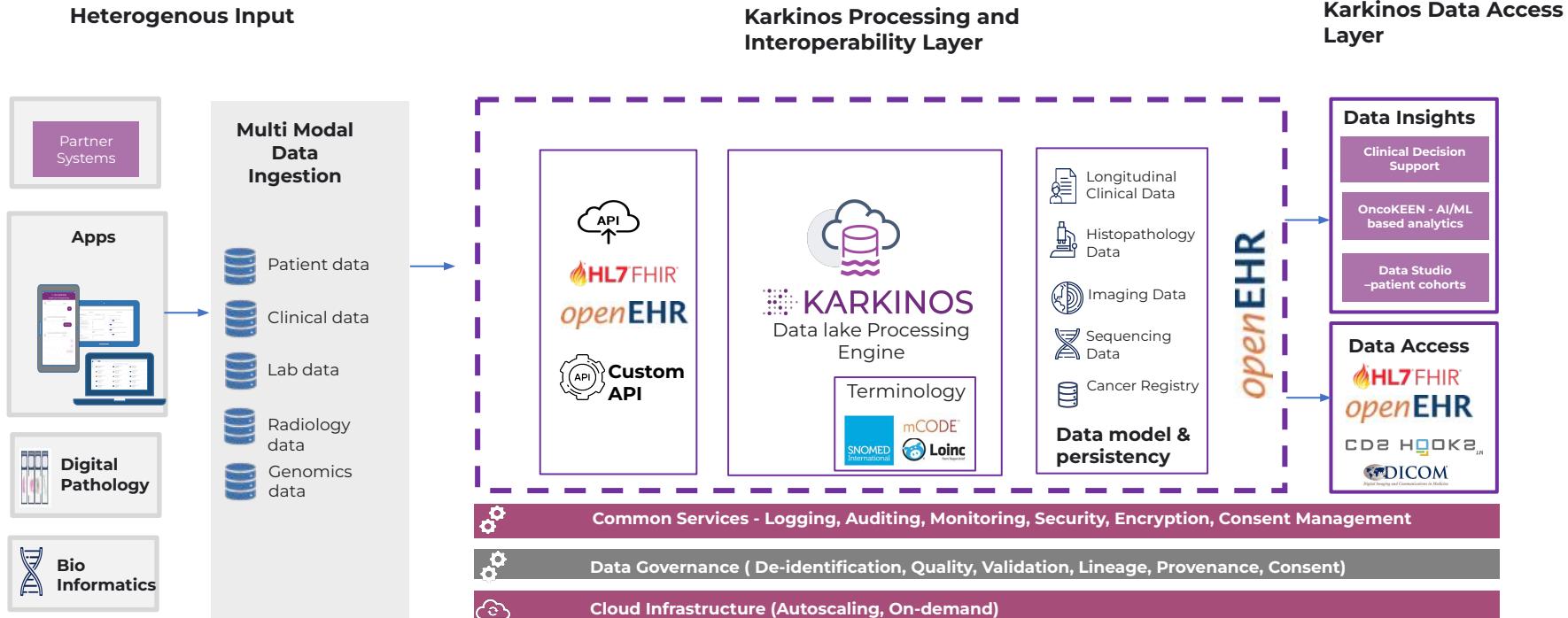
- Create a secure, integrated infrastructure to a fragmented and difficult to access clinical-lab-imaging-genomics data ecosystem enabling Discovery.
- Enabling data to be more easily shared and combined to drive scientific discoveries and healthcare innovation



# openEHR CDR - Clinical Modeling, Archetype and Template creation

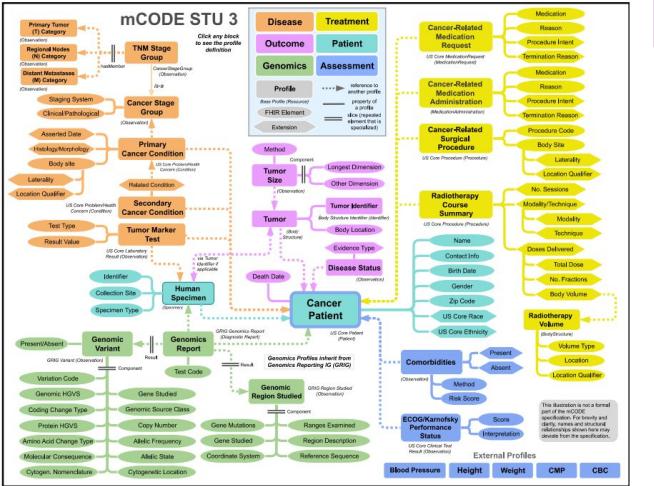


# Technology powering information Integration across care continuum



# mCODE Usage

**mCODE™** (short for Minimal Common Oncology Data Elements) is an initiative intended to assemble a core set of structured data elements for oncology electronic health records (EHRs)



|  |   |
|--|---|
| openEHR-EHR-CLUSTER.radiotherapy.v1.adl      | openEHR-EHR-EVALUATION.alcohol_consumption_summary.v1.adl |
| openEHR-EHR-CLUSTER.birth_details.v0.adl     | openEHR-EHR-EVALUATION.contraceptive_summary.v1.adl       |
| openEHR-EHR-CLUSTER.occupation_record.v1.adl | openEHR-EHR-EVALUATION.exclusion_specific.v1.adl          |
| openEHR-EHR-CLUSTER.organisation.v1.adl      | openEHR-EHR-EVALUATION.family_history.v2.adl              |
| openEHR-EHR-CLUSTER.person.v1.adl            | openEHR-EHR-EVALUATION.health_risk.v1.adl                 |
| openEHR-EHR-EVALUATION.birth_summary.v0.adl  | openEHR-EHR-EVALUATION.problem_diagnosis.v1.adl           |
| openEHR-EHR-EVALUATION.ethnicity.v1.adl      | openEHR-EHR-EVALUATION.smokeless_tobacco_summary.v1.adl   |
| openEHR-EHR-EVALUATION.gender.v1.adl         | openEHR-EHR-EVALUATION.social_summary.v1.adl              |
| openEHR-EHR-OBSERVATION.age.v0.adl           | openEHR-EHR-OBSERVATION.blood_pressure.v2.adl             |

|                   |  |
|-------------------|--|
| <b>Patient</b>    | openEHR-EHR-CLUSTER.address.v1.adl                     |
| <b>Treatment</b>  | openEHR-EHR-CLUSTER.birth_details.v0.adl               |
| <b>Assessment</b> | openEHR-EHR-CLUSTER.occupation_record.v1.adl           |
| <b>Genomics</b>   | openEHR-EHR-CLUSTER.organisation.v1.adl                |
| <b>Disease</b>    | openEHR-EHR-CLUSTER.person.v1.adl                      |
| <b>Outcome</b>    | openEHR-EHR-EVALUATION.birth_summary.v0.adl            |
|                   | openEHR-EHR-EVALUATION.ethnicity.v1.adl                |
|                   | openEHR-EHR-EVALUATION.gender.v1.adl                   |
|                   | openEHR-EHR-OBSERVATION.age.v0.adl                     |
|                   | openEHR-EHR-CLUSTER.imaging_series.v0.adl              |
|                   | openEHR-EHR-CLUSTER.laboratory_test_analyte.v1.adl     |
|                   | openEHR-EHR-CLUSTER.lymph_node_metastases.v0.adl       |
|                   | openEHR-EHR-CLUSTER.microscopy_breast_carcinoma.v1.adl |
|                   | openEHR-EHR-CLUSTER.specimen.v1.adl                    |
|                   | openEHR-EHR-CLUSTER.symptom_sign.v1.adl                |
|                   | openEHR-EHR-CLUSTER.tnm-pathological.v1.adl            |
|                   | openEHR-EHR-CLUSTER.tnm.v1.adl                         |
|                   | openEHR-EHR-COMPOSITION.report-result.v1.adl           |
|                   | openEHR-EHR-COMPOSITION.report.v1.adl                  |
|                   | openEHR-EHR-ACTION.imaging_exam.v0.adl                 |
|                   | openEHR-EHR-OBSERVATION.imaging_exam_result.v0.adl     |
|                   | openEHR-EHR-OBSERVATION.imaging_exam_result.v1.adl     |
|                   | openEHR-EHR-OBSERVATION.laboratory_test_result.v1.adl  |
|                   | openEHR-EHR-CLUSTER.imaging_instance.v0.adl            |

# Patient longitudinal data

**Longitudinal Data**

Patient Identifier Selection

**Patient ID : 10000**

**Gender:** Female

**Clinical Note Date :** 2013-01-08

|  |  |     |
|--|--|-----|
| Advance intervention decisions-Decisions description     | Treatment Plan   | 1.0 |
| Anatomical pathology examination-Examination description | Adenocarcinoma   | 1.0 |
| Imaging examination result-Test name                     | Endoscopy  | 1.0 |
| Imaging examination result-Test name                     | Pulmonary Function Test Carbon Monoxide Diffusing Capability | 1.0 |

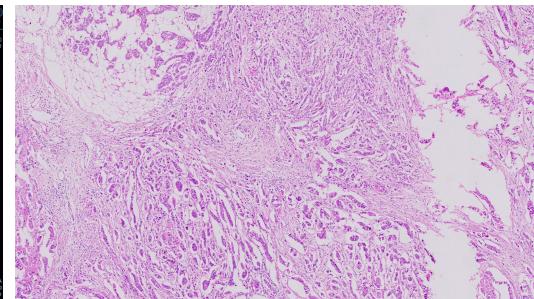
**Clinical Note Date :** 2013-08-01

|                                      |       |     |
|--------------------------------------|-------|-----|
| Imaging examination result-Test name | Scopy | 1.0 |
|--------------------------------------|-------|-----|

**Clinical Note Date :** 2013-08-12

|  |                                  |     |
|--|----------------------------------|-----|
| Anatomical pathology examination-Examination description | Adenocarcinoma                   | 1.0 |
| Imaging examination result-Test name                     | FDG-Positron Emission Tomography | 1.0 |
| Imaging examination result-Test name                     | Scopy                            | 1.0 |
| Imaging examination result-Test name                     | Endoscopic Biopsy Dup Procedure  | 1.0 |

**Clinical Note Date :** 2013-08-16



**Disease Details**

Date of biopsy: None  
 Date of first diagnosis of this cancer: None  
 Site of biopsy: Oesophagus  
If Metastatic, which site?: secondary malignant neoplasm of bone and bone marrow  
 Clinicoradiological staging (if applicable,TN staging): None  
 Histology type: None

**Unique Identifier**

Date Of Birth: None  
 Age: 70    Sex: M  
 Tobacco Usage (Yes/No): Yes  
If yes, specify: (Beedis/Cigarettes/Chewed tobacco/Others): Smoking Device - Unknown

**Recurrence**

History of recurrence(Yes/No): No  
 Site of recurrence:  
 Date of recurrence: None  
 Treatment of recurrence:

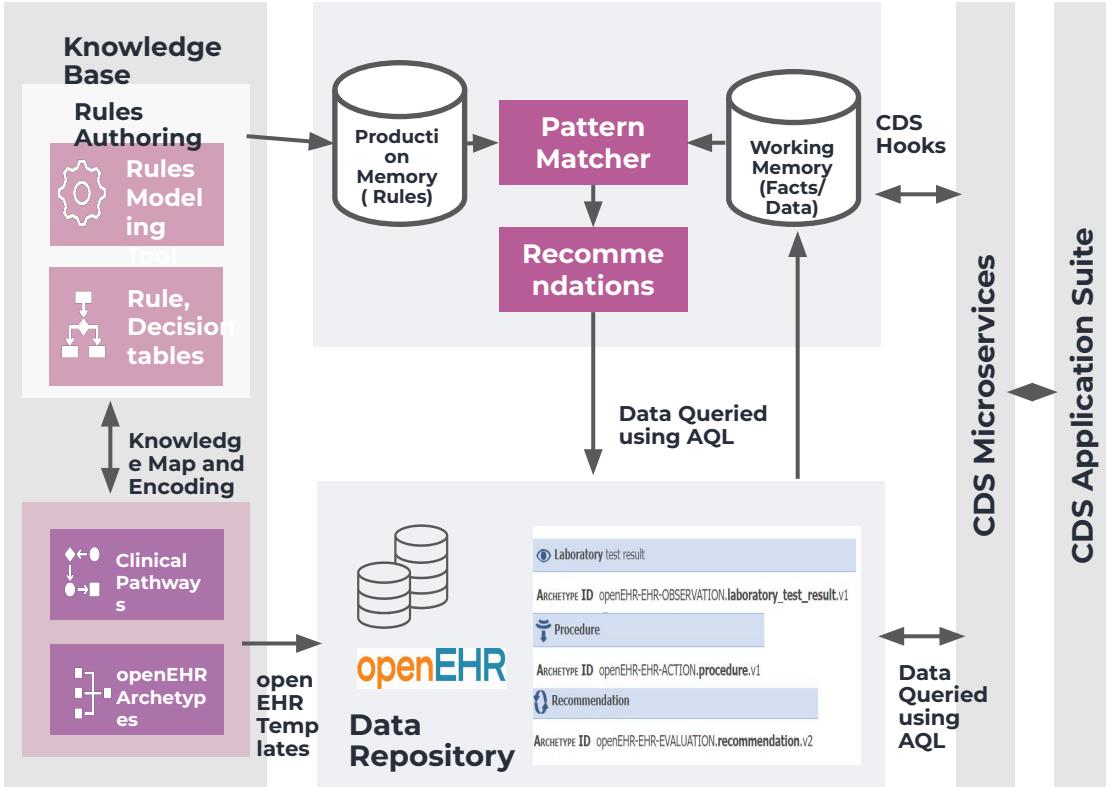
**Treatment Details**

Intent of treatment: Palliative  
Treatment received: Palliative Radiation Therapy  
Response to treatment: None

**Follow Up**

Follow up data (Available/Not Available): Not Available  
 If available, date of LFU: None  
If available, status of last follow up: Patient Referred Outside

# Clinical Decision Support Workflow





# KARKINOS

[www.karkinos.in](http://www.karkinos.in)

