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WHITE PAPER

FLEXIBLE AND AGILE ERP WITH API AND EVENTS

Abstract

Global enterprises need state-of-the-art enterprise resource planning (ERP) systems to manage their supply chain activities. While there are several ERPs for a range of business needs, making the right choice for specific business imperatives is a challenge.

This whitepaper discusses the challenges faced in ERP adoption across different industries, the factors to consider for an efficient ERP implementation, and how an API and event-based solution can help businesses overcome these multiple challenges in today's digital-driven business landscape.

Roche

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Overview

ERP software systems are being widely adopted by companies globally for standardizing processes across supply chain, finance, HR, and ecommerce. This includes large enterprises in various industries such as manufacturing, retail, finance, healthcare, and more.

Modern ERPs are tuned to the needs of the digital economy and provide companies with a competitive advantage by enabling them to make faster and more accurate business decisions.

However, our analysis shows that although ERPs are designed with the digital economy in mind, they fall short on driving value in today's evolving business environment due to internal and external factors. We will first expand on the challenges, then explain our proposed response, which we further illustrate with a real-life case study.

Challenges Across Sectors in ERP Adoption

As organizations move towards increasing digital adoption and cloud ecosystems, the traditional ERP implementation approach no longer provides the competitive advantages it once did. Today business is changing faster than ever, and these internal and external changes hugely impact ERP implementations. Here are some of the challenges organizations face across industry segments.

Manufacturing and supply chain industries

- Complex manufacturing environments and multiple manufacturing execution system (MES) instances
- Faster time-to-market while minimizing wastage and optimizing overheads
- Prohibitive maintenance costs/sluggishness driven by limited traceability and increased data errors
- A plethora of CMOs each with diverse technology footprint and capability

CPG industry

- Evolved consumer who is well-informed, highly aspirational, opinionated, impatient, and experience-centric
- Faster time-to-market while minimizing wastages and optimizing overheads
- Need for consistent digital experiences across channels, and the ability to buy from anywhere at any time
- Ability to streamline and rationalize interactions between suppliers, CMOs, and distributors to launch products in the shortest time
- Customer-focused sales and marketing teams with relevant insights to improve customer retention and drive new customer demand

Life sciences sector

COVID-19 made the world more connected and catalyzed the explosive growth of the life sciences industry. It also blurred the lines between drug manufacturers, distributors, HCPs, patients, and consumers. This has led to a completely new set of challenges.

Data as the new healthcare currency:

The need of the hour is to unlock and unite data and information from all critical systems that are updated in real-time to derive actionable insights and monetize these insights for the benefit of all

Improve collaboration among suppliers:

Bring collaboration among CMOs, 3PLs, finance, make, transport, and warehouse management functions and automate procure-to-pay, supplier onboarding, and master data management

Industrialization of pharma:

There is a need to track quality processes, product development, and production processes extensively, from procurement of raw materials to finished products to ensure regulatory and GXP compliance

Supply chain management:

Businesses need the ability to handle stock management and planning, including labeling requirements, and track and trace functionality, as well as serialization, batch, and cold chain management for both finished and semi-finished goods being transported or procured

Proliferation of mixed systems:

Enterprises need a way to deal with a mix and match of new age SaaS-based apps and legacy and fragmented backends in addition to inconsistent partners and HCX engagement channels

Increased adoption HL7 fast healthcare interoperability resource (FHIR):

The industry needs to quickly adopt the HL7 FHIR internet-based data exchange standard to pave the way for a more integrated workflow, detailed clinical decision support, and patient engagement

New medical innovations:

There is need for more patient-centric hyper-specialized solutions. For example, cell and gene therapies must have made-to-order capabilities

ERP Solution Imperatives

After studying various challenges across industries, we recommend that ERP implementations focus on the following factors to ensure faster time-to-market, reduce operational overhead, and provide better support for digital transformation.

Clean core for ERP –

How do you keep core ERP processes free of heavy customization to ensure smoother upgrades and reuse of industry best practices in a consistent manner?

Digital-ready landscape around ERP –

A digital-ready landscape means the organization's ability to compose a new solution or extend business processes within weeks rather than months and years. How do you enable your ERP for on-demand integration with digital solutions?

Simplified ERP rollouts –

How do you ensure the template processes defined with ERP are rolled out with ease? The challenge is to adopt regional variations without compromising the base template.

Unlocking data –

How do you ensure ERP data is available for digital channels in the context of the client's digital journey? The challenge here is to integrate data in real-time with the digital ecosystem.

Enable polycloud apps –

ERPs are more componentized than ever before, and organizations typically adopt best-of-breed solutions implemented using different SaaS products. How will you manage end-to-end business processes across the SaaS ecosystem running on different cloud platforms?

Adopting an API and Event-driven Approach

To address the challenges in ERP implementations, a set of architectural patterns has evolved which are becoming a critical need for any ERP implementation. These patterns help organizations keep their ERP core clean, enable the ERP system to operate in a digital ecosystem, simplify ERP rollouts, unlock ERP data, and operate in a polycloud ecosystem.

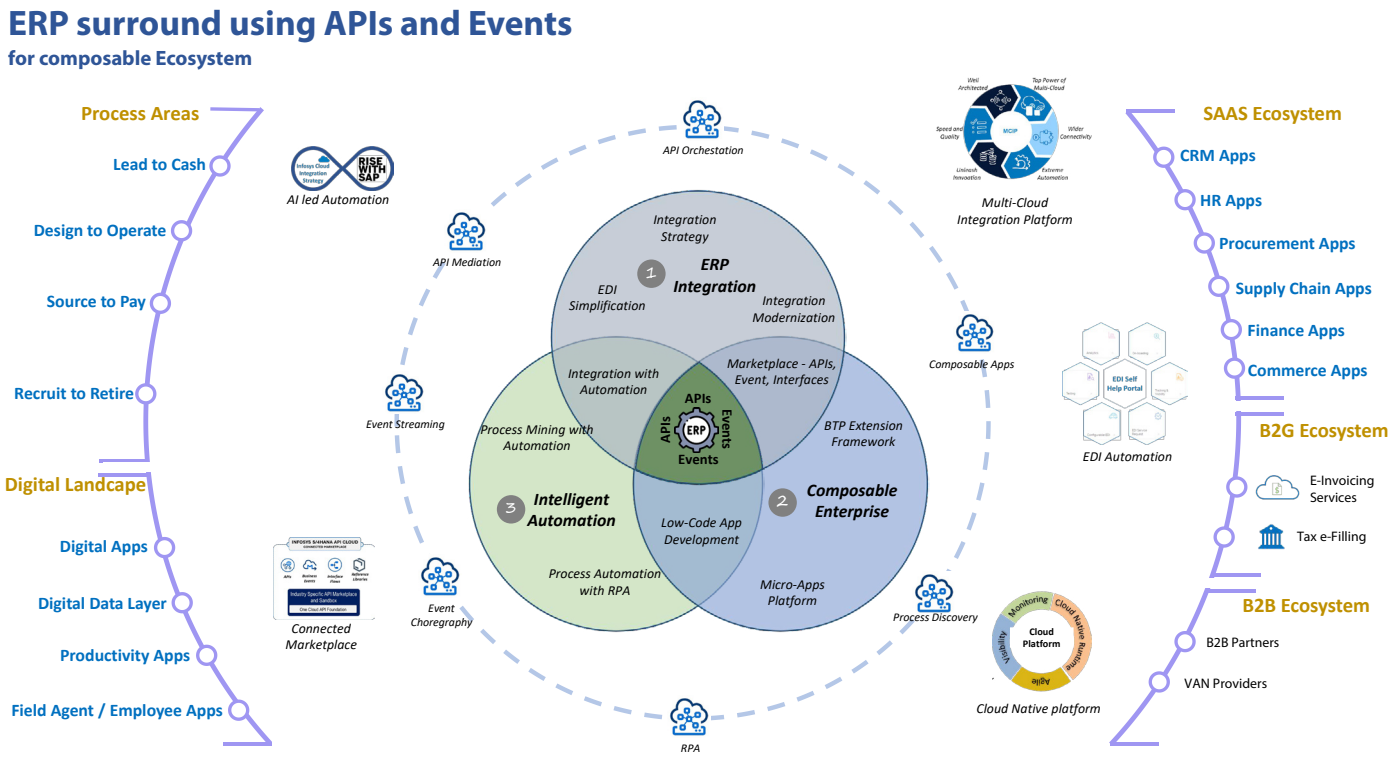


Figure 1 – ERP using APIs and Events

Pattern 1 – Expose core capabilities as API

It is important to expose core ERP functions as discoverable APIs with standardized data models. These APIs will enable businesses to:

Create customized business capabilities for a specific line of business or regional adoption

Gain real-time access to data without the need for replication

Create customized business processes

Pattern 2 – Enable ERP for events

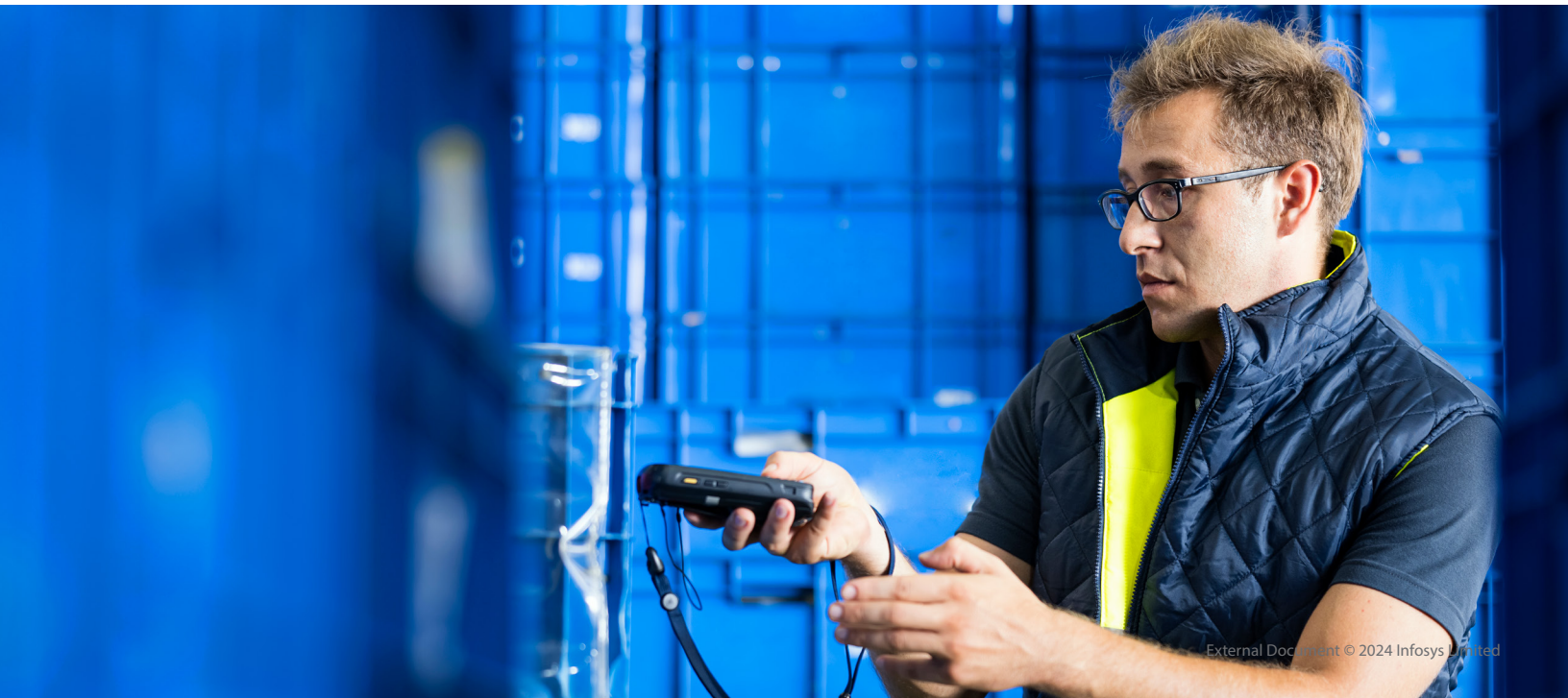
Link the ERP with event infrastructure for bi-directional event flow and enable enterprises to tap into changes in the ERP ecosystem and react in real-time. Connecting the ERP system with event infrastructure will enable enterprises to:

- React to changes in the ERP system in real-time. For example, product and customer master changes are relayed to upstream and downstream systems in real-time to make instant decisions
- Allow asynchronous process orchestration with ERP for enhanced customer experience
- Adopt event-based integration to ensure the ERP ecosystem is not carrying stale data

Pattern 3 - Implement API and event marketplace

Adopt an API and event marketplace to expose the ERP system as well as enterprise APIs and events for visibility. Providing visibility to functional and non-functional domain APIs will enable enterprises to:

- Automate end-to-end business processes
- Create custom regional and global applications required for supporting ERP implementation
- Enable on demand integration of the ERP system with the ecosystem



Pattern 4 – Cloud-first integration

Cloud-first integration ensures seamless, real-time integration across multiple cloud and SaaS ecosystems. A modern ERP ecosystem typically involves SaaS, cloud applications, and on-premises applications. A cloud-first integration is critical for smooth data, process, and API-led integration. It will enable the enterprise to:

Pattern 5 - Extend and automate ERP processes using RPA

Utilize robotic process automation (RPA) with AI to automate business processes end-to-end. Process automation capability will enable enterprises to extend business processes across the ERP ecosystem without impacting core ERP processes. RPA in conjunction with API and events will enable enterprises to:

Pattern 6 - Adopt a composable architecture framework

Adopt a composable architecture using low code/no code (LC/NC), API, and events to extend business capabilities around ERP. Each organization is unique in terms of the application ecosystem, business rules, and data. Organizations can leverage a composable ecosystem to extend unique business capabilities. Composable architecture using LC/NC will enable enterprises to:

Pattern 7: Adopt future-ready AI capabilities

ERPs will benefit by using compatible AI services for better business user experience, decision-making, and synthesizing information for projection. Use cases for adopting AI capabilities include:

Digital assistant for customer experience using customer 360-degree profile summary.

Invoice conversions and procurement recommendations

Process model generation and improvement opportunities

Benefits of Adopting an API and Event-based ERP Approach

Building an API and event ecosystem enables enterprises to be flexible and agile in terms of ERP adoption. Business benefits range from cost savings and improvement in time-to-market to an enhanced customer experience.

Improved efficiency and better decision-making:

API and event-based systems allow for automated processes and real-time data updates, reducing the need for manual data entry and enabling businesses to operate more efficiently.

- A large global hi-tech customer utilized an API and event ecosystem in conjunction with an LC/NC platform to improve the financial decision-making process by 30% with up-to-date data and by removing manual processes

Increased agility:

API and event-based systems are flexible and can be easily integrated with other systems, enabling businesses to quickly adapt to changes in the market or within their industry.

- A large European car manufacturer utilized APIs to expose the core functions around their ERP, enabling them to reduce rollout cost by 40% owing to reduced customization effort for regional deployment. A process automation platform was used in conjunction with APIs to extend the processes

Cost savings:

API and event-based systems are generally more cost-effective than traditional monolithic systems, as they require less development and maintenance.

- A large CPG company with multiple regional ERP instances modernized their "Advance available to promise" solution using composable architecture and APIs to reduce customization at an instance level. This enabled them to improve time-to-market for regional rollouts by 35%

Better customer experience:

API and event-based systems can be integrated with customer-facing systems such as CRM and e-commerce platforms, resulting in a more seamless customer experience.

- A global telecommunications company utilized an API, microservices, and event-based ecosystem to build a digital experience layer on top of their core ERP, integrating it with API and events. The solution enabled the business to automate over 50% of customer interactions, improve sales conversion by 30%, and digital sales by 50% while tripling their net promotor score

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Better supply chain management:

API and event-based systems can be integrated with logistics and supply chain management systems, providing businesses with real-time visibility into the status of their inventory, orders, and shipments.

- A global distributor created a supply chain integration framework utilizing an API, events, and process automation platform to modernize their supply chain. This helped reduce supply chain error by 30% through real-time connectivity and visibility

Case Study – How Roche Benefitted from an API and Events Ecosystem

Roche, a leading Life Sciences Enterprise, undertook a significant business transformation initiative enabled by IT, aimed at global process harmonization. This comprehensive effort, driven by state-of-the-art ERP solutions, focused on establishing a lean digital core, robust integration capabilities, and adaptable cloud-ready solutions. These foundational elements were critical to seamlessly execute harmonized business processes on a global scale, ensuring scalability and sustainability. The integration strategy played a pivotal role in creating Roche's digital backbone, facilitating its impactful contributions to the healthcare sector.

As a key component of their business transformation, Roche adopted a greenfield strategy for integration, leveraging API and event-driven architecture. This strategic move allowed for the implementation of standardized API-led and event-driven processes, enabling near real-time integration of processes and data both internally and externally.

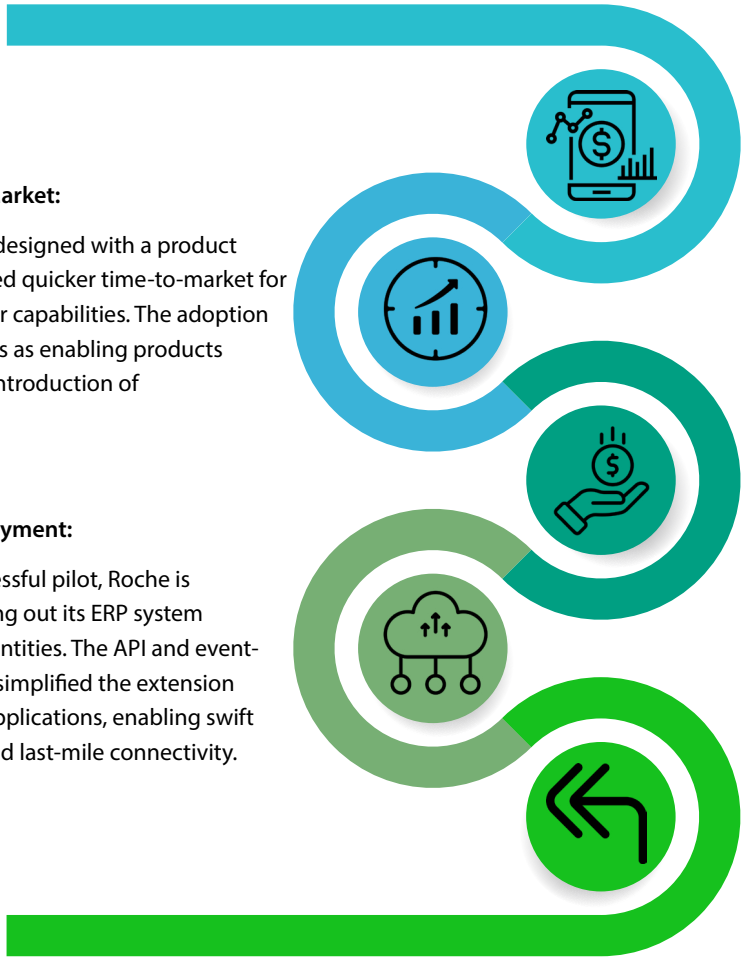
Benefits:

Faster Time-to-Market:

APIs and events, designed with a product mindset, facilitated quicker time-to-market for new extensions or capabilities. The adoption of APIs and events as enabling products streamlined the introduction of new innovations.

Faster ERP Deployment:

Following a successful pilot, Roche is aggressively rolling out its ERP system across 200 legal entities. The API and event-driven approach simplified the extension to surrounding applications, enabling swift configurations and last-mile connectivity.



App Economy:

Roche achieved a lean core by externalizing application development, and decoupling customization from the digital core. This approach provided flexibility in introducing hyper-specialized applications around the ERP digital core, seamlessly connected through API-led and event-driven integration.

Cost Savings:

Reusable enabling products significantly reduced extension costs for various rollouts and new capabilities, leading to cost savings of about 40% to 50%. In a global procurement program, Roche achieved a cost saving of approximately Swiss Franc 4 million compared to traditional ESB integration.

Shift Left:

Access to reusable APIs and events empowered product managers in the application ecosystem, reducing dependency on the ERP integration team and fostering a more streamlined development process.

Roche's strategic utilization of API and event-driven architecture not only enhanced operational efficiency but also positioned the company as a frontrunner in digital transformation within the healthcare sector. This case study exemplifies the power of innovative integration strategies in driving business success.

Conclusion

The architecture of ERP systems today is more open and lends itself to creating a composable enterprise. Events and APIs, the basic building blocks for enterprise composability, enable enterprises to be more agile to respond to fast-changing business needs.

Organizations today are leveraging open ERP architecture, APIs, and events to become more digital-native to drive faster rollouts, reduce the total cost of ownership, make business processes nimbler, and drive effective supply chain processes.

However, careful consideration is needed to design these APIs and events based on a domain-driven model to achieve the required goals. Organizations should take a long-term view when creating an API and event-driven organization.

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