

At the heart of digital is data, and the digital-first company needs to manage the data value chain that includes exchange with internal and external partners to manage material and digital offerings.

The Future of Data Exchange: Innovation for Continuity

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Introduction

We are at a time in history in IT where there is a pivot in the marketplace, where enterprises are not only consumers of technology but also producers, integrators, and distributors of technology to create new value in their own industries and marketplaces.

The growth of the digital economy is part of what is causing this pivot. By 2023, over half of all global GDP — that is, over half of the economy — will be driven by digital-first companies highly confident in creating digital experiences, offerings, and business operations. At the heart of digital is data, and the digital-first company needs to manage the data value chain that includes exchange with internal and external partners to manage material and digital offerings and internally between people and systems in the enterprise.

IDC estimates that 43 zettabytes (ZB) of data were created in 2019, and only 12% of that volume was original data. This means that 38ZB of data were created through replication and distribution. The enterprise accounts for 52% of the total Datasphere, so we estimate that about 20ZB of enterprise data are being replicated, exchanged, and distributed annually. The volume of data being exchanged is extremely high, and the velocity is also increasing, with real-time data making up approximately 19% of the total Datasphere. The diversity of data types and formats is very high in the digital economy, where a 2019 IDC survey of 300 data integration software users indicated integration of up to 10 different data types across 10 different data management technologies in the data value chain. This diversity is increasing the complexity of data environments, making it more difficult for organizations to effectively exchange, integrate, and manage data.

Organizations competing in the digital economy require technology that can handle this new reality of data volume, velocity, and variety in dynamic and distributed environments. No organization goes to market in the new digital economy without a need to exchange data with external entities and across internal boundaries. Capturing the customer experience requires capturing data, and the same is true for the partner experience. Doing business in 2020 also requires people to work outside of the office, requiring the ability to securely exchange large data files with colleagues, something that email and FTP alone cannot support.

AT A GLANCE

KEY STATS

- » The enterprise accounts for 52% of the total Datasphere, so IDC estimates that about 20 zettabytes of enterprise data are being replicated, exchanged, and distributed annually.
- » Real-time data makes up approximately 19% of the total Datasphere.

IDC defines data exchange software as an aggregation of software from two functional markets: business-to-business integration (B2Bi) middleware and managed file transfer (MFT) software. B2Bi middleware consists of software and services used to receive, route, and convert standards-based structured inter-enterprise files and messages related to transactions. B2Bi middleware is typically aligned with electronic data interchange (EDI) standards used across multiple industries, applied to use cases such as supply chain, procure to pay, order to cash, financial services, and payments. MFT software provides secure, guaranteed high-speed delivery of a file over a network for content distribution and information sharing. The file transfer can be from one enterprise to another or within an enterprise, across datacenters, or between the desktops of remote workers.

EDI and file transfer have been around for decades. The digital economy has driven new innovations in these software markets that enable organizations to create new value and remain competitive in their own industries and marketplaces. Innovations include moving MFT and EDI technologies to the cloud, providing open APIs to extend integration outside and inside of organizations, and the availability of managed services to help organizations leverage economies of scale and allow for a shift in focus to value-add products, activities, and solutions.

The global pandemic experienced in late 2019 into 2020 has exposed the fragility of global supply chains and the limitations of our technologies. Finding an alternative supplier because established manufacturing and transportation have been disrupted includes onboarding new technical connections, data formats, data types, and mapping to internal systems. The pandemic also impacted the pace of change. Past processes and activities once described as "unable to change overnight" have indeed changed overnight, requiring organizations to respond faster than ever to maintain business continuity amid disruption.

Resiliency in the Data Value Chain

In the digital economy, no business is an island. Each business relies on a data value chain, which is representative of data movement, from creation and capture to integration, curation, and consumption. Data in the data value chain represents all data that an organization leverages to conduct business: from orders to invoices, from claims to payments, from analytics to insight. The data value chain requires services provided by data exchange technologies — either directly or indirectly. Data exchange is one of those technologies that nobody in the business really sees, until it stops working. Orders stop being fulfilled, invoices stop being sent, payments stop being made, electronic funds transfers stop, governments stop getting tax and employment data, and digital media distribution stops, among many other uses of data exchange.

What causes data exchange solutions to stop working?

- » **Dynamic digital data.** If there is one constant, it is change. Digital economy data is dynamic, and it will change; formats, schema, and content will drift from the original specifications and cause transformations to break, APIs to stop working, and transactions to fail.
- » **Partner changes.** Whether because of a supply chain disruption or a contract termination or renewal, existing connections need to be changed. Changes may require modification of data exchange protocols, documents, formats, agreements, and technical connections. Changes may be known of well in advance, but others may be introduced quickly, requiring rapid response to keep the data value chain operational.

- » **Unknown exceptions due to a lack of visibility.** When a tree falls in the forest and nobody is there to see it, does it still make a sound? Lack of visibility into where data is within exchanges between and behind firewalls could mean that nobody sees the solution stop working, but the consequences will be felt — maybe not immediately but long after the event, which could cause multiple other issues in upstream and downstream systems and business processes.
- » **Certificate expiration.** Secure data exchange typically uses signed secure certificates that expire, usually on an annual basis. If the certificate is not renewed in time and exchanged with partners, the connection breaks and the data stops flowing. Automation and notification can help in the process of certificate renewal, but unfortunately expired certificates are still a reality in business-to-business data exchange.
- » **Access limited by security.** Tight security controls can prohibit access for administrators located outside of the corporate network to manage and ensure operations. This is a new reality in a world where many are now working remotely.

Innovations in data exchange solutions can help organizations remain resilient and manage against constant change through better monitoring of data drift, including use of machine learning and artificial intelligence to detect and predict changes so that they can be ahead of failures. Automation and self-service capabilities are being applied to partner onboarding and mapping activities to reduce time to operations for new partners and make partners accountable. Visibility intelligence is helping organizations see where processes are operational and where they are failing, including the ability to predict system problems before they occur. Innovations in data exchange managed services are focused on go-to-market differentiations in that these innovations are coming from software companies, not services companies.

Innovations in data exchange solutions operating in the digital economy can help organizations embrace constant change through better monitoring of data drift, including use of machine learning and artificial intelligence to detect and predict changes so that they can be ahead of failures.

Trends

The world has changed significantly in a very short time, demanding flexibility, digital connectivity, accessibility, and visibility without compromising security, all in support of business continuity. Business continuity aside, these characteristics are reflective of digital transformation and the need to compete in the digital economy. The following are data exchange market trends that are acting to help meet digital demands:

- » **Move to the cloud.** Data exchange solutions have traditionally been on-premises because the solutions involved moving data from one server to another over secured public or private networks. Now those servers are more likely virtual machines and/or containers that could be running anywhere, most likely in hybrid cloud and on-premises environments. Business applications are often the sender or receiver of data exchanges, and with many business applications having migrated to the cloud, it no longer makes sense to have data exchanges initiate or terminate only in on-premises environments. The move to the cloud improves connectivity and expands the availability of multiple alternative methods for sending files and allowing for more universal but secure access for

system administrators, users, and partners, regardless of where they are physically located. Cloud helps an organization share the service-level agreement (SLA) burden with the cloud provider as business continuity plans are executed in demanding times. IDC surveys focused on the impacts of COVID-19 on IT have shown that IT practitioners expect cloud computing and data security to be in the top 5 investments that will benefit the most from increased demand as organizations and organizational working models change.

- » **Embrace of APIs for data exchange.** Early on in the introduction of open APIs, there was tension between vendors of data exchange software and developers in IT preferring to use APIs. Open APIs could not provide the same qualities of service that MFT or EDI software could, but now that APIs and API management software have matured, APIs can be used to extend MFT and EDI software to fill gaps in data exchange capabilities. The rapid and dynamic changes that have been brought on by the pandemic are an example of how APIs can be used for more near-real-time data flows and dynamically moved to different locations without significant reconfiguration.
- » **External to internal data value chain integration.** Data exchange doesn't start or stop at the corporate network firewall. The beginning of a data exchange is likely the result of a business event occurring in a business application (a new purchase order, an invoice, a payment), or it could be a need to send a large data set or file to a recipient for a business purpose. The destination is likely a receiving business process or application (procurement, accounts payable, receiving) or processing of the data files sent. Data exchange software vendors that have traditionally focused on the transmission of data externally from firewall to firewall have invested in internal integration capabilities to take more ownership of the end-to-end flow. A benefit for buying organizations is not just in contracting but also in reducing risks associated with having multiple breakpoints across different product sets in the data value chain.
- » **Move to managed services.** The volume, velocity, and variety of data and data management technologies in the digital economy are making data exchange more difficult, but the digital economy and the new realities of physical restrictions are making electronic exchange of data mandatory. IDC's *Worldwide Global Datasphere Forecast, 2020–2024* has predicted an acceleration of data creation through 2020 and 2021 because of COVID-19. Managed services being offered by software vendors in the data exchange market provide technology expertise that can be shared across multiple tenants, taking advantage of resource pools and economies of scale to make participating in data exchange more cost effective. Cloud-resident software and the service provider's commitment to service levels remove the burden of uptime on internal IT departments. However, managed services cannot take away an organization's need for visibility into the state of data exchanges and enable self-service for IT and business users who need access to platform functionality.
- » **Automation.** The scale of data volume, variety, and distribution combined with the dynamic nature of business and IT environments in the digital economy demands automation of DevOps and DataOps in the context of data exchange. Onboarding, mapping, testing, and implementation of data exchange solutions need to be iterative and able to react to

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changes as they occur. Data being exchanged needs to be monitored for drift and quality issues as it is flowing, not after it has landed in a target or, worse, caused an exception that breaks the data value chain. Inefficiencies of manual processes would result in long implementation timelines and untimely if not ineffective responses to exceptions. Artificial intelligence is making its way into data exchange solutions to help automate onboarding, mapping, and testing activities while being trained to identify data drift for proactive, not reactive, systems management.

Considering Axway

Axway is an enterprise integration company that has been around for over 20 years, working behind the scenes to digitally transform enterprises of all sizes — more than 11,000 in 100 countries. Axway has years of experience as it was a pioneer in managed file transfer, B2B integration, API management, and content services.

The Axway enterprise integration platform AMPLIFY enables companies to combine existing data and processes with new capabilities to enrich customer experience, accelerate continuous innovation, and simplify security and governance. AMPLIFY enables modernization of integration through support of hybrid deployment as organizations move to the cloud, enabling transformation of existing processes without modifying legacy systems, and securely extend data using third-party data sources and processes to introduce new customer experiences.

Axway claims it can speed up innovation by reducing the time to integrate by up to 87%.

Organizations today have different integration needs for different use cases. AMPLIFY provides a single place for centralizing, managing, and securing various integration patterns to meet those different requirements.

- » **API Management:** Build, manage, analyze, and extend APIs
- » **Managed File Transfer:** Design and manage critical high-volume data flows across multiple enterprises and platforms
- » **B2B Integration:** Orchestrate business interactions
- » **Content Services:** Human-centric integration patterns (collaboration, sharing, ad hoc)

Axway provides customers with deployment options and flexibility to meet business needs: on-premises, cloud, and/or managed cloud services, including hybrid combinations.

Research has shown that the number 1 delay in digital transformation projects is integration complexity. Axway helps reduce this complexity and provides faster integration for faster innovation. Axway customers are using AMPLIFY to create new customer experiences across ecosystems and innovate with new business models while ensuring data security and governance.

Challenges

Data exchange has been happening for decades, and as a result, this market can be stereotyped as "legacy." Just because data exchange isn't new doesn't mean it isn't important or hasn't changed over the years. Yes, EDI is still a workhorse for business-to-business integrations, and MFT is being used to transfer bigger and bigger data every day. However, APIs are increasingly being used, and EDI is sporting modern formats and flowing more often, while MFT is getting faster and

smarter to ensure integrity of transfers. All data exchange methods have greatly improved security to protect data and the individuals represented in the data. Vendors of data exchange software and services, including Axway, need to clearly articulate and demonstrate all that is new and different about data exchange in the era of the digital economy to enable new business operational models to emerge out of a necessity for safety and continuity instead of creating more chaos in times of uncertainty.

Conclusion

Digital transformation innovations in data exchange will be essential for any successful business in the post-pandemic world. To remain resilient and competitive, organizations are more likely to embrace cloud, dynamic integration solutions, managed services, and automation and the technology that supports agile resilient supply chains and business continuity plans. Spending during the recovery period will be under scrutiny, but Axway has the opportunity to demonstrate the value proposition of data exchange and, specifically, AMPLIFY innovations that will enable organizations to succeed as the economy recovers.

About the Analyst



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Stewart Bond is Research Director of IDC's Data Integration and Intelligence Software service. Mr. Bond's core research coverage includes watching emerging trends that are shaping and changing data movement, ingestion, transformation, mastering, cleansing, and consumption in the era of digital transformation.

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