Innovation and Technology, 2023

Greg Aldrich, March 27, 2023, LinkedIn Post

When the pandemic hit, we had the fastest growth of digital technology in history. Then, in 2022, a new digital revolution began, and technological progress continues in various fields as I type this. As a result of the rapid pace of innovation, the rate at which we adopt new technologies has increased even faster than predicted.

You can tie many of the technological accomplishments cited in this article to entrepreneurial ventures and entrepreneurs like Elon Musk, Steve Jobs, Peter Thiel, and many others, both known and those who are still unknown, including stealth-mode startups.

In this article, I explore several predominant trends in technology that will play a more significant role in 2023. They are in various orders other than in some cases where they build on each other.

1. Neural Synaptic Connection

Elon Musk's startup, **Neuralink**, is already conducting trials of the neural synaptic connection, which can help disabled individuals gain the ability to interact with their environment and others. I studied and 3D-printed a headset using **OpenBCI** technology which used electroencephalogram (EEG) data several years ago. While invasive, this new Brain-Computer Interface (BCI) takes this to a much higher level.

2. The Metaverse is not a Bluff; it is a Reality

Another trend that has become a recurrent issue in discussions about the technology industry's future is the Metaverse. This setting has vast economic potential; according to **Statista**, it will reach 700 million users by the end of the decade resulting in an addressable market of up to 4.4 trillion dollars (about $13,500 per person in the US). So it's no surprise that according to their research, the most prominent segments will be gaming and e-commerce.

Regardless of the difficulties **Meta** is encountering in forming its plans, the Metaverse, in its original conception, presents potential for businesses to increase their social presence, remote work, payments, healthcare, product sales, etc.

Numerous businesses already utilize this environment to enhance their products, create a new brand image, and connect with consumers. Considered one of Industry 5.0's greatest

hopes, the industrial Metaverse now has many applications, including the collection and digitization of the physical world, the comprehension and enrichment of data in virtual settings, and the attainment of sustainable objectives through cost optimization.

However, business IT functions have less interest in Metaverse technology outside of Industry 5.0. According to a recent **InfoTech Group** survey of CIOs, over 60% have yet to make plans to use the technology. Videoconferencing has been a critical enabler for many businesses throughout my career, and it is now a staple thanks to the pandemic and proliferation of remote and hybrid work. It works; virtual whiteboards, joint document creation and editing, and the like have made it even more potent.

This digital universe that combines virtual and physical reality in a shared online space has a long way to go. Still, it can radically alter how we work, shop, and have fun, and we are already beginning to witness its power. Combined with the Neural Synaptic Link technology above, imagine eating a hamburger in the Metaverse and feeling every sensation, including pressure, pleasure, and odor. See Mixed and Expansive Realities below for more.

3. Clones or Digital Twins

Possessing a replica in the Metaverse or other digital format to conduct low-risk testing now exists, but 2023 will be the year this technology will see further investment and development. Companies will create replicas of anything from cars to jets, buildings to entire campuses, and processes such as a production line.

4. **Artificial Intelligence Invades our Lives**

Artificial Intelligence (AI) has already invaded our lives. AI is already in **Microsoft**, **Google**, **Waze**, **Smart Grids**, and many more products. The publicity of ChatGPT from **OpenAI** has brought it front and center with the masses. Microsoft made a significant investment in the tech, already seen in the new Bing. Prompting ChatGPT and retrieving results in any flavor you request is easy. AI is quickly becoming the new utility in our lives and may help change our lives as much as electricity began nearly a century and a half ago.

Artificial Intelligence and machine learning supercharge predictive analytics providing businesses with insights that significantly help the top and bottom lines. Another area AI has had a significant impact on is security. The tools to detect and prevent malware and breaches are getting more intelligent. Unfortunately, it is more than just detection and

prevention systems that benefit. Attackers have now been using ChatGPT to generate better phishing emails and more.

5. Nanotechnology & Biotech

Nanotech has had an incredible impact in areas such as the semiconductor industry; I know this because I worked at a premier manufacturer. It has fueled Moore's Law and led to the power we experience today in computing. Imagine a pill releasing millions of nanorobots that provide non-invasive preventative medicine by attacking invading cells such as viruses and cancer.

What we have seen in some science fiction movies will soon become a reality. Nanotechnology enables dramatic advancements in health, engineering, and many other fields at the tissues and new components level.

6. **Smart Robotics**

Robotics meets artificial intelligence and machine learning. Its power to destroy jobs is a significant concern, and the first anti-robot protests and rallies may probably occur in this decade. But consider that robots now undertake the physical or dangerous jobs that humans do not want to, should not, or cannot do (think bomb disposal or planetary pre-exploration, for example).

Academics and company labs are paying much more attention to human and robot interaction. If properly utilized, intelligent robots will be one of the tools that will lead to our next industrial revolution. Rather than complete programming for specific tasks, smart robots can learn from their human teachers.

Fear for jobs extends to robots, as Alphabet included cafeteria-cleaning robots in a recent layoff, according to a **Fortune** article.

7. **5G Settles, and 6G Arrives**

The deployment of the 5G network compels operators to provide clients with constantly expanding and improving services. We can therefore expect announcements of the deployment of the 6G commercial networks as the next major mobile technology trend. Early announcements indicate a possible rollout in Asia within the next two years.

8. Mixed and Expansive Realities

You are likely disappointed if you believed the Metaverse and virtual reality would have changed the world by now. However, combining reality and the digital world creates upgraded but actual worlds that can significantly impact productivity.

Currently, mobile phone applications for decoration and apps that allow you to see a product on you or in your room are the most widely used by the public. Still, unique glasses will transform our reality into something even more extraordinary, as some bulky headsets already do.

Augmented reality is already having a considerable impact on several industries. Look for it as a driving force in the more human-centered Industry 5.0.

9. Robotic Process Automation

Using software to automate repetitive tasks or processes is not novel; what will be novel is the incorporation of artificial intelligence into this software to perform tasks faster and more accurately than humans while learning from the surrounding environment and developing a vast array of applications.

10. No-Code and Low-Code

This technological trend is significant for the future of enterprise, engineering, and scientific software. Code development is becoming more accessible to everyone, not just programmers alone. However, we still need talented developers and architects to bridge the gap between the latest technologies and newer, more advanced libraries and tools.

11. Smart Ubiquity

Smart Grids, Smart Cities, Smart Businesses, Smart Industries, and Smart Universities all feature AI. In addition, the convergence of data and artificial intelligence, remote

management, autonomous vehicles, logistics, operations, and data control centers, will simplify administration and promote the proliferation of AI systems.

12. Technology for Sustainability and Energy Efficiency

The world needs clean, plentiful, and inexpensive sources of energy. Unfortunately, solar and wind are less efficient than was hoped. While we have yet to build practical nuclear fusion devices, it seems only a matter of time. One company expects to have a solution by the next century. In the meantime, companies are producing variants, such as improving renewable energies (solar, wind, ocean) and hydrogen fuel cells.

Floating data centers that leverage ocean water for cooling are here. I've been friends, and an early advisor of **Nautilus Data Technologies** since before their first DC went live. They combined proven systems in place for years to create an energy-saving platform that consumes no water and incorporates no chemicals. Traditional data centers are among the highest water consumers, behind agriculture.

13. Super Apps

It may be a fad or catch-on in the western market since this trend originated in Asia and has been consolidating there. Super Apps consist of practically all-purpose mobile applications. **Weixin/WeChat** is an example because it offers instant chatting, mobile payments, online shopping, hotel reservations, financial services, and other functions still under development.

14. Artificial Intelligence Enhanced Health Tech

Artificial intelligence provides significant capabilities in the field of medicine. Several breakthroughs are on the horizon in preventative care, indigestible robots, mental health, "anti-aging," early diagnosis of disease, and more.

15. Blockchain to Redesign Trust

In the past, multiple individuals or entities required a third party to verify information through a centralized system when making an online payment to each other. However, the decentralized nature of blockchain technology has made it possible to do away with a central authority, resulting in safer, less costly. and more resilient data storage.

Decentralization and automation will spark a dramatic increase in digital assets as new forms of commerce, communication, and business form as a result.

Gartner anticipates that by 2025, the commercial value provided by this technology will increase to more than 176 billion dollars (about $540 per person in the US), which is why various industries are beginning to use it. It is no longer exclusive to the financial sector and cryptocurrencies.

Blockchain is creating new company ideas and expediting the verification process of operations, decreasing fraud and cyberattacks while increasing efficiency, dependability, and security. Blockchain technology is improving data tracking, creating new billing systems, housing patents, monitoring sales processes, securing medical data, etc., and will be critical for organizations in the next several years.

Conclusion

Technology is poised to continue its trajectory. Artificial Intelligence and Machine Learning are coming of age and impacting several of its key growth areas. As a result, we need to prepare for a busy and exciting decade of technology with considerable progress in 2023 that will likely define the next several years of innovation and investment.

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