



# THE ROLE OF IDENTITY RESOLUTION

in Providing a Personalized CX in the  
Context of a Customer Journey



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# Table of Contents

- 03** Introduction
- 05** Identity Resolution Categories
- 07** Identity Resolution as a  
Customer Data Platform Function
- 09** Identity Resolution Components
- 19** Identity Resolution Use Cases

**The importance for brands to deliver a personalized, omnichannel customer experience is clear.** In a Harris Poll commissioned by Redpoint, 68 percent of consumers said that personalization is a standard expectation (up from 61 percent in 2019), and 82 percent said that they are loyal to brands that demonstrate a thorough understanding of them as a unique customer (up from 77 percent in 2019)<sup>1</sup>.



# But how do consumers define a thorough understanding in the context of a personalized customer experience?

For a retail customer, a thorough understanding might be interpreted as receiving a hyper-relevant offer or next-best action at the optimal moment and channel—an offer or action based on the entirety of a customer's interactions, behaviors and preferences and one that also factors in the customer's opt-in preferences and complies with regulatory requirements.



A patient coping with a chronic condition might interpret such an understanding as a healthcare provider engaging with them outside of a clinical setting, such as an online portal or mobile app that helps with prescription adherence, blood sugar control and home testing, or diet and nutrition program management. In both situations, a clear understanding means a seamless experience across physical and digital channels.



Each example requires some degree of confidence that that brand is engaging with the right customer, irrespective of how the customer proceeds along a customer journey. This recognition is the function of identity resolution, which is the process of finding, cleansing, matching, merging and relating all the disparate signals about a customer from martech touchpoints, enterprise systems and databases/lakes to produce an accurate, complete and up-to-date view of the customer. In this context, we are using “customer” to mean any party to an interaction, such as a prospect, a household or a business. Depending on the industry or context, customer can mean a consumer, a patient, a member, an employee, a B2B client, a buyer, etc.

As a recognition process, identity resolution operates robustly in the context of whatever a business's use cases and constraints may be, which may be very different for different organizations' customers—healthcare care management versus retail digital personalization, for example.

# Identity Resolution Categories

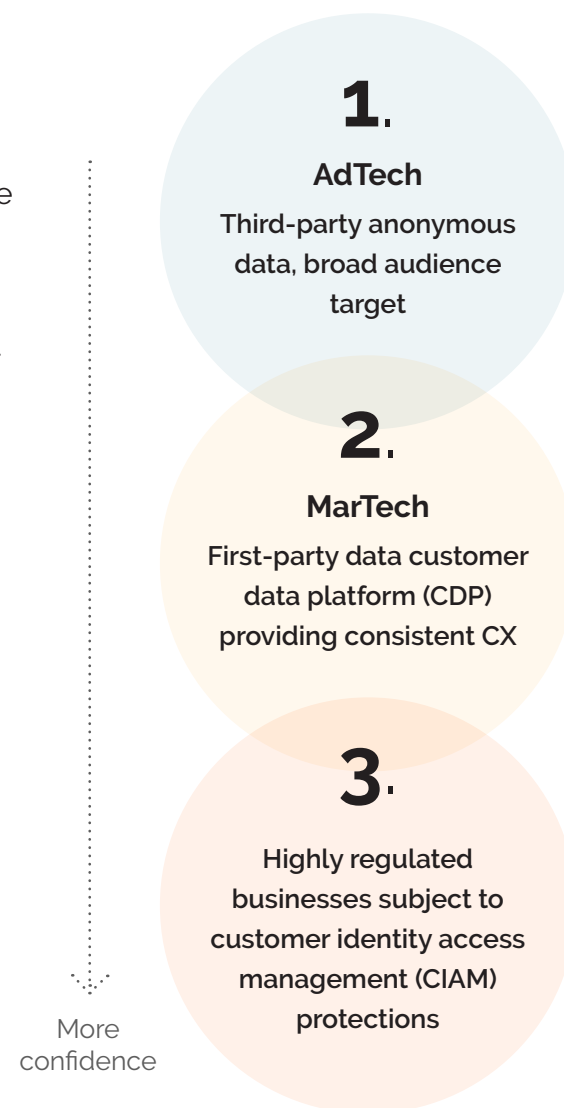
Generally speaking, there are three identity resolution categories, each with its own level of trust and confidence in the record produced. Identity resolution in the AdTech space is often limited to the use of third-party data in an anonymous capacity, and is thus the least trusted of the three. An advertiser might use minimal segmentation rules to target a broad audience, where an exact match is unimportant and any PII is encrypted.

In the MarTech space where marketing and other business functions are intent on providing a consistently personalized, omnichannel customer experience, identity resolution is an important process in generating a unified customer profile, also known as a Golden Record. In this second category, first-party data compiled and stored in a customer data platform (CDP) is used to link, analyze and deduplicate customer records to provide a consistent CX, among many other use cases.

The third and most-trusted category of identity resolution relates to highly regulated businesses subject to customer identity access management (CIAM) protections and guidelines, such as healthcare and banking where an exact match is required for certain business functions.

For each identity resolution category, the ultimate function is to produce outcomes that meet a unique business's needs. A highly accurate and trustworthy match, for example, is required to communicate with a person about a transaction perhaps deeper into the customer journey, where a looser match may be sufficient for earlier stages of a journey, e.g. communicating marketing information or educational content to an individual or household.

Generally speaking, there are three identity resolution categories:





## What is a Golden Record?

The Redpoint® Golden Record is a single customer view that combines data from any source (website, mobile app, eCommerce platform, POS, social media, CRM, etc.) to form a holistic unified record of a customer and the customer's engagement with a brand across every touchpoint. Including behavioral, transactional, demographic and preference data. A Golden Record is the foundation of data-driven insights that make hyper-personalized customer experiences a reality.

The Golden Record constructs everything that is knowable about every customer, from every available source. With all attributes, all aggregations, a full identity graph and a full contact history all processed and updated in real-time, a Golden Record allows marketers and other business users to profitably differentiate one customer from another.

By continuously applying best-in-class data quality processes at the precise moment of data ingestion, the Redpoint Golden Record renders a company's own first-party data even more perfect, with advanced identity resolution, persistent keys and tunable matching and merging included as basic features.

Identity resolution is necessary but not always sufficient in forming a Golden Record (or Customer 360). That is, a Golden Record must include identity resolution processes, but there are components of a Golden Record that go beyond identity resolution steps. Data aggregates (the last email address a customer used, how many times they've visited the website, purchase history over the last X months, etc.) are additional components of a Golden Record compiled after identity resolution. A Golden Record may also include predictions or propensities related to the customer journey as well as additional information from external sources.

Yet identity resolution is critical for providing the cleansed and matched records needed for data enrichment to produce a 360° view of an individual, household or entity leveraging online and offline data, as well as third-party data and other demographic overlays.

# Identity Resolution as a Customer Data Platform Function

There are other important distinctions pertaining to identity resolution use cases in marketing technology, particularly as to the function of identity resolution in a customer data platform (CDP).

Every CDP does some basic job of identity resolution, but most CDPs limit matching to a deterministic, exact match approach. An example is considering two records a match with an exact match of phone numbers, physical address or first and last name.

There are several problems with the exact match approach when the goal is to create a differentiated customer experience in the context of a unique customer journey. One is that customers have multiple identifiers. Matching an exact address fails to account for situations where a customer might be using an alternative address, or phone number, email address, loyalty account number, etc.

Another is that an exact match does not allow for human error, such as a data entry clerk mis-typing a street address on a form. A customer might make a similar error, or simply write the same physical address or even their name differently from one form to the next. (Street vs. St., Dave vs. David, etc.).

Another distinction between a CDP that performs advanced identity resolution vs. basic identity resolution is the latter often ignores data cleansing steps, or relies on third-party reference files with the assumption that the files are updated and accurate. In reality, reference files might be updated infrequently using non-persistent keys, meaning that every time there is new information about a customer there is no ability to make a longitudinal match based on previous keys.

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The use of persistent keys is a recognition that a customer continuously emits various identifier signals, engages across multiple devices, channels and platforms—and also interacts across multiple browsers, emails and devices. Accurately matching the various elements that contribute to a full identity graph is what sets advanced identity resolution apart from a run-of-the-mill match.

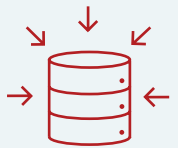
One more key distinction between basic and advanced identity resolution in CDPs is that a basic CDP will be unable to accommodate the flexibility required for householding or identifying members of a business. Advanced identity resolution, conversely, by including all disparate signals about a customer (prospect, household, business, B2B client, etc.) provides a contextual understanding, and identifies relationships (person to household, person to organization, organization to organization) as well as matches.

A contextual understanding is important in providing a differentiated customer experience for the simple fact that an entity such as a household or business will have multiple individuals, each moving at a different pace throughout a customer journey. For example, a typical household may have multiple family members using the same device, and obviously share the same physical address. Advanced identity resolution will help a brand determine the makeup of a household, and the distinct life stages of its occupants. Household dynamics change, in other words, as an individual gets married, moves to a new home, has children, becomes an empty-nester. Understanding this context helps a brand converse with an individual in the context of the individual's present situation.

Identity resolution also helps brands formulate an understanding of a customer across anonymous-to-known customer journeys. A signal from an unknown device may visit a website anonymously multiple times, and there may not be enough other signals to confidently match the device to an existing identity. At a later date, the same device might sign in after making an online purchase. With the customer's name, address and other information the device is then matched, and pieces of the previously anonymous journey are now signals that help form a new match, and a deeper customer understanding.



# Identity Resolution Components



## Data Ingestion

Data ingestion is the act of importing data and mapping it to known customer attributes for use in data quality and identity processes. With an increasing number of data sources and types, businesses are challenged with ingesting and processing data fast enough to support business goals. When the purpose of identity resolution is to provide a personalized customer experience, data ingestion must obtain data from every source that could conceivably provide signals about a customer, business, household or other entity.

A partial list of data points might include CRM records, IoT data from a connected device, mobile data, web streaming data, social media data, any behavioral data and transactional data. Data can be either streaming or batch, structured or unstructured; first-party data, second-party data and third-party data from marketing technology and enterprise systems are all potential sources of customer signals.

Speed and context are important components of data ingestion. Reconciling identifiers and signals at the moment of data ingestion is a key step in resolving an identity in the timeframe needed to deliver a relevant, hyper-personalized omnichannel CX.

When an identity graph with accurate mapping of incoming data is the goal of data ingestion, the collection of signals that constitute the framework of the customer or entity must be reconciled to provide marketers and business users a structured view of attributes and identifiers.

It is possible to ingest data without mapping and parsing it right away, which may produce the benefit of lightning-fast data ingestion with the tradeoff that a resulting identity graph will lack a contextual understanding. Recency is an important component in making sense of incoming signals to construct a consolidated view of the customer or other identity being resolved.



## Data Quality

For marketers and business users of data, one of the most important questions about the data they work with is whether it is of sufficient quality to be fit-for-purpose for their desired use cases. A comprehensive approach to data quality is vital for a CDP to deliver a contextually relevant, personalized experience across all channels and touchpoints.

Data cleansing, normalization and validation reduce errors in the identity resolution process and build trust in the resulting Golden Record. Trust is engendered because all enterprise users and applications have access to an accurate, up-to-date, unified customer profile. Perfected data that is accessible across the enterprise supports the creation and delivery of a consistent experience across all channels.

It should go without saying but raw data should never be used for customer records. Cleansing and normalizing data at the point of entry solves for the traditional “garbage-in, garbage-out” problem, avoiding the downstream problem of inaccurate matching, overmatching or undermatching that render identity resolution ineffective or incomplete. Cleansing at the point of data entry also avoids the need to repeatedly reformat or clean up data when exporting it, as is often done in so-called “Reverse ETL” solutions.

The Redpoint approach to data quality is to take care of all data hygiene and data transformation tasks at the point raw data is ingested. Complete data harmonization means that even if two pieces of data are identically labeled, the rg1 platform will make sure they mean the same thing.

**Cleansing and normalizing data at the point of entry solves for the traditional “garbage-in, garbage-out” problem.**

# 72%

**of decision makers claim that inferior data quality has hurt customer relationships**

# 76%

**say it has led to missed revenue opportunities<sup>2</sup>**

## Data Quality vs. Data Governance

Some people use the terms data quality and data governance interchangeably, but they are different concepts. As we've seen, data quality is about making sure that all data owned by an organization is complete, accurate and ready for business use.

Data governance, by contrast, is about creating the framework and rules by which organizations will use the data. Its main role is to ensure the necessary data informs critical business functions. It rests on a steady supply of high-quality data, putting in place frameworks for security, privacy, permissions, access and other operational concerns.



Importantly, rg1 perfects an organization's own first-party data prior to any data enrichment steps. This is a key distinction. Other solutions that claim to perform identity resolution regularly outsource data quality to third parties. They rely on third-party reference files for data enrichment, matching customer data to a reference file that may be days, weeks or months old and incorrectly equating this as a data quality step. A resulting record, however, is usually incomplete, inaccurate or outdated—and thus cannot be trusted to deliver a personalized, relevant experience in the precise cadence of a customer journey.

The cleansing, normalization and standardization of raw data to make sure it is in a form and quality to meet business needs prior to subsequent data enrichment solves for the problem of introducing inaccurate records into the downstream matching process.

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### Data Quality with Redpoint rg1

- Data collection and evaluation
- Parsing data into elements
- Standardizing data into consistent formats
- Cleansing data to remove or correct invalid elements
- Automated identity resolution and matching
- Enriching data with related information
- Updating the master record with the most appropriate values
- Distributing data by sharing information with other systems
- Lineage reporting, i.e. tracing the source of data and any changes made during the data quality process
- Applying data governance

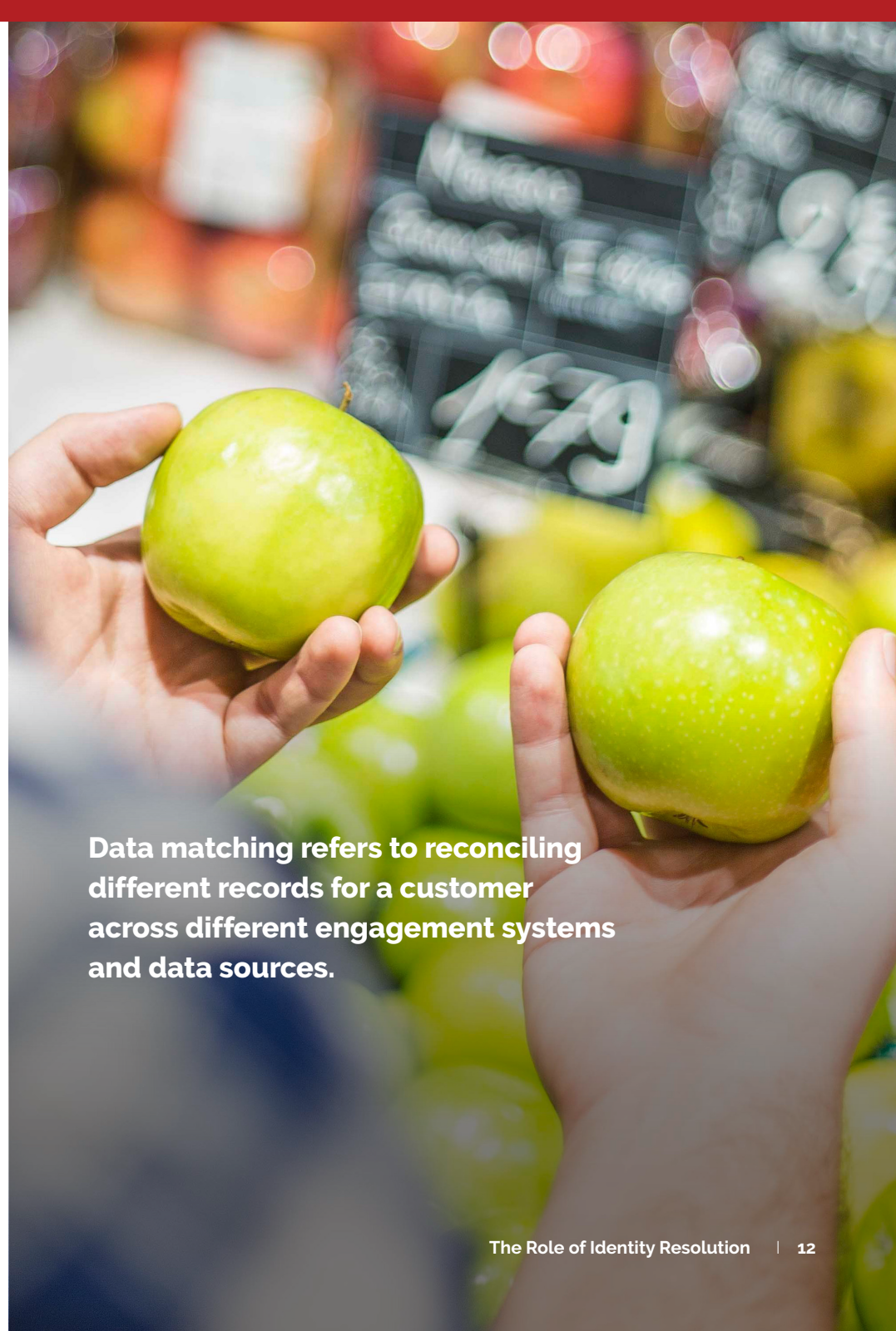


## Data Matching

With pristine, fit-for-purpose high-quality data, matching disparate records is the next step in identity resolution. Data matching refers to reconciling different records for a customer across different engagement systems and data sources (again, with customer meaning any party to an interaction) such as an email address and a digital certificate on a smartphone. Or reconciling, with a high degree of certainty, that separate identifiers belong to the same record (111 Main St. and 111 Main Street). The distinction between data matching and data merging is that the latter refers to a set of business rules governing how to consolidate a set of matched signals into a single record.

In a common householding use case for identity resolution, for example, data matching is the process of matching customers that belong to the same household through sharing common identifiers, typically physical address, shared device, IP address, or phone number. The customers' names, however, would not be merged, even though they are linked to the same household record.

Data matching is an essential component of advanced identity resolution. Reconciling multiple identity proxies from across the enterprise helps build an anonymous-to-known unified record, providing business users with key context about a customer journey, revealing important clues about customer intent and helping end users better predict a customer's behaviors.



**Data matching refers to reconciling different records for a customer across different engagement systems and data sources.**



Not all customer data platforms treat identity resolution with the same level of importance. Basic identity resolution, as we've noted, takes a deterministic, exact match approach that only matches identical phone numbers, physical addresses, names or other exact identifiers.

A broader type of deterministic matching is to identify the same user across different devices by matching the same user profiles together with a common identifier, such as an email address.

Probabilistic matching uses advanced analytics to link customer records, such as identifying two disparate customer records that represent the same individual using multiple identifiers and "close enough" matches. Machine learning can also be used to perform probabilistic matching by using ML models rather than tuned rules to propose matches.

The output of both deterministic and probabilistic matching is to discern with a high level of certainty that different data fragments or records belong to the same identity. Both are important when the use case for identity resolution is to build a Golden Record, primarily because they both contribute to compiling a full, complete and accurate identity graph that represents a detailed collected of all connected experiences, interactions and facets of a customer, person, household, organization or even product.

A customer ID may contain multiple devices, IP addresses, physical address, emails, phone numbers, transactions, social media accounts and other identifiers, and a combination of deterministic and probabilistic matching is important to reconcile multiple signals.

For example, an online browsing session might lead to items in a shopping cart and proceed to an online checkout, where a customer provides a name, credit card number and shipping address. The online session may accurately be described as one facet, or one interaction, consisting of multiple signals about the customer's ID that may be at odds with one another. The name provided might not be associated with the physical address or credit card number than what were given. It could, however, be associated with the device IP and the web behavior.

If an organization wishes to resolve an identity as part of an ensuing Golden Record, deterministic and probabilistic matching help determine the varying degrees of confidence for each signal within the interaction, or facet, and to assess whether different facets constitute the same customer.

Matching with conflicting or unclear signals, such as with the online browsing session example, is one reason to use probabilistic matching. If deterministic matching determines that the device is associated with a customer, probabilistic matching might be used to assess whether the credit card number should be linked to the same customer ID. Much depends on underlying goals; householding may require a less stringent match than if the objective is to follow an individual customer journey.

There may also be incorrect information within a facet. The physical address provided might, for example, be very close to an address on file for a customer ID but is off by one digit, or it contains a different abbreviation. Probabilistic matching reconciles inconsistencies according to algorithms that assign probability rules, allowing a match if the probability meets a predetermined threshold. The purpose is to produce better outcomes than a deterministic rule that might discard all but exact matching.

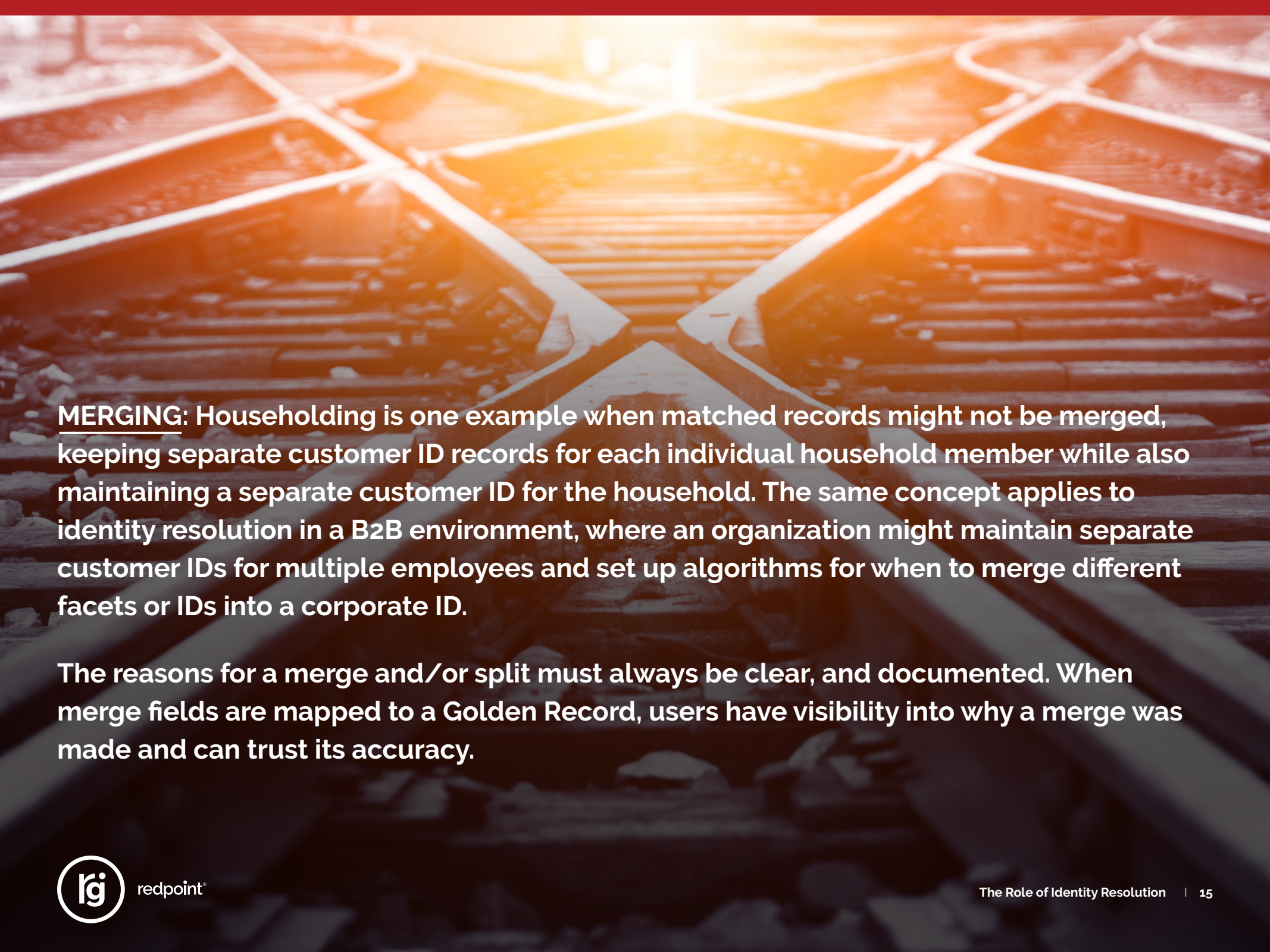
Probabilistic matching also strikes the right balance between false positives and false negatives. A false positive occurs when facets are linked incorrectly, whereas in a false negative, facets that should be linked are not.

Identity resolution may need to support different types and levels of matching simultaneously, meaning that probabilistic rules for making a match will differ by industry and use case. A healthcare organization that is sending general marketing material will have fewer constraints than if it is sending a patient information about test results. Probabilistic rules, then, will vary by industry and use case, accounting for privacy, permissions, regulations and other factors. Likewise, a deterministic rule might match two different names (John Smith, John Smith Sr.) when sending out a marketing offer, where an exact match might be required for sending financial information.

**A combination of deterministic and probabilistic matching improves an organization's likelihood of success that it will engage with the right customer, household, business or other entity across an omnichannel journey.**

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**MERGING:** Householding is one example when matched records might not be merged, keeping separate customer ID records for each individual household member while also maintaining a separate customer ID for the household. The same concept applies to identity resolution in a B2B environment, where an organization might maintain separate customer IDs for multiple employees and set up algorithms for when to merge different facets or IDs into a corporate ID.

The reasons for a merge and/or split must always be clear, and documented. When merge fields are mapped to a Golden Record, users have visibility into why a merge was made and can trust its accuracy.



## Data Steward

Data stewardship functionality is another important component of advanced identity resolution, both to oversee sourcing, cleansing, mastering and auditing of data entities that include customer/party, product or site, and to validate that data representing an entity are fit for purpose and available to the people and applications that need them.

A data steward is responsible for overseeing the quality, accuracy and completeness of records, as well as the process for correcting errors and making changes. Ultimately all these processes are automated, but it is important that a data steward be able to deal with exceptions, and to have those exceptions be documented and auditable.

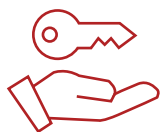
As the role concerns data matching, a data steward may be responsible for overseeing discrepancies, deciding whether a record that fails to meet a certain threshold is or is not valid, or determining whether the thresholds themselves are tuned to the right frequency to avoid overmatching and undermatching of records.

A data steward may also be responsible for prioritizing what type of customer data is collected based on usage, or similarly deciding how long a customer record may be kept. A steward is a line of defense against the mishandling of customer data or failing to honor customer preferences and regulatory requirements, all of which have the potential for serious consequences. Assigning these and other tasks related to the collecting, keeping, managing and protecting data on behalf of a customer, having a data steward in place is a recognition that identity resolution processes are not done in a vacuum; there are human beings behind the data, and meeting legal and governance requirements demonstrates to a customer that a brand shares fundamental customer values.

**A data steward is responsible for overseeing the quality, accuracy and completeness of records, as well as the process for correcting errors and making changes.**

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## Persistent Keys

A contextual understanding of a customer journey over time requires persistent key management in an enterprise CDP. Persistent keys attach identifiers across multiple data sources from various signals to a unique master record in the CDP.

Probabilistic matching depends on persistent key management; if a new unique ID were to be created every time a new data element was introduced, or with every operational update such as a nightly batch processing, there would be no way to reconcile various signals across a multitude of data sources and data fields.


Advanced identity resolution using persistent keys allows data to be sourced from any conceivable source of first-party or third-party data, structured or unstructured, batch or streaming, and reconciled to a master record, providing marketers and business users with a longitudinal view of a customer over time.

The one constant in every unique customer journey is change. Whether a customer refers to an individual, a household, business or another entity, customers and relationships are always in flux. Marriages, separations, graduations, relocations, births, job changes and other events all contribute to a new customer understanding. Customers change email and physical addresses, use new and different devices, or have multiple email addresses or physical addresses.

Persistent key management allows brands to maintain a consistent view throughout a continual journey while accounting for the vagaries of change, making it easy to create, update, merge or split records when information changes, adjusting their data to inevitable life events.

**Advanced identity resolution using persistent keys allows data to be sourced from any conceivable source and reconciled to a master record.**

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The alternative, such as with a tag management system, does not provide a longitudinal view; when new keys are created with every iteration of new data and a new match is made, it is simply a match-in-time. There is no historical context with a previous match. When an organization attempts to enrich its first-party customer data using a third-party reference file that changes keys with every iteration, all context from a previous match is lost.

Furthermore, providing first-party data to a third-party, such as an AdTech firm, is not analogous to performing identity resolution within an organization's own CDP because it does not solve the data quality issue; by entrusting a third-party to perform data quality, an organization will not be able to fully trust the resulting customer record. Outsourcing identity resolution also violates user trust, and makes identity resolution a slow, inefficient process.

If the intended identity resolution use case is to produce an accurate and completely trustworthy Golden Record, persistent key management is a foundational requirement.

# Identity Resolution Use Cases

- Customer Journeys
- Communication Strategy
- Personalized Customer Experience
- Data Trust – Variables to Monitor

## Customer Journeys

For any conceivable use case, the various components of advanced identity resolution within an enterprise-grade CDP exist to enhance the value of an organization's first-party data. For understanding anonymous to known customer journeys, for understanding households and businesses, for differentiating on personalization, first-party data is critical.

Persistent keys and probabilistic matching capabilities form the basis for understanding the complete lifecycle of a customer journey. A retailer, for example, has a longitudinal interest in understanding the progression of a customer from college student to young adult to parent. A financial services firm may wish to understand the purchase patterns and cycles for a given customer, detecting anomalies that may help detect fraud.



## Communication Strategy



Identity resolution helps brands extend a relationship with a customer by varying communication according to a customer's life stage and other factors. For a healthcare organization, for example, an identity resolution strategy may depend on whether the organization is communicating with a patient about a diagnosis, treatment, prescription adherence or another situation where at least some protected health information is needed, vs. communicating with a patient about the hiring of a new physician, a change in office hours or general marketing.

Those decisions will entail tuning identity resolution functions to handle a specific use case, with tighter thresholds (exact match only) when sharing PHI data and a looser threshold for generic marketing purposes.

The same dynamic holds true in communicating with various members of a household over time. A college student, a new homeowner, a new parent or a retiree each have different interests and behaviors, and they will respond differently to how a brand communicates with them. Understanding how a household shifts throughout the usual life stages is a function of identity resolution—knowing when to merge, split or create a new record, for instance, allows for consistent, personalized experiences applied consistently and in line with customer expectations according to a customer's station.





## Personalized Customer Experience

The reason a Golden Record allows marketers and business users to profitably differentiate one customer from another is because it is the foundation for delivering a hyper-personalized customer experience. Leveraging a deep, contextual understanding of a customer as the customer engages with a brand over time means the brand engages in the context of the customer on every channel, in real time.

According to a Harris Poll study, 82% of customers surveyed said they are loyal to brands that *demonstrate a thorough understanding of them as a unique customer*<sup>3</sup>. That ability to determine a unique customer stems from identity resolution.

- **In financial services**, advanced identity resolution capabilities eliminate siloes around the centers of influence, making it possible to create a single customer view around the individual customer, independent of a single account. This key distinction unlocks the

ability to link a center of influence with all associated accounts, addresses and account holders, which in turns enables the creation of a holistic experience for an account holder who engages in different channels.

- **In retail**, a personal understanding first and foremost leads to presenting relevant content at the time of engagement—inbound, outbound, online or in-store. A personal understanding extends to more than just analyzing behaviors and preferences for the purpose of presenting relevant content at the time of engagement, though. It also refers to having a firm understanding of customer intent through real-time analysis of potential churn indicators. A change in buying patterns, not opening or clicking on an email, negative feedback to a call center rep or a negative review on social media—all customer data has to potential to provide clues that a customer will likely churn, empowering a brand to proactively respond with a next-best action relevant and optimized for an individual customer journey.

**82% of customers surveyed said they are loyal to brands that demonstrate a thorough understanding of them as a unique customer.<sup>3</sup>**



## Data Trust – Variables to Monitor

Because data quality and data veracity processes are included in the creation of a Golden Record, business users are assured that a resulting unified customer record accurately represents the customer they intend to interact with. When the Golden Record is accessible to any person or system that needs it, that accuracy translates to enterprise-wide trust that everyone is working with the same record.

Within this context, it is important that an enterprise understand the trustworthiness of

its data. Key data users need complete transparency into the quality, timeliness, completeness and reliability of all customer data. These variables can all be monitored for source and target data, indicating the how, what, when and why of a Golden Record; users can see when and why a record was merged or split, understand a data steward's involvement and have a visual that explains the reason behind a next-best action. This transparency empowers businesses to confidently actualize their data across all edge points of the enterprise.



Resolving customer identities across all devices, channels and journey stages may seem like a daunting task, particularly when both internal and external data sources are highly fragmented. That is precisely why Redpoint architected its technology to provide rapid speed-to-value in bringing identity resolution to the parts of your business that will yield the biggest benefits, while enabling enterprises to scale identity resolution capabilities over time.



Redpoint Global takes a structured approach to linking your business objectives and value drivers with the right methods and enabling technology to resolve identities in ways that best take advantage of your data assets. This includes defining which entities are important, what data is useful, where in the customer journey stages to apply this and precisely how to resolve identities and build deeper recognition. As consumers are increasingly always-on, identity resolution is key to being able to address them with contextually aware and highly relevant messages and offers

**For more on how Redpoint can help your business deliver highly individualized experiences by accurately recognizing your customers, known and unknown, across all points of interaction to maximize customer profitability, visit [www.redpoint.com](http://www.redpoint.com).**

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Endnotes

1 <https://www.redpointglobal.com/resources/harris-poll/>

2 <https://www.snaplogic.com/resources/research/state-of-data-management-impact-of-data-distrust>

3 <https://www.redpointglobal.com/resources/harris-poll/>



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With Redpoint's software platform, innovative companies are transforming their customer experiences across the enterprise and driving higher revenue. Redpoint's solutions provide a remarkably unified, single point of control where all customer data is connected and every customer touchpoint intelligently orchestrated. Delivering more engaging customer experiences, highly personalized moments, relevant next-best actions and tangible ROI— **this is how leading marketers lead markets®**.

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