Intelligent integration for healthcare systems

Orion Health™ Rhapsody™ Integration Engine achieves rapid and scalable interoperability within complex healthcare environments by connecting systems seamlessly, in less time, and at a lower cost.
Rhapsody is Orion Health’s foundation product, the enabler that brings systems together through seamless data integration. A proven, high-performing integration engine with built-in FHIR capabilities, for robust and reliable acquisition and exchange of health data. Rhapsody is the integration engine that powers the Orion Health Amadeus Platform with high-volume data-acquisition capabilities. Rhapsody’s comprehensive set of tools, including its new Intelligent Mapper, help simplify interoperability in complex healthcare environments. Intelligent mapping ensures data quality and cuts the time of traditional migration and conversion by up to half, reducing cost and risk while increasing continuity of performance. Rhapsody allows healthcare organisations to seamlessly share and exchange information and future-proofs organisations for emerging integration patterns.

Benefits of Rhapsody

Built for healthcare
Rhapsody is a healthcare-focused integration engine utilised by public and private hospitals, health systems, Health Information Exchanges, vendors, public health departments and government organisations. With over 640 customers in 36 countries globally. It has support for all healthcare message formats and standards, which include HL7 (v2 and v3), HL7® FHIR®, CCDA, NCPDP, X12, IHE, DICOM, XML, binary, delimited and legacy formats.

Engineered for high performance
Designed for speed, Rhapsody is a scalable integration engine with the ability to process over 3,500 straight-through messages per second on a standard Intel® server. Rhapsody now processes more than a billion messages per day globally. Configuring new interfaces can be done quickly with optimised user workflow as well as drag-and-drop capabilities.

Reliable and robust engine
Rhapsody is a multi-platform integration engine supporting Windows®, Linux, AIX®, HPUX, and Solaris operating systems. It can be configured for maximum availability and delivers a reliable and robust engine. Security is of primary concern, and is built into every part of the product, with a view to safeguarding any protected health information (PHI) that passes through the engine.

Accelerated Migrations
Rhapsody and its exclusive Intelligent Mapper reduces the time and cost of migration. It accelerates the mapping process by performing much of the heavy lifting, including analysis of the legacy engine, reverse engineering of rules, documentation and code generation. Intelligent mapping ensures data quality and cuts the time of traditional migration and conversion by up to half, reducing cost and risk while increasing continuity of performance.

FHIR capabilities
Rhapsody’s purpose-built solution for FHIR enables organisations to implement FHIR-based interfaces simply and easily. The engine has significant advancements in the REST and FHIR-specific JSON support. FHIR is the latest standard in the evolution in healthcare integration, with a key focus on simplicity, extensibility, and interoperability.

Effortlessly maintain engine health
At Rhapsody’s core is an intelligent monitoring and maintenance capability for simple and proactive maintenance of your engine. Smart alerts and notifications give users advanced warning of potential issues, ensuring the engine remains healthy. The REST API can be used by third-party applications to track engine health remotely, keeping you informed of the system status 24/7.
Rhapsody is not only used to exchange health data, but is also very effective at acquiring large amounts of data from multiple sources including databases and directories, and interacting with big data platforms. Orion Health Amadeus is able to aggregate large amounts of health data by utilising Rhapsody’s integration capability for better, faster, and cheaper data acquisition.

Rhapsody Dashboard provides an at-a-glance view of all your Rhapsody environments. With colourful dials that provide status indicators for each engine, it is easy for users to focus their attention. Rhapsody Mobile for iPhone and Android provides a convenient alternative to monitoring and maintenance at critical times of the day.

Rhapsody provides the platform to deliver integration needs of today, and also future-proofs organisations for emerging integration patterns. Rhapsody development focuses on new integration capabilities with resilience and stability as the core drivers. These include horizontal scalability and high availability.
Key Features

A mighty, high-performance messaging engine

The Orion Health Rhapsody Engine (Engine) is the main messaging service of the Rhapsody product suite. It accepts messages from external systems, processes the messages within the Engine, and sends them to external systems. Security is of primary concern and is built into every part of the product, with a view to safeguarding any protected health information (PHI) that passes through the Engine. The Engine provides guaranteed message delivery and has a high message throughput.

Message archiving, filtering, routing, mapping, translations and queuing all occur according to the Engine’s configuration.

The Engine takes care of managing standards required for health data integration, from healthcare protocols - HL7, EDIFACT, NCPDP, X12 - through to emerging standards such as FHIR, and custom formats such as CSV, Fixed Width and XML.

Graphical configuration for effortless interoperability

The Orion Health Rhapsody Integrated Development Environment (Rhapsody IDE) is a Windows®-based application that provides a graphical user interface for rapidly creating and editing Rhapsody configurations. Rhapsody IDE enables the interface designer to create, view and modify configurations in a graphical drag-and-drop environment. Components are dragged into place from the toolbox of available processing actions (called filters) and connection interfaces (communication points). Rhapsody IDE automatically generates formatted PDF documentation describing the configuration.

The user experience is streamlined to provide effortless drag-and-drop configuration tools to connect systems. Rhapsody IDE provides a number of transformational tools: a filter for common HL7 message modifications, an auto-mapping and drag-and-drop field mapper, and a flexible JavaScript filter. These tools enable the user to transform data between systems rapidly, regardless of the complexity of the task. Built-in testing allows the user to test transformations with multiple scenarios. Custom extensions can also be built using the Rhapsody Development Kit (RDK).

Monitoring and management made simple

The Orion Health Management Console is a web-based application, designed to reduce time spent on day-to-day monitoring and management, and provide troubleshooting. It displays information on the system status and state of message processing in the Engine. The Management Console highlights problems such as system connections that are not operating and interfaces that are not keeping up with the required throughput. It also allows access to administration tasks and processing logs. The Management Console provides access to copies of all recent messages processed by the Engine. Messages are stored in the Rhapsody archive for a configurable period of time and during that time, they can be edited, resent and reprocessed as required. Messages can be viewed at all stages of processing and the complete path of a message is displayed graphically.
The Management Console highlights issues as they arise, enabling the user to resolve issues in a timely manner. Rhapsody can alert the user to issues before they become critical, helping to maintain a healthy Engine with minimal downtime. The alert notification system can be configured to the user’s requirements, allowing users to configure thresholds at a component level. Watchlists allow the grouping of components so that they can be monitored as a group. The delivery time and method of notifications can also be configured.

Rhapsody provides APIs for remote monitoring. These APIs provide the ability to monitor and perform management actions (such as starting a communication point) in Rhapsody’s Dashboard and Mobile components as well as external applications.

**Proactive notifications for the time poor**

**A convenient picture of health anytime, anywhere**

Orion Health Rhapsody Mobile is a free mobile app for Apple iOS and Android that provides a subset of the monitoring capability available from the Management Console. Rhapsody Mobile provides monitoring users an up-to-the-minute view of the health of an Engine and its connected network, anytime, anywhere. Rhapsody Mobile empowers administrators, who are on the move or do not have access to a computer, to stay on top of Rhapsody issues.

Rhapsody Dashboard enables administrators to monitor multiple Engines deployed across development, test and production environments. Rhapsody Dashboard provides a real-time health status and alert function for Engines and links to the Management Console for more detailed information.
Reduce migration time and cost

Rhapsody and its exclusive Intelligent Mapper reduces the time and cost of migration. Building an interface is one of the most complex tasks for a developer, building the business logic to map messages from a source system to the target system. The Intelligent Mapper can simplify this process, by analysing a sample set of HL7 source and target messages. Using matching routines on the data within the messages the Intelligent Mapper determines the business logic required to transform the source message to the target message. It then visualizes the analysis with compare reports highlighting the content changes. Developers can easily validate the mapping logic and determine the potential mapping effort required. For each change identified the Intelligent Mapper creates a mapping rule.

Categorization of each rule, will be with one of the following:

- **Fully mapped** - mapping rules that occur in all the messages.
- **Partially mapped** - mapping rules that occur in less than the total number of messages.
- **Not mapped** - mapping rules that do not meet a certain level of confidence.
- **Custom rules** - user-created rules.

Developers review the rules that are partially or not matched and determine whether to override with a custom rule, or accept the most appropriate rule. Once the analysis is complete, the Intelligent Mapper will generate the mapping code executed inside a Rhapsody Route. A PDF report is generated documenting the rule and business logic for the mapping. This can be a major benefit to document legacy interfaces that were developed many years ago. Intelligent mapping ensures data quality and cuts the time of traditional migration and conversion by up to half, reducing cost and risk while increasing continuity of performance.

Connect in numerous ways

Rhapsody Communication Points

Communication Points connect with external systems (inputs and outputs), providing support for a range of protocols. Rhapsody provides the following communication points:

- Amazon S3
- Clinicom Client
- Clinicom Server
- Database
- Database Insertion
- Directory
- Dynamic Router
- Email Client
- Error Message Redirector
- Execute Command
- HTTP Server
- JMS (Java Message Service)
- JavaScript REST Client
- JavaScript TCP Client
- JavaScript TCP Server
- MSMQ (Microsoft Message Queuing)
- Rhapsody Connector
- (S)FTP Client
- SNA LU6.2
- Sink
- TCP Client
- TCP Server
- Timer
- Watch List Notifier
- Web Service Client
- Web Service Hosting
Rhapsody Filters
A route defines an interface and how messages flow from input to output. Routes contain filters which format and process messages. Rhapsody provides the following filters:

- Asymmetric Cryptography
- Base64 Encoding
- Batch / Debatch
- Character Encoding Translator
- Content Population
- Database Lookup
- Database Message Extraction
- Date Validation
- Duplicate Message Detection
- EDI Message Validation
- ebXML Filters
- Error Queue
- Execute Process
- FHIR XML / JSON
- FreeMarker Mapper
- Generic Code Translation
- HL7 Acknowledgement Generation
- HL7 Detect Character Encoding
- HL7 External Code Translation
- HL7 External Code Validation
- HL7 Fill Empty Fields
- HL7 Message Modifier
- Hold Queue
- Intelligent Mapper
- JavaScript
- Mapper
- No-operation
- Property Population
- S-MIME
- Schematron
- Snapshot
- Search and Replace
- X12 Filters
- XML Filters
- Zip / Unzip
IHE Toolkit

The IHE toolkit is an optional extra that can simplify the implementation of IHE profiles with patient registries and repositories. The toolkit includes:

- Purpose-built Rhapsody components
- Sample configuration
- Documentation

The toolkit supports the following IHE profiles:

- XDR
- XDS
- PIX
- PDQ
- ATNA

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Future-proof your journey from Population Health to Precision Medicine.
Every step you take towards delivering personalised healthcare is valuable. Our end-to-end solution, built on our Amadeus platform, with inclusive real-time analytics, clinical, patient engagement and enterprise applications, will future-proof you for your journey.

Find out more at orionhealth.com/global/products/rhapsody/