

Enterprise Information Management (EIM): The Hidden Secret to Peak Business Performance

A White Paper

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EIM: What It Is and Why It Matters

Over the past decade, organizations of all types and sizes have experienced significant growth in the volume of business information they generate and maintain. That information and the technology architectures that house it have also become increasingly complex. The Butler Group, a division of Datamonitor, estimates that approximately 80 percent of vital business information is currently stored in unmanaged repositories, making its efficient and effective use a nearly impossible feat.

Enterprise information management (EIM) is a strategic business discipline that combines many of the key principles of enterprise integration, business intelligence (BI), and content management to streamline and formalize the activities associated with data storage, access, and handling. Comprehensive EIM initiatives blend processes and technologies to significantly improve the way information is managed and leveraged across a company.

With EIM, organizations can boost the value of their corporate information, tapping into it to increase operational productivity, reduce overhead costs, and gain a substantial competitive advantage.

According to The Butler Group, broad-reaching information management allows smaller organizations to compete with much bigger companies and, when used effectively, enables larger enterprises to manage and maintain growth, scale, and agility. The value of EIM is so profound that analyst firm Forrester Research expects the market for related information management solutions to expand at an annual rate of 8.2 percent, reaching \$10.9 billion by 2012.

EIM is particularly important given the current financial climate, as companies struggle to remain profitable in the face of shrinking revenues. Some of the key business drivers behind today's EIM projects include customer service, marketing opportunities, process improvement, regulatory compliance, and fraud detection.

Customer Service

With fewer new buyers for products and services, companies need to preserve current revenue streams by focusing their efforts on retaining their existing clients. EIM provides support staff with the comprehensive insight they need to ensure superior service delivery. Data quality ensures the customer's information is correct – eliminating errors in personal information or services delivered.

Marketing Opportunities

During tough economic times, businesses need to tap into their customer base to generate new sales. EIM makes it easier to identify potential cross-sell and up-sell opportunities. Disparate customer information from different systems can be combined into a single repository for timely and comprehensive data on every customer.

Process Improvement

As companies aim to do more with less, optimizing key business activities to increase productivity will be the key to success. EIM provides visibility into the execution of mission-critical workflows, so inefficiencies can be detected and corrected before profitability is negatively impacted. The use of real-time profiling capabilities quickly identifies these issues in an easy to understand graphical manner.

Regulatory Compliance

As regulations become more rigid, and demands for transparency and accountability increase, companies will need EIM to optimize information integrity, ensure the accuracy and completeness of data contained in reports, and provide audit trails. Master data management, combined with data quality, ensures not only accurate and correct data, but consistent data across the enterprise.

Fraud Detection

Illegal activity occurs in all industries, not just banking and financial services. EIM can help organizations prevent monetary losses due to fraud by enabling them to more rapidly identify, track, and investigate suspicious transactions. Real-time capability allows for instant identification of these transactions coupled with the ability to automatically stop or flag future fraudulent transactions.

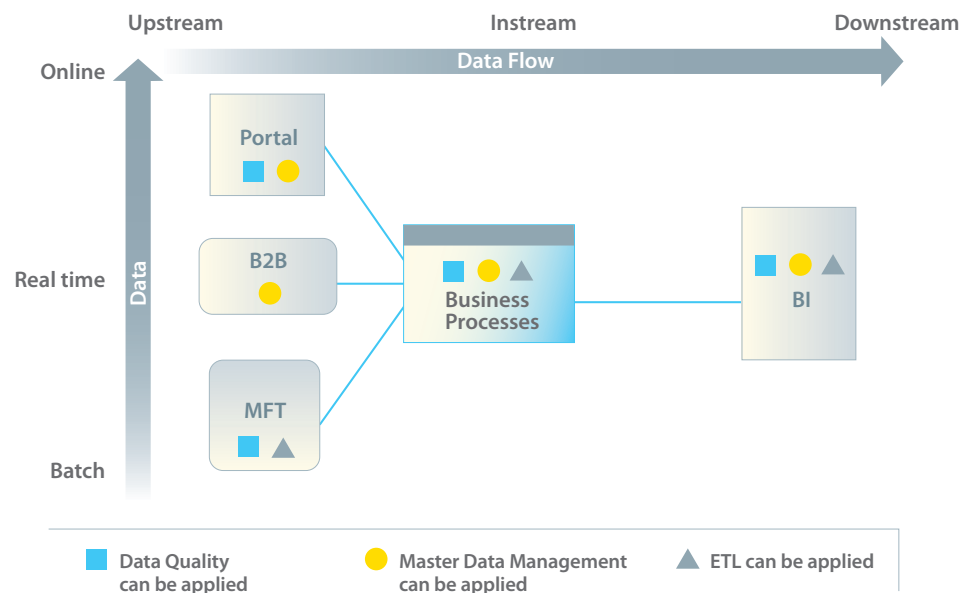
EIM: The Challenges

Without the proper tools, policies, and procedures in place, true enterprise information management will be an elusive goal. For example, the disparate, siloed systems and documents that exist in most companies today make it difficult for businesses to ensure that information is:

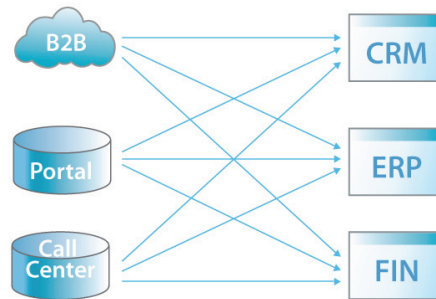
- **Accurate** – Lack of control over how data is created, updated, and stored causes serious information errors
- **Complete** – An inability to reach all sources and combine and consolidate the data contained within them hinders the thoroughness of the information that stakeholders use to carry out their day-to-day activities
- **Consistent** – Fragmented business applications often result in multiple versions of the truth and can negatively impact cross-departmental coordination, resulting in misinformed or incorrect business decisions
- **Relevant** – To be valuable, information must first be useful. If employees cannot access the relevant, contextual data they need to perform their jobs, they will be less productive
- **Timely** – Managed information becomes worthless if the information is not delivered in a timely manner when needed

The Enterprise Information Lifecycle

All data has a lifecycle and to properly manage it, companies need to understand the various phases and how information flows among them.



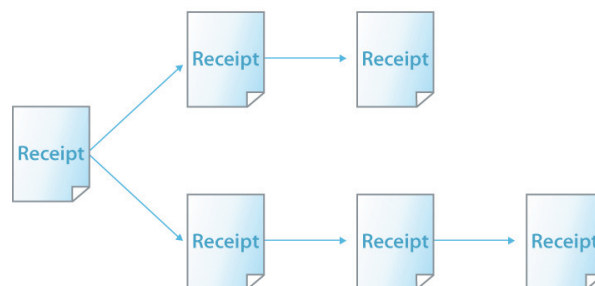
Upstream



Data enters a corporation's environment in various ways and in various formats. It can be received via e-mail, fax, or letter, and then manually entered by staff members into one of the many business solutions that exist, such as CRM systems or ERP applications. It can be collected dynamically via business-to-business (B2B) gateways. It can also be gathered through interactive voice response (IVR) and other automated call center systems, as well as self-service portals for employees, customers, or partners. Cloud-based Software-as-a-Service (SaaS) applications, such as Salesforce.com, introduce data from various hosted sources and present significant data quality challenges.

Because data is created and updated at multiple touch points, it is often challenging to maintain its accuracy and completeness. Additionally, these numerous data streams make it very hard to ensure that information adheres to all business rules and can be precisely correlated with data that is being gathered through other channels.

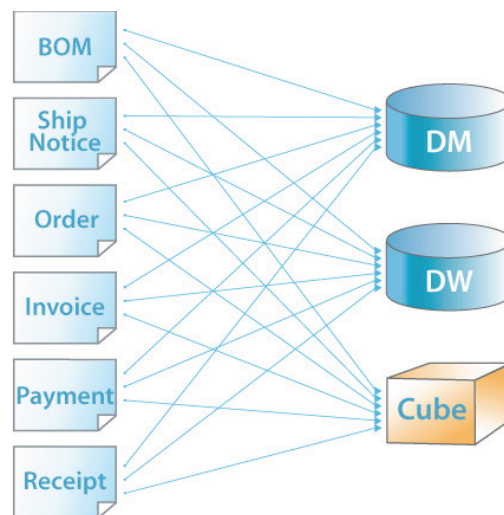
Instream



Once data has entered the environment, it will move in a non-stop flow across a business. It will be constantly evolved through manual updates and changes, and will be leveraged during the execution of complex transactions. As an example, data can flow through an Order to Cash process by evolving into items such as Invoice, Bill of Materials, or Payment Receipt. It can also be combined with other data elements to make up a set of derived data for analysis. Additionally, it will be used in support of operational business intelligence applications.

This continuous momentum creates many issues, as well as a lack of validation throughout the information flow, such as mismatched, miscategorized, or redundant data that will be difficult to detect and correct. In worst case scenarios, vital information may even be lost completely.

Downstream



End users at all levels will frequently retrieve, manipulate, and analyze the data contained within a company's information infrastructure to support their daily activities. Analysts and front-line workers will perform in-depth analysis from data marts, data warehouses, and cubes, while performance management dashboards and scorecards will present information to executives and senior managers. Additionally, data will be leveraged by financial professionals for compliance reporting and related auditing requirements.

Some of the problems that exist within downstream data can include poor accessibility, incomplete information, and compromised quality and integrity, which can negatively impact business performance. Mismatched data semantics can also lead to serious inconsistencies and redundancies within corporate information.

Formulating Your EIM Strategy: Key Points to Consider

There are many benefits that go hand in hand with enterprise information management, but those advantages can only be truly realized if the plan behind the EIM initiative is comprehensive, and the solutions chosen to support it are robust enough to meet all existing and future information needs.

EIM must do more than just improve the accessibility of enterprise information. It must provide a broad-reaching infrastructure that seamlessly integrates data – regardless of its source or location – while ensuring optimum quality. Additionally, it must provide tools that make it easy for end users at all levels to transform raw content into relevant, real-time intelligence.

When defining an EIM strategy and selecting related technologies, organizations must consider the following:

Unlimited Data Access

A company's information is often spread out across numerous types of assets, including packaged applications, databases, files, documents, and messages. For EIM to deliver maximum results, it must ensure proper retrieval, use, handling, and management of all information, in all sources and formats from across an entire enterprise. That includes both the structured data that resides in databases and other standardized locations and the unstructured content that exists in free form, such as in electronic documents and files, and the information captured through automated messages and transactions. Additionally, all information must be readily accessible to all users whenever they need it – whether on a scheduled or recurring basis, or in real time.

End-to-End Data Management and Quality Control

EIM is about more than just consolidating and centralizing data to make it easier to obtain. It's about ensuring the quality and integrity of that data as well as its relevance and usability for employees, external customers, and business partners across and beyond the enterprise. That's why it is important for an EIM strategy and related solutions to include capabilities for:

- **Data quality management**, which ensures the consistency and integrity of information as it flows instream, upstream, and downstream. The more data sources and end-user touch points a company has, the more critical it becomes to have comprehensive data quality management
- **Master data management**, which supports the global identification, linking, and synchronization of information across multiple heterogeneous sources. By building repositories holding “golden records” of master data, or registries that allow the creation of Virtual Master Records, organizations can access single versions of the truth across the enterprise on critical master data such as customer, patient, citizen, product, vendor, or employee

Maximum Flexibility

The data collected and managed within an EIM environment must be available to support other mission-critical corporate integration initiatives. This includes B2B; enterprise application integration (EAI); extract, transform, and load (ETL) for creating data warehouses, data marts, and operational data stores; and service-oriented architectures (SOA).

The iWay EIM Suite: True Enterprise-Wide Information Management

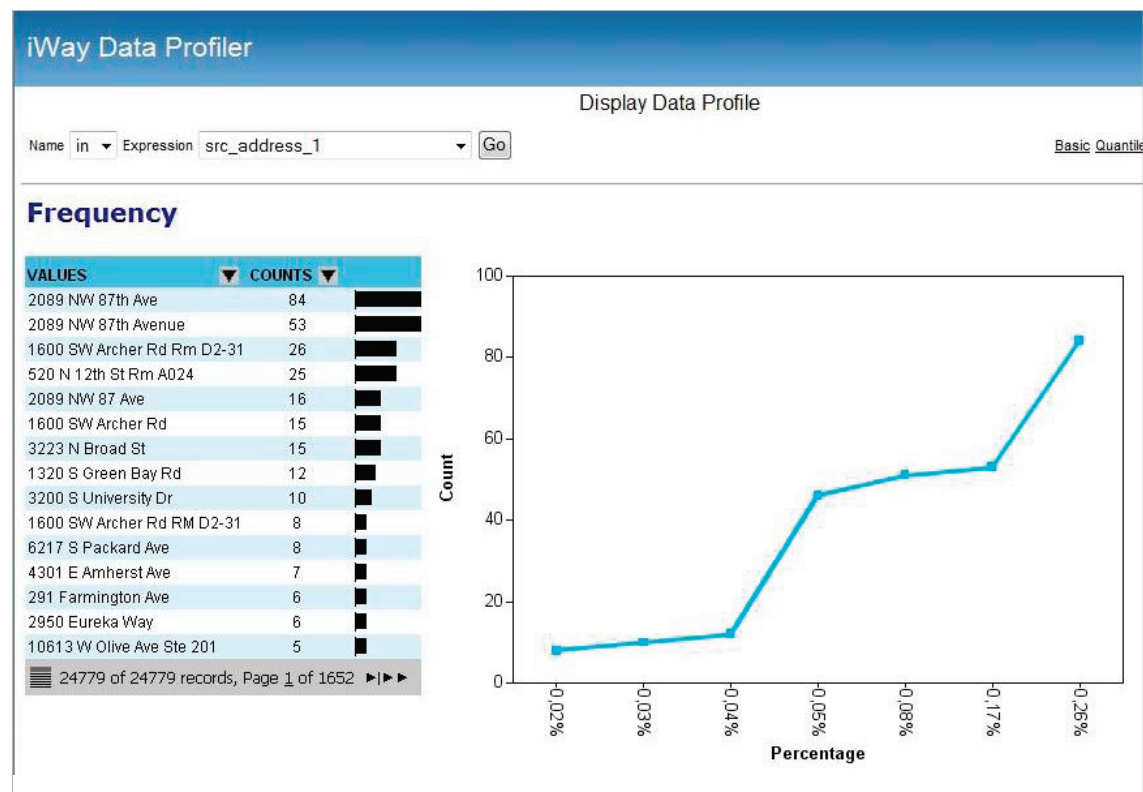
iWay Software's Enterprise Information Management suite is a robust, comprehensive solution that facilitates the real-time management of any information from anywhere across an entire enterprise. Regardless of where data resides, whether it's in structured or unstructured format, the iWay EIM suite can seamlessly integrate and enrich it, allowing for simple and efficient access, utilization, and maintenance.

The iWay EIM suite provides a single, complete platform that addresses all facets and phases of the information lifecycle, empowering organizations to make their data better, so they can tap into it more readily and use it more strategically.

Unparalleled Data Quality Management

The iWay EIM suite includes powerful capabilities that optimize the completeness, accuracy, consistency, and integrity of enterprise data. Data quality is achieved and maintained through robust techniques and features such as:

Profiling – Detailed, in-depth data analysis and profiling functionality allows users to easily obtain a precise assessment of data quality and rapidly identify and correct any issues or errors. Generated reports and graphs provide visualization for the underlying data quality.



Cleansing – Restrictions, constraints, and other business rules and criteria for data quality can be defined and implemented, then dynamically applied to data values across the information landscape. The iWay EIM suite can automatically make changes and modifications to existing data based on those definitions to eliminate mistakes and inaccuracies.

Before Cleansing

Source Data				
Name	G	SIN	Birth Date	Address
Dr. John Smith	M	000000000	12/16/1978	14618 110 Ave Surrey V3R 2A9
Smith W. John	M	095-242-434	16.12.1978	Surrey 14618 110 Ave
John William Smith		095242434	781612	25 Linden Str Toronto M4X 1V5
Dr. J.W. Smith	M	095242433	11/16/78	
John Smith		095252433	16.11.1978	8500 Leslie L3T 7M8 Toronto
Smith John			16.11.1978	8500 Leslie street Marham
John Smiht		095252433	16.11.1978	
Jane Watson		420347213	1982	600-8500 Leslie str. Toronto L3T 7M8
Watson Jane	F	420-347-213	5.1.1982	8500 Leslei street Toronto L3T 7M8
Jane Smith	F	SIN420347213	1982-01-0	
J. Smith		420-347-213		

After Cleansing

Cleansed Data					
First	Last	G	SIN	Birth Date	Address
John	Smith	M		1987-12-16	V3R 2A9; BC; Surrey; 14618 110 Avenue
John	Smith	M	095242434	1978-12-16	V3R 2A9; BC; Surrey; 14618 110 Avenue
John	Smith	M	095242434		M4X 1V5; ON;Toronto; 25 Linden Street
	Smith	M		1987-11-16	
John	Smith	M	095252433	1978-11-16	L3T 7M8; ON; Markham; 8500 Leslie Str.
John	Smith	M		1978-11-16	L3T 7M8; ON; Markham; 8500 Leslie Str.
John	Smith	M	095252433	1978-11-16	
Jane	Watson	F	420347213		L3T 7M8; ON; Markham; 8500 Leslie Str.
Jane	Watson	F	420347213	1982-01-01	L3T 7M8; ON; Markham; 8500 Leslie Str.
Jane	Smith	F	420347213	1982-01-05	
J.	Smith		420347213		

The first and last names have been correctly identified despite mixed order, initials, or titles. Where possible, any missing entries have been amended for each record. All the fields have been standardized to specific formats.

Enrichment – External sources often provide a means of enhancing and enriching existing corporate data. With the iWay EIM suite, the value of internal information can be dramatically improved. Users can compare current data to consumer demographics, geographic distributors, and other third-party content, and dynamically append attributes to include any new information that is uncovered.

Before Enrichment

Cleansed Data					
First	Last	G	SIN	Birth Date	Address
John	Smith	M		1978-12-16	BC;Surrey;14618 110 Avenue
John	Smith	M	095242434	1978-12-16	BC;Surrey;14618 110 Avenue
John	Smith	M	095242434		ON;Toronto;25 Linden Street
	Smith	M		1978-11-16	
John	Smith	M	095252433	1978-11-16	ON;Markham;8500 Leslie Str.
John	Smith	M		1978-11-16	ON;Markham;8500 Leslie Str.
John	Smith	M	095252433	1978-11-16	
Jane	Watson	F	420347213		ON;Markham;8500 Leslie Str.
Jane	Watson	F	420347213	1982-01-01	ON;Markham;8500 Leslie Str.
Jane	Smith	F	420347213	1982-01-05	
J.	Smith		420347213		

After Enrichment

Enriched Data						
First	Last	G	SIN	Birth Date	Address	Zip
John	Smith	M		1978-12-16	BC; Surrey; 14618 110 Avenue	V3R 2A9
John	Smith	M	095242434	1978-12-16	BC; Surrey; 14618 110 Avenue	V3R 2A9
John	Smith	M	095242434		ON; Toronto; 25 Linden Street	M4X 1V5
	Smith	M		1978-11-16		
John	Smith	M	095252433	1978-11-16	ON; Markham; 8500 Leslie Str.	L3T 7M8
John	Smith	M		1978-11-16	ON; Markham; 8500 Leslie Str.	L3T 7M8
John	Smith	M	095252433	1978-11-16		
Jane	Watson	F	420347213		ON; Markham; 8500 Leslie Str.	L3T 7M8
Jane	Watson	F	420347213	1982-01-01	ON; Markham; 8500 Leslie Str.	L3T 7M8
Jane	Smith	F	420347213	1982-01-05		
J.	Smith		420347213			

The zip code been determined based on the existing address and added as a separate field in each record.

Merging and Matching – The iWay EIM suite can automatically seek out and identify related entries within and across data sets, then instantly link, match, and merge associated information as needed to promote consistency throughout the business.

Match

Cleansed Data					
First	Last	G	SIN	Birth Date	Address
John	Smith	M		1978-12-16	V3R 2A9;BC;Surrey;14618 110 Avenue
John	Smith	M	095242434	1978-12-16	V3R 2A9;BC;Surrey;14618 110 Avenue
John	Smith	M	095242434		M4X 1V5;ON;Toronto;25 Linden Street
	Smith	M		1978-11-16	
John	Smith	M	095252433	1978-11-16	L3T 7M8;ON;Markham;8500 Leslie Str.
John	Smith	M		1978-11-16	L3T 7M8;ON;Markham;8500 Leslie Str.
John	Smith	M	095252433	1978-11-16	
Jane	Watson	F	420347213		L3T 7M8;ON;Markham;8500 Leslie Str.
Jane	Watson	F	420347213	1982-01-01	L3T 7M8;ON;Markham;8500 Leslie Str.
Jane	Smith	F	420347213	1982-01-05	
J.	Smith		420347213		

The related entries for John Smith and Jane Watson are identified. Despite the same name, there are actually 2 different John Smiths in this system. The Match capability correctly identifies this based on data for each record.

Merge

Cleansed Data					
First	Last	G	SIN	Birth Date	Address
John	Smith	M		1978-12-16	V3R 2A9;BC;Surrey;14618 110 Avenue
John	Smith	M	095242434	1978-12-16	V3R 2A9;BC;Surrey;14618 110 Avenue
John	Smith	M	095242434		M4X 1V5;ON;Toronto;25 Linden Street

Golden Record					
First	Last	G	SIN	Birth Date	Address
John	Smith	M	095242434	1978-12-16	V3R;BC;Surrey;14618 110 Avenue

Matched records are merged into a single golden record. In this case, the first John Smith is matched and merged into a complete record consisting of data from different iterations. The matched address fields conflict, so the Merge engine was instructed to utilize the most frequent occurrence.

Comprehensive Master Data Management

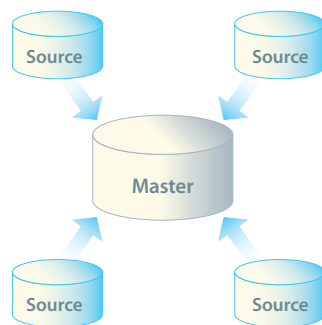
The iWay EIM suite enables the creation of a single system of record, which can serve to feed complete, consistent, and correct data back to applications across the company. This kind of reliability is particularly important in certain key functions, such as customer relationship

management, financial management, or inventory management, where numerous disparate systems, maintained by different departments or business units, may contain multiple versions of the truth that can negatively impact related business operations.

The master data management (MDM) capabilities offered by the iWay EIM suite can address the challenges associated with accuracy and consistency within customer, procurement, supplier, product, and other information categories. This allows companies to create a single frame of reference for all end users, regardless of their role.

The iWay EIM suite is designed to provide flexible support for virtually any master data management strategy, enabling companies to unify and distribute master data in an unlimited number of ways. No matter what MDM methodology or related architecture a company chooses, iWay Software provides all the tools needed, including a suite of adapters that facilitate full bi-directional interconnectivity to effectively manage master data from end to end. Other benefits of the MDM include:

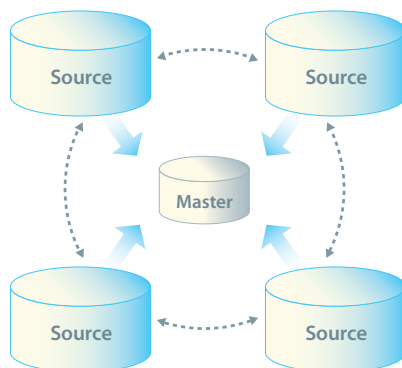
Consolidation



- Master is single version of truth
- Data quality management at master
- Updates occur at sources
- Updates propagated to master

A single instance of master data is created and maintained. Updates to master data are made at source systems and then transferred back to the central repository.

Registry

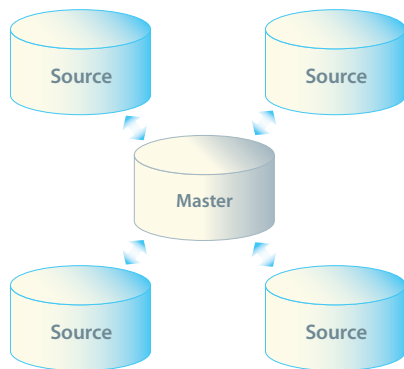


- Multiple versions of truth
- Data quality management is ongoing
- Updates occur at sources
- Keys and metadata updated in registry
- Updates propagated to other sources (optional)

All master data resides in its original databases, while a virtual repository of keys is maintained to aid in the synchronization of MDM records across different information assets. When an update

is made to master data at its source, it is harmonized with the associated key, then redistributed among other related back-end systems.

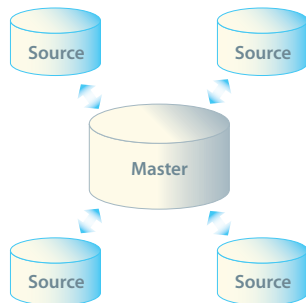
Coexistence



- Master is single version of truth
- Data quality management is ongoing
- Updates occur at sources or master
- Updates propagated to other sources

All master data attributes are stored in a central repository through the creation of a new golden master record. All sources and the master are kept in sync. Changes, regardless of where they are made, are dynamically disseminated among related sources.

Transaction



- Master is single version of truth
- Data quality management at master
- Updates occur at master
- Updates propagated to sources

Master data is read and written to a central repository in its transactional context, in real time upon event execution. Updates are also managed at the source and then propagated to the MDM database.

The Broadest Information Reach

No matter where information resides, the iWay EIM suite allows companies to retrieve, manage, and leverage it for maximum strategic advantage. Any data in any source and in any format can be directly accessed and seamlessly integrated including:

- ERP/Financials (JDE, Microsoft, Oracle, SAP...)
- Industry (ACORD, HL7, SWIFT...)
- Legacy Systems (CICS, IMS, VSAM...)
- SFA/CRM (Amdocs, Siebel, Salesforce.com...)
- Data Warehouse (DB2, Netezza, Teradata...)
- B2B (EDI, MFT...)
- Unstructured (documents, spreadsheets, e-mail...)

Multiple Levels of Information Latency

The iWay EIM suite is highly flexible, allowing companies to manage all data, and its quality, via their most preferred method. The iWay EIM suite supports multiple levels of latency, such as:

- **Online** – Users can manage data as they are entering, updating, or interacting with it
- **Real time** – Information can be validated and handled the moment it is generated in the course of automated events or transactions. For example, content from an EDI message can be either pushed or pulled the moment a supplier sends it
- **In batch** – Data can be automatically pushed or pulled between sources every hour, day, week, month, or at any other interval

Laying the Foundation for Critical Information-Integration Initiatives

The iWay EIM suite is open and configurable, giving companies the power to leverage their corporate data to support a wide array of integration initiatives including:

B2B-Oriented EIM

Many broad-reaching information management initiatives encompass business-to-business interactions in some form or another. This can result in new data integrity challenges, since the entities that the company is exchanging data with may not have formal information management and quality control procedures in place.

The iWay EIM suite can help organizations overcome these obstacles with powerful features:

- **Message validation** – All B2B messages and their content must adhere to a defined structure or format or will be deemed invalid. For example, if a last name only has one letter, or if an order for a product is missing a required part, the message will be rejected
- **Data quality monitoring** – Users can precisely determine the impact that both good and bad data will have on day-to-day activities, as well as the overall performance of the organization
- **Business activity monitoring (BAM)** – Actual business events can be closely tracked as they

take place. The BAM capabilities within the iWay EIM suite allow businesses to identify and correct critical trends that can hinder process execution and efficiency, such as a high volume of incorrect orders from a specific client

- **Managed file transfer** – By creating and enforcing automated business rules regarding the creation, use, maintenance, and sharing of electronic documents, companies can guarantee the integrity of unstructured content as it flows across the organization

ETL-Oriented EIM

The iWay EIM suite includes powerful extract, transform, and load (ETL) tools. So companies that need to migrate data across back-end systems or consolidate it into marts, warehouses, or operational data stores can seamlessly bring together information from multiple sources and locations across the business.

The iWay EIM suite offers today's most advanced ETL functionality, such as:

- **Scheduling** – Data can be collected from source systems and integrated at pre-defined intervals. For example, many companies choose to refresh their data warehouses nightly
- **Merging** – Companies can easily combine information from multiple tables or databases and create a single, cohesive data set that can be further manipulated before being transferred to its new destination
- **Bulk data sets/loading** – Bulk data management capabilities dramatically reduce the time needed to gather and move high volumes of information by optimizing the transformation and loading of very large data sets

EAI-Oriented EIM

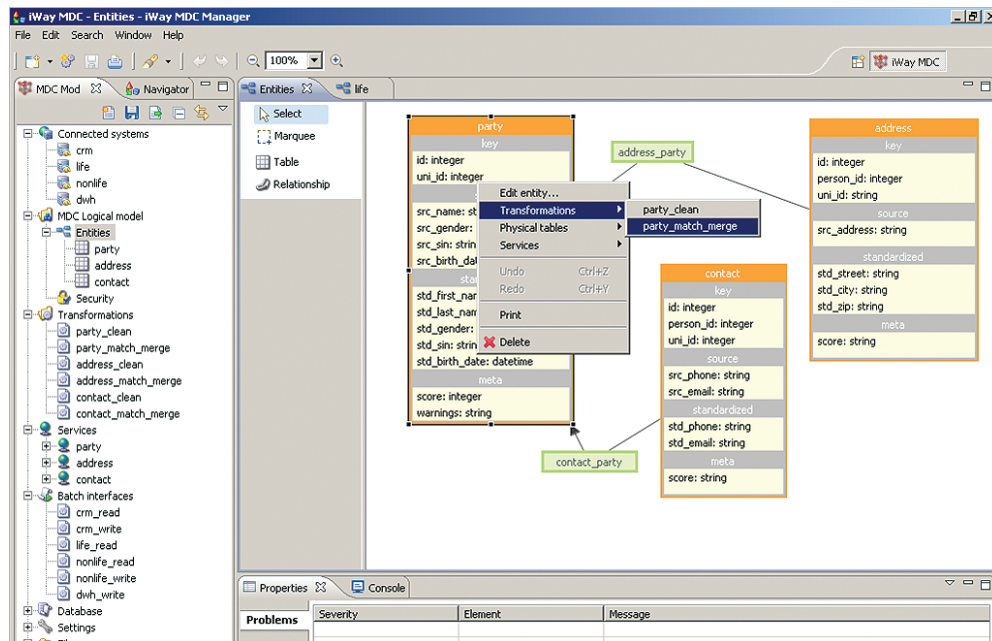
For many companies, the need to share data extends beyond people to include applications. Various back-end systems that manage similar types of information, such as help desk systems and accounting packages that both contain customer-related data, must be linked to promote consistency and prevent misleading, false, or outdated information from hindering core business operations.

Through its comprehensive master data management capabilities, the iWay EIM suite addresses potential accuracy issues between applications by creating a true view of information that can be shared by systems across the organization. Master data can be managed at its source, or in a central repository, and distributed among back-end assets to ensure enterprise-wide data consistency.

Additionally, the iWay EIM suite provides in-depth data validation, which complements its MDM functionality. By allowing for the definition of business rules that govern data and automating the validation of information against those rules, the iWay EIM suite enforces data quality policies to optimize integrity and consistency.

SOA-Oriented EIM

As the benefits of service-oriented architectures (SOA) become more apparent, a growing number of organizations are seeking to manage their information via SOA-based methods. SOA is a development and integration approach that addresses issues with interoperability by facilitating the creation and loose coupling of services and systems.



The iWay EIM suite is the ideal solution for SOA-based information management environments because it provides full support for:

- **Message-driven architectures.** The capture of data generated from business processes, as well as quality management and integration, are handled on a message-by-message basis in real time
- **Reusable services.** One of the key benefits of SOA is its ability to produce services that are reusable – they can be leveraged and shared by other systems and processes, eliminating the need for costly, time-consuming recoding
- **Master data.** SOAs also allow for end-to-end sharing and management of master data to foster enterprise-wide information consistency
- **Validation.** Business rules can be applied to all message-driven information within the SOA architecture to validate message contents and dynamically initiate appropriate action when it is deemed incorrect. For example, valid records can be routed to invoke a subsequent business process, while invalid records can be sent to a queue to be manually checked and fixed

Conclusion

Companies that embrace EIM can realize tremendous benefits, including improved operational efficiency and enhanced strategic decision-making and planning. EIM's ability to improve customer service can yield better customer retention. A comprehensive picture of the customer relationship allows for increased revenue opportunity. Vendor interaction costs are reduced through a single view of vendors and contracts. Error detection and correction capabilities improve business process productivity. By formalizing and streamlining the way data is created, stored, used, and administered throughout the enterprise, organizations can overcome the challenges created by today's diverse and complex technology architectures and transform their information into a solid competitive weapon.

The iWay EIM suite is an innovative, fully integrated solution that empowers businesses to better manage their information throughout all phases of its lifecycle. A broad range of features and capabilities provide unparalleled support for unlimited information access, data quality management, master data management, business-to-business interactions, enterprise application integration, SOAs, and much more. With the iWay EIM suite, organizations have all the tools they need to integrate and enrich their data – regardless of its source or structure – to optimize access, utilization, and maintenance.

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