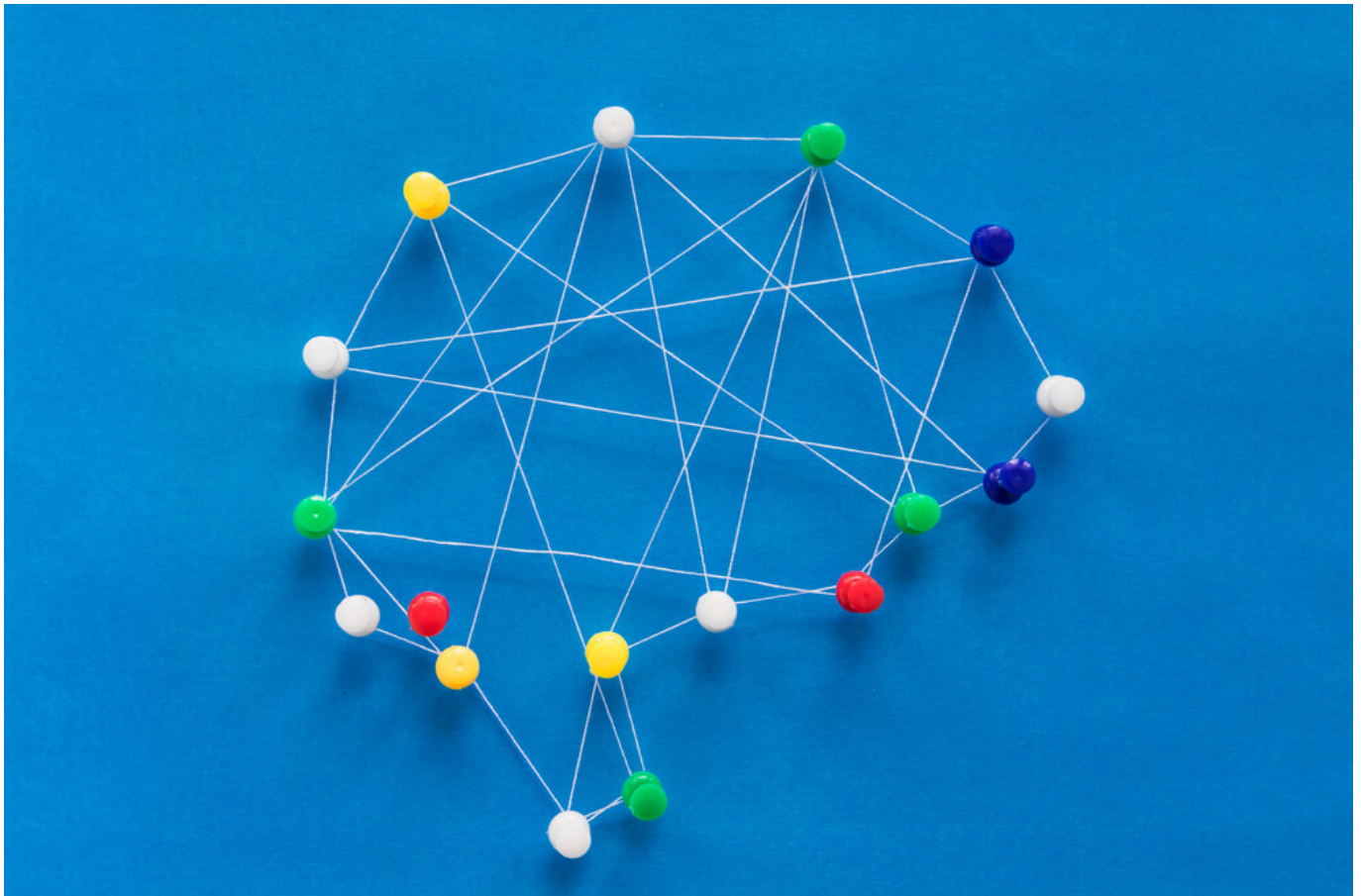




By: *Elise Quevedo*

Neurotechnology – the journey into the human brain continues



From what was once just a niche research industry, the neurotechnology market is projected to reach over \$50 billion by 2036. Neurotechnology is moving from research labs into real human use cases.

We see use cases in which patients regain mobility, restore communication, and enhance cognitive performance. But would you trust neurotechnology for a loved one?

There are strong growth projections over the next decade, and as investment flows increase, more big tech firms are partnering with or acquiring neuro-interface startups.

AI accelerates development cycles, which is why we are seeing faster growth.

Long-term financing, interdisciplinary partnerships, and a readiness to take on substantial risk are necessary for advances in neuroscience. Leading companies nowadays sometimes make investments years before they see a profit.

The patterns seen in each new technological wave align with this trend.

Neurotechnology growth is accelerating

There are three core drivers behind the rise of neurotechnology: clinical demand, AI integration, and hardware innovation.

First, clinical demand. Neurological disorders affect hundreds of millions of people globally. Conditions such as paralysis, epilepsy, and Parkinson's disease create an urgent need for new solutions.

Traditional treatments reach their limits, and neurotechnology offers direct neural-level intervention. Advocates such as Michael J. Fox and the late Stephen Hawking helped raise public awareness of the importance of neurotechnology development.

As technology advances, adoption rises

Second, artificial intelligence integration. AI models can gradually decode neural signals that forecast patterns in neurological data and convert brain activity into practical instructions. Brain-computer interfaces are now practical solutions.

Third, innovation in hardware. It is possible to design less intrusive implants with better resolution. Electrodes record more accurate signals, and wireless technologies reduce physical constraints.

These factors reinforce each other because funding accelerates research and development, and R&D develops technology. As technology advances, adoption rises.

Five neurotechnology companies making an impact

Neuralink is a pioneer in high-bandwidth brain-computer interfaces (BCIs). It creates implantable devices capable of reading and stimulating brain activity. It opens new possibilities for human potential by allowing people with paralysis to operate digital devices with their minds. A technological marvel that surpasses all expectations.

Synchron uses a stent-based device that is placed into the brain's blood arteries. This device is less intrusive since it allows patients to transmit commands without undergoing open surgery.

Blackrock Neurotech focuses on clinical applications. Its systems allow patients with severe disabilities to regain communication and movement capabilities. The company's long track record in neural interfaces provides credibility. I view its work as foundational for medical integration.

Some companies prioritise invasive precision while others focus on accessibility

Kernel looks into cognitive measurement versus direct intervention. It develops non-invasive devices for monitoring brain activity. They support research on attention, memory, and mental wellness.

Paradromics, considered Neuralink's biggest competitor develops high-data-rate brain interfaces. Its technology aims to restore speech by decoding neural signals associated with language. It targets patients who are unable to speak due to neurological damage. Considered Neuralink's biggest competitor.

Each of these companies reflects a different strategic direction. Some prioritise invasive precision whilst others focus on accessibility. Together, they define the competitive landscape.

Would you trust neurotechnology?

Unless you have personally been affected by a neurological challenge, it will always be tough to answer that question.

I personally trust the trajectory of the technology, respect the rigor behind clinical trials and regulatory oversight, and acknowledge the life-changing benefits already showcased, such as the case of Brad G. Smith, the first person with ALS to receive a Neuralink implant last year.

If a loved one faced paralysis or loss of communication, would you evaluate these solutions seriously? The potential upside outweighs the risks, but it is still a very personal choice.

There are still unanswered questions concerning security, privacy, and long-term consequences

All we can do is continue to share the latest developments so those affected can be as educated as possible before making the tough choices.

Before brain data is widely used by consumers, businesses should put strong security measures in place because it is one of the most sensitive types of personal information.

There are still unanswered questions concerning security, privacy, and long-term consequences.

We should see trust increase across the board as the technology matures and shows consistent safety, but this will depend on transparency, regulation, and proven outcomes over time.

Beyond the now and our next chapter

Clinical adoption should expand as more patients gain access to approved neurotechnology treatments and as healthcare systems integrate these solutions into standard care pathways, thereby driving near-term growth. But as we know, this is always a slow process.

By more accurately interpreting neural data and enabling real-time feedback systems that enhance usability and scalability, artificial intelligence will expand its role.



Neurotechnology is situated at the crossover of data science, engineering, and biology

Ethical frameworks should influence public acceptance and trust as governments and organisations develop more specific regulations governing data use and security.

Neurotechnology is also bound to expand its application beyond healthcare and into daily life.

One of the most notable fields of advancement is neurotechnology. It is situated at the crossover of data science, engineering, and biology.

It calls into question our definition of machine interaction. It calls into question human capacity, identity, and autonomy.

It is an assessment of responsible innovation. Businesses need to find a balance between ethics and growth. Patient outcomes should take precedence over speed. Transparency and accountability are the only ways to establish confidence.

This field cannot follow the same trajectory as consumer software. It requires deeper validation and stricter oversight. Yet the potential impact exceeds most other technologies.

Neurotechnology offers hope to individuals seeking to regain independence, but how far are we willing to integrate technology into the human mind, and who will set the boundaries?

The journey into the human brain continues.