3. Types of blockchains

Behind the simple and catchy term of "Blockchain", there are in reality many different models that vary in terms of the degree of decentralization and access, the identity of participants, the consensus mechanism, speed, level of privacy, energy consumption, fees and scalability (see Table 1 on page 12).

Blockchains are often classified as public versus private. Under the private blockchain there is a sub-type called consortium or federated blockchain, sometimes considered as a type of blockchain in its own right (Buterin, 2015). Another commonly used classification of blockchain applications is permissionless versus permissioned platforms, i.e. the extent to which access to the platform is restricted – or not – to those with permission. These two classifications are sometimes conflated and it is not uncommon for people to associate public with permissionless and private/consortium blockchains with permissioned blockchains. The reality is, however, slightly more complicated as some public blockchains can be permissioned.

The world of Blockchain is nebulous, complex and fast-changing, and definitions and classifications are not cast in stone. As the technology matures and new models of transaction flows and applications are being developed, definitions and classifications continue to evolve.

(a) Permissionless versus permissioned blockchains

The distinction between permissionless and permissioned blockchains is mainly related to the issue of access to the platform. A permissionless blockchain is a blockchain that is open to anyone with a computer, with no restrictions imposed on who can access the platform and validate transactions.

In contrast, a permissioned blockchain is a blockchain in which access is restricted. Access can be restricted at various levels depending on the specificities of the platform, in particular whether it is a public, consortium or private platform: to read data, to propose a new transaction, or to validate transactions (BitFury Group, 2015). While permissionless blockchains such as Bitcoin are the ones that make the headlines, many blockchain use cases in the area of international trade are based on permissioned blockchains.

(b) Public versus private/consortium blockchains

The distinction between public, consortium and private blockchains is linked to the issue of management of the platform (who manages it) and user authentication