

Driving Business Agility with a Unified Approach to Data Transformation

Tackling complex data transformation and integration challenges with IBM Transformation Extender

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Executive summary

Catalyst

Data transformation is a key process across different application-to-application (A2A) and business-to-business (B2B) integration scenarios, more so when considering the increasing heterogeneity of enterprise IT driven by the use of disparate data formats and messaging standards. Unless enterprises have the capability to efficiently transform input data into desired output format(s), integration and the corresponding end-to-end functionality would be difficult to achieve.

Enterprises need to think about developing and implementing a holistic data transformation and integration strategy to tackle increasingly complex and diverse sets of IT issues, many of which are mission-critical in nature with regard to agility in meeting new business requirements.

Ovum view

Digitalization calls for a holistic integration strategy reducing information and infrastructure silos. It is not only about enabling interaction between different applications, but also about the ability to realize desired output from disparate data sets without having to worry about uniformity in semantics, be it in terms of data formats or in terms of processing capabilities. Enterprises have long relied on ad hoc approaches to data transformation, including custom code/scripts and legacy transformation tools that are only point solutions incapable of meeting a new set of requirements. However, these archaic approaches are more or less luxuries that IT just cannot afford in the current operating environment.

Enterprises need flexible transformation capabilities to drive greater agility in responding to new business requirements. Many enterprises continue to struggle with "islands" of data transformation infrastructure offering very limited flexibility and adaptability to new requirements, while requiring significant development effort (more specifically, maintenance overhead) to remain relevant in the current integration infrastructure setup. IBM Transformation Extender (ITX) overcomes these limitations and can effectively meet the requirements of "many sources-to-many targets" transformation scenarios, as well as supporting easy integration with a range of IBM middleware products.

Ovum's conversations with ITX customers revealed some interesting trends and figures. Many IBM customers have used ITX and its previous versions for several years and have realized significant business value and strategic benefits. In the healthcare industry, one of the key use cases for ITX is HIPAA (Health Insurance Portability and Accountability Act) compliance. Tools and resources improving developer productivity, support for mediation with proprietary/custom standards, improved data quality, and the ability to transform, process, and validate huge volumes of data under significant time constraints were cited as some of the key benefits of ITX. Then there are cases where ITX adoption has reduced total cost of ownership (TCO) by well over 60% in comparison to the proposition of maintaining a combination of specialized tools (compliance and testing/validation tools) to comply with the requirements of the HIPAA mandate.

IBM offers a range of deployment options for ITX and provides the flexibility of exposing and consuming transformation-specific functions via representational state transfer (REST) APIs. Depending on their specific requirements, users can deploy ITX on software containers and in a public, private, or hybrid cloud environment. IBM is working toward offering rapid solutioning and

expanding automated cloud deployment capabilities, as well as introducing a dedicated cloud-enabled transformation managed services offering.

Key messages

- Enterprises must focus on rationalizing existing data transformation infrastructure (and approaches) to achieve greater agility in responding to new business requirements, including those driven by customer expectations and regulatory mandates. Gone are the days when “Band-Aids” (in the form of custom code) applied over legacy data transformation tools were “good enough” for meeting pressing data transformation and integration needs.
- ITX is a robust and comprehensive data transformation solution, automating complex transformation and validation processes across a range of messaging standards, data formats, and integration scenarios. It is well suited to the requirements of “many sources–to–many targets” transformation scenarios.
- Key features and capabilities of ITX include a “code-free” approach to the modeling, development, and testing of data transformations and integration maps, pre-built functions and adapters, industry packs, REST APIs exposing key functions, and flexible deployment options. ITX industry packs are packaged “accelerators”, enabling users to achieve faster time to value by simplifying transformation, especially with regard to compliance to industry-specific and regulatory mandates.
- The value proposition of ITX is attractive for enterprises interested in shifting to a robust and comprehensive data transformation solution to achieve IT cost savings and greater agility. According to Ovum’s interviews with IBM customers, ITX has delivered significant business value and strategic benefits, ranging from faster time to value and TCO reduction, to compliance to regulatory mandates and the realization of completely new mission-critical capabilities.

Business and IT imperatives driving changes in integration strategy

Increasing heterogeneity of enterprise IT calls for an agile and holistic approach

Enterprises use different business applications, including legacy, custom, and packaged applications that rely on mediation and data transformation capabilities, to interact with other applications and information systems. Enterprises also need to adhere to industry-specific messaging and data standards, and need to plan for supporting the latest changes in specific messaging and data standards used for B2B e-commerce collaboration with other enterprises and/or mission-critical business transactions. This could range from HIPAA compliance requirements for healthcare payers, and support for the latest version of electronic data interchange (EDI) X12 for supply chain integration, to support for SWIFT (Society for Worldwide Interbank Financial Telecommunication), SEPA (Single

Euro Payments Area), and NACHA (National Automated Clearing House Association) standards for financial payments.

In the context of HIPAA compliance, EDI submissions and transactions are evaluated against Type-1 to Type-7 tests for data validation and compliance reporting. Moreover, if certain changes are incorporated in HIPAA compliance directives and messaging standards, all relevant parties in the healthcare value chain need to comply with the new directive. This would be difficult to achieve unless an appropriate data transformation tool offering regular updates on relevant messaging and data standards is used.

With hybrid IT becoming the norm, and enterprises using data analytics to drive greater efficiency in business processes, IT must have the ability to transform standard and proprietary data formats to derive actionable insights. This is difficult to achieve with "islands" of data transformation infrastructure/tools, particularly because significant development effort is required to support proprietary messaging and data standards, as well as any changes in industry-specific standards not covered by existing data transformation tools.

Digital supply chains continue to evolve, with enterprises realizing the necessity to interact and provide services to partners and customers via digital channels to maintain and strengthen competitive positioning in a business ecosystem that is increasingly competitive and digital. Considering the nature of changes driven by digitalization, traditional approaches to data transformation and integration are no longer "good enough" for meeting key business requirements, and can be a barrier to IT agility.

The volume, variety, and velocity of data that enterprises need to transform and process to enable key business processes and derive actionable insights continue to increase at a rapid rate. At the same time, enterprises need to filter out the noise and cleanse all the relevant data sets to achieve a significant level of "data quality" that would ultimately determine the accuracy of insights obtained by processing different varieties of data. In the end, what enterprises need is "good data" that can be ingested into an analytics platform to obtain insights for optimized decision-making and prediction of future probabilities and trends. This calls for comprehensive and flexible data transformation capabilities that simplify integration between different enterprise applications and databases and other information systems.

This can be thought of as a state where IT is no longer concerned about how it will support a new messaging and data standard, even if it is proprietary in nature. And of course, there will be no need to commit resources for a significant period to develop custom code/scripts to support a new messaging and data standard. This is the kind of flexibility IT needs for meeting new requirements without having to invest in disparate data transformation tools.

What enterprises need is a suitable combination of data transformation capabilities and development flexibility, ensuring a faster response to new business requirements. This cannot be achieved with legacy data transformation tools or ad hoc approaches that offer limited scalability and flexibility. Enterprises need to devise a holistic strategy to meet complex and diverse data transformation and integration requirements to achieve the greater agility required for succeeding in an increasingly digital business environment.

Legacy and fragmented approaches to data transformation are inadequate for the current requirements of enterprises

It is difficult to realize any significant value from investment in business applications and information systems without a significant level of integration. In the absence of desired integration capabilities, IT will continue to struggle with existing infrastructure and information silos, and will ultimately fail in delivering the desired end-to-end functionality.

At a time when IT is hard-pressed to "do more with less", it is difficult to envisage internal developers/integration practitioners having the luxury of developing custom code/scripts to support very specific data transformation requirements. Moreover, with this approach, enterprises will struggle to support frequent changes in messaging and data standards, many of which are involved in mission-critical business transactions. Needless to say, the time and cost imperatives associated with this approach do not align with the need for faster time to value and greater business agility.

Many enterprises use a combination of data transformation tools, with each individual tool catering to specific data transformation needs. This translates into a proposition of maintaining significant investment in IT resources that have expertise in specific data transformation tools. Furthermore, the proposition of using a combination of data transformation tools to meet specific (and critical) business requirements often results in a bloated cost-of-ownership equation, which is difficult to sustain for any significant period of time. Moreover, persisting budget and time constraints continue to force IT to focus on delivering new capabilities in a time- and cost-efficient manner, and there is little inclination to defend legacy solutions at a strategic level.

Adding "Band-Aids" in the form of custom code to somehow maintain the relevance of a legacy data transformation solution is nothing more than an ad hoc approach that will fail to deliver any significant value. In fact, it will hinder the enterprise's ability to achieve seamless integration between applications and information systems supporting mission-critical business processes.

In the context of packaged business applications offered by independent software vendors (ISVs), enterprises need to transform specific data formats (SAP IDoc format, for example) to support integration with other applications. If a manual approach is used, IT will need to develop specialized, format-specific programs to implement pre-processing and post-processing tasks to check content validity and quality. This could easily translate into significant development and maintenance costs owing to the need to maintain and administer associated tasks (and custom code) on a sustained basis for the manual transformation of data formats.

It is obvious that efficient data transformation capabilities will pave the way for easy integration between different applications involved in key business processes. Data transformation is a core and complex sub-process of application and B2B integration processes, and enterprises can realize significant value in terms of faster time to value and IT cost savings by automating complex data transformations.

It is important that the data transformation solution is based on a modular architecture that offers access to a core transformation engine via APIs. This is especially applicable for custom programming environments and application servers where developers would like to call a core transformation engine via an API to process a pre-built transformation directly from the application.

An important IT imperative is to achieve a significant level of integration between middleware platforms enabling execution of key business processes. For example, with an appropriate data transformation tool, enterprises can add requisite EDI transformation capabilities to an enterprise service bus (ESB), enabling the extension of existing ESB/service-oriented architecture (SOA) infrastructure to use cases involving processing of industry-specific messaging and data standards.

While enterprises frequently use message-oriented middleware (MOM) for message queue (MQ)-based integration, there are certain use cases that involve both messaging- and file-based integration capabilities. In these use cases, an appropriate data transformation solution can serve as an "add-on" to MOM to support complex data transformation involving EDI-based integration. However, this can be achieved only if the data transformation solution is capable of interacting with existing integration infrastructure, and is not designed to serve as another "island" limited to very specific data transformation requirements.

It is important that the data transformation tool allows transformation of incoming messages/data into a format that can be easily comprehended by a middleware platform receiving the output of the data transformation process. For example, in the case of financial transactions, an appropriate data transformation solution can be used to transform SWIFT messages into an extensible markup language (XML) format that is readily supported by ESB/SOA infrastructure.

Because legacy data transformation tools were developed for specific requirements, significant additional development effort is often required for adding new capabilities that are necessary to meet a different set of requirements. Many enterprises have legacy, point solutions catering to specific data transformation requirements, and it is obvious that significant effort is required for maintaining a fragmented set of data transformation tools. This level of maintenance overhead could be too much to be handled by existing developers/integration practitioners, particularly if they need to focus on more-strategic and higher-value initiatives.

Understanding the value proposition of IBM Transformation Extender

ITX is a unified solution to a range of complex data transformation and integration needs

IBM Transformation Extender automates complex data transformation and validation across a range of messaging standards and data formats to enable application and B2B integrations, including those involving industry-specific data formats. ITX offers a design studio that enables modeling, development, and testing of data transformations and application integration maps via a "code-free" approach.

IBM Transformation Extender Advanced or ITXA builds on IBM's universal transformation strategy and is focused on delivering comprehensive data transformation and processing capabilities across a range of middleware products, integration scenarios, and deployment models. It offers a "many-to-many" approach to data transformation, enabling the execution of transformations, lookups, and data enrichments via a single pass of data through the core transformation engine. ITXA offers

comprehensive document management and processing functions, such as enveloping, de-enveloping, and transformation support, and data for reporting, error handling, and analytics.

ITX Design Studio provides a range of component applications and resources to simplify the development of event-driven A2A and B2B integrations. Developers and integration practitioners can use Design Studio to visualize both simple and complex data types. It also enables users to describe metadata and specify data transformation logic in the form of mapping rules

Map Editor, which is a constituent application of Design Studio, enables users to specify data transformation logic in the form of mapping rules. It offers a comprehensive library of pre-built functions that can be assembled via a "drag-and-drop" approach into spreadsheet-type/macro-based rules to execute a range of operations, including conditional testing, table lookups, mathematical functions, and data extraction.

ITX offers several adapters that provide access to a range of enterprise applications, databases, messaging systems, and other data sources. Users can customize adapter operations via adapter commands. The latest version of ITX offers Aspera Adapter, which allows maps to send and accept large data transfers. The Aspera Adapter uses FASP (Fast, Adaptive and Secure Protocol) data transport technology to move large files at high speeds over wide area networks (WANs).

The eXtreme Scale adapter connects ITX to an extreme scale server to enable users to access or set data, and execute structured query language (SQL) queries to retrieve data. IBM WebSphere eXtreme Scale is an elastic, scalable, in-memory data grid (IMDG) capable of supporting massive volumes of transaction processing with high efficiency and scalability. This combination can be used to improve application performance by scaling processing to concurrently serve greater numbers of users. Other key adapters offered with ITX include B2B Advanced Communication Storage Adapter, secure adapters, static file adapter, and Excel and PDF adapters. A recent release of ITX introduced several key features and capabilities, including REST APIs for calling ITX functions and support for importing Swagger API definitions and processing JSON documents.

The latest version of ITX has incorporated updates that allow developers/integration practitioners to add custom code/scripts for adding (and modifying) specific capabilities that are not included in the standard ITX offering. These changes drive greater development flexibility and offer developers/integration practitioners an opportunity to experiment and customize the solution to meet their specific data transformation and integration requirements.

Key features and capabilities

Simplified integration with IBM middleware products to support complex transformation and integration requirements

ITX supports integration with a range of IBM middleware products, including IBM Integration Bus (IIB), IBM Sterling B2B Integrator (B2Bi), IBM DataPower Gateway, and IBM WebSphere Application Server (WAS). ITXA supports ITX, Sterling B2Bi translation, and Extensible Stylesheet Language Transformations (XSLT) maps. In the case of integration scenarios where IIB is used for integration with applications using non-XML data formats, ITX can be used to transform data between a specific non-XML data format and XML-based objects. Several IBM customers use ITX with non-IBM application servers, web servers, and in-house developed applications.

Likewise, ITX can be used to augment EDI transformation capabilities of IIB to support application and B2B integrations involving complex data structures used in industry-specific messaging standards,

such as those used for supply chain integration, healthcare, and financial payments transactions. Data bindings play an important role in the integration of ITX with IIB. A data binding is a specific Java class that can be used to access data on message queues or Hypertext Transfer Protocol (HTTP) service calls and transformation of the same into an internally used XML format.

The integration of ITX with Sterling B2Bi offers a solution to a range of application and B2B integration issues. In this context, an ITX map can be executed within a Sterling B2Bi business process, and certain Sterling B2Bi services are also equipped to run ITX maps. The integration of the data transformation capabilities of ITX with the B2B integration capabilities of Sterling B2Bi allows map reuse and provides support for industry-specific messaging standards and data formats, and complex maps.

A good case in point is an integration scenario that requires "many sources-to-many targets" data transformation. Integration between ITX and Sterling B2Bi will allow a single process to address all data transformation requirements and there will be no need to execute multiple translation processes. This would be difficult to achieve with another combination of data transformation and B2B integration solutions.

ITX industry packs

ITX industry packs offer predefined templates, conversion maps, and in some specific cases, validation maps and tools to help ensure compliance to industry and regulatory mandates. Industry packs allow enterprises to achieve faster time to value by simplifying transformation between industry-specific messaging standards and data formats and those associated with enterprise applications. If there are any changes in an industry-specific standard, IBM updates the corresponding industry pack content to ensure adherence to the latest messaging standards and data formats.

The content of an industry pack can be imported to ITX design studio tools to allow enterprises to readily adapt to new industry-specific requirements. Industry packs are "add-ons" to ITX and can be purchased separately.

Comparing this with a scenario where an enterprise follows an ad hoc approach (custom-code development), the time and effort involved in updating in line with the latest industry or regulatory mandate can be several times greater than what could be achieved via an ITX industry pack. This is the main value of ITX industry packs, and several ITX customers mentioned industry packs as a value driver and an essential tool for compliance with changes in industry-specific messaging standards and data formats.

In addition, IBM offers ITX enterprise packs that provide pre-built capabilities, including technical connectors and adapters to simplify integration between ITX and key business applications, such as those offered by SAP.

Healthcare pack

The ITX healthcare pack provides executable template definitions for the ASC X12N standard for HIPAA, and incorporates the HIPAA 4010 addendum and support for HIPAA X12 5010-based standards. The healthcare pack enables compliance validation checking and the handling of claims attachments. It also includes support for key healthcare initiatives, including health insurance exchanges (HIX) and Post-Adjudicated Claim Data Reporting (PACDR) and several flat-file formats used for institutional claims and benefits coordination.

The ITX healthcare pack also supports Health Level-7 (HL7) and National Council for Prescription Drug Programs (NCPDP) standards. The combination of ITX/ITXA and the healthcare pack provides a unified approach for compliance with messaging standards and data formats specified in the HIPAA directive.

Financial payments pack

The ITX financial payments pack includes support for SWIFT, NACHA, SEPA, and ISO 20022 transactions. In addition to templates and maps, the pack includes capabilities for message validation, delivery monitoring, and prioritization of message storage and retrieval.

Supply chain EDI pack

The ITX supply chain EDI pack includes support for ASC X12; Electronic Data Interchange for Administration, Commerce, and Transport (UN/EDIFACT); and TRADACOMS EDI standards. It allows users to transform and exchange data across multiple country- and industry-specific data formats.

Flexible deployment options

IBM offers a range of deployment options for ITX, including deployment on software containers and various infrastructure-as-a-service (IaaS) provisions offered by IBM (IBM SoftLayer) and other vendors. The data transformation engine can be deployed in virtualized and private cloud environments using the IBM hypervisor edition.

IBM has embraced open source technologies to drive developer productivity. ITX content is available via GitHub and includes repositories on sample Docker files, installation scripts, automation scripts, and a range of adapters and APIs. CHEF, Puppet, and Ansible scripts are available to users for installation and updates.

Cloud deployment options allow the flexibility of increasing or decreasing infrastructure capacity for efficiently meeting the requirements of greater or lesser IT workloads. While the value proposition of cloud deployment models in terms of flexible infrastructure provisions offered along with high availability and disaster recovery is well understood, it is equally important to understand the economics of using data transformation services delivered via the cloud and greater predictability of costs.

In this context, data transformation services delivered via the cloud represent a good option for enterprises that need to support varying workloads with major peaks for a significant period. This mode of delivery of data transformation services via the cloud can be termed “transformation-as-a-service”. As an alternative to virtual machines (VMs), ITX supports deployment on software containers (Docker containers) to allow users to run ITX in portable and isolated virtual environments.

The latest version of ITX exposes key functions, such as envelope, de-envelope, transform, import and export, system status, and monitoring and reporting, via REST APIs. There is a provision for transformation services in hybrid cloud, where transformation-specific REST APIs can be exposed via the IBM Bluemix platform and IBM API management offering. For example, an ITX “transformation” function, or for that matter, an “integration map”, can be invoked by a REST API call to augment the data transformation capabilities of IIB or WebSphere Cast Iron Live, IBM’s integration platform-as-a-service (iPaaS) offering.

Because data transformation is usually a key sub-process in an end-to-end integration scenario, there will obviously be some qualms about moving even “somewhat” sensitive data to the cloud, and in some cases, non-compliance to regulatory and/or customer/partner data security and privacy mandates is a key concern. Likewise, data sovereignty can be a key consideration for a decision about moving sensitive data to the cloud.

IBM SoftLayer as an IaaS provision offers security at various levels, including physical and operational security, network security, and system and application-level security. IBM helps mitigate data sovereignty and privacy issues with delivery via regional data centers and mechanisms to restrict data flow beyond the host region. Moreover, IBM SoftLayer infrastructure layer is compliant with several data security and privacy, or regulatory mandates, such as payment card industry data security standard (PCI DSS); ISO 27001, 270017, and 27018; and HIPAA.

It is important to note that modern cloud service providers including IBM have invested large sums of money into end-to-end security, covering physical-level security and encryption of customer data through to automated patching and security intelligence. Unsurprisingly, not many large enterprises can replicate this environment. Many organizations will conclude that using the expertise of a third party is a more reliable approach than depending on in-house resources. However, this does not mean that public cloud is the default option. Enterprises can use a virtual private cloud (VPC) environment or a private cloud with shared infrastructure, while taking advantage of a specialist provider’s management and security capabilities. For ITX, IBM supports public, private, and hybrid cloud deployment models.

Depending on the center of gravity of the entire integration infrastructure and specific data security, privacy, and sovereignty requirements, enterprises can consider using ITX deployed on SoftLayer. Then there is the option of consuming data transformation services via the IBM Bluemix platform.

IBM is working toward offering rapid solutioning and expanding automated cloud deployment capabilities, as well as introducing a dedicated cloud-enabled transformation managed services offering or “transformation-as-a-service” delivered under a managed services model. It is quite clear that IBM has the capability to offer customized solutions to meet the specific requirements of enterprises interested in using ITX deployed in a cloud environment.

For enterprises using IBM B2B Cloud Services, “transformation-as-a-service” will allow greater flexibility in using data transformation and processing capabilities to support complex B2B process orchestrations. With IBM offering REST APIs exposing specific ITX functions, enterprises can develop integration flows extending rich data transformation capabilities to application and B2B integration scenarios.

Developing a business case for the adoption of ITX

ITX customers across several vertical industries and use cases have realized significant business value and strategic benefits

Ovum conducted independent interviews with several IBM customers to examine the business value and benefits realized via ITX adoption. There were cases where ITX played a key role in enabling IBM

customers to comply with regulatory mandates (HIPAA, for example), without having to invest in multiple compliance and validation/testing tools. In several organizations, ITX has played the role of a key enabler in the realization of completely new capabilities that are mission-critical in nature from the perspective of customer requirements.

Developer productivity tools and resources provided with ITX were frequently cited as a key benefit, and there were instances where ITX replaced existing (legacy) transformation tools as part of a systematic move toward a unified approach to data transformation. IBM enjoys a great level of customer loyalty for ITX and a significant share of its existing customer base has used ITX and its predecessors for several years.

The out-of-the-box capabilities delivered by ITX industry packs, especially with regard to compliance to specific regulatory mandates and support for mediation with proprietary/custom standards, were cited as key value drivers in some of Ovum's conversations with ITX users.

The following sections outline the value delivered by ITX across a range of use cases and for organizations spread across several vertical industries, based on observations and insights gathered from the ITX customer interviews.

US-based integrated managed care consortium

The IT organization of an integrated managed care consortium based in the US has used ITX or more specifically, the erstwhile WebSphere Transformation Extender (WTX) for about seven years. Its EDI gateway application is responsible for online transaction processing (OLTP) for EDI transactions according to the requirements specified in the HIPAA compliance mandate. Supported transactions include inbound transactions from external trading partners, and outbound transactions from regional application systems.

The IT organization used a combination of ITX and WebSphere Message Broker (WMB) to enable an enterprise-wide solution to comply with the provisions for standardized EDI transactions established by HIPAA. A good level of integration between WMB and ITX was cited as a key benefit, and ITX continues to play an important role in enabling compliance with the HIPAA mandate. This specific ITX customer has also benefited from the simplified code promotion and version control capabilities that help drive developer productivity.

Supplemental insurance coverage provider

A US-based provider of supplemental insurance coverage (including employee benefits) had used IIB for all of its data transformation needs until it embarked on a project involving processing of EDI files (as input) and transformation of records into a proprietary (legacy) copybook format. This was a customer-driven requirement, and the corresponding IT team (integration center of excellence) was expected to come up with a solution in three months.

One option was to custom code a message model to parse in-bound complex EDI files. However, this approach involved significant development effort and costs, and was more or less an ad hoc solution with significant maintenance overhead.

An EDI compliance check for HIPAA involves complex validation rules that are not readily supported by IIB. Owing to these limitations, the IT team ran a pilot project with ITX and HIPAA EDI Pack. With this combination, the IT team was able to develop an EDI processing application in less than three months, thereby meeting customer expectations.

Updates provided by IBM based on subsequent changes to the HIPAA directive can be easily imported and implemented. This saves a lot of time and effort at the user end. From an overall perspective, the company was able to support the complex EDI processing and HIPAA compliance requirements under significant time constraints without investing in a comprehensive B2B/EDI or file transfer solution, or undertaking significant custom-code development.

European asset management company

A leading European asset management company follows a single approach to data transformation using ITX. With a pan-European presence, the asset management company needs to transform and process a wide range of data formats, including proprietary formats, as part of its endeavor to provide investment solutions to a diversified customer base. The company has realized significant value via adoption of ITX, including:

- improved data quality in downstream systems realized via ITX validation capabilities
- simplified flat file-to-flat file conversion without any need to convert to XML
- faster development of maps, with the ability to develop a basic map in a day
- the ability to transform and process several thousands of messages with disparate data formats under significant time constraints

Moreover, the company involved only two developers/integration practitioners to handle all requirements related to data transformation and validation.

US-based healthcare company

A US-based healthcare company had a business requirement to support type 5 (code set) validation for inbound and outbound HIPAA data as part of a move from international classification of diseases (ICD)-9 to ICD-10 diagnosis and procedure codes. It used ITXA to comply with the requirements of HIPAA test level 1 to level 7, as specified by the workgroup for electronic data interchange (WEDI) strategic national implementation process (SNIP). This was required to support the company's contractual obligations to its customers, and the adoption of ITXA reduced the need for any additional development to comply with forthcoming changes in specifications/standards.

With adoption of ITXA, the company is well placed to realize significant TCO savings over the next four or five years. According to the company's estimates, the reduction in maintenance costs and cost savings associated with the retirement of a packaged compliance tool and a HIPAA compliance testing solution amounted to over \$130,000 on an annual basis. More specifically, the TCO for ITX (including software acquisition and maintenance costs) for the first year of implementation was reduced by about 75% in the second year, and amounted to about 30% of the TCO for the combination of the packaged compliance tool and a HIPAA testing solution.

Leading Canadian bank

A leading Canadian bank offering personal and commercial banking, wealth management, corporate, and investment banking services had a strategic objective of offering an integrated payments service to its enterprise customers, enabling them to send multiple payment types via a single transmission. The bank formed a project team to design and implement an integrated payment center functioning as an integration layer between its back-end and customer-facing mid-tier payment solutions.

The project team used ITX to develop a library of more than 30 standardized payment file specification formats, and create processes on IBM Financial Transaction Manager platform for aggregating transaction information into payment types and for direct routing of payments.

Its integrated payment center system is capable of executing transformation and processing within a few minutes, supporting enterprise customers that are sending files with thousands of payments per transmission. In this case, the development flexibility offered by ITX was cited as a key benefit.

Australian Customs and Border Protection Service

Australian Customs and Border Protection Service (ACBPS) implemented a new passenger data collection system that collects passenger name records (PNR) in near real time from different airlines and integrates this data with other data sets having unique attributes such as passenger travel history and visa details. These data sets are then fed into an analytics engine to identify travelers that could pose a security risk to the country.

ITX is used to transform and process data gathered from different sources to derive insights to indicate high-risk travelers. The ability to retrieve and analyze traveler information in near real time allows ACBPS to deploy security and law enforcement personnel before the entry or exit of a high-risk traveler. This is a good example of how ITX can be used to transform, process, and validate a huge volume of data to ultimately derive actionable insights.

How to develop a business case for ITX adoption

Considering that about 60% to 70% of the IT budget in a typical enterprise is used for “keeping the lights on”, the goal of meeting critical business requirements, with limited scope for the adoption of new IT solutions, seems difficult to achieve. As is the case with any strategic IT initiative, securing funding for a new data transformation solution is no easy task. In particular, IT will need to develop a strong business case as to how the adoption of a new data transformation solution could add business value.

It is therefore important that IT demonstrates (ideally via a proof-of-concept) how a comprehensive data transformation solution will help drive agility, be it in terms of meeting new customer requirements or in terms of complying with regulatory mandates. The corresponding business case should focus on factors/indicators directly related to the potential business value that could be realized via the adoption of a comprehensive data transformation solution. Indicators include:

- a comparison of the TCO for existing data transformation tools (and if applicable, custom-code development) and the new data transformation solution under consideration
- a reduction in development and maintenance costs
- the business risk associated with non-compliance to regulatory mandates
- the business benefits of greater agility in meeting new requirements
- better support for IT initiatives involving the consumption of transformation functions via APIs
- improvement in data quality
- a reduction in data processing time for critical business processes
- the ability to extract more value out of existing investments in integration infrastructure, enterprise applications, and information systems

- the ability to augment data transformation capabilities of application and B2B integration solutions to support complex orchestrations and new use cases.

Conclusion: Recommendations for IT leaders

IT leaders should focus on rationalizing existing data transformation infrastructure (and approaches) with the aim of achieving “fluidic transformation” capabilities that can readily meet the requirements of a wider range of use cases. A comprehensive data transformation solution will help improve data quality, allowing users to derive more granular and actionable insights. If a specific set of customers can only send data in a particular format, IT should be able to meet this requirement without having to start from scratch or apply “Band-Aids” to legacy transformation tools.

Then there is the proposition of maintaining the legacy transformation tools that are “islands” of data transformation infrastructure that frequently fail to deliver output in a single data format. Needless to say, IT would still need to maintain developers/integration practitioners with the skills required to keep these islands up and running.

Data transformation is a basic yet often neglected aspect in integration scenarios, and industry-specific and regulatory mandates continue to emerge as new challenges, with IT under pressure to deliver faster time to value. For this reason, it is important that IT leaders plan for a shift to a comprehensive data transformation solution capable of meeting business-critical requirements.

A proof-of-concept (PoC) evaluation should be conducted to check if the data transformation solution under consideration is capable of meeting the specific requirements. Moreover, it is also important that the data transformation solution supports integration with existing middleware platforms to enable the extension of rich transformation capabilities to a range of integration flows. This level of integration will allow the augmentation of transformation and mediation capabilities of existing middleware platforms, such as an ESB or a B2B integration solution. This can be further simplified by exposing the transformation functions via APIs. “Transformation-as-a-service”, or in simple terms, data transformation services delivered via the cloud, can be considered from the perspective of potential cost savings and greater infrastructure flexibility.

Appendix

Methodology

This white paper includes observations and insights gathered from interviews conducted with IBM Transformation Extender customers in an independent manner. The views expressed in this white paper are based on Ovum's ongoing research into the global integration and middleware market, which takes into account the opinions of industry consortiums, integration practitioners and developers, and enterprise and solution architects.

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Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum's consulting team may be able to help you. For more information about Ovum's consulting capabilities, please contact us directly at consulting@ovum.com.

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