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WG Identity Resolution Engine

The WG Identity Resolution Engine (IRE) connects to multiple data sources and applies similarity search technology to resolve multiple identities, and presents a trustworthy and realistic view of individuals.

The IRE allows organisations to know 'Who's Who and ...... Who Knows Whom.'

Unique Capabilities

Similarity Search

- Provides the ability to uncover identity matches in databases that are not exact matches
- Ensures that misspellings or intentional data manipulations are detected to reduce false negatives
- Searches across multiple attributes to disregard irrelevant matches and reduce false positives that waste investigative resource time

Identity Aggregation

- Identity analysis performed across multiple, remote data sources as well as data warehouses
- Expand the breadth of analysis by utilizing data sources regardless of type or physical location
- Previously unavailable commercial data sources are now a viable option to use in screening
- Reduces investment and ongoing maintenance costs

Flexible Integration

- Integrates easily with existing legacy systems leveraging IT investments
- Integrates 3rd party analytics and data sources
- Quickly incorporates heterogeneous analysis into a single solution

Collaboration

The IRE enables anonymous, secure collaboration without having to move or expose the underlying data.

- Search multiple data sources, regardless of owner, and returns answers, not data
- Enables information sharing with complete security
- Requires absolutely no movement of raw data from its secure source locations
- Allows each data owner to control the access levels to their own data
- Assures data privacy by only allowing answers to questions, not the data **itself**

Applications

- Airports
- Banks
- Blue chip companies
- Commercial organisations
- Government security intelligence departments
- Military
- Police forces
- Retailers
- Sea ports

Effective and secure business processes rely on an organisation's ability to gain a trustworthy and realistic view of the individuals with whom they do business as well as those who work within their organisations. The challenge faced by these organisations is not lack of data but how to access multiple data sources in real time and return results that highlight otherwise hidden relationships.

Traditional technologies such as customer relationship management (CRM) systems, customer data integration (CDI), master data management (MDM), and data warehousing are unable to meet the unique and complex requirements of identity resolution.

The IRE architecture is specifically designed to meet the unique challenges posed by multiple and hidden identities encountered within an organisation or market.

IRE Architecture Model

The Identity Resolution Engine (IRE) product architecture is comprised of five distinct layers:-

- Data Access Layer – Bottommost layer that provides IRE with application-level access to the data stores it requires for analysis
- Component Layer – Contains the essential building blocks of any IRE-based solution, which includes a proven Similarity Search that uses sophisticated algorithms to score and rank the similarity between search criteria and identity data. The Component Layer is also where the majority of a solution's processing will take place
- Communication Layer (optional) – Provides low-level communication access to the functionality housed at the Component Layer
- Web Services Layer – Provides industry standard SOAP and REST integration points for external application to make use of IRE services. Service level authentication and authorization are enforced at this layer
- Web Application Layer – Topmost layer that hosts the Administrative UI. The Web Application Layer can also host any J2EE-based custom application built on top of IRE

In summary, unlike traditional technologies, IRE addresses the challenges of identity resolution by providing: -

Easy integration into existing infrastructures, and similarity search technology that uses sophisticated algorithms to search across multiple attributes and data sources to provide a single view of an individual or entity.

How Does IRE Integrate with Existing Systems

The IRE utilises a Web Services-based architecture that allows for an easy and secure integration with both traditional enterprise and System Oriented Architectures (SOAs).
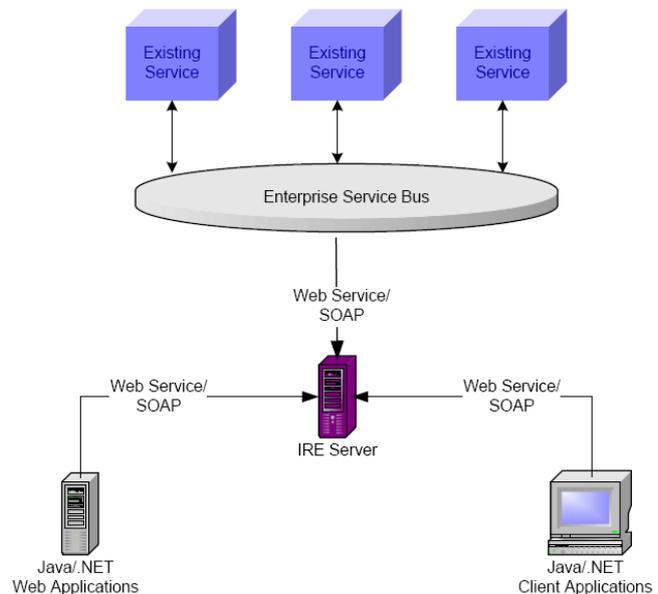
IRE features are exposed through a set of administrative and run-time Web Services interfaces. IRE's service interface implementation minimises total cost of ownership (TCO) by supporting integration with new and existing versions of the following:-

- Java and .NET applications (or any other Web Services consumer)
- SOAs and Enterprise Service Buses (ESBs)

Web Services

Web Services eliminate the need to copy and maintain external data sources. IRE is able to utilise programmatic interfaces (clients) and a standard protocol such as SOAP to request and receive information in real-time. In addition, SOAP web service endpoints permit easy interoperability between systems while delivering the rich features available with IRE.

Security

IRE Web Services support WS-Security 1.0 standard features, including Username Token Profile and X.509 Certificate Token Profile:-

- Signed bodies and multiple targets
- Encrypted bodies and multiple targets

IRE also supports SSL encryption of request transport.

How Does IRE Use Patented Similarity Search Technology?

Many methodologies used to identify individuals in new data depend on finding information within databases. This works fine in theory, but in reality, unless the data is perfect, this methodology is ineffective and increases the rate of false negatives or incorrectly discarded records.

Often, because of data entry errors or intentional data manipulations, finding matches within data can be difficult or impossible with common search techniques.

However, using Similarity Search, IRE gathers up the most similar records and presents them for comparison and analysis.

The Item below depicts the results of a standard database query for a person with the first name of "Michelle" and last name of "Midway". The search results include only data records that exactly match the search criteria in the query.

Standard Database Query

In comparison, the item below depicts the results of the same search on the same set of data using IRE's web client.

IRE Sample Search Results

IRE's Similarity Search was able not only to find an exact match (Michelle Midway) but similar records as well (e.g., Michele midwaye, Michele Midwaay, and Michelle Midaway) providing a complete and realistic view of existing data that matches a particular person.

If individuals change part of their name or alter their address in some way, IRE will still be able to match altered, identifying information with existing data captured on those individuals. Additionally, IRE provides a confidence score (percentage) that measures how closely a particular record matches a set of search criteria.

Tuneable, Deterministic Algorithms
Built into IRE are over 50 Similarity Search algorithms that calculate the distance between search and target attributes. Algorithms are available for all types of data being matched and can be tuned and customised to meet specific business needs. Examples include IP addresses, cultural name variations, and global addresses.

Conclusion
The IRE represents a unique and highly effective approach to operational challenges stemming from lack of knowledge about the identities of individuals with whom organisations interact.

Unlike other identity resolution approaches, IRE meets businesses unique requirements for identity resolution by:

- Packaging key identity resolution functions into a single, easily deployable software engine – Rather than requiring installation of individual components for each identity resolution function, IRE is a single unified engine. Upon installation IRE is ready to execute with its own sample data sources and a generalised query application that resolves identities across multiple data sources

- Integrating easily into existing systems – While new applications can be built based upon IRE alone, the system was architected to allow easy integration of identity resolution into existing systems through the use of standards-based Web Services. IRE preserves the organisation's investment in its existing systems and minimises TCO since user retraining is minimal

- Utilising Similarity Search technology – Built into IRE are hundreds of Similarity Search algorithms that calculate the distance between search and target attributes based on the algorithmic knowledge contained in those measurement functions. Using this technology IRE is able to retrieve not only exact matches but also the most similar documents and present them for comparison and analysis

- Offering context sensitive search results – Unlike traditional search technologies that increase the chances of false negatives with the more search attributes as criteria, IRE decreases the chances of false negatives

- Searching across multiple data sources – IRE is capable of searching across multiple, disparate data sources to return a single view of multiple identities and hidden relationships

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