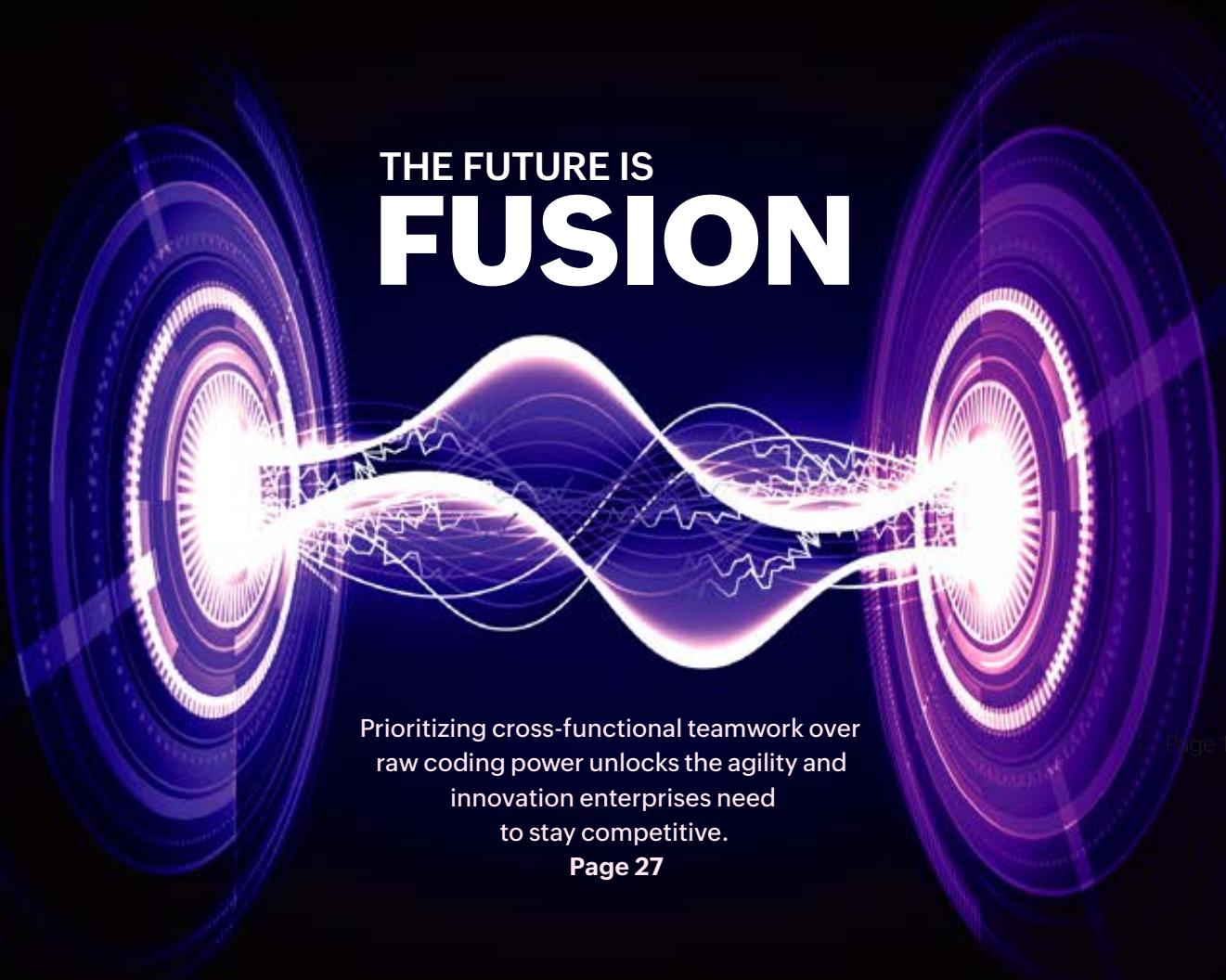




ISSUE #6 ▪ CUSTOM DEVELOPMENT

ZOHO BUSINESS PULSE

THE FUTURE IS
FUSION



Prioritizing cross-functional teamwork over
raw coding power unlocks the agility and
innovation enterprises need
to stay competitive.

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Expanding the reach and reliability
of your cloud data

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How Bourne Leisure used low-code
across 80 venues

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Shadow AI as a threat to security
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Zoho Business Pulse is a technology magazine tailored to the challenges facing mid-market and enterprise organizations. Each issue centers around a key element of business strategy, offering industry research, thought leadership, and strategic advice to help leverage and extend your current technology ecosystem.

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LETTER FROM THE EDITOR

If the last year has taught the business world anything, it's that AI vibe coding isn't nearly as mature as the hype would lead you to believe. Though AI is a powerful tool for any developer, the security, scalability, and stability required by larger organizations make raw AI code a risky proposition. Unfortunately, the current AI reality is in tension with the increasing demand—across markets and industries—for more flexible and customizable business systems.

Because of this, you should almost certainly be thinking more about low-code app development than you currently are.

In recent years, the word "custom" has fallen out of fashion with many software procurement and DevOps teams. The new gold standard for many organizations is top-to-bottom configurability. And with good reason: intuitive, flexible, and scalable enterprise software can unlock tremendous potential across a mature organization. However, in the rush to configurability, it's easy to forget how powerful a truly bespoke app can be, especially in industries and on teams that don't fit neatly into a SaaS vendor's model for how business is done.

After all, every new software deployment needs to balance process specificity, market differentiation, and strategic alignment against deployment speed, total cost of ownership, and scalability. As organizations grow and requirements become more sophisticated, some business leaders find that simple configurability doesn't cut it. Unfortunately, all of the available solutions to this problem come with their own challenges:

Comprehensive customization of an out-of-the-box solution is feasible for mainstream use cases; however, more unique processes and industries often require support from expensive implementation partners to overcome insufficient interoperability, rigid user interfaces, or incompatible data architecture. Deploying a pre-customized solution built by an industry-verticalized development company can offer extremely specialized plug-and-play functionality; however, many larger organizations are uncomfortable placing so much trust in a smaller firm that may not have the longevity or infrastructure to support their needs. Full from-scratch, in-house development offers ultimate control over and ownership of the technology that powers your organization; however, long development timelines, steep talent costs, and security and infrastructure overhead can be a massive hurdle.

The growing sophistication of AI-enabled, low-code development tools gives decision-makers a fourth option. These tools provide the security and stability of consumer software, the ease of verticalized software, the ownership stake of custom development, and the speed of vibe coding. In addition to that, they offer a range of systemic benefits, from reducing tech debt and mitigating shadow IT to enhancing digital maturity and fostering more agile and strategic IT initiatives. In this issue of Business Pulse, we'll explore how low-code, high-efficiency development strategies can transform how DevOps can support and enable your organization.

DAVID ELKINS
Editor-in-Chief

When should you consider using low-code to build business solutions in-house?



Internal solutions can give businesses a powerful competitive advantage, improving strategic agility and offering support for unique processes that drive market differentiation. Below, Zoho experts share the business scenarios where in-house, low-code development can have the biggest impacts.



Tiffany Ivey
Account Manager

“Your market is fast-moving and competitive

When you build in-house, you can roll out new features and capabilities as needed, whether that's to keep up with market changes, new regulations, or trends that have captured your customers' attention. You're not at the mercy of an external development timeline or left waiting for your needs to land on a vendor's priority list. Your company owns the roadmap, and that means your developers can prioritize projects based on what your teams are requesting.

That offers a big competitive advantage. When your software evolves with the market, you're in a better position to capitalize on new opportunities as they arise. This is especially true when you're working with a low-code development platform, because it gets rid of the more time-consuming and resource-intensive parts of a traditional development cycle.

...

“Core system control is a business imperative

The problem with outside vendors is that they lack deep, contextual knowledge about your business and its processes. That's a challenge when they're responsible for setting the strategic direction of your core business systems. What if they push a big product update during your peak season? It could introduce compatibility issues that impact your customized workflows and integrations right at the moment when even brief periods of downtime can really impact revenue.

That's simply the reality of working with a vendor that serves a range of clients across different industries. If that reality conflicts with your business strategy, in-house development is probably the smarter path forward. It gives you more control over your tools, processes, and timelines, and cuts down on the risk that someone else's decisions will create expensive disruptions for your company.



Samir Mehrali
Head of Presales

“You rely on unique or proprietary business processes

What's really powerful about custom-built applications is that they adapt to the way your business already works, rather than forcing you to change your processes to fit your software. And with new AI-powered development features, many of the roadblocks have disappeared. Now, organizations at nearly every level of technological maturity can automate unique workflows, spin up dashboards built for their specific needs, and connect critical systems with much less effort.

Even better, when the people developing these solutions already "speak the language" of your company and industry, the solutions they build are usually a better fit. Ultimately, their direct experience with how the company does business can shorten the learning curve, boost adoption, and help new apps play better with complex legacy systems.



Alexandra Hantsbarger
Sales Operations Manager

...



Three outdated MISCONCEPTIONS about IT *and how low-code and PaaS can set the record straight*

EMILY SLOAN-PACE, Senior Editor

In the digital-first economy, organizations face unprecedented pressure to innovate quickly, respond to dynamic market conditions, and leverage technology not just for efficiency but also as a competitive differentiator. Although the way that technology contributes to business success has evolved, the strategic role that corporate IT teams are allowed to play in driving that success has remained fairly static and limited. Despite their potential to act as tech-savvy partners in innovation and enablement, many IT teams still find themselves without a seat at the table when it comes to strategic decision-making.

This raises a critical question: Why are so many organizations failing to leverage teams capable of making a true strategic impact? Too often, they are holding onto

outdated assumptions about what corporate IT is: a surveillance arm tasked with clamping down on shadow IT and compliance violations; an internal triage team there to firefight support tickets; or an internal service provider that "keeps the lights on." These beliefs risk pushing IT teams into a reactive posture, making it difficult for tech experts to drive proactive change and provide strategic value.

Of course, it doesn't have to be this way. More likely than not, your corporate IT team already has the insights and talent to improve system agility, strengthen security, and drive innovation. The first step toward realizing that potential is to combat the widespread misconceptions about the role an IT team should—and more importantly, shouldn't—play in an organization.

MISCONCEPTION

IT's job is to police the organization

At many companies, IT teams are caught in a familiar cycle of friction. Denied visibility into strategic goals, IT's ability to contribute effective solutions suffers, leading frustrated end users to resort to workarounds that create more maintenance and governance work for the IT team, further reducing their availability for strategic engagement and cementing the perception of IT as a bottleneck. The unfortunate result of this runaway cycle is that talented, technically savvy professionals wind up underleveraged and overtasked with low-strategy work.

This situation is exacerbated when IT is also forced to play compliance cop. The friction of strict rule-setting and constant audits makes them feel like roadblocks and not business partners; users and managers are likely to be less appreciative of IT's problem-solving capabilities when they're frustrated from hearing "you can't do that." The more controlling IT gets, the more creative teams become at circumventing controls (often by turning to shadow IT). The adversarial dynamic further sidelines IT from strategic involvement, and the business misses a unique opportunity to turn technological enablement into a key driver of value.

MISCONCEPTION

IT is just a cost center, not a driver of innovation

Historically, IT functions are dominated by key maintenance projects: infrastructure operations, managing legacy tech debt, and supporting end-user requests. This work is time-consuming and (ideally) unseen. After all, stable system performance isn't breaking news. And while the value of monitoring, patching, and securing systems may be self-evident from 30,000 feet, at ground level, it's much harder to see that forest from the trees. This combination often puts IT teams at risk of being mislabeled as simple cost centers.

When IT's best work is also the most likely to be invisible, it's easy to understand how they can come to be seen as apart from the core economic engine of the business. The problem is compounded by the fact that IT's work can't be concretely tied to revenue streams and other typical measures of business success, since IT serves the organization, not the customer. And because so much of IT's work takes place at a distance (in server rooms, at data centers, or inside IT ticketing systems), it can quickly come to be seen as physically, culturally, and functionally separated from the business units it serves.

MISCONCEPTION

IT is reactive, not strategic

The typical measures of an IT team's success revolve around their reactivity: incident backlogs, closed tickets, and violated SLAs. And while some of this is inescapable—governance and standardization rules are a must for long-term success—that means IT teams are more incentivized to minimize change than to embrace experimentation. Eventually, this can morph into a belief that IT teams are inherently slow, risk-averse, and too focused on control: in short, an enemy to innovation and agility.

When business units only engage with IT to have something fixed or built, it's hard for them to escape the label of utility provider. When IT is only approached after the decision has been made, they can't own the strategy driving their work, only their deliverables. IT functions as a separate department that supports all others from a distance; it's unsurprising they are treated at some organizations as technical bureaucrats and not business-savvy thinkers. Expanding their scope from service providers to strategic partners requires emphasizing their role as the orchestrator of the digital and employee experience. Rather than only judging IT by resolution rates or downtime, more forward-thinking organizations will tie its value to the reduction of operational friction across the business: the problems it prevents, the changes it enables, and the services it improves.

Laying the groundwork for strategic IT

When IT teams are too overwhelmed by ticket backlogs and legacy systems, it's hard for them to focus on strategic action. In order to become more engaged collaborators and problem solvers, it is essential that IT teams are supported by a technology stack that reduces firefighting and increases agility. Investing in robust low-code and Platform-as-a-Service (PaaS) development tools allows IT professionals to rapidly prototype and test custom solutions while also simplifying integration work and reducing technical debt. This gives IT teams breathing room for activities with a greater ROI, like building more agile and resilient systems.

High-efficiency development tools can dramatically shift the allocation of IT time and spend. With low-code development, the most expensive app a business ever builds is the first one, since tools like Zoho Creator don't charge on a per app basis. And because greater utilization doesn't proportionally increase costs, a well-leveraged low-code layer can act as an extremely efficient force multiplier. Platform-as-a-Service tools like Zoho Catalyst, on the other hand, charge based on the number and type of requests made, making it affordable to rapidly prototype and test ideas, without introducing the typical risks and expenses associated with long development cycles.

When IT teams are no longer forced to choose between enforcement and enablement, everyone comes out a winner. As low-code and PaaS solutions help to expand the team's bandwidth, IT staff can turn their focus to proactively redesigning services, reducing the root causes of problems, and delivering new digital capabilities. And by empowering IT to own the entire problem space (instead of only the solution), they can begin to think more like user experience designers than support staff.

Enabling great collaboration

Any tool is only transformative when combined with new mindsets and opportunities for cross-departmental collaboration. As organizations work toward changing long-held expectations of what IT teams can—or should—do, IT leaders can start by assigning dedicated liaisons to each major business unit. This helps break down longstanding communication silos while giving developers a deeper understanding of their users' needs and pain points. Instead of on-demand tech support, these IT embeds become internal consultants and business partners.

When backed by this collaborative framework, low-code and PaaS solutions are more than technical tools; they are cultural catalysts that can radically reframe IT's role across an organization. By reducing friction, democratizing development, and enabling faster innovation, these high-efficiency development systems create space for IT teams to transition from service providers to strategic co-collaborators.

Rather than doing more with less, IT teams can do better with more: more allies, more distributed creativity, and more shared wins. Low-code and PaaS solutions serve as the connective tissue between departments, allowing the IT head to act as "enabler-in-chief." By equipping teams with tools, guardrails, and governance models, IT can drive a culture of safe innovation. And when people feel empowered and supported, resistance fades and collaboration flourishes. ▶

SPECIAL FEATURE

Shadow SaaS is a liability

Forge a smarter path to strategic agility with low-code



Hardeep Chawla, Director of Enterprise Sales at Zoho, is a seasoned SaaS sales leader with over a decade of experience driving growth and building high-performing teams. Known for his strategic vision and consultative approach, he excels in guiding enterprises through complex buying journeys and digital transformations while fostering long-term customer relationships.

While often driven by good intentions and the need for more targeted solutions, widespread adoption of shadow SaaS can expose organizations to significant risks. As a subset of the more widely recognized concept of shadow IT, shadow SaaS specifically refers to the deployment of cloud-based solutions without approval or oversight from internal IT. This practice poses a critical threat to cloud-first organizations, where tools are highly interconnected and data is frequently shared between applications.

In addition to expanding your company's attack surface, these apps complicate regulatory compliance and can obscure the true cost of your tech stack by hiding key software expenditures inside departmental expense reports. Moreover, when employees change or vacate their roles, access to their unofficial accounts is frequently lost—along with any data stored within the apps. In some instances, this leads to the accumulation of dark data; in more severe cases, it disrupts ongoing projects and essential business operations.

For companies looking to curb shadow SaaS usage, a dual approach of improving organizational visibility and expanding internal software capabilities can be highly effective. Low-code platforms support both strategies. While they may not replicate every feature of a shadow SaaS solution, low-code apps can deliver many of the same strategic advantages (such as software agility and customization), while helping centralize IT management for enhanced transparency, security, and compliance.

Low-code development minimizes much of the hassle and delay associated with traditional procurement

Understanding why employees turn to shadow SaaS

Gaining a clear understanding of the factors that drive employees to adopt shadow SaaS is key to developing a strategic and effective response. What functionalities is the company's current tech stack lacking? Are unsanctioned tools faster to obtain or easier to deploy? Is there a need to open more channels for communication with IT?

A collaborative, non-punitive approach to these conversations can lead to greater clarity surrounding the needs, expectations, and specific use cases your low-code deployment will need to address. In some situations, a low-code app may be able to serve as a straightforward replacement for an existing shadow solution. In others, it may simply offer the means for creating role-based permissions and access controls for relevant data, helping ensure that external apps are used safely and responsibly.

Meeting the demand for targeted business solutions

Because of the sheer number of SaaS solutions on the market, many business users assume that the easiest way to address a unique business challenge is to purchase an existing solution. While this can be a convenient shortcut, over time and at scale, this kind of ad-hoc strategy creates significant challenges.

A low-code approach can offer a similar range of functionality as ad-hoc shadow applications without introducing difficult-to-monitor software to the organization's tech stack. Further, the iteration, collaboration, and ongoing refinement supported by low-code enables a level of customization that few external applications can match.

This is especially important when you look beyond what kinds of apps are being developed and consider who is responsible for that development. Even relatively junior IT team members can use low-code tools to design bespoke solutions that meet extremely specific requirements. Crucially, the low-code development process minimizes much of the hassle and delay associated with traditional procurement strategies, which often require approval and consultation from a long list of high-level stakeholders, including executive leadership, business process owners, technology and architecture specialists, risk and compliance officers, and legal counsel.

Once a low-code solution has been deployed, subsequent apps built on that platform can be made available to employees without a formal procurement process. This means that low-code is not only more efficient than traditional custom development, but in some cases, it may also be more efficient than vetting external software solutions following the rigorous procurement protocols that larger organizations need.

Driving strategic and collaborative innovation

While low-code platforms can be particularly appealing to stakeholders with a clear vision of their software requirements, they also offer value to users still in the process of defining their needs.

During this experimental stage, some employees may use shadow SaaS to explore their strategic options without bothering IT or consuming significant organizational resources. What they may not realize is that low-code platforms aren't just safer and more secure; they also offer strategic benefits to the organization by enabling rapid prototyping and ongoing modification. With low-code AI app building, natural language prompts can generate visualizations that give users a clear sense of how their ideas will translate into a functional application. As a result, these platforms not only drive innovation, but promote more thoughtfully designed software solutions.

Additionally, features like role-based access permissions and in-app commenting give stakeholders the opportunity to safely test apps and provide feedback after consulting with their teammates or relevant SMEs. This creates an opportunity to explore requirements and incorporate features that may have been initially overlooked, eliminating the need for add-ons, extensions, and complicated configurations down the road.

Because low-code apps are centrally managed, they are typically accessible across departments. This means that a high-value build can have broader impacts, as it can be adopted—or adapted—to address the needs of multiple teams.

Championing the transition from shadow SaaS to low-code

Another crucial element in making a transition to low-code development is building the organization's confidence in internally developed applications. Beginning with a small-scale pilot program focused on simple use cases can give IT the opportunity to address points of friction in the development process and showcase the platform's potential to future end users.

As the program scales, establishing clear success metrics will help ensure your low-code strategy delivers on its value promise, while providing viable alternatives for shadow SaaS users. Time to application delivery, iteration rate, user adoption rate, and app performance and uptime are key indicators of whether your low-code solutions can offer the efficiency, usability, and functionality end users expect.

As productive partnerships between low-code developers and non-tech employees develop, the skills of both groups may need to evolve as well. Encouraging junior IT and operations personnel to hone skills like requirement gathering and project management can lead to accelerated custom app development and more structured and result-oriented collaborations.

Designating a few SMEs to work with employees on building an app request and feedback process can be key to developing the types of team relationships that drive low-code success. The more confident employees feel working and communicating across departments, the more successful your company will be in transitioning from siloed, fragmented systems to a collaborative, transparent, and more easily managed technology environment. □

MORE ENTERPRISE INSIGHTS

Investigate the latest strategic recommendations for maximizing the efficiency of your technology—and your team.





WHAT'S POSSIBLE WITH LOW-CODE?

What can you do with software that's built to do anything? From narrowly focused solutions to fully custom core systems, Low-code apps fit a wide variety of business needs and implementation styles. These are just a few of the ways in-house custom development can transform workflows.

INTERNAL TOOLS

Point solutions designed to facilitate a unique workflow within a team or between multiple teams.



Approval app

Sends documents—from marketing plans to expense reports—through a custom sequence of approvers, allowing for comments, revisions, and discussion along the way.

Mirroring the unique structure of each team or department, a custom low-code approvals app centralizes requests, routes them automatically based on predefined rules, and keeps comments and revisions within a single record instead of multiple emails and chats. Admins can create logic for multistep approvals, set visibility permissions, and integrate with existing calendars, messaging apps, or finance tools.

Outcome: Faster turnaround, clearer accountability, and a better paper trail.



Order management system

Serves as a hub for order input, routing, and processing, providing a convenient interface for teams to track inventory and status from multiple channels.

A low-code order management system creates a bridge between existing business systems, allowing a tightly connected fulfillment process without a full-scale ERP rollout. The app can reflect unique workflows—like routing orders to other departments for fulfillment or approval, triggering automatic updates to customers or internal teams, flagging low inventory, or capturing geography-specific purchasing or shipping requirements.

Outcome: Faster order processing with streamlined and accurate communication.

PORTAL APPS



Candidate portal

Guides job seekers through a seamless recruitment experience from resume submission to onboarding, with progress tracking and two-way communication at every step.

A low-code platform makes it easy to build a custom self-service candidate portal that offers applicants consistent, standardized communication throughout the recruitment process. The portal can provide real-time status updates, interview schedules, feedback timelines, and onboarding steps, and integrate with the company's existing applicant tracking system. Recruiters reduce bottlenecks by automating communications and document collection, while candidates benefit from a consistent, professional experience.

Outcome: Better candidate experience at scale, while maximizing the value of the recruiting team's time.



Partner portal

A central hub for resellers and sales partners to equip themselves for effective selling, track their performance, and get support from the partner management team.

A custom partner portal offers an efficient, scalable way for partners to get training materials, product and pricing information, and branding and marketing resources on a self-service basis, and to submit documents and request approvals from the partner management team. Pulling data from the company's CRM, the portal allows partners to see their performance and earnings, creating additional incentives for growth. Because the low-code app can be updated quickly, it's easy to adapt for new programs, partner certifications, or compliance needs.

Outcome: Well-informed and well-equipped partners who can always find the resources and answers they need without overloading their partner liaisons.



Event registration app

Extends an existing marketing automation platform to sign up and manage event attendees for an easy on-site experience, then seamlessly fold them into segments for follow-up and nurturing.

A low-code event registration app integrates with an existing marketing automation platform to leverage events for effective lead generation and segmentation. New registrations feed directly into the platform, updating or creating contact records and tagging them for automated confirmation emails and reminders. On the day of the event, an admin dashboard facilitates check-ins and real-time attendance reporting. Post-event follow-ups, surveys, and nurture campaigns launch automatically, a significant improvement over the events team's previous manual data entry and segmentation.

Outcome: Efficient, error-free lead capture and segmentation, leading to more effective nurturing and more post-event conversions.

CROSS-TEAM COORDINATION

Comprehensive solutions that manage business-critical processes across multiple teams and departments.



Fleet management app

Tracks fleet assets, consumables, and activities performed by multiple teams to ensure better data, more efficient dispatching, and timely maintenance.

A custom low-code fleet management app allows logistics and transportation providers to digitize legacy asset tracking logs. Dispatchers can assign vehicles and manage driver and vehicle profiles within the app; drivers can submit fuel and mileage logs and report issues using custom forms; maintenance teams can log inspections, schedule services, and check parts and tools in and out. Compliance documents and safety checklists can be stored centrally and easily updated for a smooth audit process.

Outcome: More complete asset records, reduced damage from missed maintenance, and more efficient dispatching.



Supply chain management app

Coordinates touchpoints along the supply chain, from sourcing and purchase orders to warehouse inventory and logistics, enabling accurate forecasting and fulfillment.

Building a low-code supply chain management app improves coordination across purchasing, receiving, inventory, and logistics without investing in a full ERP solution. It enables tracking of inbound and outbound shipments, flagging delays or shortages, and viewing stock levels and pending orders in a single central interface. Custom workflows can route purchase order approvals, trigger reorders, and generate status reports for leadership. Integrating the app with an existing accounting system coordinates purchase orders and invoices with goods received and shipped for easy reporting and forecasting.

Outcome: Better coordination between purchasing, warehousing, and fulfillment, leading to a more transparent, cost-effective supply chain.



Change management app

Coordinates review, documentation, and implementation of requested IT changes, and facilitates post-rollout evaluation.

Equipping the IT service team with a low-code change management app streamlines change planning, implementation, and evaluation. Change requests can be routed to stakeholders for evaluation, risk assessment, and scheduling, and synced back to the service desk platform for implementation. Change leaders can use the app to track rollout progress and adoption metrics from custom dashboards, add and update user training materials, and initiate post-implementation reviews and impact assessments.

Outcome: Transparent, well-documented tech stack changes that can be easily analyzed for future change planning.

LEGACY MODERNIZATION

Solutions for updating, extending, or replacing siloed legacy systems to create connected, integrated workflows.



Inventory management dashboard for manufacturing operations

Modernizes a legacy desktop-based inventory tracker by recreating it as a mobile-ready, cloud-based application.

A low-code inventory dashboard replicates the critical functionality of an old inventory system—tracking raw materials, work in progress, and finished goods—and adds barcode scanning via mobile devices, real-time stock visibility across facilities, and automated reorder alerts. Managers can now access live reports through interactive dashboards instead of static spreadsheets.

Outcome: Better candidate experience at scale, while maximizing the value of the recruiting team's time.



Vendor compliance tracker for procurement system

Extends an existing procurement system by adding a tracking workflow for vendor certifications and audits.

A low-code compliance tracker integrates with an existing procurement platform to ensure vendors meet regulatory and contractual requirements. Vendors can upload certifications (such as ISO, safety, or sustainability), which are then auto-routed to compliance teams for review and approval. Expiring certifications trigger automated reminders and escalation workflows, with updates reflected directly in vendor records within the procurement system.

Outcome: Reduced compliance risk and easier access to vendor documentation, with less staff time and fewer interruptions to vendor relationships.



Timesheet and project tracking system for professional services

Replaces an aging, on-premise timesheet application built on outdated tech with a modern, cloud-based platform.

A low-code timesheet system allows employees to log hours by project from mobile or desktop, with automated approval flows for managers and direct integration into payroll and billing systems. The new solution introduces role-based dashboards for project managers to track utilization, budget, and project profitability. Historical data is migrated from the legacy app to ensure continuity.

Outcome: Accurate, real-time project and timesheet tracking that improves billing efficiency and resource utilization.

How AI and low-code are working together to transform custom development



Charles Adaikkalam is the Director of Product Management at Zoho Creator, where he has been shaping the low-code landscape for over two decades. Since joining Zoho in 2001, he has played a pivotal role in bootstrapping and developing multiple products, most notably as a founding member of Zoho Creator in 2005. Today, he continues to lead the evolution of Zoho Creator and oversees Zoho Flow, bringing deep expertise in product strategy and low-code development.

The introduction of AI tools in software development—for customer-facing applications and backend ops—has produced both significant positive impacts and years of escalating hype. While a majority of AI coding tools act essentially as assistants to experienced coders, the momentum around the technology has also given rise to the tempting idea of having AI do the coding by itself. The potential benefit is obvious: a level of speed that cuts development time to a fraction of what it normally takes.

What's equally obvious is that AI isn't actually a replacement for human developers. The reality of AI's usefulness in software development is much more nuanced than the hype, and overly simplistic implementations have run into predictable problems with security and accountability.

AI-written code isn't inherently insecure, but it prioritizes getting to a working function over baking in best practices. This means that the tradeoff for the speed of pure AI coding is a level of risk that's unacceptable for most production environments.

Unfortunately, that efficiency imperative isn't something that teams can easily opt out of, since non-technical leadership is less and less inclined to tolerate the timeframes that full custom development requires. So it's not a question of whether to use AI, but rather how and when. That's where AI-enabled, low-code development come into play.

Getting realistic about AI coding

AI has genuine benefits to offer in software development: speed, ease of use, and the ability to translate broad ideas into specific code. This is nowhere more evident than in the rise of "vibe coding," or quick-and-dirty development of workable apps through a few hours of big-picture chatting with an AI coding tool, rather than spending days or weeks bogged down in the details of how the code works. That quick and responsive iteration is an incredible productivity gain for prototyping, especially for smaller tools and backend functionality.

The problem for this kind of pure AI coding is that security and accountability depend on those details. When developers copy-paste or auto-merge AI-generated code without comprehensive review, they can't guarantee the resulting app is handling data securely or using resources in a way that's sustainable and cost-effective. If it stores more data than it needs to, running it at scale can lead to enormous spending on AWS or other cloud resources. If it provides an API that's missing authorization or input validation—a situation that's become ten times more common in the last three years—it exposes the company's data to all types of data theft.

These risks are a sticking point for enterprise development, and something of an existential problem for AI coding. The price tag of fixing a data breach at scale is so enormous that apps that can't be totally guaranteed to be secure and stable simply aren't worth the risk to deploy in production environments. Deploying AI-coded applications without those risks requires developers to review the code in detail themselves, negating the speed and ease that are the benefits of AI coding in the first place.

Evaluate trustworthy vendors...

Deploy digital agents...

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with our AI issue

The importance of low-code guardrails

At first glance, the benefits of low-code platforms have a lot in common with AI coding. Both bring increased speed and power to the software development process. Both build their code behind a level of abstraction, allowing developers to quickly prototype applications by focusing on functional goals rather than the minutiae of achieving them. Both are flexible and adaptable and make rapid iteration simple.

But when it comes to security and stability, the similarities end. Unlike pure AI coding tools, low-code platforms are fundamentally about guardrails. Within them, the abstraction of code happens in consistent, repeatable ways, following best practices baked in by the platforms' designers that create a stable and predictable code base. Low-code platform providers shoulder the ongoing burden of infrastructure and data security for their platforms, providing a consistent level of accountability. This combination of flexibility plus governance gives developers the security of knowing that they can design their apps to do anything they need without creating vulnerabilities for leaks or data loss.

Putting AI code in the low-code toolbox

The solution that really harnesses the power of augmented development is the combination of these innovations: AI-powered low-code. Businesses need both AI's speed and low-code's layer of reliability if they're going to move quickly and compete. Bringing the power of AI prompting into a low-code paradigm combines the two benefits to deliver AI efficiency without the risks of a hands-off development strategy.

Deploying AI-generated configurations and custom code snippets within the safe development environment of a low-code platform facilitates rapid development and detailed customization while keeping the code base organized, stable, and easy to maintain. In effect, it's vibe coding with guardrails: a balance of creative flow and predictability that delivers easy prototypes and fast iteration with a fraction of the risk of purely AI-generated code.

CoCreator

AI-assisted app building in Zoho Creator

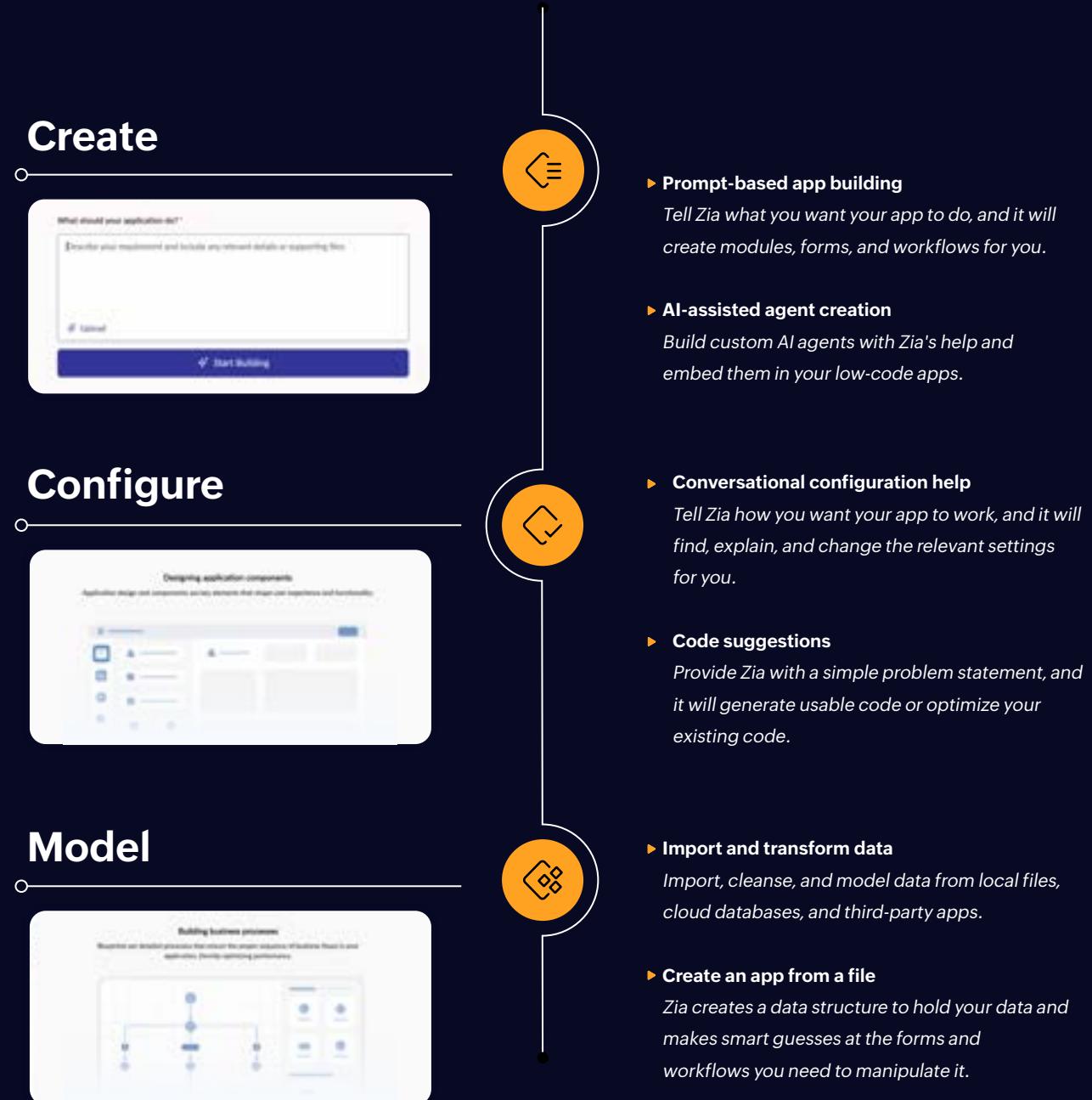
Creator is now powered by Zia, Zoho's smart AI assistant.

Choose between Zoho's proprietary LLM and OpenAI to leverage AI's potential at every stage of application development. Make app prototyping even faster and more intuitive. Feed Zia your project parameters in natural language for a smooth connection between requirements gathering and app design.

Creating custom solutions has never been simpler.



Zia in Zoho Creator is with you every step of the way to help design and fine-tune your apps, workflows, and data models. Here's some of what it can help you do faster and better.



Build your next app with AI assistance

Discover the fastest and easiest way to build and configure low-code custom solutions. Learn more about AI tools in Zoho Creator.



Schedule a call with an Account Manager

LOW-CODE SOLUTION HIGHLIGHTS

Flexible, frictionless, and resilient:

Overcoming limitations to make data more usable

Create scalable, efficient systems that expand the reach and reliability of your cloud data.

DANIEL WOOLSEY, Managing Editor

Business in the digital age has a data paradox. Being able to use large volumes of data exponentially improves the quality of business offerings, but the challenge of collecting and managing it exposes every gap across your tech stack and business processes. From offline operations to human error, missing data is a constant risk. However, if good data is too abundant, using it can be costly in terms of computing resources. The result is a balancing act between business effectiveness and cost-effective use of software platforms that can take focus away from core functions.

Zoho Creator's flexible development environment offers nuanced solutions to this paradox across the lifecycle of essential business data. Offline mobile apps expand the settings in which good data can be collected; geolocation tools automate the collection of reliable location data; and batch workflows optimize the processing of large data sets for reliability and efficiency.

In this installment of Solution Highlights, we'll explore Creator features that are improving the experience of field users, reducing the impact of human error, and reducing time-consuming manual data collection.



Offline Mobile Apps



Geolocation



Batch Workflows



OFFLINE MOBILE APPS

Complete data access for limited connectivity

Empower offsite teams with workflows that switch seamlessly from offline mode to connected and synced.

► PROBLEM

It's difficult to bring offsite workflows into a centralized IT structure

When IT leaders digitize business processes, they often find that users working in the field are slow to adopt because of obstacles like intermittent connectivity and the range of devices being used. Cloud-based web apps may be slow or unable to load outside of good internet connections, while on-premise and physical systems may simply be unavailable outside of the office. This means that offsite job activities are either happening with limited information, or they're happening in a non-live data environment (for instance, with users printing off information they'll need for a field visit the day before).

With limited access to the apps and forms that power their business workflows, field reps are likely to persist in using legacy tools, from paper forms to spreadsheets saved locally on their devices. At best, those un-integrated tools require extra data entry steps that can delay dependent activities like invoicing, follow up, and reporting. At worst, they represent additional security risks and auditing challenges. Efforts to eliminate these "shadow" workflows may fail to stick simply because the replacement tools don't perform well in the field.

► SOLUTION

Build interfaces that switch smoothly from online to offline environments and are inherently connected to the central data repository

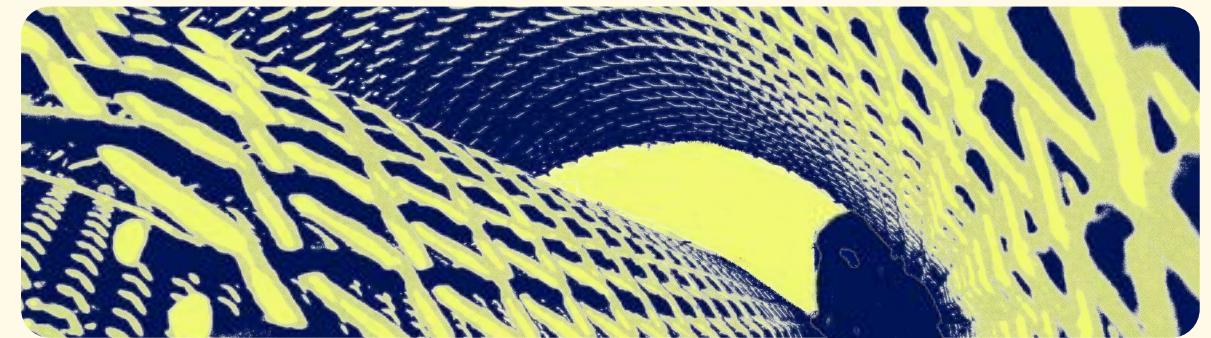
A Zoho Creator mobile app can provide working access to forms and reports when the device is offline, using data that was cached the most recent time the device had internet access. When connectivity is restored, the app syncs to the cloud database to save new records created by the offline user and update cached data. Admins or team leaders can choose the reports that will be cached on users' devices for offline access, ensuring that information needed for directing the day's offsite activities is always available.

With this seamless access, field users can continue their work uninterrupted regardless of where they are, and sync their new form entries to the database as soon as possible without needing to take time to manually upload them. Meanwhile, this bridge from the business's core systems to the work happening in the field allows central office users to work with the most up-to-date records even while offsite work is ongoing.

USE-CASE SCENARIO

A regional utility provider with over 200 field technicians has trouble managing data related to its field operations. Field teams inspecting power lines, responding to service calls, or maintaining infrastructure often work in areas with limited or no internet access, so they rely on printed ticket sheets to give them information about the site, customer, and problem history. Once in the field, they use paper log forms to record the resolution or escalation of the issue, which need to be manually typed up after returning to the office. For larger or more remote projects, it sometimes takes several days or a week for the data from the field operations to be fully entered.

The IT team builds a custom field service app using a low-code development platform and deploy it as a native



► OUTCOME

More consistent information access for both field and central users

With app access that works consistently in the field, offsite users don't need to support their workflows with paper forms or other "fill-in" tools, and can acclimate themselves to working directly in their core business apps. By not relying on static downloaded or printed-off data, field workers miss fewer changes happening elsewhere in the organization and can work with a slightly more current understanding of the problem or opportunity they're going to work on.

mobile app. This allows technicians to install the app directly on the devices they bring to the field, and work offline as needed, with the field data synced as soon as the crew's devices regain internet access. With cached reports providing ticket histories and work checklists, the field crew is able to complete their inspections and repairs with less time spent getting up to speed on the site. And with field logs available almost immediately, the financial team is able to improve the turnaround time on invoicing for service calls, leading to a faster service-to-payment cycle and less missed revenue.



GEOLOCATION

Pinpoint locations for place-based business

Streamline address and territory entry with automatic location capture in custom forms

► PROBLEM

Location data improves business outcomes, but collecting it introduces friction and inaccuracy

Knowing the location of a customer, employee, or asset is invaluable for many kinds of businesses, but collecting location data isn't always straightforward. Even users who intend to enter accurate location data in the course of business activities make mistakes, from spelling and formatting errors in text entry fields to picking the wrong city name from similar-looking choices in a dropdown or tapping an approximate but inaccurate location on a map.

With poor location data, business offerings suffer in a variety of ways. Dispatching field crews for installation, service, or incident response is slowed down by the process of finding poorly identified work locations, and each visit to the wrong site increases fuel costs and reduces the number of daily service calls that can be completed. Resolving complaints about delivery or work completion is difficult without a reliable record of where activities happened. When activities are mistakenly assigned to the wrong zip code, state, or county, account assignment and sales territory management becomes inefficient, and businesses in regionally regulated industries can face severe consequences for appearing to be out of compliance.

► SOLUTION

Collect location data automatically in low-code forms

To get reliable, consistent location data, use geolocation in Zoho Creator apps to pinpoint the location where a form was completed or submitted. Geolocation can be enabled for any form, whether it's a check-in, a service log, a service request, or a request for contact. When geolocation is enabled, each time the form is submitted, Zoho Creator will collect the latitude and longitude of the submitter's location and generate a physical address that becomes a permanent part of the record created.

App developers can choose whether to use geolocation solely to collect location information, or whether to pair the collected location data with custom logic to allow or restrict form activities based on location. Geofencing allows location-sensitive form activities, access, and check-ins to be available only if the user is within the appropriate area, eliminating a major source of incorrect or falsified check-ins.

USE-CASE SCENARIO

A retail merchandising service provider serves several hundred stores across the northeastern US. Reps from the merchandising service visit each store for monthly inventory auditing and to make seasonal updates to end caps, signage, and standees. For the reps, the high volume of daily stops means that they rush through route-finding and filling out activity logs, leading to occasional errors like going to the wrong store or forgetting to mark off one of the day's visits. In some high-volume stores, regular difficulties with keeping sufficient inventory can make the store chains' owners nervous about whether they're getting all the service visits they're paying for, and the incomplete logs and navigation errors make it hard for the company to provide reassurance or proof. The trust between the service and its clients is suffering as a result.

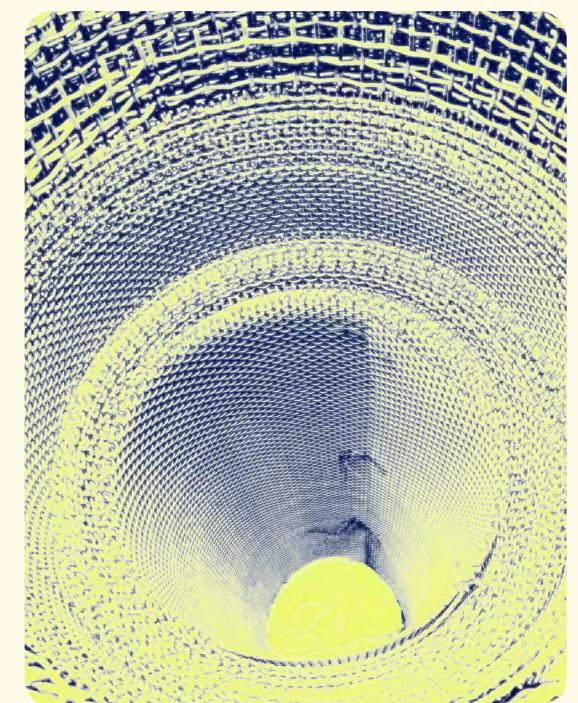
To regain control of the situation, the service provider creates a low-code merchandising service app to record reps' store visits. Now, each rep's daily schedule of store visits includes a location for each store, and when a rep checks in to record a site visit, the app populates the user's location automatically. Accidental visits to the wrong store are immediately visible in the record and can be flagged and remedied while the rep is still in the

► OUTCOME

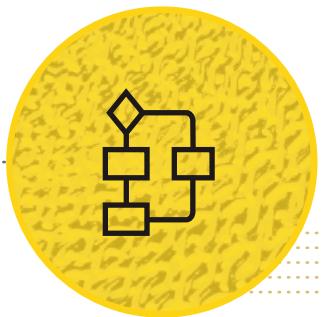
Improved oversight and reliability of location-based business activities

With automatically generated location data incorporated into each record, businesses have better insight into where each activity or request takes place. Because the addresses are generated the same way each time, their format is consistent across all records, making the locations immediately usable for filtering, reporting, and navigation tools. This leads to more effective territory assignment and routing, more accurate asset inventories, and faster and more effective dispatching of materials and service crews.

vicinity. Successful visits are captured in complete logs with location information embedded, which the company can use as proof of work done, resolving disputes and helping clients look elsewhere for the source of their inventory challenges.



Reliable location data also eliminates some common areas of business inefficiency. Because it offers a reliable source of truth about the location of employees and devices, it helps simplify dispute resolution by definitively establishing where services or deliveries were performed. When paired with geofencing, it can reduce inaccuracy in employee time tracking by preventing both deliberate and accidental errors in checking in.



BATCH WORKFLOWS

Resource optimization for large datasets

Improve the reliability of bulk updates with efficient automated batch management

► PROBLEM

High-volume data processes can strain platform resources such as API quotas and script execution limits, even halting operations if quotas are exceeded.

Custom solutions derive their effectiveness from calling on operational resources in different combinations as needed, like ordering from a menu à la carte. As businesses scale and deal with large volumes of data, those à la carte orders multiply with the size of the data sets. To prevent performance degradation, low-code platforms place limits on how complex custom scripts can be, how long they can run, how many API calls they can make, or how much memory an action can use up.

For organizations working with high-volume data, performing a custom workflow or automated bulk update on a single massive data set consisting of thousands of records might exceed the script complexity limit. Processing them individually simplifies the script execution, but bloats the resources required for script initiation or cleanup operations and increases the risk of partial or inconsistent updates.

► SOLUTION

Use custom batch workflows to optimize how records are passed through your custom solutions

Batch workflows in Zoho Creator allow you to break up large volumes of records into custom-sized groups for processing, while abstracting the complications of keeping script loops clean and organized. By running large-scale workflows in batches, custom scripts aren't pushed to the limit where they're likely to break or exceed memory limits. If one batch fails, automatic error handling reverts the records in the batch to their original state for a clean retry and allows the other batches to continue processing normally. The batch workflow reduces pre-operation overhead steps such as login, authorization, and data lookups, creating clean, efficient loops without unnecessary repetition or excessive drain on API or microservice quotas.

USE-CASE SCENARIO

A national construction company has thousands of employees across its building projects, and they use a custom app to submit daily time logs for every day they're on a work site. A custom workflow collects all of the daily logs, aggregates them into timesheets, passes them to the payroll system, and generates payroll summaries from them. During the height of the construction season when the number of time logs is the largest, the custom workflow sometimes times out partway through processing the logs. This results in incomplete payroll summaries that the HR staff have to manually finish aggregating and checking to avoid accounting discrepancies.

To make the workflow more resilient for the busy season, the IT team sets the daily time logs to process in batches of 100. The batch workflow begins every night after the work day is finished, and runs as many batches as it takes to process the day's time logs. When HR staff come in in the morning, they get the previous day's aggregated timesheets and a report of the overnight roll-up process, including any batches that encountered errors and were automatically retried. With system errors dramatically reduced, the data being passed to the payroll solution is cleaner and more reliable, leading to more on-time and accurate paychecks with much less manual intervention from HR.



► OUTCOME

Automated bulk update processes that are more resource-efficient, more resilient, and less prone to breakage

By processing records in batches, admins can reduce the time and effort spent managing large data sets during processing, and easily monitor and resolve processing errors affecting particular batches. With the batch sizes chosen to maximize the stability and efficiency of custom scripts and workflows, updates are more reliable and less likely to fail, reducing the need for users to clean up or manually fix records.

As business scales further, there's no need for IT to develop workarounds or new workflows to accommodate growing data sets. By making custom scripts resilient and resource-efficient, batch processing also extends their useful life span, offering the business more years of good performance from its custom solutions.



COVER STORY

The Future is Fusion

Bridging the gap between process owners and IT

■ ADRIANA JACARUSO, Managing Editor

For nearly 20 years, analysts and technology leaders have been in search of the holy grail of business: a truly democratized software development framework. They have dreamed of a world in which coding skills and computer science degrees were no longer the prerequisites of digital transformation, where any subject matter expert could take a software idea from plan to production with relative ease and little technical training.

In 2009, Gartner coined the term "citizen developer," promising that an army of low-code business technologists would soon replace up to 80% of development jobs. Fast forward to today, and many of the same things have been said about AI-enabled "vibe coding," which has been projected to save corporations millions while eliminating entire job categories. In both cases, the hype has fallen short of

the reality, but that doesn't mean the larger trend should be ignored.

Although it's important to resist the ebb and flow of the hype cycle, business leaders cannot deny the trajectory of the industry. With each new technical advancement, coding and development are getting faster and easier. That means the competitive edge for enterprise organizations is now less about brute technical force and more about organizational agility, strategic vision, and market differentiation. To succeed in that context, organizations will need to shrink the distance between functional experts who know business strategy and technical experts who must digitize that vision. Friction or misalignment between those groups will become even more costly as the coding side of the development process becomes truly commoditized.

Why you can't just get rid of the developers

In some organizations, the promise of a more automated development approach has been misinterpreted as an opportunity to deprioritize the role of experienced tech personnel. Across the tech sector, enthusiasm for techniques like vibe coding and prompt-driven development have led to substantial layoffs—only to be reversed months later when flaws in both the quality and security of AI-generated code became apparent. These experiences underscore a critical reality: experienced technical specialists still need to drive digital transformation efforts.

Even with the support of an advanced LCAP, non-technical creators may lack full visibility into their company's tech stack and IT strategy, creating a high potential for redundant applications and increased technical debt. Moreover, less experienced developers are prone to missteps that AI can't prevent, such as failing to account for scalability or neglecting standard documentation procedures when creating an app. As a result, performance issues, increased latency, and troubleshooting challenges can occur, especially if the app is widely adopted or becomes mission critical.

Large and scaling enterprises can gain more value—and encounter fewer risks—by cultivating a robust strategy of "citizen collaboration," rather than attempting to navigate the pitfalls of a fully democratized software development process. Working closely with IT, and leveraging the collaborative capabilities of low-code, cross-functional teams can gain the strategic advantages of emerging development methods, while avoiding the risks of unchecked AI-powered coding.

Stakeholders feel empowered—rather than discouraged—to test, evaluate, and continually seek improvements to their digital experience

How low-code fuels collaboration

Effective cross-functional engagement can drive the development of applications that are practical, easy to navigate, and relevant to real business needs. However, traditional development methods have rarely lent themselves to this kind of collaboration. With these methods, shifting user requirements often lead to delivery delays, prolonged downtime for modifications, and friction between teams.

With low-code, however, end-user feedback can be incorporated into an app without prolonged downtime or the frustrations of "starting from scratch." Tools like natural language builders and drag-and-drop code blocks enable rapid iteration, contributing to an environment where stakeholders feel empowered—rather than discouraged—to test, evaluate, and continually seek improvements to their digital experience.

Because of low-code security features, like access controls and audit logs, these stakeholders are often able to engage more deeply in all areas of the app-building process—without disrupting critical development tasks. In many cases, this results in an improved balance between strategic innovation and essential governance and guardrails.

Building an effective framework for collaborative development

Even organizations that routinely promote collaboration may face challenges engaging non-technical employees in the development process. A lack of technical sophistication in the workforce, limited familiarity with low-code tools, and unclear feedback processes can all undermine a collaborative development initiative. This is why it's crucial to start small and formalize resources, processes, and communication channels before your program scales.

In the beginning stages, identifying a few ideal citizen collaborators can be instrumental to success. These should be tech-savvy individuals who are comfortable operating across functions to bridge the gap between IT and business process owners. They should also be confident problem-solvers, willing to contribute strategic solutions to the types of challenges that arise in the early days of a new process. While they may introduce more complex use cases as that process solidifies, starting off with simple builds (such as a task management app or basic report generator) will allow them—and their developer counterparts—to build their skills and grow comfortable with a citizen collaboration strategy.

As more employees are encouraged to participate, shared learning opportunities will become increasingly valuable for both developers and future end users. Cross-functional forums not only help foster stronger relationships between teams, but also serve as an opportunity to educate non-tech employees on the fundamentals of low-code platforms and the collaborative features they provide. From an IT perspective, joint strategy sessions offer an opportunity for requirement gathering and detailed process mapping, enabling developers to prepare for unique challenges and potential complexities.

Establishing fusion teams—and setting them up for success

For many organizations, the formation of fusion teams helps bring greater structure, alignment, and accountability to collaborative development efforts. Leveraging the expertise of SMEs across disciplines, fusion teams may form to own a short-term project (like the creation of a new dashboard or automation of a manual business task) or to manage and maintain an application or digital process (like compliance monitoring and reporting) over the long term. In companies with a strong culture of collaboration, fusion teams may be able to function flexibly, with employees drawing on cross-functional expertise as needed. However, many organizations can benefit from more clarity around key project stakeholders and designated points of contact.

Before formalizing a fusion team model, it's important to assess how many employees currently have the skills and capacity to contribute. If that number is limited, focusing on smaller, shorter-term projects will help keep the initiative viable without overburdening individual employees.

Regardless of what fusion looks like for your organization, equipping teams with resources, guidelines, and support will be key to driving successful collaborations. Standard low-code platform offerings make many of these supports simple to implement. Features like access permissions (which allow meaningful contributions without disruption to vital code or processes) and shared analytics (to improve visibility into app performance) can go a long way toward encouraging inter-departmental participation, promoting team alignment, and identifying areas for improvement within an application.

Insights from cross-functional SMEs can guide developers toward practical, functional solutions to common business challenges

Leveraging citizen collaboration for long-term value

While achieving strategic alignment and stakeholder buy-in for low-code citizen collaboration may require effort upfront, the impact on a company's digital initiatives can be well worth the investment.

Beyond improving organizational productivity through more usable and targeted technology solutions, it often helps companies achieve more with their existing resources. Low-code platforms can reduce the need to hire additional senior IT professionals to manage the company's business apps. And insights from cross-functional SMEs can guide developers toward practical, functional solutions to common business challenges—helping minimize costly integrations, fixes, and add-ons in the future.

Empowering non-technical employees to participate in the development process can also have a profound impact on company culture. Involving them early and often enhances the digital experience, which in turn elevates the overall employee experience, leading to a more innovative, engaged, and solution-driven workforce. ■

Clearing the path for your next big leap

Modernizing legacy systems to minimize tech debt



With more than 15 years of work experience across SaaS and ERP technology organizations, **Bharath Kumar** optimizes user experiences across Zoho's Developer Suite of products. His primary focus is on Zoho's low-code platform, **Zoho Creator**.

Technical debt may sound like a red flag, and relying on legacy systems may seem like a way of clinging to the past. But in reality, the accumulation of software solutions is a milestone marker. It means you've been building, experimenting, and delivering at a pace that created results. Every shortcut taken to meet a deadline, every quick tool purchase to unlock a new capability, and every fast patch made to a legacy tool to keep customers happy is proof that you've been in motion, making decisions in the moment to seize momentum when it counted most.

This means software accumulation is (usually) the result of an earlier strategic trade-off: picking speed over scalability; choosing flexibility over standardization; or selecting the legacy tool that works today over the one that also fits future needs. Without those choices, you may not have moved fast enough to capture the opportunities in front of you.

Now those choices are asking for a little more attention—and that's an opportunity to modernize your legacy systems to match your current size and ambition, whether that means extending them with new capabilities, modernizing them for today's scale, or replacing them entirely. The challenge isn't to undo the past, but to shape it into a foundation for the future.

The quick decisions, clever workarounds, and bold experiments that got you here were exactly what the moment called for. Now they're the raw materials for building systems that can scale with your ambitions. The first step is seeing the patterns clearly: understanding the most common ways that tech debt takes root, so you can decide which to address now, which to address later, and which to live with as part of the cost of doing business.

Rushed timelines and shortcuts

One of the most common culprits of legacy technical debt is speed. Whether the pressure is a result of the market, customer demands, or a lean engineering team, ITOps teams facing tight deadlines are often forced to take shortcuts: embedding business rules directly in the code rather than defining them through more configurable or dynamic frameworks; skipping traditional testing and optimization cycles in favor of full deployment; relying on temporary patches to legacy software instead of processes that are scalable and sustainable.

In the short term, the business might see happier customers, faster innovation velocity, or an increased market share. But as the weight of these solutions compounds, it creates an unwieldy maintenance burden for technical teams. Instead of building new value, they spend their time patching bugs and retrofitting systems that should have been retired years ago.

As more processes rely on a brittle system, small changes can trigger cascading issues. Modernization takes a back seat to risk management, and developers go from innovators to reverse engineers. Turnover can increase if talent burns out or gets bored of fixing the same problems day after day, putting the company at risk of losing key drivers of agility and technical know-how. This is where extending systems with more flexible frameworks can restore agility without discarding what already works.

Tool sprawl and shadow IT

Another driver of technical debt stems from how tools are acquired and managed. Without a centralized strategy, individual departments lead the charge on software procurement. But don't be fooled: a patchwork of underused apps and rogue tools are relics of success, not symptoms of failure. They also reflect a history of solving problems on the fly. The old survey builders that segmented email campaigns, the productivity apps that improved collaboration, and the project management tools of yesterday are all visible markers of ambition, innovation, and momentum.

Eventually, the short-term efficiency gains that accelerated productivity become less impactful, as the complexity of legacy software introduces a range of challenges: reporting becomes error-prone and labor-intensive; IT teams are pulled into integration projects and manual reconciliation efforts; and the costs (in dollars and hours) of managing overlapping tools and redundant vendor contracts begin to grow.

As complexity mounts, risk follows. Fragmented systems make compliance harder and auditing painful. Vendor churn increases as teams hop from one tool to the next, hoping for a better fit. Meanwhile, license costs creep up for tools that go unused or duplicate existing functionality. The organization loses efficiency, alignment, and trust in its own data. When the problem gets to this point, modernization efforts often focus on consolidating or replacing redundant tools to regain control and consistency.

Poor documentation and knowledge transfer

One of the most underestimated drivers of technical debt is the failure to transfer institutional knowledge effectively. When ITOps teams are overwhelmed by backlogs, incidents, and integration requests, documentation will always fall to the bottom of the list. Even when delivery isn't the main priority, the steady flow of changes can make it difficult to keep documentation current. When teams lose trust in internal documentation, they turn to other channels for troubleshooting and knowledge sharing; the solution (and the steps to get there) are left unrecorded.

This knowledge gap can grow into a serious liability, especially when the company's core software systems are running on years' worth of ad-hoc patches and manual workarounds. If no one understands how to implement changes safely, debugging becomes guesswork, and teams may end up rebuilding features that already exist. Onboarding slows down as new hires struggle to make sense of poorly documented systems. And as changes that once took days start to take weeks, fragile systems can break. The system becomes a black box of undocumented dependencies and fragile workarounds, and every change requires significant amounts of reverse engineering.

Without widespread operational knowledge, scaling becomes an uphill battle. In the worst cases, the system can become so enmeshed in technical debt that the escape routes can't be seen, making modernization seem riskier than it needs to be. Even when leadership has identified the right strategic moves, teams can't safely implement that vision.

Failure to modernize legacy systems

While there are many types and causes of technical debt, the most persistent and the most costly isn't caused by bad code or poor planning, but by inaction. As long as the system still runs and the risk appears low, there is little urgency to update legacy solutions. But at a certain stage, the cautious pragmatism of "don't fix what isn't broken" can create technical paralysis: UIs stop working on modern browsers; architecture becomes tangled; and new features must be bolted on rather than integrated.

When the "Franken-system" becomes too fragile to evolve, it becomes increasingly rigid and costlier to maintain. As the fear of slowing down operations (or breaking them entirely) outweighs the value of adopting new tools, backend systems can begin to falter and lag. Locked in by legacy workflows that no longer reflect how the business operates, departments across the organization introduce new inefficiencies and errors through manual workarounds. Technical limitations prevent attempts to pivot to valuable new strategies (such as subscription billing, omnichannel sales, or mobile-first), and the potential benefits offered by cloud migration or digital transformation become out of reach.

Moving full speed ahead on modernization

The real risk with legacy tools isn't having them; it's in letting them dictate your next move. By recognizing the many ways tech debt accrues—from rushed timelines to under-invested infrastructure—you give yourself the power to prioritize, plan, and clear the path for innovation. Resolving it isn't about undoing the past, but reinvesting for the future. By addressing the patterns that create debt, you're not just fixing problems; you're building capacity and resilience. The same speed and creativity that built the business can rebuild its foundations and position it for even bigger wins ahead.

When you face debt head-on, you turn a liability into leverage: fixing today's problem by extending, modernizing, or replacing existing systems—while also unifying tools, capturing knowledge, and scaling infrastructure to meet tomorrow's demands. The payoff? Not just cleaner code, but a stronger, more adaptable business. ■

Software solutions to some critical areas of tech debt

Challenge: Slow delivery of internal tools fuels shadow IT and fragile workarounds that add long-term operational debt.



Zoho Creator helps operations teams quickly build and refine critical low-code solutions while reducing reliance on overburdened development teams.

Challenge: Poor asset visibility results in outdated, orphaned, and undocumented systems.



ServiceDesk Plus tracks the entire asset lifecycle—capturing status, ownership, location, and configuration—to eliminate blind spots and reduce risks from unsupported or untracked hardware and software.

Challenge: Manual patching and inconsistent configurations heighten vulnerability risks.



Endpoint Central automates patch management across OSs and apps, detecting, testing, approving, and deploying updates to close security gaps and reduce manual upkeep.

Challenge: Mismanaged user accounts pose security risks and blur privilege boundaries.



ADManager Plus enables bulk account provisioning and deprovisioning, simplifying access and permission management and eliminating orphaned accounts.

Challenge: Disconnected monitoring creates blind spots that delay detection and raise the risk of costly incidents.



OpManager delivers real-time, centralized monitoring with topology mapping, customizable alerts, and visual dashboards to eliminate blind spots and enable proactive issue resolution.

HOW BOURNE LEISURE USED LOW-CODE TO MODERNIZE BUSINESS OPERATIONS ACROSS 80 VENUES

Zoho Creator helps one of the UK's leading leisure companies **rapidly build, test, and scale apps**—from allergen menus to vendor tracking—all on one platform.

Who is Bourne Leisure?

Bourne Leisure Holdings, Ltd. is one of the United Kingdom's largest privately owned leisure and tourism companies. Through its many subsidiaries, it operates some of the UK's best known travel brands, annually hosting millions of travelers across their 38 vacation parks. Each destination—and the lodging facilities, restaurants, and entertainment venues within it—is centrally managed.

What problem led Bourne Leisure to choose Zoho?

Bourne Leisure faces multiple layers of operational complexity, with each brand functioning as an organization in its own right. According to IT director Neil Hobbs, motor-home park brands like Haven Holidays present a unique challenge, as "each site is like a small town, which means we have all the challenges involved in running a small town." This complexity presents difficulties when sourcing and deploying software, from ensuring that the tool fulfills end-user requirements, to training staff across disparate locations.

Prior to Zoho, Bourne Leisure had struggled to find an off-the-shelf product that could meet the needs of its diverse

network of brands. Prebuilt apps often lacked the flexibility to accommodate complex workloads and varied requirements. Restaurant booking apps, for instance, underperformed when deployed across Bourne's different venues, unable to accurately capture the variety of seating arrangements or site-specific operator requirements.

Perhaps unsurprisingly, the multi-faceted nature of Bourne Leisure's organization made the software procurement process long and onerous. In attempting to address the needs of guests and team members alike, the company struggled to pin down pain points and identify effective software solutions.

What solution did Zoho provide?

An early adopter of low-code, Hobbs knew Zoho Creator could meet his needs. Creator stood out for its ability to meet a developer at any point on the low-code spectrum, offering very quick app setup through an extremely simple drag-and-drop interface, backed by the power of Deluge scripting for more control and granularity when needed. He was soon deploying a wide variety of custom Creator solutions.

Bourne saw early success by building a custom restaurant booking app. Intended as a stop gap solution, within the first three months of deployment it handled 100,000+ bookings at 80 different venues. The cost savings this provided was immediate and immense; had that process been manual, it would have required having on-site teams at each location as well as another 70 back-office employees managing site-specific logistics.

Creator also helped them tackle some of the day-to-day operational challenges to improve the customer experience, such as a custom app for allergen information. The waitstaff simply populates the app with a customer's allergies and gets a menu of safe dishes as well as color-coded warnings for specific dishes the customer asks about. While they had anticipated the need for some onboarding, the app proved so intuitive that employees didn't need any training. This proved an invaluable resource for understanding and

responding to customers' needs, as well as eliminating one of the most common sources of friction for any restaurateur.

Even in cases where low-code isn't the best tool for the job, Creator is great for prototyping. When a new software requirement is raised, his team can usually create a mock-up on the same day and a more substantial prototype within 24 hours. This quickly moves discussion from concept to concrete use case, and enables end-user research to inform development or procurement.

It's not always easy to find off-the-shelf solutions to fit our requirements. We turned to Zoho... mainly because of the speed it gave us.

— Neil Hobbs

Director of IT
Bourne Leisure

What benefits did Bourne Leisure experience?

Since deploying Zoho, Bourne Leisure has built more than 30 apps (both production and prototype), and written 1,000+ lines of custom code. But for Hobbs, the true test of software is real-world usability. The high adoption rates and low incident rates for his low-code solutions have been "the most rewarding thing to see." Scalability is also covered: "I have absolute confidence in the reliability of Creator's back-end database. I know that however many users we had, we would see the same performance."

Another place where Creator provided unexpected benefits was in vendor management. The UK's largest caravan purchaser, Bourne works with seven different manufacturers, each of which has their own production process and delivery timetable. At that scale, getting real-time status updates from each vendor takes a lot of time (and occasionally frustration). With Creator, they built a simple, easy-to-update data system for tracking delivery progress; this gave them the visibility they needed and spared them the logistical labor of asking for ongoing progress reports.

I experimented with Zoho Creator... and found it easy and reliable to whip up solutions, even for simple form-based data capture.

It's also allowed for incredible agility, as the IT team can rapidly churn out apps and then drop them once the requirement is met. The fact that all of this comes at zero cost (beyond the subscription) has helped Creator go from a "Swiss army knife that has saved [the day] in critical situations" into a "central player" in their tech stack. 

THE TEAM LEADER'S GUIDE to digital maturity

EMILY SLOAN-PACE, Senior Editor



Digital maturity isn't a fixed destination, but a spectrum that reflects how deeply and effectively a team integrates digital tools into its everyday work. Like revenue or customer satisfaction, it's one of many useful ways to understand how a business operates and where it can evolve. But unlike other metrics, digital maturity reveals the relationship between people, processes, and technology, offering unique insights into how work gets done and where it gets slowed down.

Not every team will be at the same point on this spectrum, and that's expected. Some may rely on spreadsheets and email to manage core workflows, while others are experimenting with automation or building custom apps. This strategic diversity isn't a problem to solve, but a reality to work with. The key is visibility: understanding where a team stands allows its leader to meet them with the right support, whether that looks like foundational tools or full-scale transformation.

In other words, assessing digital maturity isn't about judgment; it's about enabling better decisions. The goal isn't to push every team to the same place, but to equip them to move forward in ways that are sustainable and impactful. That's where low-code application platforms come in: they empower teams to improve how they work, regardless of where they're starting from, without requiring major IT overhauls.

STAGE 1: A combination of digital and analog tools

At this early stage of digital maturity, most of a team's processes are manual, with a heavy reliance on email and spreadsheets. Data storage is fragmented and siloed, leading to inconsistent processes for workflows, data entry, and reporting. An underdeveloped digital infrastructure limits widespread automation efforts, meaning team members spend a lot of time on routine and low-impact tasks. Without real-time insights, decision-making will come down to intuition or be predicated on old data manually compiled into reports.

Critical business processes are managed by informal communication or paper records, while high degrees of dependence on spreadsheets create data silos and limit cross-functional visibility. Because most processes are undocumented, every employee takes a unique approach

to getting the work done. Most engagements with an organization's larger IT department are centered around basic troubleshooting and support, not strategic enablement. Digital initiatives are usually triggered by compliance and security concerns rather than a desire to streamline or transform the operations of the team.

How low-code can help at this stage: *Jumpstart digital literacy and eliminate inefficiencies without a complex system overhaul.*

- Replace paper forms and spreadsheets with digital forms and mobile apps
- Automate repetitive tasks (e.g., approvals and notifications)
- Centralize tracking with simple dashboards or status trackers
- Introduce self-service apps to reduce emails requesting access or solutions

STAGE 2: Digitized, but with out-of-the-box solutions

In the Stage 2 environment, digital tools are abundant but disconnected, creating a false sense of digital maturity. Team members work in parallel rather than in sync, each relying on platforms (e.g., shared drives, project boards, communication tools) picked for convenience, not consistency. The resulting tool sprawl leads to inconsistent data, duplicate efforts, and increasing technical debt. Without a central source of truth, workflows are shaped by individuals, not by systems, and key business processes like reporting, status updates, and task hand-offs have to be done manually. The team becomes reliant on key people to "hold it all together," and collaboration depends on effort and workarounds rather than technology-powered orchestration.

Over time, these small frictions can meaningfully impact productivity: time is lost to version confusion and context switching between tools; data is lost when someone leaves or a file is overwritten. This lack of consistent processes slows down onboarding (and training), creates excess operational costs from duplicate tools, and increases the risk of process bottlenecks.

How low-code can help at this stage: *Eliminate tool-switching, reduce data duplication, and streamline internal coordination.*

- Bridge disconnected tools with basic workflow automation
- Consolidate trackers and forms into a single source of truth
- Create live dashboards to reduce reporting friction
- Automate multi-step requests and hand-offs

Understanding your team's digital maturity isn't about grading performance; it's about identifying where things are working, where there's friction, and where focused effort can drive the most meaningful change. Different stages of maturity come with distinct pain points, from inefficiencies and tool sprawl to inconsistent data or fragile processes. Recognizing these patterns can help teams take targeted action, whether that's streamlining operations, empowering staff, or scaling with confidence. ■

STAGE 3: Fully custom solutions, tailored to the exact needs and processes of the team

At this stage, most processes have been digitized and automated. Essential business data is being captured, and it flows better between applications than it did in previous stages. Still, teams run into challenges when looking to scale or introduce greater complexity. The challenge now is to connect digital tools together, eliminate redundancies, and un-fragment the data environment. Overlapping tools (e.g., form builders, project trackers, automation alerts) need to be brought together so that the data they capture can be analyzed and put to use. Tools that once enabled agility may be creating more problems than they solve at this stage. Inconsistencies and hidden siloes that may be hampering decision-making need to be found and replaced with stable connections.

If the system relies heavily on separate third-party systems, over time, the complexity of maintaining them and their integrations can create its own problems. As dependencies grow, the system may become brittle and cumbersome. As the business continues to evolve, the challenge is to continue making thoughtful, data-driven improvements to optimize processes instead of allowing systems to fossilize for fear of breaking connected workflows.

How low-code can help at this stage: *Improve consistency, reduce errors, and accelerate team response times through standardized and smart processes.*

- Use conditional rules and workflows to reduce manual oversight
- Link processes across roles with structured workflows
- Use logic-driven forms to minimize the risk of human error
- Turn spreadsheet-based workflows into structured apps

Shadow AI is emerging as a significant threat to security and compliance

A U T H O R B I O

John Donegan is an Enterprise Analyst at ManageEngine. He covers infosec, cybersecurity, and public policy, addressing technology-related issues and their impact on business.



The use of unauthorized AI tools—otherwise known as shadow AI—is on the rise.

Without consulting IT or security teams, a growing number of employees are using unapproved third-party AI tools in their day-to-day work. While these tools have increased productivity across a range of job categories, they are also creating significant privacy and security concerns, since many employees are trusting them with sensitive company data and confidential client information.

Just one breach within any of these unapproved systems could expose proprietary intellectual property, financial records, or other critical data, causing irreparable harm to the organization. Beyond the reputational fallout, such an incident could also trigger significant legal and regulatory

consequences. Unfortunately, many organizations have chosen, on the short term, to accept AI's heightened risk profile, choosing to simply bide their time until the tech industry resolves the significant shortcoming of this otherwise promising new technology. In the meantime, they are reaping the benefits of AI, and hoping that their proprietary information doesn't end up in the wrong hands.

It's a testament to the power of AI—or the hype surrounding it—that so much of the business world has accepted the privacy and security risks it comes with. However, as AI usage spreads across an organization, it becomes increasingly important for the IT apparatus to stop ignoring AI and start actively managing it.

The data suggests shadow AI is a powder keg

ManageEngine—Zoho's IT infrastructure arm—recently conducted a study of 700 IT decision makers and employees at medium-to-large companies in the U.S. and Canada.

According to the study, the vast majority (93%) of employees admitted to sharing company information with at least one unsanctioned AI tool. Even more concerning, many of the respondents admitted to sharing particularly sensitive categories of information: 32% of respondents shared confidential client information; 32% shared non-public product information, and 37% shared internal documents related to financial data or overall business strategy.

Equally concerning is the disconnect between the majority of employees and IT decision makers. While 97% of IT decision makers see

significant risks in shadow AI, employees are on the opposite side of the spectrum. In fact, 91% of employees saw little to no risk in their use of shadow AI, or believed that the rewards outweighed the risks.

Employees cite a variety of valuable use cases for these unsanctioned AI tools: summarizing meeting notes and transcribing calls; ideation and brainstorming; analyzing data and reports; drafting and editing emails; and generating client-facing content. In short, they are turning to shadow AI for the same reasons they turn to any kind of shadow IT: they want to be more productive but don't have authorized tools at their disposal. Although employees believe these shadow AI tools make their jobs easier, without adequate governance in place, such tools expand the attack surface and put sensitive corporate data at risk.



Want to get more insights into the AI landscape?

Learn more about the emerging gap between top-down IT strategy and on-the-ground AI reality across mid-market and enterprise organizations. Download the full report—**The Shadow AI Surge in Enterprises: Insights from the U.S. and Canadian Workplace**.



IT personnel should act as enablers, not solely as gatekeepers

Despite the risks, shadow AI presents an important opportunity: to grow strategic alignment between IT leaders and functional heads across the organization. Shadow AI highlights gaps in the technology stack, surfaces where manual work is ripe for digitization, and helps identify where employees need additional education. By fostering healthy and responsible AI adoption across the organization, IT teams can unlock new processes, efficiencies, and data quality improvements that have the potential to create a real competitive advantage.

Central IT can start by putting all current shadow AI tools through the normal software procurement process, with careful attention paid



to the security posture of each. During the vendor due diligence phase, IT teams should seek out cloud-based AI tools that offer robust security, data control, and compliance measures.

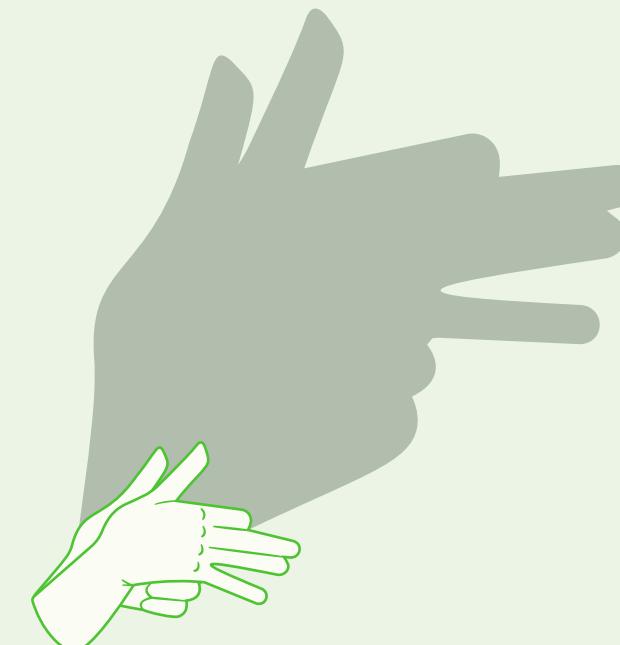
If budgetary and logistical constraints allow, another route is to build proprietary AI solutions internally. Many companies that follow this route opt to build in-house LLMs on top of open-source models enhanced through a retrieval-augmented generation (RAG) system—whereby the model consults vector databases of company- or industry-specific information rather than being trained directly on proprietary data. This both reduces hallucinations and ensures sensitive data remains in the network.

Once tools are officially sanctioned and IT personnel have built out transparent, collaborative, and secure AI ecosystems, employees can continue leveraging AI tools to work more efficiently. However, IT must manage and maintain these systems as the technology matures and AI offerings proliferate. All model outputs should be audited, employees should have role-based access controls, and any unauthorized use of new or untested AI tools should be flagged in real time using a Control Access Security Broker (CASB).

Leveraging the energy around AI

To be sure, shadow AI poses serious security and compliance threats. Left unmanaged, it can expose organizations to risks ranging from data leaks to regulatory violations. But those same unsanctioned uses also point to something important: employees are hungry for AI, and they see the value it can bring to their work. If IT teams can channel that energy into secure, transparent, and responsible use, the risks will be reduced and the benefits will be multiplied.

By building out AI ecosystems that are not only safe but also accessible and empowering, IT personnel can position their organizations for significant competitive advantage. This isn't just about efficiency gains or smarter processes—it's about setting the foundation for how the enterprise will compete in an AI-driven economy. □



ManageEngine Log360: A unified SIEM solution for your SOC

Log360's CASB capabilities allow IT to monitor user activity across the network and flag unauthorized interactions with unsanctioned AI tools in real time to ensure sensitive data stays within company-approved systems.



About ManageEngine

ManageEngine is a division of Zoho Corporation and a leading provider of IT management solutions for organizations across the world. With a powerful, flexible, and AI-powered digital enterprise management platform, we help businesses get their work done from anywhere and everywhere—better, safer, and faster. To learn more, visit www.manageengine.com.

ManageEngine



Tap into Zoho's full software ecosystem to get more value from your existing solutions.



Pipeline and Sales Management

Deliver exceptional customer experiences across every touchpoint with interconnected workflows and centralized data processes. Give teams actionable insights for optimizing customer outreach, predicting business trends, and maximizing the LTV of every customer.

 Zoho CRM	Improve sales performance with fine-grained funnel analysis, robust automations, and a unified platform.	 Zoho SalesIQ	Convert website visitors into paying customers with an integrated live chat solution.
 Zoho Sign	Send documents, collect digital signatures, and track progress across the entire signing process.	 Zoho Bookings	Automate scheduling, customize follow-up notifications, and reduce no-shows.

Interested in the full pipeline and sales management suite? Check out...

 **Zoho CRM Plus** | The customer experience command center



Customer Success

Give support reps access to comprehensive customer history so they can start every conversation on the most productive footing. Guide users through step-by-step solutions with AI-powered chatbots and AR features for faster resolutions.

 Zoho Desk	Deliver contextual customer support across multiple channels from a single interface.	 Zoho Assist	Remotely troubleshoot customer software issues and resolve support requests more quickly.
 Zoho Lens	Give real-time help to customers and field service teams with AR-based assistance.	 Zoho Publish	Manage feedback, monitor reviews, and improve feedback response processes.

Interested in the full customer success suite? Check out...

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Marketing and Customer Engagement

Maximize the ROI of marketing spend with multichannel marketing journeys optimized for every device. Empower teams to act decisively with a comprehensive solution for designing, monitoring, and automating campaigns.

 Zoho Campaigns	Nurture your leads with drag-and-drop email campaigns and track success with fine-grained analytics.	 Zoho Survey	Get a better understanding of your customers for more effective engagement.
 Zoho Backstage	Plan events from end to end with ticketing, marketing tools, and audience engagement.	 Zoho Webinar	Expand your audience with live events, pre-recorded sessions, and interactive engagement features.

Interested in the full marketing and customer engagement suite? Check out...

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Reduce the risks of revenue leakage with end-to-end accounting management. Streamline and automate invoicing, inventory management, and shipping. Improve expense compliance with receipt scanning and automated reporting, and use preset purchase approvals to streamline corporate travel expensing and keep teams within budget.

 Zoho Books	Handle every aspect of accounting, financial reporting, and tax compliance for your business.	 Zoho Expense	Simplify employee expensing with mobile receipt capture, OCR, and one-click reporting.
 Zoho Inventory	Manage purchasing, inventory tracking, warehousing, and drop-shipping across multiple sales channels.	 Zoho Invoice	Build customized invoices that align with your brand, and automate bill delivery based on project status.

Interested in the full accounting and back-office suite? Check out...

 **Zoho Finance Plus** | A streamlined solution for back-office operations



PRODUCTIVITY AND COLLABORATION

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 Zoho Mail	Scale your email system with advanced encryption, message recovery, and fine-grained security policies.	 Zoho Projects	Plan, track, and collaborate on projects while capturing detailed "time on task" data.
 Zoho WorkDrive	Simplify access management by storing, organizing, and managing team files in a single location.	 Zoho Cliq	Drive open, cross-departmental conversation while keeping your corporate communication secure.

Interested in the full productivity and collaboration suite? Check out...

 **Zoho Workplace** | The gateway to productive teams and seamless collaboration

**TALENT MANAGEMENT**

A holistic solution for managing the employee lifecycle from candidate screening and onboarding to performance reviews and exit interviews. Reduce manual data processes with self-service employee portals, custom workflows, and automations.

 Zoho Recruit	Post ads, source candidates, and automate a comprehensive candidate experience.	 Zoho People	Deliver a smoother and more positive employee experience from training to offboarding.
 Zoho Vault	Manage team and personal passwords to safeguard your business accounts from cyber attacks and insider threats.	 Zoho Learn	Build your internal KBS and employee training programs with an integrated content management platform.

Interested in the full talent management suite? Check out...

 **Zoho People Plus** | Integrated HR for seamless employee experiences

**IT AND SYSTEM MANAGEMENT**

Build, manage, and refine custom low-code business apps. Give central IT teams real-time monitoring and performance metrics for servers, networks, websites, and applications, and empower them to optimize the productivity of your distributed workforce.

 Zoho Creator	Design, build, and deploy custom low-code applications for your organization's unique business needs.	 Zoho Catalyst	Build, test, host, deploy, and optimize production-ready applications with a full-stack cloud development platform.
 Mobile Device Manager Plus	Ensure devices remain secure and compliant with mobile device management.	 Zoho Directory	Manage identity authentication and user access for connected apps.

Interested in the full IT and system management suite? Check out...

 **Zoho IT Management** | Simple and secure IT management from the cloud

**Take your business intelligence to the next level**

Go beyond the native reporting available inside your key business systems with Zoho Analytics. Combine data from across the Zoho ecosystem to create powerful, multi-product, multi-departmental insights.

Zoho One: The operating system for business

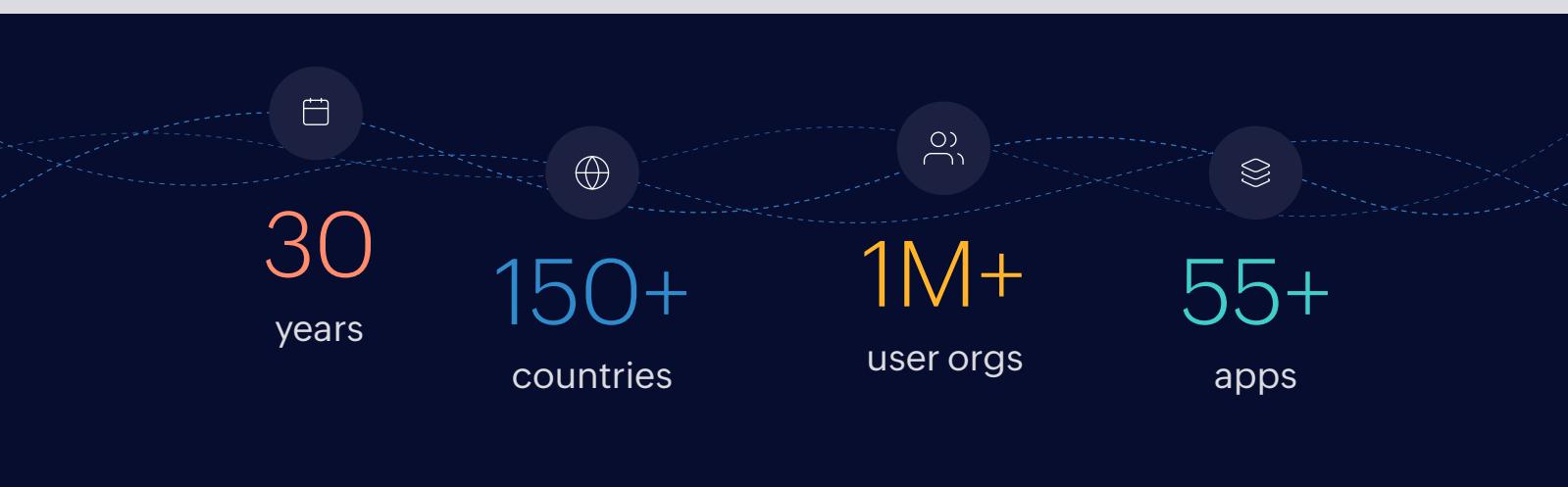
Bring all of your people and processes together with Zoho's full suite of tightly integrated applications, all with a single subscription.



ABOUT ZOHO

Over the last 30 years, Zoho has built a world-class software portfolio spanning sales, marketing, customer service, finance, HR, collaboration, business analytics, and custom development. Zoho's unified platform—built on a profoundly composable architecture—is designed to deliver both powerful out-of-the-box capabilities and easy customization. Our continuous investment in R&D allows us to deliver enterprise-grade scalability, security, and AI innovation, without the sticker shock of traditional enterprise vendors.

Privately held and consistently profitable, Zoho answers only to our customers. Our commitment to long-term value over short-term profits ensures that we stay at the forefront of rapidly changing technology while remaining a responsible, human-centric technology partner for our customers worldwide.



ZOHO'S BUSINESS PHILOSOPHY

- Deliver simple but sophisticated technology.
- Offer unbeatable value to every customer.
- Conduct business in a way that makes us easy to work with.



Zoho's Global Headquarters in Chennai, India

Thank you for choosing Zoho as your technology partner.

For nearly three decades, we've helped power millions of businesses to success by delivering scalable and flexible software solutions.

Our relentless commitment to our customers has helped us grow from a single-product company into an organization with an ecosystem of 55+ applications, 1,500+ marketplace extensions, and 120 million users around the world.



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