

Full Spectrum Customer Data Integration (CDI) Solutions

WHITE PAPER:

DATA QUALITY & DATA INTEGRATION



Full Spectrum Customer Data Integration (CDI) Solutions

2

ABSTRACT

ACCURATE, COMPLETE AND CONSISTENT CUSTOMER INFORMATION IS ESSENTIAL TO BUSINESS SUCCESS. IT PROVIDES CUSTOMER INSIGHT, INFORMS DECISIONS, ENABLES CUSTOMER INTIMACY AND DRIVES STRATEGY. MANAGED EFFECTIVELY, THIS INFORMATION ENABLES ORGANIZATIONS TO IMPROVE CUSTOMER RETENTION AND INCREASE THE VALUE OF INDIVIDUAL CUSTOMERS.

HOWEVER, MAINTAINING AND INTEGRATING QUALITY CUSTOMER DATA IS ONE OF THE GREATEST CHALLENGES IT EXECUTIVES FACE— AND THIS CHALLENGE ONLY GETS MORE DAUNTING AS BUSINESSES BOTH GROW AND BECOME MORE COMPLEX.

HOW THEN, CAN YOUR IT GROUP BECOME MORE EFFECTIVE IN MANAGING YOUR CUSTOMER DATA? THE KEY OFTEN LIES IN UNDERTAKING A FULL CUSTOMER DATA INTEGRATION (CDI) PROGRAM.

TRUE CDI PROGRAMS LOOK BEYOND THE PRODUCTS CUSTOMERS OWN AND THE TRANSACTIONS THEY UNDERTAKE—OFTEN EVEN BEYOND THE “SEGMENTS” THEY MAY BELONG TO. THESE CDI PROGRAMS OFFER INSIGHT INTO WHAT CUSTOMERS NEED AND VALUE, AND, IN DOING SO, HELP POSITION BUSINESSES TO STRENGTHEN AND ENHANCE THEIR CUSTOMER RELATIONS.

THE PITNEY BOWES SPECTRUM TECHNOLOGY PLATFORM SUPPORTS AND AUGMENTS MANY EXISTING E-APPLICATIONS

Customer Data Integration (CDI) Defined

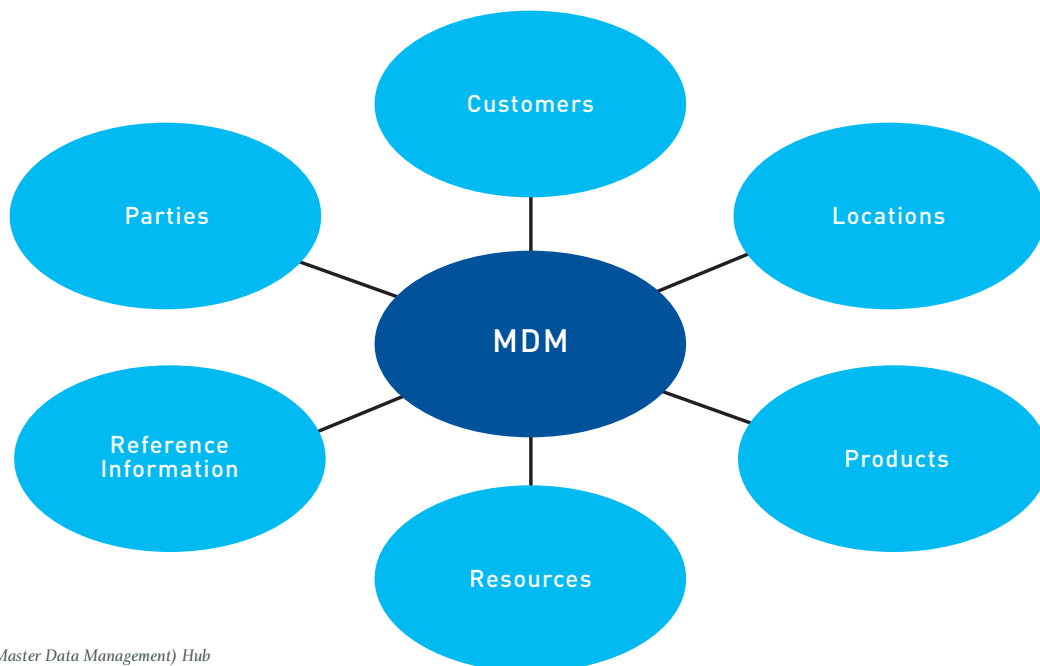
As yet, there is no universal set of CDI standards. Today's CDI standards are a function of individual organizational needs.

CDI may be characterized as “the combination of processes, controls, automation and skills necessary to standardize and integrate customer data originating from different sources.”¹ And “a comprehensive set of technology components, services, and business processes that create, maintain, and make available an accurate, timely, integrated and complete view of a customer across lines of business, channels, and business partners.”²

CDI is technically a subset of MDM (Master Data Management) which comprises a set of processes and tools which consistently define and manage the non-transactional data entities of an organization.

CDI and MDM however share a common logical approach. Both integrate data from across different sources. Both document data lineage and data evolution over time. Both strive to achieve single “golden” records which consolidate data and eliminate duplication of information.

MDM is often perceived as covering a broader spectrum of data. However, in reality, although initially focused on customer data, CDI solutions can cover much of the same ground. The essential construct is the same – a truly robust CDI solution can be readily expanded to include larger MDM applications by moving beyond customer data to include that of other key parties.



MDM (Master Data Management) Hub

¹ Jill Dyche, Customer Data Integration

² Alex Berson & Larry Dubov, Master Data Management and Customer Data Integration for a Global Enterprise

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4

CDI Reduces Customer Churn

CDI enables organizations to enact programs that enhance customer loyalty and improve retention.

Through cooperative integration across business units, it enables the organization to eliminate duplication of efforts, expedite data updates, and present a more unified and effective face to its customers.

Effective CDI thus requires a willingness of all business units to share in customer ownership: the goal is to create and maintain a single, comprehensive record for each customer that reflects the entirety of each customer's relationship with the organization.

> Consider the difference, for example, when a customer calls customer service:

With CDI and appropriate data access, questions that the customer may have about different subjects—from products to billing to support—can be addressed with maximum efficiency, often through one call and one contact.

Without CDI, the same customer questions would need to be bounced from department to department, even from phone number to phone number. The customer—and the corporation—would spend more time on the phone, call resolutions would take longer, and customer satisfaction with the interaction would decline.

In the first case, the outcome is positive, and the call may be full of potential for cross-sell opportunities. In the second, the resolution is more tedious, and the lack of a unified record makes cross-sell awkward if not impossible within the context of the call.

Across the organization, CDI enables you to:

- Determine high-value customers and apply the appropriate level of service
- Identify “hot prospects” for additional products/services
- Personalize and individualize customer communications across all points of contact

THE PROTECTIVE BENEFITS OF CDI

While the primary reason most companies pursue a CDI strategy is profitability related, CDI often provides other important benefits as well.

Compliance: companies are subjected at different levels to all the recent regulatory and Homeland Security initiatives such as Sarbanes-Oxley, Patriot Act, Department of Treasury's Office of Foreign Assets Control (OFAC) and the Health Insurance Portability and Accountability Act (HIPAA). All of these initiatives require a solid data foundation. These more stringent requirements mean that businesses often need to retain more extensive customer data and to have better data access and control. Today's requirements often mean that companies need to increase:

- Data accuracy and timeliness
- Traceability of transactions for audit trails
- Point-in-time accountability

Fraud Detection: CDI enables improved customer analysis, and with that, the potential to better protect the organization from fraud. By using an actively managed, central store of customer data, organizations can gain real-time insight into the identity of new applicants—and better detect behavior patterns indicative of possible issues.

THE PITNEY BOWES SPECTRUM TECHNOLOGY PLATFORM PROVIDES THE HIGHEST DEGREE OF FLEXIBILITY AND CONTROL IN ANY CDI EFFORT

CDI Increases Agility and Reduces Costs

Recent surveys indicate that repetitive, one-off integration efforts can absorb approximately 30% of company IT development project budgets. By reducing data and systems redundancies, CDI makes data processing and application systems more efficient, while helping to significantly reduce costs.

DELIVERING CDI

To assess the extent and quality of your organization's data integration, ask yourself the following questions:

- Can users retrieve accurate, complete, consistent and timely customer data when required?
- Does everyone within your organization agree on what constitutes a customer (or party)?
- Does your organization understand how customers relate to each other and to the organization itself?
- Do agreements exist that define the availability, quality and sources of customer data?
- Are measures available to continuously monitor the quality and availability of the customer data?

If you can answer "yes" to only one or two of these questions, then CDI reference architecture can provide clarity and direction. CDI reference architectures serve as a way to characterize the functions that need to be present in a complete solution.

Armed with this guide, organizations can be more effective in assembling solutions—often cobbled together from a variety of vendors/sources—that are specific to their particular needs and designed to accommodate changes to their organizations over time.

That, however, is just the beginning. In the process, CDI provides efficiencies that often translate to dramatically faster time-to-market for new products and services. Once an organization integrates customer data well, and continues to follow up on the integration to keep records current and complete, they avoid time-consuming project-by-project integration efforts. Coordination is simplified, and the organization becomes far more nimble in addressing the ever-changing needs of their marketplaces.

CDI efficiencies range from IT to customer care/service/call center, to marketing as well as across other staff functions. With CDI, day-to-day operations run more smoothly, and organizations can shift their IT focus toward other systems development.

The CDI Reference Architecture

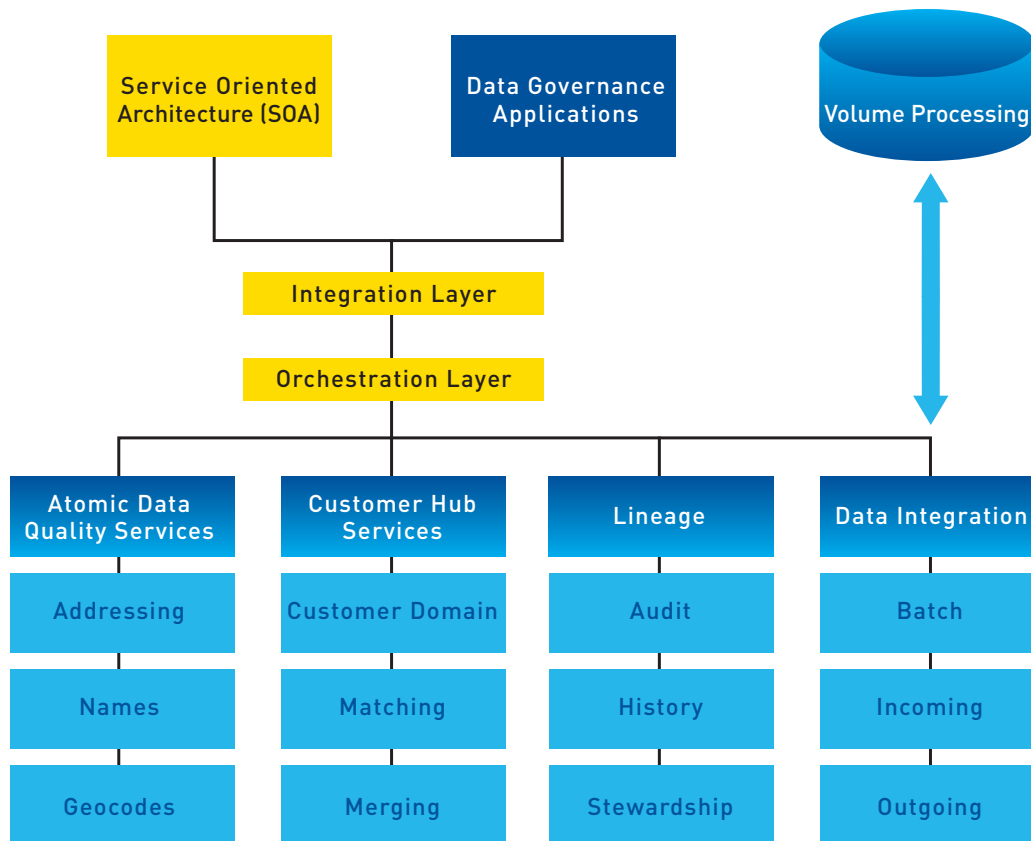
The CDI reference architecture describes the broad functional categories that a CDI Hub must support. These typically include data:

- Quality
- Maintenance
- Lineage
- Integration
- Governance

Beginning at approximately left mid-point of this diagram, (see next page) we see Atomic Data Quality Services. These services standardize and cleanse customer information such as names and addresses, and this is where data may be enriched with special qualifiers such as geocoding.

Atomic Data Quality Services feeds into the Customer Hub Services where data maintenance occurs. These processes maintain the repository of customers through a range of functions including creating, reading, updating and deleting records as appropriate. The hub uses definable

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CDI (Customer Data Integration) Reference Architecture

business terms to match and merge customers. Matching efficiency relates to how well a B2C application recognizes a given individual or organization as a pre-existing customer. Address quality, name variations, common phonetic errors, keyboard distance and international issues may all be addressed through an effective matching process. It also reviews and flags customer data with identifiers such as records in need of manual intervention and/or additional customer calls.

Lineage tracks the effects of updates to the hub whenever data is changed. This function is essential, as multiple

systems feed into the hub. Lineage both enables change to be tracked back their source, and pushes changes forward to impact other systems as necessary.

Data integration coordinates batch and external integration. Real-time requests such as those received through an “Update Customer” queue may be routed through data integration. Data integration is also important in CDI implementations for typical large, heterogeneous environments: often these have batched updates from systems that cannot be integrated through an online Service Oriented Architecture.

CDI SOLUTIONS FROM PITNEY BOWES BUSINESS INSIGHT PROVIDE A FOUNDATION FOR ENTERPRISE CUSTOMER DATA QUALITY

Data governance applications support both the strategic setting of business rules and the tactical process of data stewardship. Rules can be established specifying limited access to specific users for editing and amending. Stewardship applications are designed to allow users to identify, investigate and resolve data issues. Within data governance, some measure of workflow to track resolutions and follow-ups is required.

At the heart of the CDI architecture is the orchestration layer. This presents an interface to the outside world through a system of protocols, and typically consists of high-level services. The orchestration layer may involve constituent service calls within the hub and/or via data-integration services. Real-time requests such as 'Update Customer' will be initiated here.

CDI vs. Earlier Solutions – Getting to the Root of the Problem

The fundamental concepts behind CDI are not new – however, for many organizations, CDI provides more robust and practical solutions by approaching these concepts in new ways.

Service-Oriented Architecture (SOA) can be traced back to very traditional mainframe transaction processing platforms such as CICS, CMS, and later, Tuxedo. It provides a layer of separation between users and data – a limited-access layer which contains specific logic that can be changed independent of the data it controls.

SOA is not the same under CDI. It still has at its core the concept of “encapsulation” – hiding away how a service operates and providing access only through a specific interface. However, while at its basic level, SOA represents a way for enterprises to structure how they deliver business processes, while services are very loosely associated with business function. In CDI, SOA is more complex, breaking services up into atomic transactions which can be separated and managed independently.

Although not without issues, over the last decade, Customer Relationship Management (CRM) has highlighted the value of coordinating customer information across the organization to reduce customer churn, improve loyalty and achieve economies in marketing and operations.

CDI, however, addresses key weaknesses in the CRM approach:

- CRM addresses data coordination; CDI addresses coordination, as well as reaching deeper to improve data quality.
- CRM typically focuses on call-center effectiveness, while CDI focuses on data effectiveness across the entire organization. In this way, it sets a foundation for improving a more complete range of customer touch points.
- CRM systems are still in place today, and have found relevance away from traditional high-volume customer applications. However, the fundamental CDI approach works to greater effect in a variety of situations. By going all the way back to the data sources and systems and by providing for both rules-based governance and exception processing, CDI puts into place the structures to support larger-scale customer data coordination and integration.
- CRM and CDI each strive to provide enterprise-wide solutions. However, by working data and systems upstream of customer interactions, CDI typically enables better access to top-quality customer data and thereby increases the efficiency and effectiveness of business processes throughout the organization.
- CRM has no emphasis on data governance, whereas in CDI, data governance plays a prominent role. It requires an active partnership between an organization's business management and IT that goes beyond key performance indicators and service-level agreements to enable day-to-day monitoring, business-rule definition, and care in handling both exceptional and every-day events. Data

Full Spectrum Customer Data Integration (CDI) Solutions

8

governance is an ongoing process. Through it, data issues are tracked and progressively systemized so that rules engines can automatically handle discrepancies. Data governance not only adds efficiencies, it helps organizations address compliance requirements and identify fraud.

How Pitney Bowes Business Insight Assists In CDI Programs

The inherent complexities of an organization's data-integration requirements cause most off-the-shelf solutions to fall well short of business requirements. Thus, every system that integrates with a CDI package must be analyzed, and appropriate interfaces must be constructed. The Pitney Bowes Spectrum™ Technology Platform and Sagent® Data Flow™ data integration tools provide the highest degree of flexibility and control in any CDI effort.

Pitney Bowes Business Insight has strong propositions around supporting and augmenting existing e-applications including SAP® (including MySAP CRM & MySAP ERP), Salesforce.com®, Oracle® E-Business Suite and Siebel® (including Siebel Enterprise Apps & Siebel Industry Apps). Pitney Bowes Business Insight also offers solutions that work with applications such as Siperian® and IBM WebSphere® Customer Center.

Data quality and data integration solutions from Pitney Bowes Business Insight can be applied to any existing enterprise application capable of calling out to an SOA, and they can also provide support to existing CDI applications by providing a foundation for enterprise customer data quality. Based on SOA our solutions let all customer touch points update, link and consolidate valuable customer information into enterprise-wide business intelligence. Users can accomplish tasks such as address cleansing, name variation and/or geocoding services in advance of any matching process.

Pitney Bowes Business Insight provides outstanding global data cleansing solutions for data validation and enrichment. With business rules for international addresses as well as multiple integrations with US, Australian, UK and European address databases; Pitney Bowes Spectrum Enterprise Data Quality Solution's address cleansing capabilities are extensive and include both postal and non-postal data to ensure accuracy at the highest level.

Pitney Bowes Spectrum Enterprise Data Quality Solution incorporates five powerful modules for comprehensive data quality management end-to-end within CDI:

AddressNow™ Module – A global solution, covering more than 240 countries, with an interactive application for faster, more accurate capture, data quality at the point of entry.

Advanced Matching Module – Sophisticated data-agnostic algorithms and user-defined criteria work together to ensure you can merge and consolidate records based on your business needs.

Data Normalization Module – Enables you to generate uniform data and apply common rules, so you can provide a more consistent experience across every touch point.

Universal Addressing Module – Automatically corrects, completes and formats address data in real time.

Universal Name Module – Provides flexible name parsing capabilities, to match, standardize, analyze and consolidate complex records

Nearly 70 percent of all business data contains a location component. Pitney Bowes Spectrum Enterprise Location Intelligence and Business Solutions also offer a range of geocoding solutions and auxiliary databases such as tax region. These can enhance customer intelligence and better inform and target customer communications. By integrating customer data quality capabilities with rich location intelligence and other data enrichment you can increase customer satisfaction, reduce risk and streamline operations.

PITNEY BOWES BUSINESS INSIGHT OFFERS KEY SOLUTIONS THAT ENHANCE EFFECTIVENESS AND EFFICIENCIES, IMPROVE TIME-TO-MARKET, REDUCE COSTS AND BOOST CUSTOMER LOYALTY

Pitney Bowes Spectrum Enterprise Data Governance Solution incorporates both profiling and monitoring to enable successful rules based CDI. Data Governance is one of the more difficult aspects of data management. The Spectrum Enterprise Data Governance Solution provides the appropriate tools to profile and manage the quality of your company's data, with monitoring and alerts to assure timely reporting and appropriate adherence.

Specialty Applications to Solve Complex Business Problems

SAP and Siebel are supported through tight integration. The Pitney Bowes Spectrum Data Quality Connectors for mySAP maintains a series of match keys which can allow it to quickly evaluate a series of matches and return a list back to the calling application. This architecture does not duplicate the SAP information in the match database, thus reducing overhead on information updates. The Spectrum Data Quality Connector for Siebel enables easy integration into your Siebel solution with the look and feel of existing Siebel user interface. It delivers functional components as a set of pre-configured services for use within Siebel. Data Quality Connectors for SAP and Siebel are fully certified data quality services to help you maximize the value of your strategic competitive asset – your customer data.

CDI applications can also use the connector API architecture to offload matching to the Pitney Bowes Spectrum Technology Platform. Its users then benefit from a single view of the customer, better recognition and service, and reduced fraud and compliance issues.

The Sagent Data Flow solution from Pitney Bowes Business Insight is a powerful and flexible integration engine that brings together data from disparate sources into a single view where a comprehensive set of data transformation tools can merge and cleanse the data to enhance its business value. It is one single solution that combines powerful data integration and Business Intelligence (BI) capabilities.

The Pitney Bowes Spectrum Technology Platform and Sagent Data Flow Data Integration Solution provide high-productivity tools for coordinating lower-level service requests as part of larger business services. With unique architecture and analytic components, users can easily access multiple data sources and transform the data. Once disparate data is transformed into actionable information, the insights can drive smarter businesses decisions across your organization. This presents an opportunity to become the hub of services integration for the enterprise.

Benefits of employing the Pitney Bowes Spectrum Technology Platform and Sagent Data Flow solutions include speed of implementation for CDI hubs, faster data integration, improved data governance, address quality and the matching efficiencies, and better analysis. Pitney Bowes Business Insight solutions can also simplify integration and reduce the need for larger infrastructures.

CDI applications typically provide few built-in functions for consolidating batch information, and those that do are not often optimized for the demands of a large-scale operation. Pitney Bowes Business Insight solutions, however, can do this “heavy lifting”. The Spectrum Technology Platform provides facilities for coordinating services into larger process flows. A Distributed File System (DFS) provides a further level of scalability for larger or more complex sources. These complexities are also compounded by the need to handle exceptions, and this function is easily handled.

Overall, batch loading solutions enable use of a single code base and thereby lower the cost of ownership. High productivity from both the Spectrum Technology Platform and Sagent Data Flow™ solution enable faster deployment and expedite return on investment.

As discussed earlier in this paper, MDM and CDI applications have many similarities. The Pitney Bowes Technology Platform reference architecture also supports the wider MDM applications.

Full Spectrum Customer Data Integration (CDI) Solutions

10

Domains such as locations and resources often have addressing and geospatial attributes which benefit from accurate cross-checking against reliable reference sources. Match-rules technology can also be easily extended to account for product-name structures.

A Call for Action

Customer data distributed across multiple silos is a serious business issue.

It jeopardizes strategic business objectives such as customer intimacy and one-to-one marketing, reduction in customer churn and decreasing the risks associated with fraud. It creates dangers for IT departments as well, forcing them to gamble on successful deployments of packaged applications with assumed system delivery on the quality, accuracy and availability of the organization's data.

These wide-ranging consequences call for enterprise-wide collaboration on data integration. Business units within the organization must team with other business units and with IT to break down barriers and share data to a single view of the customer.

The opportunity exists for business unit owners to take control of their data through a process of stewardship and governance. Working in partnership, IT and business units can define data quality and data-integration needs, resolve issues to meet tomorrow's data requirements and adapt to new ways of doing business.

Pitney Bowes Business Insight, with its long heritage of data quality and data integration, along with world-class supporting products and services, can provide key solutions that provide for and tie together CDI programs, enhancing both effectiveness and efficiencies, improving time-to-market, reducing costs and boosting customer loyalty.

To learn more, call 800.327.8627 or visit www.pbinsight.com

**PITNEY BOWES BUSINESS INSIGHT: YOUR SOURCE FOR
ANSWERS AND SOLUTIONS**

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