

DIGITAL TRANSFORMATION IN THE RETAIL INDUSTRY: EMPOWERING IT TO DELIVER STRATEGIC VALUE TO BUSINESS

Technical White Paper



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Executive Summary

Digital transformation of the retail industry is well under way. Thanks to digital leaders like Amazon and Apple, retail customers have become more technologically savvy than ever before. Customers today expect seamless, personalized, and enjoyable digital experiences spanning all touchpoints along the customer journey — and their expectations are increasing every day. Senior management and the line of business are therefore relying on IT to become strategic partners in identifying and prioritizing innovative new services that can create new sales channels, increase revenue, improve customer retention and loyalty, and provide competitive advantage — and to bring such services to market quickly.

The challenges for IT organizations in the retail industry have never been greater.

This white paper describes this tectonic industry shift as well as the business drivers, trends, and challenges for IT organizations. It then describes a unique technology — InterSystems IRIS — a complete, unified data platform that is enabling retail organizations to meet these challenges quickly and at lower costs, both in terms of dollars and resources. InterSystems IRIS can empower IT to become a strategic partner with executive management and the line of business to accelerate digital transformation initiatives and help businesses succeed in this new environment.



Key Business Initiatives in Retail

The retail industry has seen a major upswing in online sales and customer activity, and this shift has produced savvy digital consumers. Today's shoppers expect retailers to know who they are, what they want, and when they want it. Retailers that fail to deliver an exceptional experience spanning all interactions and channels quickly see their competitors surpass them.

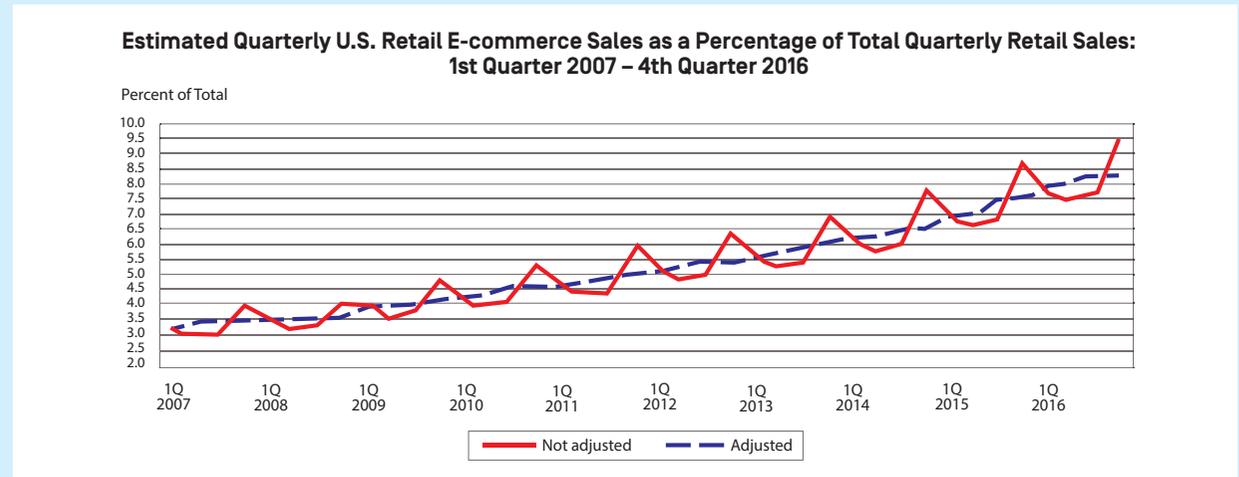
Therefore, the critical IT initiatives in retail today are no longer about just controlling costs and “doing more with less.” IT must deliver innovative digital services that increase revenue, meet and exceed customer expectations, and assist businesses in creating and extending their competitive advantage.

To succeed in this environment, most retailers and analysts agree that the highest priority IT initiatives for retailers must address enabling unified retail commerce and developing and leveraging a deep understanding of each customer.

Enabling unified retail commerce. To be competitive today, retailers must present their customers with a consistent and unified experience encompassing all online and offline channels and touchpoints spanning their entire extended ecosystem of applications and partners. Customers expect a consistent shopping experience — including product selection, pricing, discounts, promotions — regardless of whether they are shopping online, on mobile and other devices, or in stores.

Customers also expect an accurate, transparent, and seamless view into the relevant business systems and processes that impact them, for example, to check product availability, order status, shipment information, and return and refund status — all in real time. Making unified retail commerce a reality

U.S. retail e-commerce sales for the fourth quarter of 2016 totaled \$123.6 billion, an increase of 32 percent from the previous quarter, while e-commerce sales as a percent of total sales rose to 8.1 percent in 2016, up from 7.3 percent in the same quarter 2015¹.



¹ U.S. Census Bureau News, February 17 2017.

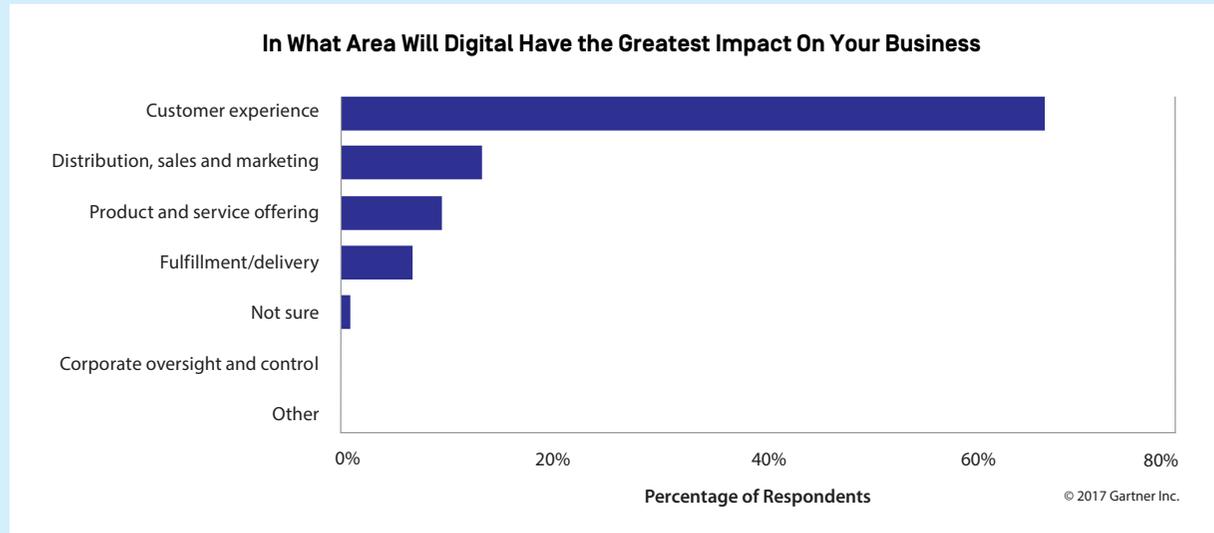
requires retailers to ensure that their relevant business applications — as well as those of their business partners — are properly integrated, with seamless composite business processes that can be executed and monitored by employees, business partners, and even by customers.

Developing and leveraging a deep understanding of each customer. Customers — particularly repeat customers and those enrolled in loyalty programs — expect retailers to know them well and treat them accordingly. This deep level of understanding and personalization requires collecting and managing data from online and offline customer interactions, as well as enriching their own customer data with relevant third-party data to create an accurate representation of the customer that crosses sales channels, brand lines, internal systems (e.g., website

session activity, call center, etc.), and external sources (e.g., social media, gas prices, weather, local events, data from third-party data brokers). It requires the ability to analyze potentially large and diverse data sets to understand and cater to customers on an individual level.

For example, the retailer should know all the products each customer has purchased, their online browsing history, loyalty status and activity, and any call center or email history. The company may even need to know what kind of cars customers drive, whether they own a home, or have a new baby, so that the business can present offers that are relevant at each point in time. Retailers must be able to personalize the many interactions that take place along the customer's journey, which encompasses more touchpoints than ever before.

According to Gartner, “customer experience” has the greatest impact on retailers’ business².



²2017 CIO Agenda: A Retail perspective, Gartner, February 2017, Gartner report figure 4.

Technology Considerations

To support the rapid digital transformation of the retail industry, IT has been making a major transformation of its own — from a cost center that fixes problems and bottlenecks to a board-level strategic partner with the business. But today’s business drivers not only require a change in mindset, they present difficult technological challenges. IT must now meet a wide and ever-growing set of technology demands and provide the necessary skill sets and expertise to implement new services with agility and speed to market — often with limited resources and budgets.

For example, creating a comprehensive, seamless view of the extended enterprise can be daunting, especially for retail organizations with diverse applications and business partners. Exposing business applications to customers for self-service purchasing, availability information, order status, shipment information, etc., requires organizations to integrate multiple internal systems (e.g., CRM, Point of Sale, Warehouse Management, ERP, etc.) as well as those of their business partners (e.g., suppliers, distributors, etc.). Creating a seamless process that spans multiple applications that were not designed to work together is extremely challenging. It requires application integration; business process orchestration and monitoring; real-time analytic processing capabilities; real-time event-driven capabilities; and a database capable of storing and analyzing large sets of data from different applications and in various formats.

“E-commerce and technology have absolutely changed the rules of the game [in retail] and given massive amounts of power to the consumer. There is a self-help mentality now. People walk around with their phones in their hand to tell them the best model and the best price³.”

– Simeon Siegel, Executive Director, Equity Research at Nomura Securities

³Patricia Cohen. Retail Payrolls Sustain a New Blow as Shopping Habits Shift. New York Times, April 7, 2017.

Creating and maintaining an accurate and up-to-date 360-degree view of each customer, predicting what each customer will want, and making targeted offers in real time requires big-data processing capabilities. These must span both batch and real-time analytics, as well as the ability to work with a range of data types in their native formats. The task can require multi-workload (simultaneous transactional and analytic) database capabilities to perform analytics on live transactional data without delays, as well as cost-effective dynamic scaling capabilities to handle traffic spikes (e.g., Cyber Monday, ad campaigns, or other promotions) with confidence and without performance or availability issues.

According to the research firm IDC, 78% of enterprises surveyed report that the inability to analyze current live data inhibits their ability to take advantage of business opportunities³.

³IDC, 3rd Platform Information Management Requirements Survey, November 2016.

The reality is that many IT teams are finding that it is simply not practical to purchase, install, integrate, learn, support, and maintain the various technologies required to deliver the services that the business requires.

But what if all of the required capabilities were available in a single, fully functional data platform designed to meet all of these requirements? And what if that platform were also easy to install, use, and maintain?

According to Gartner, lack of skills and funding are the top barriers to success in retail IT⁴.

Top Barriers Impeding CIO Success in Retail

Showing Top Nine Responses for Overall Respondents	Retail (n = 120)	Top Performers (n = 162)	Typical Performers (n = 1,976)	Trailing Performers (n = 160)	Overall Total (n = 2,299)
Skills/Resources	23%	27%	26%	22%	26%
Funding/Budgets	15%	19%	17%	16%	17%
Management Sponsorship/ Understanding/Relationships	5%	10%	8%	16%	8%
Culture/Structure/of Organization	8%	4%	8%	10%	8%
Technology Challenges (Legacy, Security, etc.)	7%	8%	5%	3%	5%
Lack of Leadership/Planning/ Strategy	10%	4%	5%	6%	5%
Capacity/Willingness to Change	7%	2%	5%	4%	4%
IT/Business Alignment	6%	6%	5%	3%	4%
Business Value of IT	3%	2%	4%	7%	4%

⁴2017 CIO Agenda: A Retail perspective, Gartner, February 2017, Gartner report figure 2.

InterSystems IRIS Data Platform for Retail Digital Transformation

InterSystems IRIS Data Platform™ is a complete platform with the full suite of functionality that retailers and their technology providers need to meet their myriad business goals. It provides comprehensive application integration (e.g., enterprise service bus) capabilities; real-time orchestration, monitoring and alerting development capabilities; a high-performance multi-model database that supports simultaneous transactional and analytic workloads at scale; a high-performance big-data analytics engine; and a natural language processing engine for handling unstructured text, all tightly integrated and accessed via a single, intuitive application development environment. With its full complement of capabilities, it is unlike any other enabling technology for speeding and simplifying retail digital transformation.

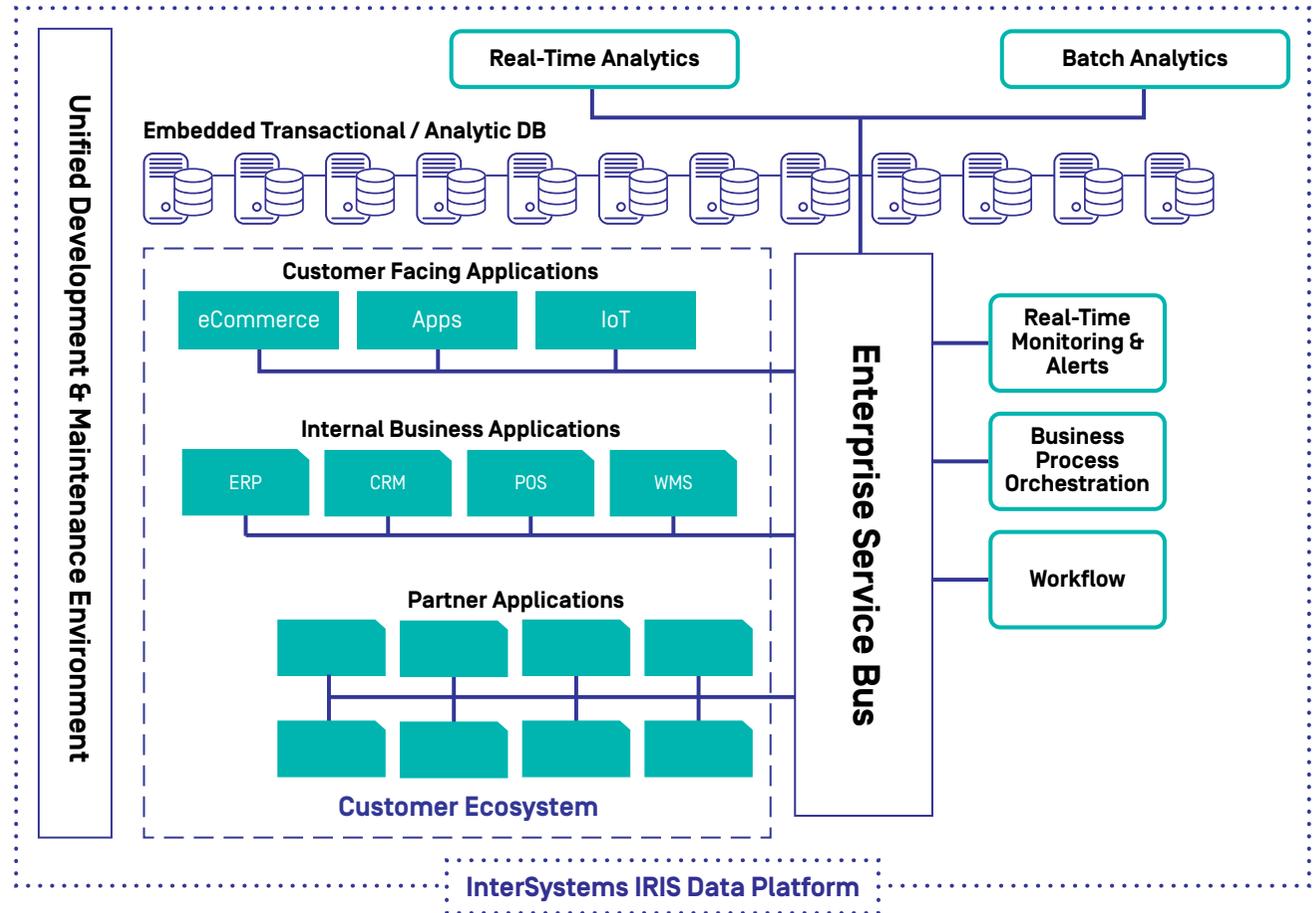


Figure 4: InterSystems IRIS is a complete platform for digital transformation initiatives

InterSystems IRIS Data Platform provides a far simpler and more cost-effective approach for IT organizations to become agile strategic partners with the business, enabling them to more quickly develop and deploy a range of innovative new services that meet the goals of the business and provide outstanding customer experiences.

InterSystems IRIS is an ideal platform for application providers and retailers that need to seamlessly integrate multiple disparate applications from across their extended ecosystem; create and present a unified view of composite business processes to internal and external audiences; create and maintain a 360-degree view of customers; and tailor interactions — including real-time personalized interactions — with each customer. InterSystems IRIS provides a simple, cost-effective approach for IT organizations seeking to become agile strategic partners with business, enabling them to quickly develop and deploy a range of innovative new services that meet business goals while providing outstanding customer experiences.

With other approaches, retail organizations must purchase, install, learn, integrate, and maintain multiple products, resulting in higher infrastructure costs, larger staffing requirements, and greater complexity. InterSystems technologies have proven effective in more than 10,000 mission-critical production implementations worldwide.

InterSystems IRIS includes all of the following tightly integrated components:

- **InterSystems IRIS: Interoperability** provides a comprehensive integration platform that provides application integration, data coordination, business process orchestration, composite application development, API management, and real-time monitoring and alerting capabilities to support the full spectrum of integration scenarios required in the marketplace. It provides all of the features of an enterprise service bus (ESB) and more.

- **InterSystems IRIS: Database** is a high-performance, horizontally scalable, multi-model, hybrid transactional-analytic (HTAP) database that stores and accesses data modeled as objects, schema-free data, relational data, and multidimensional arrays, making it ideal for working with a wide range of applications and data types. It is able to concurrently process both transactional and analytic workloads in a single database at very high scale, eliminating delays between events, insights, and actions.
- **InterSystems IRIS: Analytics** is a powerful open analytics platform that can analyze data in InterSystems IRIS: Database and other data repositories. It can also embed analytic processing into business processes and transactional applications. Doing so enables the user to make sophisticated programmatic decisions based on real-time analytics. It features natural language processing to identify meaning and sentiment in unstructured text, allowing organizations to streamline processes that reference customer emails, knowledge databases, social media content, and other unstructured text data.

Having access to all of these capabilities in a single platform, with a consistent development and maintenance interface, enables IT to implement a wide range of strategic initiatives quickly, easily, and cost-effectively.

InterSystems IRIS Data Platform enables retail organizations to:

- **Quickly develop and deploy** data rich applications and services;
- **Integrate disparate applications** rapidly across an entire extended ecosystem;
- **Create seamless composite business processes** that incorporate real-time, event-driven analytics;
- **Expose relevant business processes and data** to internal and external audiences with role-based interfaces and security;
- **Monitor, alert, and report** on activities, process flows, and key performance indicators in real time;
- **Create a deep understanding** of each customer
- **Personalize customer interactions** across all channels.

InterSystems IRIS provides all of these capabilities while providing a consistent development and maintenance experience.

Supporting Unified Retail Commerce

InterSystems IRIS Data Platform provides a consistent, unified view of the underlying data, applications, and services in an organization's technology ecosystem — no matter what platforms, languages, data models, storage architectures, network protocols, or other technologies are in use. It reduces the complexity typically associated with integration projects and significantly reduces development and maintenance efforts.

Key capabilities include:

Seamless business process orchestration with real-time analytics.

Application developers can use InterSystems IRIS to visually diagram processes, rules, and workflows, with a focus on the logical interactions between systems. Concerns about application interfaces, adapters, or middleware mechanisms are minimized. The graphical model facilitates collaboration between the line of business and IT, resulting in faster development of reliable systems that better match business requirements, and easier modification and extension of existing processes.

Non-programmers, including business users and support personnel, can use the InterSystems IRIS visual business rules editor to quickly configure and change decision points in a business process. This reduces the time and cost associated with making changes, and it frees developers to focus on new projects — reducing backlogs and getting systems into production sooner.

Since InterSystems IRIS includes embedded database and analytics capabilities, analytics can be seamlessly incorporated into business processes, leveraging data stored in the database as well as real-time event data. For example, rich user data describing a user's online, offline, and even external (e.g., from third-party data providers) data can be leveraged along with the user's current attributes and actions to provide a highly personalized set of offers, content, and overall experience for each user in real time.

Visual, flexible data transformation capabilities.

InterSystems IRIS makes it easy to resolve differences in semantics and data schemas between applications or services. It provides graphical and code-based data transformation capabilities that bridge these differences via formulas and lookups, and it can be extended by adding customized functions.

Flexible workflow engine.

The embedded role-based workflow engine supports manual interactions in business processes, automating the distribution of tasks among users and incorporating their decisions and actions.





of diverse programming models, programming interfaces, and data formats, enabling a single development environment across all functionality — from messaging to process orchestration to business activity monitoring.

Multi-model, multi-workload database.

Unlike traditional integration technologies, InterSystems IRIS includes a multi-model, multi-workload database that is able to record any and all messages, data, and system interactions for easier debugging, real-time reporting of message payloads, auditing, and for ensuring the reliability of long-running asynchronous processes. Persisting all messages and data associated with application integration and composite business processes in a single database provides rich data and metadata for use with analytic processing tasks.

Real-time monitoring and alerting.

The database can store any of the messages and events that pass among the components in a composite application spanning multiple systems. This means any of the data and metadata related to the components and activities in the system can be available in a consistent format to the real-time monitoring and alerting functions. InterSystems IRIS draws on this rich set of data to provide IT staff, the line of business, business partners, and even customers with real-time transparency into events and changing business conditions across the extended enterprise. This data, which can be presented via multiple methods, including graphical dashboards, email alerts, and text messages facilitates timely decisions by the business and its partners; it also provides valuable self-service capabilities for customers and other end users.

Interoperability and standards support.

InterSystems IRIS provides out-of-the-box connectivity and data transformations for a wide range of packaged applications, databases, industry standards, protocols, and technologies. Adapter code is maintained by InterSystems, reducing the IT development burden on the business and simplifying implementation. The software also allows rapid development of custom adapters. While each custom adapter can have unique attributes — determined by the application, data source, or technology to which it connects — all adapters share a common set of capabilities that ensure a simple, consistent integration model.

The extensive standards support provided by InterSystems IRIS means it works well with a wide range of standards used in retail (as well as in other industries such as healthcare, financial services, and telecommunications), including REST architectures and web services (e.g., JSON, XML, XPATH, XSLT, SOAP, DTDs).

Unified development environment.

InterSystems IRIS provides a unified graphical and code-based environment that simplifies and accelerates development and maintenance of composite business processes by users and developers. It provides a consistent representation

Unstructured data analysis.

Creating a unified view of the organization may require the ability to analyze unstructured data — for example, to analyze customer emails to respond to concerns, or to help customers find information. InterSystems IRIS includes embedded natural language processing capabilities that automatically infer the meaning and sentiment of unstructured text and data feeds. This information can then be incorporated into analyses and business processes.

IoT support.

Many retailers are now implementing Internet of Things (IoT) technologies including beacons; RFID tags to track inventory; smart shopping carts and other sensors that track customers' paths through stores; digital signage; and more. The ability to rapidly incorporate IoT technologies into business initiatives can boost revenue, create new revenue channels, and increase operational efficiencies. For example, Juniper Research predicts that RFID tags that identify and locate retail assets in real time will become a “killer app” and that the number of connected devices in retail will grow from 2.7 billion in 2016 to more than 12 billion by 2021⁵. InterSystems IRIS works with a wide range of disparate device data types, formats, and protocols and can incorporate real-time and historical device data into business processes and analytics to support a range of IoT uses.

End-to-end management.

Composite business applications can be difficult to manage because they link applications that were not designed to work together. InterSystems IRIS embedded database stores a wealth of information to support end-to-end monitoring and management. This information includes all messages, process states, and metadata captured from all systems. The InterSystems IRIS management portal provides intuitive capabilities that leverage this information to simplify management and monitoring.

For example, administrators can use the “visual trace” capabilities to track messages and examine content as they move through the system. This feature also provides powerful analysis and reporting functions for real-time visibility into business processes and troubleshooting.



⁵ Juniper Research, IoT in Retail: Strategies for Customer Experience, Engagement & Optimisation 2017-2021. March 2017.



Supporting a Deep Understanding of Each Customer

Creating a comprehensive, 360-degree view of each customer requires sophisticated analytics capabilities. InterSystems IRIS enables organizations to analyze large, dissimilar data sets and embed analytic processing tasks into real-time, event-driven actions.

Key capabilities include:

Big-data capabilities.

InterSystems IRIS scales both vertically and horizontally, and can be seamlessly integrated with existing data stores and big-data environments to complement organizations' existing heterogeneous data assets. It enables organizations to obtain a unified, panoramic view of all data from multiple sources across the organization via a real-time distributed caching layer. This provides accurate, secure access to very large volumes of distributed source data. A unified SQL layer offers application developers a familiar analytic development environment.

InterSystems IRIS provides an ultra-high performance scale-out processing layer for performing complex batch and real-time processing tasks on large, distributed data sets. It leverages intelligent algorithms for performing complex multi-table joins on sharded data that minimize network overhead and maximize throughput for the cluster without imposing restrictions on the data model. The result is the ability to reliably identify valuable information locked away in distributed data sets that would otherwise take hours or time out without completing, while reducing operational costs.

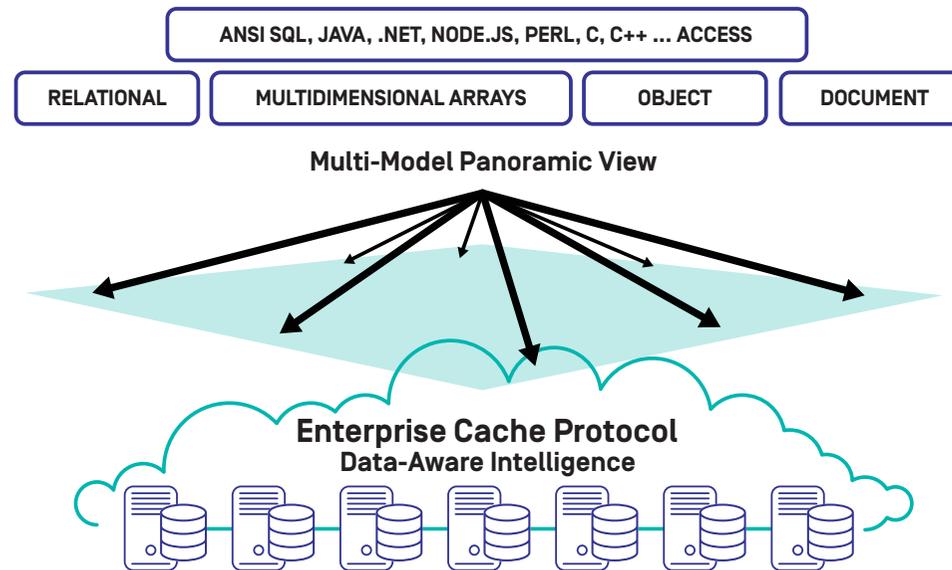


Figure 5: InterSystems IRIS features a horizontally distributed, multi-model, hybrid transactional-analytic processing database.

InterSystems IRIS: Database — A Multi-model HTAP Database for Retail Digital Transformation

At the core of InterSystems IRIS is a proven, enterprise-grade, distributed, hybrid transactional-analytic processing (HTAP) database. It can ingest and store transactional data at very high ingest rates while simultaneously processing high volumes of analytic workloads on transactional and historical data.

InterSystems IRIS: Database is built on a horizontally distributed architecture to support large data volumes, enabling organizations to analyze very large historical data sets simultaneously with recent and transactional data. This cost-effectively supports both real-time and batch use cases with very high levels of performance.

InterSystems IRIS: Database is a multi-model database. The data is stored once and can be accessed via multiple data models, including relational and object models that are always synchronized, eliminating the need to duplicate data or provide mappings between different representations (e.g., object-to-relational mapping) for higher performance and efficiency.

InterSystems IRIS: Database provides strong enterprise-level security, integration with Kerberos and LDAP, role-based access control, and encryption for data both in transit and at rest. The technology in InterSystems IRIS: Database is the engine behind more than 10,000 mission-critical production implementations worldwide.

InterSystems IRIS integrates directly with Apache Spark via a shard-aware native Spark connector. The connector transparently leverages the physical data layout and topology of an InterSystems IRIS cluster, enabling Apache Spark to push the work to where the data resides. This deep integration enables organizations to seamlessly leverage Apache Spark processing and libraries to gain customer and operational insights, including demand forecasting, dynamic pricing, sales forecasting, and for other scenarios.

Embedded analytics.

InterSystems IRIS: Analytics provides tightly integrated analytic capabilities with structured and unstructured data for real-time and batch use cases and an open environment for incorporating best-of-breed analytics tools. It is able to incorporate predictive models developed with specialized tools directly within business processes through support for open standards like PMML. Organizations can incorporate transactional and historical data into their business processes to implement a range of innovative

customer-facing initiatives, for example to support 360-degree views of the customer, real-time targeting, next best action, location-based services, and other initiatives. Unstructured data can be analyzed along with structured data, for example, to understand the impact of positive or negative tweets on product sales.

Additional capabilities of InterSystems IRIS Data Platform include:

Horizontal scalability.

InterSystems IRIS scales both vertically and horizontally, supporting scale-out sharded architectures and allowing organizations to work with very large data sets using low-cost distributed processing and storage nodes.

Cloud native.

InterSystems IRIS supports deployment both on premises and in the cloud, allowing organizations to choose the deployment options that work best for them.

By leveraging a unified, comprehensive data platform, InterSystems customers in the retail industry are able to accelerate their digital transformation efforts with less software, fewer IT personnel, and lower costs. As a result, many InterSystems customers report their IT departments are now truly strategic partners with the business.





Customer Success

CFAO: Enabling Digital Transformation While Empowering IT to Become a Strategic Partner

CFAO is a multinational company engaged in the sale of consumer goods, automotive equipment and services, healthcare, infrastructure, and energy. The company has operations in Africa and overseas territories with more than 4.2 billion Euros in revenue in 2017 and more than 15,000 employees. CFAO relies on InterSystems technology for a variety of inter-related strategic initiatives to streamline operations, unify commerce, improve customer satisfaction and create new revenue channels to provide an integrated offering to serve African markets in a profitable and long-lasting way. As a direct result of these initiatives, CFAO's IT organization is now regarded as a key strategic contributor to the company's success.

Project Hubic.

With more than 120 subsidiaries, operations in more than 40 countries and many suppliers, CFAO needed to streamline the flow of data, improve the traceability of orders and products, and increase the responsiveness of the distributed systems. Previously, the company was often not able to respond in a timely manner when customers or distributors would inquire or complain about late or missing products, missing invoices, etc. CFAO lacked sufficient transparency into the process flows to determine the location of ordered products, the status of the orders in the various systems, and so on. According to Anthony Gillaizeau, IT manager at CFAO, "Before the implementation of InterSystems technology, the IT staff did not have the ability to anticipate problems identified by the business, or even quickly bring them the right level of response."

CFAO at a glance

165 years in Africa

Locations in **36 African countries** and access to **53** of the **54** markets of the continent, **7 French overseas territories, Vietnam and Cambodia**

Registered office in **France**

2017 revenue of **€4.2 billion** of which **80%** in Africa

15,200 employees

120 operating subsidiaries

Subsidiary of the **Japanese group TTC**

AFRICAN OPERATIONS

Algeria	Mali
Angola	Morocco
Benin	Mauretania
Burkina Faso	Maunitius
Cameroon	Niger
Chad	Nigeria
Congo	Uganda
Cote d'Ivoire	Central African Republic
Gabon	Democratic Republic of Congo
Gambia	Rwanda
Ghana	Sao Tome and Principe
Guinea Conakry	Senegal
Guinea-Bissau	Sierra Leone
Equitorial Guinea	South Africa
Kenya	Tanzania
Liberia	Togo
Madagascar	Zambia
Malawi	Zimbabwe

FRENCH COLLECTIVITIES OVERSEAS (FOTs), VIETNAM AND CAMBODIA

Guadeloupe	New Caledonia
Guyana	French Polynesia
Reunion Islands	Saint-Martin
Martinique	

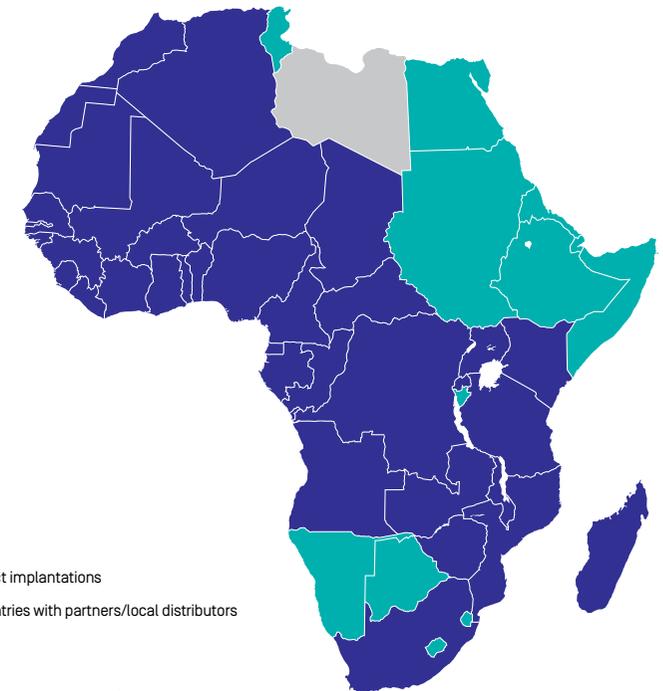


Figure 6: CFAO at a glance

Additionally, the time it was taking to integrate new subsidiaries, manufacturers, warehouses, etc. into their system was limiting their agility and their ability to take advantage of new revenue opportunities.

The company implemented Project Hubic using InterSystems technology to integrate the various internal and partner applications (CRM, POS, ERP, etc.), create composite business processes, and more quickly integrate new applications and business partners as the business required. ***New integrations are now completed in a total of two days, compared with 6 months previously, more than 60 times faster.*** Business activity monitoring capabilities provide real-time visibility into the status of every process, eliminating the difficulties and “blind spots” that the company struggled with in the past. CFAO provides these real-time monitoring capabilities to IT, the line of business, and to business partners and customers so they can have their questions answered in a self-service manner. The company is now also able to proactively anticipate potential customer issues in advance so they can correct them or alert the customer before they become problems. ***The entire Hubic application is managed with just one-half of one employee’s time.***

Digital Help Desk.

CFAO uses InterSystems natural language processing capabilities to power their digital help desk, shortening the learning curve and improving the responsiveness and accuracy of CFAO’s IT staff on

the help desk. The project integrates with their existing knowledge database to allow their staff to find the best answers to questions faster and more easily. ***Use of the system has reduced average time for help desk staff to answer questions from 2 hours to 5 minutes*** and allows new staff to be productive faster and with less training. The next phase of the project is to expose the service to customers so they can get answers to their own questions without involvement from IT, further boosting customer satisfaction and operational efficiency.

Forex.

CFAO operates in 36 countries in Africa, seven French Territories, Denmark, Portugal, Italy, India, Vietnam and Cambodia, and buys and sells the various local currencies for all of these countries. The company uses InterSystems technology to aggregate and filter the relevant financial data from the various systems, present the information in specific formats, and identify any discrepancies in exchange rates. It also automates compliance with European Market Infrastructure Regulation (EMIR) requirements.

Previously, the work to check the exchange rates and perform the related hedging and EMIR regulatory compliance activities was handled manually each day, which was a time consuming and error prone process. With the Forex application in production, these processes are now automated, ***reducing manual involvement from 4 hours to less than 10 minutes per day.***

AfricaShop.com.

The company relies on InterSystems to power a new online retail business that enables consumers in African nations to order French products previously only available outside Africa, creating a new revenue channel, AfricaShop.com. This new online channel enables customers to create a single, multi-brand basket, and provides a complete service including shopping, transport, customs clearance, and home delivery, with secure payment solutions.

The same type of interoperability and transparency developed with Hubic has been implemented for AfricaShop. Products spanning multiple brands are offered on the website. Between five and six different systems associated with each brand, all with different interfaces, have been successfully integrated with CFAO’s systems. Composite business processes seamlessly connect the required partners and systems to support ordering, invoicing, shipping, and other processes. Customers have the ability to query product availability, order and shipment status, for example, to have their questions answered in real-time. CFAO leverages InterSystems analytics capabilities to present key performance indicators to the line of business, including number of orders, products per order, number of customers, time on website per order, basket size per brand, and more.



Figure 7: CFAO Retail in partnership with Carrefour

CFAO Retail.

In 2015, CFAO began leveraging its strength in distribution and logistics in Africa in an alliance with Carrefour, the second largest mass retail player in the world. The two groups are developing the retail brand in various formats in eight Western and Central African countries: Côte d’Ivoire, Cameroon, Nigeria, Senegal, Ghana, Gabon, Congo and the Democratic Republic of Congo. To ensure the appeal of its shopping centres, CFAO Retail has also created franchise partnerships with well-known international brands looking to expand into African markets.

CFAO’s goal is to design a modern “one-stop” shopping experience for consumers where international brands have traditionally had difficulty penetrating the African market due to small markets, long distances, and logistical difficulties.

CFAO and Carrefour are operating three different types of outlets in the shopping centers: convenience stores, supermarkets, and hypermarkets. InterSystems technology provides the integration backbone for CFAO Retail.

CFAO views InterSystems technology as a powerful and comprehensive Swiss army knife, providing the wide range of capabilities they need to deliver whatever the business needs in one single platform with a single architecture and user experience. Based on their success with these projects, IT is now viewed as a strategic enabler of the business — rather than a cost center.

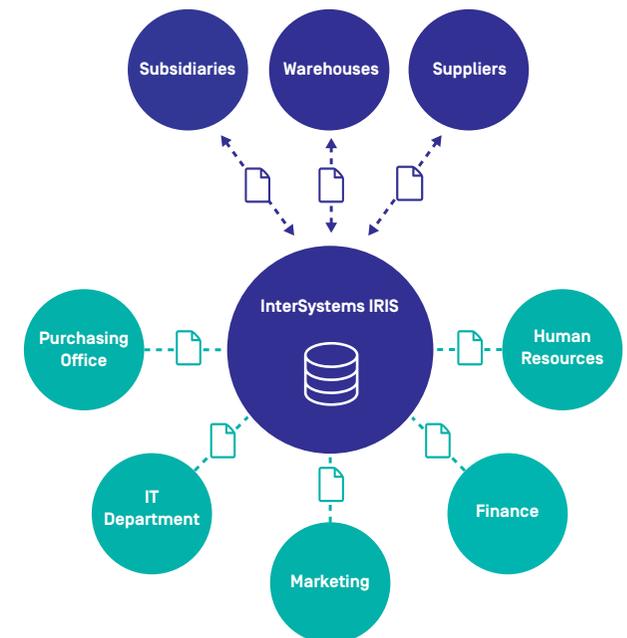


Figure 8: InterSystems backbone at CFAO

Conclusion

InterSystems IRIS Data Platform supplies the full suite of capabilities that retailers and their technology providers need to accelerate digital transformation initiatives and meet business goals faster and with lower total costs. With its full suite of features spanning integration, orchestration, data management, and analytics, it is a one-of-a-kind technology for enabling digital transformation in the retail industry.

InterSystems is the engine behind the world's most important applications. In healthcare, finance, government, and other sectors where lives and livelihoods are at stake, InterSystems is the power behind what matters. Founded in 1978, InterSystems is a privately held company headquartered in Cambridge, Massachusetts (USA), with offices worldwide, and its software products are used daily by millions of people in more than 80 countries.

For more information, visit [InterSystems.com](https://www.intersystems.com)





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