» Paper

Google Cloud Partner | rappit

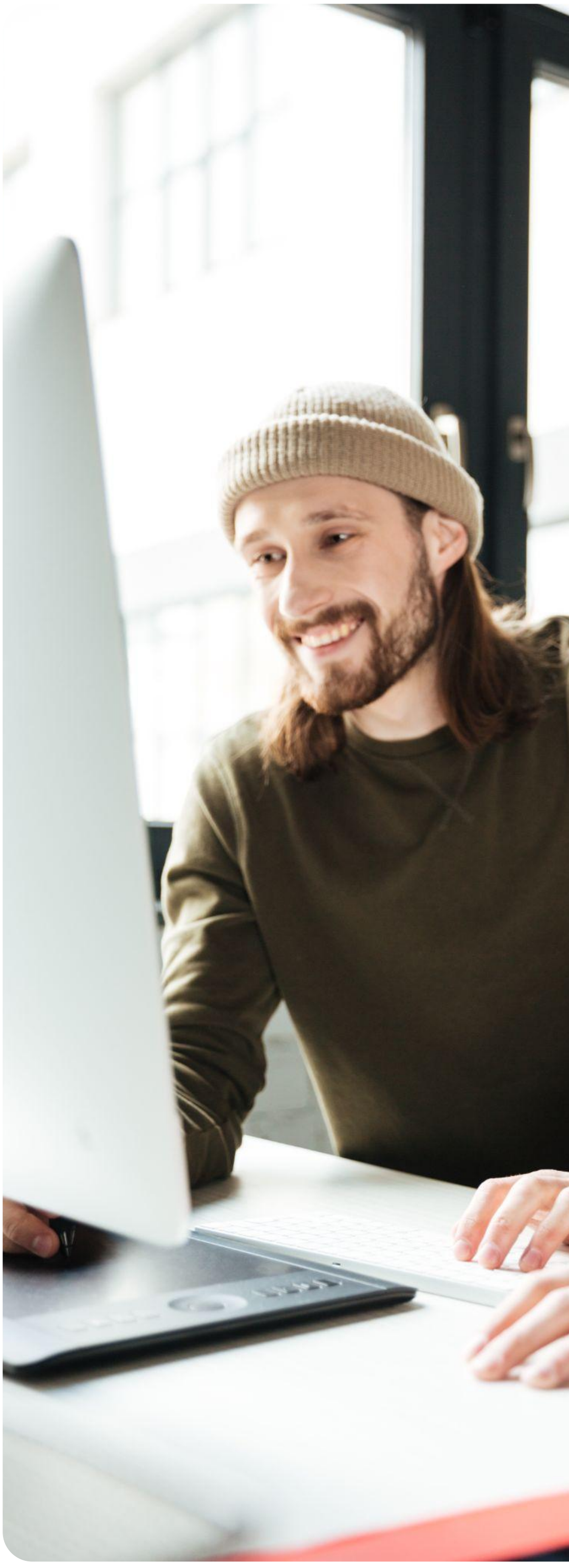
Modernize or marginalize: the cold truth about AI, legacy systems, and your future

How old business systems kill your AI, and what you can do about it

The AI promise versus the reality you are facing

Over the past couple of years, the world stood amazed at the capabilities and possibilities unleashed by generative and agentic Artificial Intelligence (AI). This wave of innovation is profoundly impacting business operations, technology architectures, and customer expectations. AI is no longer a futuristic concept, it's the engine driving today's most successful enterprises, from hyper-personalized retail experiences to optimized logistics operations. As noted in a McKinsey report on the state of AI, those who fail to adopt AI will fall behind competitors, miss market opportunities, and waste resources.

However, for many organizations, AI ambitions hit a wall... their legacy systems. These outdated systems are burdened with technical debt, making it nearly impossible to fully harness AI's potential. A recent IBM study reveals the significant gap between ambition and reality. While 83% of executives believe modernizing their applications and data is crucial to business strategy, only 27% say they've actually modernized the necessary workflows, including the related data and systems. Another survey of 750 IT decision-makers across the United States, United Kingdom, and Germany found that maintenance costs, impacts on the data stack, and AI ambitions are pushing companies to modernize their legacy fast. To deliver on the promise of AI and outperform your peers, you must make your enterprise software future-ready, and that begins with confronting your old business systems.

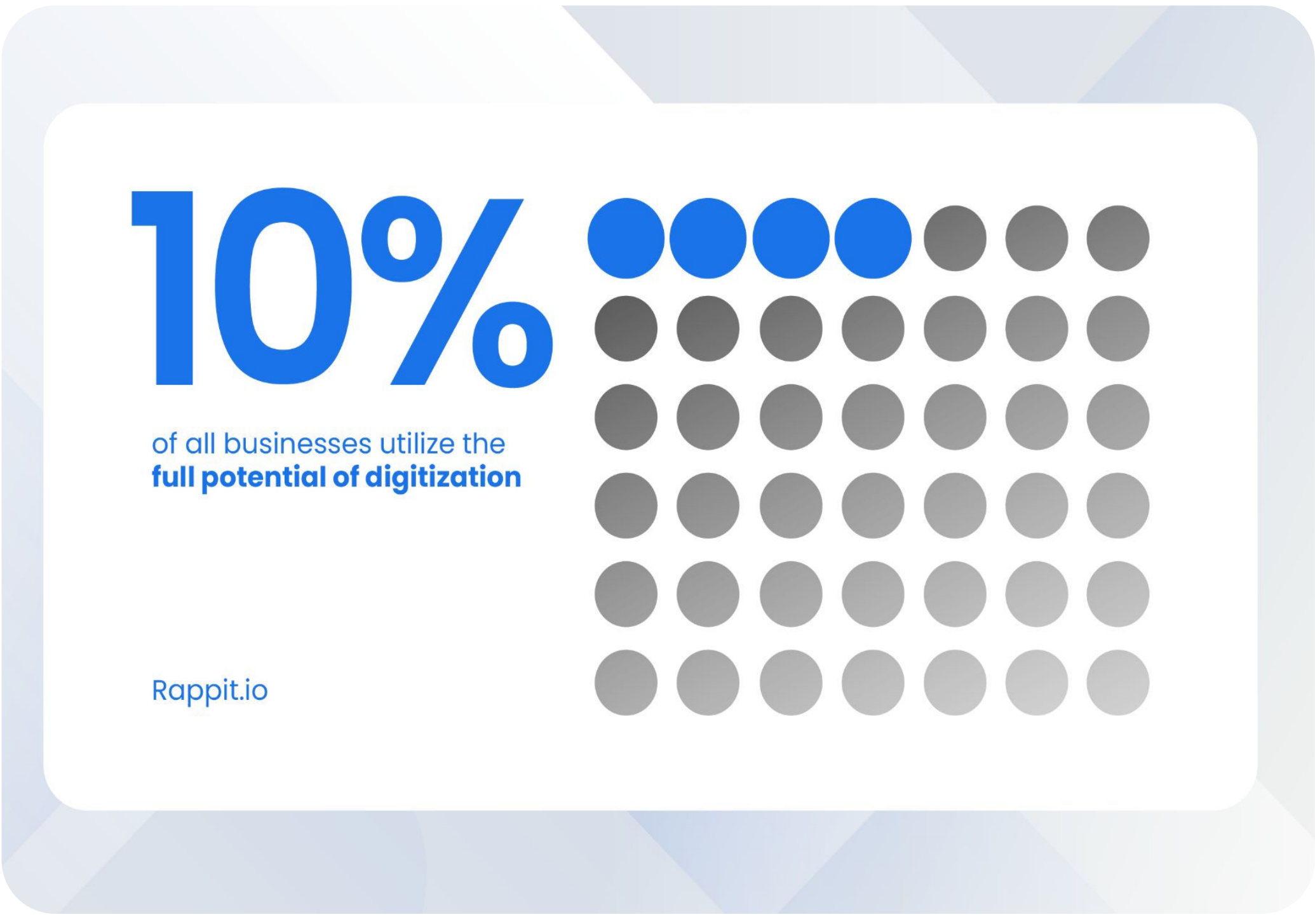


How old business systems kill your AI

Legacy systems, often developed decades ago, form the technical backbone of companies in almost every sector. Research by McKinsey found that 70% of the software powering Fortune 500 companies was developed 20 years ago. These outdated systems, once just a drag on performance, are now actively blocking the effective use of generative AI. Here's why these old systems kill your AI potential:

- **Data silos & fragmentation**: GenAI's power starts with your data's strength. Ever wondered how to make intelligent, AI-powered applications ineffective and "stupid"? Garbage in is still garbage out. However, critical customer, product, and operational data often resides in various on-premise legacy systems. Whereas AI models cannot function effectively without accessible, unified data. This results in inaccurate predictions and flawed insights. In the end, GenAI is only as good as the data it learns from. Its effectiveness depends on the (freshness of) data it processes. This is also emphasized in recent research by BCG, which found that 50% of the companies surveyed believe legacy IT slows down their AI efforts by limiting scaling, reusability, and data availability. The global research and advisory firm Gartner even predicts that half of all enterprise GenAI projects will fail by 2026, partly due to poor data quality.
- **Integration nightmares:** Legacy systems often lack modern APIs, making it incredibly difficult to connect them to AI models or AI-powered applications. This prevents real-time data flow to AI, limits AI's ability to trigger actions in core systems, and restricts the scope of AI initiatives. Without real-time data, AI is like a GPS running on last week's traffic updates, it steers you straight into a traffic jam. Legacy technology is putting emerging technology ambitions at risk as well. In a recent survey, nearly one-third of respondents said up to 25% of their legacy systems are unable to support AI tools and workloads.

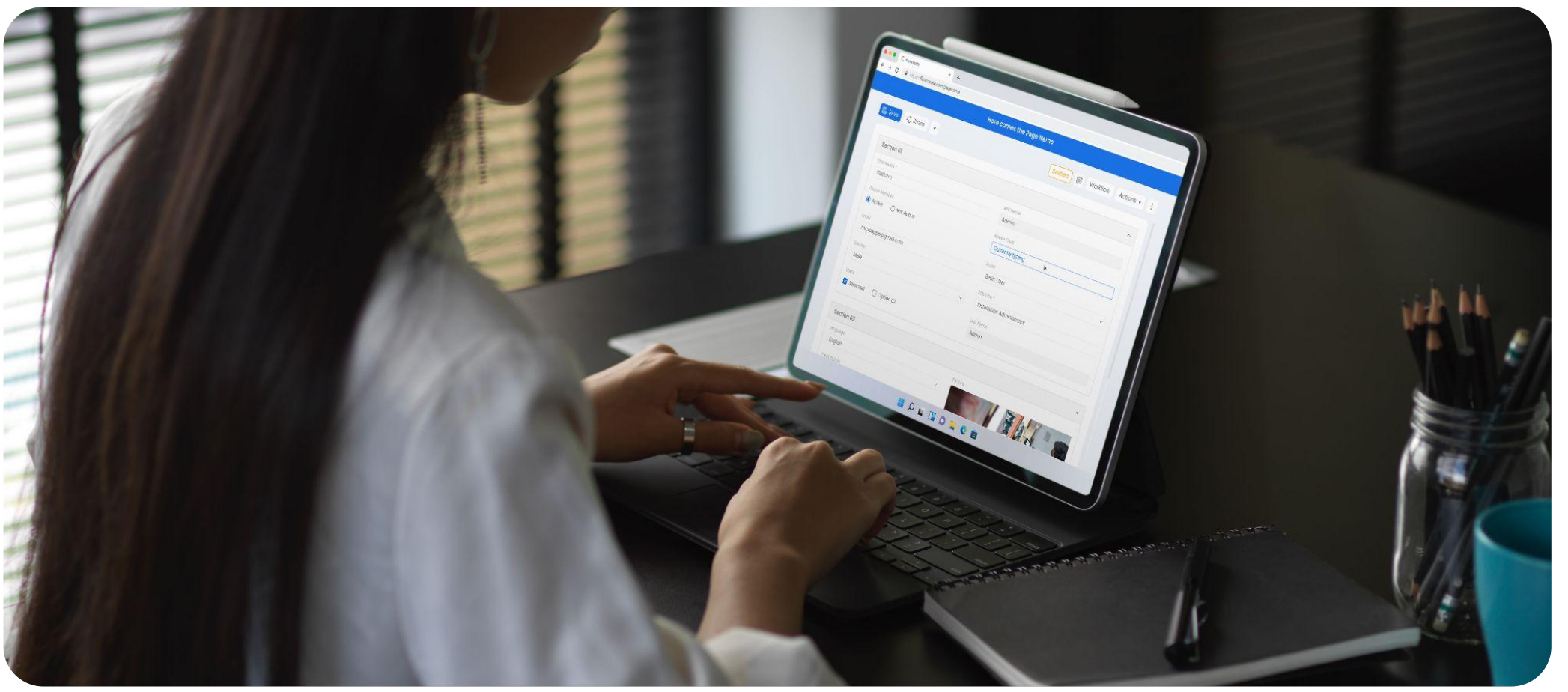
- **Scalability & processing limitations**: A significant portion of enterprise systems are still on-premise, running on software developed long ago. These systems cannot handle the volume, velocity, or variety of data required for AI processing. A Recent research by NTT DATA shows that while a majority of organizations had already invested in GenAI, 90% of them say legacy infrastructure is a roadblock to using GenAI effectively. Furthermore, McKinsey research indicates that only 10% of organizations believe they have achieved the full value of what the Cloud has to offer due to the focus on IT cost savings, impacting their ability to compete in the current AI era.
- **Talent drain & focus shift**: Maintaining legacy systems consumes valuable IT talent and budget, diverting resources from AI-powered solutions development and implementation. Research by McKinsey found that companies with high technical debt spend up to 40% of their IT budgets on maintenance rather than on value-generating activities like AI.
- **Security & compliance risks**: Legacy systems often contain known security vulnerabilities and struggle to meet modern data privacy regulations. Integrating AI with insecure legacy systems introduces significant risk. Experts even warn of "data poisoning" attacks, where compromised legacy systems can be used to inject malicious data into an AI's training pipeline, corrupting the model (“The Hidden Risk: How Unmodernized Legacy Systems Threaten Your AI Security").



Building a future-ready foundation

Innovative AI technology is ready, but your data likely isn't. Even the most advanced AI applications depend on the quality of their data inputs. Fragmented, siloed, or biased data often doom projects before they begin. Start by investing in:

- **Data cleansing and preparation for AI readiness**: legacy systems are often repositories of "dirty" data that is inconsistent, inaccurate, incomplete, or duplicated. For AI models to learn effectively and produce reliable outputs, this data must undergo extensive cleansing and preparation. Data modernization directly addresses this by identifying missing data, standardizing formats, removing duplicates, correcting errors, and structuring data for analysis. For example, imagine customer data stored across multiple systems, with the same person listed under different spellings (Stephen King, Steven K., Stephan King). Without proper cleansing, an AI trying to personalize customer experiences would fail to identify unique individuals, leading to irrelevant offers. These preparation activities are foundational to AI readiness, directly improving model accuracy and reducing the risk of biased or flawed outputs.
- **Unified data architectures**: to overcome data silos and provide a better view of data for AI, organizations should modernize their data architectures by implementing data lakes and data warehouses. Data warehouses provide a robust foundation for analytical AI, while data lakes are critical infrastructure for training, fine-tuning, and grounding large language models (LLMs). These unified architectures reduce data redundancy, improve quality, and enable easy data sharing across business domains, providing a scalable foundation for advanced and differentiating AI use cases.



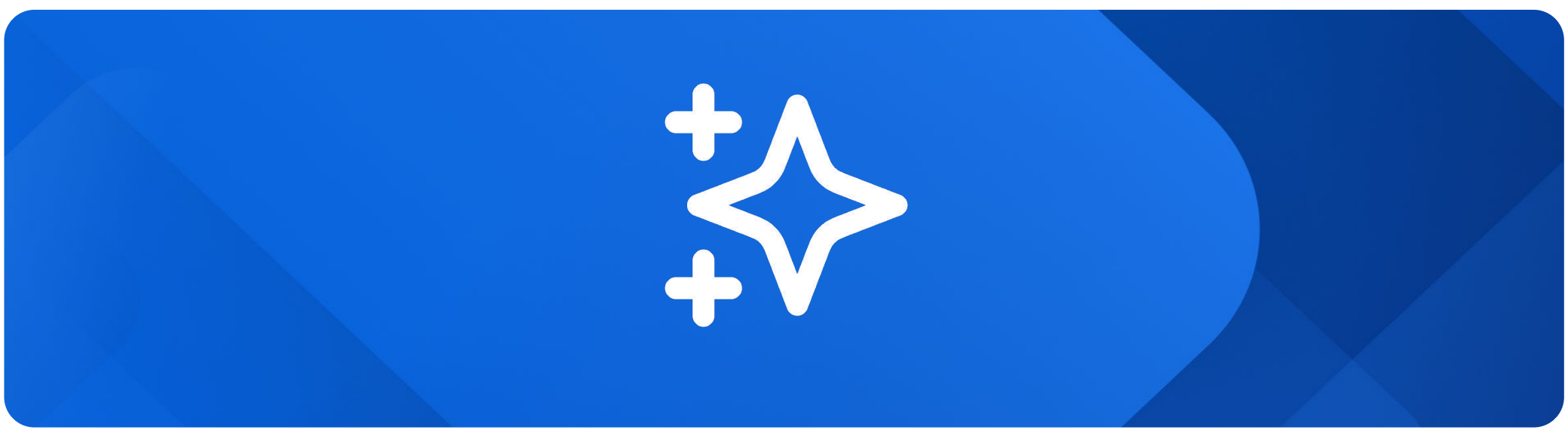
- **Move to the cloud for scalability and performance**: Bridging the gap between legacy systems and AI ambitions involves strategic choices, as there isn't a one-size-fits-all solution. It involves strategic choices like re-platforming applications to cloud infrastructure for enhanced scalability, re-architecting them into modular microservices for greater agility and easier AI integration, or a complete rebuilding of the application to create an entirely new, AI-ready system. The latter is where our customers are seeing a significant positive business impact. Moving to cloud infrastructure and transforming your legacy enterprise business applications into modern, cloud-native solutions provides several advantages:
    - Enhanced scalability and performance: Cloud platforms offer the scalability, flexibility, and performance required to handle the massive data volumes and demands of AI. While cloud-native applications enable on-demand scalability, allowing systems to handle sudden spikes in workloads and economic shifts efficiently. However, on-premise legacy systems with fixed capacity can't keep up.
    - Cost efficiency: Migrating to cloud-native platforms reduces expenses associated with maintaining and upgrading on-premise hardware and software licenses.
    - Improved data management: Cloud migration tools automate and simplify the movement of data from on-premises systems to cloud platforms.
    - Foundation for AI services: Cloud platforms like Google Cloud offer integrated AI and ML services, making it easier to build, train, and deploy AI models directly on modernized data infrastructure. By transitioning to the cloud, organizations can overcome the limitations of legacy infrastructure, creating a robust, flexible, and cost-effective foundation for their AI initiatives.

Your accelerated path to modernization with Rappit

Many companies know that rebuilding their custom enterprise applications is essential to outperform their peers and unlock the promise of AI. Yet, they struggle to turn that knowledge into action. At Rappit, we understand the complexities of legacy systems and the demands and potential of AI. Here's how Rappit helps:

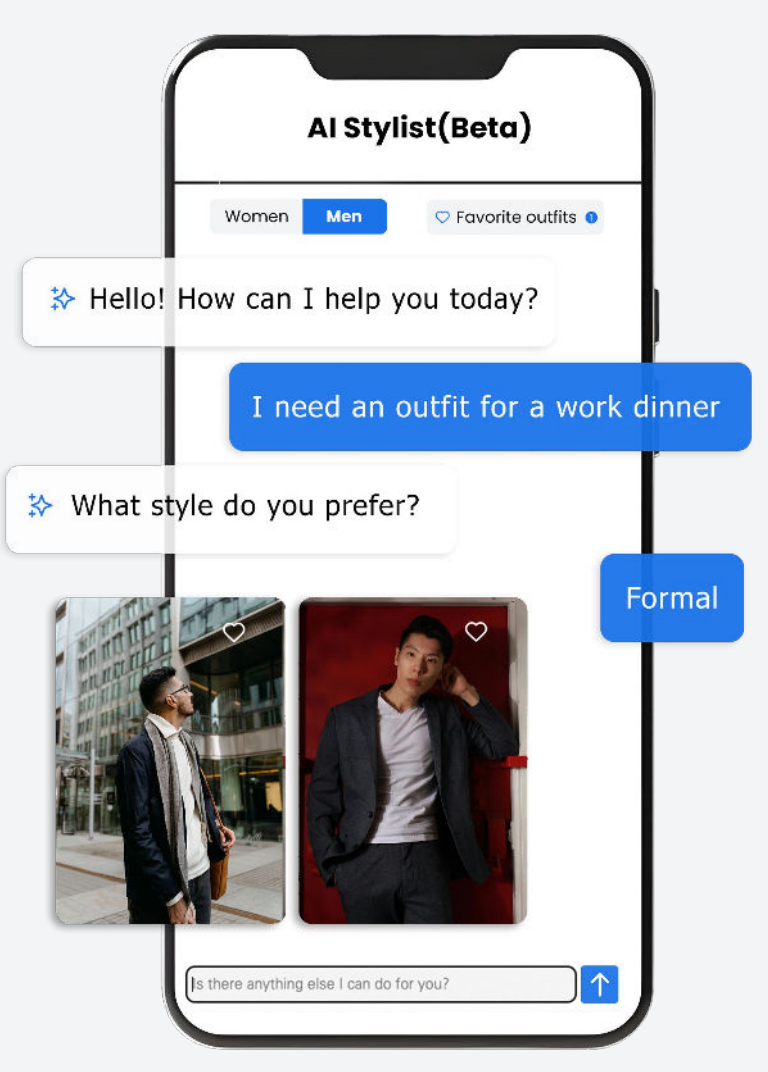
- **Get future-ready:** modernize and build custom enterprise applications fit to your unique processes with our AI-led application platform:
  - AI-led legacy modernization: AI can also be part of the solution. Rappit provides innovative capabilities that intelligently transform old application assets (e.g., SQL files, PDFs, application screenshots) into a jumpstart for a modern application.
  - Cloud-native applications: our platform delivers applications that are built on a modern, cloud-native, microservices architecture, providing the foundation that AI demands.
  - Application generation: quickly build new, AI-infused applications, allowing you to innovate at the speed of your business.
- **Get AI-ready**: build the data foundation with a data lake or data warehouse, deliver data cleansing, and build robust data pipelines to power GenAI applications and Agentic workflows with Rappit's data & AI services. Additionally, utilize Rappit Undoc for a customized intelligent document processing solution to extract, cleanse, and transform unstructured data from documents, providing your AI projects with high-quality data.
- **Get AI-in production**: identify use cases and focus on the opportunity that delivers the most value fast with Rappit's GenAI discovery workshop and GenAI solution development services.

Beyond the tooling, technology and services, our team brings deep domain knowledge and proven expertise in guiding advanced enterprise modernization journeys.



The case of Omoda

Omoda, the leading fashion retailer in the Netherlands, is revolutionizing the online shopping experience with its new AI-Stylist, a generative AI-powered assistant that moves beyond simple product listings to offer personalized outfit recommendations. Long before the current retail industry push to apply AI, Omoda demonstrated forward-thinking by proactively addressing its legacy core system. The company partnered with Rappit to rebuild its custom core system to create a foundation for future growth and moved to a scalable data infrastructure on Google Cloud. With the robust data pipelines built by Rappit, Omoda was able to integrate marketing and logistics data from its warehouse management system and order management system. This unified data foundation allowed the company to predict customer behavior better and deliver highly personalized recommendations with the AI-powered assistant developed in collaboration with Rappit.



Don't let legacy limit your future

It’s "now or never" for legacy modernization. AI has raised the stakes; legacy software modernization isn't just an IT project; it's a strategic investment in your AI-powered future. If you spend the next five years putting a modern foundation in place to realize and scale AI-powered applications, you will be too late. Your competitors will do better.

Hence, the question is not *if* you'll successfully adopt and scale AI in your organization, but *when*, and whether your systems will be ready to support it. Don't let your legacy systems hold back your business potential. That doesn't necessarily mean you need to modernize your entire infrastructure and systems overnight. What matters is forward movement. Taking significant steps fast to secure AI-readiness of your enterprise business applications, and future-readiness of your business.

Start your legacy system modernization journey today!

Book a Discovery call.

Rappit is a leading independent software provider. Building on a proud heritage, we are experts in developing Cloud based Enterprise Software modernization solutions, that include Custom Made Applications, Data Analytics, Artificial Intelligence and Machine Learning. Based on the Rappit Platform, consisting of amongst others Rappit Developer and Rappit Composer, we enable our customers to create unique business value.

Rappit serves a customer base consisting of multinationals and medium-sized organizations, mainly in the Manufacturing, Supply Chain & Logistics, and Retail & Wholesale industries. Our Rappit Platform also supports ISVs and System Integrators in building world-class applications.

Rappit headquarters

Vanenburgerallee 7
3882 RH Putten
The Netherlands

info@rappit.io