

**Quantum Blockchain Technologies Plc**  
(“QBT” or “the Company”)

**Update on Bitcoin Mining R&D**

The board of Quantum Blockchain Technologies (AIM: QBT) is pleased to update shareholders on the current progress of its Bitcoin (“BTC”) mining research and development (“R&D”) activities.

**Highlights**

- Bitcoin mining testing commenced using knowledge-based algorithms
- Bitcoin mining to follow shortly after completion of current testing
- Quantum computing simulations generating positive results, and
- New patent applications to be filed as soon as practicable

**Bitcoin Mining**

The Company has moved from simulation testing and has started live experimental BTC mining on its IT R&D platform, using a standard version of the SHA-256 algorithm. The main purpose of the mining activity is to collect real time data to populate the Company’s existing Big Data database, which is then utilised by the R&D team with machine learning and data analysis tools. The Company is pleased to report that this development has led to the first two knowledge-based algorithms, which govern the SHA-256 computation, being deployed, with mine testing now taking place.

This is the final step of nearly a year’s work by one of the Company’s two Machine Learning Teams. A third Machine Learning Team, which started work earlier this year, to develop an alternative solution to the two Machine Learning methods, has already delivered some innovative results. Both approaches (Method ‘A’ and Method ‘B’) have a “probabilistic element” approach, which over time, represents a “deterministic superiority”. During testing, Method ‘A’ has improved the performance in speed and energy consumption significantly compared to existing crypto mining hardware. Taking exact measurements is part of QBT’s mining testing programme.

The second knowledge-based mining approach (Method ‘B’) will need the availability of a proprietary ASIC chip which, if successful, probabilistic mining could be improved by several factors compared to today’s deterministic BTC mining using commercial ASIC chips. Theoretical analysis is currently showing a material improvement, but experimental testing is required to quantify it on a large number of real mining cases. The Company is, therefore, assessing its competitive approach using GPU and FPGA chip technology, instead of ASIC, such is the expected potential of this new approach.

Subject to the confirmation of current testing, it is expected that two new patent applications will be filed as soon as practicable.

More importantly, the Company expects to shortly commence real Bitcoin mining using Method ‘A’, performed on the latest generation of GPU and FPGA.

**Quantum Computing**

Work on the Quantum version of the SHA-256 algorithm is ongoing, and it is expected that a patent application will be filed once the Company achieves theoretical confirmation. Importantly, the Company has been performing simulations on an extremely scaled down simulated Quantum version of the SHA256 algorithm, which have produced exact results (instead of approximate results which are more typical with this type of computation) for the first time – a milestone achievement for QBT.

During the next two months, the Company is aiming to get theoretical evidence of whether the number of Qubits available on the next generation of commercial quantum computers (expected to be released into the market in 2023), will be enough to sustain the Company’s full SHA-256 computation.

## Second patent

The current directions taken by both R&D teams of cryptography and ASIC design are now more oriented on extreme silicon energy optimisation techniques, to stress the limit of the physical properties of a 5nm ASIC, for which a leading world-class ASIC design research organisation has been engaged.

The filing of the second patent for the SHA-256 optimisation has been put temporarily on hold. This is pending results of the performance of potential improvements which the Company believes are an alternative to an existing patent, and within a similar speed and energy consumption order of magnitude. An update on this patent will be released once a decision has been reached.

**Francesco Gardin, CEO and Executive Chairman of QBT, commented:** *“QBT is addressing an opportunity which represents a step-change for the Bitcoin mining industry, and where our competitors have invested several years, hundreds of researchers and engineers, as well as tens of millions of pounds. After just one year, QBT is already in a position to start its knowledge-based Bitcoin mining, using what we believe to be a unique and novel approach. The results of our Bitcoin mining endeavours during the next few months will determine the real value of our approach.*

*“At the same time, we continue to improve the chip design of ASIC based traditional mining by optimising the SHA-256 algorithm and its silicon implementation. Our Quantum Computing team has now successfully achieved its first correct quantum computation of a reduced size version SHA-256 and is now scaling up to the full SHA-256.*

*“The complexity of the task makes predicting the timeframe for publishing new results and operational updates difficult. We have over 20 world-class experts working in our R&D team to achieve these results. We will endeavour to communicate more frequently with our shareholders. We strongly believe that our efforts are taking QBT into a new direction of Bitcoin mining and ask for shareholders’ patience until these efforts are rewarded by success.”*

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This announcement contains inside information for the purposes of Article 7 of the Market Abuse Regulation (EU) 596/2014 as it forms part of UK domestic law by virtue of the European Union (Withdrawal) Act 2018 ("MAR"), and is disclosed in accordance with the Company's obligations under Article 17 of MAR.

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### **About Quantum Blockchain Technologies Plc**

QBT (AIM: QBT) is an AIM listed investment company which has recently realigned its strategic focus to technology related investments, with special regard to Quantum computing, Blockchain, Cryptocurrencies and AI sectors. The Company has commenced an aggressive R&D and investment programme in the dynamic world of Blockchain Technology, which includes cryptocurrency mining and other advanced blockchain applications.

### **Glossary of Terms:**

**ASIC:** An Application-Specific Integrated Circuit is an integrated circuit chip customized for a particular use, rather than intended for general-purpose use. ASIC chips are typically fabricated using metal-oxide-semiconductor (MOS) technology, as MOS integrated circuit chips

**Big Data:** Big data refers to the large, diverse sets of information that grow at ever-increasing rates. It encompasses the volume of information, the velocity or speed at which it is created and collected, and the variety or scope of the data points being covered

**FPGA:** A field-programmable gate array is an integrated circuit designed to be configured by a customer or a designer after manufacturing – hence the term "field-programmable". The FPGA configuration is generally specified using a hardware description language (HDL), similar to that used for an application-specific integrated circuit (ASIC).

**GPU:** A graphics processing unit (GPU) is a computer chip that renders graphics and images by performing rapid mathematical calculations.

**Probabilistic Approach:** A probabilistic approach doesn't guarantee to find always the solution, but when it does, it takes far less computational steps. When applied to a large number of mining attempts, the overall number of steps will be considerably less, but solution will be fine in, say 90% of cases.

**Pool Mining:** As part of bitcoin mining, mining "pools" are a network of miners that work together to mine a block, then split the block reward among the pool miners. Mining pools are a good way for miners to combine their resources to increase the probability of mining a block, and also contribute to the overall health and decentralization of the bitcoin network.

**SHA-256:** Secure Hashing Algorithm (SHA)-256 is the hash function and mining algorithm of the Bitcoin protocol, referring to the cryptographic hash function that outputs a 256 bits long value.

**Qubit:** A classical bit can be in two states, it can be either zero or it can be one. A quantum bit or qubit, however, can be in a sort of zero state and in a one state at the same time. This situation is called a superposition of (quantum) states. Qubits have some very particular properties: for instance, it is not possible to make copies of qubits.