شـركـة وادي الرياض
**Riyadh Valley Co**

# Cloud Computing – Poised for Sky High Growth

June, 2023

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# Introduction

In today's digital era, businesses are utilising cloud computing as the key enabler to complete their digital transformation, and the COVID pandemic has further accelerated this mandate. Cloud computing has become an integral aspect of business operation. With the advent of the internet, cloud computing has provided new and efficient ways of conducting business by allowing companies to rise above the conventional on-premises IT infrastructure. It has transmuted the way organizations store, access, and share information, collaborate, and manage computing resources.

The cloud computing industry had a global market value of USD 371 billion in 2020.[1] By 2025, the global cloud computing market is set to exceed USD 832 billion in value.[2] In 2022, there was around USD 770 billion available to buy cloud computing companies, with USD 440 billion of cash on the balance sheets of strategic investors and USD 330 billion of dry powder from technology-focused private equity funds. The amount of money invested in private cloud-computing companies in Europe and the United States declined 42% in Q3 2022. Despite a decline in the valuations of publicly listed cloud computing companies in 2022, spending on automation and digital transformation is likely to rise from USD 1.8 trillion in 2022 to USD 2.8 trillion by 2025.[3] The global cloud computing market anticipates witnessing increase in the number of mergers and acquisitions in the near-term.

Cloud computing market has gained traction in the wake of COVID-19 pandemic. Major factors affecting the growth of this market during the pandemic include the offices and enterprises investing in IT infrastructure for implementation of cloud computing services. The rise in demand for cloud-based services and suitability of the cloud situation for the current pandemic scenario further fuelled industry growth. The cloud computing industry's market size in the Middle East is estimated to reach USD 9.8 billion by 2027, growing at a CAGR of 21%.[4]

Cloud computing represents a substantial area of future investment in information and communication technology (ICT) in Saudi Arabia. The investment is critical for expanding economic prospects and promoting the Saudi government's 2030 vision. The Saudi Arabia cloud computing market is estimated to generate a CAGR of 35.5% between 2021-2030.[5] Roughly 70% of the companies accelerated their digital transformation, with cloud computing acting as a key driver for such developments.

Notably, the Saudi Arabian economy used cloud computing to navigate the economic downturn caused due to the COVID-19 pandemic. Cloud computing technology is one such industry that marked significant growth during the crisis in Saudi Arabia, with growth registered across software, platform and infrastructure as a service. Major industries such as banking, retail, manufacturing, consumer, and oil & gas embraced cloud computing services to transform business, reduce costs and risks and sustain the negative impact of the declining oil price during the period.

[1]GlobeNewswire
[2]Analytics Insight
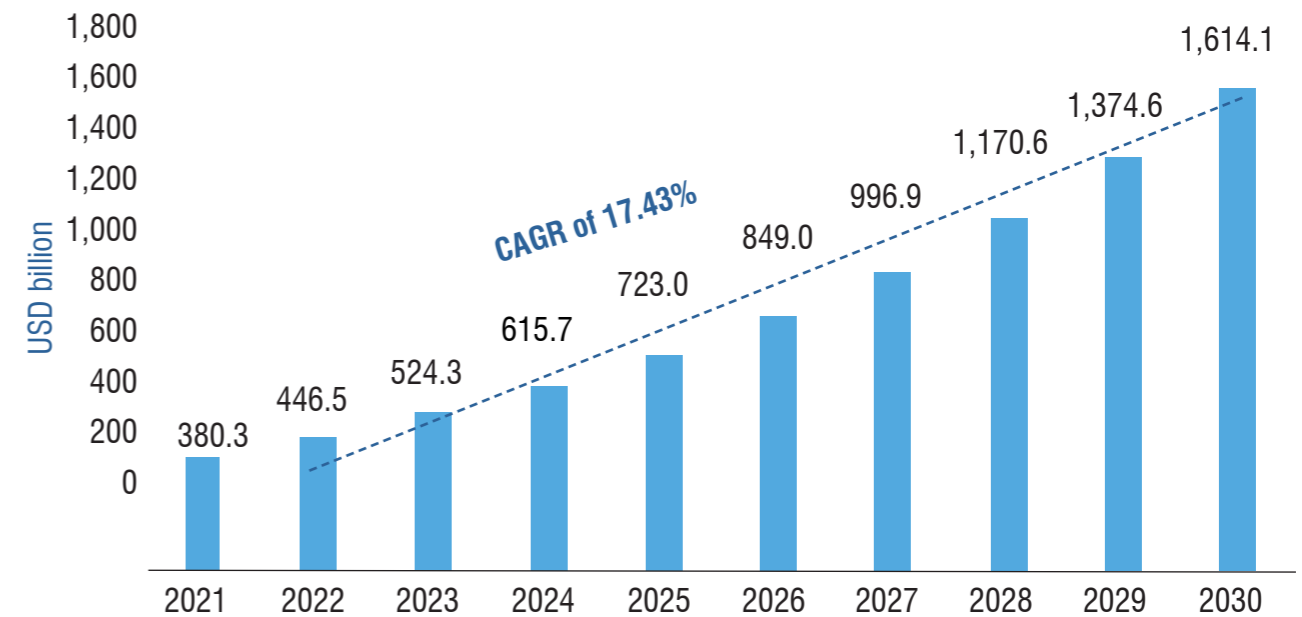[3]Accel report
[4]Zawya
[5]QuantAlign Research

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## 01 Overview of Cloud computing

Cloud computing is an on-demand access to computing resources such as applications, physical and virtual servers, data storage, development tools, networking capabilities via internet and hosted by a cloud services provider (CSP). The CSP makes these resources available for a monthly subscription fee or charges them in accordance with the usage.

Cloud computing enables users to access technology services such as databases, computing power and storage on an as-needed basis from the cloud computer instead of buying and maintaining physical data centres and servers. The growth in the market for global cloud computing can be attributed to increased automation and augmented adoption of cloud computing technologies globally. Recent spurt in the number of small and medium enterprises (SMEs) further contribute to the accelerated adoption of hybrid cloud services and expansion of growth opportunities for cloud computing vendors.

### Market size of Global Cloud Computing industry (2021-2030)



Bar chart showing USD billion values by year with CAGR of 17.43%:
- 2021: 380.3
- 2022: 446.5
- 2023: 524.3
- 2024: 615.7
- 2025: 723.0
- 2026: 849.0
- 2027: 996.9
- 2028: 1,170.6
- 2029: 1,374.6
- 2030: 1,614.1

*Source: Globe Newswire*

Enhanced customer experience, increased cost savings and return on investment, rapid adoption of remote working culture and rise in demand for cloud-based tools underpin the consistent growth in the market size of cloud computing industry. The onset of the COVID-19 pandemic has compelled businesses to integrate cloud computing services in the operations to offer more flexibility during turbulent times due to rapid adoption of remote working conditions.

## Top trends in the Cloud computing industry

### Edge Computing

- Data is stored, processed at the edge of the network, and analyzed geographically closer to its source. Increased use of 5G enables faster data processing and reduced latency.
- Major benefits of cloud computing include privacy, faster data transmission, security, and increased efficiency.

### Multi and Hybrid Cloud solution

- Enterprises have increasingly adopted multi-cloud and Hybrid IT strategy that combines on-premise, dedicated private clouds, several public clouds, and legacy platforms.
- The hybrid strategy offers a combination of public and private clouds dedicated to a specific company whose data is key business driver, such as insurance, banks.

### Cloud Gaming

- Streaming video games require higher bandwidth made possible with the introduction of 5G technology and high speed internet access.
- Cloud computing is expected to serve as a base for the game streaming service and aid in streaming features directly to customers.
- Video gaming services are provided by Microsoft, Sony, Nvidia, and Amazon.

### Artificial intelligence & Machine Learning (AI and ML)

- The integration of cloud computing and AI and ML services are cost-effective since large amounts of storage space is required for data collection and algorithm training. Cloud computing provides a solution for managing massive volumes of data to improve the productivity of tech company.
- The key trends that are likely to emerge include enhanced automation and self-learning capabilities, greater data security and privacy, and personalized cloud experiences.

### Cloud security & Resilience

- Companies face security risks in the process of migrating to cloud and prevention of data loss is integral part of cloud computing.
- The need for data security is expected to increase the usage of security-as-a-service providers and AI to detect risks before they cause issues.

### Disaster recovery

- Businesses can quickly restore critical databases in the event of a natural or man-made catastrophe using cloud computing resources.

### Serverless computing

- Serverless computing provides compute resources as a service rather than installing on physical servers. organisations pay for the resources they use rather than maintaining its servers.
- Serverless cloud solutions offer ease of use and the ability to build, deploy and scale cloud solutions quickly.

### Internet of Things (IoT)

- IoT operates as a mediator and ensures successful communication and aids in data collection from remote devices.
- It resolves warnings and supports the security protocols by businesses to create a safer cloud environment.

### Blockchain

- Blockchain uses cryptography to store data in blocks ensuring transparency, security and decentralization.
- It can process vast amounts of data and process documents securely, especially when used in industrial applications.

*Source: Analytics Insight*

In today's hyper-competitive business environment, cloud computing is transforming and reshaping business structure. As of 2022, cloud computing was used to store more than 60% of the global corporate data. By 2025, the cloud computing is expected to store over 100 zettabytes of data, about 50% of the total data the world is anticipated to have by then.[6]

[6]Cybersecurity Ventures

## Proportion of corporate data stored using Cloud computing (2015-2022)
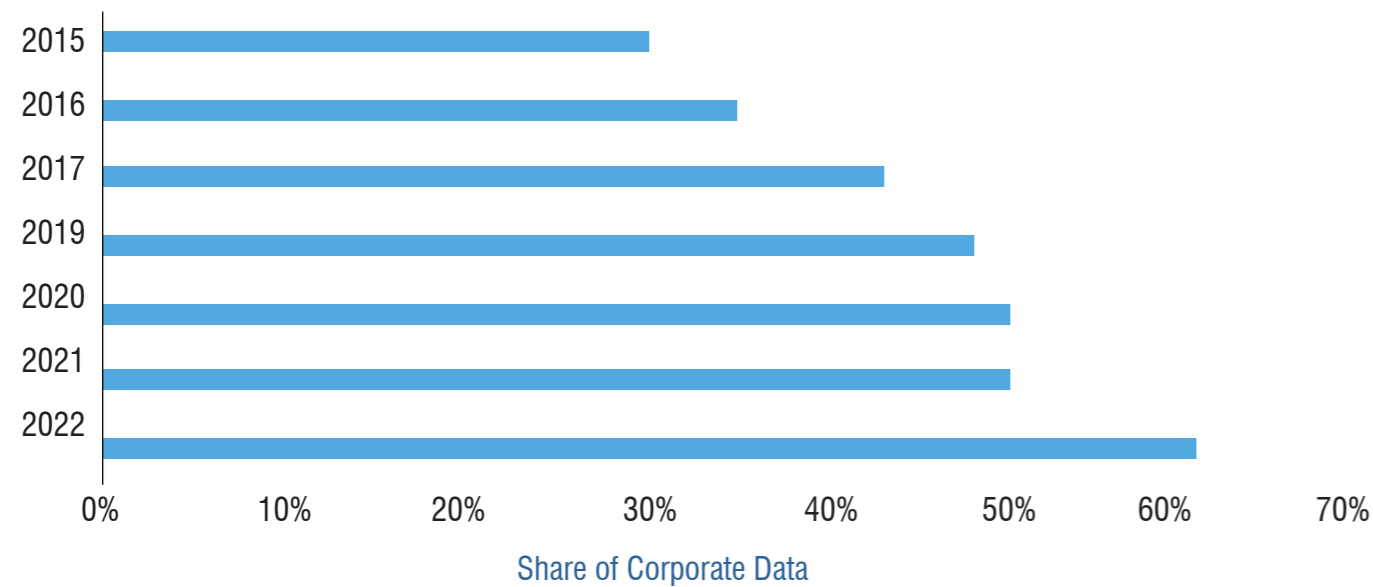


*Source: Imaginovation Insider*

Cloud computing services has not only transformed the IT industry but brought revolutionary changes in a host of other key industries. It has created a game-changing opportunity for industries of all sizes enabling businesses to make decisions faster, gain customer confidence and build optimal infrastructure.

## Cloud computing across industries

| Industry | Use |
|---|---|
| Banking and Financial Services | Cloud computing enables banks to invent newer methods of customer relationship management, offering customers services regardless of their location or time. Cloud computing aids in handling large volumes of data quickly and provides financial data security against data breaches and other fraudulent activities. |
| Education | Cloud computing solutions have modernised the teaching-learning environment by allowing educational institutions to host their student and teacher data. With the increased use of laptops and tablets in classroom, cloud computing helps to upload large sized data for the benefit of students. The technology has resulted in cost savings for students by reducing the need to spend on storage devices as cloud-based applications use the cloud for processing power and can be run on even the most basic devices. |
| Healthcare | Cloud computing helps healthcare organisations to store large amounts of patient data. Health companies use wearable technology to monitor patient health ensuring they receive customised care instantly. |
| Retail | Cloud computing is revamping inventory management in the retail industry offering benefits of reduced operational cost. They aid in storing and analysing customer data enabling firms to segment the target audience and devise marketing strategies. |
| Automotive | Automotive companies depend heavily on the availability of data requiring huge infrastructure to maintain them. Cloud computing offers updated data required by the firms using Internet of Things (IoT). Cloud computing plays a key role in fleet monitoring by providing fleet operators with real time information on fuel efficiency, navigation routes, location, estimated time of arrival etc. These cloud-based services have interfaces for both data aggregation from the vehicle and display of data to the fleet owner, facilitating improved monitoring of the transportation business. |
| Real estate | Cloud computing aids the industry in the storage of historical real estate data collected over time. The companies can minimise heavy capital expenditure on IT resources using cloud computing. |
| Insurance | The cloud computing allows insurance companies to communicate within channels, set up customer portals, and track customer accounts and status. Cloud computing ensures speed and efficiency owing to the instant availability of necessary data. |
| Telecommunication | Cloud computing is used for creating new products, enhancing the existing products, and developing new business models (B2B) in the telecom industry. |
| Transportation & Logistics | The sector has been using cloud computing services for tracking shipments through the supply chain, predicting when deliveries would arrive, analysing customer data and enabling intelligent warehousing. |
| Entertainment | Cloud computing helps entertainment service providers to monitor business projection without additional investments. Cloud computing is building customer experience and expectations by offering high streamline performance with minimal downtime and delays. |

*Source: Imaginaovation Inder, MSR cosmos*

The COVID-19 health crisis has accelerated the adoption of cloud computing across several industries. The end-user spending on public cloud computing services was anticipated to grow at 18.4% in 2021 totalling to USD 304.9 billion.[7]

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[7]Forbes

## Accelerated Cloud computing Adoption and COVID-19 pandemic: Growth Drivers

**Business resilience**

- The occurence of COVID-19 pandemic resulted in higher emphasis on flexible computing power, lower cost of backup and disaster recovery, remote workforce management including business continuity.
- A survey from Flexera indicated 27% of the businesses witnessed increase in cloud spend due to the pandemic.

**Remote working**

- The remote working scenario has heightened the importance of the cloud for business continuity with remote workforces and uninterrupted online collaboration.

**Healthcare Investments**

- Healthcare investments surged during the pandemic that leveraged cloud for AI-based research and development, telehealth and crisis management.

**Evolution of business operations**

- Business operations have also evolved because of increased demand for e-learning, robotics, composite artificial intelligence, augmented reality and virtual reality scenarios, digital payments and virtual retail experiences.

**Focus on environmental sustainability**

- Organizations are adopting the public cloud to harness the benefits of carbon footprint reduction.

## 02 Global VC Funding in Cloud computing

According to Accel's 2022 Euroscape report, 51 software cloud developers raised funds at valuations of over USD 1 billion in Q1 2022. In October 2022, there was roughly USD 770 billion worth of funds available to purchase cloud computing companies. Rising inflation and interest rates have been major headwinds for the industry as the valuation of publicly listed cloud computing companies dropped to USD 1.2 trillion from USD 2.8 trillion in the last 12 months, as of October 2022.[8]

### Prominent VC Investors in Cloud computing space

Cloud computing start-ups serve as attractive option for venture capital investors owing to the high profit margin with a relatively small customer base and attractive exit opportunities including IPOs and strategic acquisition.

| Investor | Description | Investment Stages | Investments |
|---|---|---|---|
| Ignition Partners | An early-stage enterprise software venture capital firm that invests based on operating experience and enterprise relationships. They have footprints in both Seattle and Silicon Valley with a network that has a global reach. | Seed, Series A, Series B, Growth | Snap logic, Archipelago, Aviatrix |
| Intel Capital | Intel Capital invests in the future of compute via investments in Cloud, Silicon, Devices, and Frontier | Pre-seed, Seed, Series A, Series B, Growth | SaVia, Medical Informatics, Astera Labs |
| Aspect Ventures | Aspect Ventures is a venture capital firm investing in the emerging mobile marketplace | Seed, Series B, Growth | Silverfort, Future Family, Vida Health |
| New Enterprise Associates | A global venture capital firm that invests in technology and healthcare. | Pre-Seed, Seed, Series A, Series B, Series C, Growth | Regression Games, PixieBrix, Timescale |
| Mohr Davidow Ventures | The firm invests in early-stage technology startups and partners with entrepreneurs to build companies that leverage big data, mobile analytics and web cloud. | Seed, Series A, Series B | Kabbage, Aryaka, Webscale |
| Formation 8 | The firm focuses on seed, early and later stage venture investments. | Seed, Series A, Series B, Growth | Aviatrix, Ascus Biosciences, Fieldwire |
| Battery Ventures | The firm invests in technology companies of all stages of growth. The firm has invested in over 160 technology companies worldwide across communications, software, infrastructure. | Pre-seed, Seed, Series A, Series B | Seek AI, Mews, Galileo |

[8]Reuters

## 03   Cloud Computing in Middle East

The cloud computing industry in the Middle East is continuously evolving and generating new opportunities for cloud computing vendors. The industry witnessed robust growth post-pandemic driven by increased demand, partnerships with global cloud computing vendors and agile technological advancements. Industry giants such as IBM, Oracle and Microsoft are expanding their operations in the MENA region. For instance, in June 2019, Microsoft opened data centres in Dubai and Abu Dhabi with cloud computing services. In July 2020, Oracle launched a data centre in Saudi Arabia. In 2019, Amazon Web Services opened the first AWS Middle East Region in Bahrain and has signed agreements with an array of regional government offices, including the Ministry of Commerce and Industry (MOCI) in Kuwait and the Information and e-Government Authority in Bahrain. In 2022, Google Cloud announced its plan to establish data centres in the Middle East, especially in UAE and Kuwait.
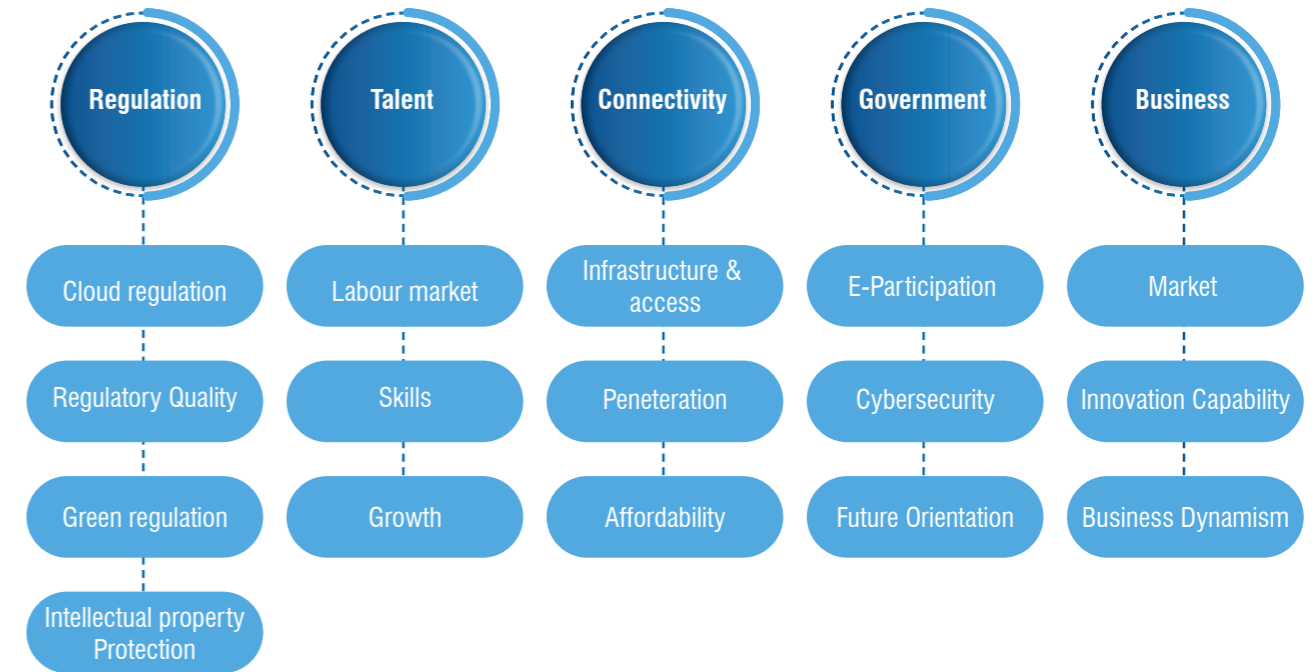
### Middle East Cloud Computing Market size (2021-2026)



CAGR of 17.2%
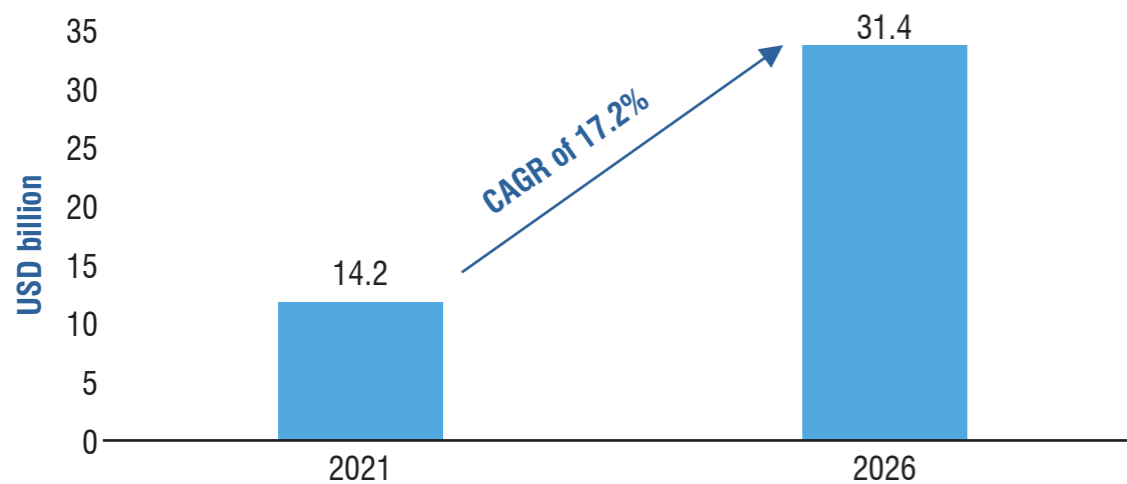
*Source: Markets and Markets*

The Cloud Competitiveness Index serves as a tool to measure the health of cloud computing market and track the progress of regional economies in adopting cloud computing technologies. The index covers five domains assessing the regulatory framework of the region, competitiveness of workforce, the quality of network infrastructure, government support and role of business environment for cloud computing stakeholders in the country.

### Cloud Competitiveness Index 2023 Pillars



| Regulation | Talent | Connectivity | Government | Business |
|---|---|---|---|---|
| Cloud regulation | Labour market | Infrastructure & access | E-Participation | Market |
| Regulatory Quality | Skills | Peneteration | Cybersecurity | Innovation Capability |
| Green regulation | Growth | Affordability | Future Orientation | Business Dynamism |
| Intellectual property Protection | | | | |

UAE ranks first among MENA countries with conducive infrastructure and participation from the government. While Kuwait ranks last among the six GCC countries, the region has favourable infrastructure for the adoption of cloud computing services including the Computing Regulatory Framework, Cloud First policy and Cloud Migration Guide.

### GCC Countries Ranking

| Global Rank | Country | | Score |
|---|---|---|---|
| 1 | UAE | | 7.57 |
| 3 | Qatar | | 6.93 |
| 4 | Saudi Arabia | | 6.82 |
| 5 | Bahrain | | 6.45 |
| 6 | Oman | | 6.38 |
| 8 | Kuwait | | 5.59 |

*Source: Temenos*

Saudi Arabia has been ranked fourth among 15 countries in the index owing to the support from the government and strong cyber space in the country. Saudi Arabia secured second place on the ITU's Global Cybersecurity Index on back of initiatives towards capacity building and legal, cooperative measures. The implementation of Saudi Personal Data Protection Law and Cloud Computing Regulatory Framework have also contributed to the country's score.

## 04 ▶ Cloud Computing in Saudi Arabia

Public Cloud Computing consists of a third-party data provider providing data on-demand via internet to individuals and organisations. Revenue from Saudi's Public Cloud computing market is expected to witness a CAGR growth of 16.2% during 2023-2027 resulting in a market volume of USD 2.58 billion by 2027.[9] Major growth drivers for Saudi Arabia cloud computing services market include growing focus on reduction of capital expenditures, newer digital business strategies, preference for Internet of Things (IoT) and easier cloud service implementation. High digital penetration in Saudi Arabia is a key contributor for booming cloud computing market in the region.

### Saudi Arabia Cloud Computing Market size (2022-2029)
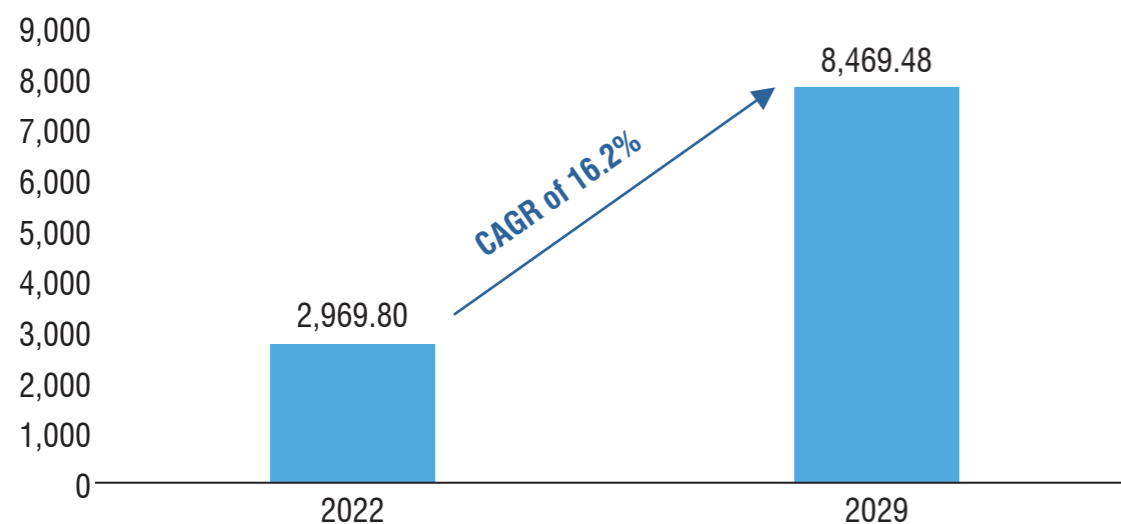


*Source: Bluewave Consulting*

Major players operating in Saudi Arabia cloud computing services market include Google LLC, Amazon Web Services Inc., Alibaba Cloud, Microsoft Corporation, Oracle Corporation, VMware, Inc., Salesforce Inc, Saudi Telecom Company, IBM Corporation. In 2020, Penny, a cloud-based procure-to-pay management solutions for businesses was established in Saudi Arabia with funding of USD 6 million. Outliers Venture Capital, Shorooq Partners, Oryx Fund were the major investors in the start-up. The startups are taking a variety of approaches to innovate the cloud computing industry.

### Cloud Computing startups in Saudi Arabia



*Source: Tracxn, Beststartup.asia*

Saudi Arabia's spending on IT services hit USD 27.59 billion in 2020. The projected demand for cloud computing services in Saudi is anticipated to reach USD 10 billion by 2030.[10] The cloud computing sector's development is expected to double over the next five years, contributing USD 13.3 billion to the GDP, according to the Ministry of Communications and Information Technology (MCIT).

## Factors favouring Cloud computing market boom in Saudi Arabia

**National Transformation program (Saudi Visison 2030)**

- The Saudi government has deployed the National Transformation Program (Saudi Vision 2030) to digitally transform key sectors of the economy, including banking, finance, government, manufacturing, and healthcare, in tandem with the world's progress in digital technologies.
- The government has emphasis on cloud adoption to save costs, upgrade infrastructure, speed up operations, and enhance overall performance in the public sector.

**Cloud-first policy**

- The policy aims to speed-up the process of shift from traditional infrastucture to cloud facilities in government organisations.

**Small & medium enterprises (SMEs)**

- Small and medium-sized businesses (SMEs) with a domicile in Saudi Arabia have started embracing cloud computing to serve their technology demands.
- More than a quarter of corporations intend to employ a mix of legacy systems, public clouds, and on-premise private clouds.

**COVID-19**

- The outbreak of COVID-19 pandemic caused businesses to set up technology that allows staff to work at home, allowing Saudi Arabian enterprises to increase their use of multicloud computing and enhance security tech.

**5-G Digital services**

- Saudi Arabia's Ministry of Communications and Information Technology became the 5G digital regulator to connect the kingdom to thriving digital economy, increase innovation, growth and partnerships.

*Source: Arab News*

## 05  Spotlight: Cloudalize

Cloudalize is one of the investment portfolio companies of Riyadh Valley Company. It is specialized in clould computing and GPU services. The company provides better alternatives to virtual computing services based on server infrastructure for use in fields such as engineering, architecture, industry, education, and commerce applications. Founded in 2011, it is headquartered in Belgium with 2 data centres in London and New Jersey.

Key Highlights
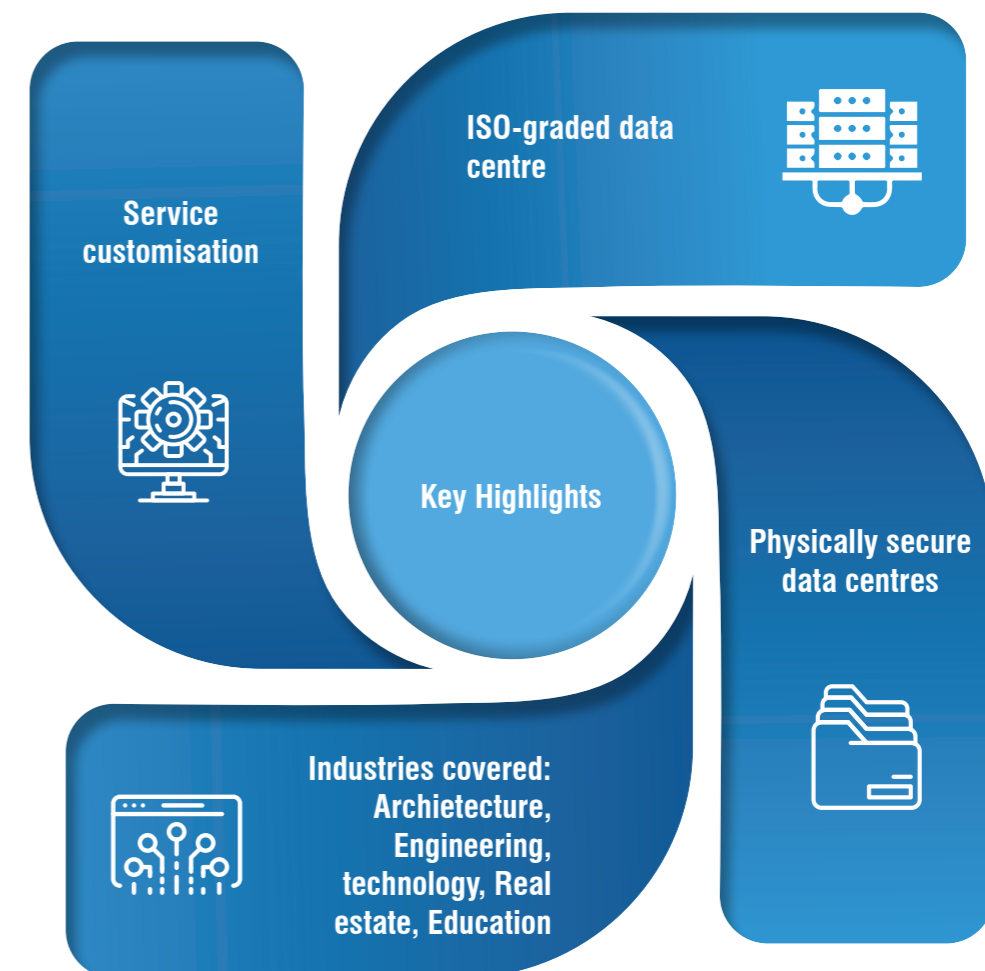


*Source: Cloudalize Website*

Cloudalize offer services via three packages namely Cloudalize Cloud, Custom Cloud and Private Cloud and charges on hourly, always on (24/7) or business hours (160 hours) basis.

## Cloudalize services

### ☁ Cloud Workstations

- Powered by faster GPU, the cloud workstations turn any device into a well-charged computer.
- Cloud Workstations serve as a cost-effective alternative to Virtual Desktop Infrastructure (VDI)
- It offers customised service with speed and safer technology.

### ⚙ Application as a service

- The platform provides High-End UE4 experience on any device via a One-Click experience through a self-serve portal.

### ▦ Private GPU Cloud

- Private GPU Cloud is an alternative to Virtual Desktop Infrastructure.
- The service combines the accessibility and security of VDI with the flexibility and mobility of cloud computing.
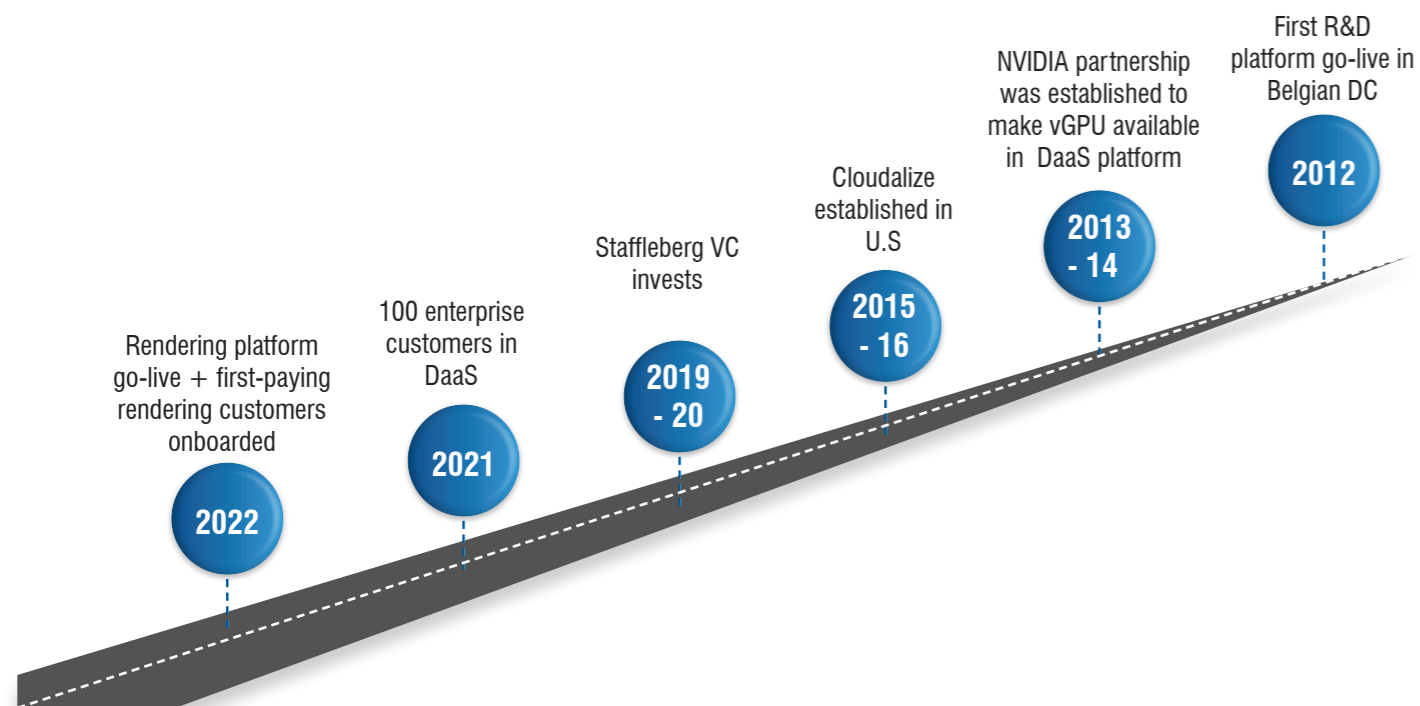
### ☁ Kubernetes GPU Cloud

- Kubernetes GPU Cloud offers a pre-configured Kubernetes platform powered by GPU for faster and more efficient operations. Cloudalize's Kubernetes GPU Cloud enables a business or educational institution to set up and build AI to meet the challenges of the future.

*Source: Cloudalize website*

## Key milestones



## 06 ▶ Conclusion

The adoption of cloud computing services has seen a massive upsurge over the past few years. Cloud computing has revolutionised the technology world. Cloud computing technologies will likely remain at the core of business strategy, providing the necessary connectivity and flexibility to keep pace with evolving standards. According to the "RightScale 2019 State of the Cloud Report'', over 30% of enterprise IT decision-makers recognized public cloud as their top priority in 2019.[11] One of the reasons for this shift is that business executives want to ensure that their companies can compete in the new world of digital transformation that demands adoption of public cloud computing. In 2023 and beyond, the cloud computing technology revolution will continue its rapid development. More companies and organizations will migrate their businesses to the cloud computing to find solutions to their business concerns. Cloud computing technology will continue to evolve in the coming years and will likely to play a pivotal role in reshaping the economy. The growth in the sector can be linked to emerging trends such as edge computing, AI and machine learning. AI and machine learning is expected to gain traction among emerging cloud computing technologies and services. These technologies provide a range of cloud-based, ready-to-use AI and machine learning services for client needs.

Cloud computing providers are facing stiff competition for cloud computing market share, so the cloud computing industry continues to progress, expand, and diversify its range of services. In the next generation, cloud computing technology is anticipated to be an integral element in the life of each human being because Cloud is one place where software, hardware, and device can connect in a single place.
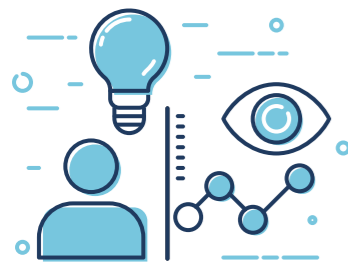
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[11]Techtarget

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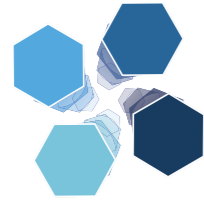
## شـركة وادي الرياض
## Riyadh Valley Co

### Riyadh Valley Company

Riyadh Valley Company established in 2010 by Royal Decree No.116 dated 13/4/1431 AH to be the investment arm of King Saud University in the fields of Knowledge Economy and the university strategic projects.

### Vision

To be the regional leader in knowledge-based investment and technology.

### Mission

Riyadh Valley Company is a strategic investor, focused on leveraging the local capabilities, investing locally and globally in growth - stage businesses to create financial and strategic returns that will support the future of economic development in the Kingdom.

## Investment Sectors:

### Venture Capital Investments

- Healthcare Investment
- FinTech
- Renewable energy& Sustainable Recourses
- Education
- Information & Communication Technology
- Logistics and Trasportation

### Strategic Investments

- Innovation and R&D Projects
- Commercial Projects
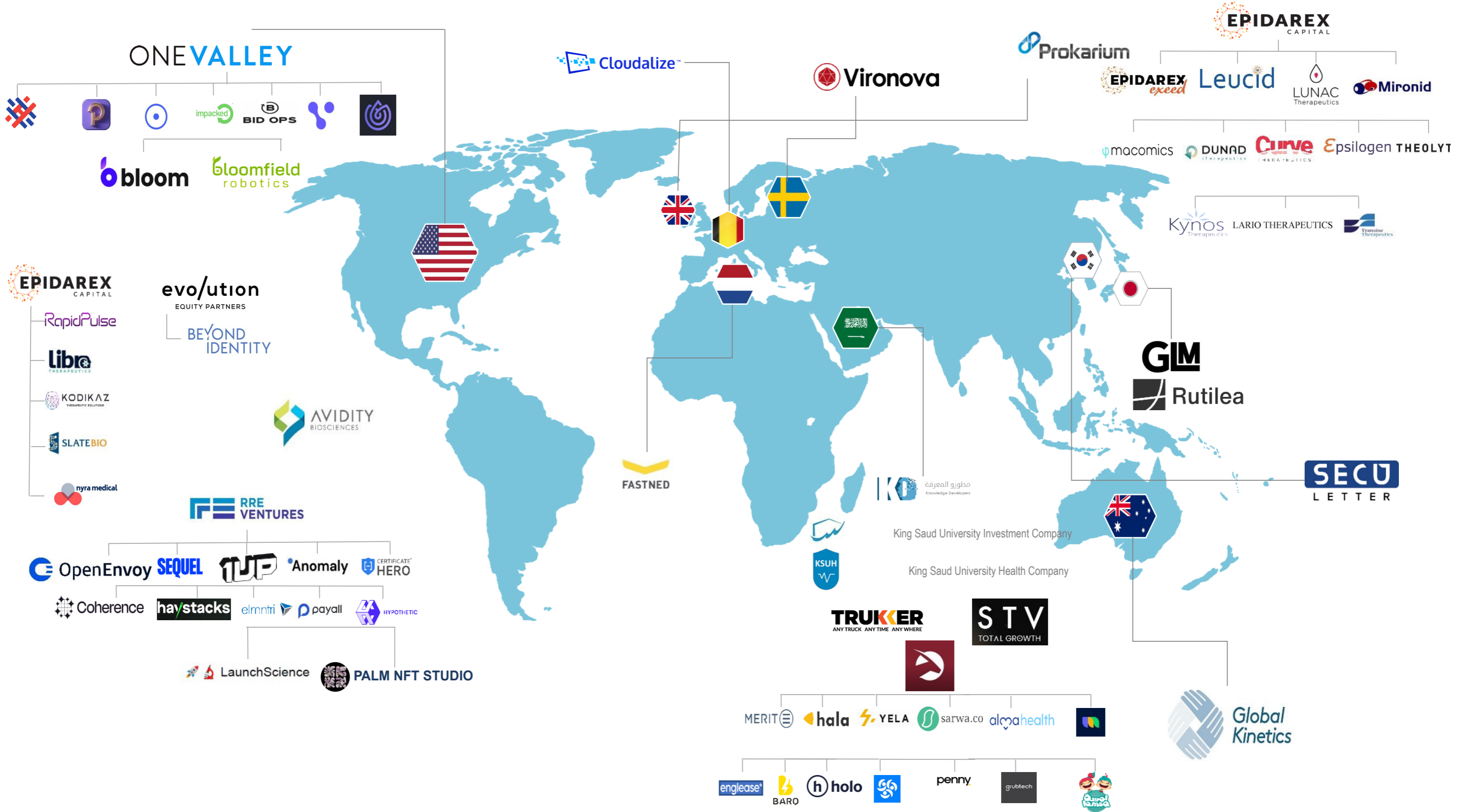- Educational Projects
- Residential Projects
- Healthcare Projects
- Mixed-use Projects

## Knowledge Investment Portfolio



ONEVALLEY

impacked · BID OPS

bloom · bloomfield robotics

Cloudalize™

Vironova

Prokarium

EPIDAREX CAPITAL

EPIDAREX exceed · Leucid · LUNAC Therapeutics · Mironid

macomics · DUNAD · Curve · Epsilogen · THEOLYT

Kynos · LARIO THERAPEUTICS · Transine Therapeutics

EPIDAREX CAPITAL

RapidPulse

Libra

KODIKAZ

SLATEBIO

nyra medical

evolution EQUITY PARTNERS

BEYOND IDENTITY

AVIDITY BIOSCIENCES

FASTNED

RRE VENTURES

OpenEnvoy · SEQUEL · Anomaly · CERTIFICATE HERO

Coherence · haystacks · elmntri · payall · HYPOTHETIC

LaunchScience · PALM NFT STUDIO

IKD مطورو المعرفة Knowledge Developers

KSUH

King Saud University Investment Company

King Saud University Health Company

GLM · Rutilea

SECU LETTER

Global Kinetics

TRUKKER ANY TRUCK ANY TIME ANY WHERE

STV TOTAL GROWTH

MERIT · hala · YELA · sarwa.co · almahealth

englease · BARQ · holo · penny · grubtech

## Strategic Investment Portfolio

**Sudair Pharma Company Project**

Research center and company offices for Sudair Pharma Company

**ELM Information Security Company Project**

Innovation Center project for Elm information security company

**Al-sorooh Al-Mubarakah Company Project**

Mixed-use project contains office complex, Mall, Restaurants, cafes, and walkway for visitors

**Obeikan Company Project**

Commercial project contains various stores near the Common First Year building

**Four Directions Company Project**

Commercial and office project contains office buildings and multi-use halls

**Majd Real Estate Company Project**

Commercial and Office project

**Derma Clinic Company Project**

Medical-Commercial project contains several medical clinics, medical products stores, and pharmacies
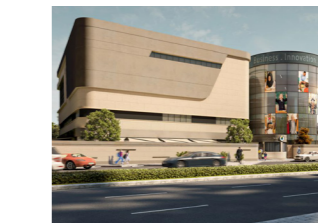
**Dur Alkuttab Company Project**

Educational project for Primary Schools

**Derma Clinic Company Project (Residential)**

Residential project for Derma Medical Clinics

**City Lights Real Estate Company Project**

Entertainment-Commercial project contains screens on the building and architectural blocks, in addition to areas for live shows

**Four Directions Company Project**

Commercial and Residential project

**Omnia Real Estate Development Company Project**

Commercial project contains various shops
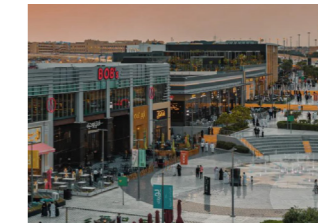
**Qasr Alaaredh**

Social-Entertaining and sports project

**Sahat Al-Ardh Company Project**

Acommercial project contains various shops

**Unified Real Estate Development Project**

Cultural-Entertainment project that includes Luxury restaurants, Cafes, Cinemas and green spaces

**University Boulevard**

Commercial-Entertainment project gives visitors a different experience, and it includes Restaurants and cafes

**NMR Real Estate Company Project**

Mixed-use project includes a hotel, restaurants and cafes

**Takween Altanmia Company Project**

Commercial and Office project

**Arrowad For Higher Education Company Project**

Educational complex, Arrowad colleges University campus in Riyadh