Hype Cycle for ERP, 2020

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ERP strategies are evolving toward a brighter but more complex future — the era of composable ERP. When planning a strategic roadmap, CIOs should study this Hype Cycle to understand trends in technologies and approaches relating to ERP.

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What You Need to Know

ERP strategies are evolving from modern and postmodern ERP approaches. The next era will be characterized by composable ERP — an application strategy combining various technology components to deliver business capabilities.

The hype around the disruptive technologies needed for the ERP transformation that will enable composability is approaching its peak. Many of these technologies are seen individually as potential solutions to meet evolving business and technology needs.

There are notable differences in the maturation times of entries on this Hype Cycle. Some will reach the Plateau of Productivity within five to 10 years. Most, however, will take less time, and will be essential to support the era of composable ERP. A considerable number of entries with short and medium-length maturation terms will raise questions about portfolio management priorities. CIOs must distinguish reality from hype when planning how to incorporate maturing technologies into their portfolios, sooner rather than later.

The Hype Cycle

Massive and unexpected business disruptions are forcing CIOs to be more creative in order to add flexibility and agility to their ERP landscapes.

This year's Hype Cycle shows fast maturation of the emerging technologies and approaches needed to transform ERP platforms. A cluster of emerging technologies is nearing the Peak of Inflated Expectations, which means they subject to the most hype. These technologies will encounter growing pains as they mature and pass the Peak. When it comes to adoption, care must be taken to understand their limitations and establish what they are truly capable of.

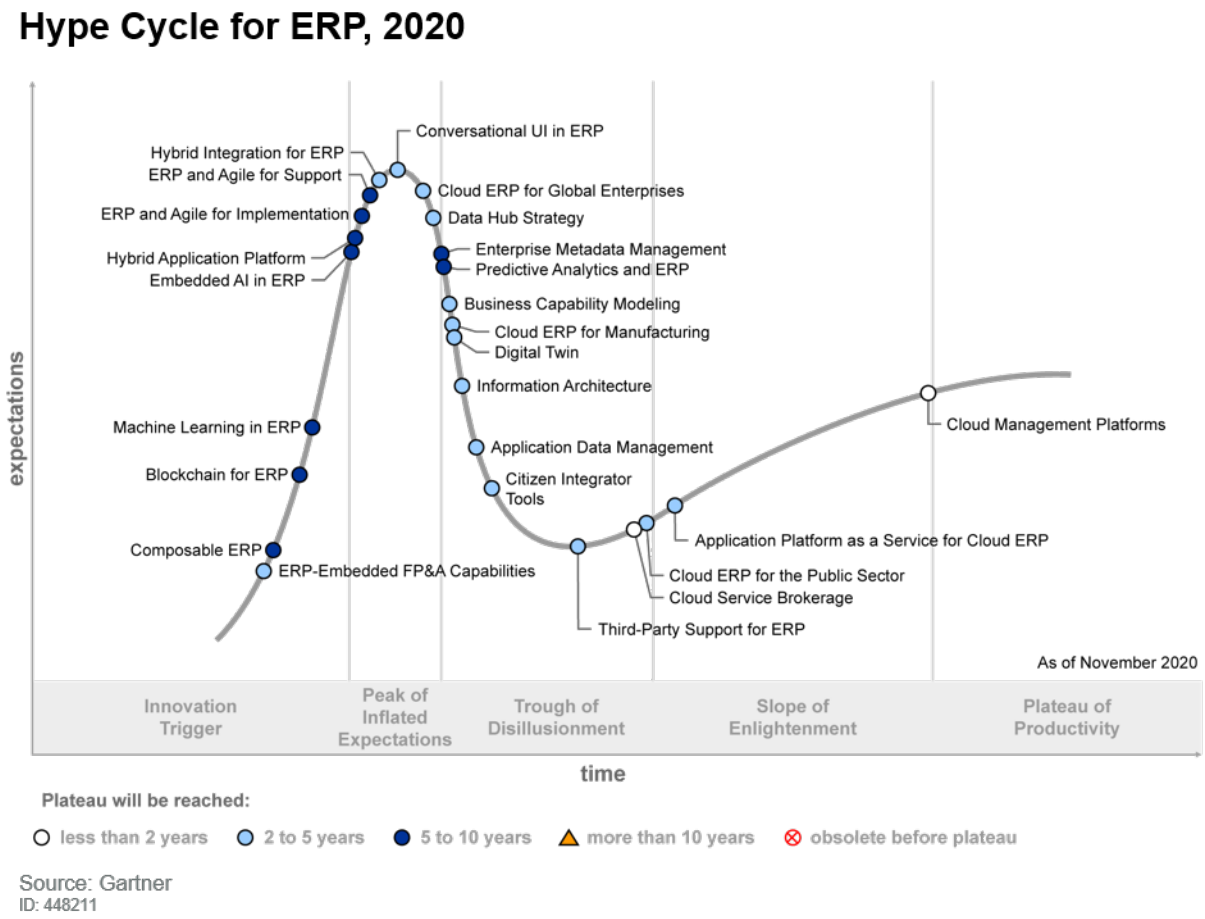
Several entries have already crested the Peak, and the truth about their real capabilities is starting to sink in. Examples are **cloud ERP for global enterprises** and **data hub strategy.** A few, such as **application platform as a service for cloud ERP,** have moved into early mainstream adoption.

Cloud-related technologies and services keep maturing as demand for "all things cloud" continues unabated. The broad spectrum of cloud maturity is reflected in the Hype Cycle. Almost all cloud-related entries have passed the Peak, but several are in the Trough of Disillusionment, such as **cloud service brokerage** and **cloud ERP for the public sector.**

Composable ERP makes its debut in this year's Hype Cycle. Its inclusion reflects how ERP strategies are affected by the need to embrace a more complex technology landscape in order to power the dynamic "composable enterprise." Also in reflection of that broad vision, we have added entries such as **business capability modeling** and **hybrid application platform.**

Some entries, such as **third-party support for ERP** and **cloud ERP for manufacturing,** have made strong progress along the Hype Cycle. Others, like **blockchain for ERP,** are close to stagnation.

Figure 1. Hype Cycle for ERP, 2020



Source: Gartner
ID: 448211

The Priority Matrix

In this 2020 edition of the Hype Cycle, no technology or approach is considered both transformational and likely to achieve mainstream adoption within the next two years. Many, however, will mature and have an impact over the next two to five years. CIOs must plan for their adoption now, because the changes associated with them will be significant.

With regard to technologies of transformational benefit that are likely to achieve mainstream adoption in the next two to five years, CIOs should:

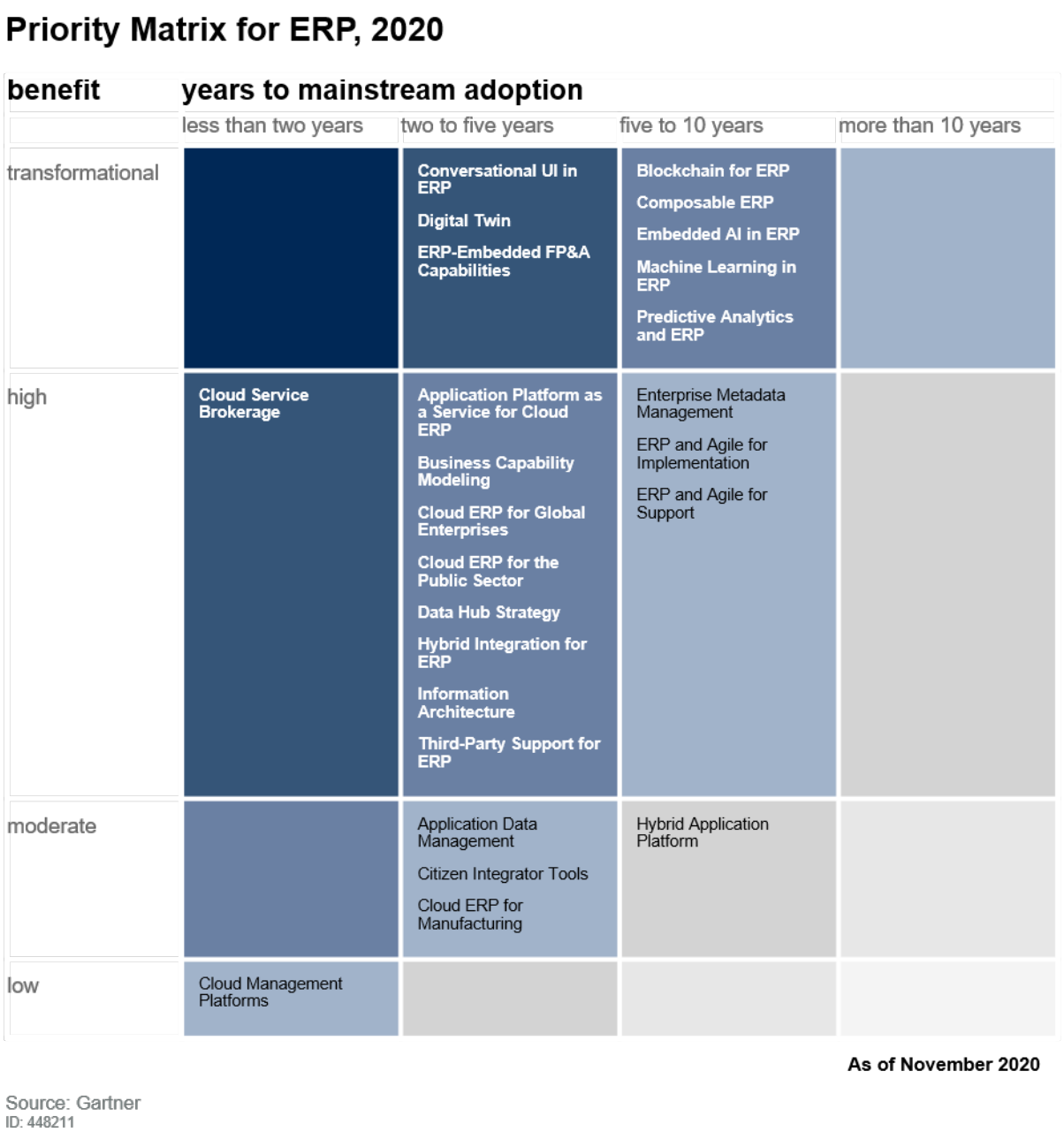
- Create a roadmap to adopt **conversational UI capabilities in ERP** to simplify the future user experience.
- Evaluate whether to abandon a best-of-breed approach to financial planning and analysis (FP&A) capabilities if their incumbent ERP vendor proves able to provide a strong solution with **ERP-embedded FP&A capabilities** for their core financial requirements.

- Assess with business leaders how **digital twin** technology may fit into their long-term business strategy, as it is enabling digital modeling of virtually everything. The potential impacts of adoption should be reflected in the ERP strategy.

In addition, a substantial number of entries on this Hype Cycle should deliver high business benefit in the next two to five years. Our recommendations for these include:

- Incorporating cloud ERP vendors' **application platform as a service for cloud ERP** capabilities into ERP initiatives to help bridge the gap for "last mile" functional requirements.
- Assessing how adoption of **cloud ERP for global enterprises** or **cloud ERP for the public sector** could help an ERP strategy achieve digital transformation goals.
- Deploying a **hybrid integration for ERP** approach that supports a federated ERP application strategy.

Figure 2. Priority Matrix for ERP, 2020



Source: Gartner
ID: 448211

Off the Hype Cycle

This 2020 edition of the Hype Cycle has a stronger focus on technologies that will help customers progress from outdated monolithic ERP approaches toward composable ERP strategies. Consequently, the following entries no longer appear:

- **Enterprise business capabilities (EBC):** This entry has been replaced by **composable ERP,** which is more closely aligned with the future of ERP in relation to the "composable enterprise" goal that most companies will pursue.
- **IMC ERP, FP&A and fin close apps:** This entry has been replaced by a more up-to-date one for **ERP-embedded FP&A capabilities.**

There are also some changes of name:

- **Blockchain for postmodern ERP** now appears as **blockchain for ERP.**
- **Conversational UX in ERP** now appears as **conversational UI in ERP.**
- **Hybrid integration for postmodern ERP** now appears as **hybrid integration for ERP.**
- **Predictive analytics and postmodern ERP** now appears as **predictive analytics and ERP.**

On the Rise

ERP-Embedded FP&A Capabilities

Analysis By: John Van Decker

Definition: Financial planning and analysis (FP&A) provides capabilities for budgeting, planning, forecasting, management reporting, strategy, costing and profitability. It has historically been available from third-party solutions as the preferred sourcing approach. We are now seeing FP&A tools from core financial vendors that rival best-of-breed counterparts, offering deeper integration at the data and end-user layers. This provides deeper integration for drill-down, as well as to serve as a "lens" into actual ERP results.

Position and Adoption Speed Justification: Over the past three years, there has been a big shift to cloud solutions for the FP&A functions that are significantly different from their past on-premises counterparts. Cloud FP&A solutions have become model-based platforms for developing specific planning use cases. The best-of-breed market was the first to offer these flexible, less IT-dependent "planning shells" directly to finance end users. Until recently, they were well-ahead of solutions from core financials vendors, but this situation has changed rapidly. ERP vendor-sourced FP&A solutions are offered as cloud solutions, and best integrate with an ERP vendor's cloud core financial/ERP system. As functionality, user ease of use and integration improve, many organizations will select these over third-party capabilities. Over the past two years, the capabilities in these solutions are rivaling best-of-breed, and within two to three years, will have a major impact on the FP&A market, disrupting the third-party vendor landscape.

User Advice: Exploit FP&A capabilities within an ERP/core financial vendor's product where these could provide superior integration for data and user interface. If your ERP/core financial vendor does not yet offer FP&A, or if you already have an FP&A tool that meets your needs, develop a future strategy that considers sourcing both from the same vendor. As FP&A solutions become more similar and commoditized in their ability to provide an environment within which to manage financial models for planning and budgeting, strongly consider their integration capabilities, which

can surpass best-of-breed approaches. If you have a multivendor/multi-ERP environment, favor a best-of-breed FP&A approach, as you will most likely be unable to use the integration features found in a single core financials and FP&A approach.

Business Impact: The FP&A market has long been driven by best-of-breed vendor innovation. Over the past 10 years, organizations have taken advantage of innovations from best-of-breed vendors in areas such as finance planning, modeling and predictive analytics. Today's highly funded and successful FP&A market is rich with innovation. FP&A solutions are not as "sticky" as core financials or financial close solutions, and most organizations go through some sort of market assessment when cloud renewal contracts come up (typically within three years), so there will be a lot of opportunity for system replacement. Linking FP&A to core financials, with higher levels of integration and user experience level, presents an organization with the opportunity to seek more stability.

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Emerging

Sample Vendors: NetSuite; Oracle; Sage Intacct; SAP; Workday

Recommended Reading: "Predicts 2020: Position Your Organization for Success in a World of Changing Financial Management Solutions"

"How to Get the Most Out of Your Cloud FP&A Implementation in Times of Crisis and Opportunity"

"Prepare Now for the Future of Financial Planning and Analysis and Financial Close"

"2020 Strategic Roadmap for Cloud Financial Planning and Analysis Solutions"

"2019 Strategic Roadmap for Cloud Core Financial Management Suites"

Composable ERP

Analysis By: Denis Torii; Duy Nguyen

Definition: Enterprise resource planning is no longer solely focused on "resources" or "planning." As a core part of the composable enterprise journey, ERP strategies need to evolve and embrace an increasingly complex technology environment. Composable ERP, a technology strategy (not a product), becomes a new and mandatory direction into a future where application and platform capabilities provide an enterprise business capabilities focus on end users.

Position and Adoption Speed Justification: Organizations are broadly disillusioned by ERP — costly, inflexible and inadequate are some of the qualifiers associated to it. What they need instead is a portfolio of connected, high-performance, highly usable solutions that can support and adapt to the fast pace of digital business environments. They want to adopt out-of-the-box standardized, commoditized processes. They seek opportunities to explore and deliver differentiated and

innovative, value-creating processes. They want a platform to create innovative processes. But like all evolutionary processes, this will take time to reach mainstream — five to 10 years maybe. Right now, composable ERP is at the Innovation Trigger phase of the Hype Cycle, as organizations, software and service vendors are starting to understand the impacts and directions into this new future state. Even in its postmodern form, ERP is evolving from something more than just loosely coupled apps into a mesh of platforms and non-ERP vendors. Something new and aligned to the composable enterprise and future of applications.

User Advice: CIOs aiming to deliver flexibility and value to the enterprise must create a composable ERP strategy that focuses on these six hallmarks:

- AI-driven: AI will perform complex processes with little or no human intervention improving process outcomes throughput.
- Data-centric: Data is the lifeblood of composable ERP. Data will increasingly come from multiple applications, sources, services, and things.
- Consumable: Highly commoditized functionality offered as aggregator platforms, low-cost services.
- People-augmented: AI and automation assisting people to perform faster or to deliver better business outcomes.
- Enabling: Follows where you go, freeing the workforce from their desks and offering a seamless user experience on any device anywhere.
- Customer-facing: The name of the game is now what differentiates you to your customer, and how you can better support them with the best overall experience.

You must understand how these technologies are currently changing the shape of packaged business capabilities itself. Identify what new skills will be needed, the ongoing organizational change impacts created, and when and where to adopt them. There is an urgent need to get your data house in order and to plan for AI adoption in the near term.

- Establish the scope of what ERP means — and should mean — for your organization by synchronizing capabilities with business plans and desired outcomes and experiences. Reimagine ERP to align with the emerging generation of applications, architectures and technologies. The old monolithic ERP mindset and practices are a dying beast.
- Exploit the emerging technologies across all pace layers based on your organization's growth, transformation or optimization goals.
- Implement an ERP strategy that includes the hallmarks of composable ERP — or lose the ability to adapt and gain efficiencies.
- Invest in enabling technologies along the core ERP journey — AI, low-code/no-code, integration capabilities, master data management, security discussions must all be part of the ERP strategy.

Business Impact: Delivering business value remains at the heart of composable ERP. However, the ability to deliver value is beginning to change radically, thanks to the influx of new technologies, mindsets, and practices. ERP is shifting toward:

- The business outcomes of the process, rather than the process execution itself. You must shift the focus from how to do it to why to do it.
- New, more-agile approaches to implementation to meet the rapidly changing digital world, resulting in quicker time to value. The days of five-year waterfall ERP implementations are over.
- What differentiates you to your customer, and how you can better support their wants and needs.
- Accepting complexity and working to manage it is a must. Don't oversimplify the challenge toward a single vendor approach across the board.

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Emerging

Recommended Reading: "ERP's Emerging Fourth Era — Moving Beyond Postmodern ERP"

"Application Leaders: Master Composable Enterprise Thinking for Your Post-COVID-19 Reset"

"Future of Applications: Delivering the Composable Enterprise"

Blockchain for ERP

Analysis By: Paul Schenck; Tim Faith

Definition: A blockchain is an expanding list of cryptographically signed, irrevocable blocks of records shared by all participants in a peer-to-peer (P2P) network. Each block of records is time-stamped and references links to previous data blocks. This innovation profile refers to the use of blockchain with ERP. Multiple ERP vendors have blockchain projects underway, but they are limited in scope and have not yet hit mainstream adoption.

Position and Adoption Speed Justification: The potential benefit of blockchain is high. However, the hype of blockchain — especially in supply chains — has pressured some organizations to explore this technology before it is sufficiently mature. Governance and standards are emerging as significant constraints to scaling public blockchain. Blockchain integration into business processes is a potential issue as it may create two systems of record, driving significant internal reconciliation processes.

ERP vendors are being pragmatic in their recommendations to customers and potential customers. They state there is "potential" for blockchain to have a major impact. Yet barriers such as governance, funding, standards and measurable ROI across blockchains inhibit widespread adoption. COVID-19 has further restricted spend on unproven technologies. These concerns mean

that stand-alone mainstream blockchain adoption is still at least two to three years away. Adoption through ERP is much farther out at five to 10 years.

ERP use cases will lag behind the general adoption of blockchain until ERP vendor blockchain platforms provide interoperability. While hype is high, the reality of blockchain for ERP is that adoption is quite low. The position of blockchain for ERP on the Hype Cycle therefore has moved only slightly, with most enterprise projects stuck in experimentation mode and lacking clear goals and measurements.

User Advice: Determine blockchain relevancy:

- Many blockchain projects for ERP could be completed via secure cloud databases without the use and limitations of blockchain.
- Analyze the strategy of the blockchain startups that provide relevant use cases for your industry to highlight benefits.

If blockchain looks relevant, evaluate more deeply:

- Most current ERP-related deployments of blockchain involve tracking items in the supply chain. Supply chain leaders, CIOs and other IT leaders must perform due diligence in evaluating the merits of other technologies alongside the potential of blockchain.
- Data integration: Ledger DBMSs provide many of the benefits like data tampering detection and auditing without the complexity of configuring and managing a decentralized environment. They are managed by a single entity, which makes their implementation and management far easier and more secure.
- Gartner's research can help determine the suitability of blockchain in your ERP applications. (See "Assessing the Optimal Blockchain Technology for Your Use Case.")

If you decide to try blockchain:

- Establish metrics and indicators for project success or failure.
- Do not expect widespread industry adoption. Gartner expects that POCs across supply chains will be working within ecosystems of five trading partners or fewer.
- Conduct POCs with limited scope to understand the potential and limits of blockchain technology in conjunction with ERP. Pilot with a closed solution where one authority manages the blockchain.
- Use what you learn to match your organization's requirements to the capabilities of blockchain platforms. Develop expertise in how to use blockchain technology effectively in your ERP strategy.
- Expect development of public blockchain governance to be constantly evolving through 2023. Organizations governing their blockchain use cases for ERP will have to involve many external organizations in order to apply proper governance and risk management. Make sure that governance of the blockchain matches participant expectations.

- Review the blockchain roadmaps of your strategic ERP vendors and gauge their likely impact to meet your blockchain needs.
- Use public blockchain only as an anchoring system for your systems' records.

Business Impact: If organizations can navigate the hype correctly, the potential benefits of blockchain could be high, but not necessarily immediate. Blockchain and distributed-ledger concepts could disrupt industry operating models within some ERP functional areas such as supply chain and finance.

ERP vendors see the promise and the opportunity of blockchain, but many applications are immature. Few ERP use cases have been applied into production. Many applications of blockchain focus around the banking and security industry, but even there blockchain is not yet widely accepted. Gartner anticipates clearly defined manufacturing, government, healthcare and education use cases will emerge by 2021.

The 2020 Gartner CIO Survey found that adoption of blockchain varies by region. Europe has the highest percentage of blockchain use cases at 30%. Asia/Pacific region has 28% of tracked use cases, while North America has 25%. No other geographic regions exceed 6% of use cases.

Benefit Rating: Transformational

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: Accenture; Amazon Web Services; Deloitte; Ethereum; FaunaDB; Fluree; IBM; Infosys; Oracle; Ripple

Recommended Reading: "Blockchain Unraveled: Determining Its Suitability for Your Organization"

"Predicts 2020: Blockchain Technology"

"Cool Vendors in Blockchain Business"

"Top 10 Strategic Technology Trends for 2020: Practical Blockchain"

"Assessing the Optimal Blockchain Technology for Your Use Case"

Machine Learning in ERP

Analysis By: Denis Torii

Definition: Machine learning in ERP is an embedded artificial intelligence engine that generates business outcomes through recognition of patterns from the ERP application data source. It allows the deployment of AI-enabled applications through client customization. Machine learning is different from embedded AI applications deployed as modular out-of-the-box capabilities in ERP applications.

Position and Adoption Speed Justification: Currently, primary drivers for the adoption of machine learning for ERP are:

- Ever increasing volume of data managed in ERP applications.
- Growing number of use cases that conventional analytical methodology can't handle.

As the volume, types and sources of data increase, the complexity of systems will also grow. In such scenarios, traditional software engineering approaches to automatic data processing will produce inferior results.

Organizations are exploring use cases through initial phases of pilots/proofs of concept. Despite the heightened interest in the technology, most organizations are generally only able to dabble in machine learning. Finding the relevant skills needed to implement tailored machine learning projects is a challenge for organizations. Moreover, the capability is immature.

For these reasons, this is still considered to be in the Innovation Trigger region of the Hype Cycle.

User Advice: Application leaders considering using machine learning for ERP should:

- Separate hype from reality by deploying simple use cases that can lead to visible business outcomes and gradually move toward more complex business problems. Ensure data employed in those use cases is "clean," to ensure high-quality outcomes.
- Before investing in custom machine learning, check whether your ERP vendor offers or plans to deploy similar functionality by examining ERP solution roadmaps.
- Assemble a (virtual) team that prioritizes machine learning use cases. Establish a process to move the most valuable use cases from pilot through to production.
- Map the prerequisites and known gaps to leveraging machine learning use cases (e.g., historical data) in order to set the right expectations for when outcomes can be really achieved.

Business Impact: Machine learning for ERP will transform business execution by enabling sophisticated process automation capabilities. It will also create differentiation capabilities by mixing complex and unstructured data to provide insights and trigger business actions. In the future, advances in many industries will be unfeasible without embedded ERP machine learning.

Some examples of proper use of the technology include:

- Supply chain execution optimization
- Workforce effectiveness
- Fraud detection
- Customer scoring for business development prioritization

Benefit Rating: Transformational

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: Infor; Microsoft; Salesforce; SAP

Recommended Reading: "Evaluating and Selecting System Integrators for 'Intelligent' ERP Implementations"

"3 Types of Machine Learning for the Enterprise"

"Magic Quadrant for Data Science and Machine Learning Platforms"

At the Peak

Embedded AI in ERP

Analysis By: Duy Nguyen

Definition: Gartner defines artificial intelligence (AI) as technologies that adapt their behavior based on experience. This includes functionality not totally dependent on instructions from people (the technologies learn on their own) and able to come up with unanticipated results. In this profile, we look at the use and impact of AI embedded in ERP applications.

Position and Adoption Speed Justification: Organizations are slowly recognizing and achieving business benefits in deploying embedded AI in ERP. This will only escalate as ERP vendors deliver more and more AI-enabled applications to their products. Many enterprise application vendors have included AI technologies within their offerings in addition to introducing AI platform capabilities.

AI-driven analytics is enabling autonomous data processing and visualization in financial planning and analysis, financial close applications, procurement, and sales. It is providing more real-time diagnostic, predictive and prescriptive analytics, and is doing so with greater accuracy by leveraging broader datasets.

In composable ERP strategies, these AI-powered applications have the potential to significantly disrupt traditional ways of working in the following business operations:

- Finance planning analysis and invoice processing
- Inventory and warehouse management
- Enterprise asset management
- Facilities maintenance
- Logistics and production capabilities

This entry has changed from "Trigger/Peak Midpoint" to Pre-Peak 20% since last year. Gartner's CIO survey for 2021 showed 24% of CIOs responded to have deployed AI, an increase of 6% 2020. The 2021 Gartner CIO Survey was conducted online from 14 July 2020 through 14 August 2020 among Gartner Executive Programs members and other CIOs.

User Advice:

- Harvest usable data from your ERP. The key to success for AI is the availability and "digestibility" of data. For embedded AI in applications, that data comes from the ERP applications themselves. The integration capabilities of the newest generation of applications allow data models to extend and consume structured/unstructured data from data lakes and other database applications. The AI algorithms are tunable by the business to highlight factors most important to the organization's business. In addition to data generated by ERP applications, CIOs must investigate how existing data-rich products can bolster the data foundation for AI in applications. Examples of these services are Declara, Connexus and Hobsons' Predictive Analytics Reporting (PAR) Framework.
- Leverage embedded AI for personalization. CIOs should view ERP data as one of the foundations for AI deployment within the organization. Investigate how your ERP vendor is embedding AI into application use cases such as financial, procurement, time and attendance, and customer orders. The short-term benefit of deploying these can result in personalized suggestions for the user, employee and customer to automate their workload. Future benefit will aim toward autonomous and self-executing business processes.
- For system-of-record automation, default to embedded AI. CIOs must also evaluate the difference between leveraging embedded apps and custom ML/AI capabilities. Since ERP vendor know the data model, they can design the AI to ingest and clean data in the embedded application. AI designed from scratch will have to "learn" the difference between good and bad data since it needs to be taught the data model. When the cost benefits between using embedded and custom are similar or equal, it is better to select the embedded AI. When it comes to providing distinct differentiation for the business, go with the custom AI development.
- Don't blindly trust that embedded AI will always behave itself and self-correct. Seek to understand how both you and the vendors can monitor and audit the results for every upgrade or update.

Business Impact: Out of 1,834 respondents from Gartner's CIO 2021 Survey, 25% mentioned that AI will be a game changer for their enterprise. Gartner believes the impact of AI embedded in ERP will be transformational. By 2022, 60% of organizations will utilize packaged AI to automate processes in multiple functional areas. By 2024, 10% of analytic reports from ERP will be generated by AI.

One of the key application scenarios of AI in the next two years is improving the end-user experience. Gartner anticipates that at least 10% of end users expect to get their data from AI within the next four to five years, which will improve:

- **Predictions —** Increasing relevancy and personalization by analyzing high data volumes along with contextual data to provide recommendations and advice.
- **Decisions —** Improving decisions by processing large volumes of data faster, providing the most relevant actions at the right moment. With each iteration, the model retrains and improves.

- **Understanding through conversational interfaces and augmented analytics —** Analyzing text or voice using natural language processing to improve language and user communication. Chatbots and personal digital assistants must continuously improve by learning from conversations they have with people.

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Epicor; Infor; Microsoft (Dynamics 365); Oracle (ERP Cloud); Plex; Sage; SAP (S/4HANA)

Recommended Reading: "ERP's Emerging Fourth Era — Moving Beyond Postmodern ERP"

"Unlock AI Functions in Business Applications"

"What to Do to Boost Your AI Maturity (and What to Avoid)"

Hybrid Application Platform

Analysis By: Anne Thomas

Definition: A hybrid application platform (HAP) is an IT organization's governed portfolio of on-premises, on-edge and cloud-based application platform components that supports all present and future applications — including legacy, heritage, commercial off-the-shelf (COTS), SaaS, homegrown, third-party and digital business applications. Gartner's HAP capability framework helps application leaders define, implement and govern their multiplatform strategy by describing the capabilities required across all application concerns.

Position and Adoption Speed Justification: Many Gartner clients tell us that they have "one of everything" when it comes to application platforms. An organization needs multiple platforms, but an unstructured application platform selection process can lead to a proliferation of redundant and conflicting platforms, which can in turn lead to unmanaged costs and risks. A HAP strategy uses a capability model to classify and categorize application platform technologies and to ensure that the organization has the appropriate platform capabilities it needs (no more or less) to support its diverse application portfolio — supporting old and new, homegrown and purchased, and on-premises and cloud-based applications. It guides organizations to assemble complementary platform technologies and avoid adopting competing ones. Gartner's HAP capability model recommends analyzing platform capabilities based on application use cases, developer skill sets, application types, application architectures, business goals and constraints, portfolio considerations and deployment requirements. An example of applying the model to cloud platforms is presented in "Establish Guidelines for Selecting Cloud Platform Services."

Traditional megavendors, such as IBM, Microsoft, Oracle and SAP, and leading cloud megavendors, such as Amazon, Google and Salesforce, provide broad platform capabilities, and they claim to provide everything an organization needs. But no vendor supplies all types of platform capabilities,

supporting all types of applications and all types of developers. A successful HAP strategy should be compiled from multiple vendors and providers.

The notion of using a capability framework to govern an application platform portfolio is new, but it is resonating well with vendors and progressive end-user organizations. We anticipate that the HAP will continue to garner support, although it will take many years to reach maturity.

User Advice: Application leaders responsible for application development and platforms should:

- Use Gartner's HAP capability framework to assess requirements and govern and manage application platform software and service investments.
- Institute a platform selection governance framework to manage and limit platform acquisitions. Start by classifying platform options by use case. Refine selection guidance by developer skill sets, application types and architectures, business goals and constraints, portfolio considerations, and deployment requirements.
- Avoid getting trapped in a strategy dependent on a single-platform solution or provider. If your preferred provider doesn't provide the platform capability you need, bring in third-party services that complement what you have.
- Share your platform selection framework with vendors during requests for proposals to maximize vendor partnership opportunities. Vendors can identify where they fit in your HAP. If they can't, they aren't relevant to your search.
- Invest in integration infrastructure to support managed platform heterogeneity and to reduce dependency on any one platform vendor (see "How to Deliver a Truly Hybrid Integration Platform in Steps").

Business Impact: As they evolve their application platform strategies, application leaders and enterprise architects face conflicting challenges. First and foremost, they must support the established system-of-record application portfolio at the lowest possible cost and, thus, look for stable, low-risk products that are focused primarily on reducing total cost of ownership (TOC). At the same time, application leaders must also provide platforms that enable rapid innovation for their digital business initiatives. Modern applications require new technologies and architectures such as cloud, mobile, in-memory computing, web scale, microservices, hybrid IT and APIs. Standardizing on a single-application platform is impossible. Traditional platforms don't support cloud-native applications, and legacy applications won't run on cloud-native platforms. An effective HAP strategy supports all types of applications. It reduces risks, contains IT costs, and prepares the organization to exploit opportunities.

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Recommended Reading: "Establish Guidelines for Selecting Cloud Platform Services"

“Top 10 Trends in PaaS and Platform Innovation, 2020”

“Top Emerging Trends in Cloud-Native Infrastructure”

“Low-Code Development Technologies Evaluation Guide”

“Technology Insight for Multiexperience Development Platforms”

ERP and Agile for Implementation

Analysis By: Mike West

Definition: Agile implementation for ERP focuses on delivering new business capabilities on an ongoing basis quickly. Agile allows iterative improvement to the ERP system, through internal development or activating new features and functions provided externally by a vendor or partner. Motivated business and IT people collaborating toward frequent small goals ensure velocity and quality in ERP support.

Position and Adoption Speed Justification: The adoption of agile methodologies and practices in ERP implementations is accelerating toward the peak stage. This finding is based on the year-over-year adoption trends seen in the annual Gartner survey on Agile in the Enterprise. However, there are significant challenges to widespread adoption of agile methodologies in ERP implementations. Many enterprises have pockets of agile practice, but IT leaders have not applied that knowledge to ERP. ERP vendors and system integrators have little or no experience in applying true agile methodologies to deliver ERP projects. Solution architectures may not in some cases permit agile approaches. Many ERP “agile” implementation methodologies contain phase/gate approaches that incorporate prototyping rather than true agile practices. However, as the ERP vendors themselves use agile for product development, they then promote those same practices in implementation.

We expect enterprises to spend the next five to 10 years instituting the use of agile frameworks and methodologies while implementing ERP. Enterprises implementing ERP using agile will expect to deliver quicker ROI without compromising the integrity of the overall solution.

User Advice: Application leaders responsible for ERP must do the following:

- Develop agile scrum teams and enhance their technical acuity through use of agile technical practices, many of them from XP; implement DevOps, adopt a suitable enterprise agile framework (EAF) and train agile scrum teams.
- Challenge your business counterparts to identify product owners and product managers for implementing ERP according to end-to-end business processes (value streams) rather than modules.
- Identify a suitable initial agile practice (or two) to adopt as a starting point. Allow the team to deliver a business process that provides “just enough” business value using the chosen agile practice.
- Invigorate ERP governance processes and frameworks by integrating the core principles of agile into business and IT teams.

- Engage experienced agile practitioners to coach your project team on adopting your chosen agile methodologies prior to the start of the ERP implementation.

Business Impact: Traditional methods of supporting ERP have significant lead times and are often reactive efforts. The shift to agile makes the support approach more proactive and targets improvement based on the outcomes rather than fixing or customizing individual functions. The shift to cloud ERP SaaS pushes support organizations to update much more frequently. The impact of agile is that organizations have the capability and competency to quickly complete testing in much tighter windows. Those organizations can evaluate and activate vendor-provided new features on an iterative basis. Supporting ERP through agile enables IT and business stakeholders to work tightly together to iteratively deliver new business capabilities on an ongoing basis.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Accenture; Atlassian; Capgemini; Deloitte; Micro Focus; Panaya; Worksoft

Recommended Reading: "Accelerate Benefits of ERP With Enterprise Agile"

"How to Build Agile ERP Support With Product Teams"

"First Steps in Applying Agile and DevOps to ERP Support"

ERP and Agile for Support

Analysis By: Paul Schenck; Tim Faith

Definition: Agile support for ERP focuses on delivering new business capabilities in a rapid and iterative fashion. Use of agile allows for faster improvements to ERP systems through internal development or activating new features provided by a vendor. Agile support is composed of small dedicated product teams from the business and IT collaborating closely together to ensure velocity and quality.

Position and Adoption Speed Justification: Agile support for ERP is near the peak of hype. Client inquiry related to that topic increased 56% and then 22% over the last two years. The adoption of agile in ERP support is further along than agile ERP implementation, due to the smaller scale of incremental support releases. Enterprises are seeking to deploy pockets of agile practice, such as in their front-office or custom applications. The incremental desire is to expand agile to the support of back-office systems such as ERP.

The COVID-19 pandemic and associated financial challenges and headcount reductions inhibit the ability to stand up agile teams which focus more on value creation than maintenance. Cost cutting may lead organizations to use application management services (AMS) for ERP support more extensively. While AMS providers may adopt agile internally, their support structures are not aligned well to the product team characteristics of being dedicated, proactive and collaborative. Financial

barriers may dissipate in 18 months to three years with the return to a healthy economy and a renewed focus on building competitive advantage.

User Advice: Application leaders responsible for ERP must do the following:

- Enhance collaboration with business partners by establishing product teams with defined agile roles, seeking members who have a collaborative mindset.
- Develop versatile support staff and grow their agile competencies through development programs and coaching.
- Apply agile governance practices on an ongoing basis to support and monitor the product teams and align their efforts across the organization.
- Don't lose control of quality. SaaS vendor testing can reduce the time and cost of QA efforts. However, application leaders are still responsible for providing a high-quality, compliant application, and must identify the risk areas and mitigate them.
- Adopt automated testing. Leveraging cloud testing options to execute as often as possible, based on vendor's release schedule or major integration changes to external systems.
- Establish error handling and problem resolution processes as a part of the communication plan when negotiating the SaaS agreement.

Business Impact: Traditional methods of supporting ERP have significant lead times and are often reactive efforts. The shift to agile makes the support approach more proactive and targets improvement based on the outcomes rather than fixing or customizing individual functions. The shift to cloud ERP SaaS pushes support organizations to update much more frequently. The impact of agile is that organizations have the capability and competency to more quickly complete testing though struggles still exist. Those organizations can evaluate and activate vendor-provided new features on an iterative basis. Supporting ERP through agile enables IT and business stakeholders to work tightly together to iteratively deliver new business capabilities on an ongoing basis.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Recommended Reading: "How to Build Agile ERP Support With Product Teams"

"First Steps in Applying Agile and DevOps to ERP Support"

"Coordinate Agile Application Delivery With Traditional Release Management for ERP"

Hybrid Integration for ERP

Analysis By: Tim Faith

Definition: A composable ERP strategy requires flexible integration capabilities. These integration capabilities include event-driven and API-enabled application, business process, and data integration; a business service repository; harmonized security architecture; and connectivity to external endpoints. Hybrid integration is a framework of on-premises and cloud-based integration tools and governance methods enabling differently skilled personas supporting a range of integration use cases.

Position and Adoption Speed Justification: Technologies for application integration continue to emerge and evolve. We have positioned hybrid integration for ERP just before the peak of the Hype Cycle for the following reasons:

- In the context of ERP application integration, hybrid integration platform (HIP) is a somewhat new technology strategy. Collectively combining integration platform as a service (iPaaS), traditional integration platform software, API management and other capabilities is not yet as widely adopted as each of these technologies individually.
- Market capabilities for integration are changing. Rising interest in artificial intelligence and machine learning is now affecting integration technology in several ways. Methods are evolving for collecting and organizing unstructured data. Automation is changing how large data volumes are processed at scale. Machines are learning to map data and to build and repair the interfaces. This allows integration vendors to provide support for the constantly changing connectors, APIs and data models of ERP application vendors.
- Many organizations are just beginning to develop formal integration strategies in conjunction with a composable ERP transformation strategy.

User Advice: Many vendors historically offering cloud-based applications are now building basic, preconfigured application integration capabilities as part of the SaaS. However, more comprehensive integration development and management is required by customers and needs to be sourced through other platforms and services.

Application leaders responsible for ERP should:

- Determine your organization's requirements for ERP application integration by developing both a composable ERP strategy and a corresponding hybrid integration strategy.
- Calculate the complexity, stability and frequency of integrations required, as well as the volume and type of data within the integrations. Adopt and deploy a HIP to support the dynamic nature of your applications.
- Acquire the necessary integration components from as few vendors as possible. Determine whether some of the components you need are already part of your portfolio or architecture, or if your incumbent integration vendors already provide them. Replace those components that no longer apply.
- Do not assume that ERP vendor-provided integration tools will meet all your needs for integration, data management, security or automation. Evaluate the cloud integration platforms

and options in the market, and utilize all applicable toolsets in accordance with your integration strategy.

- Establish a set of connecting technology and governance policies that can provide the IT organization with the necessary data management, security, development and integration oversight. Do not constrain the flexibility and responsiveness the business requires.
- Ensure you have the appropriate skills in your organization. Determine which integration personas are required to support your integration strategy. Leverage a citizen integrator approach (where practical and when the tools are available) to improve your organization's efficiency, business agility and ability to innovate.

Business Impact: The impact of a proper hybrid integration platform strategy on ERP is high. ERP today requires complex integration technologies to enable the integration of specialist applications and foundational platforms to support the organization's business strategy. Specific uses include the Internet of Things, digital twins and hyperautomation. Digital business, and its characteristic of multiple sources of data input, requires a robust yet flexible and scalable integration capability. Traditional approaches to integration are inadequate to support composable ERP and digital business that increasingly leverages APIs and event-driven architecture.

As organizations transform their existing legacy ERP suites, application integration increases in importance. Application integration technology enables replacing components of the ERP suite without having to adopt an "all or nothing" replacement strategy. This provides more flexibility while maintaining data, process and security integrity.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Boomi; Informatica; Jitterbit; Microsoft; MuleSoft; Oracle; SAP; SnapLogic; TIBCO Software; Workato

Recommended Reading: "Create a Future-Proof Integration Strategy for Your ERP"

"How to Deliver a Truly Hybrid Integration Platform in Steps"

"Choosing Application Integration Platform Technology"

"Choose the Best Integration Tool for Your Needs Based on the Three Basic Patterns of Integration"

"3 Steps to Designing a Future-Proof Business Application Integration Strategy"

Conversational UI in ERP

Analysis By: Duy Nguyen

Definition: Conversational user interface (CUI) is a high-level design model in which the user and machine interactions primarily occur in the user's spoken natural language. Sophistication of the conversational UI can vary from understanding just simple utterances to handling complex interactions. This profile addresses the use of conversational UI in ERP applications.

Position and Adoption Speed Justification: According to Gartner client inquiry and Peer Insights' review data, client adoption of CUI and chatbots increased by 120% in 2019, which was another year of strong adoption following a 185% increase in 2018. Client interest in CUI and chatbots is starting to level out and declined slightly in 2019, which we take as an indication that it has hit its peak of hype. Many organizations are starting to develop a good understanding of natural language technologies, the limitations of current technology solutions and possible use cases today.

Conversational UI exists as a front end to applications or business processes, but also as a description of the interface employed by chatbots and virtual agents. Chatbots are the No. 1 use case for AI in the enterprise.

The promise of conversational UI is a shift in responsibility between the user and the interface. In traditional user interfaces (UIs), the user is an operator of the technology and is largely responsible for the effects of using the technology. In a conversational UI, this responsibility shifts as technology takes the user input and determines the intention of the user. Conceptually, it takes over some of the responsibility that was once reserved for the user.

Conversational UI is evolving through advances in natural language understanding (NLU) and natural language processing (NLP) in more advanced dialogue management. It is an evolution of preexisting technologies (e.g., voice warehouse picking) moving from scripted preset instructions to a self-learning natural language interaction. Additionally, we are beginning to see the introduction of multimodal interactions. This is where speech, text, video and point-and-click interactions are all used to determine the intention of the user.

Most ERP vendors have introduced conversational UI as user interfaces to their applications. While some are rudimentary, many are rapidly gaining sophistication and maturity. Challenges remain, however, for conversational UI enablement languages other than English.

User Advice: The shift toward conversing with your ERP rather than operating it represents a significant milestone in ERP's evolution. It will have an enormous impact on user satisfaction levels. It brings with it enormous organizational change. Training, onboarding, escalations, productivity, empowerment and responsibility all change with this new way of interacting.

We recommend:

- Treat CUI as transformative and plan on it becoming the dominant interaction model.
- Monitor the ERP vendor roadmap to understand when the capability may be ready to enable mainstream adoption across the enterprise, especially in multiregional ERP deployments.

- Additionally, organizations looking to adopt conversational UI should investigate its security. Not only the ERP vendor's security, but conversational device security (such as firmware and OS security) that might be outside the ERP vendor's control.
- Evaluate whether additional costs are necessary to enable this user interface (e.g., additional licensing, new hardware, higher bandwidth) and define where to initially deploy conversational UI based on cost-benefit analysis.

Business Impact: Chatbots and virtual assistants embedded in your ERP applications will be a significant part of your conversational UI portfolio. Conversational UI will be especially popular for high-touch communicative fields of customer service and Q&A-type interactions with significant volume.

Application leaders should look for and bias toward conversational UI to improve process effectiveness within their ERP portfolios.

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Sample Vendors: Infor; Microsoft; Oracle; SAP; Workday

Recommended Reading: "Architecting and Integrating Chatbots and Conversational Platforms"

"Emerging Technologies: Top Use Cases for Conversational UI"

"Conversational UI Adoption Data for Tech CEOs to Target Key Segments"

Cloud ERP for Global Enterprises

Analysis By: Denis Torii

Definition: Cloud ERP for global enterprises is defined as the SaaS ERP suite adoption by companies that operate across multiple regions with total annual revenue above $5 billion. Those types of companies usually search for an ERP application suite that can cover multiple country localization features — including language support and embedded tax calculation engines. There must also be an offering that allows them to provide a flexible application platform that takes into consideration different geographical and local business execution constraints.

Position and Adoption Speed Justification: Interest in cloud ERP for global enterprises continues to grow due to legacy applications reaching end of life. At the same time, it represents opportunity to adopt modern technology with lower initial investment for subsidiaries. That interest is also variable across different business domains. For example: most organizations are highly interested in cloud human capital management (HCM) adoption, while only a few are pursuing cloud ERP adoption for complex manufacturing environments.

Mature localized cloud ERP offerings are not available in all countries in which these enterprises operate, which leads to a slower adoption rate in certain regions. Governmental policies and regulatory compliances created additional constraints on data protection and sovereignty status where ERP vendors do not have access or qualify to operate. The lack of dependable telecom infrastructure can still be strong inhibitors in certain geographies. These barriers to adoption are a reality check for global enterprises aspiring to upgrade their core systems, and their resulting disappointment pushes this technology toward the trough.

User Advice: Application leaders should:

- Adopt cloud ERP as part of a global ERP strategy approach, when appropriate. Leverage cloud ERP point solutions for specific business domains (e.g., HCM or CRM) as part of the overall ERP strategy enablement.
- Consider potential issues that may arise from technological and legal constraints in certain regions (including internet access quality and reliability, and rules about data residency within the country). Evaluate the architecture capabilities of this application to overcome those challenges.
- Map global ERP requirements that consider the regional complexities (local legal and business requirements), and understand how they fit into a global application strategy.
- Validate that your implementation timelines align with the roadmap of these global cloud ERP applications, including localization features enablement. Plan for the fact that ERP vendors don't guarantee fulfillment of future release roadmaps.
- Evaluate whether a two-tier ERP strategy is the best fit to promote regional coverage, as opposed to adopting a single solution that may be too complex to deploy globally.

Business Impact: Some of the advantages of cloud ERP potentially include lower cost of implementation, faster time to benefit, reduced cost of upgrades, and lower capital expenditure. Thus, there is currently no clear indication that cost is lower as compared with an on-premises deployment, when measured over the useful life of the solution.

Global enterprises that are able to adopt this can benefit from quicker global rollout (when compared with the traditional on-premises model) when the functional scope defined is adherent to standard capabilities. Global ERP support structure enablement may be another one.

Achieving business outcomes is easier when enterprises accept and commit to a global culture of change and adaptability to standard business execution. And this continues to be a big challenge in many cases. Evidence exists that enterprises that don't properly prepare to adopt such architecture struggle with the frequent updates.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: IFS; Infor; Microsoft; Oracle; SAP

Recommended Reading: "What CIOs Need to Know About ERP Consolidation"

"2-Tier ERP: Modernizing the Hidden Jewels of the Enterprise"

"Toolkit: Evaluate the Applicability of 2-Tier ERP to Your Enterprise"

"Market Guide for Service-Centric Cloud ERP Solutions"

"IT Market Clock for ERP 2020 — Preparing for the 4th Generation of EBC"

Data Hub Strategy

Analysis By: Ted Friedman; Andrew White

Definition: A data hub strategy effectively determines where, when and how data needs to be mediated and shared in the enterprise. It layers data and analytics governance requirements atop data sharing demands to establish the technology approach for enabling data flow. The strategy drives implementation of one or more data hubs that link the work of data and analytics governance and sharing. Deployment of data hubs involves various types of integration technology, governance-related tools, metadata and, possibly, data persistence capabilities.

Position and Adoption Speed Justification: A data hub is a logical architecture which enables data sharing by connecting producers of data (applications, processes and teams) with consumers of data (other applications, process and teams). Examples of common data hubs today are master data management solutions (master data hubs) and data integration hubs. Endpoints, such as business applications, data warehouses or data lakes, interact with the data hub(s), provisioning data into it or receiving data from it. The hub then provides a point of mediation and governance, and visibility to how data is flowing across the enterprise.

The position on the Hype Cycle relates to those organizations that are new to the idea; for those who have been applying these principles (perhaps without the name "data hub"), the hype is really not relevant. The hype related to data hubs has reached a peak — technology providers and practitioners of various types have a focus on this topic, but often with very different definitions, principles and goals. This is due to several reasons:

- The opportunity created from the general failure of modern data and analytics efforts to cope with high complexity across large and diverse landscapes of data, applications and processes.
- The misinformation created by vendors that sell capabilities referred to as "data hubs" or "hubs" that have little to do with this modern design pattern.
- The confusion created internally when enterprises don't clearly understand and communicate the definition and purpose of data hubs.

A data hub does not imply a central physical repository. A hub is like a transit station on a rail network; it is not a place where all passengers converge. A hub is a small component, part of the infrastructure; it is not an endpoint like a data warehouse or data lake. Once data and analytics

teams get this point, the idea makes a lot of sense. However, vendor messaging will continue to confuse many organizations.

User Advice: Data and analytics program leaders, including chief data officers (CDOs) and information architects, should:

- In your architectures and business plans, consider all applications, databases, data warehouses and data lakes as possible endpoints. The purpose of a data hub strategy is to focus on key points where you can gain benefits by applying data and analytics governance more effectively across sets of endpoints that need to share data.
- Design a data hub strategy to understand data and analytics governance and sharing requirements, and to drive integration efforts.
- Include any master data, application data, reference data, analytics data hubs or other intermediaries such as customer data platforms, in your overall data hub strategy.
- Start by using Gartner's Adaptive Data and Analytics approach to align the governance approach to the use case. Then follow up with Gartner's Value Pyramid to align data efforts to outcomes, and Gartner's Three Rings of Information Governance to identify the data that is most frequently used or is most important with most business value.
- Iterate changes to your data hub landscape as business requirements for data and analytics governance, data sharing and data integration change; perhaps even specializing certain hubs on specific kinds of data being governed, shared and/or integrated.

There are many types of data hubs in practice. One common example is an MDM implementation, whereby master data is shared and governed through a hub. Others include application data management, customer data platforms (CDPs) and general-purpose integration hubs. This helps explain the low penetration: an explicit data hub strategy is very new and not well-penetrated even though numerous hubs themselves have likely been adopted for discrete, even siloed purposes.

Business Impact: In coordinating programs and projects, and "connecting the dots" with a hub strategy, the business benefits will tend to grow over time as more endpoints are connected to data hubs, and possibly more hubs are adopted. This is because, without a hub strategy, complexity and cost of data sharing grows exponentially — with the hub, it grows linearly. Organizations should focus on the most high-value or complex areas first in order to gain a significant business benefit impact through the deployment of the initial hub. A formal set of hubs, managing the trusted flow of data across the entire landscape of applications and warehouses and lakes, will also expose more trusted lineage information.

If there are no effective data and analytics governance, data sharing or effective integration programs in place, the benefits of starting with a data hub strategy (compared with trying to retrospectively fit one into an established environment) will be greater.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Recommended Reading: "Use a Data Hub Strategy to Meet Your Data and Analytics Governance and Sharing Requirements"

"Implementing the Data Hub: Architecture and Technology Choices"

"Data Hubs: Understanding the Types, Characteristics and Use Cases"

Enterprise Metadata Management

Analysis By: Guido De Simoni

Definition: Enterprise metadata management (EMM) is a business discipline for governing shared metadata assets between and across disparate data, and between and across analytics and operational projects and programs. For example, those for master data management (MDM), business intelligence (BI) and records management. The aim is to achieve the benefits of enterprise information management (EIM).

Position and Adoption Speed Justification: Most organizations cope with managing metadata *in situ* — that is, within the confines and needs of each data and analytics program, business initiative or system. For example, an MDM program, a BI initiative and a data warehouse implementation will include a specific metadata management focus. But EMM — the discipline of aligning and governing shared and common metadata between all such programs — is much harder to develop, as the business case for it is harder to formulate and communicate. Hype remains significant due to technological innovations, like augmented data catalogs that are sparking new interest in linking information silos to improve the value of information-based business outcomes. These innovations increase the need to govern information assets across multiple information management investments, which in turn creates fresh demand for EMM and EMM-enabled systems. At the same time, when EMM is poorly planned, it can be prohibitively costly to implement technologies capable of managing the enterprisewide variety, volume, velocity and complexity of metadata about vital information assets.

Modern metadata management tools are now able to offer functional capabilities, automation through machine learning and data valuation methods that push new EMM adoption. EMM is therefore moving off the Peak of Inflated Expectations, but most organizations' adoption remains at an early phase. Concurrently, various technology innovations, while trying to fill EMM gaps, are disrupting the discipline's maturation, which means EMM will move slowly along the Hype Cycle.

User Advice: Defining EMM needs is a key responsibility of the chief data officer or data-savvy business leaders, whereas the implementation and ongoing management typically falls within the realm of the CIO. This mismatch of responsibilities requires dedicated executive oversight and ongoing discipline for organizations to derive sustainable business value from EMM.

Explore EMM when you have common corporate goals, yet disparate information management programs (each with its own metadata) that are neither aligned nor sharing consistent information. Use EMM to help govern the metadata and information assets between these programs. EMM is valuable when your organization needs to incorporate its information management programs into a

more mature enterprise information management framework. If your goal is to align information across these metadata elements, grow the "connections" between the programs and datasets as needed, over time, and use EMM to govern the shared metadata. You need an EMM strategy/plan for how to improve the situation by drawing on other planned initiatives, which may involve the participation of individuals from different organizational units. To create and sustain an EMM program, you need to account for people and process issues, as well as technological issues and choices. These issues include those related to identifying the best metadata to use, the viability of the technology housing the metadata, and the most suitable approaches to federating or consolidating metadata across technologies.

Business Impact: EMM confers the following benefits:

- Enables coordinated efforts in data and analytics use cases. As a result, it provides an immediate benefit to business teams by allowing them to search, request, reuse governed metadata across siloed projects for their self-service use.
- Addresses reduction in costs by identifying and prioritizing data and analytics assets by CDO teams.
- Drives improvement in productivity for data management teams by allowing them to be on the same page with semantics and to better resolve semantic variations with business teams.
- Extends the benefits of other programs — such as those for analytics, MDM, data quality, data integration, business process management and service-oriented architecture — by supporting reconciled semantics in the information sources they use.

Many service providers offer training and consulting in EMM. In addition, metadata management solution vendors provide training and consulting in a more coordinated and customized way to support specific EMM use cases.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Recommended Reading: "Implement Enterprise Metadata Management to Drive Effective Enterprise Information Management"

Predictive Analytics and ERP

Analysis By: Tim Faith

Definition: Predictive analytics relies on techniques such as predictive modeling, regression analysis, forecasting, multivariate statistics and pattern matching, and machine learning. Predictive analytics applied to ERP analyzes massive amounts of organizational and external data to present a "What is likely to happen" scenario in distinct business use cases. Some example use cases are

impact of quality management on revenue margins, predictive maintenance on assets, new cost modeling for introducing new products and identifying M&A outcomes.

Position and Adoption Speed Justification: The combination of transactional and analytic processing in ERP allows real-time analysis to be embedded within ERP applications, guiding and optimizing execution of transactional processes. This is different than the more common use of algorithms created and maintained by data scientists and executed externally from the ERP applications today.

Supply chain planners, for example, have built and maintained algorithms for years for areas such as demand, inventory and transportation planning, and manufacturing scheduling. Planners currently deploy these algorithms in areas where best practices are appropriate because there is a known cause-and-effect relationship. Vendor-embedded predictive algorithms are now able to solve complicated end-to-end supply chain problems. The system self-adjusts the algorithm decision execution, leveraging data from the digitalization of supply chains and the broader adoption of the Internet of Things (IoT). Consequently, the use of predictive analytics has strong transformational potential, redefining the way businesses will observe, evaluate and reconfigure processes.

Further, predictive analytics will become an integral part of the transactional business process itself, rather than a separate activity performed after the event. This means that you can see the prediction based on the analysis at the time when the business decision is necessary, not after the fact.

ERP software vendors are imbedding predictive analytics capability into their offerings in one of three ways:

- Building predictive analytics into their products to fulfill specific use cases (such as SAP and Workday)
- Offering add-on platforms and services (such as Oracle Analytics Cloud and Microsoft Analytics Platform System)
- Purchasing BI platforms to incorporate into their offerings

We place predictive analytics ahead of the Peak of Inflated Expectations as product offerings are still new; to date, customer utilization is low. Vendors are competing to refine analytics included in their products while incorporating the technology toward more complex use cases. Although we do not see any advancement along the Hype Cycle over the past year, we expect predictive analytics to progress steadily toward mainstream adoption over the next five to ten years.

User Advice: Application leaders responsible for implementing predictive analytics into ERP should:

- Determine whether your analytics capabilities will be delivered by the ERP platform, an external analytics platform or a combination of both.
- Explore analytic capabilities that are currently available in the versions of your ERP applications and understand your ERP vendor's product roadmap in this area.
- Create proof-of-concept areas of focus. Target areas that benefit from improved plan and forecast accuracy by providing mathematically derived, probabilistic range of outcomes

(compared to consolidating multiple, unrelated forecast assumptions). One such use case is the optimization of the order-to-cash business process through the improvement of projected order fulfillment for your most important customers.

- Use predictive analytics to identify future operational problems. For example, use an analytic capability to evaluate the impact of interrupted supply chains to corporate profitability. The analytics can suggest action plans (the possibility of engaging in alternative sourcing and suppliers), while determining the likely profitability impact of such plans.
- Define the extent to which analytics will target business processes encapsulated in a single ERP application suite. Then, determine whether analytics that spans multiple application data sources requires applying additional integration and data management capabilities.

Business Impact: Predictive analytics, along with the ability to iteratively test more sophisticated hypotheses, will provide opportunities to identify or improve ERP value across the enterprise. Greater use of embedded predictive analytics that utilizes machine learning is inevitable. Traditional planning and analysis approaches will not be able to keep up with the speed and volume of incoming data. This is due in part to explosion of data available from devices and IoT-enabled supply chains.

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Sample Vendors: Acumatica; Infor; Microsoft; NetSuite; Oracle; SAP; Workday

Recommended Reading: "Top 10 Trends in Data and Analytics, 2020"

"Composable Analytics Shapes the Future of Analytics Applications"

"Augmented Analytics Is the Future of Analytics"

"Leverage Data and Analytics Efficiently to Improve Digital Business Outcomes"

Sliding Into the Trough

Business Capability Modeling

Analysis By: Saul Brand

Definition: Business capability modeling (BCM) is a technique that represents the ways in which enterprises combine resources, competencies, information, technology, processes and their environments to create unique competitive possibilities and deliver value to customers or citizens.

Position and Adoption Speed Justification: Business capabilities intersect the enterprise business and operating models. Enterprise architecture (EA) and technology innovation (TI) leaders

must stimulate, contribute toward and facilitate conversations with business and IT leaders about the impact of new and emerging technologies on the enterprise's business and operating models. They can do this by focusing on businesses' capabilities and their ability to create, capture and deliver value.

BCM is one of the tools and techniques EA and TI leaders use to help business and IT leaders see the common view of the business. It is a discipline, tool and technique that helps business leaders visualize which resources need to be combined to execute and operationalize the business strategy. By applying digital business concepts to business capabilities, EA and TI leaders can help business leaders explore potential ways to enhance or develop their capabilities, unlocking and executing new business opportunities. BCM can be used to flesh out and operationalize the organization's business strategy, communicate the business strategy, and demonstrate how people, process and technology resources need to change to achieve targeted business outcomes.

Between April 2019 and April 2020, Gartner has engaged with more than 442 clients inquiries, one-on-ones, and workshops on leveraging business capability modeling as the common platform to inform and drive decision making between business and IT executives.

We conducted a pre-event survey in August 2019 of potential client and nonclient attendees from North America and Europe ahead of Gartner's 2020 EA Summits in Orlando, Florida, and London, U.K. The total number of respondents was 486. We asked this question: "How important is it for you to leave the event with insights into business capability modeling?" We found that 87% of EA practitioners are interested in learning about linking EA to business and IT strategy, and that 73% of EA practitioners are interested in learning about business capability modeling. These statistics show a significant year-on-year change. Specifically, those interested in learning about business capability modeling has more than doubled.

We believe there is still significant hype around business capability because enterprise architects — and IT in general — are looking for tools and techniques that will help to strategically engage and drive more value when working with their business counterparts. However, we believe that interest in business capability modeling is greater than its adoption. Therefore, we put the market penetration in the range of 10% to 30%, with the view that the current overall market penetration is about 20%. For this reason, we position the business capability profile as just beyond the Peak of Inflated Expectations.

User Advice: To create a high-impact, business-outcome-driven EA practice, it is essential that EA practitioners create strategically focused anchor models, typically, a future-state BCM. EA practitioners must also consider leveraging and mashing up BCMs with other key business architecture deliverables, such as value-stream, business process, ecosystem, customer maps and other operating and functional models. Once used to represent a future-state business and operating model, business capabilities can be used as a platform for creating both diagnostic and action-oriented deliverables. Deeper, detailed BCMs may be used to illustrate specific decisions in information, business, solutions and technology architecture viewpoints.

Business Impact: BCM has the highest business impact when it is used to identify and assess technology options and value creation opportunities. These can be used to craft a compelling, high-level set of capabilities and business trade-offs that are immediately relevant to business and IT

leaders. This approach focuses and links IT efforts to business direction and strategy, as well as targeted business outcomes, programs, projects, products and initiatives. It decreases the likelihood that business and IT leaders will get bogged down in political, organizational and technical quagmires.

The benefit of BCM is rated high because it enables business and IT strategic planners to engage in business strategies and execution planning, and to understand the impact of these decisions on business and IT. This is especially important as organizations push deeper into digital transformation and optimization initiatives that focus on customer-centricity and value streams.

The value of BCM is, first and foremost, to focus on and explore future-state business and IT direction and plans. It can also be used to help focus and illustrate investment decisions. These decisions can then be linked to information, solutions, technical, application and security and other architectural changes. Another, equally important benefit is to enable EA practitioners to have objective discussions about how to achieve future-state business capabilities without drilling down into technology, people, process and information details. Drilling down into details too early can derail discussions about business direction and strategy, as well as about organizational optimization.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Sample Vendors: Avolution; BiZZdesign; BOC Group; LeanIX; Orbus Software; QualiWare

Recommended Reading: “Toolkit: Construct Business Architecture Deliverables That Deliver Value to Business Leaders”

“Toolkit: Business Outcome Statements Deliver Value to Your Business and Guidance for EA”

“8 Best Practices for Creating High-Impact Business Capability Models”

“Toolkit: Workshop for Constructing an Initial Business Capability Model”

“Toolkit: How to Use Pace Layering With Business Capability Modeling to Prioritize Investment Decisions”

“Compendium of Business Capability Models”

“The Architect’s Business Capabilities Handbook”

“Sample Business Capability Model”

“Toolkit: How to Develop a One-Page Business Strategy”

“Create Roadmaps That Support Decision Making and Communicate Strategy Effectively”

"Stage Planning a Business-Outcome-Driven Enterprise Architecture"

Cloud ERP for Manufacturing

Analysis By: Denis Torii

Definition: Cloud ERP for manufacturing enterprises comprises SaaS ERP suites aimed at companies that manufacture products. These suites have operational ERP capabilities that include, but are not limited to, production planning and scheduling, production operations and control. They also provide manufacturing information management capabilities such as production performance reporting and analysis. Optionally, they may have administrative ERP capabilities that normally include human capital management, financials and procurement.

Position and Adoption Speed Justification: Cloud ERP vendors are evolving in terms of their ability to provide enabling functionality adequate for certain manufacturing segments. Functional scope and sophistication have improved to support the requirements of many small and midsize enterprises, and so we have seen significant movement across the Hype Cycle. However, supporting the requirements of complex manufacturing companies is still beyond the capabilities of most cloud ERP vendors.

Manufacturers' concerns about production continuity in the event of network failure still represent a big barrier to adoption. Intellectual property safety and the potential for poor data delivery speeds to and from shop floor assets are other barriers. Many cloud ERP solutions lack depth in their manufacturing capabilities, which limits an easy transition to the cloud. The presence of incumbent modifications or custom functionality in current ERP environments creates additional challenges. This is especially true when transition is part of a replacement of on-premises legacy ERP deployments. As a result, adoption of cloud ERP in manufacturing remains behind other sectors such as service-centric organizations, which mainly focus on administrative functionality.

User Advice: Application leaders seeking to adopt cloud ERP in manufacturing scenarios should:

- Evaluate cloud ERP manufacturing offerings as part of their broad ERP strategies. For global and complex environments, consider a tiered ERP strategy as a possibility to enable a more flexible setup.
- Engage business stakeholders in the ERP application selection process to enable a good functional fit and standardization mindset that will persist throughout the deployment journey.
- Create proper governance mechanisms to avoid a proliferation of extensions to the application that erode overall delivered value.
- Evaluate the usage of platform capabilities for less disruptive extension of the suite provided by the vendor.
- Identify the integration capabilities delivered with the cloud ERP suite and ensure that it will support any ancillary applications planned — either on-premises or cloud-based.
- Evaluate if the solution is modular enough to allow for a phased implementation approach that will enable a less disruptive adoption.

- Evaluate if the licensing model for the cloud ERP application chosen requires payment for indirect access charges. If so, include proper provisioning of costs into the business case for this adoption.

Business Impact: Potential advantages of cloud ERP include lower cost of implementation, faster time to benefits realization, reduced cost of upgrades and lower capital expenditure. Although increased value is achievable, there is currently no clear indication that total cost of ownership is lower compared with an on-premises deployment. Cloud ERP may also enable the benefits of standardized processes, state-of-the-art user experience, better analytics and financial transparency — important concerns for profit-oriented companies.

However, to fully realize the advantages of cloud ERP, organizations must embrace a culture of standardization of processes and adaptive change.

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Acumatica; Infor; Microsoft; Oracle; Plex Systems; QAD; Rootstock Software; SAP

Recommended Reading: "Magic Quadrant for Cloud ERP for Product-Centric Enterprises"

"Critical Capabilities for Cloud ERP for Product-Centric Enterprises"

"2-Tier ERP: Modernizing the Hidden Jewels of the Enterprise"

"Replace or Renovate: Can Your Current ERP Win in the Turns in a Digital Business World?"

Digital Twin

Analysis By: Alfonso Velosa; Benoit Lheureux; Marc Halpern

Definition: A digital twin is a virtual representation of an entity such as an asset, person or process and is developed to support business objectives. The three types of digital twins are discrete, composite and organizational. Digital twin class elements include the model, rules, relations and data properties. Digital twin instance elements include the model, data, unique one-to-one association, and monitorability.

Position and Adoption Speed Justification: The idea of modelling people, physical assets, and processes continues to gain traction, especially as the architecture for the future of applications includes digital twins as features of an application, and as stand-alone supplements to portfolios of applications that address an entity.

- People: Digital twins are the evolution of trends including customer 360-degrees, patient electronic health records, and fitness monitors. Their near-term uses include health monitoring and employee safety, particularly in response to the pandemic.
- Physical assets: Digital twins adoption aligns to Internet of Things (IoT) trends. For owner/operators, near-term use includes lowering maintenance costs and increasing asset uptime for equipment users in factories, hospitals, utilities, etc. For product original equipment manufacturers (OEMs), near-term uses include product differentiation, business model differentiation through new product service models, and obtaining customer data.
- Processes: Digital twins are being developed to model IT organizations, financial exchanges, and processes such as purchase orders.

The digital twin profile has moved past the Peak of Inflated Expectations, based on enterprise confusion driven by conflicting vendor marketing and on challenges implementing digital twins. Gartner's CIO Survey 2020 shows that 6% of enterprises have implemented digital twins, although less than 1% of assets have digital twins. Another 41% of enterprises expect to deploy digital twins within three years. These trends lead us to shorten the time to plateau down to two to five years. In the next decade, digital twins will become the dominant design pattern for digital solutions.

User Advice: CIOs should work to guide and protect business adoption of digital twins:

- Business outcomes: Work with business leaders to establish clear business objectives for digital twins. In parallel, establish an IT vision for digital twins, to establish a coherent approach to support the business units.
- Technology: Start with models that are as simple as possible of the entities that are of interest for your business process, whether basic, such as the location of vehicles or a very high fidelity models of a human heart. Determine what data is necessary to "feed" the models and the types of analytics needed; a corollary here is the need to verify and drive data quality. Don't let the dearth of standards limit innovation. Assess how composite and organizational digital twins will require integration and custom development.
- Governance and accountability: Engage the business unit to identify champions, budget support, and to co-build the digital twin strategy and roadmap. Establish a joint business and IT governance process for digital twins, covering their alignment to business KPIs, short and long term value, and their updates and life cycle management.
- Digital ownership and ethics: Work with business and legal teams to establish a policy on ownership of the digital twin models and data, as well as who may participate. In parallel, establish a digital ethics policy to guide the organization to develop twins that positively support the enterprise while serving employees, customers or citizens. This policy will set guidelines to engage ecosystem stakeholders about what data may be shared and what monetization experiments to conduct.
- Vendors selection: Understand most technology providers are still developing their strategy and mostly offer enabling technology. A small number of technology providers have digital twin portfolios which align with specific vertical markets.

Business Impact: Digital twins are transformational as they enable business to drive new digital business models as well as update existing models. For example, they enable superior asset utilization, service optimization and improved customer experience. They create new ways to operate, such as consumption of physical outcomes instead of the capital expenditure acquisition of industrial assets, or new ways to drive an ecosystem or supply chains. And they will open new ways to monetize data.

Digital twins will challenge most enterprises to change their thinking of master data from an IT practice to one that engages the business units and IT to get a more comprehensive situational awareness of assets, people, or processes. In addition, a digital twin can be expensive to maintain, and its value centers on remaining a live model, synchronized with the entity.

Benefit Rating: Transformational

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: AVEVA; Bentley Systems; C3.ai; Cognite; GE Digital; Mavim; Microsoft; QPR Software; Schneider Electric; ThoughtWire

Recommended Reading: "Market Guide for Digital Twin Portfolios and Enabling Technologies"

"Survey Analysis: IoT Digital Twin Adoption Proliferates Across Many Sourcing Options"

"Toolkit: Enterprise Readiness for Digital Twin Deployment"

"Market Trends: Software Providers Ramp Up to Serve the Emerging Digital Twin Market" 6

"Software Product Managers Should Exploit the Full Revenue Potential of Digital Twins"

Information Architecture

Analysis By: James McGovern

Definition: Information architecture is the part of the enterprise architecture (EA) process that describes the current state, future state and guidance necessary to flexibly share and exchange information assets to achieve effective enterprise change. This is accomplished through a set of requirements, principles and models. Information architecture also formalizes the map of technology capabilities for analyzing and organizing data aimed to match the requirements to deliver business value to all types of decision makers (human and machine).

Position and Adoption Speed Justification: Information is the lifeblood of digital business. As pervasive sensing approaches drive the instrumentation to collect, share and develop insights into all facets of business activities. Stand-alone information architectures are insufficient for the emerging data economy. The challenge for enterprise architects, policymakers and information management professionals is how to plan, design and implement information-sharing environments, given a large number of information silos and the difficulties teams have coordinating activities

enterprisewide. Mastery of information architecture practices creates the potential to alter the competitive landscape and provide increased business insight.

Most businesses are starting to recognize limitations to traditional data warehouse approaches (focused on a single version of the truth for internal structured data). Although there are case studies outlining the benefits of information architecture, those who pursue this approach face significant challenges and will take longer to reach maturity, although the best practices to achieve it may be well-known. The two challenges that most need to close are that the supported analytics excludes unstructured information and that the supported analytics cannot provide in-the-moment insight supporting intelligent responses to emerging situations or contextual versions of the truth. The penetration is higher than should justify its positioning, because these points have not been resolved. As such, we have positioned at peak-trough midpoint. Beyond these three, other limitations are widely recognized:

- There is an inability to store and process ever-growing amounts of information.
- Accommodating new information sources is exposing the need to shift to a built-for-change mindset.
- The latency between the time information is produced and when it can be effectively consumed is unacceptable.
- Full accountability in knowing that data is current, correct, present and usable across multiplatform data architecture is often difficult to manage and afford.
- Understanding where information architecture begins and ends is increasingly challenged by databases not officially managed by IT.
- Concepts such as governance, integration, system management processes, records retention and system logs matter in operational/transactional architectures, as well as analytical architectures.

User Advice: Information architecture is an input to and the output from information strategy. Organizations can achieve significant business results and position the organization for competitive advantage by:

- **Mapping the information architecture to your business strategy.** Leverage tools such as business capability modeling to understand the information impacts to the organization's critical business imperatives.
- **Communicating information's key role in overall business success.** Use quantifiable metrics linked to business key performance indicators (KPIs), whenever possible.
- **Treating information as a strategic asset.** Information warrants its own strategy to ensure that its economic benefits are fully maximized. Leading organizations will begin indirect and direct data monetization, making metadata and master data essential for business outcomes to capture value and minimize risk.
- **Staying ahead of digital disruptions.** Use Gartner's Digital Transformation Framework to give EA leaders the concepts, tools and examples to accelerate the ideation process. As a result,

they can stay in front of the disruptive impacts caused by advanced machine learning (ML), the Internet of Things (IoT), big data and advanced analytics.

- **Planning for the potential usage of new information sources.** Connecting people to content (e.g., data, information and knowledge) often requires leveraging third-party data sources. IoT will drive enterprise needs to collect, manage and analyze rich, real-time data sources. Connecting consumer sentiment, customer behavior and other sources of information can transform business models in novel ways.

Business Impact:

- **Customer-driven insights.** Understanding customer buying habits, purchasing behaviors, churn and missed opportunities can enable enhanced personalization and targeted promotions, along with service and product catalog refinements. Leading retailers use this to provide incentives using location data, current inventory and staffing levels to deliver enhanced shopping experiences.
- **Strategic decision making.** Visibility across the enterprise to make important decisions, which requires investments in common data models and governance.
- **Proactive risk and compliance.** Integrating a diverse set of use cases, including traditional risk management; cybersecurity; third-party management; business resilience; environmental, health and safety; and regulatory compliance.
- **Enabling innovation.** Data presents an invaluable opportunity for firms to innovate, but only if they know what to do with it.

Benefit Rating: High

Market Penetration: More than 50% of target audience

Maturity: Early mainstream

Sample Vendors: Caserta; Deloitte; Evolytics; ExistBI; TCS

Recommended Reading: "Toolkit: Sample Job Description for the Role of Information Architect"

"Innovation Insight for Continuous Intelligence"

"How to Optimize Business Value From Data and Analytics Investments … Finally"

Application Data Management

Analysis By: Andrew White

Definition: Application data management (ADM) is a technology-enabled discipline where business and IT work together to ensure uniformity, accuracy, stewardship, governance, semantic consistency and accountability for data in business application or suite, such as ERP, customer data platform, or custom-made app. Application data is the consistent and uniform set of identifiers and

extended attributes used within an application or suite for things like customers, products, or prices.

Position and Adoption Speed Justification: Organizations have long struggled to manage data within the context of business applications, even though almost all business applications assume authority of their own data. The tools offered by application vendors and developed by app developers have rarely focused on what is needed to govern and steward application data. The focus has shifted recently to data quality and entity resolution as newer uses of graph technology, even augmented with machine learning, to improve the speed and efficacy of entity discovery and identification. As a result this innovation profile has moved back up the down-swing of the Hype Cycle being drawn by growing hype in related technologies such as graph.

With the COVID-19 reset, we anticipate a balancing of price power between rightsized MDM and ADM implementations. Organizations will realize they are different value propositions, business value, and you don't always need both at the same time.

User Advice: Starting with a focus on business outcomes to identify what data matters most, organize, classify and govern data based on which drives the most important business outcomes:

- **Master data and MDM —** The data that matters most to the most impactful business outcomes. Master data is the least number of attributes that define business entities such as customer, citizens, products, services etc., are governed in a master data hub for the broadest use across all applications and uses and are thus context-free
- **Application data and ADM —** The data that matters most to a specific set of use cases supported by one application or suite like e-commerce or customer data platform. Application data is the rest of the descriptive or reference data that describes business entities and other entities such as price, unit of measure, etc. used in an application or suite for uses specific to those applications or suites and are thus context-specific.

Demand from your packaged (on-premises or cloud) application provider the necessary capability to set (that is, govern) and enforce (that is, steward) information policy pertaining to data used in the application or suite. When this is lacking, look to MDM vendors to support this capability. Note that even if you obtain such capability from your application vendor, you may still need to integrate it into your MDM hub infrastructure.

Design your overall program independent of application data management capabilities to support your enterprise application architecture and landscape. It is also possible that some MDM solutions will negate the need for an additional application data management solution. Note that some vendors do not use the term "ADM" and instead use other names that are more appropriate to the context of the user, such as customer data hub, or customer interaction hub.

Implement ADM alongside any MDM program so that they can operate at their own speed and benefit. They do align and share metadata in support of a wider EIM program.

Business Impact: The primary benefactors of this discipline are business users, as in material planners, production planners and customer service reps., or marketers, but not IT users. Business users will finally be able to steward and govern the application data needed within their specific

business application or suite. Thus, this is a good first step in support of a widening of your MDM program, since ADM can now be coordinated with the very same governance and stewardship work that is part of an MDM program. If you don't have an MDM program yet, you can still adopt ADM for each application, but your integration challenges with the shared (application or master) data will likely persist.

Many users of large packaged or industry-vertical applications believed that these applications or suites already helped them do a good job of managing the data used in them. They might, therefore, be shocked to find their strategic vendor partners developing solutions that accomplish what they thought the application package had been doing all along. Most often lacking is the capability's focus on governance and stewardship of the business rules, workflows and metrics reporting on data consistency across the application for the entirety of the data life cycle. However, the need to manage this data formally has emerged only recently due to the increasing complexity of application environments (even those labeled ERP) and the growing need to ensure a trusted view for data across organizations.

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Sample Vendors: Chain-Sys; Epicor Software; Oracle; PiLog; SAP; Tealium; Utopia Group; Winshuttle (EnterWorks)

Recommended Reading: "Design an Effective Information Governance Strategy"

"Toolkit: How to Classify Information Assets to Be Governed in Applications"

"Use the 7 Building Blocks of MDM to Achieve Success in the Digital Age"

"The Role of Technology in Data and Analytics Governance"

Citizen Integrator Tools

Analysis By: Massimo Pezzini; Tim Faith

Definition: Citizen integrator tools are typically cloud-hosted services meant to enable expert business users with minimal IT skills to handle relatively simple application, data and process integration tasks (or "automations") by themselves through very intuitive, no-code development environments. In addition, citizen integrator tools also provide a rich set of prepackaged integration flows ("recipes") that business users can rapidly configure and run with no assistance from integration specialists.

Position and Adoption Speed Justification: Tools that support citizen integrators come in many forms:

- Recipes — These are prepackaged and configurable sets of integration flows, available stand-alone (at times for free), as embedded capabilities in SaaS or as add-ons to integration platforms.
- Integration software as a service (iSaaS) — Cloud services that enable users to implement brand new recipes and to deploy, run and customize existing ones. Typically sold to business users, they partially overlap with iPaaS and at times with digital workplace tools.
- Integration platform as a service (iPaaS) — These are targeted to professional integrators, but a growing number of iPaaS provide an iSaaS-like development environment on top of their offering and/or make available collections of configurable recipes atop their platform.

Pure-play iSaaS providers have achieved notable traction in the consumer and SMB markets, but not in other segments. Instead, recipes (often embedded in SaaS applications like ERP, CRM, HCM) and iPaaS providing citizen-integrator-oriented capabilities are becoming popular in midsize, large and global organizations. These are under pressure to reduce costs and increase business agility, therefore they strive for integration approaches that lead to fast time to value and don't demand expensive and hard to find skills. The growing use of AI, ML, NLP and chatbots in iPaaS offerings will further contribute to augmenting their appeal for citizen integrators.

However, excessive expectations for ultra-easy, super-fast integration and the simplistic nature of some citizen integrator tools may still lead to disappointment, thus hindering the widespread adoption of these offerings.

User Advice: Business users are increasingly technology savvy and often driven by velocity and time-to-market pressures, especially in the post-COVID-19 era, which requires fast reaction to sudden changes in the business environment. This will increasingly urge them to adopt cloud citizen integrator tools, rather than wait for their IT colleagues to methodically perform integration work. This will inevitably lead to security, compliance, management and governance issues, which central IT will eventually have to resolve.

Therefore, as application leaders responsible for integration architecture and platforms you should:

- Engage with your business users to understand their automation challenges and identify to what extent citizen integrator tools can improve their responsiveness and productivity.
- Adopt an approved, certified and supported set of citizen integrator tools and make them available to internal users in a self-service way. This will help to prevent the uncontrolled proliferation of similar tools and maintain a degree of centralized governance and monitoring. However, beware of the unsophisticated and lowest-common-denominator nature of several tools (especially, recipes) available in the market.
- When selecting an iPaaS, give preference to providers that can support both "professional" and citizen integrator requirements.
- Frame citizen integrator tools, including those embedded in SaaS applications, in your hybrid integration platform (HIP) strategies.

Business Impact: The insatiable need for integration as well as the mounting pressure for business change and greater efficiency caused by the post-COVID-19 global recession will fuel adoption of citizen integrator tools.

These tools enable business users to automate tasks that are currently integrated via slow and error-prone manual methods. When framed in an HIP, they can improve organizations' efficiency, productivity, agility and innovation, while keeping technical debt, security and compliance risks under control.

Citizen integrator tools can also be leveraged as high-productivity environments for integration specialists or less-skilled IT staff (ad hoc integrators), to quickly and cheaply sort out simple tasks instead of using more sophisticated, but expensive and time-consuming tools. This can increase productivity, reduce cost of integration and free up integration specialists' time to focus on the more challenging requirements.

Consequently, citizen integrator capabilities may help reduce integration and business operations costs and enable tactical or strategic digital initiatives by supporting fast, pervasive integration by a wide range of employees within (and potentially also outside) the organization.

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Adeptia; APIANT; Formstack; IFTTT; OneSaas; Oracle; Quick Base; Tray.io; Workato; Zapier

Recommended Reading: "The Applications of the Future Will Be Founded on Democratized, Self-Service Integration"

"Boost Development Team Capacity at MSEs Using Citizen Developers and Integrators"

"Market Guide for Application Integration Platforms"

Third-Party Support for ERP

Analysis By: Denis Torii

Definition: Independent third-party support for ERP is provided by vendors, other than the ERP OEMs, who maintain, customize and provide technical support for applications using customization logic. These services do not include software product updates such as new versions, new functionality, new security patches and other changes contained in proprietary code fixes.

Position and Adoption Speed Justification: Application leaders are being questioned about paying significant maintenance fees to ERP vendors for solutions that are no longer the focus of innovation. Independent ERP third-party support market is rapidly maturing. Many ERP application leaders are now more aware of the option to terminate software vendors' maintenance agreements

in favor of third-party support models. Hence, we have positioned it in the final stages of the Trough of Disillusionment.

Increasing cost optimization challenges faced by enterprises will result in continued growth of the third-party support market for on-premises ERP applications, leading to a time to plateau in a range of two to five years. Customers' requirements to keep exploiting existing ERP assets until a clear business case for replacing them emerges, will also play a role in that growth. Alternatively, some customers would report the intent to divert funds from maintenance to some level of application innovation as a motivation.

User Advice: Application leaders should:

- Evaluate whether current use of ERP vendor support services — and the value extracted from those services — justifies the money spent on ERP vendor's maintenance agreement.
- Evaluate the scenarios in which canceling the ERP vendor's maintenance agreement would be a good decision from both business and IT perspective.
- Assess how the decision to use third-party support services fits into the overall ERP strategy — short term and long term. Avoid turning this into a decision based solely on cost.
- Evaluate potential constraints to the adoption of third-party support. Look at factors such as contractual obligations, contractual limitations and lack of a future upgrade path for an application.
- Create an exit strategy for third-party support that aligns with the short- and long-term goals of the ERP strategy and reflect that into the contract clauses.
- Evaluate if the timeline for realizing savings matches the goals of short-term cost reduction, based on when ERP vendor contracts are canceled.

Business Impact: Third-party support is relevant to enterprises that choose to extend the life of existing ERP applications or wish to divert sustainment IT spending to innovation. It can also be part of the ERP evolution roadmap of enterprises that are continuing to expand their incumbent ERP vendors' on-premises solutions. Or it may be adopted as an interim solution for enterprises whose postmodern ERP strategies include retiring or replacing their existing ERP solutions. In any case, it tends to be a medium-term solution as part of a future enterprise move to embrace new technologies or ERP applications.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Rimini Street; Spinnaker Support; Support Revolution

Recommended Reading: "What CIOs Need to Know Before Adopting Third-Party Support for Oracle and SAP ERP"

"Market Guide for Independent Third-Party Support for IBM, Microsoft, Oracle and SAP Software"

Cloud Service Brokerage

Analysis By: Sid Nag

Definition: Cloud service brokerage combines technology, people and methodologies to help organizations consume cloud services. Cloud service brokerage is defined as an IT role and business activity in which a company or internal entity adds value to one or more (public or private) cloud services. This is done on behalf of one or more consumers of that service by providing an aggregation, integration, customization and/or governance role. CSB enablers provide technology to support cloud service brokering activities.

Position and Adoption Speed Justification: With cloud computing already being mainstream, especially the adoption of multicloud models, the adoption of cloud service brokerage (either taken on internally or outsourced to a service provider) continues to increase. This has cloud service brokerage (CSB) moving steadily toward the Plateau of Productivity. As companies continue to formulate their cloud strategies, the role of IT as a cloud service broker has become a role model for many IT organizations especially those that are adopting multiclouds. According to Gartner's cloud survey, more than 80% of organizations have adopted or plan to adopt multiclouds by the end of 2020.

The area related to cloud service brokerage that has, however, grown the fastest over the last few years is the segment of third-party managed service providers (MSPs). These MSPs offer value-added services for cloud migration and managed services on top of cloud infrastructure (for details, see "Market Guide for Cloud Service Brokerage"). Providers come from a wide variety of backgrounds, including system integration, managed hosting and full-service outsourcing, which compete with pure-play startups.

Providers of CSB-enabling technologies include dedicated cloud brokerage platforms, cloud management platforms (see "Magic Quadrant for Cloud Management Platforms") with embedded brokering capabilities, and a wide variety of cloud management point solutions.

User Advice: We recommend the following:

- Have a unified layer of consumption that is predicated on four pillars — aggregation, integration, customization and governance. These drive the need for cloud service brokerage in multicloud adoption (see "Market Insight: Cloud Imperative — Embrace Hybrid Cloud and Multicloud Architecture and Services"). In some cases, your organization can take on the role of an internal service broker to provide multiple cloud services to both internal and external customers via a brokerage enablement platform/app store. And for some other cases, your organization can turn to an external cloud services broker (see "Competitive Landscape: Cloud Service Brokerage").
- Engage an external cloud managed service provider to perform the CSB function, if you lack the requisite CSB skills and capabilities, or when an external provider can best meet your time-to-deployment or risk management requirements. Make sure to assess potential CSB provider

maturity at the commercial and technical level (see “6 Best Practices to Create a Cloud Service Brokerage Offering in the World of Multicloud and Hybrid Cloud”).

- Institute an internal CSB role when brokering is perceived as a required internal core competency. Examples are when you want full unilateral control over cloud consumption, or you are responsible for delivering IT services across a hybrid and multiple combination of public and private clouds. Consider colocating your CSB function with your cloud center of excellence (see “How to Build a Cloud Center of Excellence”). Give preference to CSB technology enablers that have a roadmap indicating the broad understanding of the emerging role of the CSB as the enterprise strategic intermediary for cloud consumption.

Business Impact: Internal IT, on the back of increased adoption of multicloud, has now widely embraced the “cloud service brokerage” term. However, external providers by and large have used the “brokerage” label intermittently from a marketing perspective while offering the same functionality. Instead, they prefer terms such as “multicloud management” or “cloud managed service provider.” Meanwhile distributors, value-added resellers, independent service providers and OEMs are continuing to look how to redefine their business models in context of the new cloud reality but struggle to find the right business model for monetizing their value-added brokering activities.

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Sample Vendors: Accenture; Cognizant; DXC Technology; Flexera (RightScale); Fujitsu; IBM Global Technology Services; NTT DATA

Recommended Reading: “Adapting IT to Become the Broker of Cloud Services”

“Market Guide for Cloud Service Brokerage”

“Competitive Landscape: Cloud Service Brokerage”

“6 Best Practices to Create a Cloud Service Brokerage Offering in the World of Multicloud and Hybrid Cloud”

“Magic Quadrant for Public Cloud Infrastructure Professional and Managed Services, Worldwide”

“Critical Capabilities for Public Cloud Infrastructure Professional and Managed Services, Worldwide”

“Forecast Analysis: Cloud Consulting and Implementation Services, Worldwide”

“Market Insight: Top 10 Things ‘To Do’ to Seize the Cloud Service Brokerage Opportunity”

Cloud ERP for the Public Sector

Analysis By: Duy Nguyen

Definition: A cloud ERP solution is an off-premises-based, subscription-licensed ERP solution. It does not include remote hosting, where ownership remains with the customer and it is mandatory that all customers must be on the same release version before the next upgrade is adopted. Cloud ERP for the public sector is typically limited to administrative ERP, which includes human capital management, financials and procurement.

Position and Adoption Speed Justification: Cloud ERP for the public sector has moved beyond the trough into mainstream adoption as vendors have improved functional scope and addressed previous inhibitors such as data residency and security. Interest is elevating as public-sector entities seek to replace expensive and aging legacy business systems while optimizing precious IT resources through cloud deployment. Public-sector adoption of cloud ERP suites has increased significantly but remains behind the private-sector organizations due to policy constraints and procurement methodology.

Cloud ERP vendors are delivering functionality and preconfigured analytics reporting that is adequate for most public-sector entities. The functional scope and sophistication have improved to support all but the most complex entities (i.e., defense and intelligence). The largest public-sector entities may elect cloud ERP to support back-office operation. However, most entities are choosing alternative solutions for complex process requirements involving contract management and sensitive acquisitions.

User Advice: Public-sector application leaders responsible for composable ERP strategy must:

- Evaluate cloud ERP offerings as part of your ERP strategy. Focus first on administrative back-office capabilities, which have the greatest return on investment.
- Ensure a good functional fit and build an internal roadmap to adopt new features as the vendor rolls them out. Consider the fact that cloud ERP generally has a different update/upgrade cycle than that of the traditional on-premises ERP and adjust your governance and planning processes accordingly.
- Be aware that the scope of a public offering may vary by geography (e.g., the Government Cloud in the U.S. and the European Union Cloud Initiative). Many vendors have a prime geography that they target first and then look at localizing through a private cloud SaaS offering. Confirm that the offering meets your regulatory and compliance needs.
- Address the internal skills needed to move from your legacy systems to the cloud. Plan for skills changes in IT as well as functional areas such as procurement and finance.
- Educate the ERP team and business stakeholders on the enhancement platform provided by the vendor. Avoid a proliferation of extensions to the application because these will erode value. Consider integrating other applications to fill the gaps rather than building your own extensions.
- Negotiate enhanced data security, disaster recovery and exit strategies. Be on the lookout for hidden costs for items such as multiple environments and storage and integration costs. Scrutinize agreements thoroughly and seek external contract advice if needed.

Business Impact: The advantages of cloud ERP can include lower cost of implementation, faster time to benefit, reduced cost of upgrades, and lower capital expenditure compared with implementing a new on-premises ERP. Although increased value can be achieved, there is currently no clear indication that the cost is lower compared with an on-premises deployment.

Using cloud ERP generates the types of economies of scale and sharing of resources that can reduce costs and increase the choice of technologies. This frees up valuable IT resources for public-sector entities and allows them to focus more on their core missions.

Cloud ERP also provides the benefits of standardized processes and state-of-the-art user experiences (UXs), better analytics and financial transparency — important concerns in the public sector. However, to fully realize the advantages of cloud ERP, organizations must embrace a culture of change and flexibility, which is not a fundamental strength of most public-sector entities.

Vendors are developing and improving ML/AI within their own cloud ERP applications. These advanced technologies are beginning to be used to drive greater process efficiency and effectiveness. For example, chatbots and virtual assistants are reshaping how we work by allowing people to perform more value-adding activities. The use of automation — via bots, sensors and analytics — is enabling us to derive better performance outcomes from our assets.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Early mainstream

Sample Vendors: CGI; Infor CloudSuite Public Sector; Microsoft; Oracle Cloud for Public Sector; Oracle (NetSuite); Ramco Systems; Sage Intacct; SAP; Unit4; Workday

Recommended Reading: “Market Guide for Service-Centric Cloud ERP Solutions”

Climbing the Slope

Application Platform as a Service for Cloud ERP

Analysis By: Denis Torii

Definition: Application platform as a service (aPaaS) for cloud ERP is a cloud platform service that offers an environment and tools for ERP application development and deployment. It allows APIs to be selectively exposed for application extensibility and integration. This enables a customer to create functional extensions that inherit the data, security and/or user experience models of the cloud ERP application.

Position and Adoption Speed Justification: Application platform as a service is a mainstream technology. The availability and adoption of aPaaS for extensibility in cloud ERP however is still advancing with varying degrees of sophistication. The use of these tools, in conjunction with cloud ERP implementations, is less mature than aPaaS tools for general application development.

The primary use case for aPaaS is a means to close the “last mile” in functionality for ERP through custom extensions built using either high-control or low-code/no-code development. It is also used for creating new UI experiences or integrations. Some ERP vendors position their aPaaS as a means for the development of the system integrator ecosystem to build new applications — for example, creating an application marketplace. A recent trend is to package these into easily consumable industry-focused offerings. For these reasons we positioned aPaaS for cloud ERP in the post-trough zone, heading toward an early mainstream maturity level.

User Advice: Some cloud ERP vendors deliver aPaaS through their own platform (e.g., Oracle, Microsoft or SAP); others use commercially available platforms such as Microsoft Azure and Amazon Web Services. Some vendors use a commercial platform and enhance it with their own tools (e.g., Infor, Rootstock Software or Epicor Software). It is important to understand how your cloud ERP vendor provides aPaaS. The different tools and environments will impact the skills and training necessary to properly leverage aPaaS in your environment.

One of the precepts of adopting cloud ERP is to accept vendor-delivered functionality and limit customizations. However, the configuration capabilities inherent in cloud ERP suites will not meet all the requirements for many organizations, resulting in the need for extensibility.

While limiting application extensions is desirable, aPaaS can be useful in the following cases:

- To support processes that are not possible through the extended configuration of the underlying SaaS application.
- When process complexity, organizational uniqueness and/or geographic requirements are not planned in the vendor’s roadmaps.
- When you need to integrate a third-party point solution to provide functionality not available in the cloud ERP suite.

The skills needed for aPaaS are different from those needed for implementing core product and/or legacy development tools. Additional training and/or change management for internal resources may be required depending on the extension built. Those aPaaS that rely on high-control frameworks like Cloud Foundry will also require additional conventional application development skills.

For each extension your team creates, review your vendor’s product roadmaps to determine whether using aPaaS will be a temporary or permanent workaround. When practical, retire developed extensions and adopt vendor-delivered functionality.

Business Impact: Using your cloud ERP vendor’s aPaaS can provide a lower-cost alternative to purchasing a third-party packaged application to close a functional deficiency or gap in your cloud ERP suite. Done correctly, using an aPaaS extension will result in a seamless experience for users and allow for native reporting and analytics with extended functionality.

Using aPaaS will also be a faster way of getting desired functionality that is not on your vendor’s immediate short-term to midterm roadmap. Customers can build extensions, or consume extensions built by others from application marketplaces.

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Sample Vendors: Amazon; Google; Infor; Microsoft; Oracle; Salesforce; SAP; Workday

Recommended Reading: "Top 10 Trends in PaaS and Platform Innovation, 2020"

"Magic Quadrant for Enterprise Low-Code Application Platforms"

Cloud Management Platforms

Analysis By: Dennis Smith

Definition: Cloud management platforms (CMPs) enable organizations to manage private, public and multicloud services and resources. Their specific functionality is a combination of provisioning and orchestration; service request management; inventory and classification; monitoring and analytics; cost management and resource optimization; cloud migration, backup and disaster recover; and identity, security and compliance. This functionality can be provided by a single product or a set of vendor offerings with some degree of integration.

Position and Adoption Speed Justification: While the CMP market is continually changing, vendors and enterprise customers are getting a better feel about where such tooling can and cannot be used. Vendors are still being challenged with evolving customer requirements (for example, interfacing with multiple public clouds, cost transparency with workload optimization to remediate cost overruns and handling newer functions like containers and serverless deployments). At the same time, major market consolidation will continue. For example, many vendors, that initially targeted cost management, have been acquired as this functionality is becoming a part of the basic CMP. Additionally many vendors in adjacent markets are acquiring CMP vendors and combining this functionality with asset management (software and hardware) and SaaS operational management. Cloud service providers (CSPs) and management service providers (MSPs) are also entering the market. Additionally, many long-standing vendors are introducing next-generation products, often targeting holes that their previous products had. Finally vendors in different markets (e.g., monitoring) are also entering the market. Some of the core CMP functionality is also being combined (for example, monitoring and analytics with cost management and resource optimization). The ability to serve both application developer and I&O personas is the key. This requires that CMPs be linked into the application development process without imposing a workflow that inhibits agility while also allowing infrastructure and operations (I&O) teams to enforce provisioning standards.

Organizations have an increasing need to address multicloud requirements. In some cases, they want to become internal cloud service brokers (CSBs) and manage public services that were previously acquired — often by lines of business (LOBs) outside the I&O organization — and have become difficult to manage operationally.

User Advice: As CMP market volatility increases, IT organizations must:

- Consider CMP vendor's viability along with evaluating features.
- First consider native cloud services as an alternative or option versus CMPs, particularly if you favor depth with an individual cloud provider versus breadth across different cloud providers.
- Consider functionally focused tools (e.g., cloud expense management tool) if you only require a limited set of functionalities.
- Augment, swap out or integrate additional cloud management or traditional management tools for many requirements, because no vendor provides a complete cloud management solution.
- Standardize, because deriving value from your CMP will depend heavily on the degree of standardization offered by the infrastructure, software and services.
- Set realistic expectations on deployment times, as mature organizations implement CMP in a relatively short period (one to two years); however, less mature organizations may require two or more years to design effective, repeatable, and automatable standards and processes.
- Plan for new roles, such as cloud architects and cloud service brokers (CSBs), including developing skills in the financial management and capacity management areas.

Business Impact: Enterprises will deploy CMPs (increasingly as a part of a larger product suite) to increase agility, reduce the cost of providing services and increase the likelihood of meeting service levels. Costs are reduced and service levels are met because CMP deployments require adherence to standards, as well as increased governance and accountability. Desirable IT outcomes include:

- Policy enforcement (e.g., on reusable standard infrastructure components).
- Reduced lock-in to public cloud providers, although at the cost of CMP vendor lock-in that can slow innovation.
- Enhanced ability to broker services from various cloud providers and to make informed business decisions on which providers to use.
- Ongoing optimization of SLAs and costs.
- Management of SLAs and enforcement of compliance requirements.
- Health and performance monitoring of cloud applications.
- Accelerated development, enabling setup/teardown of infrastructure that mimics production, resulting in lower overall infrastructure costs and higher quality. This can be in support of DevOps initiatives.

Benefit Rating: Low

Market Penetration: 5% to 20% of target audience

Maturity: Mature mainstream

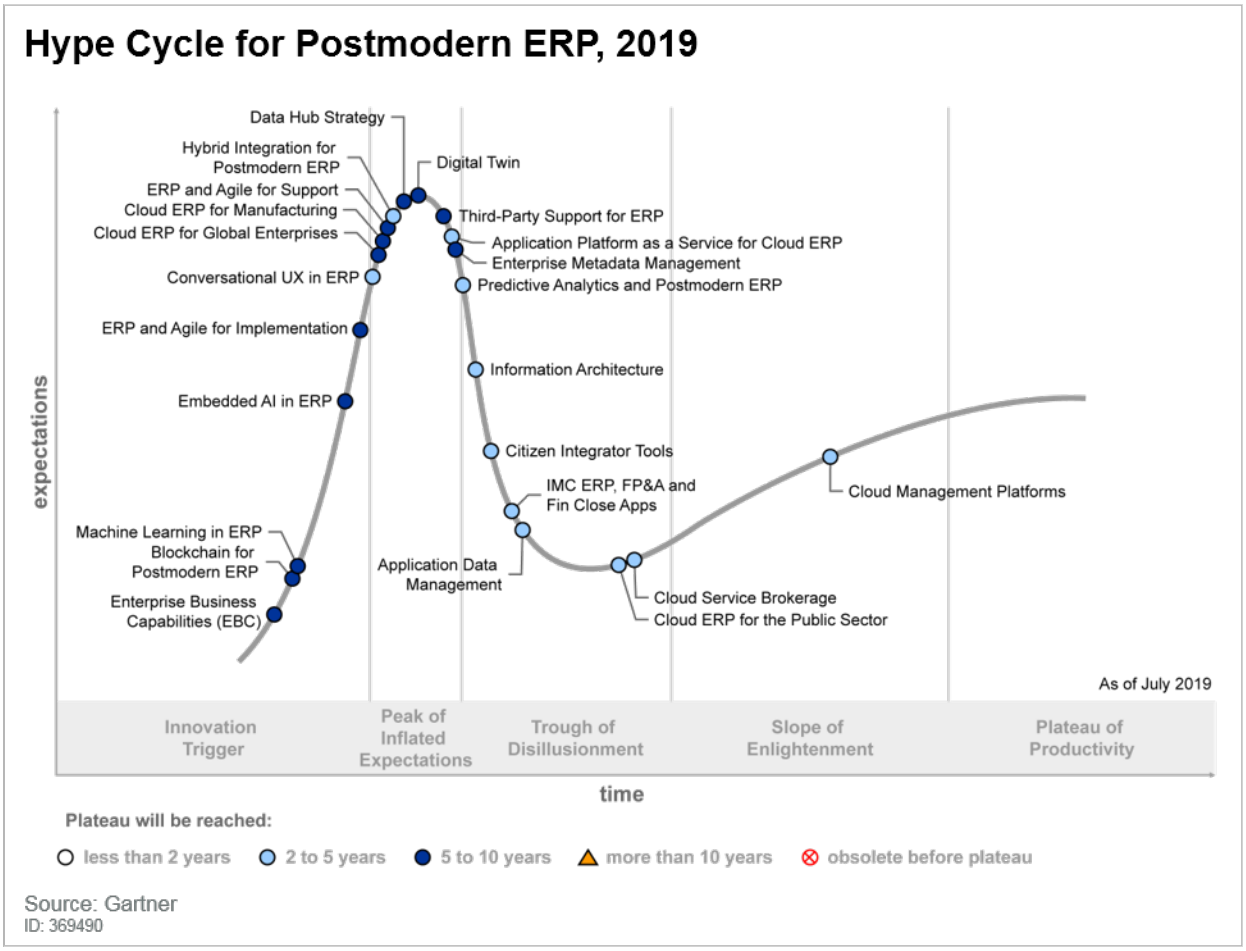
Sample Vendors: CloudBolt; CloudSphere; Flexera; Morpheus Data; Scalr; Snow Software; VMware

Recommended Reading: "Magic Quadrant for Cloud Management Platforms"

"Critical Capabilities for Cloud Management Platforms"

Appendixes

Figure 3. Hype Cycle for Postmodern ERP, 2019



Source: Gartner
ID: 369490

Hype Cycle Phases, Benefit Ratings and Maturity Levels

Table 1. Hype Cycle Phases

Phase	Definition
Innovation Trigger	A breakthrough, public demonstration, product launch or other event generates significant press and industry interest.
Peak of Inflated Expectations	During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the technology is pushed to its limits. The only enterprises making money are conference organizers and magazine publishers.
Trough of Disillusionment	Because the technology does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.
Slope of Enlightenment	Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the technology's applicability, risks and benefits. Commercial off-the-shelf methodologies and tools ease the development process.
Plateau of Productivity	The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. Growing numbers of organizations feel comfortable with the reduced level of risk; the rapid growth phase of adoption begins. Approximately 20% of the technology's target audience has adopted or is adopting the technology as it enters this phase.
Years to Mainstream Adoption	The time required for the technology to reach the Plateau of Productivity.

Source: Gartner (November 2020)

Table 2. Benefit Ratings

Benefit Rating	Definition
Transformational	Enables new ways of doing business across industries that will result in major shifts in industry dynamics
High	Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise
Moderate	Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise
Low	Slightly improves processes (for example, improved user experience) that will be difficult to translate into increased revenue or cost savings

Source: Gartner (November 2020)

Table 3. Maturity Levels

Maturity Level	Status	Products/Vendors
Embryonic	■ In labs	■ None
Emerging	■ Commercialization by vendor ■ Pilots and deployments by industry leaders	■ First generation ■ High price ■ Much customization
Adolescent	■ Maturing technology capabilities and process understanding ■ Uptake beyond early adopters	■ Second generation ■ Less customization
Early mainstream	■ Proven technology ■ Vendors, technology and adoption rapidly evolving	■ Third generation ■ More out-of-the-box methodologies
Mature mainstream	■ Robust technology ■ Not much evolution in vendors or technology	■ Several dominant vendors
Legacy	■ Not appropriate for new developments ■ Cost of migration constrains replacement	■ Maintenance revenue focus
Obsolete	■ Rarely used	■ Used/resale market only

Source: Gartner (November 2020)

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

Understanding Gartner's Hype Cycles

The Future of ERP Is Composable

Replace or Renovate: Can Your Current ERP Win in the Turns in a Digital Business World?

Innovation Insight for Packaged Business Capabilities and Their Role in the Future Composable Enterprise

Future of Applications: Delivering the Composable Enterprise

What CIOs Must Do to Avoid Disappointing ERP Initiatives

Use Gartner's Reference Model to Deliver Intelligent Composable Business Applications

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