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TOP TEN PREDICTIONS FOR 2024

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THE BOTTOM LINE

As we approach another year filled with uncertainty, Nucleus presents its top 10 forecasts for 2024. End-user organizations are increasingly focused on determining which components of their technology infrastructure truly provide value. Consequently, vendors are striving to anticipate customer needs, minimize churn rates, and fortifying their customer base in anticipation of economic instability. AI and Healthcare have become the top topics of the tech world, as vendors look to expand offerings in both spaces, trying to differentiate themselves in a crowded market.

THE CONTINUED RISE OF RAG FOR LLMS APPLICATIONS

Organizations initially gravitated towards fine-tuning foundational LLM models for specialized applications. However, there is a shifting consensus towards the superiority of Retrieval-Augmented Generation (RAG) over such methods. RAG offers an improvement to the output quality of LLMs by anchoring the model's response using external knowledge sources. This supplements the LLM's inherent data representation. LLMs are known for the problem of hallucination: producing outputs that are not grounded in factual data. Integrating RAG with LLMs for question-answering tasks addresses this concern. By rooting the LLM in external and verifiable data, it curtails the chance for the model to derive information solely from its parameters. This reduces risks associated with data leakage or generation of inaccurate or misleading data. Other advantages of RAG include that the model remains updated with current, reliable information and that users can trace the model's sources, ensuring the authenticity of its claims. Contrastingly, fine-tuning lacks these advantages, is prone to hallucination, and often demands more extensive resources.

INCREASED PARTNERSHIPS BETWEEN QUANTUM COMPUTING VENDORS AND SUPPLY CHAIN VENDORS

The growth of e-commerce and increasing competition in logistics will drive rapid adoption of autonomous technologies across the industry in 2024. Warehouse robotics, driverless delivery vehicles, and autonomous freight shipping will become essential for retailers and logistics providers to meet unrelenting consumer demand for short delivery times. By automating tasks ranging from inventory picking and packing to last-mile delivery, autonomous solutions enable 24/7 operation, optimize workflows, and reduce costs through improved productivity and fewer errors. With labor shortages plaguing the logistics sector, autonomous technologies are necessary to satisfy customer expectations and keep pace with rivals. Warehouse automation enables retailers to exponentially scale fulfillment capabilities without expanding headcount, autonomous last-mile delivery vehicles transcend driver availability constraints by offering consumers precise delivery windows, and autonomous shipping empowers ports to handle surging container volumes with minimal human resources. Ultimately, the value derived from autonomous logistics comes from increased speed and accuracy, reduced overhead, and the ability to rapidly scale operations in an on-demand climate.

INCREASED ADOPTION OF TINYML IN IIOT INITIATIVES

To stay competitive, many industrial organizations are channeling efforts into IIoT implementations, aiming for broader device deployment across their operational landscapes. One key technology poised to underpin this trend is TinyML. Given its tailored design to function on devices with minimal resources, like microcontrollers or single-board computers, TinyML is forecasted to gain considerable traction in the upcoming year. Its ability to work in environments where devices are situated in remote or hard-to-reach locations is pivotal. This ensures the devices remain operational over prolonged durations without regular interventions. Furthermore, the cost-effectiveness of devices compatible with TinyML algorithms amplifies their appeal. Their affordability and accessibility mean organizations can deploy them extensively without significant financial strain, promoting broader and more efficient IIoT implementations.

AI ADOPTION DRIVES INCREASED DATA MANAGEMENT AND INTEGRATION INVESTMENT

This past year has been hallmarked by the emergence and popularization of AI use cases, especially generative applications. These large parameter models have delivered impressive results for a wide variety of applications but encounter limitations when applied to very specific subject areas. Organizations across industries see data as a path to alleviate these limitations and deliver better results, specifically vast quantities of connected data related to the organization's domain. As a result, integration technologies and connected data platforms are seeing a surge of popularity and emerging demand. Organizations who fail to adopt technology required to create this connected data fabric are having a hard time deploying successful AI and data projects and see limited financial returns on those initiatives. For this reason, Nucleus expects to see a surge in adoption for data management technologies over 2024, especially those which enable unified data analysis such as Databricks and Snowflake.

HEALTHCARE BECOMES HR TECH'S NEW DARLING

While some vendors are already leading the charge, the time to capitalize on the fading rigidity of the healthcare industry's approach to HR technology is now. Healthcare's strict compliance guidelines, skill and certification requirements, and complex scheduling needs make it a prime candidate for dedicated, vertical solutions. As more of these organizations move away from homegrown on-premises or legacy solutions, vendors that offer pre-configured functionality with strong compliance measures and quick implementation times will be best suited to capture net new business in 2024 and beyond. This addressable market includes a sizeable population of smaller healthcare systems and providers.

THE GROWING AI CHASM

In the ever-evolving world of sales, AI stands poised to redefine the hierarchy of the profession and stratify the sales workforce. Envision a sales landscape where AI tools predict client behaviors and automate tasks, leaving no room for the merely average sales rep. AI will take over the middle ground of BDRs, and accentuate the chasm being built between knowledge workers and everyone else. Adaptable employees who embrace these tools will rise to the top, while the less agile, clinging to outdated methods, will find themselves pushed to obscurity. Much like the CRM revolution before, AI isn't a threat but an opportunity. For the modern sales rep, it's not just about sales effectiveness anymore, but about mastering and leveraging these tools to sell more efficiently. The choice is simple: adapt or be left in the digital dust.

VC WANTS YOUR AI

Venture Capital funding hasn't dried up, but it will become more exclusive. Nucleus expects funding to be limited to vendors investing in cutting-edge capabilities such as Generative AI. As such, the Gen AI boom has no end in sight, and R&D efforts must focus on the technology to ensure startup survival, at least for the time being. VC firms are a fickle friend, and while we see Gen AI being the hot technology in the first half of 2024, vendors should take note of emerging trends that branch off of the AI craze. The space will quickly become undifferentiated in core SaaS areas, so anything a vendor can do to set themselves apart from the pack will be crucial to remaining relevant as market consolidation continues.

THE NO-CODE DIFFERENTIATION

No/Low-code extensibility and application development will be a key platform evaluation criteria and competitive differentiator for both customers and enterprise platform vendors in 2024. The vast majority of enterprise platform vendors already invest in and market the extensibility of their platforms. Vendors want to enable customers to manage platform extensibility on their own with no/low-code tooling. This usually takes the form of lightweight form design, workflow automation, and RPA tools, but other vendors have taken a step to develop full-fledged Low-Code Application Development Platforms (LCAP). These tools provide citizen and professional developers with the tools to design, develop, publish, and, in select instances, monetize applications. Extensibility and LCAP solutions are table stakes now and vendors who lack such offerings will be playing catchup in 2024 as customers prioritize centralizing their tech stack under a single platform to maximize technology ROI.

CONSOLIDATION ACROSS CX.

Nucleus anticipates a marked shift in the CX market, with organizations increasingly moving towards consolidating software licenses. Aligning with observed market trends, a demand for cost-effective, feature-rich solutions, and an emphasis on broader technology adoption, this consolidation is poised to lead to significant reductions in total cost of ownership (TCO) while amplifying the "stickiness" of solutions. In addition, Nucleus expects an uptick in demand for vendors that offer single-tier pricing options. This shift in pricing dynamics and user access to CRM-focused technology will not only simplify decision-making for organizations, but also foster a sense of transparency and trust between vendors and their customers. As the CX market matures, it's evident that value-driven solutions, transparency, and strategic consolidation will be at the forefront of organizational priorities into 2024.

ESG REGULATORY OUTLOOK

The SEC is likely to hand down ESG reporting regulations for publicly traded companies, driving technology adoption among Corporate Performance Management (CPM) and Supply Chain Planning (SCP) solutions, as well as ESG tracking and reporting tools. Nucleus believes the reporting requirements will necessitate the granular tracking and reporting of Scope 1 emissions as well as disclaimer statements for Scope 2 and Scope 3 emissions. Currently, most ESG information is manually entered and tracked in Excel spreadsheets.

Looming regulations will place greater pressure for organizations to report on emissions and supplier due diligence efficiently and accurately. As such, Nucleus expects companies to turn to technology to streamline data tracking, consolidation, and reporting. Companies will also need to build connectors with their trading partners to peg emissions directly to the corresponding activity, work order, or line item. Only with ESG visibility can organizations proactively implement sustainability initiatives and set realistic goals and objectives.