

Type	Status	Revised
Platform	Generally Available	2019-June-11

Technical Description

The Health Catalyst Data Operating System (DOS) combines features of data warehousing, clinical data repositories, and health information exchanges (HIEs) to integrate real-time, granular data into a single computing ecosystem. DOS is vendor-agnostic, unlocking data trapped in diverse information systems that previously could not communicate with each other and separately lack the functionality needed to yield analytical insights.

Software applications

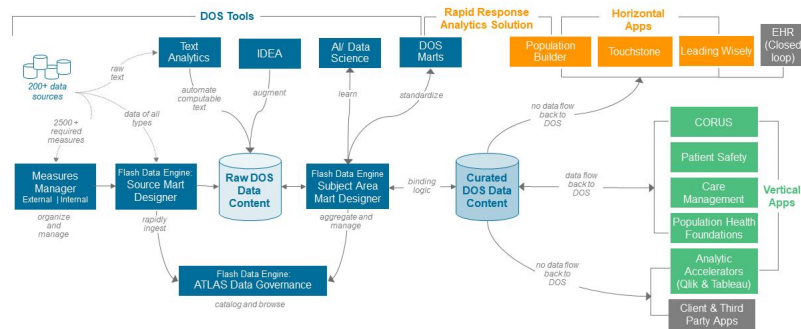
- **Source Mart Designer** – A data architecting software tool that automatically extracts data from source systems, brings it into the Health Catalyst Data Operating System, and maps it to source marts for downstream use in visualization tools. Source Mart Designer's easy-to-use interface helps data analysts create enterprise-wide consistency and configure the ETL process for hands-off maintenance.
- **SAM Designer** – A data mart architecting software tool that rapidly constructs, deploys, and executes subject area marts in an automated, repeatable way with simple SQL code to organize data from multiple sources for consumption by business intelligence and analytical visualization applications. SAM Designer also integrates machine learning capabilities designed to empower data architects – not just data scientists – to conduct data-science initiatives.
- **DOS Operations Console** – A web-based extract, transform, and load (ETL) management dashboard for data warehouse managers and data and analytical engineers to configure and schedule jobs, load data into the Health Catalyst Data Operating System, monitor its health, and use advanced diagnostics to proactively resolve problems.
- **Atlas** – A web-based index of metadata stored in the Health Catalyst Data Operating System that supports data governance. Use it to find existing reports, dashboards, etc., for your organization, find the data you need to create your own analytics, understand data lineage and its dependencies, and find your organization's standard code sets or create your own for use across your organization.
- **IDEA** – A web-based application that collects custom sets of data for instant entry into DOS. IDEA builds and deploys custom web applications to collect data not captured in an EDW for critical reporting and analysis. The data collected flows right into DOS. With IDEA, you can create as many applications as you need, manage them in a central place, and scale them to meet enterprise needs.

Related components

- [Atlas \(link\)](#)
- [DOS Operations Console \(link\)](#)
- [IDEA \(link\)](#)
- [SAM Designer \(link\)](#)
- [Source Mart Designer \(link\)](#)
- [DOS Marts \(link\)](#)
- [Closed-loop analytics \(link\)](#)
- [EHR Interoperability \(link\)](#)
- [Terminology and measures \(link\)](#)

Visualization

Health Catalyst DOS & Product Story



The Health Catalyst Data Operating System unlocks your source data and serves it up to a host of analytics apps.

Background

Enterprise data is locked in many systems and sources, and it needs to be combined before insights can be derived. Electronic health records (EHRs), enterprise resource planning (ERP) systems, enterprise data warehouses (EDWs), and some forms of health information exchange (HIE) are the dominant data collection systems in healthcare today, accompanied by innumerable smaller systems for registrations, scheduling, counter billing, and other transaction-based workflows. Together, these proprietary source systems make up a complicated, expensive monolith that locks data away.

The current answer to the healthcare analytics problem relies on vendor or homegrown data warehouses, but these lack the flexibility needed for the breadth of analytic questions healthcare users need to answer. They focus narrowly on limited datasets, lack real-time feed functionality, machine learning, and text analytics. What's more, they don't scale.

Application Overview

DOS combines data from many proprietary source systems, breaking it free from a complicated, expensive monolith that locks data away, to provide actionable insights. DOS delivers those insights into your workflows in the present moment.

DOS leverages healthcare data locked in expensive, tightly coupled transaction systems and combines and standardizes it, providing real-time streaming and low-latency processing to provide analytics soon after events are recorded. DOS is easily upgradable, scalable, and extensible, allowing analysts to build data-first analytic applications fast in response to the demands of a changing healthcare business landscape.

Benefits and Features

- **Ingest and combine terabytes of data from multiple sources with the Flash Data Engine** – The Flash Data Engine is the first data engine built from the ground up specifically for the healthcare data needs of today and tomorrow. The Flash Data Engine runs exceptionally fast and can process terabytes of data in real time (including HL7 data loading). It supports SQL, ODBC, X12, flat file (delimited, fixed width), and XML, rapidly combining data from disparate source systems. Built-in AI features mean data analysts with no data-science background can generate predictions. Developers can build custom plugins that import data from non-SQL sources and export it to non-supported destinations, plug into 300+ source system connectors, and perform custom transformation like running R code.
- **Design custom solutions, or enhance existing solutions, with open-source RESTful APIs** – APIs are a way to integrate DOS with your solutions. Open and extensible APIs enable you to build your own DOS applications over a standard but extensible data model, including clinical, claims, patient satisfaction, cost, person, terminology, surgery, or use third-party applications to customize and enhance your DOS. These microservices reduce the time required to create applications, allow applications to share logic with one another, and simplify the work to incorporate real-time data and claims.
- **Security and access management** - A data security and authorization subsystem controls access to the platform's data marts, system configuration tables, and management applications. The data security and authorization subsystem is managed by privileged system users and works in conjunction with a client's authentication services like Active Directory. DOS supports auditing data access. It secures data in transport, from authentication and authorization to data security, encryption, and auditing.
- **Integrate native AI and machine learning into existing data pipelines** – The main hurdle in AI is having appropriate, clean data. Today's healthcare analysts are increasingly turning to machine learning to deliver forward looking insights to their teams as soon as new data becomes available. DOS lets you easily integrate machine learning into existing data pipelines and provides AI pipelines and AI models so you can create the right insights.
- **Infuse natural language processing into your solutions** – DOS naturally supports analyzing unstructured data, such as physician's notes, and turning it into discrete data for analysis.
- **Create a services-based architecture** – Leverage microservices without having to learn and manage them. Cloud-based services are presented as simple-to-use web-based applications.
- **Host data in Microsoft Azure** - Client data centers are hosted in Microsoft Azure, which secures data with Microsoft's HITRUST foundation. Cloud hosting improves scalability and easily integrates machine learning into existing data pipelines.
- **Automate and scale data governance** – DOS ensures healthcare leaders and clinicians have access to consistent, quality data to help them make better decisions. Together they use the tool to collaborate and create standard common definitions.

Use Cases

- **IT leaders** can meet the increasing organizational demands for Deep Data and predictive analytics through the use of SQL, Big Data, and AI capabilities, without having to build huge infrastructures.
- **Clinical leaders** get real-time insights using all of the patient's data without leaving their workflow, enabling them to interact more with their patients.
- **Population health leaders** now have access to Deep Data—claims, clinical, costing, and socioeconomic—across the entire care continuum. Plus, data enhancements (such as risk scores, attribution models, patient matching capabilities, and AI) to deliver more effective and financially sustainable, scalable population health programs.
- **Financial leaders** now have access to Deep Data—clinical, costing, and operational—across their entire care delivery system to thrive in a world of decreasing revenue and increasing risk contracts.
- **Health system leaders** no longer have to rip and replace expensive technologies to get the Deep Data they need to take action.
- **Independent software vendors** can eliminate the frustration of waiting for access to clinical data and the insurmountable task of getting their tools integrated into clinical workflows.

Contact us today

For more information on how Health Catalyst products and services can help your organization, please contact your sales representative, call us at (855) 309-6800 or email: info@healthcatalyst.com

This document provides an overview of technology which has been developed by Health Catalyst. We are continuously improving our products and services and we reserve the right to make changes in specifications and features shown herein, or to discontinue the product described at any time without notice or obligation. Some technology may not be available for deployment based on current product status.