

Let us now discuss the three core concepts that Eleutheros borrows from the Bitcoin Protocol. In doing so, we shall discuss layer isolation, unstructured peer-to-peer networking, and the proof-of-work algorithm.

### **1. Layer Isolation — Enables a clean separation between network and application**

Eleutheros only defines operations of the network and not those concerned with the application. It adopts the layer isolation mechanism mentioned in the seminal work, which speaks of referencing the Merkle root.

- A. The application is: “a local process that produces and verifies block content files on-demand”
- B. The P2P node is: “a local process that provides ‘other services’ to support the application”
- C. The Bitcoin protocol describes “A+B”, while Eleutheros describes “Generalized B + Any A”

In fact, this is how it has always worked and how it now works. Until now, some aspects of the application had been segregated. For instance, the non-mining wallets can be anything else in Eleutheros. Therefore, it would not be wrong to point out that Eleutheros is the continuation of this Herculean task of segregating ‘A’ from ‘B’ in the referencing itself. This is a better way of doing it rather than forking out to implement other digital currencies or algorithms in the future.

### **2. Unstructured P2P networking lets nodes switch overlays**

The Bitcoin network is an unstructured peer-to-peer network that comes with two key benefits<sup>18</sup> — independence and fungibility:

- A. It is possible to run multiple independent P2P overlays on a given network, and
- B. It is possible for a node to switch from one overlay to another

Again, this isn’t something new and has already been implemented to some extent. For example, it is quite common for the Bitcoin Network’s nodes to switch from the MainNet to TestNet or to a

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<sup>18</sup> A broad generalization: P2P is a field in its own right. Fortunately, blockchain networks are well-suited to P2P topographies as they require few of the processes most demanding for P2P networks (eg blockchain files are small/ infrequent, the # of files to index/search is low, etc.)