

## BLOCKCHAIN – WHAT DOES IT MEAN FOR THE UN

### WHAT IS BLOCKCHAIN?

People have documented facts, events and transactions for millennia. And keeping the information safe and secure has always been paramount—from village elders worried that scrolls would get destroyed by flood to government officials concerned that a central database is susceptible to hacking.

Blockchain is a distributed ledger technology (DLT) in which many copies of a ledger can exist, ensuring the information is not lost. The “pages” in this ledger (blocks in a blockchain) are linked with cryptographic codes, ensuring information can never be changed without it being detected.



### WHY IS BLOCKCHAIN SUCH A FUNDAMENTAL NEW TECHNOLOGY?

TRUST IS A FUNDAMENTAL ELEMENT IN SOCIETY; THEREFORE, THE ABILITY TO INSTANTLY CREATE TRUST IS POWERFUL

The guaranteed “truth” of the information in a blockchain means it can establish trust among parties without a central authority. For example: If Marise wants to sell her car to Hong they will go to a government office to document this sale. Using a blockchain they could document the transaction in the public ledger. Even if the details of the sale are not publicly visible, the record of the sale is stored and can never be altered in any way.

Where the Internet provided us with a means to easily, affordably, and globally exchange information, blockchain technology does the same for exchanging value, as well as documenting ownership and proof of existence. Possible applications range from monetary transactions to land titles, fishing quota or marriage certificates.

While often described as a singular “the blockchain”, there are currently many implementations of the technology in public or private (internal to an organization) use.

### WHAT IS THE DIFFERENCE BETWEEN BLOCKCHAIN AND BITCOIN?

The first application of blockchain technology was to create a virtual bank where people could store a form of virtual money they obtained and use it to trade with others. Bitcoin was the first such currency, but there are now thousands. Today, the value of Bitcoins worldwide is approximately USD150 trillion; the collective market cap of all types of such cryptocurrencies is close to USD 500 trillion.

The loss of control, and lack of visibility of the flow of money is of great concern to governments. Many are urgently introducing regulation. Policies are ranging from total prohibition (as in the case of Namibia) to fully embracing crypto-currencies (Estonia, for example). It is important to remember, however, that virtual currencies are just one of many applications of blockchain technology.

### BLOCKCHAIN TECHNOLOGY IS EVOLVING

Already a powerful tool used for many purposes, blockchain technology is still in its nascent phase and is continuously evolving. For example, recent versions of blockchain technology have introduced “smart contracts”—small pieces of computer code that can take an action as soon as an event has been documented in the blockchain, such as the release of a payment once a delivery has been confirmed. You might compare the current state of blockchain to the Internet around 1995: email existed already, as did websites, but certainly a lot has changed since then. Similar evolution is still to come for blockchain technology.

#### KEY FEATURES OF BLOCKCHAIN TECHNOLOGY



**Distributed**  
(multiple copies typically exist)



**Decentralized**  
(no central authority is needed)



**Immutable**  
(records can never be altered)

This leads to increased trust, accountability, transparency and accessibility

## BLOCKCHAIN IS BEING USED TO SUPPORT SUSTAINABLE DEVELOPMENT

Many uses of blockchain have direct relevance to the UN. Following are a few examples.

### IDENTITY

More than one billion people do not possess legal identification. This can restrict their access to services, various kinds of rights and opportunities. Proof of ID, therefore, is an important enabler of many other types of development. SDG target 16.9 is aimed to provide legal identity for all. A digital identity, based on blockchain and accessed through mobile devices and/or combined with biometrics, such as an iris scan, can provide a solution. In addition, this type of digital identity can be made more secure (from identity theft) and improve data privacy.



Source: id2020.org

The ID2020 alliance of private and public entities is working to provide universal digital identification for every person on the planet. Local initiatives, however, are far easier to implement and have already launched. For example, in New York, the Fummi app provides a digital ID for the homeless to access government services.

### GOVERNMENT SERVICES

Governments can use blockchain for increased efficiency, transparency and inclusiveness. Assuming a national ID system is in place, examples of application are e-voting, tax filings, health records, land or other property titles. Estonia in particular has proactively embraced blockchain technology.

# 2 billion

More than 2 billion people in the world are still unable to participate in the formal financial system. The majority are women.

## FINANCIAL INCLUSION

Blockchain can provide the "unbanked" with access to financial services. A mobile phone is all that is needed. Mobile banking is happening through text messages, notably in Kenya, but blockchain technology can take it to a new level. Blockchain technology can also facilitate micro-credit services or other community-based networks. It can dramatically lower the cost and effort involved in remittances, as companies like Everex, Kora and BanQu are showing. It can also reduce costs of intermediaries, as successfully piloted by World Food Programme (WFP) in refugee camps in Jordan.



Source: Mira Gratier/DFID

## DONOR ASSISTANCE

Cryptocurrencies can be used to channel funds to specific causes or specific communities. Advantages include cost savings by avoiding multiple intermediaries and currency conversions as well as increased transparency. The Disperse platform, for example, allows funds to be traced through the whole chain, from donor to beneficiary. Blockchain-based systems can also make payments dependent on goals being achieved. These advantages will help reassure donors that their money is well spent.

## ENVIRONMENT

The ability of a blockchain to track data from multiple actors in different locations can help manage the environment. Platforms have been set up to monitor and trade in carbon emissions. The Dutch government is piloting a blockchain-based system for toxic waste transport and waste sector data sharing. Mission Blue and Western Australian Ocean Foundation built a shared, tamper proof, permanent data repository for marine conservation.

## POSSIBLE USES OF BLOCKCHAIN TECHNOLOGY IN THE UN SECRETARIAT



UN Photo/Eskinder

### ADMINISTRATION

An internal (private) UN blockchain to document financial transactions could improve accountability and auditability.

Inter-departmental or inter-agency transactions could be carried out on a private blockchain, with or without the use of an internal virtual currency.

Documenting a procurement process on a private blockchain could increase transparency.

Asset tracking could be implemented using blockchain technologies and tokens. Smart contracts could be used to implement accounting standards such as IPSAS.

### INTERNATIONAL LAW

A blockchain could function as a centralized ledger to establish the status of Member States with respect to various international treaties and any change in that status, providing visibility and clear interpretation of international treaties and participation.

### HUMANITARIAN AFFAIRS

A public blockchain as a common database could help document needs in humanitarian emergencies by a multitude of parties.

### PEACE BUILDING

A blockchain could be used to record incidents of peace violations.

### DISARMAMENT

A blockchain could be used to track small arms voluntarily submitted for collection and destruction.

### ELECTIONS

A blockchain and accompanying software tools could be offered as a service to member states to help run elections in a secure and transparent way.

### HUMAN RIGHTS

A blockchain could provide a secure and tamper-proof repository to register human rights violations.

## BENEFITS OF BLOCKCHAIN FOR THE UN SECRETARIAT

