



## **Predictions for 2023**

**RFG Perspective:** The outlook for 2023 is one of fear, uncertainty, and depressing news. While there are some bright spots, business and governments are planning on continued high inflation, high interest rates, and a recession for part of 2023. The war in Ukraine will continue until both sides feel a diplomatic solution – i.e., compromise – is better than waging war. Additionally, we are now in the age of scarcity, affecting data center systems and components, which will last at least through the end of the decade if not longer.

Traditional assumptions – such as unlimited growth, low-cost energy, uninterruptible power systems (UPS), unconstrained water supplies, rapid access to new equipment, just-in-time delivery, and a disposable economy – no longer applies. The new paradigm entails limited growth, energy constraints (at higher prices), power shortages and outages, water supply constraints, supply chain constraints, labor shortages, and the need for a reusable, circular economy. All this, in turn, means that businesses will need to modify their business plans to address efficiency and sustainability. “Being Green” is no longer just an abstract commitment: it’s a necessity.

The structural impacts of the age of scarcity and the digitalization of corporate business models add to the overall distress and uncertainty, as companies and individuals strive to determine how to survive and prosper in the new world environment. To address these challenges, business and IT executives must re-examine their business models, culture, people, processes and supply chains – and all of the impacts caused by external pressures.

Executives will need to resolve staffing and talent challenges through collaborative, interactive, and personalized approaches with the goal of diminishing employee turnover and addressing skills limitations. There will be a need for process changes that leverage AI, analytics, IoT technology and remote sensing, mass personalization and mobility. These technologies will connect employees throughout the organization wherever they may be at any moment in time. The same approach will be used to enhance an organization’s connectivity with business partners, customers, and supply chains.

In conjunction with this, IT executives must address the data integrity, privacy and service level concerns that impact business outcomes, productivity, revenues and cybersecurity – all with the goal of building more confidence in IT and the organization as a whole.

To achieve these objectives, IT executives must increase their focus on analytics, automation, componentization, containerization, AI and machine learning (ML), environmental and operational efficiencies, orchestration, privacy, and security. By focusing on these priorities, IT will be able to deliver more and better offerings faster – and at a lower cost – while protecting the business from cybersecurity attacks and vulnerabilities.

The year 2022 proved to be a tougher year than most had predicted. The war in Ukraine and the rise in food and energy prices and interest rates, along with shortages in labor and supply chain delays caused business executives and government agencies to pivot from



their original plans to cope with these temporary changes. However, as we move into 2023, people around the world are realizing that these are not temporary challenges at all -- but, rather, they will be with us for an extended period.

In the United States, enterprises are gearing for a constrained first half of the year (1H23) with the hope that once inflation is “conquered” and any future recession ends, there will be a period of growth. Outside of the U.S., there is a similar hope; however, there is recognition that they will have further to go than the U.S. And there is always the prospect that tensions and disruptions could arise in hotspots around the world (e.g., Ukraine and Taiwan among them), bringing substantial negative impacts to global commerce.

On the technology side of business, cybersecurity attacks will continue unabated, forcing businesses and governments to re-examine their business culture, their processes, and the degree to which they are safeguarding privacy and security. All of this means that executives must invest in transforming their business in the evolving work-from-anywhere environment that began in the COVID-19 pandemic. It will be a tall order: executives must drive process improvements to remain competitive, contain costs, enhance compliance, minimize risks, ensure privacy, and improve resource utilization – all at once.

## **Major Trends for 2023**

**Below are six areas that we expect will be focal points in 2023:**

**Efficiency and Sustainability** – More than 50 percent of F500 companies have made commitments to reduce greenhouse gases, with the aim of achieving net-zero emissions by the year 2050 or sooner. Yet fewer than 20 percent of CIOs and IT teams have been asked to contribute to these efforts, industry surveys reveal. This will change in 2023 as executives realize that they will be expected to deliver real results without counting on “greenwashing” – the practice of making the company look more environmentally friendly than it really is – to realize their goals. Yet few IT executives know where to begin to implement this process or what the key metrics should be.

Regarding the new age of scarcity, there is a scarcity of power and/or water in many locations around the world. That situation is driving up the costs of carbon offsets and fossil fuels – and in some areas, those costs are expected to be 10X higher than originally expected. Not only will enterprises need to reduce their carbon emissions by 2030, but they will also need to find ways to become more efficient and more sustainable. The last time that enterprises were incented to improve data-center efficiencies was about a decade ago – and, sadly, much of that institutional knowledge is now lost through attrition, retirement, and downsizing of IT staff.

While the push for efficiency and sustainability is optional in most countries, the EU has mandated a “fit for 55” package. The new year, 2023, is not likely to be a year of progress towards the overall EU goal of energy reduction of 32.5 percent by 2030 over 2007 levels.



Rather, due to energy-supply issues related to coal and natural gas for heating, we are likely to see a regression. In some EU countries, IT data centers account for three percent or more of overall energy usage. The good news in this – in the EU and elsewhere – is that there are significant actions for IT and facility executives to take that can reduce their carbon emissions and power usage by as much as 50 percent compared with current levels. However, it will require cooperation between multiple business units, all working together to understand their current baseline metrics, to create a fundable business case that can achieve a corporate-wide result for improved efficiencies and sustainability purposes.

**Business Transformation Journey** – The shift to the digital economy combined with the new work-from-anywhere/anytime environment and the scarcity of resources continues to force organizational business transformations. This is likely to be the norm going forward. Business processes are, indeed, being reshaped: one new option for change is that business campuses are being re-evaluated for new uses as alternative worksites – or they are being shed altogether.

Work processes will be in flux in 2023 as companies attempt to interact via a standard set of social media and software tools. However, security, privacy, and data-governance guardrails must be constructed to minimize the exposures created by the evolving work environment. The inevitable conclusion is this: IT executives must work more closely with line of business (LoB) executives to ensure that funds and resources are being allocated more effectively than they are today. Alignment requires a three- to five-year outlook.

Software that ensures the new functionality will require automated oversight, usually by deploying AI/ML software for event discovery and rapid identification of IT issues. Firms will automate more of their business processes and operations, perform process re-engineering, and re-evaluate supply chains and staffing. Lastly, companies will tackle the online customer experience because users prefer working with enterprises that simplify the process of doing business with them, making interactions more natural.

**Cloud/Edge/IoT** –As always, the network/server/storage topography continues to evolve. Enterprises will be more selective in their choices of where to place applications and data – with the aim of having the work being executed as close to the physical work site as possible. The secondary location parameters will be complexity, “fit for purpose” and management. One result of this will be a slowdown of applications and data moving to public clouds. These considerations will make it difficult for IT executives and cloud architects to construct application and data architectures that can survive long-term without sparking major outages or failures. As last year, 2023 will be the year for enterprises to address their cloud management and BC/DR requirements, as the frequency of outages by cloud service providers (CSPs) is forcing business and IT executives to recognize that clouds are not always available and that CSPs do not have all the availability answers – yet.

New methods of abstraction, automation, software orchestration, and portability are emerging to address these growing issues. But many companies still find themselves locked



into legacy on-premises and cloud solutions with “islands of data” that remain unconnected to other key systems, including on-prem and off-prem systems. Having these data islands, or data silos, makes the productive use of business analytics more difficult for IT and for the business it supports. Cloud affinity and lack of portability means that architects must determine the best target Cloud/Edge solutions for each workload – and do so early in the design/development (DevOps) cycle. While more workload migrations to clouds, Edge, and IoT are planned for 2023, the business impacts and business results will likely be mixed unless the design goals are clear – and the impact of applying these technologies is understood. In short, determining the true impact of these technologies on business development will depend on addressing the full spectrum of cross-organizational issues within their business environment.

**Cybersecurity and Regulatory Compliance** – The number, sophistication, and variety of cyberattacks is expected to increase again in 2023. The use of analytics, along with artificial intelligence (AI) and machine learning (ML) software, will improve real-time analysis and reduce the risks. But RFG believes that cybersecurity breaches will remain a major challenge that IT executives must address in 2023 for the following reasons:

- The security guardrails are still too lax to prevent security lapses.
- Human error (e.g., via software design, customer service, and user error) creates security gaps that can be exploited in cyber-attacks and ransomware.
- Third-party software contains vulnerabilities that could cause inaccurate or unexpected damage to the business.
- State actors – and non-state actors – will aggressively push to find the weakest links in an organization’s security and data-protection software.
- Ransomware attacks have proven to be a successful business – for the attackers, gaining them substantial – and unearned – funds.

RFG expects that the year 2023 will produce more cybersecurity issues, with the average financial impact of such attacks poised to increase next year. On top of that, most users remain oblivious to the impacts that are caused by poor business practices, including insecure email practices, insecure mobile apps, and insecure IoT (Internet of Things) embedded devices. In addition, CISOs need to add OT (operations technology) to their list of security priorities.

It is evident from examining recent security breaches that many organizations have security lapses related to people and process failures (including the application of configurations, encryption, patches, and quality code). These factors are overtaking the impact of pure-play technology failures. To clean up their recent shortcomings and longer-term technical debt, CEOs and Boards of Directors must establish cyber-attack mitigation strategies, while CISOs, CSOs, and other security executives must re-imagine their security practices by analyzing them from all angles. The key takeaway here is that companies need to adopt defense-in-depth strategies and make their company “unappetizing” to attackers.

Furthermore, the lack of cloud service provider (CSP) transparency remains an issue and an exposure in 2023. During the pandemic, many companies accelerated their move to the cloud – and instituted cloud-first policies for new applications under development. Part of the problem here is that the exact causes of some CSP outages are not publicly reported. This creates enough uncertainty that there is “room” for some providers to imply that some (if not most) breaches may have been caused by customers’ failures, even if that is not the case.

On the compliance front, countries and localities worldwide will continue to pass their own privacy acts, adding to a growing patchwork of requirements across geographies – and making full compliance a struggle for many firms. IT executives will be hard-pressed to keep up with compliance requirements globally until they can fully automate the process, reducing the time it takes to align implementations to widely varying governance policies. To address these issues, IT executives will need to work with auditors and regulators to develop automated processes that will enable continuous compliance while reducing the cost of compliance and risk exposure. If that happens, 2023 will be the year when enterprises start becoming audit-ready, allowing them to truly integrate compliance into the development cycle and production software.

**Data Analytics and Data Management** – Data analysis and data usage will be the key to business advantages as some economies stagnate during 2023. Unfortunately, the shift of workloads to clouds and the Edge, and the associated architectural decisions behind these moves, will be focused on application workloads – rather than being focused on data management. This situation aggravates customers’ challenges regarding data integrity and privacy (PII), while increasing their company’s exposure to data loss. Organizations must place more emphasis on all aspects of data management if this issue is to be properly addressed in the coming year. RFG expects that a data-centric approach will occur naturally in some, but not most, companies.

Artificial Intelligence (AI) is a required component for nearly all new solutions that require some form of analytics. As is already evident, AI and ML software will prove to be highly valuable components for most of the new solutions for analytics and data management. This extends to customers’ applications development processes, IT operations (in the form of AIOps), and OT (Operations Technology) production tools.

**DevSecOps / DataOps** – The trend toward DevOps and DevSecOps – now joined by SRE (site reliability engineering) and DataOps for more effective data analytics – continues into 2023. However, progress will remain slow, because most companies are still a long way from adopting these methodologies as standards for their application-development processes.

The challenge is not the technology – because new and enhanced CI/CD and other automation/orchestration tools continually come into the software marketplace. Rather, it is the organizational culture and adherence to legacy processes that is impairing customers’ shift to DevSecOps. In general, developers resist picking up operations tasks



while operations SRE staff seek to fill that void. This causes a redefinition of processes and tasks. As part of this analysis, compliance and security will have to become more integrated into the DevOps/DevSecOps processes – so that they will not become bottlenecks for new applications.

No-code/low-code development will gain more adherents and be adopted over time, especially since 2023 will see staffing and talent shortages continuing into the new year. The challenge is clear: businesses must overcome reservoirs of deep-seated organizational resistance to change – and the acceptance of new, and expanded, roles and responsibilities for application developers who are writing a new wave of applications that will transform the Core, Cloud and Edge.

DataOps, an automated, process-oriented methodology, is a needed counterpart to the more well-understood DevSecOps. Because it is a relatively new technology, although DataOps has yet to gain widespread adoption. RFG is convinced that customers will come to see the benefits of using DataOps in coming years because of its potential to improve data quality and to reduce data-analytics cycle-times. We expect that DataOps will be more widely adopted by 2030.

DataOps gives IT organizations a new process to eliminate or minimize the islands of data (isolated data resources) in the enterprise data center – and in the clouds – that were created over time in previous development efforts. It is problematic to have new DevSecOps applications available for production within a few weeks or months, especially since some of the supporting data for those applications cannot be extracted, transformed, and loaded in less than six months.

RFG believes that interest in DataOps will gain traction in 2023, leading to a year of piloting, proofs-of-concept (PoCs), and early trials for DataOps in many large enterprises.

## Summary

The new year – 2023 – will be a tough year for enterprises globally as they struggle to survive and grow in a year of uncertainty and inflation. The paradigm shift to a digital economy and a work-from-anywhere economy will be a work-in-progress – especially since companies, governments and individuals have not yet seen the last of the COVID-19 pandemic and a continuing wave of “great resignation” dislocations for business and the global economy. It is important to recognize that business transformation goals are not a technology issue. Rather, the challenges are to address business-model issues, and these transformation goals must be recognized as such. The mission of IT organizations is to support the shift; but business units – which provide the funding for new initiatives – are still driving the train.

Business executives must make the key business decisions that guide their company’s business directions and digital transformations. As leaders, senior executives need to determine which businesses they plan to participate in and fund – and to make the



appropriate structural changes to implement those plans. In 2023, business leaders need to create the strategies that lead to selecting which processes and applications will be designed and implemented across their entire organization. IT executives must ensure they align themselves with these new directions and directives across their enterprise.

**RFG POV:** The year 2023 will certainly be another challenging year for business and IT executives. IT organizations need to work harder to integrate their goals with those of the business – and to work collaboratively to enhance operations (whether onsite, in the cloud, or at the Edge) and to innovate new, simpler approaches for doing business.

Although funding and other resources will be constrained in 2023, IT executives will need to invest in AI/ML software, cybersecurity, DevSecOps, DataOps, data center efficiency and sustainability, and other process improvements. This will help contain costs, mitigate the skills shortage, enhance compliance, increase flexibility and responsiveness, minimize risks, and improve resource utilization.

To achieve truly effective changes in business that will drive revenues and profits, business and IT executives must collaborate throughout the year. With this approach, IT budgets, plans and strategies will dovetail with the primary goals of their organization – in business and in government – and ensure that they remain tightly integrated with the goals of their business throughout the year.

*Additional relevant research is available at [www.rfgonline.com](http://www.rfgonline.com). Interested readers should contact RFG Client Services to arrange further discussion or interview with Mr. Cal Braunstein. Jean S. Bozman of Cloud Architects llc, contributed to this report.*