

Cybersecurity & Quantum Technology

A recent study by Assoc Prof Griffin argues that quantum computing could be used to solve what is known as the "blockchain trilemma", which refers to the notion that improving all three fundamental attributes of blockchain – decentralisation, scalability, and security – at the same time is not achievable.

For example, a larger network is harder to secure, or the more decentralisation there is, the less scalable the network. According to Assoc Prof Griffin, quantum computing could resolve the blockchain trilemma by introducing highly secure networks. Quantum algorithms could also potentially provide better data privacy for blockchain interoperability, thus improving decentralisation while maintaining scalability.

Finally, scalability could be enhanced due to the very high speeds that information can be transferred between quantum computers using quantum networks. Overcoming these obstacles will address the issue of the interoperability of different blockchains, and lead to greater and safer transfer of information between existing blockchains. Whether paired with Quantum Technology or not, cybersecurity solutions can leverage blockchain-based space applications in a number of ways, from the use of ground-to-satellite secure communications for authorising financial transactions, to providing redundancy units in orbit for building hyper-resilient networks.

Ref: <https://www.businesstimes.com.sg/hub-projects/tackling-societal-challenges/a-potential-quantum-leap-for-blockchain-applications>
<https://www.forbes.com/sites/andrewarnold/2019/01/30/4-promising-use-cases-of-blockchain-in-cybersecurity/#36d075353ac3>

1. Find 3 potential applications of space and blockchain for **Cybersecurity & Quantum Technology**.

2. Space and Blockchain can bring disrupting innovation to **Cybersecurity & Quantum Technology**. How can the core properties of blockchain be used in this vertical?
 - Immutability

 - Transparency

 - Decentralisation

 - Resilience/security

3. What are the main barriers you expect to see while developing solutions, products or applications using blockchain technology and space for **Cybersecurity & Quantum Technology**?



Payments & Banking

Since the 2008 economic recession, the financial industry has been unexpectedly shaken and faced with a number of challenges concerning trust, reliability, and value. Traditional banking is now deemed outdated and somewhat unreliable as consumers and businesses are seeking alternative options for their transactions and assets. As a result, blockchain technology and cryptocurrencies have disrupted the industry entirely. It has completely transformed the business of large financial institutions, retailers, and international businesses, changing the way payments are conducted and fulfilled.

Traditionally, international enterprises face high banking fees and time delays due to physical distance. However, blockchain can improve cross-border payments by offering added security, higher transfer speed, and lower conversion fees. Such payments can be further supported with smart contracts, adding more certainty for the sender and receiver. Additionally, blockchain's ledger can render the varying ledger systems of banks worldwide obsolete, creating a single, clear record of payments.

Ref: <https://www.plugandplaytechcenter.com/resources/easier-and-faster-payments-blockchain/>

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Investment & Other Business Opportunities

It's been nearly half a century since humans left footprints on the moon and during that time, human space exploration has largely centred on manned low-Earth orbit missions and unmanned scientific exploration. But now, high levels of private funding, advances in technology and growing public-sector interest is renewing the call to look toward the stars. The investment implications for a more accessible, less expensive reach into outer space could be significant, with potential opportunities in fields such as satellite broadband, high-speed product delivery and perhaps even human space travel.

Near term, space as an investment theme is also likely to impact a number of industries beyond Aerospace & Defence, such as IT Hardware and Telecom sectors. Morgan Stanley estimates that the global space industry could generate revenue of more than \$1 trillion by 2040, up from \$350 billion, currently. Yet, the most significant short- and medium-term opportunities may come from satellite broadband Internet access.

Ref: <https://www.morganstanley.com/ideas/investing-in-space>

1. In your opinion, in what ways will blockchain change how people invest?
2. If you were a space investor, which categories of space companies (surveillance, mission deployment, manufacturing, data analytics, etc) would you find most interesting? Why?
3. Many traditional investors have not yet begun to include space companies into their portfolio. In your opinion, why is that the case? What can the space industry do to change this? Can blockchain be a potential solution for it?
4. List which integration of blockchain and space technology will demonstrate the most business potential over the next 5 years.