Senzing Entity-Centric Learning

Delivering Highly Accurate Record Matching

Entity-centric learning is the highly accurate, AI-powered record matching technique used by Senzing® entity resolution to resolve new records with existing entities. This unique capability, developed by the Senzing team, is essential to finding criminals intentionally trying to obfuscate their identities.

Entity-centric learning doesn't just excel at detecting bad actors. It is also great for identifying new opportunities, improving matching accuracy, increasing operational efficiencies, and reducing risk – regardless of use case.

Benefits of Senzing Entity-Centric Learning

Detect hidden business & marketing opportunities	**Identify criminals & other bad actors**	**Increase effectiveness & reduce risk**

How Does Entity-Centric Learning Work?

Entity-centric learning treats resolved records as a single holistic entity. The technique assembles every name, address, phone and other attribute variations of each entity, without any tuning. As more records are received, entity-centric learning identifies nicknames, alternative addresses, common typographical errors and other insights – including intentionally fabricated information – related to an entity.

The entity-centric learning AI compares inbound records to existing resolved entities, providing users with a complete view of every record that matches the same real-world entity, as well as possible matches and possibly related matches. Entity-centric learning can find matches and relationships that other methods – such as the more common record-to-record matching – can't identify.

> **"In the case of fraud detection, entity-centric learning is utterly essential. You can't catch clever bad people using record-to-record matching because they never use the same name, phone, address and passport number on every record."**

Entity-Centric Learning Excels at Discovery and Insight

Entity-centric learning, one aspect of the real-time learning in Senzing entity resolution, is smart because it learns from experience, in real time. As data is received over time, the system becomes more accurate, reveals hidden connections, delivers more complete entity views, and unlocks better insights, even when data is inconsistent, messy or incomplete.

Senzing Entity-Centric Learning:

Powers higher quality, more accurate matching results	**Identifies hidden connections**	**Delivers holistic 360-degree views of entities**

Entity-centric learning acts like an automated investigator built into your entity resolution system. It learns how to recognize entities in ways similar to how a human learns. For example, each time a human learns something new, they add that information to the previous knowledge they had about the entity.

With Senzing entity-centric learning, as more data about an entity is received, the system utilizes the data to create more comprehensive entity views or perform real-time self correction. This is especially valuable when an entity has dozens of attributes (from name and address to credit card numbers and social handles) scattered across countless data records and sources.

Entity-Centric Learning Technology Overview

Senzing entity-centric learning provides entity-centric matching and supports ambiguous conditions, real-time self-correction and other unique capabilities.

1. Entity-Centric Matching
Entity-centric matching compares each record to existing entities to determine if a record matches.

2. Ambiguous Conditions
If a record could match two or more entities equally, a special type of ambiguous relationship is recognized until more data makes it certain.

3. Real-Time Self-Correction
The system evaluates if new data impacts earlier decisions and instantly makes corrections.

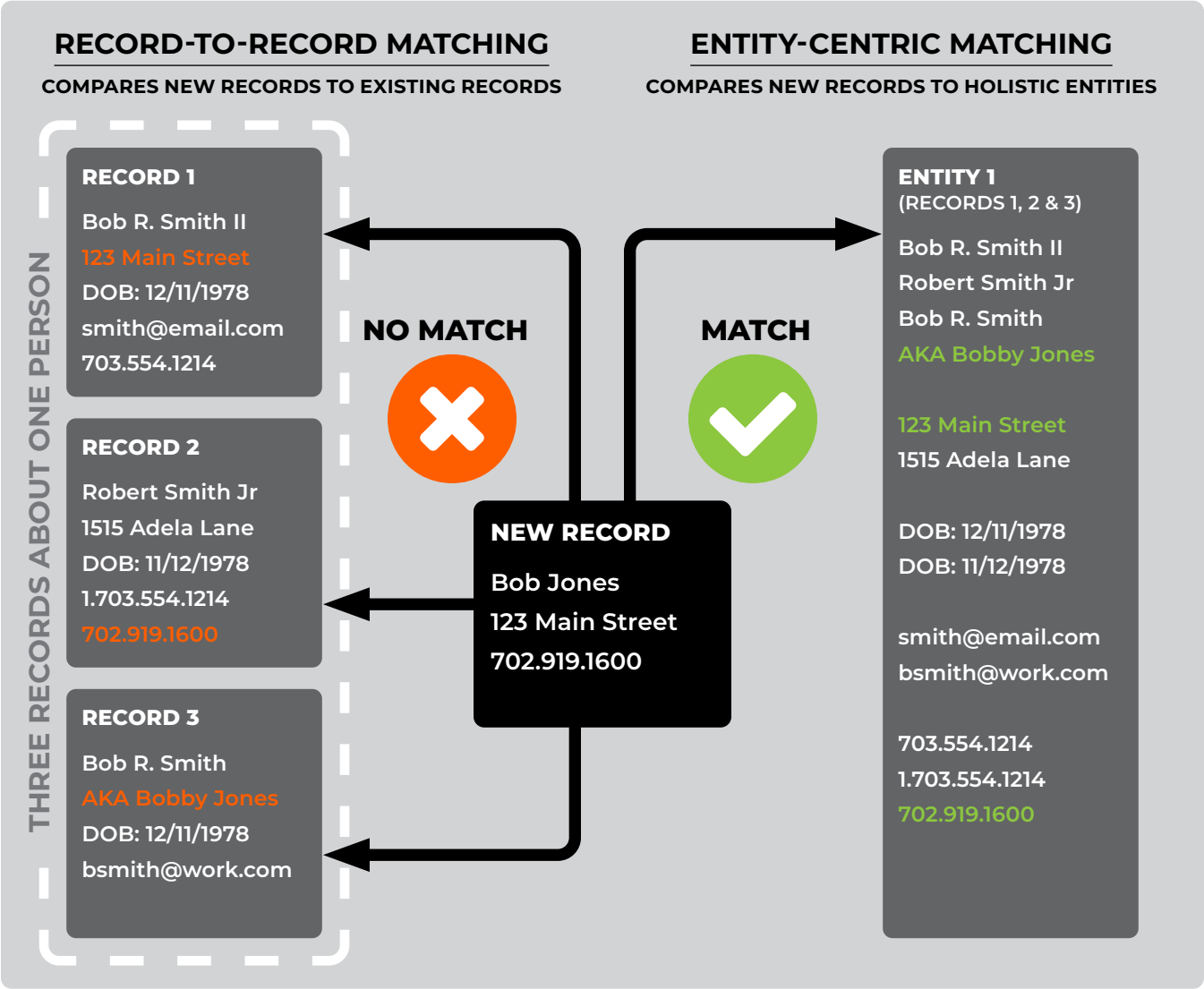
> **“Entity-centric learning treats resolved records as a single holistic entity, gets smarter over time, improves accuracy, and detects relationships that humans can easily miss.”**

1. Entity-Centric Matching

Entity-centric matching finds matches that record-to-record matching can't detect. In the comparison below:

Record-to-Record Matching doesn't match the New Record to any of the three Records and incorrectly determines the New Record is a different person.

Entity-Centric Matching matches the New Record to Entity 1 and correctly determines the New Record is the same person.



Record-to-Record Matching

1. Record 2 matches 1 (similar names & phones, close date of birth [DOB])
2. Record 3 matches 2 (close name & DOB)
3. New Record is compared to Records 1, 2 & 3 (matching data in red)
4. New Record doesn't have enough data to match any of the three Records

Entity-Centric Matching

1. Entity 1 is created with the data from Record 1
2. Record 2 matches Entity 1 (similar names & phones, close DOB)
3. Record 3 matches Entity 1 (close names & DOB)
4. New Record correctly matches Entity 1 (same address & phone, similar name & AKA)

2. Ambiguous Conditions

When a record matches two or more entities equally, Senzing entity resolution doesn't match the record to either entity until additional data provides more certainty. Most record-to-record matching systems don't identify ambiguous conditions, resulting in more false positives and false negatives.

For example, a record with a name and address for 'Pat Jones' matches equally to a 'Patrick Jones' and a 'Patricia Jones' at the same address. Entity-centric learning designates the 'Pat Jones' record as ambiguous to 'Patrick Jones' and 'Patricia Jones' until more information is received. Without support for ambiguous conditions, 'Pat Jones' would match to 'Patrick Jones' or 'Patricia Jones,' whichever record it is compared to first.

3. Real-Time Self-Correction

Senzing entity resolution evaluates if prior decisions are impacted by new data and automatically makes corrections in real-time as needed. For example, in Record 3 above the system learned that Bob Smith uses a Bobby Jones alias and corrects any prior decisions impacted by the new information.

This real-time self-correction ensures data is always up to date and allows the system to get smarter over time. Without it, entity resolution accuracy degrades and systems must regularly reload and reprocess all data, which is expensive as data volumes grow.

Senzing Entity Centric Learning Enables New Levels of Accuracy

Senzing offers the first real-time, purpose-built artificial intelligence (AI) for entity resolution. Powered by entity-centric learning and other unique capabilities, Senzing entity resolution equips modern organizations with the tools to accurately resolve diverse data sources and provide unparalleled 360-degree views.

Senzing entity resolution enables your organization to quickly improve financial and compliance operations, fortify fraud and insider threat detection, and drive impactful marketing and customer experience initiatives. By harnessing the power of entity-centric learning, you can unlock new levels of precision and efficiency in understanding and managing your data.

For more information visit www.senzing.com or contact us.