

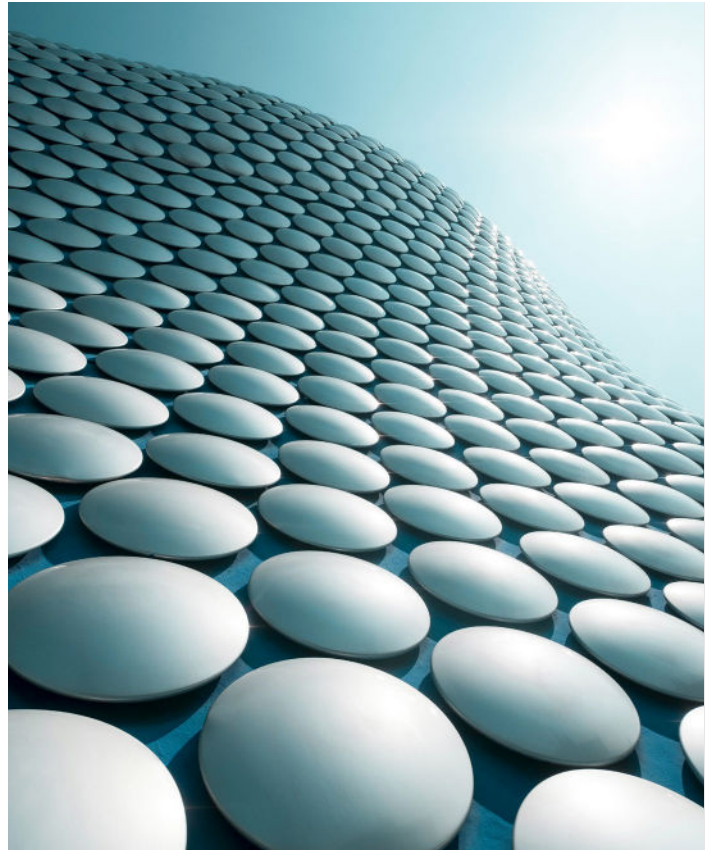
# Integration Your Way

Modern Data Integration:  
Importance, Challenges, and  
Identifying the Right Solution



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## Understanding the Importance of Data and Application Integration in the Modern Era

In today's dynamic and competitive business environment, access to reliable and high-quality data is critical for success. Data, often called the lifeblood of modern businesses, is central to everything from informing decision-making and strategic planning to enhancing operational efficiency. The ability to quickly retrieve, analyze, and leverage insights from data can be the difference between staying ahead of the curve and falling behind.

While the importance of data is clear, acquiring useful data is not always a straightforward task. Almost every department within a business wants access to data, but most available solutions require extensive IT resources. Issues like application access, data formatting inconsistencies, and delays in data delivery frequently hinder the ability to maximize data to its fullest potential.

Finding a comprehensive solution that addresses diverse data needs across different departments can seem like a daunting challenge, but by carefully considering your data goals, you can lessen the time spent hunting for a solution. The most important part of data and application integration projects is to look beyond short-term problem-solving. To do this, consider the following three areas:

- **Data users:** Everyone wants to be able to look at data to make decisions or validate assumptions. When done correctly, integration should facilitate timely, accurate, and secure data access to all data consumers – regardless of technical skill level.
- **Data accessibility:** According to *Gartner*, organizations will continue to shift to the cloud, but 50% of workloads remain on-premises. This is usually due to regulatory, compliance, or regional restrictions. Data must be accessible from any environment, cloud, on-premises, or across multiple clouds.
- **Data usability:** This is a meaty topic that should incorporate a range of considerations. Data serves no purpose if it's not usable; this includes safeguarding sensitive data fields and allowing users to transform data to benefit any given use case.

## Driving Success with Effective Integration

High-performing organizations understand the need to embrace technology if they want to compete and grow in the digital+ economy. According to *Gartner*, companies now have an average of more than 900 applications in their estate, which creates a staggering amount of data to manage. Integrating data from various sources and applications helps improve operations and provides businesses with a comprehensive understanding of their operational performance, customer data, and market dynamics.

Numerous integration approaches serve specific purposes within organizations, enabling connectivity, collaboration, and data-driven decision-making. The primary goal remains consistent: to attain accurate, usable data for driving business growth and innovation. The key distinction between application and data integration lies in automation. For instance, while gathering data from diverse sources into a spreadsheet is common, this method is inefficient and prone to manual errors and versioning inconsistencies.

Effective integration utilizes predefined processes to automate data workflows, reducing manual effort and ensuring predictability. While this automation is beneficial, disparities in data structures across systems can compromise data quality without appropriate normalization. Employing transformation tools to address these structural disparities is essential for maintaining data quality and integrity across integrated systems.

Navigating integration challenges may appear daunting, and numerous companies claim to provide quick fixes for all integration issues. Rather than embarking on a quest for a mythical one-click integration solution, begin by assessing and documenting the business benefits needed from integration projects.



## Successful Integration Leads to Better Business Outcomes

Data integration is a cornerstone for achieving better business outcomes by harmonizing disparate data sources, enabling organizations to glean actionable insights, improve decision-making processes, and enhance operational efficiency. By consolidating data from various systems and applications into a unified view, businesses can gain a comprehensive understanding of their operations, customers, and market dynamics.

This integrated approach fosters more accurate reporting, forecasting, and analysis, empowering stakeholders to make informed decisions based on real-time information. Furthermore, data integration facilitates automation, streamlining workflows and reducing manual errors, optimizing resource allocations and driving cost savings. Ultimately, by harnessing the power of data integration, organizations can unlock new opportunities for innovation, growth, and competitive advantage in today's data-driven landscape. Some business use cases and outcomes include:

Business Case	Integration Scenario	Business Outcome
Employee Benefit Administration	Employee health insurance <b>benefit enrollment</b> and maintenance data exchange to employee health plans.	<b>Automate benefit elections transmissions</b> and optimize eligibility verification.
Healthcare Claims Processing	Patient <b>claim information exchange</b> between healthcare insurance and healthcare provider or clearing house.	<b>Expedite healthcare claims processing</b> and stay HIPAA compliant.
Financial Planning & Analysis	<b>Budgeting</b> and <b>forecasting</b> based on accounting journals and general ledger.	<b>Achieve predictive insights</b> based on a more accurate balance sheet and income statement (P&L)
Sales Reporting & Analysis	Systematic record of <b>sales activities</b> over a particular period. Sales operations, sales strategy, and sales analysis. Sales volume, revenue, and acquisition costs	<b>Leverage up-to-date insights</b> into sales performance, without manually wrangling or preparing data.
360 Data (Customer, Patient, Marketing, Product)	Creation of a <b>master record</b> by aggregating, cleansing and enriching all data from across the organization.	<b>Combine</b> disparate data sources <b>into a single view</b> to eliminate data gaps.
Supply Chain Analysis	Process of <b>evaluating every stage</b> of a supply chain including, suppliers, manufacturing, distribution, and customer data.	<b>Enable rolling forecasts</b> and lean manufacturing processes through automated data pipelines.
Trend Analysis	Technique used to examine and <b>predict movements</b> of an item based on current and historical data.	<b>Anticipate potential market changes</b> and make adjustments to avoid negative business impacts.

## Integration Excellence for the Entire Business

At the highest level, a successful integration strategy enables the business to:

- **Improve productivity:** By automating data synchronization and eliminating manual processes, integration improves productivity and efficiency. Employees can access the data they need, reducing time spent on data entry, and allowing them to focus on higher-value tasks.
- **Streamline operations:** Integration eliminates data silos and enables a seamless data flow between applications and systems. This data flow streamlines operations, reduces errors, and improves process efficiency. For example, integrating customer relationship management (CRM) and enterprise resources planning (ERP) systems can optimize order management and inventory control, leading to cost savings and improved customer satisfaction.
- **Enhance customer experiences:** Integrated data provides a holistic view of customer touchpoints, which can help drive improvements in customer satisfaction, loyalty, retention, and ultimately, business growth.
- **Gain competitive advantage:** By leveraging integrated data and applications, businesses can respond quickly to market changes, adapt to customer needs, and innovate faster than their competitors.

## What's Involved in Integrations

While data and application integrations offer numerous benefits, they also pose challenges. Integrations can range from simple tasks, such as using an API to pull information into a database, to complex workflows involving multiple steps.

Integration considerations include:

- **Data quality and consistency:** Integrating data from various sources often involves addressing inconsistencies, duplicates, and other quality issues. Integration platforms can aid in transforming data and enforcing quality processes to prevent inaccuracies.
- **Compatibility and interoperability:** Integrating applications from different vendors or technologies may introduce compatibility issues with data formats, APIs, or protocols. Middleware or additional development efforts may be necessary to ensure seamless communication.
- **Scalability and flexibility:** As businesses grow and evolve, their data and application integration needs may change. Integrations should be scalable and flexible enough to accommodate future expansion and adapt to new technologies or business requirements.
- **Change management:** Integration initiatives often necessitate process, workflow, and endpoint changes. Effective integration technology should facilitate isolation and modification of integrations to adapt to evolving business needs, avoiding the pitfalls of unwieldy point-to-point scripts.

# aeriz

**Aeriz**, a multi-state cultivator and cannabis product manufacturer, faced a challenge managing inventory and demand forecasting due to the requirement to use a state-mandated system that offered limited reporting capabilities and only provided batch data processing. With the implementation of the Actian Data Platform, Aeriz not only gained real-time access to crucial data that had been previously inaccessible but also achieved significant efficiency improvements.

Utilizing the integration and data warehouse capabilities provided by the Actian Data platform allowed Aeriz to save 120 hours per month previously spent on data preparation. Utilizing the Actian platform also reduced the errors associated with manual data entry and the use of numerous spreadsheets. Actian's intervention not only addressed data accessibility issues but also brought about substantial time and accuracy enhancements in operational processes.

When assessing integration solutions, prioritize compatibility with diverse data sources, applications, APIs, and formats. Ensure the solution can handle complex requirements and future needs, including data from edge devices, cloud applications, and emerging technologies like artificial intelligence (AI) and machine learning (ML).

## Providing Data Value for All Skill Levels

Utilizing data effectively is crucial for making informed decisions, promoting innovation, and achieving business objectives. However, simply collecting data is of little use; data must be easily accessible to the entire organization. Accessibility to data plays a pivotal role in enabling employees to make informed choices, drive innovation, and achieve their objectives.

One of the many benefits of data accessibility is promoting collaboration and cross-functional teamwork. When employees from different departments have access to the same data, it breaks down barriers and silos that often hinder communication and collaboration. Marketing teams can align their strategies with sales by analyzing customer data, while operations teams can optimize processes by examining production and supply chain data. This seamless flow of information fosters collaboration and empowers employees to make data-driven decisions that benefit the entire organization.

This combination of experts allows businesses to identify patterns, trends, and opportunities that might otherwise go unnoticed. However, it's also important to note the rising trend of citizen integrators - employees needing swift access and manipulation of data without IT intervention. Prioritizing flexibility is essential when choosing technologies for data and application integration.

While data is crucial for everyone, specific roles within an organization have more demanding data needs:



**Data Consumers:** Individuals or executives that rely on data for various purposes. They need timely, complete, and accurate data for decision making.



**Data and Business Analysts:** Both roles are responsible for uncovering the data needed for decisions and ensuring that the value of data is actionable. While similar in job role, the technical capabilities can vary.



**Data Scientists:** They make up the exploration teams. Using machine learning and large data sets, data scientists look for patterns and new opportunities in the data.



**Programmers:** Programmers design databases, write code for data processing and analysis, create visualizations, and ensure data security throughout its lifecycle. Their tasks include collection, storage, retrieval, and maintenance based on project requirements and organizational needs.



**Data Engineers:** This role is the conductor. It includes constructing and maintaining the architecture for data generation, processing, and analysis. Their expertise ensures the efficient flow of high-quality data, enabling organizations to derive valuable insights and make informed decisions.

## Integration Technology Types and Use Cases

Integration Type	Benefits	Challenges	Common Use Cases
<p><b>No-code Integration</b></p> <p>This approach allows business users to integrate data from different sources, such as databases, applications, and cloud services, without relying on IT or development teams.</p>	<ul style="list-style-type: none"> <li>- User-friendly for non-technical users</li> <li>- Rapid deployment</li> <li>- More cost-effective</li> </ul>	<ul style="list-style-type: none"> <li>- Limited capabilities</li> <li>- Only able to handle simple integration scenarios</li> <li>- Generally does not support transformations</li> <li>- Limited customizations</li> </ul>	<ul style="list-style-type: none"> <li>- Business intelligence and reporting</li> <li>- Basic workflow automation</li> </ul>
<p><b>Low-code Integration</b></p> <p>Provides a visual environment for building integration flows with minimal hand-coding. These platforms aim to streamline the integration process by enabling developers to connect systems and applications using visual interfaces and pre-built components.</p>	<ul style="list-style-type: none"> <li>- Visual development environments</li> <li>- Drag and drop functionality</li> <li>- Pre-built connectors</li> <li>- Standardized components</li> </ul>	<ul style="list-style-type: none"> <li>- Limited ability to handle complex or custom integration scenarios</li> <li>- Rigid component structures can lead to performance impacts</li> </ul>	<ul style="list-style-type: none"> <li>- Application integration to improve automated data flow</li> <li>- API integration to improve interoperability</li> <li>- ETL/ELT for data warehouse</li> </ul>
<p><b>Pro-code, such as Integration Platform as a Service (iPaaS)</b></p> <p>Facilitates the integration of applications, data, and processes across an organization using a combination of pre-built connectors, data mapping tools, and workflow design. These technologies support cloud-based, on-premises, and hybrid data and application integration.</p>	<ul style="list-style-type: none"> <li>- Offers connectivity between any application, database, or system</li> <li>- Robust data transformation to transform data formats and structures</li> <li>- Data quality capabilities</li> <li>- Workflow orchestration to create and manage data flow between endpoints</li> <li>- Monitoring and management for easier troubleshooting</li> <li>- Customizable</li> <li>- Highly scalable to expand and modify integration architecture</li> <li>- Extremely flexible, providing an agile integration framework</li> </ul>	<ul style="list-style-type: none"> <li>- Requires a high level of technical knowledge</li> <li>- While it offers integration frameworks, custom coding may still be needed</li> <li>- Careful consideration for data governance and compliance needs</li> </ul>	<ul style="list-style-type: none"> <li>- Hybrid cloud integration</li> <li>- Legacy system modernization and cloud migration</li> <li>- E-commerce integration to support backend systems such as customer relationship management (CRM) and enterprise resource planning (ERP) systems</li> <li>- Supply chain integration</li> <li>- Real-time data and event processing</li> </ul>

## Considering a Data Platform

A data platform is a comprehensive solution that can enable real-time data integration, transformation, and processing for operational and analytical purposes. A data platform can integrate data from various sources, provide storage infrastructure, enable governance and security, and offer high-performance data processing capabilities. Organizations can address integration challenges by choosing a data platform to manage connectivity and data exchange between different systems and applications while also gaining the benefits of efficient data processing and storage.

This approach ensures scalability and flexibility to handle growing data volumes, maintain data quality, and guarantee consistency and accuracy in data stored in databases and warehouses. Consolidating data management onto a single platform can result in cost savings and streamlined operations, reducing reliance on expensive technical teams. Furthermore, data platforms can support hybrid and multi-cloud environments, allowing data accessibility across distributed architectures and future-proofing against evolving technology trends.

In addition, data platforms often prioritize ease of use, which allows both technical and business users to access and transform data for their individual use cases. Access controls provide added governance, safeguarding data from unintended use and minimizing compliance risk.

### Benefits of Making Data Easy to Access Across the Organization



By democratizing data access and breaking down information silos, businesses can unlock the full potential of their data assets and empower employees to make data-driven decisions. All employees can make decisions based on accurate, up-to-date information when they have access to the necessary data. Some examples include:

- **Increased revenue:** Sales can access customer data and purchase history to personalize sales pitches and increase customer conversion rates.
- **Fostering a culture of collaboration:** Employees can easily share insights, analysis, and findings with colleagues, promoting cross-functional collaboration. Teams from different departments can work together to solve problems and achieve business goals. For example, a marketing team can share customer data with the product development team to inform enhancements or new features.
- **Pattern identification:** Business leaders gain the ability to identify patterns, trends, and opportunities that might otherwise go unnoticed. Leveraging data analytics tools and technologies, they can analyze large volumes of data to uncover insights and make data-driven predictions. For example, a financial institution can analyze transactional data to identify patterns of fraudulent activity and take proactive measures to prevent financial losses.



## The Power of Hybrid Data Integration

The cloud journey is not a one-size-fits-all endeavor but a dynamic and ongoing process marked by continuous evolution. It necessitates ongoing efforts in training and upskilling teams to harness the full potential of cloud capabilities, ultimately leading to a more agile, scalable, and resilient business ecosystem. For these reasons, every company's journey to the cloud is different and never an overnight task.

Hybrid data management can facilitate the cloud journey by combining on-premises infrastructure with cloud-based solutions. It allows businesses to seamlessly integrate and manage their data across multiple environments, leveraging the benefits of both on-premises and cloud technologies. As digital transformations continue, many companies also discover that not all data is well suited for the cloud. With hybrid capabilities, companies have the flexibility to tailor their data needs for today and the future.

Businesses can achieve greater flexibility, scalability, and cost efficiency by choosing hybrid data management. With the ability to seamlessly integrate on-premises infrastructure with the cloud, organizations can use unlimited storage capacities and unparalleled processing power. This hybrid approach streamlines data management processes and enables faster decision-making and innovation. Hybrid data management also ensures data security and compliance by offering robust encryption methods and access controls. Organizations can have peace of mind knowing data is protected, whether on-premises or in the cloud.

### Caution – Curves Ahead



While hybrid data management offers numerous benefits, it also presents unique challenges that businesses must address. Managing data across multiple environments requires careful planning, coordination, and integration, including ensuring data consistency and synchronization between on-premises and cloud systems. Data may be stored and processed in different formats and locations, so a unified data platform is needed to maintain a single source of truth.

## Top Benefits of Hybrid Data Integration

- **Scalability:** By combining on-premises and cloud infrastructures, businesses can scale their data management capabilities according to their changing needs. They can quickly provision additional cloud resources to handle peak workloads or leverage on-premises infrastructure for low-latency processing.
- **Cost-efficiency:** With hybrid data management, businesses can optimize costs by choosing the appropriate infrastructure for different data types and workloads.
- **Data security and compliance:** Hybrid data management ensures security and compliance by offering robust encryption methods, access controls, and data governance capabilities. It allows businesses to protect sensitive data while meeting regulatory requirements, regardless of where the data resides.
- **Faster decision-making and innovation:** By leveraging the power of on-premises and cloud-based solutions, businesses can process and analyze large volumes of data faster, enabling real-time decision-making and innovation.

To realize these benefits and achieve successful hybrid data management, data management strategies should include several key components that work together to ensure seamless data integration, security, and performance.

- **Data integration:** Implement robust data integration processes to ensure data consistency and synchronization between on-premises and cloud systems. This should include data integration tools, APIs, or data replication technologies.
- **Data security:** Hybrid data management requires strong measures to protect data from unauthorized access, breaches, and cyber threats. This may involve implementing encryption, access controls, multi-factor authentication, and monitoring tools.
- **Infrastructure optimization:** Businesses must optimize their on-premises and cloud infrastructure to ensure scalability, performance, and cost-efficiency. Considerations include cloud-native services, optimizing data storage and processing capabilities, and implementing hybrid cloud architectures.

## Why Actian for Unified Data

As data volumes rise, businesses face challenges in managing the load, leading to slower processing times and delays in accessing vital information. Traditional integration approaches typically depend on batch processing, delaying data updates for analysis. Given dynamic market conditions, real-time data access is essential to sustain a competitive edge.

A unified platform like the Actian Data Platform provides far more flexibility and speed for data access and data-intensive applications. Unlike traditional methods, businesses can quickly scale data integration efforts as needs change and grow without investing in expensive infrastructure or facing the limitations of on-premises solutions. Businesses can handle large volumes of data without experiencing performance issues or delays.

Another benefit of a unified data platform is its cost-effectiveness. Data platforms utilize cloud capabilities, providing a pay-as-you-go pricing model and eliminating unnecessary costs. It also eliminates the expenses of managing and maintaining hardware, reducing operational expenses and allowing resources to focus on projects with more significant business impact.

Security and data governance are crucial considerations in data integration. A data platform offers robust security measures, including encryption, access controls, and backups. These safeguards ensure data confidentiality, integrity, and availability, protecting businesses from potential breaches and unauthorized access. Platform users can define data policies, monitor data quality, and enforce compliance with regulatory requirements.



**Academy Bank** successfully leveraged the Actian Data Platform to enhance its data integration capabilities. By securely exposing existing integrations to cloud applications and third-party vendors, the platform enabled real-time updates to Academy Bank's core banking system.

Replacing many of its Virtual Private Network (VPN) integrations with Application Programming Interfaces (APIs) Academy Bank saved over four hours of daily manual data entry. The Actian solution also facilitated the development of new online services, ultimately enhancing the customer experience.

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*"Actian is a critical part of our infrastructure. Without it, we couldn't do the processing and automation needed for our banking operations."*

**- Barry Worthy, Manager of Enterprise Architecture at Academy Bank**

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## Conclusion: Embrace Integration for Future Success

Unlocking the full potential of information requires addressing the intricacies of data acquisition, integration, and automation. Users of all skill levels must have access to data, regardless of the environment, and it must be able to transform data to suit any use case. A flexible data platform helps organizations remove barriers to effective data management, allowing them to gain a holistic view of their business, create new efficiencies, and accelerate innovation.

Consolidating data management using a single, unified data platform provides the foundation for companies of all sizes to maximize the benefits of high-quality data. Choosing a data platform for integration provides organizations with a strategic asset that simplifies data utilization and empowers users to leverage data to create a competitive advantage.

## About Actian

Actian makes data easy. We deliver cloud, hybrid cloud, and on-premises data solutions that simplify how people connect, manage, and analyze data. We transform business by enabling customers to make confident, data-driven decisions that accelerate their organization's growth. Our data platform integrates seamlessly, performs reliably, and delivers at industry-leading speeds. Learn more about Actian, a division of HCLSoftware: [www.actian.com](https://www.actian.com).

