

**NEXTGATE**

# MatchMatrix

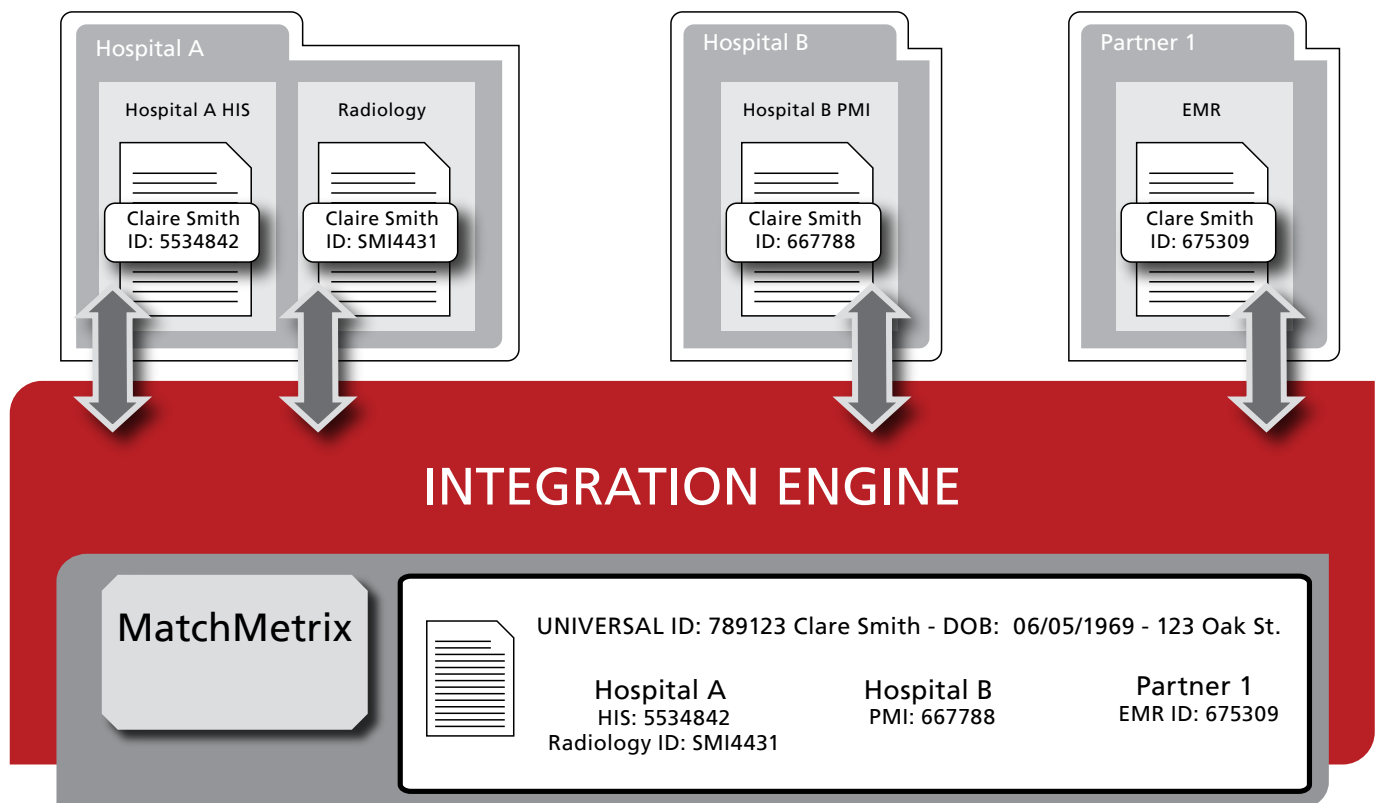
enterprise master data solution suite

The domain of healthcare data integration keeps expanding. Electronic medical records, HIEs, NHIN and market forces are driving the need for the seamless and accurate exchange of healthcare data. In this multi-participant environment, it is critical to identify and correlate patient, provider and health data, regardless of location or unique local identifiers.

The NextGate MatchMatrix Suite is a world class enterprise master data index that enables the precise management of information. MatchMatrix uses intelligent matching algorithms to recognize, index, and resolve related data records spread over different applications and disparate systems. Using varying local identifiers, it builds a comprehensive master index of entities, and links them together under an Enterprise ID. The Suite can generate various master data applications, such as an Enterprise Master Patient Index (EMPI), Enterprise Provider Index, Entity-Organization Registry, Terminology Index, PIX/PDQ/XDS.b Index, or Service Delivery Location Registry.

The MatchMatrix core is based on Mural, the leading open source Master Data Management engine. NextGate developed a suite of plug-ins and add-ons to optimize the engine for the specific needs of healthcare. Together, the Suite provides a comprehensive indexing solution with a short implementation timeframe, improved matching accuracy, and simplified operation and management.

With more than 15 years of experience deploying enterprise index solutions, NextGate designed MatchMatrix to be an affordable, efficient and flexible application. The MatchMatrix Suite is the scalable, reliable, and adaptable solution for next generation healthcare information management.





## MatchMetrix Server

The MatchMetrix Server is the central component of the index, consisting of the database indexing logic and the sophisticated algorithms that evaluate, correlate and resolve data. The Server can be deployed in centralized or federated variations, and delivers comprehensive functionality at accelerated speed.

The data model for the index is tailored to healthcare information, including attributes necessary to support a multi-facility, multi-partner deployment. Probabilistic matching algorithms are tuned for aliases, transposed characters, and ethnic naming conventions. Based on user-configured match thresholds, all indexed entries are assigned a weight which is used to determine potential duplicates, automatic merges, and unique records.

## MatchMetrix Analyzer

The effectiveness of the index is determined by the precision tuning of the matching algorithm. The Analyzer evaluates the data set for quality issues and generates statistics that help adjust the algorithm for the specific data population. During analysis, matching weights are assigned based on frequency (common values = low weight), duplicate records are identified, and fields are normalized (1st St. = First Street). As new data sources are incorporated in the index, the Analyzer performs a cross-feed analysis to ensure the algorithm stays “in tune”.

## MatchMetrix Access Manager

The Access Manager supports the strict concerns of security, privacy and data ownership by controlling user and system access to the index. Utilizing Role Based Access Control, LDAP credential stores, consumer opt-in and opt-out settings, and PKI-based security, only authenticated users are capable of interacting with the contents, functions, and GUIs of the index. With granular precision, all data fields are restricted according to the roles of authorized users, protecting sensitive data from disclosure. Comprehensive audit capabilities track every time a record is viewed or changed, including before and after images, and the user ID. This feature is particularly helpful in the context of an IHE, giving participating enterprises confidence that their data is not generally available to any index user.

### Leveraging the Index

With an index in place, many additional exchange services are possible.

- ePrescribing
- Lab Results Delivery
- Medication history
- Hospital Discharge Summaries
- Clinical Summaries
- Radiology Reports Delivery
- Eligibility Verification & Claims Submission
- Quality Reporting

# MatchMetric Data Quality Manager

The Data Quality Manager (or DQM) provides the front-end web-based management interface for searching, viewing, editing, merging, and tracking records. It is the end-user's gateway to the underlying MatchMetric index.

The search engine accepts a variety of query types and accommodates common user errors like misspellings and transposed characters. Up to 5 records can be compared side-by-side, with highlights indicating field differences. Each system that participates in the index can choose to have individual fields masked for privacy. The DQM layout and functionality greatly enhance productivity and efficiency.

## Search Types

- Demographic with varying levels of attributes
- Local identifier (e.g. medical record number)
- Unique identifiers (e.g. SSN or driver's license number)
- Statewide MPI identifier

The screenshots illustrate the MatchMetric Data Quality Manager v6 interface. Key features shown include:

- Person Search:** A search results page with a table of potential duplicate records. The table has columns for EUID, First Name, Middle Name, Last Name, and Suffix. Example records include EUID 1000000260, First Name LILLY, Middle Name LILLY, Last Name LILLY, and Suffix LILLY.
- SIDE-BY-SIDE COMPARISON:** A view comparing two records (1 of 2) side-by-side to identify differences in field values.
- RecordDetail:** A detailed view of a record for EUID 1000000010. It includes a 'Person' section with fields like First Name (RAFAEL), Middle Name (D), Last Name (SMITH), SSN (772-04-2344), Date of Birth (12/02/1950), Gender (MALE), and more. It also includes an 'Address' section with fields like Address Line 1 (1139 GUM STREET), City (MOUNT JOY), State Code, Postal Code (17552), and Country Code.
- Known Local IDs:** A table listing local identifiers with columns for Facility, Local ID, and Status. Example: Facility EUID, Local ID 1000000010, Status active.
- Alias:** A table for managing aliases with columns for Link, Middle Name, First Name, and Last.
- Comment:** A table for adding comments with columns for Link, CommentCode, CommentText, and EnterD.

## MatchMetrix Reporter

The Reporter generates practical reports to help maintain a clear operational understanding of the index, from both a data quality and a user activity perspective. The Reporter GUI allows end users to generate standard reports or build ad-hoc reports against any data element in the index. Reports can be displayed on a browser or saved in PDF, XLS or CSV formats for distribution. Most importantly, the reports can focus on a single facility or user, or span the entire index.

Standard reports include:

- Potential Duplicate by Facility
- Automatic match by Facility
- SSN Duplication/Change
- Potential Overlay
- Transaction Activity

## MatchMetrix Screen Scraper

Using advanced screen scraping and screen capture technologies and techniques, the Screen Scraper simulates user interaction between third-party applications and the MatchMetrix GUIs. Data can be extracted from any point on a user's screen or input into any location. This capability allows applications that do not provide API-level integration to participate in the enterprise integration framework. A common use of screen scraping is to enable legacy applications to access an index in order to facilitate the Patient Lookup process and thereby reduce the frequency of creating duplicate Medical Record Numbers.

Standards Interoperability

- Transport level: HTTP, FTP, SMTP, SSL, TLS
- Data format level: XML, Web Services, EDI, X12 and others
- Domain level: IHE Profiles (XDS.b, PIX/PDQ), HITSP, ONC NHIN, HL7 and others

## NextGate Implementation Resources

NextGate has unmatched experience in designing, implementing, testing, and rolling out index solutions. Our experience starts over 16 years ago with the development of the healthcare market's first vendor independent EMPI. Since then, our team of expert resources has been working together, acquiring a distinguished track record and deep knowledge of the subtleties, benefits and consequences inherent in the implementation of an index. This elite team is comprised of solution and product architects, engineers, QA analysts, and project managers, each with an extensive knowledge of the entire index implementation process.





## About NextGate

NextGate provides software technology and consulting services that enable organizations to capitalize on the rich content of their data and organize it efficiently to drive improvements in productivity, knowledge and costs. We deliver Enterprise Indexing, Master Data Management, and Services Oriented Architecture-based solutions to Healthcare and other industries that need to effectively integrate and analyze data.

NextGate has been designing and deploying advanced data management solutions worldwide since 2005, with a legacy of development experience that stretches back to 1994. Our technology and services provide an affordable, user-friendly and rapidly implementable answer to the complexities of the modern data environment, giving you greater accuracy, confidence, and control over your data.