

UniVerse

The Decentralised Academic Journey



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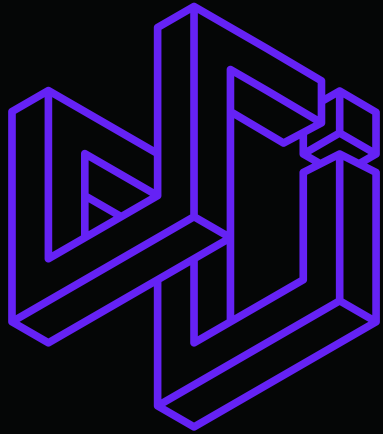
**Stimulate our economy and
diversify our revenues**

”

- His Royal Highness Prince Mohammed bin Salman, Crown Prince, Prime Minister, and
Chairman of the Council of Economic and Development Affairs

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UniVerse

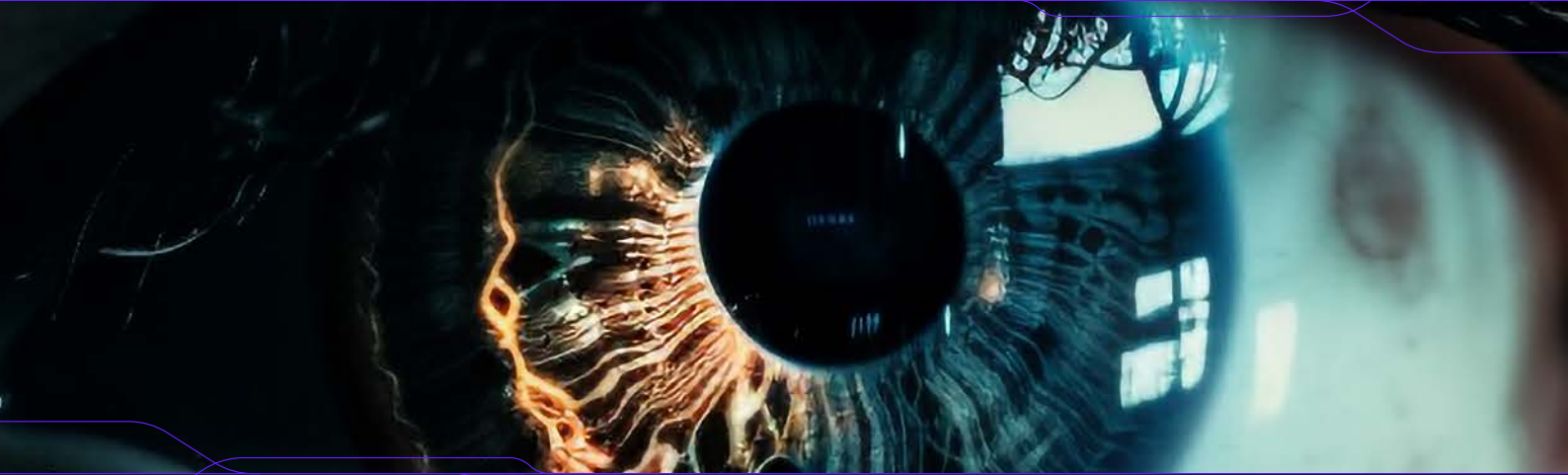
The Decentralised Academic Journey

**The World's Most Influential Platform for
Real-Time Medical Research and Innovation**

The Final Frontier Of New Knowledge

UniVerse is revolutionising how the world approaches medical research by creating a decentralised, collaborative platform that empowers academics and institutions to drive innovation in real-time. Our mission is to make the research process a profitable and sustainable venture, enabling researchers to be fairly compensated for their contributions while accelerating the pace of discovery. Through advanced technologies like NFT-based intellectual property systems and real-time hypothesis testing, UniVerse opens new avenues for job creation within academia and across industries such as manufacturing, logistics, and more. By reducing the costs of getting products to market and fostering cross-border collaboration, UniVerse positions itself as a critical driver of medical breakthroughs and global economic growth.

Vision



To become the most influential platform globally for medical research, capable of directing the world's response to health challenges in real-time while contributing rewards for ethical and impactful research.

Mission



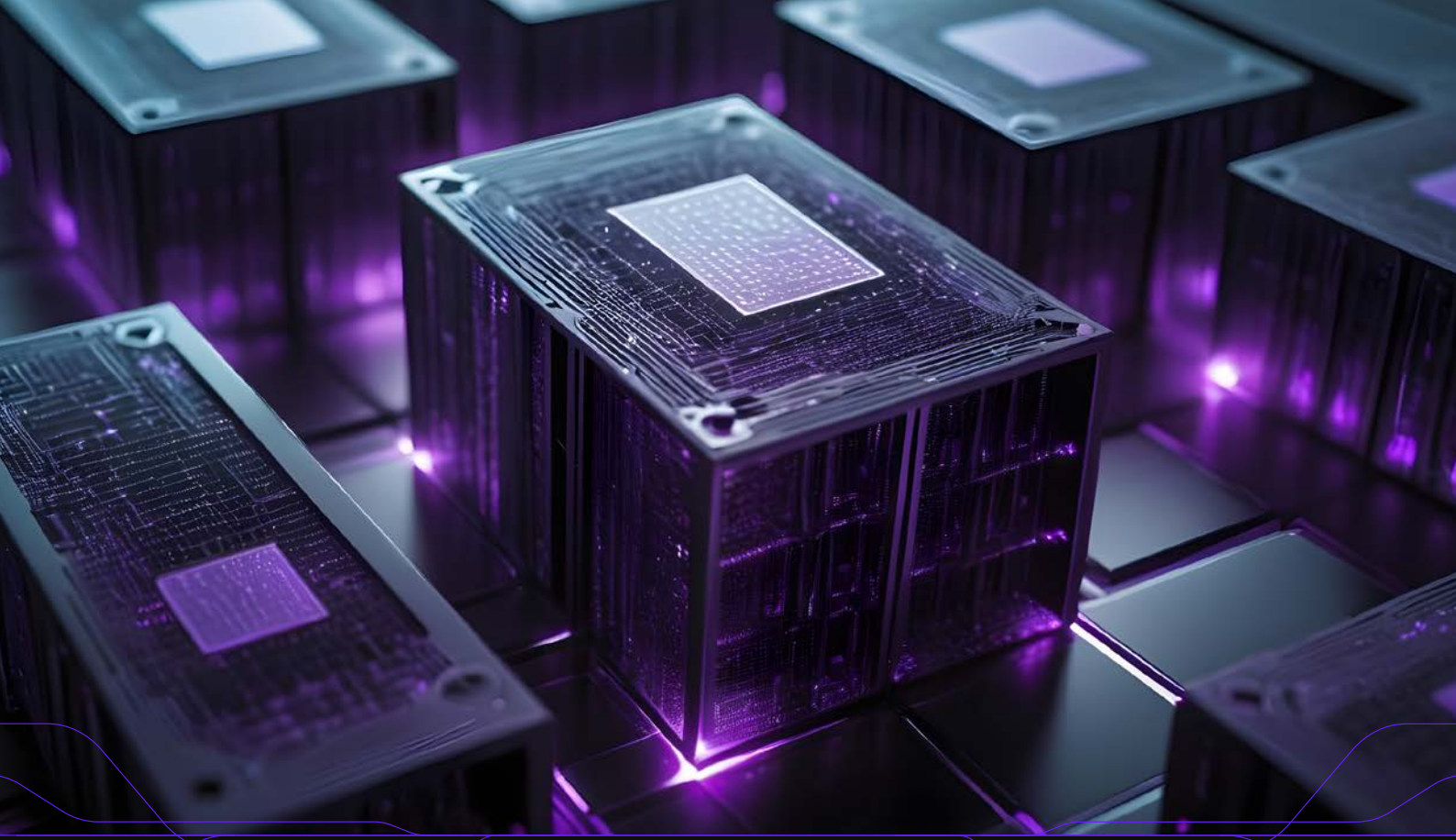
UniVerse provides a perpetual cycle of innovation by enabling real-time hypothesis generation, instant research execution, and a reward system that empowers academics and institutions globally.



Medical Data Index (MDI)

The Medical Data Index (MDI) is the world's largest repository of medical meta-data, continuously updated with validated data from global researchers.

- **Centralised Hub:** The MDI is the central hub of UniVerse, aggregating meta-data from billions of datasets across various medical domains, including genomics, proteomics, lipidomics, metabolomics and many other fields of medical research. It is the largest, most comprehensive repository of validated medical data globally.
- **Role in Data Aggregation:** The MDI serves as the data foundation for UniVerse, ensuring that researchers have access to the most up-to-date, high-quality data across all medical fields. This data can be utilised for hypothesis generation and validation.
- **Search engine for biomedical data:** We are building a biomedical search engine by standardising metadata into JSON-LD using Bioschemas.org. Utilising Spark, EKL frameworks, and LLMs for schema matching, we efficiently process large datasets through robust ETL operations.
- Each data point will receive its own Data repository scheme (DRS) ID that will be captured in our Decentralised Ledger Technology (DLT).



Large Language Model (LLM) with Retrieval-Augmented Generation (RAG)

The Large Language Model (LLM), equipped with Retrieval-Augmented Generation (RAG), powers real-time hypothesis generation for UniVerse.

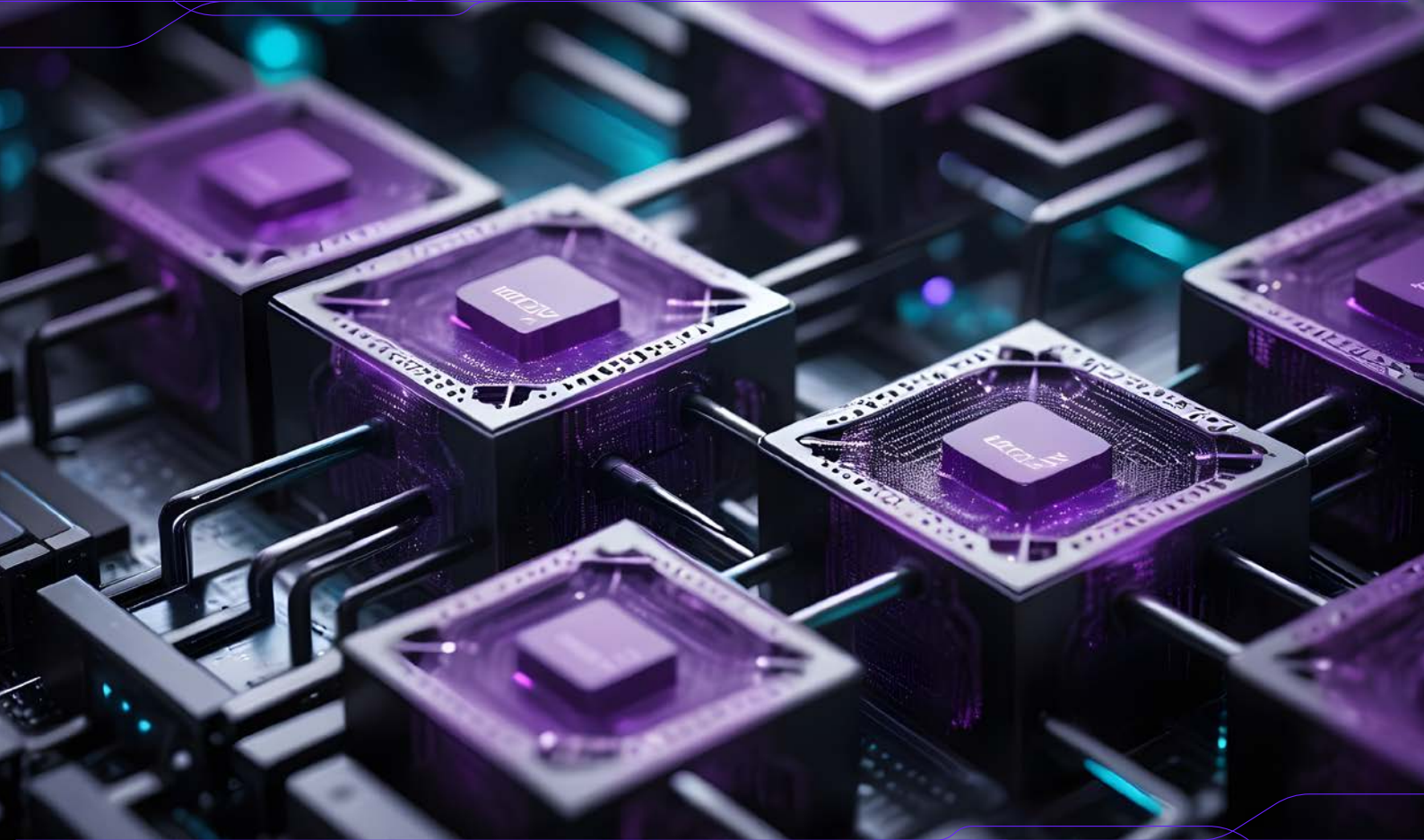
- **Real-Time Hypotheses Generation:** Real-Time Hypotheses Generation: The LLM is UniVerse's intelligent engine, which processes relevant data from its internal archive and the MDI through advanced machine learning algorithms to generate real-time hypotheses.
- **Grounded in Real Data:** The RAG technology ensures that the hypotheses are always based on the most up-to-date and relevant research from the MDI, allowing researchers to act on data-backed insights that are highly applicable to ongoing research.
- Each new hypothesis generated via our LLM will receive an immutable ledger through Decentralized Ledger Technology (DLT). This ensures that all insights generated are based on immutable, verified data, adding an extra layer of trust and credibility to the hypotheses generated.

A glowing purple cube sits on a circuit board, illuminated by a purple and blue light. The background is a blurred view of a computer keyboard with glowing keys. The overall aesthetic is futuristic and technological.

Real-Time Hypothesis Actioning

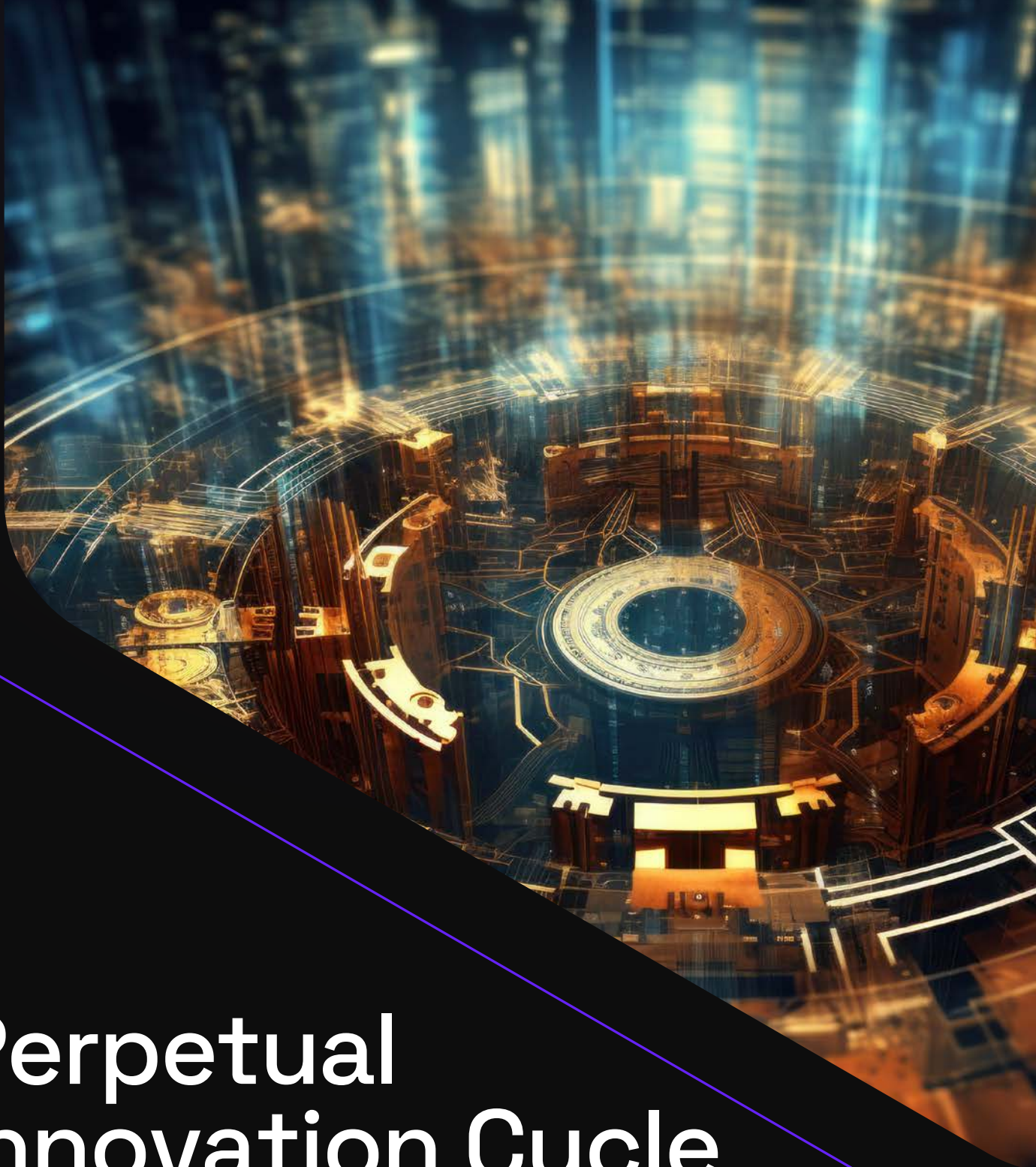
Once a hypothesis is generated, research can be **immediately acted** on using UniVerse's production grade Workflow execution service (WES), providing access to a global range of pipelines and workflows via its Tool registry service TRS), which includes **real-time data analysis, advanced bioinformatics, and subsequently** access to **state-of-the-art laboratory equipment**. These services enable researchers to conduct everything from **molecular testing** and **genomic profiling** to **complex experiments** across various medical fields.

Dollar to Research Impact Ratio (D2RIR)



A novel metric that quantifies the value of research value based on its impact over time.

- **Quantifying Research Value:** The D2RIR is a unique metric developed by UniVerse that assigns a quantitative value to each piece of research contributed to the platform. The value increases over time as the research is reused, validated, and built upon, ensuring that researchers receive continuous recognition.
- **Real-World Impact:** This metric considers account several factors, including how many hypotheses have been generated, further discoveries made using the research, and the real-world impact of the research. It provides a way to measure how valuable research contributes to global health challenges objectively.
- **DLT-Backed Research Value:** The value assigned to research through D2RIR is verifiable via the decentralised ledger. This ensures that the research value is based on actual, immutable data, and that researchers' contributions are ethically rewarded every time their work is cited or reused. This transparency fosters trust and fair compensation across the platform.



Perpetual Innovation Cycle

UniVerse creates a self-sustaining loop of continuous innovation, where every research contribution leads to new hypotheses, experiments, and discoveries. This cycle is fuelled by the integration of cutting-edge technologies and an incentive system that rewards researchers for every contribution, ensuring that innovation never stops.

- **Instant Hypothesis Generation and Actioning:** This instant feedback mechanism ensures that each new experiment or discovery directly contributes to the next, creating an ever-evolving, perpetual loop of scientific progress.
- **Real-Time Experimentation and Results:** The ability to conduct real-time research means that hypotheses are not just theoretical. They are actively validated and iterated upon, with results feeding back into the system in real-time, ensuring that insights are available immediately, thereby accelerating the research process.



- **Research Fuels Research:** The key to the perpetual innovation cycle is that every completed experiment feeds new data back into the platform. This means that every discovery doesn't just stand alone—it adds to the knowledge base, making future research faster and more accurate.
- As researchers test their hypotheses and generate results, these results become part of the MDI, further enriching the platform and providing new data for the LLM to process. This creates a continuous loop where the output of one experiment becomes the input for the next, ensuring that innovation never stagnates.
- **Incentivising Participation with the Dollar-to-Research Impact Ratio (D2RIR):** Researchers are not just contributing to science—they are also building personal value through the D2RIR system. Every time their research is reused or validated, the value of their work increases. This motivates researchers to continually contribute new data, knowing that their efforts will be rewarded in the long term.

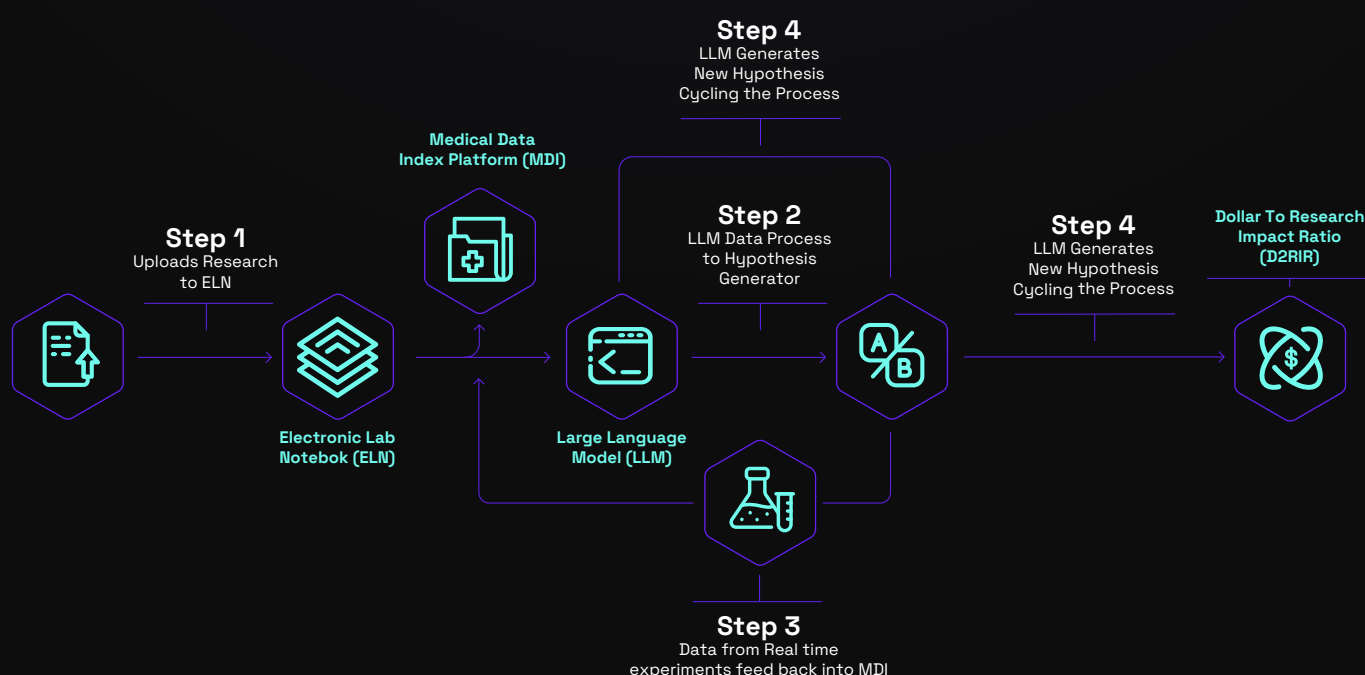
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The second pillar of our vision is our determination to become a global investment powerhouse. Our nation holds strong investment capabilities, which we will harness to stimulate our economy and diversify our revenues.

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- His Royal Highness Prince Mohammed bin Salman, Crown Prince, Prime Minister, and Chairman of the Council of Economic and Development Affairs

Example of The Perpetual Innovation Cycle in Action



- **Step 1:** A researcher submits new findings about Alzheimer's disease to the Electronic Lab Notebook (ELN), which integrates into the MDI.
- **Step 2:** The LLM processes this new data and generates a hypothesis about a potential biomarker for Alzheimer's.
- **Step 3:** The hypothesis is tested through lipidomics and cell testing, producing immediate results within the same day. These results are fed back into the MDI.
- **Step 4:** Based on these results, the LLM generates a new hypothesis, potentially about drug interactions or therapeutic targets. This new hypothesis is ready for testing, and the cycle continues.
- **Step 5:** As the research progresses, all contributions are immutably recorded on the DLT, ensuring a transparent, ethical record of every action. Researchers receive increasing rewards as their work continues to contribute to discoveries, tracked via the D2RIR system.



IP Ownership & Reward System

UniVerse revolutionises how research intellectual property (IP) is managed, ensuring that contributors are adequately credited and rewarded for their work. Through NFTs and smart contracts, Governments, institutions, and researchers retain full ownership of their research while receiving ongoing compensation every time their work is reused, cited, or built upon.

Smart Contracts and Tokenisation of Research



A novel metric that quantifies the value of research based on its impact over time.

- **Tokenised Ownership:** Every piece of research contributed to UniVerse is tokenised as an NFT (Non-Fungible Token). These NFTs act as digital certificates of ownership, ensuring that the intellectual property behind each piece of research is securely tied to the contributor.
- **Smart Contracts for Ethical Rewarding:**
 - Smart contracts are automatically triggered whenever the research is reused, cited, or built upon. These contracts ensure that researchers are automatically compensated for their contributions, with payments distributed transparently and instantly through UniVerse's tokenised economy.
 - This ensures a fair and ethical reward system, where contributors are not only recognised but also financially rewarded for their work over time.

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The idea of having a simple, unified platform where I can search for everything - sequencing data, medical imaging, relevant scientific literature - would have a global impact. Imagine every medical researcher having seamless access to a vast and diverse data universe. By providing a comprehensive data indices, researchers will be enabled to more efficiently tackle complex medical challenges.

”

- Kilian Liss, Data Analyst



Fractional Ownership for Continuous Reward

Fractionalized Rewards:

When new research builds upon previously published work, the original researchers receive fractional ownership of any new NFTs generated. This ensures that they receive royalties not just for their original contribution but for any future discoveries that stem from their work.



Agile Research & Pandemic Preparedness

Instant Shift in Research Focus:

In a global health emergency, UniVerse can rapidly reallocate resources and mobilise its network of international researchers to focus on the most pressing issues. Whether it's a new pandemic, a sudden outbreak, or a region-specific health crisis, UniVerse ensures that the platform's collective resources are redirected to where they are needed most.

Real-Time Global Health Interventions

Addressing Regional Health Challenges

UniVerse is designed to be adaptable, allowing regions to address their specific health concerns while still benefiting from global collaboration. Whether it's an outbreak of disease in a specific country or a chronic health issue prevalent in certain regions, UniVerse can quickly shift focus to tackle these challenges.



Real-Time Focus Shift

UniVerse can instantly pivot to address global health emergencies, ensuring timely research and interventions.

Regional & Global Collaboration

The platform supports both regional and global health initiatives, ensuring that local challenges are addressed with global expertise.

Ethical & Transparent Governance

UniVerse's decentralized model ensures fair and ethical oversight of research, ensuring that all contributions are rewarded and transparent.



Market Opportunity & Scalability

The Most Influential Platform in Global Research:

- **UniVerse's Global Leadership:** UniVerse is uniquely positioned to become the global medical research and innovation standard. By leveraging its real-time research capabilities and AI-driven insights, the platform provides governments, academic institutions, and industries unprecedented access to real-time data and discoveries.
- **Scalability Across Industries:** From academic institutions to pharmaceutical companies, UniVerse's platform is designed to handle large-scale input from diverse sectors, ensuring that cutting-edge research is continually available and actionable across disciplines.

Scalability

- **Built for Continuous Growth:** UniVerse's infrastructure is designed to scale seamlessly as the number of users and data points grows. With the ability to handle massive datasets and process real-time research, UniVerse can support thousands of institutions and researchers who are contributing and consuming data simultaneously.
- **Tech Scalability:** Powered by a scalable microservice architecture and big data infrastructure, the platform can accommodate growing research demands without compromising speed or accuracy and avoiding legacy problems. The more researchers and institutions join, the more valuable the platform becomes due to the network effect.
- **Expanding Global Participation:** As more academics, governments, and industries join the platform, the Medical Data Index (MDI) continues to grow, making it a richer resource for future discoveries. This network of global research participants ensures that UniVerse remains the most comprehensive and influential platform for medical research.



Data Security Privacy & Sovereignty

UniVerse ensures that sensitive research data is secure, private, and compliant with global standards while providing governments and institutions full data sovereignty.

- **End-to-end Encryption:** All research data transmitted and stored on UniVerse is protected by end-to-end encryption, ensuring that it remains private and secure at every stage, whether in transit or at rest.
- **Global Compliance:** UniVerse adheres to international data security standards such as GDPR and HIPAA, making it a trusted platform for handling health data and ensuring compliance across borders.
- **Data Sovereignty:** UniVerse's architecture ensures that national health data remains within a country's control, allowing governments and institutions to maintain ownership of sensitive information while benefiting from global collaboration.
- **Confidentiality of Research:** For projects involving sensitive or proprietary information, UniVerse offers private data vaults, ensuring that only authorized personnel can access critical research data.

UniVerse

Roadmap

Completed Milestones

Acquisition of Over a Decade of Medical Research:

UniVerse has secured access to over AUD \$50 million worth of medical research conducted by leading research institutes and industry partners. This extensive repository provides the foundational data needed to power the platform's AI-driven insights and research breakthroughs.

Development of Tokenized Digital Asset & Tokenomics Infrastructure:

The platform has successfully developed a tokenized digital asset ecosystem, supported by a licensed over-the-counter (OTC) digital exchange licence. This infrastructure enables secure, transparent transactions and rewards for researchers using NFTs and smart contracts.

Acquisition and Installation of H100 Supercomputers:

UniVerse has acquired and installed several H100 supercomputers, providing the computing power necessary to run large-scale data analytics, molecular simulations, and advanced AI operations with unparalleled speed and efficiency.

Medical Data Index (MDI) Completion:

The MDI has been scoped and integrated with over 10 billion datasets from global medical research sources. This positions UniVerse as the largest repository of structured and validated medical data, capable of powering real-time, AI-driven insights.

Initiation of LLM + RAG Platform:

The Large Language Model (LLM) with Retrieval-Augmented Generation (RAG) has been initiated and is currently undergoing training protocols. This involves continuous learning and optimization based on the vast datasets within the MDI to generate highly accurate and relevant research hypotheses.

Commitment to World-Leading Academic Team:

We have assembled a full-time development and advisory team of over 20 globally renowned academics, representing some of the leading minds in bioinformatics, AI, molecular biology, and medical research. This team is driving the ongoing development of the platform's core technologies and medical research initiatives.

Acquisition of State-of-the-Art Research Capabilities:

UniVerse has acquired world-class research capabilities, including PC1 and PC2 laboratories, and a range of advanced analytical research equipment such as: Xevo G3 QTof System (Mass Spectrometry), Carbon NMR, Bio-Plex 200 System, Abby Western Protein Analyzer, ACQUITY UPLC Systems and more cutting-edge technologies. Along with this, we have developed the necessary infrastructure to support the expanding developments and future growth of the platform and infrastructure.

In Progress To Be Achieved

(Next 12-24 Months)

Electronic Lab Notebooks (ELN):

Integration of the ELN into the UniVerse platform will enable researchers to organize, manage, and publish their research outputs. The ELN will seamlessly connect with the MDI and tokenomics system, allowing for the real-time tracking of contributions and rewards distribution through NFT-based ownership.

Medical Data Index (MDI):

Full MDI integration with over 10 billion datasets ingested. Development of a query engine for accessing validated, structured data stored within the MDI, with all information captured and verified on the blockchain for full transparency.

LLM + RAG Integration:

Ongoing integration of the Large Language Model (LLM) with Retrieval-Augmented Generation (RAG). The LLM will continuously learn from the MDI's massive dataset to generate real-time, AI-driven hypotheses. All hypotheses generated will be captured on the blockchain, ensuring integrity and transparency throughout the research process.

Hypothesis Generation Engine:

Development and integration of the Hypothesis Generation Engine, allowing researchers to generate and validate hypotheses in real time using the combined data from the MDI and LLM. This engine will enable seamless hypothesis testing and iterative research, accelerating the discovery process.

Blockchain Integration:

Continued development of blockchain-based validation processes and the creation of NFTs to track intellectual property and research contributions. This ensures that researchers receive ongoing rewards for their contributions, while maintaining transparency and security of data and research.

Monitoring & Security:

Ongoing enhancements for platform security and monitoring. Deployment of a service mesh to manage growing infrastructure needs, with advanced logging to ensure platform stability and security.

Compliance & Certifications:

Addressing compliance challenges specific to blockchain, ensuring data pseudonymization, and working towards obtaining international security certifications for data privacy and protection. future growth of the platform and infrastructure.



Future International Collaborations & Expansion

UniVerse is committed to expanding its global reach through strategic partnerships with leading research institutions, governments, and industries worldwide. Over the next 12-24 months, the platform will focus on establishing international collaborations that drive cross-border innovation and scientific discovery. This includes working closely with government health organizations, biopharmaceutical companies, and global research bodies to address pressing healthcare challenges and support large-scale public health initiatives. UniVerse will also facilitate cross-border data exchange and establish regional research hubs to ensure region-specific health challenges are addressed, contributing to improved global health outcomes and faster commercialization of research discoveries.

Team

The foundational components that make up UniVers TDAJ have been made possible by various key personnel including, but not limited to:

Leadership



Grant Reddy

Chief Executive Officer at UniVerse TDAJ Pty Ltd



Chad Reddy

Chief Technical Officer at Universe TDAJ Pty Ltd



Hunter Bui

Chief Operating Officer at Universe TDAJ Pty Ltd

Development



Dr. Boris Guennewig, PHD

Lead technical Officer at Universe TDAJ Pty Ltd



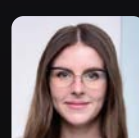
Professor Joris Vankerschaver

Statistician and Software Development at Universe TDAJ Pty Ltd, Faculty Member at the Centre for Biosystems and Biotech Data Science at the University of Ghent



Ognjen Milicevic M.D., Ph.D.

Lead technical Officer at Universe TDAJ Pty Ltd



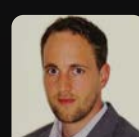
Anna Hoffman

Biology & Data Scientist at UniVerse TDAJ Pty Ltd



James McCallum

Senior Software Engineer at UniVerse TDAJ Pty Ltd



Alex Kanitz, PHD

Senior Software Engineer at Universe TDAJ Pty Ltd



Ralph Kalsi

Founder and Chief Executive Officer at Blockchain Australia



Harly Zappino

Founder at Neo Legal and Director at Blockchain Australia



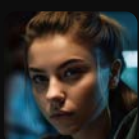
Lukasz Orlowski

Chief Technical Officer at 5ireChain, technical advisor Universe TDAJ Pty Ltd



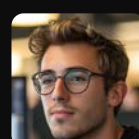
Leisa Rumjahn

Head of Technology Operations at Universe TDAJ Pty Ltd



Ana Damljanovic

ML Engineer at UniVerse TDAJ Pty Ltd



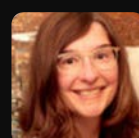
Matthew Pervan

Software Developer at UniVerse TDAJ Pty Ltd



MSC. Raquib Ul Ulam

Senior ML Engineer at UniVerse TDAJ Pty Ltd



Cathrin Rohleder, PHD

Senior Scientific Consultant at UniVerse TDAJ Pty Ltd



Ari Quintero

Project Coordinator at UniVerse TDAJ Pty Ltd



Vinicius X Viana

Head of Marketing at UniVerse TDAJ Pty Ltd

Team

The foundational components that make up AIAC and UniVerse: TDAJ have been made possible by various key personnel including, but not limited to:

Medical Advisory



Professor Andrew Shalliker

Professor of Physical Science at Western Sydney University



Professor Dennis Chang

Director at NICM Health Research Institute, Professor of Pharmacology at Western Sydney University



Professor Chunguang Li

Research Director at NICM Health Research Institute, Professor of Pharmacology at Western Sydney University



Associate Professor Mourad Tayebi

Associate Professor in Biomedical Sciences at the School of Medicine, Western Sydney University



Professor Zhong Tao

Professor of Infrastructure Materials and Director of Materials at the Centre for Infrastructure Engineering at Western Sydney University



Dr. Nady Braidy

Senior Lecturer in Neuroscience, PhD Physiology and Pharmacology - Society Memberships, American Alzheimer's Association.



Dr. Md Sadequul Amin

Scientific Advisor at UniVerse TDAJ Pty Ltd



Dr. Araz Solomon

Research & Development Manager at Horticultural Innovation Australia



Dr. Jason Jiangt

Research Follow at the Centre for Infrastructure Engineering at Western Sydney University



Dr. Utpal Adhikari

Postdoctoral Research Fellow at Western Sydney University



Social & Economic Impact of UniVerse

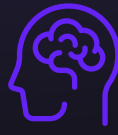
UniVerse is designed to drive both academic innovation and social progress by addressing key challenges in employment and economic growth. By creating a self-sustaining ecosystem that incentivizes research, UniVerse not only increases research output but also alleviates the financial burdens associated with unemployment, particularly in countries like Australia and Saudi Arabia. Below are the key statistics highlighting the transformative impact UniVerse can have on global economies and academic sectors:

Key Statistics



AU\$4.9 BN

Size of the Higher Education Loan Program (HELP) debt as of 2020.



AU\$38 BN

Annual cost of care for Australians living with a chronic health condition.



US\$47 TN

Estimated cost of worldwide chronic disease by 2030.

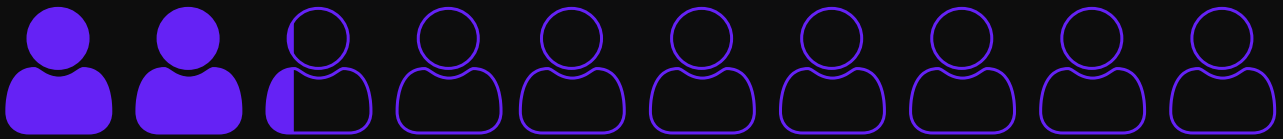


US\$18.6 BN
(2.8% OF GDP)

Annual cost of care for Saudi Arabians living with a chronic health condition.

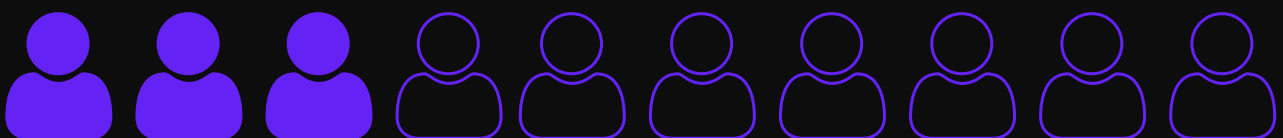
21.5%

of graduates are unable to find a job in their field of study within 4 months of course completion.



30%

of graduates in the MENA are unemployed.



Economic Impact Of UniVerse

- Every \$1 invested in R&D generates \$3.50 in economic benefits, according to CSIRO. This highlights the value of investing in UniVerse's ecosystem, which promises expanded academic employment, greater collaboration, and sustained economic growth.
- UniVerse can reduce unemployment, increase research output, and improve global GDP, creating jobs across various sectors and helping governments reduce their financial burden related to unemployment.



Cost Of Unemployment

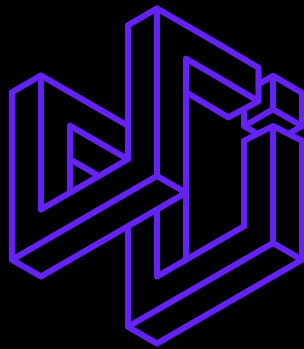
- **Australia:** AU \$41,649 per unemployed person annually.
 - **Direct cost (JobSeeker Payment):** AU \$16,367.
 - **Lost tax revenue:** AU \$19,717 per unemployed individual.
 - **Indirect fiscal impacts:** AU \$5,565 annually.
- **Saudi Arabia:** 87,600 SAR per unemployed person annually.
 - **Unemployment benefits:** 66,000 SAR.
 - **Social insurance contributions:** 14,400 SAR.
 - **Indirect fiscal impacts:** 4,200 SAR from VAT revenue.

Global Economic Impact

By leveraging the UniVerse platform to create academic and industry jobs, countries like Australia and Saudi Arabia can reduce unemployment by 0.01%, resulting in AU \$300 million in economic benefits over three years. UniVerse's model fosters a global research community that generates sustainable growth through employment opportunities, reduced student debt, and expanded research and development efforts.

Closing Statement

UniVerse represents a global opportunity to redefine the way medical research is conducted, not through technology alone, but by fostering a new era of collaboration between nations, institutions, and industries. By partnering with world-class researchers and forward-thinking governments, we can accelerate breakthroughs, create meaningful employment, and drive economic growth across borders. Together, we have the chance to harness the collective power of academia and innovation to tackle the world's most pressing health challenges, ensuring that no region is left behind in the pursuit of scientific progress. UniVerse is not just a platform—it's a catalyst for global impact, made possible through strong partnerships and a shared commitment to advancing knowledge for the benefit of all.



UniVerse

The Decentralised Academic Journey

