## Infosys cobalt

## INFOSYS ORACLE TECHNOLOGY VISION 2024: TRANSFORM WITH CLOUD, DATA, AND AI







### Foreword

#### Transform with Cloud, Data, and AI

Welcome to our Oracle Technology Vision 2024. The technology world is changing rapidly, and businesses are trying to understand their technology focus areas in 2024 and beyond. They often struggle to align suitable investments in the right technology areas. The Oracle Technology Vision 2024 empowers business leaders to futureproof their IT and business landscapes by guiding strategic investments in Oracle technology.

In the past years, businesses have invested billions of dollars in moving to the cloud and now want to use these many clouds to harness synergy, growth and best practices. Gen AI is another trend that has excited the whole world, and organizations want to move beyond POCs and pilots to bring real-life productivity to their operations. Green business is another topic everybody is trying to make an impact on.

Our technology vision document identifies six key trends in the Oracle landscape that will futureproof your business and IT landscape. These trends will be your navigator in the journey of 2024 and beyond. Let's step into the future with bold decisions, reshape the technology landscape, and confidently ride the massive wave of change.

- Sreekumar Sreedharan, SVP and Service Offering Head - Infosys Oracle Services.

### Oracle Technology Vision 2024

Exciting transformations are sweeping through industries worldwide, driven by a dynamic fusion of cutting-edge technologies. The technology landscape is teeming with innovation, from the rise of Generative AI (Gen AI) to the accelerated adoption of cloud solutions, particularly during the COVID-19 pandemic. Governments and the private sector alike are pouring significant investments into technology, eager to seize the opportunities of tomorrow. Keen to maximize returns, forwardthinking entities seek to align with key trends that will shape their industries and the global marketplace and direct investments accordingly. They want to know which emerging technologies hold the most significant potential in 2024.

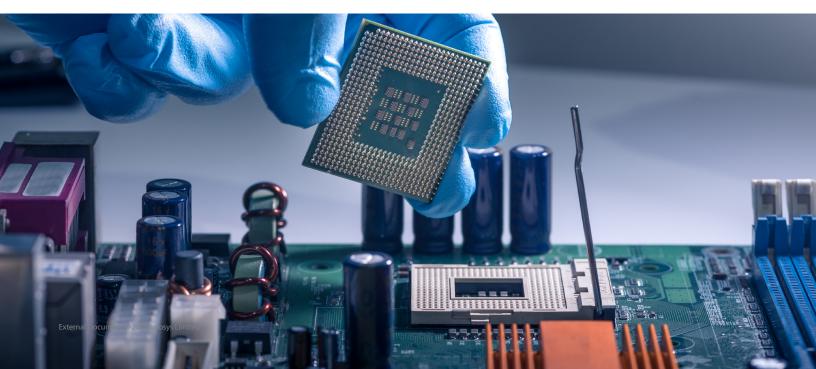
To meet this demand head-on, Infosys has expertly evaluated the technology landscape to produce Technology Vision, an insightful report unveiling six Oracle technology trends poised to impact organizations significantly in 2024 and beyond.

We have partnered with the Infosys Knowledge Institute (IKI)

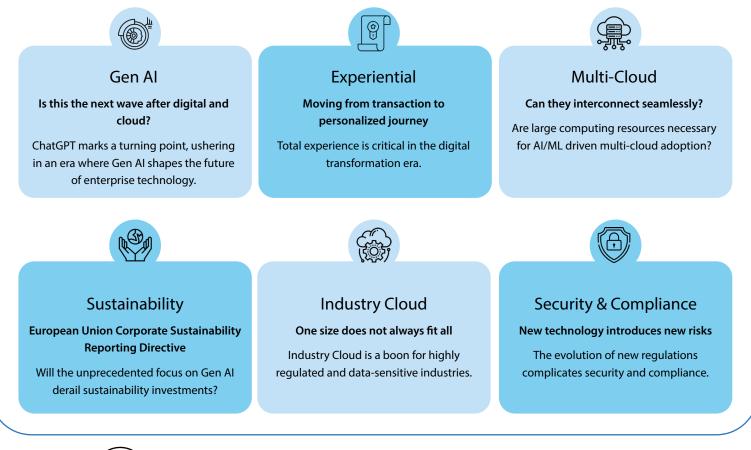
on this report. IKI comprises a global multi-disciplinary team of industry, technology, content and research experts who periodically scan the market through global surveys and are uniquely positioned to identify budding trends.

In addition, we solicited insights from several experienced industry leaders from within the Infosys Oracle practice and other practices, as well as from external experts. Finally, the Oracle Technology Vision team conducted extensive research to substantiate the findings.

Our exhaustive research uncovered a multitude of technology themes, each appearing relevant. However, the Oracle Technology Vision team understands that buzzwords don't translate to business value. We assessed each theme's tangible impact on real-world business challenges through rigorous prioritization. We were thus able to curate a concise report highlighting the emerging trends most likely to reshape the C-suite agendas in the near future.



## Futureproof Your Business: 6 Oracle Tech Trends You Can't Ignore in 2024





#### Although it is only a recent entrant, Gen Al came in with a bang and has enterprises aggressively exploring its transformative potential.

ChatGPT took the world by storm in November 2022. The chatbot quickly went viral, attracting over one million users within a mere five days and triggering multi-billion dollar investments in Gen AI.

Gen Al technology can produce new and original text, images, audio, video and animation by using neural networks to identify the patterns and structures within existing data. That marks a key difference between generative and traditional Al models, as the latter solves specific tasks with predefined rules and analyzes data to make predictions.

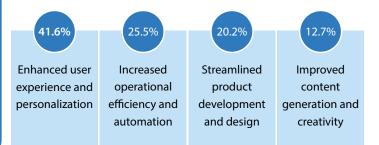
## Gen Al gathers momentum with investment surge

A recent Infosys survey<sup>1</sup> revealed that 94.5% of respondents plan to increase spending in the next 12 months, with no one planning cutbacks. In fact, these investments are projected to accelerate even further in 2024.

Surprisingly, we found that companies with more than \$10 billion in revenue lead in adoption to claim business value from these initiatives. Furthermore, adoption is likely the highest in the healthcare and life sciences sectors, closely followed by financial services.

## The Gen Al impact

Though Gen AI is widely viewed as a content generation tool, business leaders see greater potential beyond just creative outputs, according to our study.



Source: Infosys Knowledge Institute

Generative AI and related technologies could add up to \$4.4 trillion in economic benefits as half of today's work in sales, marketing, coding, and R&D becomes automated between 2030 and 2060.

Source: McKinsey & Co<sup>2</sup>

## Leadership and Talent



The buy-in of senior executives beyond the IT realm for Gen Al bodes well for broader adoption as it signals transformative potential.

As with most technologies and initiatives, talent is central to realizing the potential of Gen AI. Our survey showed that most companies plan to upskill and reskill employees (41%), partner with vendors (33%), and recruit talent (26%) to address this challenge.

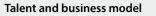
We believe that those who scale AI across the organization will be in high demand, as will new skillsets such as prompt engineering and model fine-tuning.

## **Overcoming Adoption Challenges**

#### We identified three main challenges:

#### Data quality

Almost half of the respondents mention privacy and security, quality or usability as their biggest obstacles to Gen Al implementation.



Success is challenged as much by talent as data science.

#### **Ethics and Bias**

Al ethics, bias, and model transparency are primary concerns as stakeholders worry that opaque Gen Al tools make decisions based on data with embedded biases, perpetuating societal disadvantages such as discrimination against certain ethnicities or genders.



As businesses move from the pilot phase to full implementation, data quality becomes critical to train Gen AI models with organization-specific data. In addition, there must be continuous updates with live data to improve accuracy.

## Oracle's Gen Al strategy:

Oracle's Gen AI strategy is built around three different modalities: Infrastructure, Models and Services, and within Applications:

#### Infrastructure

Through a partnership with NVIDIA, Oracle provides a robust infrastructure for training Gen AI models at scale. These are powered by the latest GPUs in the market connected with an ultra-low-latency RDMA over a converged Ethernet (RoCE) network. Customers can start building their Large Language Models (LLMs) on this high performing and cost-effective infrastructure. Many AI startups like Adept and MosaicML are building their products directly on OCI.



#### **Models and Services**

Oracle is enabling Gen AI services and business functions by partnering with Cohere, a key player in this space for enterprise-grade LLMs. Cohere will train, build, and deploy its Gen AI models on OCI. This beta launched AI service, **OCI Generative AI**, enables OCI customers to add Gen AI capabilities to their applications and workflows through simple APIs and finetune models with their data.

#### **Applications**

Oracle is embedding generative models into Oracle applications and workflows that business users use daily. Oracle plans to embed Gen AI from Cohere into its Fusion, NetSuite, and SaaS portfolio. Oracle applications will harness Cohere's state-of-the-art foundational LLMs and can be customized and improved based on Oracle's unique industry knowledge and data insights.

"Most technology "does not get the attention of heads of states and heads of government and everyday people and other professionals. It just doesn't." But when it comes to GenAI, "everyone wants to know what comes next."<sup>3</sup>

"Generative AI showed up about a year ago now, and it changes everything. It's certainly changing everything at Oracle"4

#### Larry Ellison

Chairman and Chief Technology Officer, Oracle

## Infosys Redefines What's Possible with Gen AI/ Contributions to Gen AI

We see promising early signs for employing Gen AI in the software engineering cycle from the project planning and analysis stage to testing. We focus on Gen AI usage for productivity gains and have arrived at numerous use cases, some of which are in the prototype or pilot stage with customers:

- The SQL code generation Assistant prototype creates a query based on voice commands by analyzing over 25K SQL tables for ERP.
- A pilot of Intelligent search that utilizes Oracle Generative Al Infra for knowledge management will provide users with relevant and accurate information on demand to users by scouring millions of internal documents under development.
- An Australian life insurance company and an energy company in the UK are testing our pilots using Oracle AI Apps for Return order predictability, Purchase price prediction, Dynamic Discounting, and Intelligent Account code combination.

Infosys Topaz is an Al-first set of services, solutions and platforms using Gen Al technologies. It amplifies the potential of humans, enterprises, and communities to create value from unprecedented innovations, pervasive efficiencies and connected ecosystems. It uses Infosys applied Al framework to build an Al-first core that empowers people to deliver cognitive solutions that accelerate value creation.

It offers **12,000+ Al assets**, 150+ pre-trained Al models, 10+ Al platforms steered by Al-first specialists and data strategists, and a **'responsible by design'** approach uncompromising on ethics, trust, privacy, security and regulatory compliance.

#### Some real-life applications:

- A British bank transformed over 2000 customer service processes to operate in near real-time instead of a week.
- A national railway company built a smart hub for profitably creating agile value chains with best-fit partners from the market for functions such as first and last-mile logistics.
- A food and beverages chain could autonomously connect unconnected data signals from new partners to deliver a "superior" off-store consumer experience with over 95 percent accuracy.

Infosys is reskilling and upskilling its large workforce on Gen AI to ready them for internal and client Gen AI transformations.

#### Infosys Al-First Strategy Focus Areas:

#### I) Application Modernization and Transformation:

A) Efficient Workload Migration: Execute cost-effective migration of on-premises workloads to the cloud using automation and AI.

**B)** Cloud-Native Capabilities: Utilize LLM-infused APIbased microservices, data conversions, and low/no-code solutions for application modernization.

C) Next Gen Application Maintenance Services (AMS): Employ LLM-backed knowledge models and automation for superior outcomes at reduced costs, building on the success of Oracle AI First - AMS pilot programs and shared service.

**D) Application Transformation:** Progressively shift Oracle EBS applications to contemporary Oracle ERP cloud applications and incorporate LLM-assisted capabilities to achieve more efficiency and lower delivery costs.

#### II) Team productivity (e.g., SQL script development):

This initiative augments team productivity and effectiveness through AI and Gen AI. It centers on developing domain-specific knowledge models, including SQL development, accessible through a user-friendly conversational interface.

#### III) Business Operation Transformation:

A) Transition to Intelligent-Driven Business Processes: Propel the shift from event-driven to intelligence-driven processes through AI and LLM-powered integration of sensors and real-time data, fostering intelligence-driven enterprises.

**B) Industry-Specific Solutions:** An industry-tailored strategy that envisions how LLMs can revolutionize operations in manufacturing, retail, financial, HCM, and CX domains by addressing industry-specific needs. Initiate client-centric use case framework development initiatives to achieve this objective.

We expect businesses to adopt Generative AI in three steps:

#### 1. Use existing Gen AI models AS-IS:

organizations will use existing LLMs such as OpenAI ChatGPT, Meta Llama, Google Bard and Cohere as-is.

#### 2. Fine-tune the processes:

organizations will train existing models on specifics about their processes and data. R&D firms and companies like Cohere will help organizations train Gens AI models.

#### 3. RAG - Retrieval Augment Generation:

The RAG framework links Gens AI (LLMs) with external sources to increase response accuracy and authority. System integrators should play a significant role in linking external sources with LLMs.

### Lead the wave

The Gen AI landscape is brimming with promise, fueled by senior executive buy-in, early adoption in critical sectors, and significant planned investments. However, as with any nascent technology, challenges lie ahead.

- Risk of unfocused investment and skipped foundational steps we anticipate many lessons will be learned quickly about the true value and application of Gen AI in the enterprise landscapes in 2024.
- Significant challenges exist around data governance and usability; currently, there are no quick solutions. But leaders who correct those issues responsibly now will reap greater rewards in the long term.
- The rush to train, contract and hire AI skills will also disrupt the talent landscape, compromising a company's ability to advance with this technology in the short term.

Despite these hurdles, the transformative potential of Gen AI remains massive. We foresee a refined focus and optimism period as lessons are learned and challenges overcome. This disruptive change holds immense opportunities for those who navigate its complexities strategically.

## 2. Sustainability



Increasing regulations have led to a surge in corporate sustainability reporting since 2020. Significant shifts are expected in 2024 with the implementation of the Corporate Sustainability Reporting Directive (CSRD) in the EU and anticipated Climate Disclosure Rules in the US. The International Sustainability Standards Board (ISSB) has issued global sustainability disclosure standards, setting a universal baseline. Over 25 countries already have mandated ESG reporting, with more to come. Companies will report and explore green technologies to reduce carbon emissions and promote biodiversity this year.



## Green SOS: Why We Need Environmental Solutions Now

Several large organizations have set ambitious "net-zero" targets. However, many struggle with credible and effective environmental solutions to curb emissions, reduce water usage and waste, and foster circular economies.

We foresee a surge in investments in green technology in 2024 to ensure a tangible and predictable reduction in carbon emissions.

Decarbonization has become an integral part of business strategy for our clients. Reducing carbon emissions in business operations demands meticulous planning and technology advancements.

## ESG Dynamics: Shifting Focus and Priorities to S & G in 2024



Over the past three years, businesses have focused on the "E" -Environment aspect of ESG, prompted by the Paris Agreement on climate change. We predict a strategic shift towards a holistic Environment ("E"), Social ("S"), and Governance ("G") focus. Our analysis reveals a direct correlation between stronger emphasis on "S" and "G" initiatives and improved profitability<sup>5</sup>.

Furthermore, organizations now recognize the paramount role of human sustainability and employee well-being in retaining talent and boosting productivity.

## Scope 3 Emissions in the Spotlight along with Green Supply Chain

While organizations have better control over Scope-1 and Scope-2 emissions, Scope-3 emissions present a more indirect

challenge. We expect increased scrutiny of Scope 3 emissions as stakeholders seek greater transparency and actions on climate change. This will necessitate end-to-end traceability in the supply chain to establish an eco-friendly/green supply chain.

## Data Integrity in Sustainability

We expect increased pressure from investors and regulators for third-party validation of sustainability data or the introduction of independent green audits to curb "greenwashing" practices.

Unlike financial data, sustainability data is much more diverse and covers the entire organization, making data collection challenging. This data collection is primarily manual today, but we anticipate significant efforts to establish a "single source of truth."

## Will the unprecedented focus on Gen Al derail sustainability investments?

The excitement around Gen AI will continue unabated, so we expect re-prioritization in business investments in 2024.

#### Some GenAl use cases:

- Simulate environmental impacts caused by climate change
- Grid management and planning
- Al-powered sustainability data platforms, sustainability reporting tools, and sustainability decision support systems

#### A word of caution:

- Gen Al workloads place enormous demands on data center infrastructure and will increase demand for electricity and water. So, businesses will need to balance this with sustainability targets.
- Ethical/Responsible AI will gain prominence in boardroom discussions on governance.



## Oracle's Sustainability Solutions:

Oracle's Sustainability solutions can be categorized into three blocks:

#### Infrastructure

**OCI** is a high-performance green cloud solution with a strong focus on sustainability. Renewable resources power it and align with the circular economy to support a clean cloud solution.

- All European OCI data centers are powered by renewable energy, and the remaining data centers will be powered by renewable energy by 2025
- Recycled and reused 99.7% of retired hardware
- Al/Gen Al models hosted on OCI will have an enormous sustainability impact as they consume significantly less electricity and water than others.

#### Applications

Oracle is embedding sustainability in enterprise applications:

- Oracle SCM helps reduce environmental impacts by enabling reuse and recycling, traceability of sourcing, minimizing waste and lowering carbon footprint by optimizing shipping
- Oracle HCM focuses on sustainability related to the workforce, including diversity and inclusion, talent development, workforce management, and health and safety.
- Oracle ERP supports sustainability through Oracle Risk Management and Compliance, which provides built-in health and safety features.
- Oracle EPM can be configured to collect and manage ESG data from multiple sources. It helps to perform scenario modeling, turn ESG goals into short- and long-term plans and do what-if analysis for decision-making.

#### **Oracle Fusion Cloud Sustainability**

Oracle is developing Fusion Cloud Sustainability, a solution for capturing and managing the sustainability data associated with ESG. It will be deeply integrated with Fusion applications and provide up-to-date, accurate and thorough data. It will capture environmental data and calculate emissions while providing an auditable record of all sustainability activities.



"Oracle is committed to embedding sustainability across our enterprise and delivering innovative cloud technology to accelerate meaningful change."<sup>6</sup>

Safra Catz

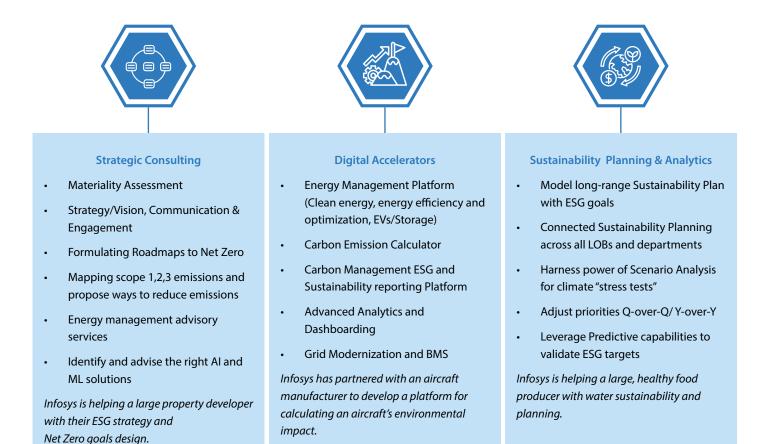
CEO, Oracle

## Infosys Redefines What's Possible in Sustainability/ Contributions to Sustainability

Our persistent efforts over a decade made us a carbon neutral company in 2020, 30 years ahead of our UN commitment.

We have an in-depth understanding of carbon emission management and how it can enable our clients to strategize and realize their net zero goals.

#### Infosys offers sustainability solutions in three areas:



Our sustainability solutions are comprehensive, ranging from consulting and advising to setting up plans and providing engineering solutions for carbon reduction, and monitoring of sustainability goals to enable verifiable reporting.



### Lead the wave

Expect a significant acceleration in the global sustainability landscape thanks to these factors -

- The EU CSRD implementation in January 2024, the expected release of US SEC Climate Disclosure Rules, and the alignment of many countries' sustainability disclosures with ISSB standards will drive standardization and consistency in reporting.
- Businesses aim to progress beyond reporting and net-zero pledges to actively reduce emissions and waste through green technologies. We expect a surge in green technology and a single source of truth data solutions.
- Gen Al is a buzzword, and businesses will harness it, including its application in sustainability efforts. There will be a renewed focus on increasing profitability through sustainability, emphasizing productivity enhancements.

The emergence of independent third-party validations and audits of sustainability data, especially with the EU CSRD making it mandatory, will become more prominent.

## 3. Experiential Transformation



In today's digital age, experience reigns supreme. As more customers turn to digital channels, businesses continue to invest in digital transformation to transform and not just adopt new technologies. The critical shift is prioritizing customers and employees and fostering personalized journeys throughout the transformation process. According to BCG, digital leaders achieve 1.8 times higher earnings growth than the digital laggards<sup>7</sup>.

## Moving from transaction to journey/The journey imperative

In today's digital age, organizations must move from isolated transactions and embrace holistic journeys for customers, employees and all stakeholders.

**Mapping the customer journey** across awareness, consideration, conversion, service, loyalty, and advocacy empowers organizations to optimize every touchpoint with data-driven personalization, leading to superior service and deeper understanding.

The **new hire experience** is critical within the broader employee journey and defines their success path, productivity, engagement and retention. With 30-60% of the workforce joining in virtual mode in the last three years, a planned **organizational culture journey** helps integrate them with the organization and perform better.

According to the Salesforce report, 88% of customers consider experience as necessary as a company's products and services<sup>8</sup>.

## Personalization as a Strategic Advantage/ Personalization Matters Today



In today's hyper-connected landscape, exceeding customer or stakeholder expectations requires shifting from transactions to orchestrated, personalized journeys. Customers demand experiences tailored to their needs and preferences while seamlessly integrating past interactions.

Privacy-First Personalization is critical in today's highly regulated era. It uses contextual data to tailor a user's online experience while considering their preferences and privacy.

Privacy-centric, omnichannel personalization is vital as it responsibly harnesses data to deliver relevant, accessible content across every touchpoint – phone, chat, email and app. Anytime, anywhere, digital assistance across all formats drives a superlative experience and customer loyalty.

## Data Analytics Helps to Personalize the Customer Experience/ Data-driven Personalization

Data is the fulcrum for **personalized and contextualized customer experience.** This is achievable only through real-time data capture and AI/ML processing. Gen AI models can add more insights and provide an enriched, personalized experience. We expect AI-powered personalization to dominate in 2024 and maximize customer delight and loyalty.

The surge of people analytics: People analytics, a form of workforce analytics, uses data to measure and analyze aspects of people management and helps make informed decisions in areas such as recruitment, compensation, employee retention and succession planning. We anticipate it to become a significant employee experience trend. Companies will increasingly use Al-driven technologies to analyze employee data from various sources, including experience (structured and unstructured) and behavioral and operational data.

# Sustainability and Gen AI movements positively impact customer and employee experience

Consumers in developed nations demand eco-friendly products and are willing to even pay a premium for them. But mere greenwashing won't do. They expect transparency and action, seeking genuine sustainability journeys from businesses. We foresee a spike in incubating green products and services in 2024 and beyond.

Employees, too, consider the **Diversity, Equity, and Inclusion (DEI)** factor when evaluating a new organization.

Gen AI can bring experiential and contextualized transformation in customer and employee experiences. However, concerns over **transparency, control over their data, and potential misuse** of customer and employee data can surface.

So, building trust through clear communication, transparency about data usage, and the purpose for which data is collected will facilitate personalized transformation.

Forbes says that companies with high employee experience ratings have seen 3x higher employee productivity and 2x higher customer satisfaction<sup>9</sup>.

## Chatbots Have Become More Prevalent

Social media chatbots empower brands to engage directly with customers on their preferred platforms. These Al-powered assistants bridge the gap, offering speedy responses and accessibility.

There's more. Chatbots analyze data, preferences, and demographics to deliver relevant options tailored for each customer. This personalized touch, coupled with quick in-app support, eliminates the need for app training and creates a frictionless experience that caters to today's demand for immediate, customized solutions.

Ultimately, infused with AI, chatbots become potent tools for delivering seamless and satisfying customer experiences.

## A digital superlative layer to enhance satisfaction

With multiple applications reigning across different functions, today's complex enterprise application landscape makes it impossible to have a single view of the customer journey.

A **digital superlative layer** overlaid on these applications can provide a unified view. 2024 will add to the earlier start in having an end-to-end customer and employee view.

### Personalized Learning and Development

Keeping employees motivated and relevant for the future is essential, as they are critical to an organization's growth and profitability. Enhanced productivity and personalized learning and development assume importance. So, we expect training and performance journeys linked to compensation, rewards, and appraisal to emerge. In addition, employee health and well-being, emphasis on employee feedback, flexibility and autonomy and skill mapping will feature prominently.

### **Oracle's Experiential Solutions:**

Oracle's experiential solutions can be categorized into three blocks:

#### **User Experience**

- The Oracle Redwood user experience was introduced recently and is being implemented across the entire portfolio of Oracle solutions to provide a unified, consistent and more compelling user experience and enhance efficiency.
- A uniform look and feel is the biggest benefit in user training and for users across different functions. It increases ease of use and stickiness to applications.
- Redwood will continue introducing exciting innovations across the portfolio that increase personalization.

#### **Oracle Guided Learning (OGL)**

Oracle's Digital Adoption Platform (DAP) **Oracle Guided Learning** helps accelerate user adoption and manage continuous business change. It provides personalized, context-sensitive learning when needed.

#### Applications

Oracle has embedded experiential interaction/journey in enterprise applications:

- Oracle CX helps create personalized experiences and journeys across industries and has industry-specific solution offerings. Oracle Unity Customer Data Platform (CDP) provides a unified customer view based on the data collected from multiple sources.
- Oracle HCM Oracle ME (my experience), part of Oracle HCM, enables personalized, contextual employee journeys and skills development along with a conversational AI Chatbot.
- Oracle Enterprise app's personalized navigation can be created in other Oracle apps like ERP, EPM, SCM, etc. It also provides personalized dashboarding and sandboxing capabilities.

With Oracle CX, we improved data visibility and transparency by unifying sales and service features. This enabled us to monitor key performance indicators and access a centralized source of customer data, which continues to improve our sales management.

Jung-Hun Bae Team Leader of Management Support Team, Megagen Implant Co., Ltd.

## Infosys Redefines What's Possible with Experiential Transformations/ Contributions to Experiential Transformations

Infosys has worked with several customers in experiential transformation. Our solutions include:



## **Recent Customer Experiential Transformations**

Infosys helped a large financial services company transform customer experience by significantly boosting customer's digital experience, personalizing content and smoothly integrating with legacy applications.

Infosys partnered one of India's largest private sector commercial banks to strengthen their operations and deliver connected, data-driven, and intelligent customer experiences across all touchpoints<sup>10</sup>.

### Lead the wave

In today's interconnected world, "total experience" reigns supreme. It recognizes that customer, employee, and partner needs are intertwined, impacting each other and, ultimately, an organization's success. It entails comprehending the interactions between different user groups and the organization. This requires crafting an integrated strategy considering customer and employee preferences and behaviors. Success in today's intricate environment hinges on designing an end-to-end experience across these diverse touchpoints.



### 4. Multi-cloud



Enterprise adoption of multi-cloud spiked in the last two years. The multi-cloud strategy involves services from more than one cloud provider to deploy a solution. Organizations can place their workloads and data in the best suited environment across cloud providers. We foresee Gen Al's massive consumption of computing power and ESG concerns around data centers powered by fossil fuel energy, raising multi-cloud adoption in 2024.

The number of large organizations with a multi-cloud strategy is predicted to rise from 76% to 85% during 2024. This strategy offers cost and flexibility advantages but adds complexity to data governance and integration with legacy systems.

Source: Forbes.com<sup>18</sup>

## Multi-cloud holds several benefits presents challenges

Benefits like business agility and flexibility, best-of-breed services, no vendor lock-in, improved resilience and redundancy, high performance and availability, cost optimization, geographic flexibility and regulatory compliance drive many firms towards multi-cloud. However, they need a mitigation plan for key challenges such as network latency, data integration and interoperability, security and compliance, managing data governance and maintaining control over data sovereignty and skilled personnel while defining and executing a multi-cloud strategy.

"In fact, some companies do certain things better than other companies. Some people do AI better than other people, some people do data warehousing better than others, and customers really want to connect to the cloud that has the technology that they're interested in. And that would be multiple clouds.

"So they have to able to connect to multiple clouds — and that's what we're trying to do,"

**Larry Ellison** 

Chairman and Chief Technology Officer, Oracle

## Multi-Cloud Interconnect



Several cloud players are enabling Multi-cloud Interconnect, a key link for enabling faster, more reliable and secured multi-cloud environments -

The OCI-Azure Interconnect is a dedicated private interconnection with FastConnect and ExpressRoute, ensuring low latency, high throughput, and seamless interoperability.

Google Cross-Cloud Interconnect is a dedicated physical connection between Google Cloud and another cloud service provider.

Other players like Cisco, IBM, VMWare and Juniper have also developed multi-cloud interconnect tools.

## AI / ML is driving multi-cloud adoption

Today's tech leaders need cloud infrastructure that can support data-intensive workloads, so they use cloud providers beyond their primary cloud provider.

39% of respondents cited AI/ML workloads as a top reason for using alternative cloud providers besides their primary cloud provider. Respondents also indicated application development and testing (39%), database clustering (33%), and global service delivery (31%).

## **B2B** Commerce still matters

Though B2B commerce is old news, in 2024, core SaaS providers will introduce significant direct integration with third-party service providers to enable a **Connected B2B** experience.

Oracle B2B Commerce solution aims to ease the complexity of B2B transactions by integrating finance from JP Morgan and logistics from FedEx into the Oracle Cloud ERP platform.

These interconnected B2B commerce possibilities will accelerate transactions and settlement speeds, bringing much-needed swiftness and reducing.

## A collaborative and interconnected environment

With a focus on end-to-end near-perfect solutions and demand for speed, we foresee significant collaboration between product vendors, system integrators, and domain partners.

This collaboration will enable technology players to work on innovations, and domain experts will contribute their expertise towards applying them to solve real-world business problems.

A classic example of this is Oracle's Gen AI platform on OCI, where Oracle brings NVIDIA's computing prowess to Cohere's expertise in LLM and its mastery in infra.

## How does OCI accelerate multi-cloud deployment?

OCI provides several products and services to simplify the deployment of a multi-cloud solution:



#### Oracle and Microsoft Azure

- Oracle Azure Interconnect provides
   low-latency private connection
   between two leading cloud
   providers.
- Oracle Database@Azure provides
   Oracle database services running
   on OCI, collocated in Microsoft data
   centers.
- Oracle Database Service for Azure
   offers Exadata Database Service,
   Autonomous Database, Oracle
   Base Database Service, and MySQL
   HeatWave.



#### Database services in multi-Cloud

- Oracle MySQL HeatWave on AWS
   is an OCI fully managed database
   on AWS compute with machine
   learning–powered automation and
   built-in advanced security features.
- OCI GoldenGate is a real-time service for replicating the data for HA and analytical purposes.
- Oracle API Gateway helps to expose services to other service clients in multi-cloud/ hybrid cloud deployments.



#### **Monitoring and Security**

Oracle Cloud Observability and Management Platform lets customers monitor, analyze, and manage multi-cloud applications and infrastructure environments.

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 Oracle Data Safe helps understand data sensitivity, evaluate data risks, mask sensitive data, implement and monitor security controls, assess user security, and monitor user activity in multi-cloud and hybrid cloud environments.

In the case of AWS: Connect Oracle Cloud (FastConnect) to AWS (direct connect) via Megaport Cloud Router directly with minimal latency (15 -20msec) and high throughput.

"Oracle Database Service for Microsoft Azure has simplified the use of a multi-cloud environment for data analytics. We were able to easily ingest large volumes of data hosted by Oracle Exadata Database Service on OCI to Azure Data Factory, where we are using Azure Synapse for analysis."

Jane Zhu, Senior Vice President and CIO, Veritas

## Infosys Redefines What's Possible with Multi-cloud/ Contributions to Multi-cloud computing

The Infosys Polycloud Platform enables enterprises to procure, build and manage vendor-agnostic solutions across multiple hybrid cloud providers without worrying about vendor lock-in. It provides the flexibility to port their platform and data from one provider to another. Its salient features are:

Select the top services and features from each cloud provider with minimal to no lock-in period

Ability to seamlessly switch providers for specific workloads

Seamless experience across user personas

Advanced skills in managing multiple clouds

#### Key success stories of Infosys Polycloud Platform:

- Infosys set up the Polycloud platform for a multinational company that designs, develops, and manufactures electrical systems, devices, and equipment for its aerospace, defense, transportation, and security sectors. The platform combines OCI and Azure, to which several applications were migrated.
- For a leading global investment management company, Infosys consolidated over 250 Oracle databases. They migrated from the US and UK on-premise data centers to the UK/Europe OCI region on Exadata Cloud Infrastructure. We also used OCI-Azure interconnect for application connectivity on Azure.
- Infosys set up a multi-cloud environment for a large appliances manufacturing company in the US with a combination of OCI and AWS and established FastConnect connectivity between them. Overall, 45TB+ databases were migrated to OCI.
- Infosys Polycloud Platform Transforms IT Operations of Managed Healthcare Services Provider
- Infosys Polycloud Platform Simplifies Implementation of Resource Unit-Based Pricing Model
- Infosys Polycloud Platform Reduces MTTR by 80% in a
  Multi-Cloud Environment.



### Lead the wave

A multi-cloud environment is often the right choice for organizations to balance price, performance, and agility in a world with many cloud-based services and solutions. We expect increased multi-cloud adoption and interconnect primarily to drive:

- Large data computing for Gen AI decoupled from main applications
- ESG priorities to shift to data centers/clouds powered by renewable energy and hardware infra created from recycled materials
- Use of "best-of-breed" cloud capabilities
- Sovereignty and regional data controls

While multi-cloud adoption is well underway, 2024 promises a year of accelerated innovation and consolidation. The focus will shift from simply using multiple clouds to connecting them seamlessly, exploiting each provider's unique strengths and capabilities. Seamless real-time data integration, security, and integrity will be pivotal in realizing the full potential of interconnected multi-clouds.



## 5. Industry Cloud



Traditionally, most cloud providers offer horizontal software to solve a function, but the trend is now moving to industry-specific cloud solutions to cater to unique industry requirements. That's where an **Industry Cloud** platform gives solutions organizations need for their most important use cases.

A recent Gartner survey<sup>14</sup> shows nearly 40% of North American and European enterprises are already adopting industry cloud platforms, with another 14% in pilots and 17% actively planning deployment by 2026. By 2027, Gartner predicts a near-universal 70% adoption rate, marking a dramatic shift from less than 15% in 2023.

## Industry Cloud benefits

Industry Cloud platforms are tailored cloud solutions addressing specific industry needs. Combining IaaS, PaaS, and SaaS with domain knowledge, they offer preconfigured environments with specialized software, transforming cloud platforms into businesscentric solutions. Key benefits:

- Industry-specific process and best practices
- Greater security and regulatory compliance
- Better management of sensitive information and privacy requirements

They add value using innovative technologies and approaches, such as packaged business capabilities, industry-aware data fabrics and composable tooling.

## One size does not always fit all

Industry clouds offer a solid foundation, but one-size-fits-all won't do. Specific cloud customization is the future: hyper-focused solutions for micro-segments within industries. Moreover, industry clouds foster connectivity and collaboration, enabling enterprises to share, create and refine applications, spurring innovation.

The healthcare sector spent the most on industry cloud, followed by the public and finance sectors, according to IDC.

Source: Infosys TechCompass<sup>15</sup>

## A boon for highly regulated and data sensitive industries

Traditional cloud services do not cater to the several regulations and data privacy requirements of today, compelling businesses in financial services, insurance and healthcare to build their own solutions to ensure compliance.

The industry cloud can be a crucial ally by offering specialized services and applications tailored to regulatory compliance, data privacy, and emerging trends like Gen AI and sustainability.

### Importance of Data in Industry Cloud

A unified data model is essential for the success of an industry cloud, serving as the foundation for integrating multiple solutions across the organization.

"In our retail cloud services, for example, Oracle has decoupled the data from each individual cloud service and made all data accessible in a common data model – the Retail Data Store. By doing this we make the 'customer' and all their data that historically sat within a single cloud service, accessible to all stages of the retail process."

Mike Sicilia, Executive Vice President, Oracle Industries<sup>16</sup>

### Continuous security and compliance update

In a dynamic tech landscape, security and compliance are paramount. Industry cloud platforms must uphold rigorous security standards and continuously adopt compliance measures to safeguard sensitive data amidst constant threats and regulatory shifts.

Giant players like AWS, Azure, Google, Oracle, and Salesforce have Industry Cloud solutions and are investing heavily in developing further capabilities.

## Oracle play in Industry Cloud

Oracle has a two-pronged approach to Industry Cloud.

#### Partner eco-system

- Oracle expects the partner to use their industry-specific expertise and create solutions harnessing Oracle technologies.
- Oracle works with partners to create, review and approve industry solutions.
- Oracle encourages partners to create solutions for white spaces in existing Oracle solutions.

#### **Oracle Applications**

Oracle has created dedicated global business units (GBU) specific to an industry. Seven GBUs enable domain expertise to collaborate with technology and create new industry solutions.

Industry-specific cloud solutions launched by Oracle:

- Oracle Financial Services Cloud
- Oracle Health- the acquisition of Cerner Oracle helps create new solutions for the healthcare industry.
- Oracle Retail

Oracle is making significant investments in this area, forging partnerships with domain and industry leaders to develop additional solutions for the future.

## Infosys Redefines What's Possible with Industry Cloud/ Contributions to Industry Cloud Solutions

Infosys' Industry Cloud Solutions are designed to drive digital business transformation. With a robust set of industry-specific assets, we accelerate cloud adoption and create value across the ecosystem. We seamlessly integrate digital transformation capabilities into our clients' value chains using our extensive domain knowledge and technology expertise.

The industry solutions provide reference architectures, industry process templates, IP for product whitespaces, and innovations that can provide customers with a ready reference template for their industry to undertake business transformation and drive growth.

Today, Infosys has seven industry solutions approved by Oracle and four more under development.

Infosys Stratos, Infosys Revenue Management Platform, Retail, Utilities, Infosys Discrete Manufacturing Solution, Logistics, and Telecommunications Industry Solutions help clients start their digital transformation journey with industry-specific processes and best practices.

Infosys industry cloud services offer different options for clients to select what they need the most. Our key success stories in this space include:

- Infosys Stratos helped Western Digital to build Industry 4.0
- Infosys Revenue Management Platform helped Western
   Union in customer acquisition and retention



### Lead the wave

Industry clouds offer clear benefits and competitive advantages, with a noticeable uptick expected in 2024 and beyond. They cater to specific industry needs, including security, data privacy, and process requirements. Particularly beneficial for newly set-up companies, start-ups and organizations undergoing transitions like demergers or divestitures, industry clouds enable quick adoption of best practices without reinvention. Adopting Industry 5.0, 5G, and evolving regulations will further bolster industry cloud growth. While no perfect solution exists, system integrators and implementers will be critical in advising and implementing tailored solutions.

## 6. Security and Compliance



Groundbreaking innovations like cloud, AI, and automation unlock immense potential, but also usher in new risks. Companies are grappling with managing unprecedented volumes of data across diverse platforms, amidst evolving compliance standards, necessitating reevaluation of data protection strategies.

Gartner says that global end-user spending on risk management and cyber security will reach \$215 billion in 2024, reflecting a 14.3% surge from the previous year. And, as the regulatory landscape becomes more intricate, GRC programs will progress to becoming a top priority<sup>17</sup>.

## **Cybersecurity Threats**

Cybersecurity is a fast-moving sector, as hackers and security providers vie to outsmart each other. New threats and innovative ways to combat them emerge all the time. 1 in 31 companies worldwide experienced weekly ransomware attacks only in the first quarter of 2023<sup>18</sup>.

**Cybersecurity threats** arise from increased remote working, IoT devices, ransomware, cloud services, multi-factor authentication and hybrid communication platforms.

#### Financial crime and fraud

Over \$800 billion is laundered every year, according to Kroll<sup>19</sup>.

- 68% of global executives and risk professionals expect financial crime to increase over the next 12 months, with cybersecurity and data breaches being the biggest drivers.
- Over half (56%) of respondents felt that evolving technology was one of the biggest challenges in fighting financial crime.

But there's a silver lining. While technology can increase financial crime risks, it can also help detect and prevent fraud and other financial crimes.

The global average cost of a data breach was \$4.45 million in 2023<sup>20</sup>

## Other key trends for Security and Compliance in 2024:

- Third-party risk management will gain prominence.
- Businesses need to prioritize real-time risk visibility and continuous control monitoring.
- Governments are increasingly concerned about supply chain security, especially in critical industries like healthcare and defense.
- Zero Trust Architecture assumes that all users, devices, and applications are untrustworthy, requiring authentication and authorization before granting access.
- The shortage of security and compliance experts has become more significant in recent years.

### Data Security, Privacy and Governance

Regulators will continue to assess consumer financial data privacy protection across the collection, use, safeguarding, retention, and disposal, including increasing attention to purpose limitation, data minimization, and consumer rights.

An important trend is the **rise of data privacy as a discipline.** Numerous high-profile cyberattacks have exposed millions of personally identifiable information records(PII). This, coupled with introducing stricter data laws worldwide, such as the EU's GDPR, US HIPAA, and PCI-DSS, means data privacy is increasingly prioritized. Gartner predicts that 75% of people globally will have their personal data covered under privacy regulations by 202421.

In 2024, more countries will implement **data protection laws**. This will create a complex web of data governance and compliance requirements for multinational organizations.

The emergence of sovereign clouds reflects a desire for greater control over data, enhanced data privacy and security, and restriction of data movement beyond national borders.

Data privacy legislation such as GDPR in the EU promotes Data Masking, where sensitive/PII data is masked to maintain data privacy.

## Al and Gen Al Influence on Risk and Compliance

Al for GRC (Governance, Risk and Compliance) will emerge as a promising area in 2024. The diverse applications include Alpowered threat intelligence, automated risk assessment planning, continuous regulation monitoring, and fraud detection.

In addition, it can rationalize controls and automate control tests, identify missing controls and enhance control test planning efficiency.

Gen AI can analyze and interpret complex regulatory and policy documents and answer any question.

Although Al/Gen Al offers many benefits, there are risks as well:

- Potential for bias and discrimination
- Spread of misinformation
- Security, data privacy and intellectual property (IP) risks
- Social engineering risks, accountability and governance risks

While AI can assist with more robust threat detection, criminals also use the technology to automate attacks, using data-poisoning and model-stealing techniques. Gartner has suggested that "AI TRISM" (AI trust, risk, and security management) will become essential in the years ahead.

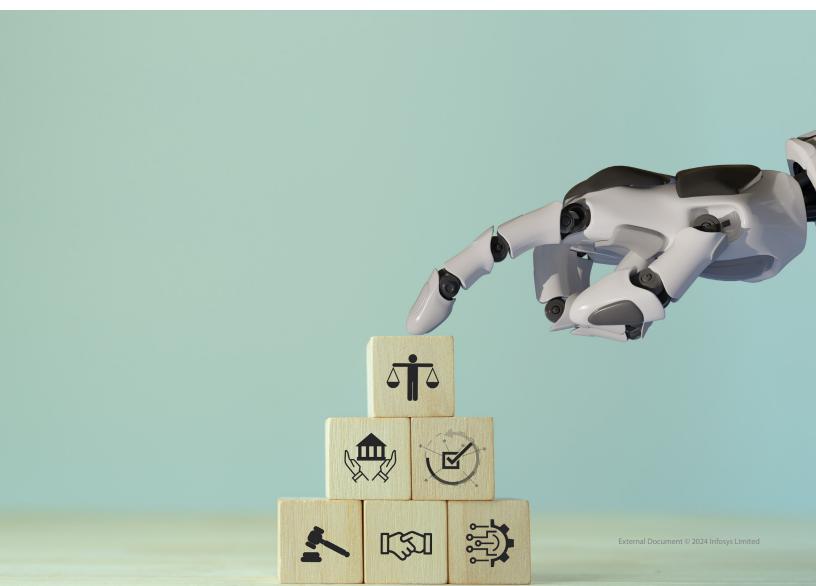
## **Evolving Regulations:**

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With continuous evolving regulations and stricter enforcement by regulatory bodies, businesses need solutions to meet them and constant monitoring for changes. What to watch for in 2024:

- New AI regulations and ethical AI
- Stricter sustainability and data privacy regulations
- New standards from accounting regulations like IFRS and ACS
- Country/regional tax and regulatory filing compliance

Recent IFRS15, 16 & 17 accounting regulations profoundly impacted certain organizations. The lack of solutions was a huge challenge initially.



## Oracle play in Security and Compliance

Oracle has two-pronged approach to security and compliance:



#### Oracle Application

#### **Oracle Risk Management and Compliance**

Oracle Risk Management is a module within Oracle Fusion Cloud ERP to manage risks and meet compliance and privacy mandates (SoD, SOX, GDPR, etc.).

#### Key Features of the module:

- Automate monitoring and control of user access
- Continuously monitor user activity with AI
- Audit transactions to identify fraud, error, and policy violations
- Automate audit and SOX compliance workflows

Oracle Risk Management provides a library of ready-to-use controls for high-risk business processes



#### **Oracle Databases and OCI**

**Oracle Data Safe** is a cloud service that scans databases for sensitive data and masks that sensitive data.

**Oracle Data Masking and Subsetting** is a pack that scans your database for sensitive data and masks that data. It also creates reduced-size copies of data to minimize storage costs.

Both of these help in GDPR compliance

**Oracle Advanced Security** provides transparent data encryption (TDE) and data redaction.

**Oracle Database Vault** protects data from unauthorized access, even by privileged users, and lockdown database commands.

**Oracle Zero Trust Packet Routing Platform** helps prevent data leaks and insider threats by restricting attackers' ability.

COMPLIANCE GUIDELINE PRACTISE RULES STANDARD REGULATION POLICY

"We process a huge number of transactions every day, and it would be impractical to review each and every one for error or fraud. Oracle Cloud Risk Management automates this process and helps us create a culture of continuous monitoring with advanced access controls, advanced financial controls, and financial reporting compliance."

Rich Christensen, SVP and Chief Accounting Officer, TrueBlue<sup>22</sup>

## Infosys Redefines What's Possible with Security and Compliance / Contributions to Security and Compliance Solutions

While vendors like Oracle integrate security and compliance features into their products, organizations still must translate these features into effective data protection strategies. This requires domain knowledge of specific regulations and the technical expertise to configure solutions according to their unique needs.

By integrating domain and technology expertise deftly, Infosys has guided many customers in meeting compliance requirements. Some examples:

- IFRS 15 (ASC 606) Revenue from Contracts compliance for a global leader in designing, building and servicing critical infrastructure enabling data centers using Oracle Revenue Management Cloud.
- IFRS16 (ASC 842) Lease Accounting utilizing Oracle Fusion Cloud capabilities for an American television and wireless service provider. Infosys also created specific bolt-on solutions to aid automation and manage 16,000+ leases.

- GDPR compliance for a European telecom client using Oracle solution and created a foundation and comprehensive framework for future implementations. As part of this implementation, Infosys created bolt-on solutions to manage compliance.
- Risk and Control framework using Oracle Risk Management Cloud and automated SOD compliance for a world leader in electrical, communications and utility distribution and supply chain services provider. Infosys has created models and controls for all identified SOD policies across ERP, SCM and HCM work areas.
- Risk and Control framework for a leading professional services firm utilizing Oracle Risk Management Cloud. Infosys enhanced risk coverage by leveraging Infosys SOD Library, built custom roles for access and identifying SOD violations, created a 100% SOD violation-free access, and defined additional transaction controls per the agreed Risk Control Master.



### Lead the wave

Regulations tighten, threats rise, and AI becomes essential. Stringent AI rules, escalating cyberattacks, and sustainability concerns demand a fresh security approach. Enter AI and automation: not just a trend, but a necessity for efficiency and streamlined compliance. The proactive adoption of these tools will be crucial in managing the increased regulatory demands and complexity. Gartner predicts organizations embracing "Continuous Threat Exposure Management" for seamless, automated protection.



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## **About Infosys**

Infosys is a global leader in next-generation digital services and consulting. We enable clients in more than 56 countries to navigate their digital transformation.

With over four decades of experience in managing the systems and workings of global enterprises, we expertly steer clients in more than 56 countries as they navigate their digital transformation powered by cloud and AI. We enable them with an AI-first core, empower the business with agile digital at scale and drive continuous improvement with always-on learning through the transfer of digital skills, expertise, and ideas from our innovation ecosystem.

We are deeply committed to being a well-governed, environmentally sustainable organization where diverse talent thrives in an inclusive workplace.

Established in 1981, from a capital of US\$250, we have grown to become a company with a market capitalization of approximately US\$83.71 billion.

In our journey of over 40 years, we have catalyzed India's transformation into the global destination for software services talent. We pioneered the Global Delivery Model and became the first IT company from India to be listed on NASDAQ.

Visit us at: https://www.infosys.com

## About Infosys Oracle Practice

More than 9500+ practitioners are working in Oracle practice on multiple projects. We have more than 25 years of experience working in the Oracle economy.

We have 16 go-to-market Oracle based Industry Solutions and Sutainability Planning & Analystics solutions leveraging the Oracle platform. Our dedicated partnership with Oracle and library of solutions, including 20+ co-developed solutions, show a strong capability and deep understanding of the Oracle stack and robust technical services surrounding that technology.

We are rated as leaders by several leading analysts and have over 70 Oracle Cloud experts. There are 5900+ process assets that form the backbone of accelerated transformation for many of our clients. In the latest Oracle Cloud World (2023), we won 10 awards showcasing our expertise in Oracle technology and successful implementations for our clients.

Visit us at: https://www.infosys.com/oracle

Infosys Cobalt is a set of services, solutions and platforms for enterprises to accelerate their cloud journey. It offers over 35,000 cloud assets, over 300 industry cloud solution blueprints and a thrivin community of cloud business and technology practitioners to drive increased business value. With Infosys Cobalt, regulatory and security compliance, along with technical and financial governance come baked into every solution delivered.

Infosys Topaz is an Al-first set of services, solutions and platforms using generative Al technologies. It amplifies the potential of humans, enterprises and communities to create value. With 12,000+ AI use cases, 150+ pre-trained AI models, 10+ AI platforms steered by AI-first specialists and data strategists, and a 'responsible by design' approach, Infosys Topaz helps enterprises accelerate growth, unlock efficiencies at scale and build connected ecosystems.



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