
ERP TREND
RADAR
2025/26

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Foreword

ERP systems form the backbone of digital enterprise management. In an increasingly dynamic environment, both providers and users are faced with the challenge of integrating new technological developments in a meaningful way. To gain an overview of the current status and future trends, the Center for Enterprise Research at the University of Potsdam conducted a comprehensive survey for the first time as part of this ERP Trend Radar. The aim was to identify which new technologies are already incorporated into ERP systems today and which will play a more prominent role in the coming years.

A particular focus was placed on the topics of artificial intelligence, data storage and data sovereignty, mobile usage options, and the adaptability and integrability of ERP systems. The results show that many companies have begun to implement new technologies in a targeted manner, but at the same time there are uncertainties regarding selection, benefits, and long-term sustainability. The ERP Trend Radar is designed as an orientation tool that systematically classifies technological trends. The visual representation as a radar shows which developments are already highly relevant today and which are looming on the horizon. In an environment of growing complexity and uncertainty, the radar provides a sound basis for strategic technology decisions in the ERP context. We would like to thank all participating companies and experts for their contribution and hope you find this report informative.

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Management Summary

The ERP Trend Radar 2025/2026 is a tool for identifying and evaluating technological developments in the field of enterprise resource planning. Its aim is to provide companies with a sound basis for strategic decisions and to highlight areas of innovation that will shape the further development of ERP systems in the short to medium term. The Radar was developed in a multi-stage process that combines trend discovery, integration of different perspectives, impact assessment, and expert evaluations.

Trends are visualized using symbols that represent three dimensions: expected impact, time to widespread adoption, and strategic recommendations for action. This allows the maturity, relevance, and urgency of individual technologies to be assessed. In addition, the radar takes into account the perspectives of users and providers. While users define operational requirements and transformation goals, providers reflect technical feasibility and market readiness. Combining both perspectives with a panel of experts provides a comprehensive picture of innovation readiness and strategic gaps.

The analysis is based on three key metrics: user demand, current or planned supply from providers, and the deviation between the two variables. This data is supplemented by assessments of strategic influence, time horizon, and recommended action. This makes it possible to identify technologies that are synchronized between users and providers, overvalued or prematurely valued, or insufficiently used despite high demand.

Particular emphasis is placed on technologies with a significant gap between supply and demand. These include data lakes, machine learning for analysis and forecasting, generative AI, ESG reporting, robotic process automation, eye tracking, and semantic processes. These gaps point to shortcomings in the process support offered by today's ERP systems, for example in terms of forecasting capabilities, automation, and sustainability reporting.

At the same time, technologies with high strategic potential that have been prioritized by expert assessments are presented. These include business process management as a fundamental architecture component, internal low-code platforms, enhancements through cloud services, resilient ERP systems, robotic process automation, open data integration, generative AI, data lakes, and containerization. These technologies are considered key drivers of a modular, intelligent, and future-proof ERP landscape.

The detailed analysis shows that machine learning is becoming increasingly important for forecasts and analyses. Users are demanding short-term implementation, while providers are often lagging behind. Generative AI is considered a transformative approach to content, interactions, and automation, but it is associated with implementation gaps and ethical issues. RPA shows potential for automating repetitive tasks, but has so far received insufficient support from providers. ESG reporting is becoming a regulatory requirement, but providers are lagging behind. External No-Code platforms offer opportunities for democratizing innovation, but are not yet well established. Responsive web apps are considered key to cross-device usage, but there are discrepancies between provider specifications and user experiences. Internal low-code platforms are largely established but need to be further developed in terms of user-friendliness. Data lakes are seen as essential for real-time analytics and AI applications, but are the field with the largest gap between demand and vendor implementation. Cloud service extensions are considered indispensable for flexible architectures but are met with uncertainty among users. Containerization is a basis for modular and scalable systems, while resilient ERP systems are perceived as crucial for crisis resilience. Automated process analysis is seen as the next step toward data-driven process optimization. Finally, business process management occupies a leading position and is considered a fundamental pillar of modern ERP architectures.

The outlook emphasizes that ERP systems are evolving toward modular, intelligent, and user-centric platforms. While some technologies, such as responsive web apps and internal low-code platforms, are already maturing, others, such as data lakes, generative AI, and external No-Code platforms, still have significant gaps between demand and implementation. Competitive advantages arise for providers who invest in these fields early on, pursue an open ecosystem strategy, and actively empower users to utilize them. The ERP Trend Radar thus highlights opportunities and shortcomings and provides companies with a strategic tool for aligning their innovation and digitalization strategies.

Developing the ERP Trend Radar 2025

A structured approach to identifying, evaluating, and visualizing ERP innovation

The ERP Trend Radar was developed as a strategic foresight tool to systematically capture, assess, and structure technological, organizational, and process-related trends within the enterprise systems (ERP) domain. As ERP systems continue to evolve under the pressure of digital transformation, globalization, and increasing process complexity, our goal was to give organizations clear guidance to navigate the growing landscape of software-based innovations.

The radar's purpose is to provide ERP decision-makers, in research and practice, with a structured, evidence-based foundation for shaping their future ERP strategies. Its design is concise and visual, yet grounded in practice. The development process followed a five-step methodology, combining academic rigor with practitioner insight to ensure that the radar reflects both what is technologically feasible and what is operationally required. The steps we followed to develop the ERP Trend Radar are depicted in Fig. 1.

Trend Discovery

The first step in developing the ERP Trend Radar was to identify a comprehensive set of trends potentially relevant for ERP systems. This involved a multi-source discovery phase that drew on both academic and industry-oriented inputs. Key sources included:

- A structured review of peer-reviewed academic literature, including leading journals in information systems, enterprise architecture, and digital transformation
- Market analyses, whitepapers, and strategic roadmaps published by ERP vendors, consulting firms, and analyst organizations

Fig 1. Approach to development of the ERP Trend Radar

- Exploratory expert interviews with ERP researchers, consultants, and practitioners, which helped uncover emerging signals and context-specific insights

This phase aimed to identify not only *technologies*, but also broader organizational and *process-related innovations* that may shape ERP environments in the coming years. The result was a longlist of candidates for trends, which laid the foundation for further consolidation, evaluation, and classification.

Integration of different Perspectives

To ensure that the ERP Trend Radar reflects both technological innovation and practical need, it was essential to integrate insights from two distinct yet complementary stakeholder groups: ERP providers and ERP users.

perspective highlights what is relevant and urgently needed from a business and user-centered viewpoint.

To systematically capture both views, during the development process of the radar two targeted surveys were conducted:

- One survey focused on ERP providers, capturing current technology-based offerings, development roadmaps, and technology strategies
- A second survey addressed ERP users, capturing perceived business needs, interest in innovation, and adoption readiness

In addition, moderated workshops and expert discussions enabled a deeper synthesis of both viewpoints. This dual-perspective foundation ensures that the ERP Trend Radar does not simply reflect hype or isolated innovation efforts but instead captures trends that are both technologically feasible and practically necessary. At the same time the radar also allows for identifying discrepancies between supply and demand, which is a key indicator of innovation gaps or missed opportunities.

Impact Evaluation

After the identification and consolidation of trends, the next step was to assess the strategic relevance of each trend for the future usage of ERP systems. While the previous phases ensured that the trends were grounded in data and reflected multiple perspectives, this step aimed to determine which trends matter most and why.

To this end, a panel of ERP experts, including researchers, consultants, and experienced practitioners, was asked to evaluate each trend using a standardized impact rating scale. This evaluation was designed to go beyond surface-level popularity by focusing on the actual

transformative potential of each trend within ERP contexts.

Each trend was rated on a 5-point impact scale:

- 0 = No impact: The trend is not expected to influence ERP systems meaningfully
- 1 = Low impact: The trend may play a minor role or remain limited to niche applications
- 2 = Moderate impact: The trend may be relevant in specific industries or use cases
- 3 = High impact: The trend is expected to become important across multiple ERP contexts
- 4 = Transformational impact: The trend is seen as a game-changer for the ERP landscape

This expert-based assessment provided a quantitative foundation for prioritization. It also made it possible to distinguish between trends that are already mature but limited in impact, and those that are emergent but strategically critical.

Importantly, the impact evaluation is aligned with data from the user and provider surveys. This allowed the team to compare perceived demand (from users), readiness (from vendors), and future potential (from experts), to enable a multidimensional understanding of each trend's significance.

The output of this step was a ranked list of trends, each with an assigned impact score that would later inform both visual placement on the radar and the assignment of strategic recommendations.

Expert-Based Impact Assessment and Strategic Recommendations

Building on the expert impact scores, each trend was then translated into a qualitative strategic recommendation. This step ensures that the ERP Trend Radar is not only descriptive but also actionable, and that it can offer clear guidance to decision-makers in organizations, ERP providers, and researchers alike.

To achieve this, a simple yet effective recommendation framework was applied, categorizing trends based on their impact score into one of four strategic actions:

- Phase Out (Impact score 0–1):
  Trends in this category have low strategic value and are unlikely to shape future ERP development. Organizations are advised to deprioritize or monitor them passively without further investment.
- Monitor (Impact score 2):
  These trends may have situational relevance, particularly in specific industries or technical contexts. They are not yet broadly applicable but should be observed closely for signs of

broader adoption or critical advancements.

- Sustain (Impact score 3):
  Trends in this category are already playing a significant role in current ERP systems and should be maintained as part of ongoing ERP strategy. This includes technologies that are proven, reliable, and in active use across various contexts.
- Scale Up (Impact score 4):
  These are high-priority trends with strong potential to transform ERP functionality, architecture, or strategy. They are considered essential innovation areas that warrant proactive investment, piloting, and integration.

The combination of quantitative impact scoring and qualitative strategic recommendation allows ERP stakeholders to differentiate between hype and substance, between emerging experimentation and strategic necessity. It also provides a forward-looking planning basis and enables organizations to structure innovation roadmaps, evaluate technology portfolios, and align IT investments with long-term goals.

Each trend's recommendation was then visualized alongside its placement on the radar to create a multidimensional decision support tool.

Structure of the ERP Trend Radar

How trends are visualized, categorized, and strategically positioned

In the rapidly evolving landscape of ERP systems, staying ahead of technological shifts is paramount for sustained success. To aid decision-makers in this complex environment, the ERP Trend Radar offers a visually intuitive and strategically robust framework. This tool is designed to distill multifaceted trend analyses into an accessible format, empowering organizations, ERP providers, and researchers to anticipate change, prioritize innovations, and align their strategies effectively. The radar achieves this by systematically mapping trends based on their anticipated impact, projected Time-to-Adoption, and a clear strategic recommendation.

To provide this strategic direction, trends are categorized using a framework that aligns with their assessed impact, visualized directly on the radar as can be seen in Fig. 2. The key structural elements of the radar chart are:

- Technology Category Sextant
- Time-To-Adoption
- Technology impact size
- Strategic Recommendation

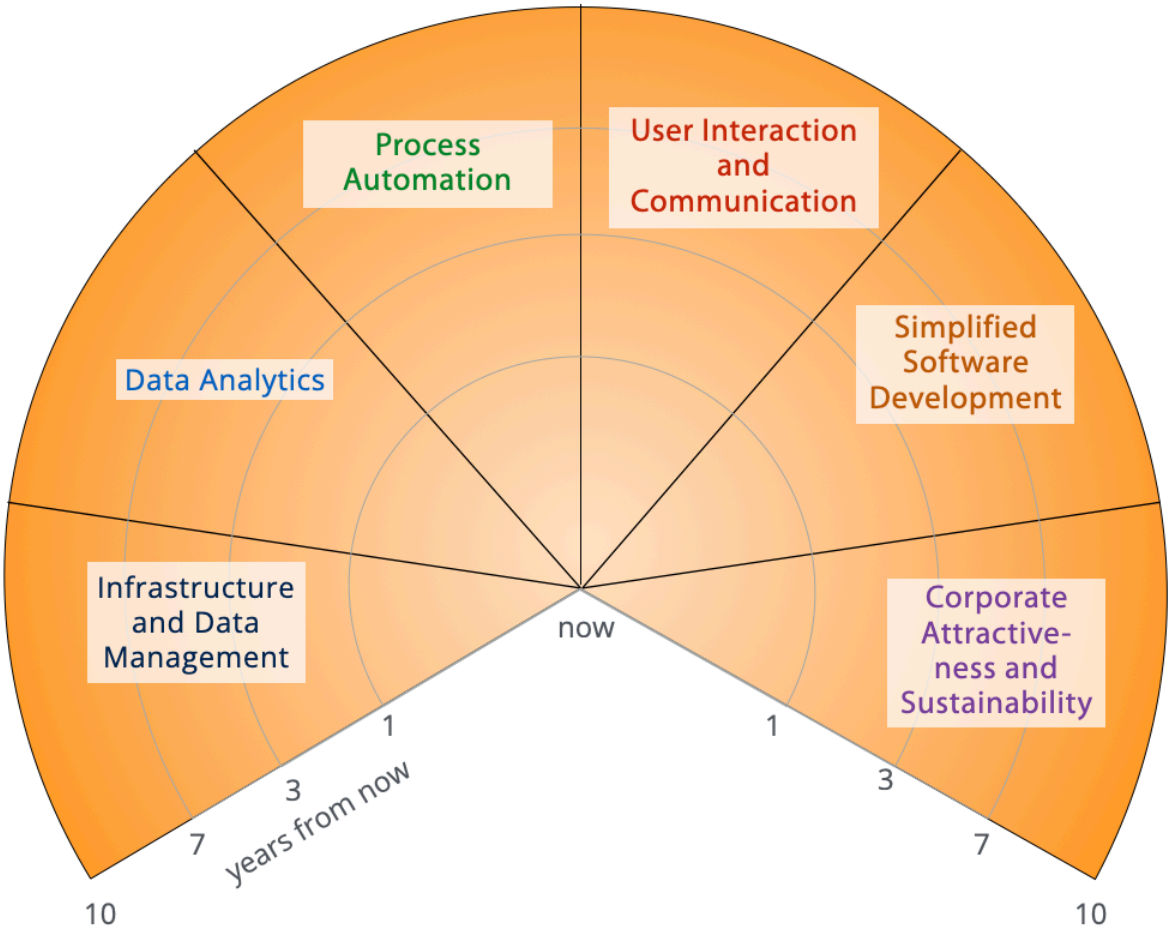

Fig. 2: Structure of the ERP Trend Radar

Impact of a Technology Symbol

The impact of every trend is given by its size of the symbol, representing the spectrum of a trend's potential impact (Fig. 3).

- **Very Low Impact:** Trends marked with this symbol are considered to have minimal strategic significance for the broader ERP landscape.
- **Low Impact:** Trends here may offer niche value or are in very early stages, not yet warranting significant mainstream attention.
- **High Impact:** These trends are recognized as having considerable

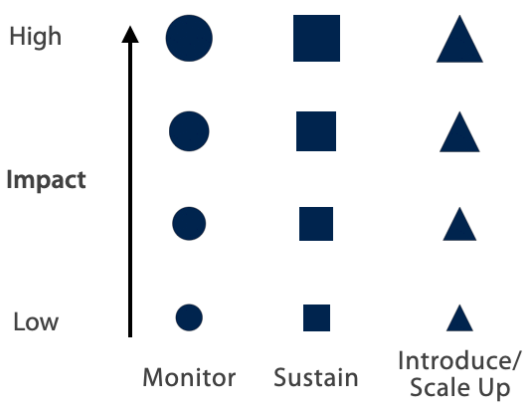

Fig 3. Impact of a technology

Fig 2. Visualization of the ERP Trend Radar

potential to influence ERP systems and strategies.

- **Very High Impact:** Trends in this quadrant are deemed transformative, with the power to fundamentally reshape ERP functionalities, architectures, or operational paradigms.

Time-to-Adoption

Four concentric rings denote the estimated timeframe for a trend's widespread adoption within the ERP ecosystem:

- **Now:** Trends currently impacting or being adopted
- **1-3 years:** Short-term adoption horizon
- **3-6 years:** Mid-term adoption horizon
- **7-10 years:** Long-term adoption horizon

Technology Category

Each trend has an overarching technology category with a specific color.

- **Infrastructure and Data Management:** This category encompasses foundational technologies that shape how ERP systems store, process, and deliver data. Trends here focus on increasing system flexibility, scalability, and performance.
- **Data Analytics:** This category highlights technologies that extract insight from data, transforming raw information into actionable knowledge. The focus lies on enhanced decision-making through AI-driven and semantic techniques.
- **Process Automation:** This category covers technologies that optimize and automate business processes, aiming to reduce manual effort, increase speed, and improve consistency.
- **User Interaction and Communication:** Technologies in this category aim to enhance how users engage with ERP systems by making interactions more intuitive, immersive, and effective.
- **Simplified Software Development:** This category focuses on enabling faster and more accessible software creation, often by empowering non-developers and reducing reliance on traditional programming.
- **Corporate Attractiveness and Sustainability:** This category reflects trends that enhance an organization's appeal to customers, investors, and employees, while also addressing environmental, social, and governance (ESG) objectives. It focuses on integrating sustainability into the core ERP strategy.

Each technology and their respective technology categories can be found at Table 1.

Strategic Recommendations

Each trend on the radar is marked with a specific shape, denoting its strategic recommendation:

- **Phase Out** (▼ Triangle Pointing Down): Trends with this marking generally correspond to a "Very low impact". They are considered to have diminishing strategic value or may be outdated. Organizations are typically advised to deprioritize these, cease further investment, or plan for their obsolescence.
- **Monitor** (● Circle): Often represented as "low impact", these trends possess potential situational relevance. They may be emerging, specific to certain industries, or require further maturation. Close observation for critical advancements or broader applicability is recommended.
- **Sustain** (■ Square): These trends, typically marked as "high impact", are already integral to current ERP systems. They represent proven, reliable technologies or methodologies that should be maintained and optimized as part of an ongoing ERP strategy.
- **Scale Up** (▲ Triangle Pointing Up): Predominantly marked as "very high impact", these are top-priority trends. They offer substantial transformative potential for ERP systems and warrant proactive investment, pilot projects, and strategic integration into roadmaps

How to read the ERP Trend Radar

Interpreting the ERP Trend Radar involves understanding how a trend's visual placement and its designated shape collectively inform strategic decision-making. By examining these elements, stakeholders can effectively differentiate between fleeting trends and significant technological advancements, guiding resource allocation and innovation efforts.

- **Identify a Trend:** Locate a specific trend (represented by its number) on the radar.
- **Assess its Impact:** Note the size of the symbol of the trend. This indicates its assessed potential impact, ranging from "very low impact" to "very high impact". A bigger trend symbol signifies greater potential influence on the ERP landscape.
- **Determine Time-to-Adoption:** Observe which concentric ring the trend falls into. This estimates its market maturity and the timeframe for

its widespread adoption ("Now," "1-3 years," "3-6 years," or "7-10 years"). Trends in the inner rings are more immediate.

- **Understand the Strategic Recommendation:** The shape of the trend (▼, ●, ▪, ▲) provides an explicit strategic directive (Phase Out, Monitor, Sustain, or Scale Up), as detailed previously.

By synthesizing these three dimensions (i) impact size, (ii) time-to-adoption ring, and (iii) recommendation shape, users can quickly grasp a trend's overall strategic importance. This holistic view allows for rapid scanning of the technological horizon, identification of opportunities and risks, and targeted development of innovation roadmaps and technology portfolios aligned with long-term organizational goals. Table 1 shows all technologies investigated.

ERP Innovation Alignment Perspective

Mapping technological readiness and expectation across ERP users and providers

To complement the user-centered foundation of the ERP Trend Radar, we extended our analysis to integrate both ERP user expectations and provider strategies. ERP system evolution is shaped by both the dynamic capabilities of providers and the changing requirements of business processes and user organizations, making a dual-perspective essential for capturing innovation readiness in a holistic manner (Gronau, 2021). This dual-perspective approach highlights not only what ERP customers seek to achieve, but also what ERP vendors are prepared to deliver. By combining these two lenses, we reveal where supply and demand are aligned, and where strategic gaps remain.

While user organizations define operational needs and transformation goals, ERP providers shape what is technically feasible and available on the market. Understanding both perspectives together offers a more complete view of innovation readiness and highlights critical friction points in the evolution of ERP systems.

Our analysis draws from different complementary sources:

1. A quantitative survey of ERP providers, capturing their current and planned support across more than 25 key technologies, from AI and automation to architecture and interaction.
2. A matching survey of ERP users, capturing expectations and perceived needs for the same technology fields.
3. A structured expert panel assessment, identifying technologies with high strategic importance for future ERP development, regardless of current demand or implementation.

Table 1: Technologies and their Technology Category

Technology Category	Nr	Technology
Infrastructure and Data Management	(1)	Federated Databases
	(2)	Cloud and On-Premise
	(3)	Cloud Service Extensions
	(4)	Containerization
	(5)	Non-relational Databases
	(6)	Data Lakes
System-wide interconnection	(7)	Platform Integration
	(8)	ERP Marketplace
	(9)	Blockchain Integration
	(11)	Open Data Integration
Data Analytics	(12)	Generative KI
	(13)	Machine Learning – Analytics
	(14)	Machine Learning – Forecasting
	(15)	Semantic Evaluation
	(16)	User Intent Recognition
Process Automation	(17)	Automated Authorization Management
	(18)	Robotic Process Automation
	(19)	Real-Time Tracking
	(20)	Automated Process Analysis
	(21)	Automated Process Control
	(22)	Business Process Management
User Interaction and Communication	(23)	Responsive Web Apps
	(24)	Eye Tracking
	(25)	E-Learning
	(26)	Mixed Reality
	(27)	Holograms / Avatars
Simplified Software Development	(28)	Internal Low-Code Platforms
	(29)	External No-Code Platforms
	(30)	Self-Describing Components
Corporate Attractiveness and Sustainability	(31)	Pay-per-Use
	(32)	ESG Reporting

By combining these perspectives, we move beyond isolated insights. Instead, we offer a dynamic view of where user demand, provider readiness, and expert prioritization converge, or diverge. The result is a radar model that captures not only what is happening today, but also what matters for the future of ERP systems.

Survey Methodology and Evaluation Dimensions

A multi-source approach to mapping ERP innovation readiness

Each technology was evaluated along three core metrics:

- **User Demand (%)**: Share of ERP users who express a concrete need or interest in the technology
- **Provider Offering (%)**: Share of ERP vendors that have implemented or plan to implement the technology
- **Discrepancy Score (%)**: The absolute gap between demand and offering, highlighting misalignments

To enrich this analysis, every technology was further classified along three expert-evaluated dimensions:

- **Strategic Impact** (Scale 0–4): How important the technology is for the long-term evolution of ERP
- **Strategic Recommendation**: Action guidance based on current maturity and future value (e.g. Phase Out, Monitor, Sustain, Scale Up -> also see „Development of the Trend radar")
- **Time Horizon:** When the technology is expected to become relevant (1–3, 3–6, or 7–10 years)

This evaluation enables us to identify technologies that are:

- Already in sync between vendors and users
- Strategically overhyped or prematurely adopted
- Critically under-implemented despite high user demand and strategic importance

Key Findings: High-Discrepancy Technologies

Uncovering innovation gaps between user needs and vendor readiness

The comparison of ERP user needs with current and planned vendor implementations reveals a nuanced picture: while many technologies show reasonable alignment, others display significant gaps, pointing to blind spots in the strategic roadmaps of ERP providers.

We identified several technologies with a discrepancy of 30 percentage points or more between user demand and vendor implementation. These represent critical innovation gaps in today's ERP ecosystem, where actual user demand is not yet matched by provider action.

- Data Lakes (57%)

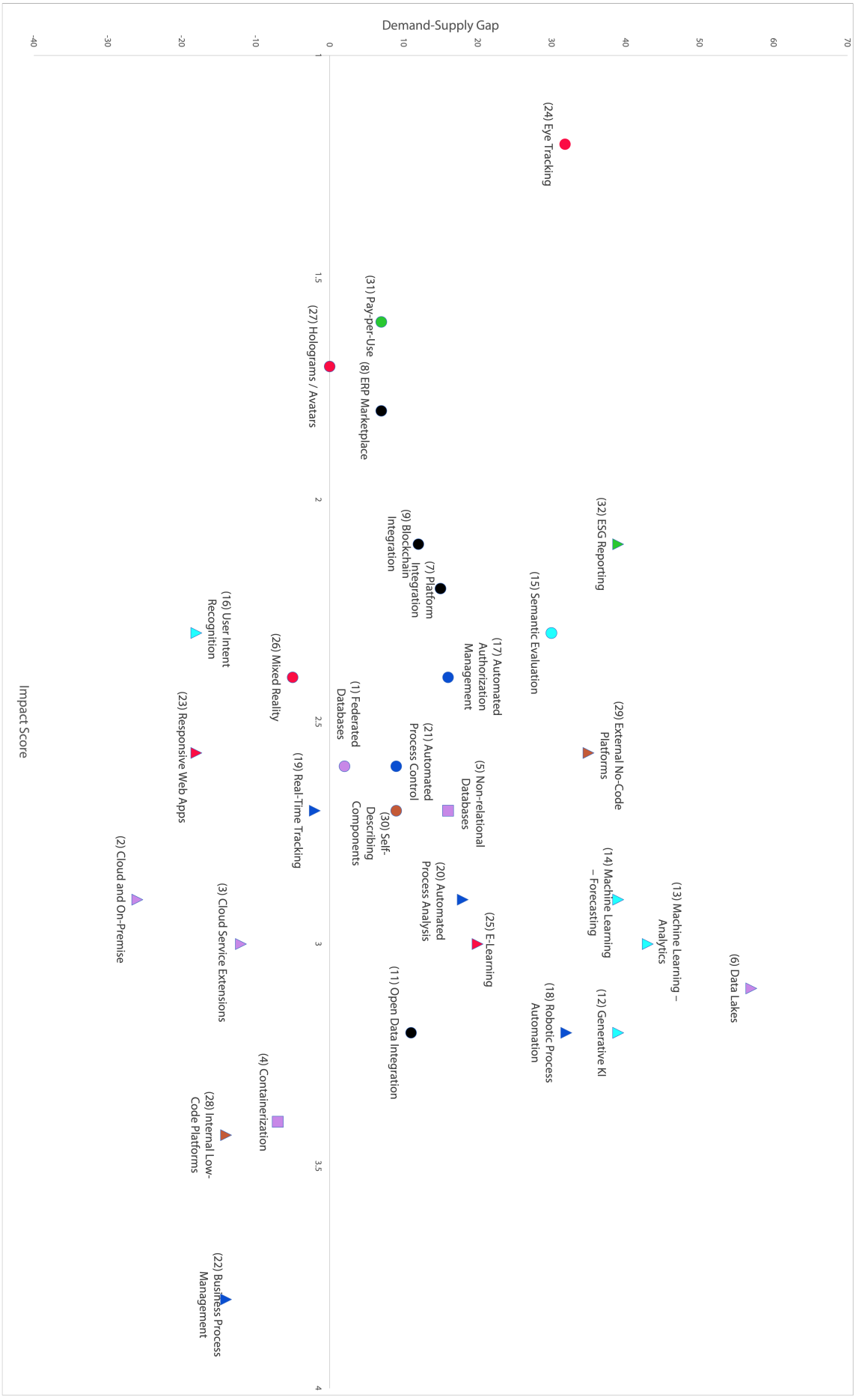

Fig. 4: Discrepancy between offer and demand for technologies

- Machine Learning – Analytics (43%)
- Machine Learning – Forecasting (39%)
- Generative AI (39%)
- ESG Reporting (39%)
- Robotic Process Automation (RPA) (32%)
- Eye Tracking (31.82%)
- Semantic Analysis (30%)

These high-discrepancy technologies do not just reflect a mismatch in innovation planning - they also reveal concrete process-related deficits in today's ERP environments. For example, the lack of robust machine learning forecasting and semantic evaluation directly hinders advanced planning capabilities and contextual decision-making. Missing RPA and external No-Code tools limit user-driven automation and introduce inefficiencies in routine workflows. Similarly, low support for Fig 3. Impact Score versus Demand Supply

ESG reporting prevents organizations from embedding sustainability compliance into standard processes such as procurement, HR, and financial disclosure.

- Data Lakes and Generative AI exemplify technologies that combine strong user demand with expert validation, reinforcing their role as essential enablers of advanced ERP analytics and decision-making.
- ESG Reporting and External No-Code Platforms illustrate cases where vendors may underestimate emerging user priorities related to compliance, transparency, and self-service enablement.
- Process Mining (via RPA) and Machine Learning Forecasting show that automation and predictive intelligence remain key ERP evolution drivers, yet suffer from lagging vendor readiness.
- Eye Tracking and Semantic Technologies reflect the rise of context-aware ERP systems, where interfaces understand intent and adapt accordingly—but market readiness remains limited.

Together, these high-discrepancy technologies spotlight where ERP innovation is most urgently needed—and where providers must act to close expectation gaps and secure long-term competitiveness.

Technologies with high strategic potential

Beyond immediate user demand and current implementation levels, our analysis incorporates a structured expert assessment to identify technologies with high long-term strategic potential for ERP system evolution. These expert-prioritized technologies, each rated with an impact score of 2.90 or higher, reflect anticipated innovation trajectories that may not yet be

fully visible in provider offerings or user adoption, but are expected to shape the future of ERP systems significantly.

Leading this group is Business Process Management (3.80), the highest-rated technology in the assessment. Experts see BPM not only as a mature discipline but as a foundational pillar for modular ERP architectures and process-driven system customization. Its ability to align enterprise logic, orchestrate workflows, and drive continuous optimization places it at the heart of future ERP flexibility. The primary impact of BPM lies in its potential to ensure process transparency and coherence between business and IT, enabling continuous process improvement and long-term system maintainability.

Closely following are Internal Low-Code Components (3.43), Cloud Service Extensions, and Resilient ERP Systems (each 3.40). Internal low-code platforms are seen as enablers of business-side agility, allowing non-technical users to build and adapt ERP functionality autonomously, which accelerates innovation and reduces IT dependency. Cloud service extensions are valued for their ability to facilitate modular ERP ecosystems through API-based integration of external services such as AWS or Azure, making ERP systems more extensible and scalable. Resilient ERP Systems, in turn, are highlighted as socio-technical constructs that ensure system continuity during disruptions. Their impact is particularly relevant for organizations seeking to increase responsiveness and adaptability through modular architectures and user-driven workaround strategies.

Also among the top-tier recommendations are Robotic Process Automation (RPA), Open Data Integration, and Generative AI (each scoring 3.20). These technologies represent the convergence of automation, external intelligence, and creative system interaction. RPA is regarded as a quick-win solution for reducing manual effort in ERP usage by automating repetitive workflows without altering system architecture, thus improving both efficiency and data accuracy. Open Data Integration expands ERP capabilities by enabling the use of publicly available data (e.g., weather or market data) for forecasting, planning, and regulatory purposes, which enhances situational awareness and data richness. Generative AI is expected to fundamentally change user interaction with ERP systems, as it enables automated generation of content, such as offer texts, reports, or user prompts, thereby significantly increasing productivity and reducing manual workload.

Further infrastructural foundations are provided by Data Lakes (3.10), Machine Learning for Analysis (3.00), and Containerization (3.00). Data lakes provide a scalable, schema-flexible architecture for

storing and querying heterogeneous data sources, allowing ERP systems to support advanced analytics and real-time decision-making. Machine Learning for Analysis is used to detect hidden patterns and correlations in ERP data, which facilitates predictive process optimization and data-driven decision support. Containerization, finally, ensures lightweight and portable deployment of ERP modules across environments, supporting DevOps practices and improving maintainability and scalability.

Similarly, E-Learning (3.00) is recognized as an essential enabler of ERP adoption and user empowerment. Through integrated digital training formats, it reduces resistance to change and supports ongoing skill development across increasingly complex ERP landscapes.

Rounding out the set of strategic importance are Automated Process Analysis, Cloud + On-Premise Hybrid Architectures, and Machine Learning for Forecasting (each with a score of 2.90). Automated Process Analysis leverages technologies such as process mining and AI to detect bottlenecks and deviations in ERP processes automatically, which contributes to continuous process optimization and auditability. Cloud + On-Premise hybrid architectures offer a pragmatic path to modernization by combining the control and data sovereignty of on-premise systems with the flexibility and scalability of cloud-based extensions. Machine Learning for Forecasting builds on historical ERP data to predict demand, resource needs, or anomalies, thereby improving the quality and precision of planning processes.

In sum, these findings underline that the ERP systems of the future must be modular, intelligent, user-driven, and resilient. Vendors that invest in these expert-backed innovation fields today will be better positioned to meet emerging expectations tomorrow, while users should critically evaluate whether their systems are aligned with this strategic trajectory.

Interpretation and Strategic Implications

The ERP Trend radar reveals a landscape in transition. While many technologies show convergence between user demand and provider strategy, several key areas

remain fragmented, particularly those tied to AI, automation, composability, and data infrastructure. The integrated analysis surfaces four dominant trends:

1. **Intelligent and Predictive ERP: Emerging and Urgently Needed**

Technologies like Generative AI, Machine Learning for Forecasting, and Semantic Evaluation are driving the transition of ERP systems from static record-keeping tools to intelligent, adaptive platforms. On the user side, expectations are high, pushed by increasing system complexity, the

growing demand for real-time insights, and a volatile market environment that requires faster, more informed decisions. In contrast, ERP providers are progressing slowly, often hindered by technical challenges, difficulties in integrating AI components into core processes, and concerns regarding explainability and data privacy. To close this gap, vendors must invest in secure, explainable, and seamlessly embedded AI modules that enhance decision support and automation. At the same time, users should demand transparency about AI-related roadmaps and ensure that upcoming features provide tangible value through measurable, context-aware intelligence.

2. Empowering Users through Modular Design

The way users engage with ERP is being transformed by technologies like Internal Low-Code Platforms, External No-Code Solutions, and Robotic Process Automation. These innovations offer the promise of democratized system adaptation, allowing departments to configure workflows and automate repetitive tasks without deep technical expertise. Users, especially in industries with rapidly changing requirements, are increasingly demanding tools that allow them to act independently from IT departments. While internal low-code components are already widely implemented on the provider side, offerings for external No-Code platforms and integrated RPA capabilities are still limited or immature. This shows that while the direction is clear, the depth of integration and the actual usability of these tools vary significantly. For ERP systems to truly empower their users, providers must deliver well-integrated, user-friendly, and extensible environments that support modular innovation. In turn, users should evaluate whether these tools enable real autonomy or simply replicate traditional constraints in a new interface.

Integrated RPA capabilities are still limited or immature

3. Data Infrastructure as a Competitive Advantage

Data-centric technologies such as Data Lakes, Federated Databases, and Cloud–On-Premise Integration are emerging as critical enablers of modern ERP environments. These components form the backbone of intelligent operations by enabling the flexible storage, processing, and analysis of distributed data in hybrid system landscapes. From the user perspective, the relevance of these technologies is high, driven by needs for scalable analytics, real-time process visibility, and compliance with regulatory frameworks. However, ERP providers vary significantly in their implementation progress. While hybrid models like cloud–on-premise integration are relatively

advanced, data lakes and federated database systems often remain in the conceptual or experimental phase. This fragmented picture underscores the strategic need to modernize ERP data infrastructure. Vendors should prioritize modular, scalable storage and integration architectures, while users should assess whether current systems enable seamless data access, portability, and multi-source interoperability in line with strategic goals.

4. From Functional to Contextual User Experiences

The future of ERP interaction is not merely about cleaner interfaces, but about creating systems that understand context, adapt to the user's environment, and support multimodal interaction. Responsive Web Apps, Mixed Reality, and Eye Tracking are key examples of this emerging paradigm. Users increasingly expect ERP applications to offer a consistent and intuitive experience across devices, with full functionality available on smartphones, tablets, and desktops. However, implementation on the provider side often falls short. While some ERP systems claim to support responsive interfaces, user experiences are frequently inconsistent, and more advanced modes of interaction, like spatial interfaces or eye-tracking, are deprioritized. This mismatch points to the need for a more deliberate shift from functional parity toward contextual responsiveness. Vendors must focus on developing unified, adaptive user experiences that go beyond aesthetics and truly support the situational needs of mobile, hybrid, and task-diverse workforces. Meanwhile, users should actively test usability across real scenarios and platforms to ensure that ERP solutions deliver both efficiency and accessibility.

Findings in Detail

Machine Learning – Forecasting

Empowering ERP with predictive intelligence

Machine-learning forecasting uses self-adapting algorithms within ERP systems to analyze historical and real-time data in order to predict future demand, trends, or events. It comprises a set of techniques that autonomously learn patterns from data to enable predictive capabilities. In the manufacturing domain, commonly used ML methods include neural networks (NN), random forest (RF), and support vector regression (SVR), as they offer robust and flexible solutions for modeling complex, nonlinear demand patterns (Douaioui et al., 2024; Sistla et al., 2024).

With an impact rating of 2.9, forecasting based on machine learning is seen as a highly relevant innovation in the context of ERP system evolution. The strategic recommendations from experts reveal a clear tendency toward proactive engagement: most of them advocate for scaling up efforts in this area, while only a

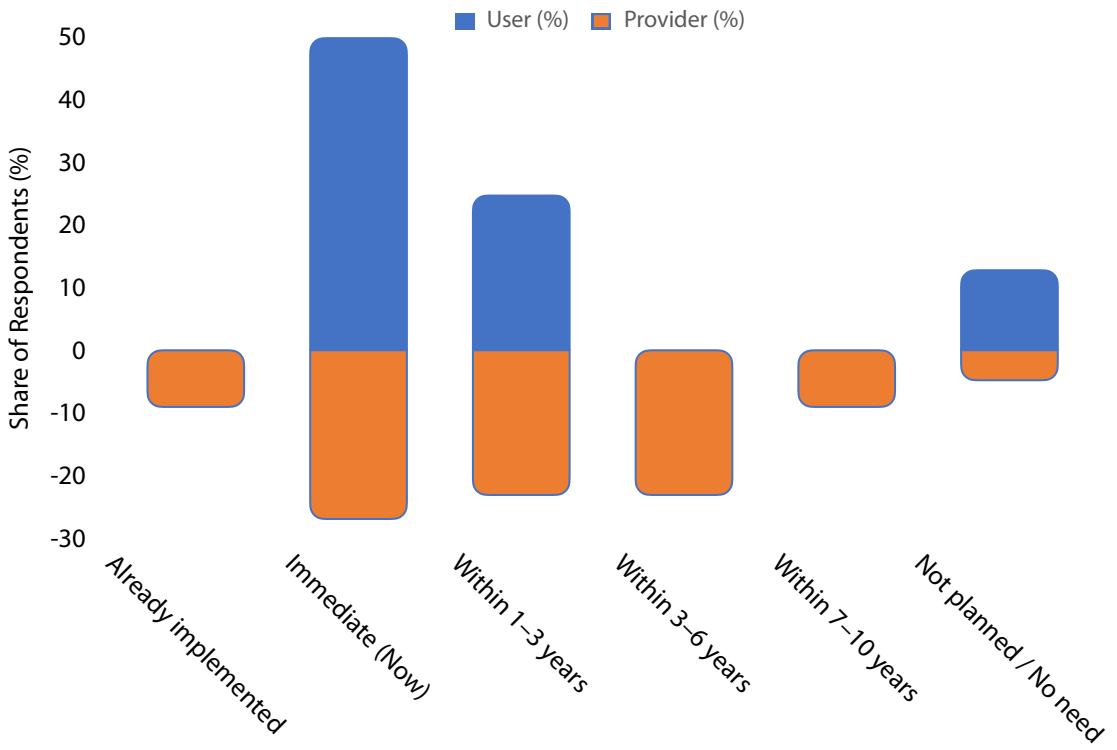

Fig. 5: Technology Impact: Machine Learning - Forecast

minority recommend monitoring developments or maintaining the current status. This reflects a growing consensus that organizations should not remain passive but instead move actively toward the implementation or enhancement of machine learning-based forecasting features.

When it comes to the suggested adoption timeline, more than half of the experts emphasize the need for short-term action. Some recommend immediate implementation, while others see a one- to three-year horizon as appropriate. This prioritization underscores that machine learning for forecasting is no longer a future-oriented topic, but already making its way into ERP roadmaps and becoming an integral part of digital transformation initiatives.

Survey Results – User vs. Provider Perspective

To better visualize the demand–supply alignment, Fig. 5 shows how users and providers distributed their expectations and implementation plans across time horizons.

This comparison clearly illustrates that user expectations for short-term implementation (75% total within the next 3 years) exceed current provider readiness.

Interpretation and Strategic Implications

From the user perspective, ML-based forecasting is no longer a "nice-to-have" feature. Volatility in supply chains, changing consumer demands, and regulatory pressures require ERP systems to be able to proactively anticipate future developments. Accurate forecasting contributes directly to reduced costs, optimized resource allocation, and improved customer satisfaction.

From the provider perspective, the technology gap is shrinking: about 27% of ERP vendors report already offering or actively implementing such capabilities. However, this still lags behind user demand (75%), indicating a discrepancy of nearly 48 percentage points in total planned or realized coverage.

This gap presents both a warning and an opportunity:

- ERP vendors who embed robust and explainable forecasting models (e.g., using time-series ML, Bayesian models, or reinforcement learning) into planning modules will position themselves as innovation leaders.
- Those who delay risk falling behind as forecasting becomes a baseline capability in competitive ERP offerings.

Furthermore, explainability and integration with other ERP modules (e.g., sales, inventory, HR) are essential to unlock full value. Forecasts that remain in a "black box" offer limited actionable insight for decision-makers. Therefore, usability, transparency, and cross-functional data access are just as important as model accuracy.

Strategic Recommendation: Introduce within 1–3 years to meet user expectations and strengthen ERP intelligence.

Machine Learning - Analysis

Unlocking value from data through pattern recognition and self-learning models

Machine Learning Analysis applies algorithms to the automated evaluation of large and complex datasets. It describes the capacity of systems to learn from problem-specific training data to automate the process of analytical model building and solve associated tasks (Janiesch et al., 2021). With a solid impact rating, ML analysis is recognized as a strategically relevant innovation for ERP systems. Most experts recommend actively scaling up such capabilities, reflecting a clear interest in implementation and experimentation with ML-based analysis features in operational ERP environments, while a few suggest continued observation and monitoring of developments.

Regarding the expected adoption timeline, the majority of experts advocate for immediate implementation, highlighting the perceived maturity and

urgency of this technology. Only a small number consider a slightly longer timeframe appropriate. This emphasis on short-term action confirms that ML analysis is not only technically ready but also seen as a high-priority area for ERP transformation initiatives.

Survey Results – User vs. Provider Perspective

To visualize the alignment between user expectations and provider readiness, Fig. 6 presents the distribution of implementation timeframes:

The comparison reveals a **43 percentage point discrepancy** between total user demand (75%) and total provider offering (32%). This mismatch underscores the urgency for ERP vendors to act:

Interpretation and Strategic Implications

From the user perspective, ML analysis is increasingly essential for handling growing data volumes and complex, real-time business challenges. It enhances decision quality, supports automation, and reduces reliance on manual interpretation.

From the provider perspective, the adoption rate remains below expectations. Technical constraints, integration challenges, and the perceived complexity of ML remain common barriers.

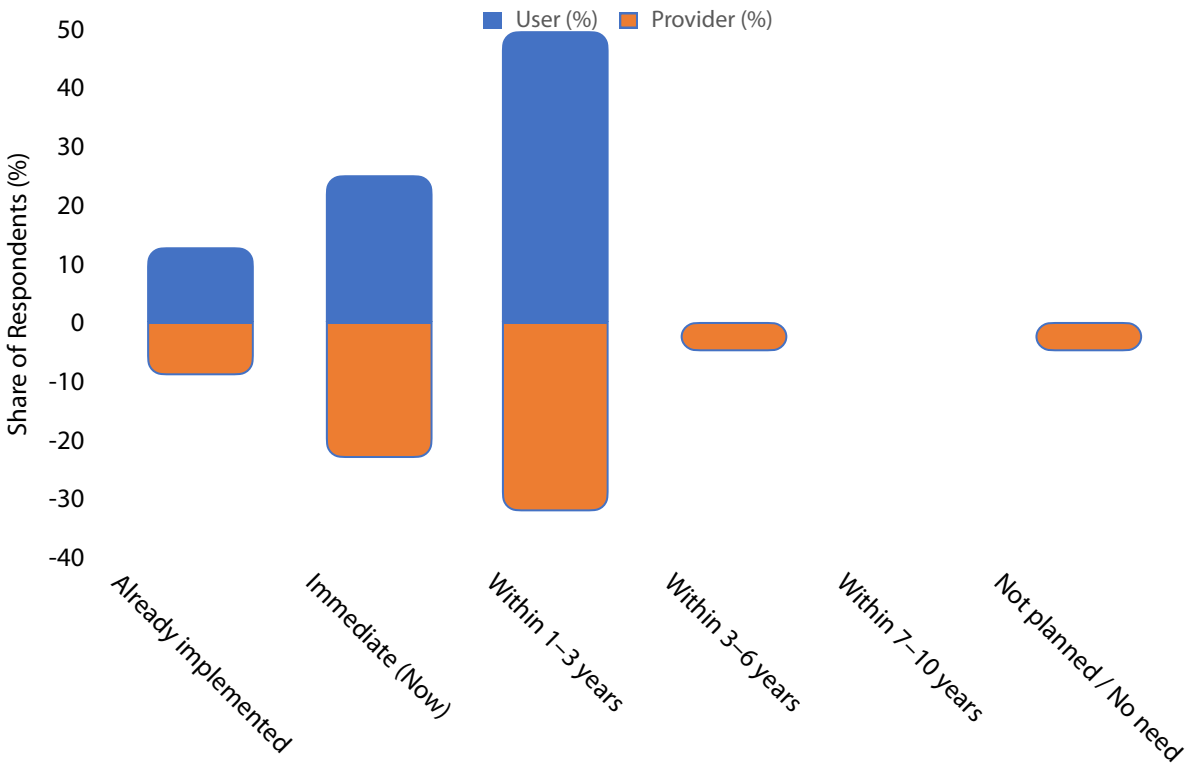

Fig. 6: Technology Impact: Machine Learning - Analysis

However, machine learning–based analysis is central to enabling intelligent ERP systems that go beyond static reporting. Providers who invest in explainable, scalable, and seamlessly integrated ML modules can significantly increase system stickiness by embedding advanced analytics directly into the ERP core. This creates differentiated value for planning, monitoring, and operational control, while also laying a strong foundation for future AI-driven capabilities.

Strategic Recommendation:
Introduce immediately or within 1–3 years. Embed ML analysis natively into ERP analytics, ensuring usability for business users and alignment with existing data structures.

Generative AI

Creating content, insights, and automation within ERP

Generative AI comprises models that learn the probabilistic structure of their training data and autonomously produce new content such as text, images, audio, or code. It enables automated content creation and creative assistance but also carries risks such as bias, hallucinations, and copyright concerns (Feuerriegel et al., 2024). With one of the highest impact ratings, Generative AI is considered among the most strategically significant innovations highlighted in the ERP Trend radar.

Most experts recommend actively scaling up generative AI capabilities, reflecting a shared belief that both ERP providers and

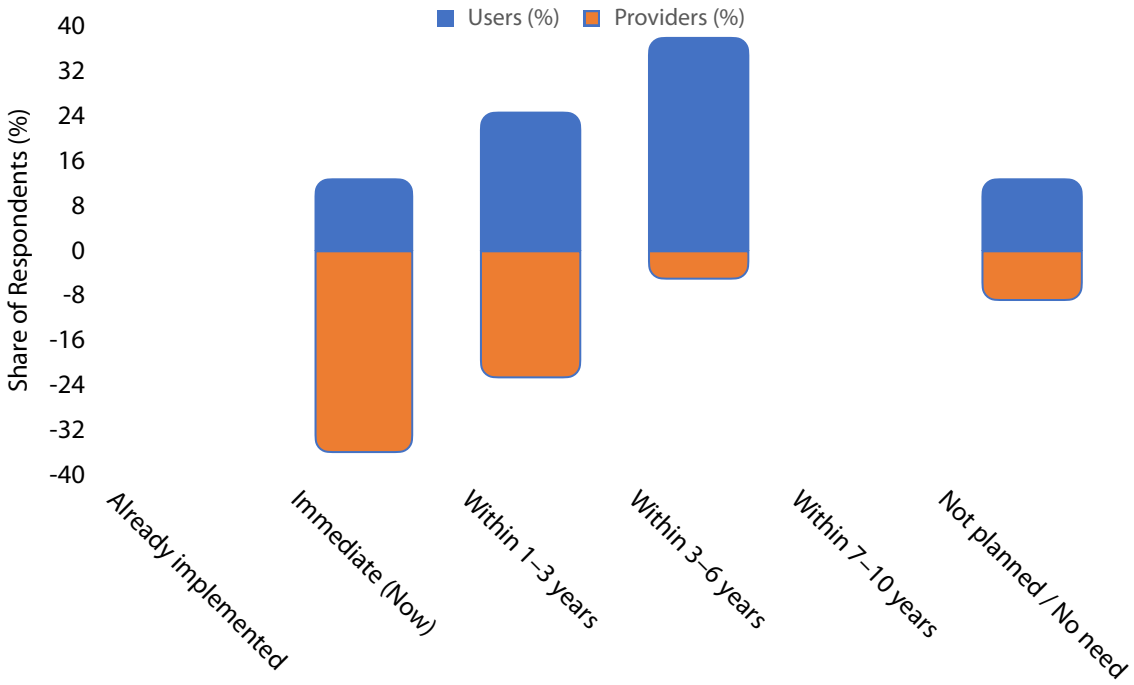

Fig. 7 Technology Impact: Generative AI

user organizations should engage with this technology in the near future. While a few experts suggest a more cautious monitoring approach, there is broad agreement that generative AI represents a transformative force and should be treated as a high-priority area for exploration and implementation.

Survey Results and Vendor Readiness

Fig. 7 shows the adoption timeline distribution for Generative AI capabilities from both users and providers.

Despite 75% of users signaling interest within the next six years (and 37.5% within three years), none of the surveyed vendors report full implementation yet. However, 36.4% of providers are preparing for immediate introduction, and 22.7% plan to adopt within 1–3 years, indicating that mainstream integration is accelerating. Still, a gap of nearly 39 percentage points remains between user-side expectations and current vendor-side availability, highlighting a significant innovation lag.

Interpretation and Strategic Implications

From the user perspective, Generative AI holds transformative potential across core ERP functions. It enables the automated creation of reports, offer texts, and compliance documents, while also supporting natural-language interaction through voice or chat interfaces. Moreover, by generating workflows or code snippets, it empowers citizen developers and expands ERP accessibility to new user groups. These capabilities not only reduce manual workload but also increase usability and flexibility.

From the provider perspective, integrating Generative AI requires careful consideration of both technical feasibility and ethical responsibility. Key challenges include ensuring data privacy and security within regulated enterprise environments, maintaining explainability and robustness of models, and embedding generative features seamlessly into critical business workflows.

Despite these challenges, the strategic benefits are considerable. ERP vendors that act early and responsibly in this space will be able to deliver context-aware, assistant-style systems that adapt to user behavior, support self-learning, and offer advanced customization possibilities—even for users without technical expertise.

Strategic Recommendation: Introduce within 1–3 years. Prioritize ethical safeguards and robust, high-value use cases to align with user demand and drive market differentiation.

Generative AI represents a paradigm shift, from systems that store and process data to platforms that actively co-create knowledge and automate work alongside users. Vendors who lead in this domain will define the next chapter of enterprise applications.

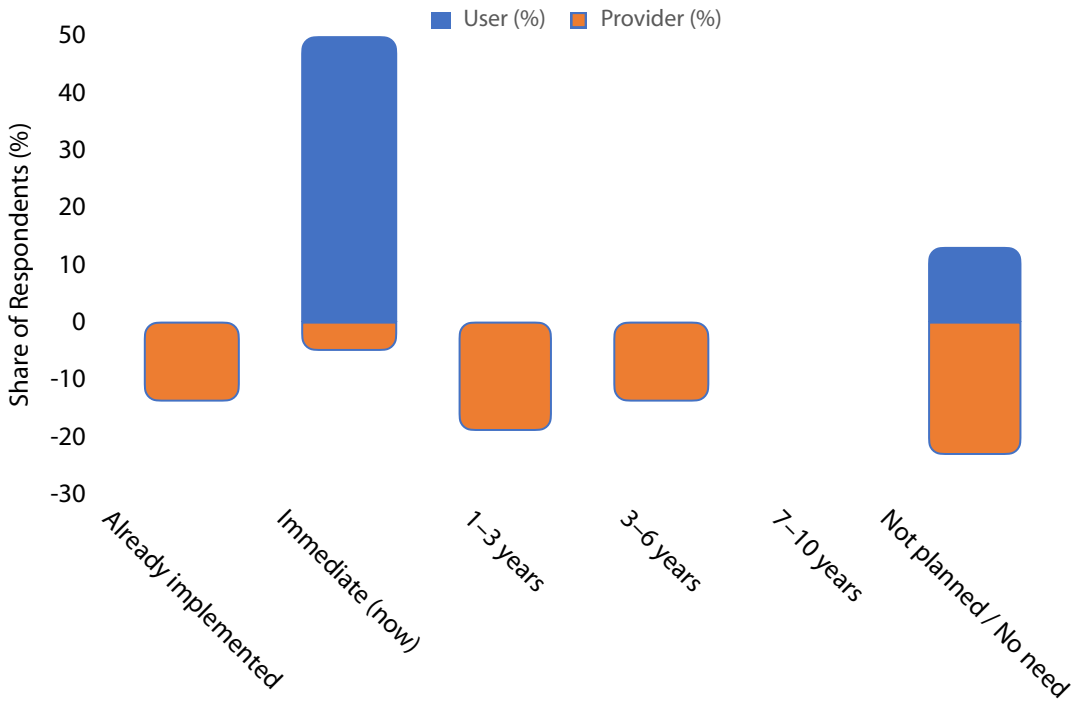

Fig. 8: Technology Impact: RPA

Robotic Process Automation (RPA)

Streamlining repetitive tasks through rule-based automation

In robotic process automation (RPA), manual activities are replicated by software robots that mimic user behavior on the existing presentation layer. Because the original systems remain untouched and no additional interfaces are required, RPA is particularly attractive for rapid deployment within ERP landscapes.

Survey Results and Vendor Readiness

Fig. 8 summarizes the adoption timelines for RPA among users and providers:

While 50% of users report an immediate need for RPA capabilities, only 13.6% of providers have implemented them and 4.5% are currently planning for short-term rollout. This results in a gap of over 30 percentage points, clearly identifying RPA as a high-discrepancy innovation where ERP providers are lagging behind user expectations.

Interpretation and Strategic Implications

RPA is becoming an essential component of modern ERP offerings. From the user perspective, it delivers a fast-track solution for digital transformation by automating routine tasks without requiring system-wide changes. Users benefit from immediate improvements in efficiency and accuracy, particularly in workflows such as data entry, invoice processing, or cross-application orchestration. Moreover, RPA empowers business departments to

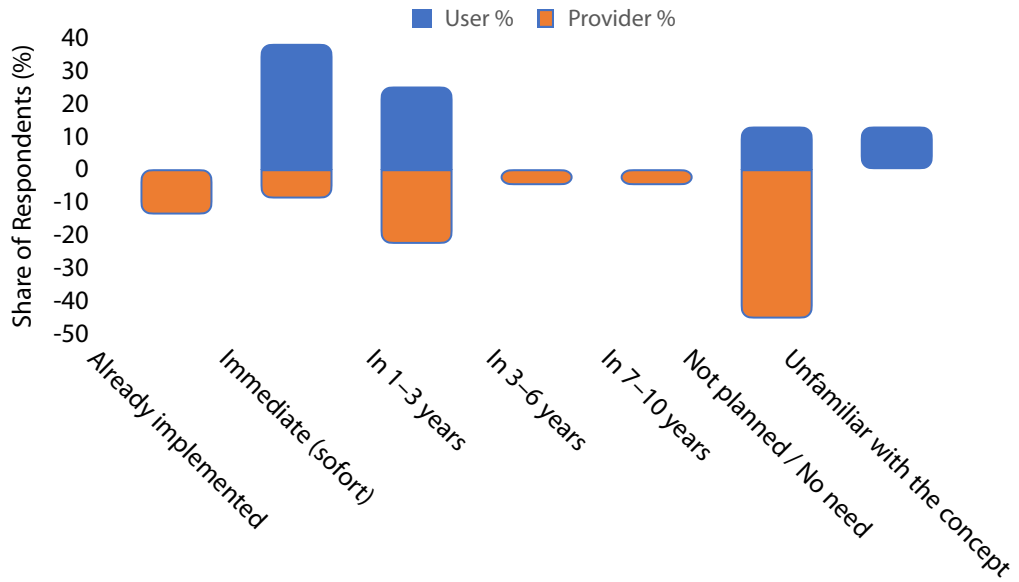

Fig. 9: Technology Impact: ESG

implement automation independently, enabling user-driven innovation. On the provider side, however, the comparatively slow rate of implementation suggests a degree of hesitation. This may stem from a reliance on external RPA engines rather than fully integrating automation tools natively into ERP platforms, as well as from licensing costs or the perception that RPA represents a temporary workaround rather than a sustainable long-term capability. Nonetheless, experts consider RPA to be strategically important, especially as an entry point to more sophisticated automation approaches such as event-driven orchestration, context-aware recommendations, and intelligent exception handling. While BPM and RPA serve different roles in ERP modernization, they are inherently complementary. BPM provides the overarching framework to model, orchestrate, and optimize processes at a strategic level, while RPA operates tactically to automate repetitive, task-level actions within those frameworks. BPM defines the structure and logic of business operations, the "what" and "how", while RPA delivers the "how" through rapid execution, particularly where legacy systems and manual interfaces remain. Together, they enable organizations to enhance process agility and progressively automate operations without undertaking disruptive system overhauls.

Strategic Recommendation:
Immediate rollout is advised. Providers should embed RPA capabilities natively or ensure seamless integration with leading automation platforms such as UiPath or Power Automate to meet rising user

demand and remain competitive in a rapidly evolving ERP landscape.

ESG Reporting

Enabling transparency for sustainability, compliance, and governance

ESG reporting refers to the structured disclosure of a company's environmental, social, and governance performance to internal and external stakeholders. It involves tracking indicators such as carbon emissions, energy use, workforce diversity, labor standards, and board governance. Standardized frameworks such as GRI, SASB, and ESRS provide structure for these disclosures. Under the EU's Corporate Sustainability Reporting Directive (CSRD), companies are required to report based on a double materiality principle, considering both their impact on society and the environment, and the financial risks posed to the company by ESG factors (Yadav et al., 2024).

Survey Results

With an expert-rated impact score indicating moderate perceived importance, ESG reporting is not yet among the top-ranked technologies for long-term ERP transformation. However, the strategic recommendations suggest that its relevance is increasing. Most experts recommend actively scaling up ESG functionalities, reflecting a growing recognition of its strategic importance, while a smaller group advises continued observation and evaluation. Notably, none of the experts suggested deferring or dismissing ESG reporting, which highlights its growing weight on the strategic agenda. In terms of implementation timelines, most experts consider ESG features to be relevant in the short term, recommending either immediate implementation or adoption within the next few years. Crucially, no expert indicated that ESG reporting is "not planned," which reinforces its cross-cutting relevance across planning horizons.

From the user perspective, the urgency is even more pronounced, as can be seen in Fig. 9. A notable share of users already expect ESG functionalities to be integrated into ERP systems either immediately or within a one-year timeframe, and the rest anticipate adoption within the next three years. No respondent considered ESG reporting irrelevant or unplanned, signaling clear consensus on its importance. In contrast, ERP provider readiness significantly lags behind. Only a small fraction of providers have ESG reporting capabilities currently implemented, and only a few more plan to do so in the near term. Alarmingly, a large share of providers report no plans to support ESG reporting at all in the foreseeable future. This results in a significant gap between what users demand and what providers currently

offer, making ESG one of the most critical innovation gaps identified in the Trend radar analysis.

Interpretation and Strategic Implications

From the user perspective, ESG reporting has evolved from a niche feature into a compliance necessity. Regulatory frameworks such as the EU Corporate Sustainability Reporting Directive (CSRD) mandate structured, auditable reporting, while customers, investors, and regulators increasingly expect enterprises to demonstrate transparent and responsible business practices. Embedding ESG capabilities directly within ERP systems not only facilitates automated data collection but also ensures organizational alignment and audit-ready compliance across departments.

On the provider side, the low readiness may stem from several factors. The relatively recent emergence of ESG-specific ERP features, the complexity involved in consolidating data from various modules such as HR, finance, procurement, and production, and a tendency to delegate ESG reporting to external platforms have all likely contributed to the current shortfall. However, this reluctance to integrate ESG directly within ERP platforms carries strategic risks. As regulatory requirements intensify and social expectations heighten, systems without native ESG capabilities may increasingly be viewed as outdated or inadequate, particularly in industries where sustainability and ethical governance are under public and legal scrutiny.

Addressing this gap presents a significant opportunity for ERP vendors to demonstrate leadership and innovation.

Strategic Recommendation

Scale up (Impact Score: 2.10)

ERP vendors should invest now in native ESG features or integrate tightly with modular add-ons that enable flexible, standards-compliant reporting. Early adopters will be well-positioned to support their customers' sustainability transformations and differentiate themselves in compliance-driven markets.

Bottom line: SG reporting is not just a regulatory checkbox. It represents a convergence of digital transparency, risk mitigation, and social responsibility. As sustainability becomes a core KPI across industries, ERP systems must evolve to become the trusted data backbone for ESG accountability.

External No-Code Platforms

Empowering users through modular, low-barrier ERP customization

Low-code platforms are visual development environments that enable users without in depth programming knowledge to create business applications by combining pre-built, configurable

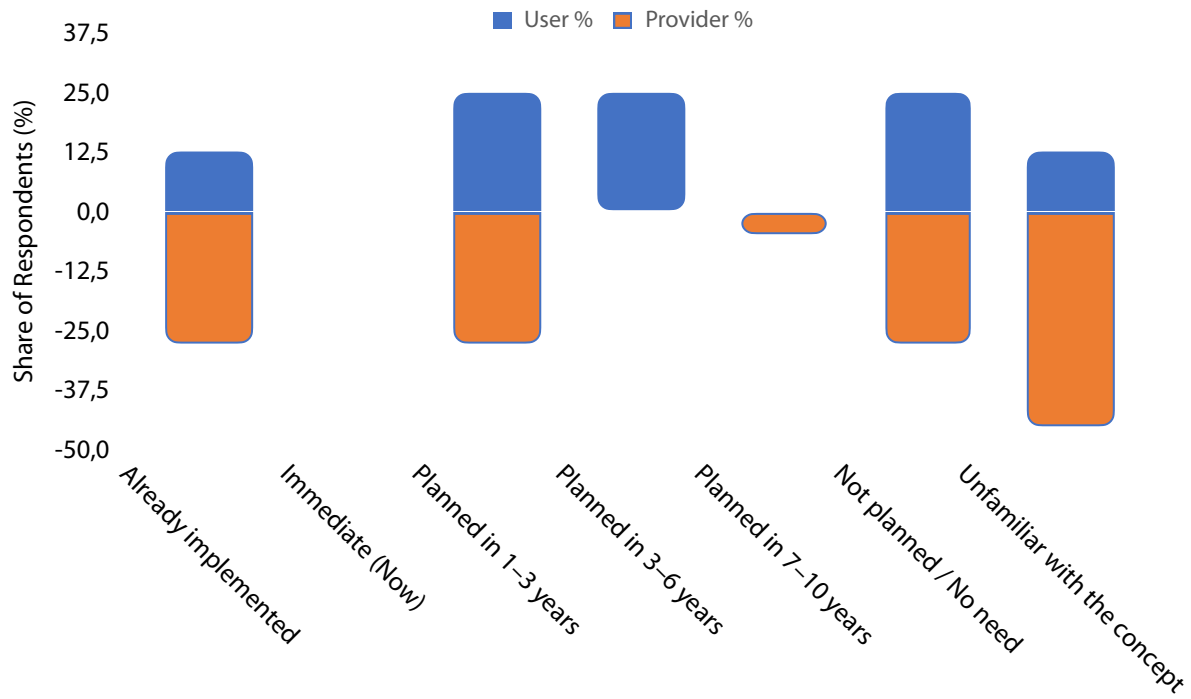

Fig. 10: Technology Impact: External No-Code Platforms

components. These platforms support intuitive, modular customization of ERP systems and help implement individual, competitively differentiating processes in a cost-efficient and scalable manner (Pöppler and Abendroth, 2025).

Survey Results

External No-Code platforms received an average impact score of **2.6**. Notably, all experts immediate introduction, retention, or discontinuation. Regarding the expected adoption horizon, all participants uniformly identified a short-term timeframe of one to three years. No responses indicated urgency for immediate implementation, nor were longer-term horizons (3–6 years, 7–10 years, or "not planned") selected.

Despite the lack of immediate introduction recommendations, the consistent 1–3 year horizon across all responses suggests growing strategic importance in the near term.

Strikingly, over 70% of vendors have neither implemented nor planned for external No-Code platforms, suggesting that many providers may not yet fully recognize the strategic relevance of this concept—despite unanimous short-term expectations from users. This lack of awareness represents a critical blind spot in the innovation strategies of ERP vendors.

Interpretation and Strategic Implications

From a user perspective, external No-Code platforms offer a powerful means to foster

decentralized innovation within business units. They enable departments to act independently of scarce IT resources, accelerating ERP adaptability in response to fast-changing workflows or specific functional requirements. These platforms extend the flexibility of ERP systems by allowing users to create integrations with other information systems, dashboards, or lightweight applications without the need to modify the ERP core, assuming that robust APIs and interoperability standards are available. In doing so, they support agile experimentation and iterative process enhancements close to the operational front line.

On the provider side, the current hesitancy to embrace external No-Code environments may be rooted in concerns about data integrity, governance, and security, particularly when third-party tools are involved (see fig. 9). Some vendors prefer internal low-code frameworks, which offer greater control and monetization potential. Additionally, there is often a lack of architectural blueprints that clearly define how to embed external No-Code tools safely and reliably within existing ERP ecosystems. This architectural uncertainty may lead vendors to delay or deprioritize strategic integration.

However, such caution could have long-term consequences. As enterprise customers increasingly demand composability, openness, and empowerment of non-technical users, ERP vendors that fail to meet these expectations risk being perceived as rigid or outdated. To avoid this, providers should reassess the openness of their platforms and the robustness of their API strategies. Developing certified connectors or partnerships with established No-Code environments such as Make, Airtable, or Retool could significantly boost adoption, expand the surrounding ecosystem, and enhance user satisfaction. Rather than undermining ERP system integrity, external No-Code platforms can serve as catalysts for ERP evolution. Vendors who proactively embrace and integrate these tools will unlock new layers of value and position their systems as open, agile, and truly user-centric.

Semantic Evaluation

Enabling contextual understanding and intelligent data processing in ERP

Semantic evaluation technologies aim to make ERP systems "understand" the meaning behind structured and unstructured data. By using ontologies, metadata, and contextual relationships, ERP platforms can derive insights beyond surface-level values, improving planning, forecasting, document processing, and cross-system integration. These capabilities form the foundation for context-aware automation and AI-

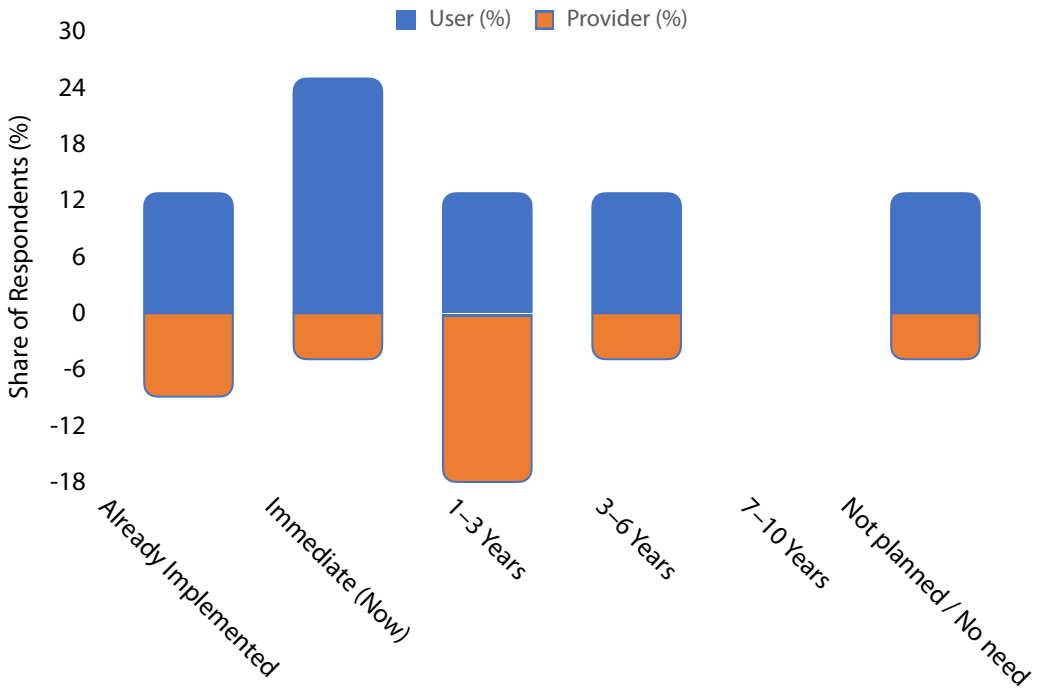

Fig. 11: Technology Impact: Semantic Evaluation

supported decision-making (Cambria and White, 2014).

Expert Evaluation

Semantic evaluation was assigned an average impact score of 2.30. Strategic recommendations varied: three participants suggested the technology should be evaluated ("Monitor"), while two recommended retaining it ("Sustain"). None proposed immediate implementation or discontinuation.

In terms of time horizon, two experts expect relevant implementation within the next year, while one each indicated a horizon of 1–3 years and 3–6 years. Interestingly, one participant marked it as "not planned," suggesting diverging views on its short- to mid-term viability.

Survey Results: Provider and User Comparison

To better assess the alignment between provider offerings and user expectations, Fig. 11 shows the percentage distribution of responses by adoption horizon.

These numbers indicate that although some providers have begun implementing semantic evaluation capabilities, the pace does not yet match the scattered but increasing user interest in the near term.

Interpretation and Strategic Implications

Despite its relatively moderate impact score, semantic evaluation holds strategic potential for both providers and users, as ERP systems grow more data-intensive and context-driven. From the provider perspective, semantic technologies are still

nascent and complex to implement, often requiring significant changes to data models and infrastructure.

However, ERP users increasingly seek intelligent systems that can interpret, rather than merely process, data. For example, semantic layers can power advanced document classification, automate compliance checks, or enhance planning accuracy through better contextualization.

The mixed feedback in the survey reflects a classic early-stage technology dilemma: while some respondents already value its retention, others are still in an exploratory phase or remain unconvinced of its short-term benefits. Given this ambiguity, providers should monitor developments in semantic processing closely and consider offering modular pilot features to early adopters in high-data-intensity industries.

As semantic capabilities mature and AI integration deepens, this field may transition from a „nice-to-have" position to a strategic differentiator.

Responsive Web Apps (RWAs)

Enabling seamless ERP access across devices

A Responsive Web App is a browser-based application whose layout and interaction patterns adapt fluidly to any screen size or device, providing the same core functionality on desktops, tablets, and smartphones. It relies on standard web technologies such as HTML5, CSS media queries, and JavaScript with asynchronous requests to update content without full page reloads. This enables users to, for example, record inventory, approve orders,

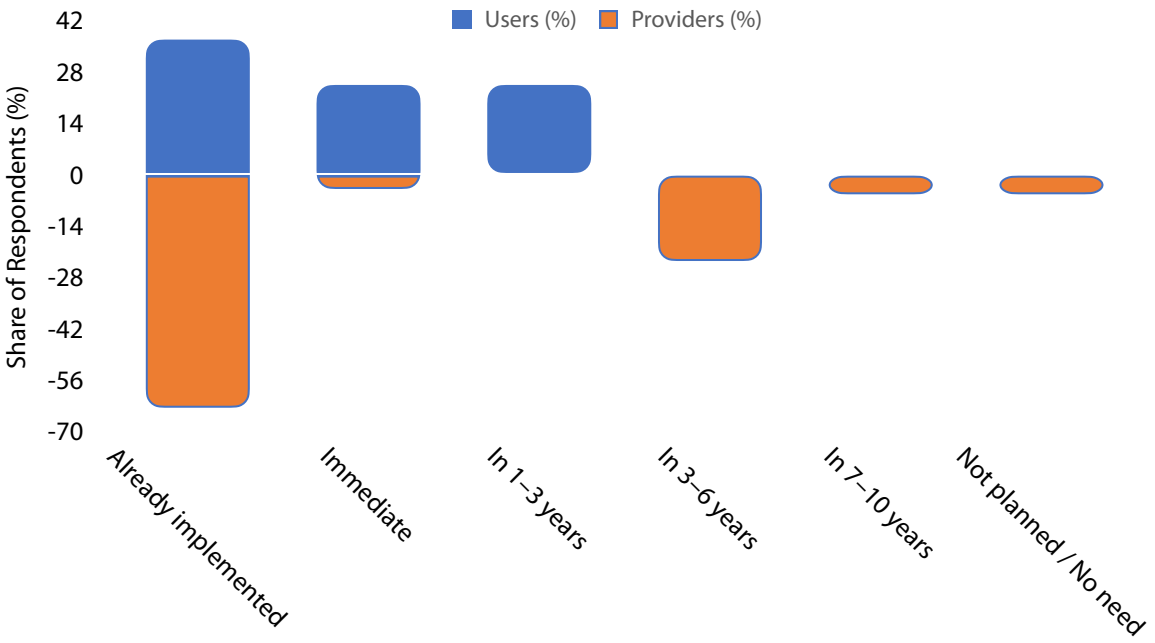

Fig. 12: Technology Impact: RWA

or complete tasks regardless of their device or location.

Survey Results – User vs. Provider Perspective

RWAs received an average expert impact score of 2.6. Among the expert panel, seven experts recommended "Scale up", and one opted for "Monitor", indicating near-unanimous strategic endorsement for immediate implementation. All participants agreed on a short adoption horizon ("Immediately").

This data reveals a clear gap in perceived availability: while 63.6% of providers claim RWA functionality has already been implemented, only 37.5% of users confirm that this is currently accessible to them. In addition, a substantial portion of users (50%) expect responsive capabilities within the next 1–3 years, while providers indicate longer roll-out horizons or a lack of planning in some cases. This discrepancy may stem from incomplete rollouts, poor communication, or inconsistent quality across devices.

Interpretation and Strategic Implications

Responsive Web Apps are a foundational expectation in modern ERP environments. User-side urgency is high, driven by increased mobility, hybrid work structures, and rising expectations for seamless digital access. Providers, on the other hand, show high implementation claims, yet the inconsistency in actual user experience suggests that full parity across platforms is not yet the norm (see fig. 12).

Vendors should prioritize investments not only in visual responsiveness but also in ensuring functional completeness cross

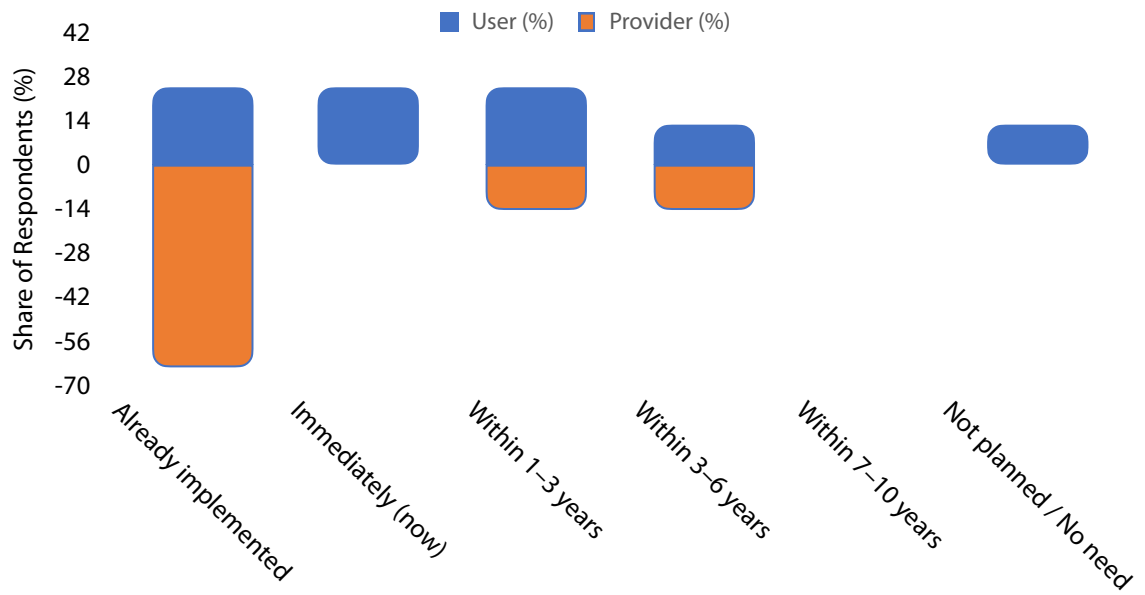

Fig. 13: Technology Impact: No-Code/Low-Code-platforms

devices. This includes enabling complex transactions, workflows, and analytics in mobile contexts without degraded performance or feature limitations. Vendors who address these issues proactively can position themselves as modern, user-centric ERP leaders.

Strategic Recommendation: Immediate rollout with a focus on parity across device types and seamless integration into existing ERP modules.

Internal No-Code/Low-Code Platforms

Accelerating ERP adaptability through embedded configuration tools

Internal Low-Code/No-Code platforms empower ERP users to customize workflows, build forms, and extend system functionalities without needing extensive programming skills. Embedded directly into ERP environments, these tools support citizen development, agile iteration, and local innovation, especially in organizations undergoing digital transformation. By enabling business users to create tailored solutions independently of central IT, internal Low-Code/No-Code components accelerate adaptation to changing processes and reduce implementation cycles. They are particularly valuable for departments with rapidly evolving requirements and limited technical capacity.

Survey Results – User vs. Provider Perspective

This technology received an average impact rating of 3.4, reflecting its strategic relevance. From the provider side, 64% of ERP vendors report that they have already implemented internal Low-Code/No-Code platforms. Additional vendor responses indicate that 14% plan implementation within the next 1–3 years, and another 14% within 3–6 years. No vendors reported plans beyond that horizon or no intention to implement.

On the user side, the adoption picture is somewhat more varied. 25% of users report current usage ("already implemented"), while another 25% expect immediate implementation. A further 25% expect implementation within 1–3 years, and 13% within 3–6 years. Notably, 13% of users indicated that they do not plan to implement such platforms. This creates a moderately aligned timeline, with 50% of users expecting adoption within the next three years compared to 78% of providers either already having implemented or planning to within that same horizon.

Interpretation and Strategic Implications

Internal no-/low-code platforms are increasingly viewed as an essential component of modern ERP systems, enabling adaptability, local autonomy, and faster iteration cycles. From the user side, urgency is evident, with 50% expecting

immediate to near-term implementation and strong support for deployment., as can be seen in fig. 13. This reflects a growing demand for more self-service customization options in dynamic business environments.

On the provider side, while a majority report that such capabilities are already available, the relatively moderate user-side confirmation points to a usability or communication gap. Many solutions currently on offer lack the depth, intuitiveness,

or integration needed to fully empower non-technical users, resulting in underutilized potential.

Vendors should focus on delivering genuinely intuitive and powerful no-/low-code environments that integrate deeply with existing ERP processes, data models, and governance structures. Functional richness, security compliance, and ease of use will be key differentiators as user expectations continue to rise.

Strategic Recommendation: Prioritize immediate availability of fully integrated and user-friendly no-/low-code tools that go beyond interface tweaks and enable full process customization without developer support.

Data Lakes

Creating flexible, scalable data foundations for ERP intelligence

A data lake serves as a flexible and scalable repository that ingests and stores raw data from diverse sources in its original format. By exposing this data through rich metadata services, users can query, maintain, and analyze it on demand. This schema-on-read approach stands in contrast to traditional data warehouses, which require data structuring prior to loading (Hai et al., 2023). In the context of ERP systems, data lakes are critical enablers of advanced analytics, predictive intelligence, and real-time decision-making. They facilitate long-term data archival, support cross-domain analytics, and enable seamless integration of both external and streaming data sources.

Expert feedback confirms the high strategic relevance of data lakes. Most experts advocate for an active scaling of such technologies, while a smaller group suggests careful monitoring of their development and implementation. Notably, none recommend delaying or discontinuing efforts in this area. When considering the expected adoption timeline, the majority of experts call for immediate implementation, with others projecting rollout within the next few years. This consensus underlines both the urgency and long-term value of data lakes as foundational elements in the modernization of ERP system landscapes.

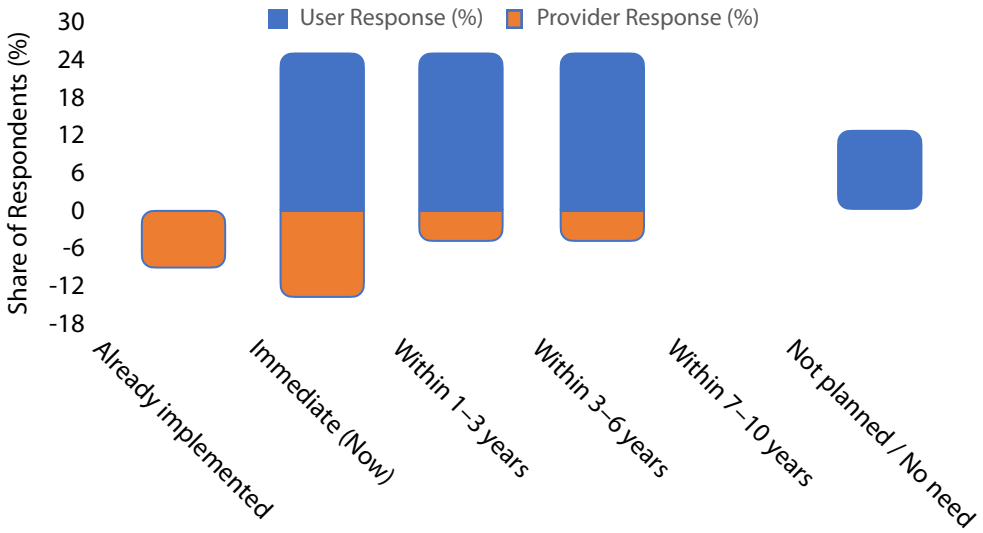

Fig. 14: Technology Impact: Data Lakes

Survey Results – User vs. Provider Perspective

The demand–supply comparison reveals a significant gap between ERP user expectations and provider readiness.

Despite 75% of users signaling demand within the next six years, only 18.2% of providers have implemented or are currently planning data lake capabilities. This results in a discrepancy of nearly 57%, the highest across all technologies in the ERP Trend Radar.

Interpretation and Strategic Implications

From the user perspective, demand for data lakes is steadily growing (see fig. 13). While only a small portion report immediate implementation, nearly 50% of surveyed ERP users expect data lake functionalities to become relevant within 1–3 years. This aligns with rising expectations for ERP platforms to support real-time analytics, AI integration, and data-driven decision-making across business domains.

From the provider side, implementation remains limited, likely due to architectural challenges. Legacy ERP systems were typically designed around structured, relational data models and require significant redesign to support schema-on-read architectures. Furthermore, providers often view data lakes as part of a separate analytics layer rather than a core ERP responsibility.

To address user expectations and remain competitive, ERP providers must begin treating data lakes as strategic assets rather than peripheral storage solutions. This involves offering native connectors to both internal and external data sources, ensuring semantic traceability and governance to support enterprise-wide

compliance, and enabling low-latency data access for embedded analytics, machine learning, and intelligent workflows. By embedding data lake capabilities directly into their architectures, ERP vendors can lay the foundation for adaptive, insight-driven systems that meet the evolving demands of digital enterprises.

Cloud Service Extensions

Flexible expansion of ERP capabilities via external cloud platforms

Cloud service extensions refer to visual connectors and APIs that enable services such as AWS, Azure, or Google Cloud to be seamlessly integrated and orchestrated into enterprise processes, without manual coding. These connectors allow ERP systems to be enhanced with external functionality such as machine learning, analytics, messaging, or data storage services. This architecture facilitates rapid scaling, modular service composition, and customized extensions, especially useful in environments where business demands change quickly.

By externalizing some logic or functionality, cloud service extensions support greater ERP composability and open the door to innovation ecosystems beyond the ERP core.

Expert Evaluation

With an expert-rated impact score of 3.4, cloud service extensions are considered highly relevant. The strategic recommendations emphasize that these technologies are not emerging or experimental but are already in widespread use and should be maintained as core components of ERP strategies moving forward. Rather than calling for initial adoption or evaluation, most

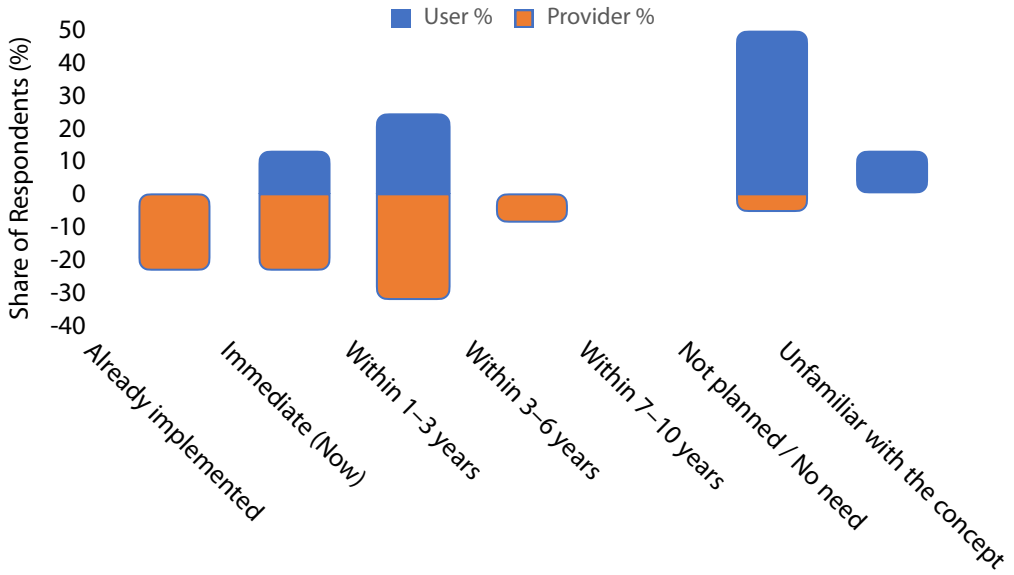

Fig. 15: Technology Impact: Cloud Service Extensions

experts stress the importance of sustaining and further integrating these capabilities. The anticipated timeline for continued implementation points to a sense of short- to mid-term urgency, with the majority favoring immediate integration, while others view adoption within the next few years as appropriate. This shared perspective underscores the expectation that ERP systems must be capable of seamlessly extending their functionality through scalable, API-based cloud services to remain agile, composable, and future-ready.

Survey Results: Provider and User Comparison

Survey results show a clear maturity gap between ERP providers and users in terms of awareness and planned adoption of cloud service extensions. The data reveals that while providers are actively investing in or planning for cloud extensions, users remain cautious, with 50% stating no current need and 12.5% unfamiliar with the concept.

Interpretation and Strategic Implications

This asymmetry is typical of technologies operating behind the scenes (see fig. 15). While ERP vendors increasingly offer extension options via cloud services, end users may not perceive the added value directly, especially if integrations are technical or if user interfaces remain unchanged.

From the provider perspective, cloud service extensions enable rapid functional scaling without inflating the ERP core, allowing for a leaner, more modular system architecture. They facilitate flexible integration with specialized third-party tools and platforms, supporting the development of innovation ecosystems that can evolve independently from the core system. For users, the benefits of cloud service extensions are often more indirect. They gain access to enhanced capabilities without the need for major system upgrades, ensuring a smoother and more continuous evolution of their ERP environment. These extensions also help future-proof ERP investments by making it easier to integrate emerging technologies as they become relevant. Additionally, users can customize their systems to meet specific needs without adding undue complexity to the underlying ERP infrastructure.

The survey results indicate a clear need for communication and enablement strategies: vendors must proactively explain and demonstrate how cloud connectors benefit business operations, ideally through real-world examples or guided adoption packages.

Strategic Recommendation

Sustain (Score: 3.40)

Cloud service extensions are a strategic building block of modern ERP architectures. Vendors should continue to

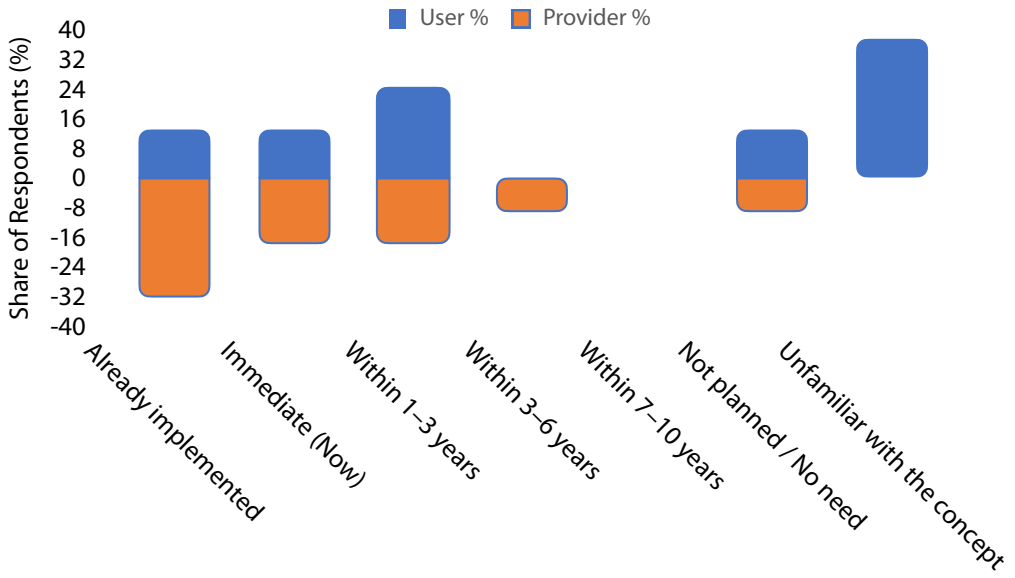

Fig. 16: Technology Impact: Containerization

expand their catalog of cloud connectors and make their use as seamless and visible as possible to business users.
Providers are advised to invest in end-user education and use-case-driven marketing to overcome current awareness barriers and demonstrate tangible business value.

Containerization

Accelerating deployment and scaling through lightweight packaging

Containerization packages applications and their dependencies into isolated, OS-level containers that run without a guest kernel. This architecture allows consistent deployment across laptops, private data centers, and public clouds, enabling faster startup, reduced resource consumption, and enhanced portability. Unlike traditional virtualization, containerized environments support microservice-based ERP architectures efficiently and are central to DevOps workflows.

Tools such as Docker and Kubernetes automate lifecycle management, including orchestration, autoscaling, and self-healing, making containerization a foundational element for modern ERP deployment and evolution.

Expert Evaluation

Expert evaluations indicate that containerization, with its recognized impact, is already playing a significant role in ERP and should be maintained as a core component of ongoing ERP strategies. Most experts recommend actively expanding its use, while a few suggest monitoring its development, reflecting its established relevance and strategic value. The temporal outlook suggests short- to medium-term prioritization, with some calling for immediate action and others

envisioning adoption within the next few years. This overall classification under "Sustain" implies that containerization has already demonstrated its utility and is in active use across various ERP contexts, though not all stakeholders have reached the same level of maturity in implementation. As such, continued integration and advancement are recommended to fully leverage its benefits in modular deployment, scalability, and infrastructure efficiency.

Survey Results: User–Provider Comparison

Survey responses indicate growing momentum, but also significant gaps in awareness and implementation (see fig. 16).

While more than 30% of providers have already implemented containerization, almost half gave no clear timeline, suggesting ongoing evaluation or internal uncertainty. On the user side, adoption is not only slower, but awareness remains low, with 38% unfamiliar with the concept and another 25% not answering.

Interpretation and Strategic Implications

The mixed assessments of containerization within the ERP ecosystem do not reflect contradiction but rather indicate varying levels of maturity and adoption. Experts and early-adopting providers already view containerization as an essential and valuable technology, which explains its classification under "Sustain." In contrast, some vendors, particularly those tied to monolithic legacy systems, face

challenges in adopting containerization due to technical debt or a lack of architectural readiness. On the user side, container technologies often remain invisible, leading to a tendency to underestimate their strategic importance, even though users benefit indirectly through increased system uptime, more frequent feature releases, and improved overall performance.

From the provider's perspective, containerization enables streamlined CI/CD pipelines, supporting faster and more reliable software deployments. It also allows for granular scalability and fault isolation at the microservice level, and it aligns well with modern ERP models that are cloud-native, hybrid, or edge-based. For users, the advantages translate into greater reliability, continuous innovation through modular service delivery, and more flexible deployment across different infrastructure environments.

This discrepancy in awareness highlights the need for providers to proactively bridge the knowledge gap. Clear communication about the operational and strategic benefits of containerization, paired with transparent migration roadmaps, will help users understand its significance and support broader adoption across the ERP landscape.

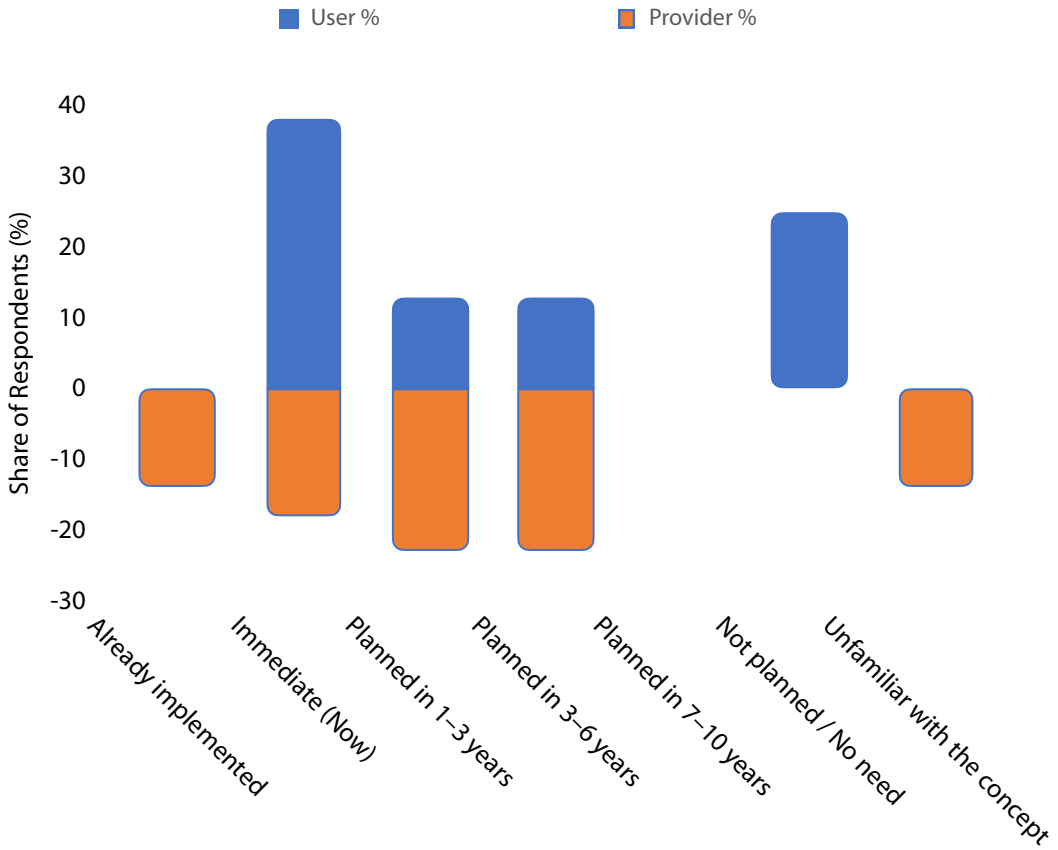

Fig. 17: Technology Impact: Open Data Integration

Strategic Recommendation

Sustain (Score: 3.00):

Vendors should treat containerization as a strategic baseline, adopting container orchestration platforms (e.g., Kubernetes) and making container-based deployment the standard for future modules and services. Adoption within 1–3 years is advisable. At the same time, user education and onboarding should be strengthened to ensure that functional departments and decision-makers understand and benefit from containerized ERP architectures.

Open Data Integration

Enabling data-enriched decision-making through external public sources

Open Data Integration in ERP systems refers to the ability to seamlessly incorporate publicly available, reusable, and universally accessible datasets into internal business processes. Examples of such open data include weather conditions, transportation infrastructure, energy markets, or demographic information. Typically provided via open APIs or public data portals, these datasets allow ERP systems to enhance business intelligence by enabling more accurate forecasting (e.g., demand planning, predictive maintenance), situational awareness, and proactive decision-making. By embedding open data into operational workflows, companies can augment

internal information with real-world signals, strengthening agility and responsiveness in volatile environments.

Expert Evaluation

With an expert-rated impact score of 3.20, open data integration is seen as a relevant and timely enabler of ERP evolution. Strategic recommendations from the survey suggest a strong tendency toward implementation and near-term action, with three experts recommending immediate adoption and two suggesting further evaluation.

None of the experts considered open data integration irrelevant or dispensable, indicating strong consensus on its long-term value. The temporal distribution of expected implementation confirms this: while a majority favors short-term action ("Immediate", and "1–3 years"), no responses indicated a delay beyond 3 years or a lack of planning.

This reflects a shared recognition that open data is becoming a strategic asset that ERP systems must be equipped to consume and act upon – especially in use cases involving risk detection, logistics, market monitoring, or regulatory compliance.

Survey Results: Provider and User Comparison

The user-provider comparison reveals a moderate adoption gap but a converging interest in implementation (see. Fig. 17). While 38% of users already plan immediate implementation, only 18% of providers offer open data integration today – indicating a lead in user-side readiness. However, 23% of providers expect to deliver open data integration in the next 1–3 years, signaling that ERP vendors are actively moving toward closing this gap.

Notably, 25% of users indicate no current need or familiarity with the concept, underscoring the need for clearer communication and better education on the benefits of open data in enterprise systems.

Interpretation and Strategic Implications

This pattern suggests a growing awareness of Open Data Integration among users, but also underlines a knowledge and communication gap. For providers, the technology represents a natural extension of composable ERP through standard APIs and public datasets. It allows systems to dynamically incorporate external signals, improving forecasting, compliance, and contextual awareness.

From the user perspective, Open Data Integration supports smarter, data-rich processes without requiring costly internal data acquisition. The ability to embed open, real-time data feeds into ERP workflows can yield significant value—particularly in industries sensitive to external conditions, such as manufacturing, logistics, agriculture, or

utilities.

However, the lack of immediate visibility or tangible use cases may hinder adoption. Vendors should therefore not only provide technical integration capabilities but also showcase business-oriented scenarios and help users build the required governance structures for secure and reliable open data use.

Strategic Recommendation

Monitor and Introduce (Score: 3.20)

Open Data Integration is a strategic enabler of data-driven ERP modernization. Providers should actively invest in connectors to relevant public datasets, standardize APIs, and reduce integration friction.

To close the user-provider gap, vendors must offer real-world use cases, domain-specific applications, and clear ROI demonstrations. Supporting customer enablement and data literacy will be essential to unlock the full potential of Open Data Integration as a core capability of future ERP ecosystems.

Automated Process Analysis

Data-driven insight into workflow performance and optimization potential

Automated Process Analysis refers to the structured evaluation of business processes using formal or executable models, enabling validation, verification, and performance measurement through simulation or algorithmic methods. This goes beyond traditional modeling by offering quantitative insights that support optimization and systematic improvement (Vergidis et al. 2008)

These tools enable organizations to assess real process performance and uncover bottlenecks or hidden rework. The resulting insights support fact-based

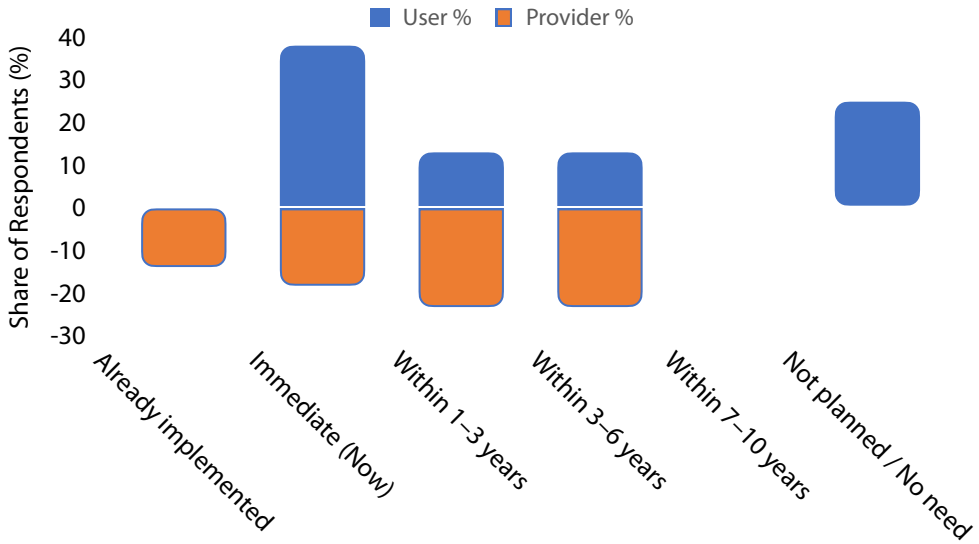

Fig. 18: Technology Impact: Automated Process Analysis

decisions on cycle-time reduction, task automation, exception handling, and resource balancing. Automated process analysis plays a key role in continuous improvement and scalable digital transformation, especially in complex ERP environments.

Expert Evaluation

Automated process analysis is considered strategically relevant and dynamically evolving by most experts. A majority advocate for active and prioritized expansion, seeing high innovation potential in the ability to automatically capture, analyze, and improve business processes within ERP environments. Others recommend a more watchful stance, acknowledging the contextual relevance of the technology while suggesting that its full potential may not yet be universally applicable. Importantly, no experts advise to merely sustain current efforts or phase the technology out, signaling confidence in its future role.

The anticipated adoption timeline reinforces this outlook. While only a few experts call for immediate implementation, most expect its relevance to rise within the next one to three years, with some extending the timeline to a mid-term horizon. These projections suggest that although the field is still maturing, organizations increasingly recognize the value of automated insights for process optimization.

Altogether, the evaluations highlight the transformative capacity of automated process analysis, particularly when integrated with broader ERP innovation strategies. Its ability to uncover inefficiencies, support decision-making, and enable agile process adaptation makes it a key enabler of next-generation enterprise systems.

Survey Results: Provider and User Comparison

Fig. 18 compares adoption timelines from both ERP users and providers.

These results reveal a strong alignment on short-term relevance: most providers are implementing or planning adoption within three years, while nearly 40% of users already demand immediate access. The absence of long-term planning and the high rate of current or near-future implementation highlight the emerging consensus on its urgency.

Interpretation and Strategic Implications

Automated process analysis is increasingly positioned at the intersection of ERP modernization and data-driven operational strategies. On the user side, there is notable interest, with the majority expecting adoption within the next three years. However, a significant minority still sees no immediate need, pointing to a gap in awareness and the necessity for clearer, tangible use cases. From the provider perspective, readiness is advancing

steadily. More than half are either already implementing or plan to introduce automated process analysis capabilities by 2026, indicating growing momentum in the market.

Expert evaluations reinforce this trend, with strong support for scaling and active monitoring. Notably, no experts questioned the relevance of the technology or advised against its use, suggesting a high level of consensus regarding its strategic potential. The absence of fundamental awareness barriers and the lack of long-term postponement in strategic outlooks further indicate that automated process analysis is transitioning out of the innovation phase and beginning to establish itself as a core component of modern ERP systems.

To accelerate this transition, ERP vendors should now focus on reducing the barriers to entry by offering pre-integrated dashboards and plug-and-play connectors. At the same time, they must enhance communication around specific use cases to reach user segments that have yet to recognize its value like performance benchmarking, compliance monitoring, or onboarding support. These efforts can help ensure that automated process analysis becomes a standard feature in enterprise systems, driving both operational efficiency and strategic insight.

Strategic Recommendation

Scale Up / Monitor (Score: 2.9)

Automated process analysis is on the verge of becoming a standard capability in ERP ecosystems. Vendors should invest in tight process mining integration, actionable metrics, and user-friendly insights across departments.
To unlock full potential, ERP providers must also educate users who are hesitant or unaware, highlighting the measurable gains in process performance, resource utilization, and decision support that automated analysis enables.

Business Process Management

Structuring enterprise logic to drive agility, alignment, and customization

Business Process Management (BPM) refers to the structured and strategic coordination of workflows, data, systems, and people to achieve organizational goals. It encompasses the modeling, analysis, execution, monitoring, and optimization of end-to-end business processes across departments and systems. It is not only a methodology but also a management philosophy that enables continuous improvement and transparency through the systematic use of modeling languages such as BPMN (Gronau, 2023). In ERP contexts, BPM serves as a key mechanism to configure workflows and ensure cross-functional alignment Gronau, 2021).

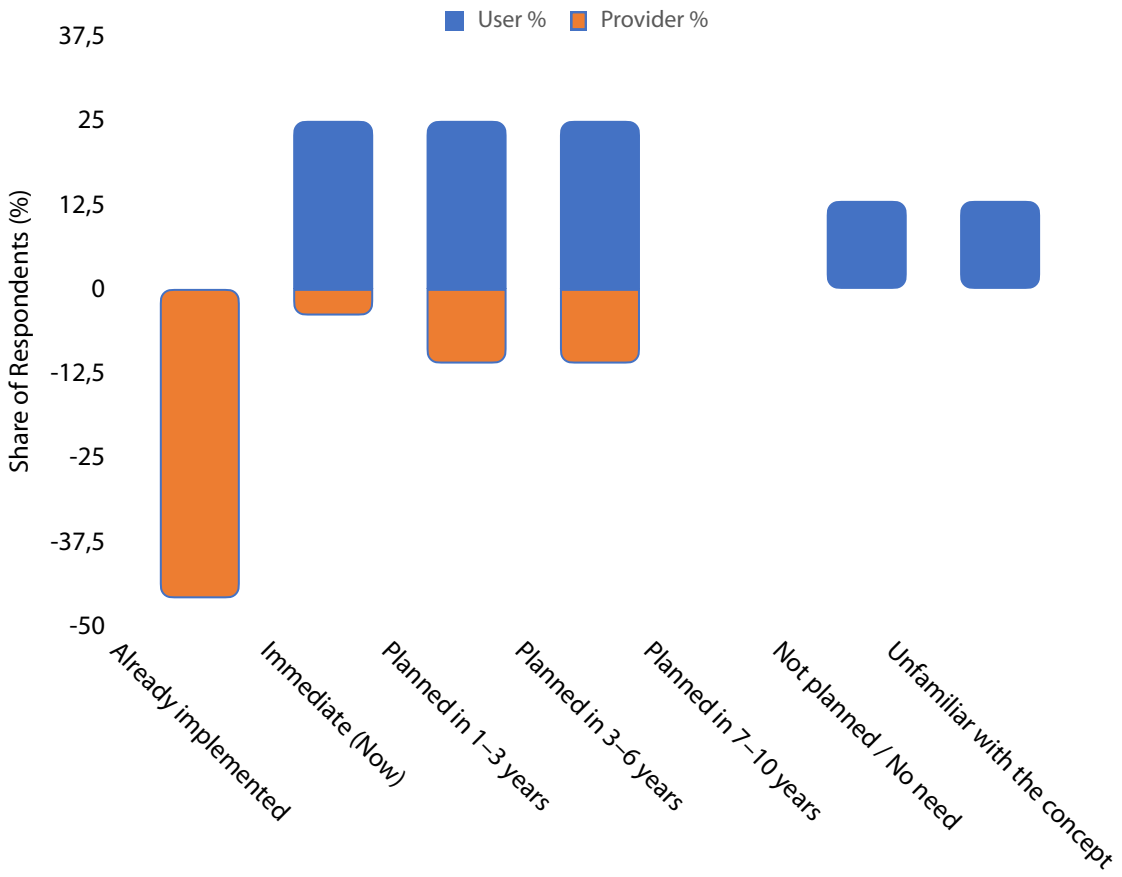

Fig. 19: Technology Impact: Business Process Management

As a core discipline, BPM empowers organizations to design and adapt business logic dynamically, whether through low-code modeling interfaces or process-centric configuration tools. In the ERP context, it supports not only internal efficiency but also the customization of applications based on specific industry or departmental needs.

Expert Evaluation

With an expert-rated impact score of 3.80, Business Process Management (BPM) is viewed as a mission-critical enabler for building sustainable and adaptable ERP architectures. Expert assessments reveal a strong consensus on its strategic importance: most recommend a clear scaling of BPM capabilities, while others emphasize the need to maintain current momentum. Notably, there is no indication that experts consider BPM a future or distant concern.

The expected adoption timeline is similarly focused, with all experts anticipating implementation within the next one to three years. No respondent identified BPM as requiring immediate rollout or postponed integration in the long term. This concentrated near-term outlook underscores BPM's role as an operational necessity rather than a discretionary innovation. For both ERP providers and

user organizations, BPM remains a foundational capability to ensure process-centric adaptability, enabling continuous optimization and resilience in rapidly evolving business environments.

Survey Results: Provider and User Comparison

The adoption timelines from ERP providers and users can be seen in figure 19:

These results show that ERP providers are clearly ahead in implementation, while many users are still evaluating or unaware of the concept's potential. The fact that nearly half of the providers have already integrated BPM into their systems highlights a maturity level

not yet mirrored on the user side.

Interpretation and Strategic Implications

Business Process Management (BPM) is deeply embedded in ongoing ERP modernization. On the provider side, 46% have already implemented BPM, demonstrating a clear lead in operationalizing it. Among the remaining providers, most are planning near-term adoption, indicating broad commitment to embedding process-centric tools. On the user side, however, adoption lags behind: 75% are still in the planning phase or unaware of the relevance of BPM for their ERP systems. In contrast, 25% of users are already actively pushing for immediate access to BPM functionalities, highlighting a subset of early adopters with clear expectations.

Experts echo this sense of urgency and strategic relevance. All five surveyed experts recommend adopting BPM within the next one to three years. None suggest immediate rollout or long-term planning, pointing to a consolidated near-term focus that positions BPM as a critical capability rather than an optional enhancement.

This clear discrepancy between provider readiness and user demand reveals a significant communication and enablement gap. While vendors are embedding BPM frameworks into their platforms, many users are either unaware of their existence or unsure how to apply them effectively. To close this gap, ERP vendors should work on demystifying BPM by providing role-based modeling environments and intuitive toolkits that empower users without requiring deep technical expertise. Rather than treating BPM as a supplementary module, it should be positioned as the default interface for customizing, monitoring, and optimizing ERP processes.

Vendors should also emphasize the tangible benefits of BPM, such as reduced change request cycles, easier workflow configuration, and improved integration with surrounding systems. Only by bridging the gap between technical capability and user accessibility can BPM

realize its full potential as the backbone of adaptable, future-proof ERP architectures.

Strategic Recommendation

Scale Up (Score: 3.80)

BPM is a foundational pillar of modern ERP. Vendors should position it as a core architecture principle, not a niche function. Investment in intuitive modeling environments, seamless integration with runtime engines, and prebuilt reference processes will help close the adoption gap.

Outlook

The ERP Trend Radar highlights a clear message: modernization is no longer optional but a strategic imperative. While technologies such as responsive applications and internal low-code platforms are reaching maturity, several high-impact innovations remain underdelivered by providers despite strong user demand. These adoption gaps mark the fields where strategic investments are most urgent.

Data lakes represent the most critical gap. They are essential for enterprise-wide analytics, AI integration, and real-time decision-making, yet vendor support remains limited. Providers that fail to offer robust data lake capabilities risk losing ground to specialized platforms.

Generative AI is equally pressing. Its potential for process automation and user interaction is widely acknowledged, but concerns about explainability and data security have slowed integration. A secure, transparent, and use-case-oriented approach will be decisive for building trust.

ESG reporting is rapidly gaining importance due to regulatory pressure. Users expect ERP systems to deliver integrated sustainability metrics, but vendor readiness is still low. Early movers can gain long-term differentiation.

Robotic process automation (RPA) offers immediate efficiency gains for repetitive tasks, yet most ERP systems rely on external engines. Embedding native RPA capabilities would respond directly to user demand for seamless automation.

Finally, external no-code platforms remain undervalued. They empower business users and foster ecosystem innovation, but vendors hesitate due to governance concerns. Those who enable secure openness will strengthen customer loyalty and broaden their reach.

In summary, the next ERP generation will not be defined by incremental upgrades but by the ability to close innovation gaps in these high-impact fields.

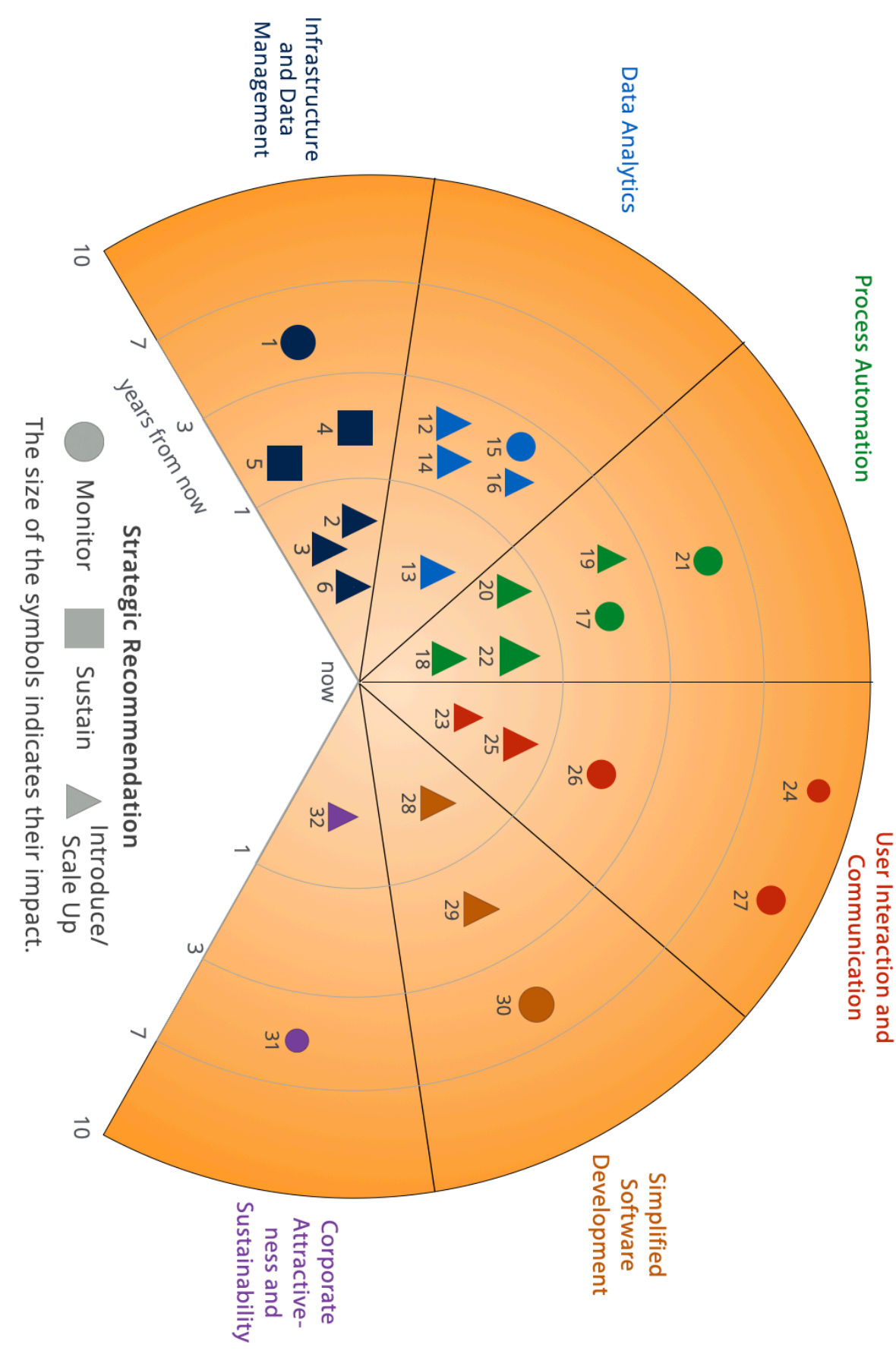

Fig. 20: Complete ERP Trend Radar 2025/2026

Center of Enterprise Research

The Center for Enterprise Research (CER) at the University of Potsdam is a leading research institution in the field of enterprise software, particularly enterprise resource planning (ERP). Under the direction of Prof. Dr.-Ing. Norbert Gronau, the CER brings together scientific findings and translates them into practical solutions. Its focus is on the design of IT strategies, the selection and implementation of systems, and the certification of ERP solutions.

The CER is part of the Chair of Business Informatics, esps. Processes, and Systems and has many years of experience in supporting ERP projects. It offers a wide range of services, including research projects, studies, workshops, and lectures. It has particular expertise in the areas of AI, smart factories, enterprise software for increasing productivity and competitiveness, and business process optimization.

With the Industrial Transformation Lab, the Creative Thinking Lab, and the Teaching and Learning Lab, the CER has innovative platforms at its disposal that combine research and teaching. These facilities make it possible to test new technologies and methods in a practical setting and integrate them into the training of students and skilled workers.

The CER cooperates closely with small and medium-sized enterprises and international partners to actively shape the digital transformation. By combining technical, sociological, and psychological expertise, the center supports companies in the analysis and successful implementation of transformation projects.

Further information can be found on the CER website: www-enterprise-research.de.

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Norbert Gronau

Professor Dr.-Ing. habil. Norbert Gronau studied mechanical engineering and business administration at the Technical University of Berlin (TU). In 1994, he received his doctorate in the Department of Computer Science (TU) on the subject of "Conception of a strategy-oriented management information system for decision support in production management". Up to March 2000, he was head of the teaching and research group Production-Oriented Business Information Systems at the TU Berlin, and in October he habilitated on the topic of "Sustainable Architectures of Industrial Information Systems in the Event of Organizational Change". Due to the chair offering in Oldenburg, Prof. Gronau was head of the Department of Business Information Systems at the University of Oldenburg from 2000 to 2004. In 2004 he was offered a C4 professorship at the University of Potsdam and since then he has held the chair of Business Informatics, Processes and Systems including Electronic Government.

Glossary

Automated Authorization Management [Process Automation] (17):
Components for rule-based assignment, auditing, and adjustment of access rights (RBAC/ABAC) in no-/low-code applications. They cut manual administration and boost security and compliance through end-to-end automation (Sanders and Yue, 2019).

Automated Process analysis [Process Automation] (20):
Automated process analysis uses tools such as process mining, RPA and large language models to capture event logs, reconstruct actual workflows and detect bottlenecks or rework without manual effort. The insights drive data-based decisions on cycle-time cuts, task automation and resource balancing, supporting continuous, scalable optimisation in digital-transformation projects (De Michele, Armas Cervantes and Frermann, 2025).

Automated Process Control [Process Automation] (21):
Modern ERP systems automate cross-departmental workflows by integrating machine data, inventory updates, and document processing. This reduces manual effort, minimizes errors, and enables real-time decision-making (proALPHA, 2023).

Blockchain Integration [System-wide interconnection] (9):
Embedding distributed ledger technologies (e.g., Ethereum, Hyperledger) as a visual component in applications to deliver trusted transactions, smart contracts, and end-to-end traceability without requiring deep blockchain programming expertise (Liang et al., 2019).

Business Process Management [Process Automation] (22):
Business process management seeks to use resources efficiently to create value for internal and external customers, while meeting objectives for time, cost, quality, and customer satisfaction (Gronau, 2022).

Cloud + OnPremise [Infrastructure and Data Management] (2):
A Cloud + On-Premise, or hybrid-ERP, architecture couples an organisation's existing on-premises ERP core with best-of-breed SaaS or other cloud modules through a dedicated integration layer. This arrangement preserves the customisation, data-sovereignty and low-latency benefits of the in-house system, while adding the scalability and continuous innovation of cloud services. Success hinges on a coherent strategy that tackles technical, business and socio-organisational integration factors in concert (Nakkeeran, Niranga and Wickramarachchi, 2020).

Cloud Service Extensions [Infrastructure and Data Management] (3):
Visual connectors that enable cloud services (e.g., AWS, Azure, Google Cloud) to be integrated and orchestrated into enterprise processes without manual coding. They facilitate rapid scaling and the creation of new service combinations (Mohamed and Sacile, 2023).

Containerization [Infrastructure and Data Management] (4):

Containerization packages applications and their dependencies into isolated OS-level containers that run without a guest kernel. This lets deployments start faster, use fewer resources, and remain portable from laptop to cloud, while orchestrators such as Kubernetes handle automatic scaling (Pahl et al., 2019).

Data Lakes [Infrastructure and Data Management] (6):
A data lake is a flexible and scalable repository that ingests and stores raw data from heterogeneous sources in its original format. It exposes the data through rich metadata services so users can maintain, query and analyse it on the fly, an approach known as schema on read that contrasts with traditional data warehouses which impose a schema before loading (Hai et al., 2023).

E-Learning [User Interaction and Communication] (25):
A form of teaching and learning that may comprise part or all of the educational model in which it is employed, using electronic media and devices to ease access, promote advancement, and improve the quality of education and training (Sangrà et al., 2011).

ERP Marketplace [System-wide interconnection] (8):
An ERP marketplace is a central online sales channel run by an ERP-platform provider in which ecosystem partners publish complementary software solutions and services. It enables enterprise customers to discover, purchase and receive add-ons for their ERP system through a single curated storefront, streamlining the entire buying process from information search to delivery with minimal human effort (Wenzel, Novelli and Burkard, 2013).

ESG Reporting [Corporate Attractiveness and Sustainability] (32):
ESG reporting is the structured disclosure of a company's environmental, social and governance metrics to stakeholders, showcasing its sustainability strategy. It tracks indicators such as emissions, energy use, workforce diversity, labour conditions and board practices, using frameworks like GRI, SASB or ESRS. Under the EU's CSRD, reports must apply double materiality, detailing both the firm's impacts on society and the environment and the financial risks ESG factors pose to the business (Yadav et al., 2024).

External Low-Code/No-Code Components [Simplified Software Development] (29):
No-Code platforms or components are development environments that let users build applications solely by combining predefined, visually available components, without any programming knowledge. They enable simple, intuitive design of business applications at a high level of abstraction, allowing individual, competitively differentiating processes to be implemented efficiently and cost-effectively (Pöppler and Abendroth, 2025).

Eye-Tracking [User Interaction and Communication] (24):
Eye-tracking is an instrument-based, concurrent method for determining a person's gaze direction. It reveals precisely which media content viewers look at, for how long, and in what sequence (Blake, 2013).

Federated Database [IInfrastructure and Data Management] (1):
A federated database links autonomous, heterogeneous data stores via a mediator that exposes one global schema and query endpoint. The mediator splits queries into source-

specific requests and merges the results in real time, giving a unified view without replicating or relocating the underlying data (Sheth and Larson, 1990).

Generative AI [Data Analytics] (12):
Generative AI comprises models that learn the probabilistic structure of their training data and autonomously produce new content such as text, images, audio or code. It enables automated content creation and creative assistance but also carries risks like bias, hallucinations and copyright concerns (Feuerriegel et al., 2023).

Holograms/Avatars [User Interaction and Communication] (27):
Holograms and avatars are complementary XR representations that embody remote users or objects. Volumetric holograms stream a live 3D capture of a person into shared space, while avatars are software-generated 3D figures that reproduce the user's movements and expressions with lower bandwidth. Used together, they provide identity, presence, and real-time interaction for immersive collaboration scenarios such as holomeetings, digital-twin monitoring, and metaverse events (Fernández et al., 2022).

Integration with Platforms [System-wide interconnection] (7):
Integration with Platforms denotes the connection of ERP systems or other enterprise software with external digital platforms such as payment providers (e.g., PayPal), logistics services (e.g., DHL, UPS), e-commerce marketplaces (e.g., Shopify, Amazon), or social networks (e.g., Facebook, LinkedIn). These integrations enable automated data exchange, synchronized workflows, and seamless interoperability across systems. As a result, businesses benefit from greater efficiency, improved transparency, and enhanced customer experience while reducing manual tasks and potential errors (Legner et al., 2017).

Internal Low-Code Components [Internal Low-Code Components] (28):
Pre-configure modular components within an enterprise low-code platform that let business users with no programming skills quickly adapt and extend business processes. They encourage reuse, strengthen governance, and reduce development effort (Zhang and Chen, 2022).

Machine Learning-Analysis [Data Analytics] (13):
Machine Learning Analysis applies machine-learning algorithms to the automated evaluation of large and complex datasets. This process involves identifying patterns, correlations, and trends that may be difficult for human analysts to detect. It is utilized in areas such as predictive analytics, image and speech recognition, and the optimization of business processes. By continuously learning from new data, the accuracy and efficiency of the models improve over time (Janiesch, Zschech and Heinrich, 2021).

Machine Learning-Forecasting [Data Analytics] (14):
Machine-learning forecasting uses self-adapting algorithms inside ERP systems to analyse past and real-time data and predict future demand, trends or events. By continually learning from new inputs, it outperforms static models and drives smarter demand planning, inventory optimisation, production scheduling and predictive maintenance (Jawad and Balázs, 2024).

Mixed Reality [User Interaction and Communication] (26):

Mixed Reality is an interactive environment in which digital and physical elements coexist, align in real time, and affect each other. It spans the full spectrum between augmented reality where virtual overlays complement a mostly real scene and augmented virtuality where real world objects or data enrich a mostly virtual scene. MR systems track the user's surroundings and inputs so virtual content stays spatially anchored, enabling seamless interaction, shared presence, and context aware workflows that merge real and virtual worlds (Speicher, Hall and Nebeling, 2019).

Non-relational Databases [Infrastructure and Data Management] (5):
Integration of NoSQL storage technologies (e.g., document, key-value, and graph databases) as components within no- or low-code platforms. This enables flexible, schema-less data storage and rapid prototyping for big-data and IoT use cases (Han et al., 2021).

Open Data Integration [System-wide interconnection] (11):
Open Data Integration in ERP systems refers to the ability to seamlessly incorporate publicly available, reusable, and universally accessible datasets into internal business processes. Open data such as weather, logistics, infrastructure, or market data is freely accessible, redistributable, and usable by all, often provided via open APIs or public portals. When integrated into ERP systems, open data enhances business intelligence by enabling advanced forecasting (e.g., predictive maintenance, demand planning), situational awareness, and proactive decision-making (Peksa and Grabis, 2022).

Pay-per-Use [Corporate Attractiveness and Sustainability] (31):
A billing model in which software or infrastructure components are integrated into no or low code environments on a pay per use basis for example, per API call, transaction or hour. It supports cost control and enables flexible, scalable business models (Armbrust et al., 2010).

Real-Time-Tracking [Process Automation] (19):
Real time tracking refers to the immediate capture, transmission and display of an object's or vehicle's location and status data. A sensor determines the position at short intervals, often via GPS, sends it to a server over a cellular or radio network, and analysis software makes the information available with no perceptible delay. This allows users to know at any moment where the goods are and in what condition, enabling functions such as transport monitoring, automatic inventory postings and instant alarms (Kandel, Klumpp and Keusgen, 2011).

Responsive Web App [User Interaction and Communication] (23):
A Responsive Web App is a browser based application whose layout and interaction patterns adapt fluidly to any screen size or device, providing the same core functionality on desktops, tablets and smartphones. It relies on standard web technologies such as HTML5, CSS media queries and JavaScript with asynchronous requests to update content without full page reloads and to exchange data with back end systems in real time, enabling users to record inventory, approve orders or complete other tasks wherever they

are (Chavan, Bhatkar and Muley, 2022).

Robotic Process Automation (RPA) [Process Automation] (18):
In robotic process automation, these manual activities are learned and executed by a software robot. The inputs that employees would normally prepare and enter are replicated on the existing presentation layer, so the underlying systems remain unchanged and no additional technical interfaces are required (Arnautovic, Habegger and Haller, 2021).

Self-describing Components [Simplified Software Development] (30):
Self-describing components are software elements that expose machine-readable metadata about their interfaces, capabilities, and requirements, enabling automatic discovery, configuration, and integration in distributed systems (e.g., IIoT or service-based ERP). Standards such as the Asset Administration Shell make this dynamic, interoperable adaptability possible (Industrial Internet Consortium and Plattform Industrie 4.0, 2019).

Semantic Analysis [Data Analytics] (15):
Components for automated analysis and interpretation of text, JSON, or XML data using NLP and ontologies. They detect entities, relationships, and sentiment at a high level of abstraction to support decision-making processes (Cambria and White, 2014).

User intent recognition [Data Analytics] (16):
User intent recognition is the automatic identification of a user's underlying purpose or goal based on their input in natural-language systems such as chatbots, search engines, or voice assistants. Techniques from natural language processing and machine learning are employed to extract the user's intent, such as seeking information, making a purchase, or solving a problem from textual inputs. Modern approaches leverage large language models like GPT-4 to better understand and classify complex or ambiguous queries (Bodonhelyi et al., 2024).

References

Armbrust, M., Fox, A., Griffith, R., Joseph, A.D., Katz, R., Konwinski, A., Lee, G., Patterson, D., Rabkin, A., Stoica, I. and Zaharia, M. (2010) 'A view of cloud computing', *Communications of the ACM*, 53(4), pp. 50–58. doi:10.1145/1721654.1721672.

Arnautovic, H., Habegger, A. and Haller, S. (2021) 'Grundlagen der Robotic Process Automation', in Schellinger, J., Tokarski, K.O. and Kissling-Näf, I. (eds) In *Digital Business: Analysen und Handlungsfelder in der Praxis* (pp. 57-83). Wiesbaden: Springer Fachmedien Wiesbaden.

Blake, C. (2013) 'Eye-Tracking: Grundlagen und Anwendungsfelder', in Möhring, W. and Schlütz, D. (eds) Handbuch standardisierte Erhebungsverfahren in der Kommunikationswissenschaft. Wiesbaden: Springer VS.

Cambria, E. and White, B. (2014) 'Jumping NLP curves: A review of natural language processing research', IEEE Computational Intelligence Magazine, 9(2), pp. 48–57.

Chavan, R.C., Bhatkar, S.D. and Muley, K. (2022) 'Progressive Web Apps vs Responsive Web Apps', International Journal of Advanced Research in Science, Communication and Technology, 2(1), pp. 207–210.

De Michele, W., Armas Cervantes, A. and Frermann, L. (2025) 'Automated business process analysis: An LLM-based approach to value assessment', arXiv preprint, arXiv:2504.06600.

Fernández, S., Montagud, M., Cernigliaro, G. and Rincón, D. (2022) ,Multi-party holomeetings: Toward a new era of low-cost volumetric holographic meetings in virtual reality', arXiv preprint, arXiv:2206.05426.

Feuerriegel, S., Hartmann, J., Janiesch, C. and Zschech, P., 2024. 'Generative ai'. *Business & Information Systems Engineering*, *66*(1), pp.111-126.

Gronau, N. (2021). ERP-Systeme: Architektur, management und funktionen des enterprise resource planning. Walter de Gruyter GmbH & Co KG.

Gronau, N. (2022) Geschäftsprozessmanagement in Wirtschaft und Verwaltung. 3rd edn. Berlin.

Hai, R., Koutras, C., Quix, C. and Jarke, M., 2023. 'Data lakes: A survey of functions and systems'. *IEEE Transactions on Knowledge and Data Engineering*, *35*(12), pp.12571-12590.

Han, J., Haihong, E., Le, G. and Du, J. (2021) 'Survey on NoSQL Data Models', ACM Computing Surveys, 53(2), Article 31.

Industrial Internet Consortium and Plattform Industrie 4.0 (2019) Digital Twin and Asset Administration Shell: Concepts and Application. White paper.

Janiesch, C., Zschech, P. and Heinrich, K. (2021) 'Machine learning and deep learning', *Electronic Markets*, 31(3), pp. 685–695. doi:10.1007/s12525-021-00475-2.

Jawad, Z. N., & Balázs, V. (2024). Machine learning-driven optimization of enterprise resource planning (ERP) systems: a comprehensive review. Beni-Suef University Journal of Basic and Applied Sciences, 13(1), 4.

Jawad, Z.N. and Balázs, V. (2024) 'Machine learning-driven optimisation of enterprise resource planning (ERP) systems: A comprehensive review', Beni-Suef University Journal of Basic and Applied Sciences, 13(4).

Kandel, C., Klumpp, M. and Keusgen, T. (2011) 'GPS based track and trace for transparent and sustainable global supply chains', in Thoben, K.-D., Stich, V. and Imtiaz, A. (eds) Proceedings of the 17th International Conference on Concurrent Enterprising (ICE 2011), Aachen, Germany, 20–22 June 2011, pp. 252–259.

Legner, C., Eymann, T., Hess, T., Matt, C., Böhmann, T., Drews, P. and Ahlemann, F. (2017) 'Digitalization: Opportunity and challenge for the business and information systems engineering community', Business & Information Systems Engineering, 59(4), pp. 301–308.

Liang, X., Zhao, J., Shetty, S. and Li, D. (2019) 'Towards Integrating Blockchain with Enterprise Applications in a Low-Code Environment', Business & Information Systems Engineering, 61, pp. 435–449.

Mohamed, A. and Sacile, R. (2023) 'Low-Code Integration of Cloud Services: A Visual Orchestration Approach', IEEE Cloud Computing, 10(4), pp. 56–65.

Nakkeeran, A., Niranga, M. and Wickramarachchi, R. (2020) 'A model for on-premises ERP system and cloud ERP integration', in Proceedings of the 10th International Conference on Industrial Engineering and Operations Management (IEOM), Dubai, United Arab Emirates, 10–12 March 2020. Southfield, MI: IEOM Society International, pp. 1381–1391.

Pahl, C., Brogi, A., Soldani, J. and Jamshidi, P. (2019) 'Cloud Container Technologies: A State-of-the-Art Review', IEEE Transactions on Cloud Computing, 7(3), pp. 677–692.

Pahl, C., Brogi, A., Soldani, J., & Jamshidi, P. (2017). Cloud container technologies: a state-of-the-art review. IEEE Transactions on Cloud Computing, 7(3), 677-692.

Peksa, J. and Grabis, J. (2022) 'Integration of the Autonomous Open Data Prediction Framework in ERP Systems', in Proceedings of the 24th International Conference on Enterprise Information Systems (ICEIS 2022), Porto, Portugal, 24–26 April 2022, vol. 1. SciTePress, pp. 251–258.

proALPHA (2023) 'Prozessautomatisierung – das ERP der Zukunft: Selbstlerner oder Selbstläufer', ERP Management.

Sanders, M.W. and Yue, C. (2019) 'Mining least privilege attribute based access control policies', *Proceedings of the 35th Annual Computer Security Applications Conference (ACSAC '19)*, pp. 404–416. New York: Association for Computing Machinery. doi:10.1145/3359789.3359805.

Sangrà, A., Vlachopoulos, D., Cabrera, N. and Bravo, S. (2011) Towards an inclusive definition of e-learning. Barcelona: eLearn Center, Universitat Oberta de Catalunya.

Sheth, A. P., & Larson, J. A. (1990). Federated database systems for managing distributed, heterogeneous, and autonomous databases. ACM Computing Surveys (CSUR), 22(3), 183-236.

Sheth, A.P. and Larson, J.A. (1990) 'Federated database systems for managing distributed, heterogeneous, and autonomous databases', ACM Computing Surveys (CSUR), 22(3), pp. 183–236.

Speicher, M., Hall, B.D. and Nebeling, M. (2019) 'What is Mixed Reality?', in Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI 2019), Glasgow, UK, 4–9 May. ACM, pp. 1–15.

Vergidis, K., Tiwari, A., & Majeed, B. (2007). Business process analysis and optimization: Beyond reengineering. IEEE transactions on systems, man, and cybernetics, Part C (Applications and reviews), 38(1), 69-82.

Wenzel, S., Novelli, F. and Burkard, C. (2013) 'Evaluating the App-Store Model for Enterprise Application Software and Related Services', in Proceedings of the 11th International Conference on Wirtschaftsinformatik (WI 2013), Leipzig, Germany, 27 February–1 March 2013. Wirtschaftsinformatik Proceedings 2013, Paper 88, pp. 1408–1419.

Yadav, S., Samadhiya, A., Kumar, A., Luthra, S. and Pandey, K.K. (2024) 'Environmental, social, and governance (ESG) reporting and missing (M) scores in the Industry 5.0 era: Broadening firms' and investors' decisions to achieve Sustainable Development Goals', Sustainable Development.

Yadav, S., Samadhiya, A., Kumar, A., Luthra, S., & Pandey, K. K. (2024). Environmental, social, and governance (ESG) reporting and missing (m) scores in the industry 5.0 era: Broadening firms' and investors' decisions to achieve sustainable development goals. Sustainable Development.

Yılmaz Börekçi, D., Büyüksaatçı Kiriş, S. and Batmaca, S. (2020) 'Analysis of enterprise resource planning (ERP) system workarounds with a resilience perspective', Continuity & Resilience Review, 2(2), pp. 131–148.

Zhang, L. and Chen, Y. (2022) 'Design and Reuse of Modular Components in Low-Code Platforms', Journal of Systems and Software, 179, 110985.