The Futurum Group

Accelerating Integration Modernization with Composable Development

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Introduction: Modernization Efforts Have Become Static, Disjointed, and Inefficient

In today's rapidly evolving business landscape, organizations face immense pressure to innovate and adapt to changing customer demands. Leaders realize that they need to accelerate innovation but often are unsure about what to prioritize, which enabling technologies to use, and how modernization efforts will impact technology budgets. As a consequence, many organizations have taken an approach to modernization that has resulted in siloed data and a fragmented technology stack. They update applications or systems in a haphazard, piecemeal fashion based on the immediate needs of a division or department without considering the impact to data accessibility and availability, security, or scalability.

Applications, business processes, and technology needs inevitably will change over time. A siloed approach to development leads to fragmented systems that address only static needs and are difficult to maintain and update. Additionally, a technology stack that has been cobbled together over time, using a wide variety of integration approaches and technologies usually lacks the flexibility to adapt to new technologies and business requirements.

Even if an organization has taken a measured, thoughtful, and planned approach to integrating disparate applications and systems, using a traditional code-intensive integration strategy will typically feature long development timelines, conflict over priorities, and limits on the necessary coordination between developers and end users. As a result, any completed integrations might not meet the needs of users today and will require significant developer resources in the future if the organization needs to update, modify, or scale applications; expand access to data; or modify or create integrations with other existing or new applications or systems.

Furthermore, the advent of AI—particularly generative AI—will have a profound impact. It can accelerate how teams deliver integration and automation by enabling them to use AI to augment their development processes, such as enabling builders to use conversational experience to drive low-code or code-first development. But more broadly, AI is a technology that will be used to reinvent business processes across every department, infusing them with AI. The internal and external demand to integrate this powerful new functionality is putting further pressure on teams to not only clear their backlog of other projects to make way for AI projects but also deliver on the "AI-ification" of the business. Yet many integration and automation technologies were designed decades ago and make it challenging to incorporate AI.

With business processes and orchestrations that reach into apps, APIs, and AI services, and with the need for business teams to maintain control for agility, it has never been more important to employ a collaborative, team-based approach that brings together developers and business teams, developing in a composable, shareable, and reusable way. In an era when corporate leaders are being tasked with driving more innovation with limited resources, often within compressed timeframes, the traditional approach to application development and integration is unsustainable.

The Markers of Innovation Velocity Are Constantly Evolving and Require an Agile and Modern Platform to Help Deliver Business Benefits

The speed of technological innovation is both a blessing and a curse for enterprises. While faster innovation can result in significant process improvements and accelerated technology-driven cost reductions, the flip side is that innovation timelines tend to compress, resulting in shorter timeframes to implement new technology, and generate ROI, before needing to reassess and start the innovation or transformation process again.

As a result, the only certainty is that the need to continuously innovate will accelerate. The introduction of enterprise-grade AI will not only reinvent many business processes but also be integral in how organizations evaluate, build, and manage their technology infrastructure and ecosystem.

Organizations must be nimbler than ever. Indeed, according to data presented at the Digital Enterprise Show in the 2023 Futurum Digital Transformation Index, more than one-half of respondent companies have significantly adjusted their digital transformation plans based on global events over the past 3 years, and more than 60% of respondents report their companies have significantly accelerated their digital transformation plans.

Ensuring that an enterprise remains nimble or agile requires the construction or configuration of an architecture that enables enterprise-wide innovation, which includes building reimagined business processes across the cloud and heritage stack while ensuring all systems and applications can tap into the power of both predictive and generative AI to reduce friction, improve processes, and accelerate delivery of products and services.

Traditional modernization efforts have often been characterized by:

- **A fragmented approach:** Leaders struggle to prioritize and align modernization initiatives, leading to a lack of cohesion and scattered efforts.
- **Static integrations:** Code-intensive integrations result in long development timelines and fail to adapt to changing needs, largely due to technical debt.
- **Limited collaboration:** Developers and end users are disconnected, leading to integrations that misalign with user expectations and require significant rework.
- **Resource constraints:** Corporate leaders face the challenge of driving innovation with limited resources and compressed timelines.

The solution can often be found via the use of low-code, no-code and generative AI development tools. These development platforms and tools democratize development, enabling stakeholders with varying degrees of technical acumen to participate in the design, development, and deployment of applications, workflows, and data integration projects.

These platforms are increasingly being embedded with powerful AI technology that allows each stakeholder to intuitively interact with a development or integration platform, enabling the creation of new applications, workflows, integrations, and processes. However, while some platforms utilize an aging code base and leave the vendor no choice but to "bolt-on" AI capabilities, the most advanced platforms utilize a native AI layer within the code base that provides a seamless AI experience. Further, top platforms enable fusion development teams to iteratively develop and re-engineer every process with AI at the core. Modern, nimble development should encompass two main pillars upon which all projects should be based.

Pillar 1

Employ Composable Development: A Requirement of Modern, Nimble Enterprises

Composable development refers to a process in which different components or elements can be combined or connected in various ways to create larger, more complex systems or structures. Thus, the platform and any applications, integrations, and workflows are built with well-defined interfaces, making it simple to integrate with other components without requiring significant modifications.

Composable development enables developers, technologists, and business teams to create and share building blocks that can be reused and orchestrated and to create higher level business processes. This approach ranges from a developer creating a microservice to a technologist using it in a low-code integration to business teams working together and using it all to build processes that connect departments.

A key element of composable development is that all stakeholders must have the opportunity to create workflows and processes. This method ensures maximum process and cost efficiency and makes sure that tools serve those who need them, meeting their technological, data, and user interface requirements.

IT leaders know that they need to future-proof their stacks, which portends the use of composable development principles. Composable development ensures that new processes, applications, and data can be easily incorporated over time. Composable development can reduce technical debt, which is the result of accumulating and failing to update outdated development tools, integrations, and workflows that no longer serve any purpose or users. By implementing composable development principles, organizations can more easily assess outdated tools and ensure they are modernized and optimized based on users' and developers' needs and requirements.

Pillar 2

Embrace AI Across Every Facet from Delivery to Process Reengineering

The second key pillar that enterprises should rely on when undertaking any development project is to embrace AI across all facets of the process. AI has and will continue to change the calculus of strategic decision-making and operational planning and the nature of how and how fast organizations will need to deliver.

Enterprises have the opportunity to infuse AI into every aspect of composable development, enabling developers and technologists to use AI-augmented development platforms and toolsets to build faster. In addition, AI will allow more robust, data-driven decision-making and recommendations, enabling more efficient development of workflows and processes. Every business process from how we build to how the business runs will be touched by generative AI.

The integration of AI across the enterprise will provide organizational leaders with the opportunity to reevaluate every project they are delivering, including across marketing, sales, finance, and service. Regardless of whether traditional analytics, predictive AI, or large language model (LLM) generative AI is used, leaders can and should identify how they can drive competitive advantage through the use of the technology.

The Elements of a Comprehensive, Modern Integration Platform as a Service

In an ideal world, organizations would simply purchase new applications or platforms that incorporate the latest and greatest technology features and capabilities. But in the real world, not only are budgets limited but also the latest and greatest quickly morphs into yesterday's technology, often within the span of a few months.

As such, organizations need an integration platform that will allow the smooth integration of new applications, data sources, and technologies with the organization's existing technology stack. A comprehensive, modern integration platform as a service (iPaaS) that provides all stakeholders with the ability to contribute to and influence development tasks, regardless of their level of technical proficiency with code, application or data integration, and technical resource management is a catalyst to enabling ongoing innovation for years to come.

An ideal iPaaS platform also encompasses the following attributes:

- Tailored interfaces and tools for different skill sets, linked to a common platform, enabling seamless collaboration between developers, technologists, and business teams
- The ability to allow real-time collaboration among users of all levels of technical proficiency, along with support for fusion teams to enable efficiency and effective development
- The incorporation of automation and generative AI tools to speed workflows, create documentation around integrations, and allow talent to focus on the most important facets of development and integration work
- A framework that allows faster time to value while reducing labor and capital costs and providing support for continuous improvement.

For example, consider an IT organization at an enterprise that is looking to strategically partner with the marketing organization. Marketing needs to transform their static, hard-to-change, and manual lead process to a dynamic, intelligent, and faster lead lifecycle process—from ingestion and data quality and enrichment through to routing—that reaches across a large array of apps and databases. The ultimate goal is to move the dial on marketing campaign ROI and staff productivity and increase sales satisfaction.

IT recognizes that operating their existing legacy integration platform—which requires code and technical experts for every aspect of the project delivery—creates three significant issues: 1) high project costs, 2) slow delivery velocity, and 3) weight on IT to deal with every ongoing change management request. Meanwhile, marketing is left with a static lead process that is impossible to keep updated, to meet the latest business demands, or to incorporate the latest innovations in AI.

IT chooses to deliver instead using a unified, multi-experience iPaaS that enables them to use composable development to drive collaboration between AppDev and marketing. With AI-augmented composable development, IT gains two critical benefits. First, they can build reusable components such as API integrations, make custom connectors to homegrown or proprietary apps, create snippets of business logic, or reuse componentized workflows to ensure marketing can collaboratively build on a strong IT-sanctioned foundation. And they can use generative AI-augmented development to code microservice logic more quickly starting with natural language, or use it to instantiate an app connector as needed by generating the code from its OpenAPI spec.

Marketing can leverage these underlying building blocks to create projects and quickly compose orchestrations using low-code, or no-code, visually building their lead process, transforming data, and connecting their stack by leveraging robust components provided by IT where needed. This approach ensures they are building quickly, but in a managed way.

Rather than being reliant on a handful of specialists, marketing can include more participants in the process, enabling teams to start building workflows using AI and natural language processing (NLP) to accelerate business process creation. And because the unified iPaaS includes connectivity to not only their stack but also a broad array of AI/machine learning (ML) and generative AI services, they can easily upgrade their marketing flows with sentiment, adaptive lead routing rules, predictive lead routing, and intelligent lead scoring. This method turns their lead process from static to intelligent and autonomous.

Marketing can stay agile and aligned with the needs of the business with more autonomy over reinventing and iterating their business processes. IT can stay focused on delivery not maintenance and without sacrificing observability, instrumentation, and centralized management. It is a win-win for both organizations.

But beyond productivity and efficiency gains, an iPaaS platform must also meet or exceed the same visibility and security criteria as any enterprise-grade application or tool set and should be able to be implemented as quickly and seamlessly as possible. This consideration is particularly important as organizations continue to integrate AI across all facets of their AI algorithms, data, and outputs.

Companies need to address access risks associated with exploited privileges and unauthorized actions. For example, an LLM that uses insecure plugins to receive "free-form text" inputs could be exposed to malicious requests, resulting in unwanted behaviors or the execution of unauthorized remote code. Similarly, plugins or applications that handle LLM outputs insecurely can be susceptible to cross-site and server-side request forgeries, unauthorized privilege escalations, hijack attacks, and more.

Unauthorized data manipulation—which can occur via deliberate malicious attacks or inadvertently when an AI system learns from unreliable or unvetted sources via prompt attacks—can also wreak havoc on an organization. As such, significant reputational and business risks resulting from bad AI outputs or actions should be mitigated by incorporating seamless security across all points of vulnerability.

To protect the organization and its assets, an iPaaS platform should be compliant with industry security standards such as SOC 2 Type 2, HIPAA, and GDPR, and ensure that data is encrypted while in transit and at rest for complete security. To ensure the system can handle spikes in demand, the platform should be built using serverless technology, which should support strong visual automated error handling, intuitive debugging, stateful workflows, API-retry logic, and API queuing.

IT leaders know that they need to future-proof their stacks, and future-proof means composable. By embracing collaborative and composable development, organizations can accelerate innovation, enhance agility, and deliver transformative value to their customers. A modern iPaaS platform, equipped with the right tools and capabilities, can serve as a catalyst for this transformation, empowering teams to build smarter, faster, and more adaptable solutions.

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