



Astrata's Flexible Data Repository Enabling Quality and Value-Based Care Initiatives

KEY BENEFITS

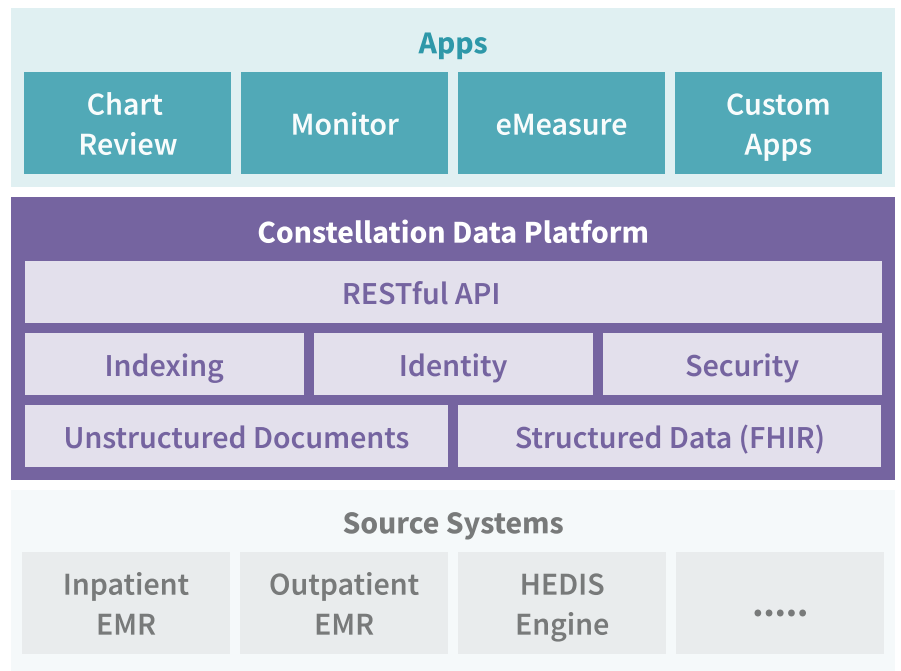
- **Decoupled:** Constellation runs independently of existing systems. Build and deploy Constellation apps without affecting your EMR. You don't have to purchase a new API from your EMR vendor or submit a ticket to your institution's IT department.
- **APIs:** A rich set of APIs let you search for healthcare data across a population, retrieve individual documents or specific clinical data elements, or listen for new events matching specific criteria.
- **Real-time & historical:** Constellation is both a historical system—storing past clinical data, and real-time—capturing clinical data seconds after clinicians enter it.
- **Secure:** 100% HIPAA-compliant. built atop a NIST-compliant (SP 800-53) architecture. All access to Constellation APIs is time stamped and logged. To access any Constellation API, an app or service must have an authorized, unique application key.
- **Multi-tenant:** Constellation is a service, like Salesforce.com or Splunk. Every health system that uses Constellation has its own 'tenant': a unique, HIPAA-compliant, encrypted, password-protected cloud-based container for their data.

ASTRATA'S CONSTELLATION DATA PLATFORM ENABLES QUALITY & VALUE BASED CARE INITIATIVES ACROSS THE ORGANIZATION

Constellation connects two important trends in healthcare IT:

1. **A sea of healthcare data:** A typical health system has petabytes of patient data going back a decade or more, trapped in disparate software systems.
2. **Apps and services that work on data:** Clinicians, patients, scientists, health IT professionals, and modern applications like NLP and machine learning need access to that data to deliver the highest quality care.

Constellation is a new platform aligned to quality and value-based care initiatives, and incorporating changes that take advantage of NCOA's alignment around FHIR and NLP. It's designed to make it easy for app developers to build software solutions that access clinical data and clinical systems. In other words, Constellation is a platform: it sits between apps and traditional healthcare IT systems.

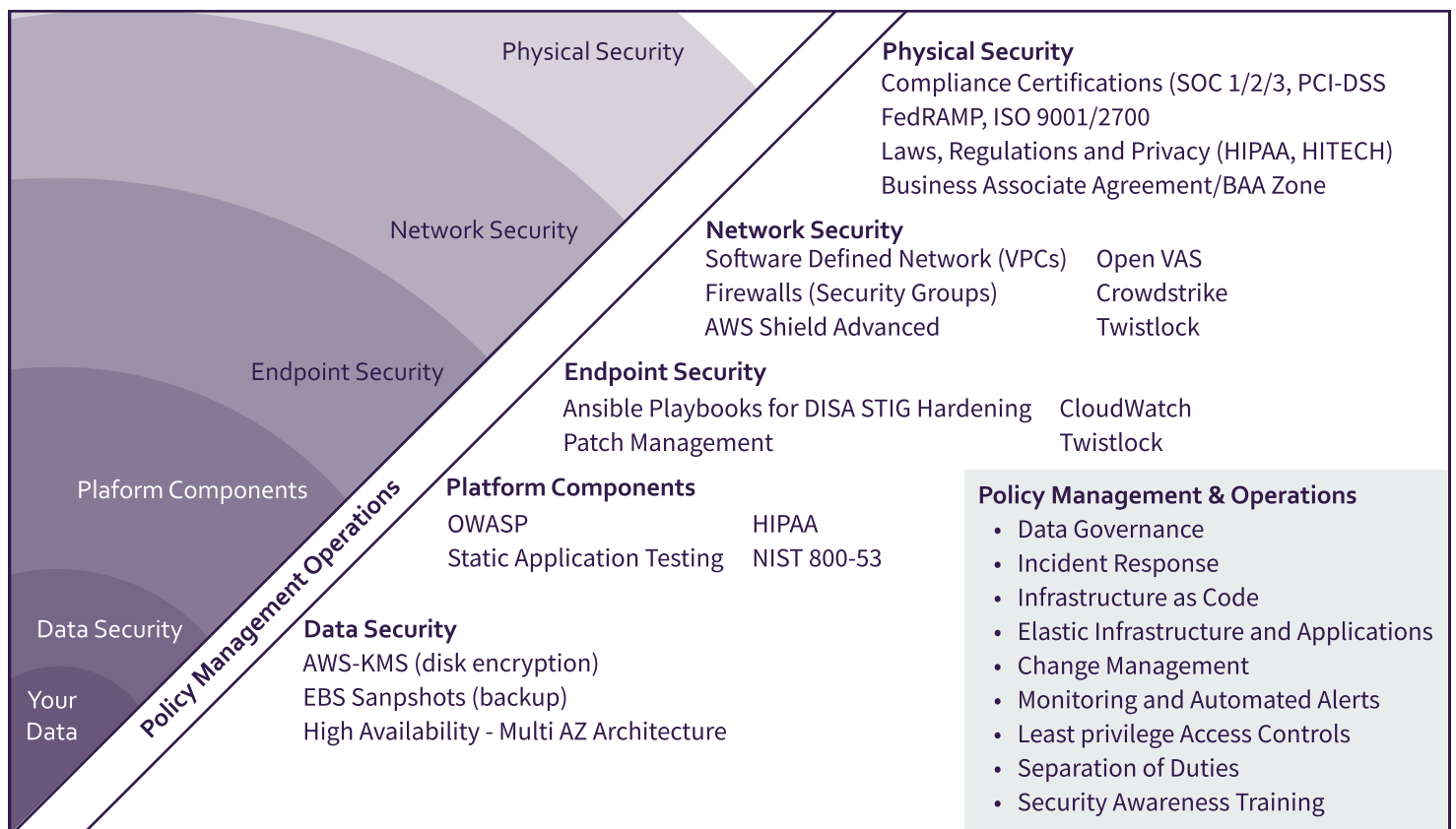


KEY FEATURE | Subscription model: Many healthcare use cases follow the pattern: "When X happens, do Y." Constellation's subscription model lets you register for a callback when an event fulfills certain criteria; no need for API polling.

SECURITY POSTURE

Constellation runs as a service, interacting with applications through authenticated web service calls on a combination of AWS and Azure. It's built on a NIST-compliant architecture that adheres to AWS/Azure best practices for security and high-availability, and relies exclusively on HIPAA-compliant infrastructure and services on AWS and Azure. Constellation doesn't permit direct SQL (or similar) access. End users access Constellation data through an authorized app that invokes one or more APIs. Each service or application accessing an API must supply an authorized, unique application key. Constellation logs and timestamps every API call and generates audit logs of user access and security events; these logs can be modified for ingestion into a Clinical Log Aggregation System (CLAS), such as Fairwarning.

Entity	Responsibility
Constellation Tenant	Decide which applications are authorized to access Constellation APIs
Constellation Platform	Enforce that only authorized applications can access Constellation
Constellation App	Authentication: decide which users are allowed to use the app. Access control: enforce user access to allowed data and functionality.
End User	Adhere to home institution's data privacy regulations.



KEY FEATURE | Patient Identity Reconciliation: Often a single patient has multiple identities across systems, complicating longitudinal analysis. Constellation's solution: preserve original identifier data and maintain a graph of patient relationships, resolving them in real-time on query. No matter the patient context, including non-clinical or payor contexts, the system consistently returns all patient data, while allowing quality controls on the relationships to resolve issues like co-mingles without impact. EMPIs are often not built to handle patient validation and reconciliation at the speed that a health system generates data. Constellation's patient reconciliation feature is a hyper-optimized mirror of a system's EMPI with auditing capabilities driven from ADT's or file backloads or both.