Data Integration of Health Information Systems in Kenya: A Case of the Kenya Health and Research Observatory (KHRO)

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MINISTRY OF HEALTH

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Introduction

- While health data is abundantly available in Kenya, its use in policy, decision making, and service delivery is still low.
- Low quality, unreliable, fragmented or insufficient access to data;
- Poor access to research evidence.
- The current status is largely defined by the different technologies used leading to silo systems that rarely exchange data.

The Kenya Health and Research Observatory

- Collects health data from various health reporting systems in Kenya
  - Routine data – collected weekly, monthly, quarterly and yearly
  - Survey data – collected yearly, biennially, every five years
  - Research data
  - Publications including policies and guidelines
- Data is analyzed and displayed in form of tables and charts
- Makes health data available in one location
- Strengthens and improves the availability and utilization of data.

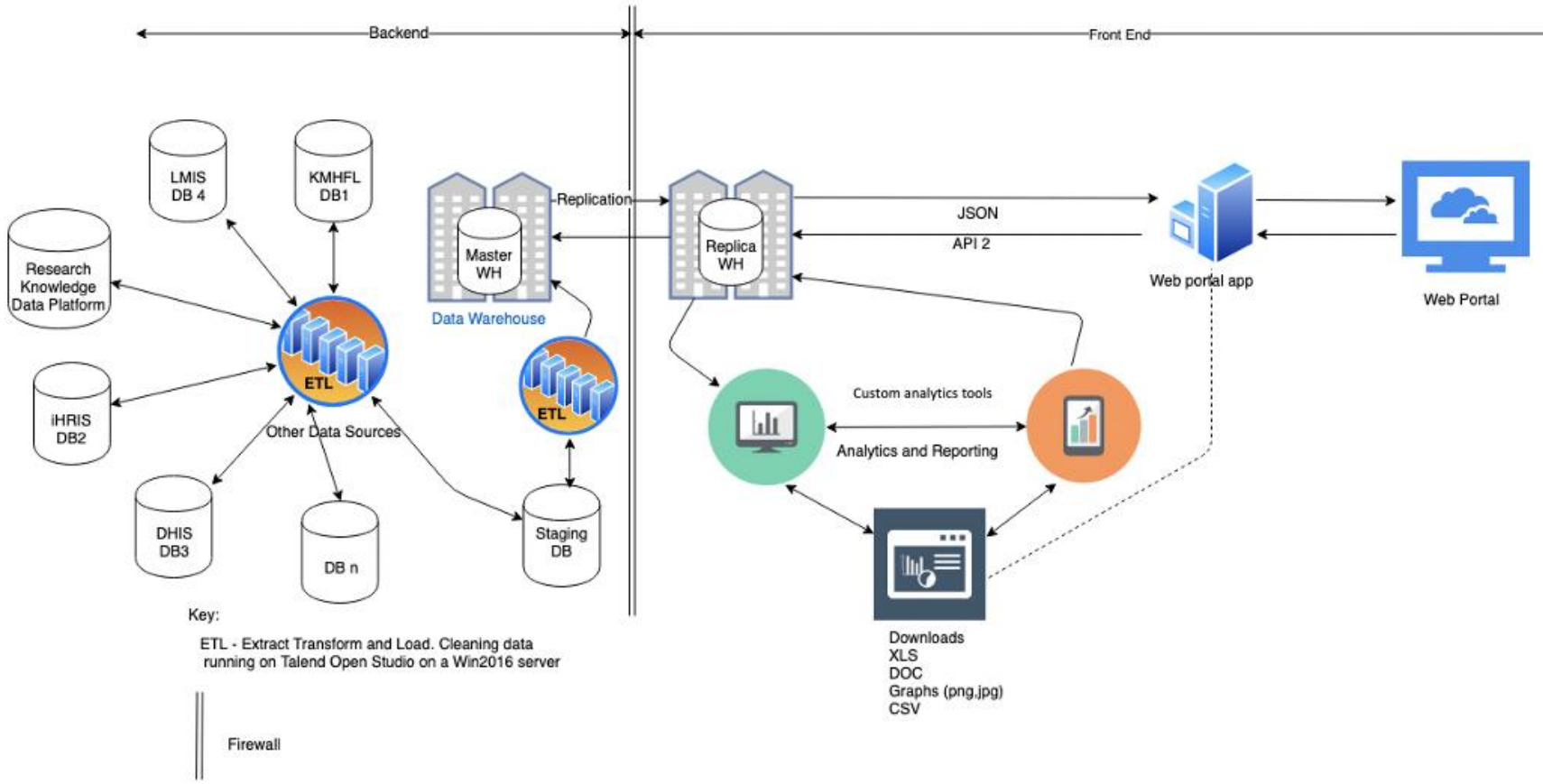
KHRO - Background

- A landscape analysis was conducted in different healthcare facilities with different capacities such as patient traffic and resources available
- Determines the capability of HIS to exchange data, data storage procedures and the data format being exchanged.
- A series of workshops where users working in different capacities in the healthcare sector were invited to give input on type and quality of data.
    - Team - the Ministry of Health, representatives from different health information systems organizations, data source systems, among others.
    - Data - the routine and survey data and the respective source systems or survey documents.

KHRO - Architecture

- The system was designed using open-source technologies that allow data source systems to share data across different Application Programming Interfaces (APIs).
- The collected data is stored in a data warehouse through an extract, transform and load process using a micro-service.
- A microservice checks for data validity against preset checkpoints through an algorithm which compares the data received with acceptable health indicator margins
- Flags any information that is either too high, too low or out of scope.
- The clean data is then collated and analyzed through preset algorithms where it's categorized into location, period and data type/measure.
- This information is passed to a web portal through API where it displays the data in different formats such as graphs, tables or charts

KHRO - Architecture



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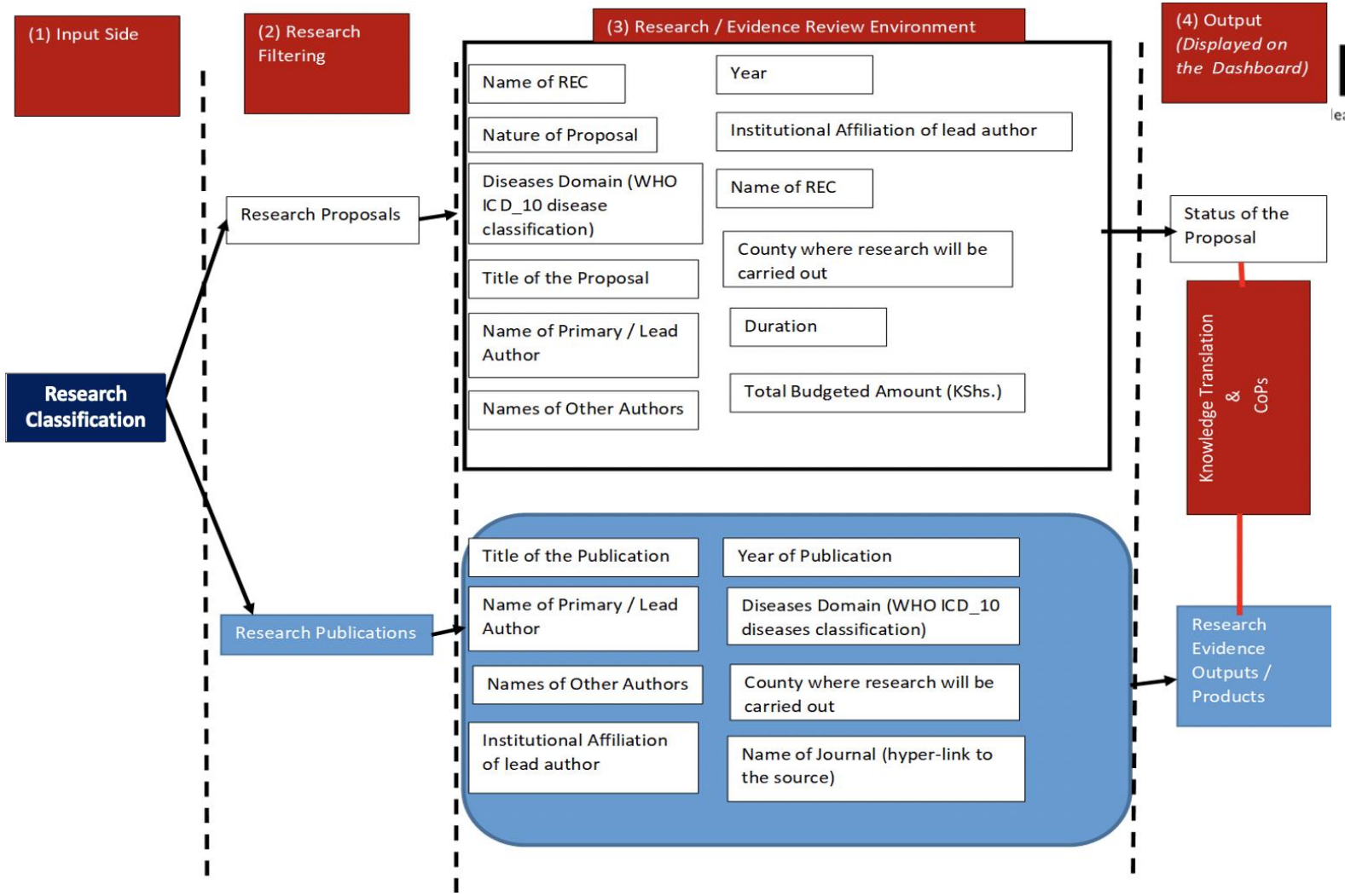
Source: Kenya Health and Research Observatory Architecture Diagrams

KHRO – Research

- The research information has a similar data structure to the health data,
- categorized into different domains and subdomains of health research data.
- The data displayed has several attributes: title, short abstract, funding agency, project stage, and the output from the research such as publication, reports or journal paper.

KHRO - Research



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Source: Kenya Health and Research Observatory Architecture Diagrams

Discussion

- The web portal shows the current health status of the country
- Public Health data collected from various reporting systems
- Research data being done in medical research institutions and universities, and the policies, surveys and guidelines published by the government.
- Promotes the utilization of digital technologies to improve universal access to health
- Increasing accountability
- Improve quality of data for decision making
- Monitoring health performance.

What's next

- Phase Two of Development
- Adopting PowerBI for Analytics
- Data capture tool
- Integrating with more health reporting systems

Any Questions?

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