

ABSTRACT

HAISS Data Warehouse (HDW)—A new data access architecture for ESSENCE in the VA

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Objective

To describe the new data warehouse, HAISS Data Warehouse (HDW) architecture whereby VA's Electronic Surveillance System for Early Notification of Community-based Epidemics (ESSENCE) will receive its required data elements from VA's 128 Vista systems in a more accurate, robust and time sensitive manner.¹

Introduction

The data elements required for the proper functionality of VA's ESSENCE system are all currently available within VA's 128 VistA systems. These data are made available to VA's ESSENCE system via a series of complicated MUMPS extraction routines, multiple data transformations crossing multiple servers, networks, operating systems and HL7-parsing

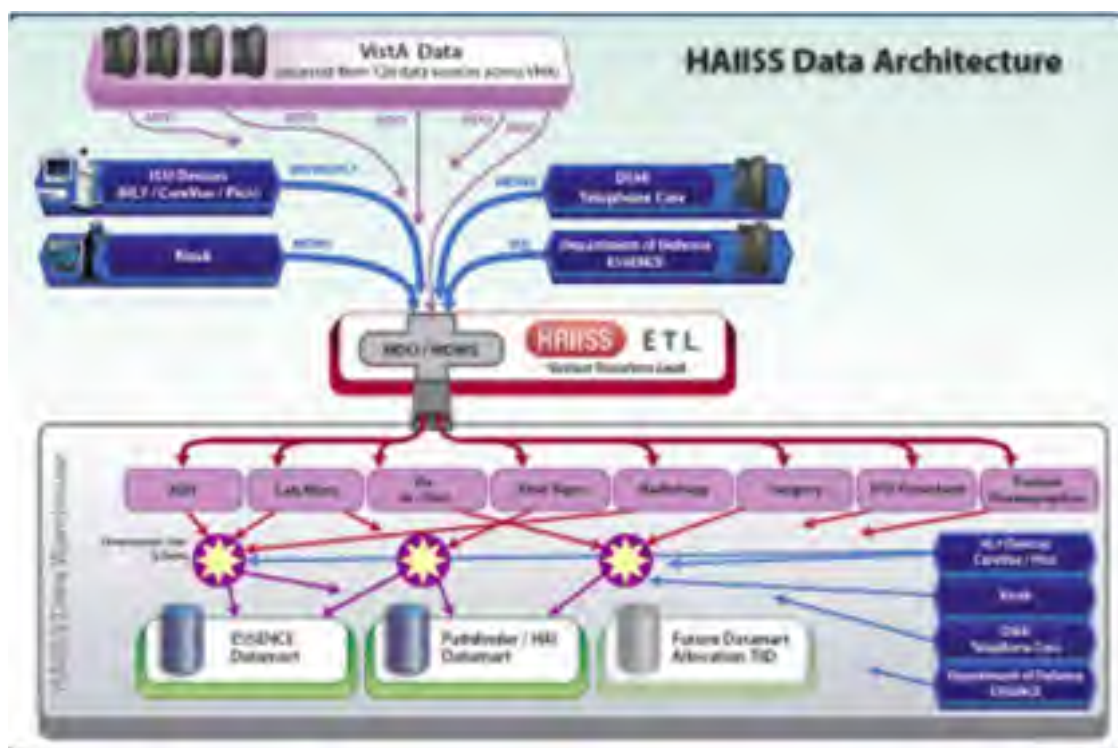


Figure 1 Required data elements are collected via a MDO-based ETL process and populate an ESSENCE data mart.

routines on a daily interval. With recent changes emerging in VA's information technology infrastructure, a new data architecture supporting ESSENCE's surveillance capabilities is becoming possible.

Methods

Healthcare Associated Infection and Influenza Surveillance System (HAISS) is a VA project tasked with the operation and deployment of VA's biosurveillance system using ESSENCE, and a nosocomial surveillance system. In order for HAISS to successfully untangle the current data access challenges supporting these systems, a new data access architecture has been developed and is being embedded as part of Extract-Transform-Load (ETL) layer of a data warehouse in support of HAISS Data Warehouse (HDW) project. The Extraction methodology is based on the Remote Procedure Call (RPC) capabilities of VistA. This VistA RPC technology is in turn abstracted into a Data Access Object (DAO) design pattern written in C# hence, an Application Programming Interface (API) called Medical Domain Objects (MDO) is written whereby targeted, inexpensive extraction calls are made against VistA systems. The resulting returning object in turn is passed along to a Business Processing Engine of the HDW whereby the Transformation-Load steps associated with populating the data warehouse and consequently the ESSENCE data mart are accomplished (Figure 1).

Conclusions

Utilization of MDO as part of the data extraction capabilities of HDW has offered us the ability to query for the required data elements using an extremely efficient and low overhead process. The required surveillance data are now made accessible to ESSENCE as queriable data inside a relational database hence, alleviating the expensive and often error-prone HL7-based flat-file parsing process. Finally, the Business Processing Engine associated with HDW allows the data warehouse manager the ability to poll the VistA data sources in a situationally specific interval, such that the periodicity of critical data elements used by ESSENCE-alerting mechanism is much shorter than a daily interval.

Acknowledgements

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Reference

- 1 Gillon, Joseph—VA SharePoint. <http://medora.sharepoint.med.va.gov/sites/mdws/default.aspx>.