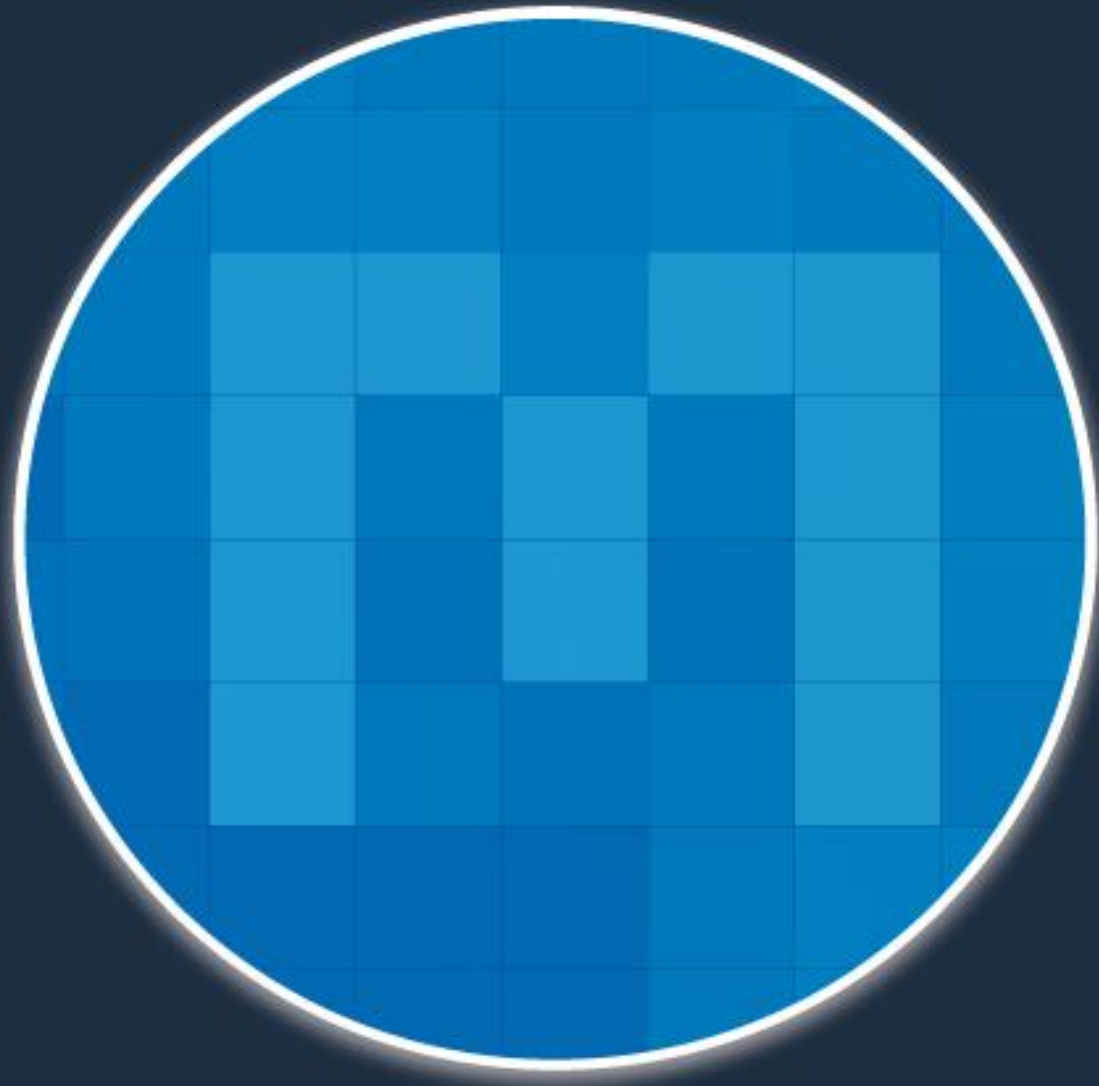


The Coin of Fairness and Justice  
for Latin America



UTEMIS

WHITE PAPER



## TECHNICAL SUMMARY

### Background Information: UTEMIS as an Ethereum Token

The UTEMIS cryptographic token is being built on the basis of a proven, robust, efficient, secure and scalable technology: the Ethereum network.

In a simple way, Ethereum is a decentralized and distributed computing platform that allows to execute Smart Contracts P2P on a public Blockchain.

Blockchain is a database of public access distributed and shared in real time in many different computers, so that when a new record is generated it is reflected on each computer. If one computer is hacked or disabled the information is replicated on many more. The database can only be updated with the consensus of the majority of equipment, and the stored data cannot be modified or deleted: it is an immutable and permanent record.

A Smart Contract is an autonomous and automatic application or script with the ability to execute and validate itself if the conditions for which it has been programmed are met. Being distributed in blockchain, a Smart Contract is a transparent, safe application with an activity time exponentially close to 100%.

UTEMIS is defined as an Ethereum token. It will thus represent the unit for all transactions carried out within the UTEMIS ecosystem. In other words, UTEMIS will be the virtual currency with which to buy or exchange goods within the UTEMIS ecosystem.

A token is a unit of value that represents some good. For example, a token can be the money with which you buy a good.

UTEMIS will be implemented as an ERC20 token. An interface that guarantees interoperability with the existing Ethereum infrastructure that is comprised of exchanges and development tools, and of course, other existing ERC20 tokens. In this way it will be possible to exchange UTEMIS for other compatible tokens. This makes UTEMIS an immutable, un-hackable, secure and active (zero idle time) token.

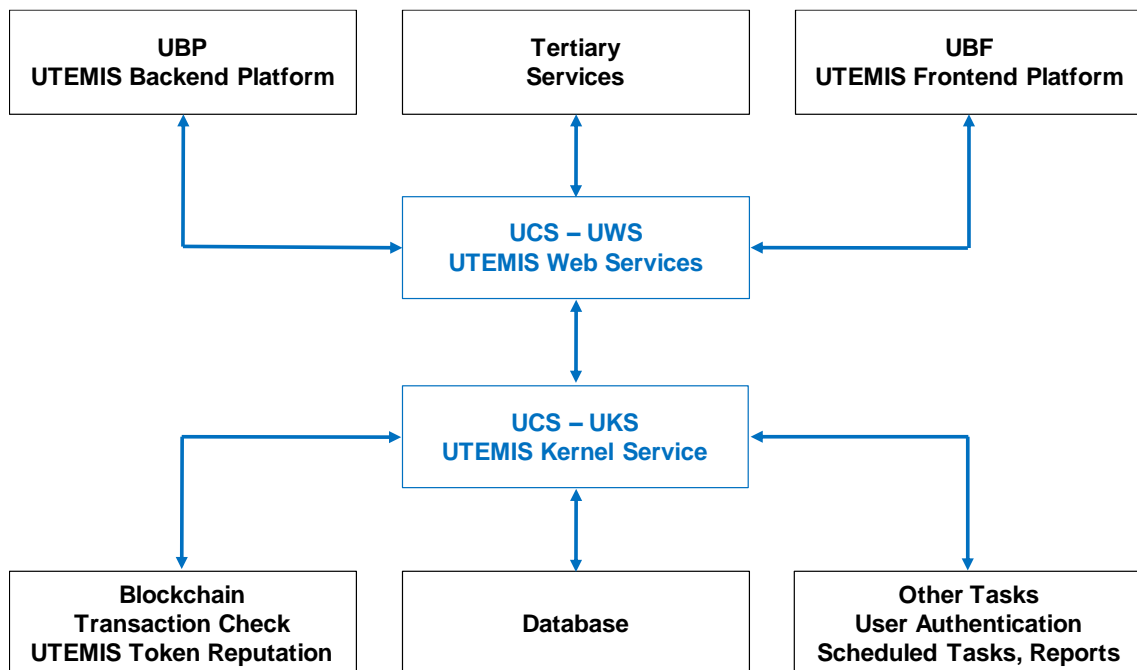
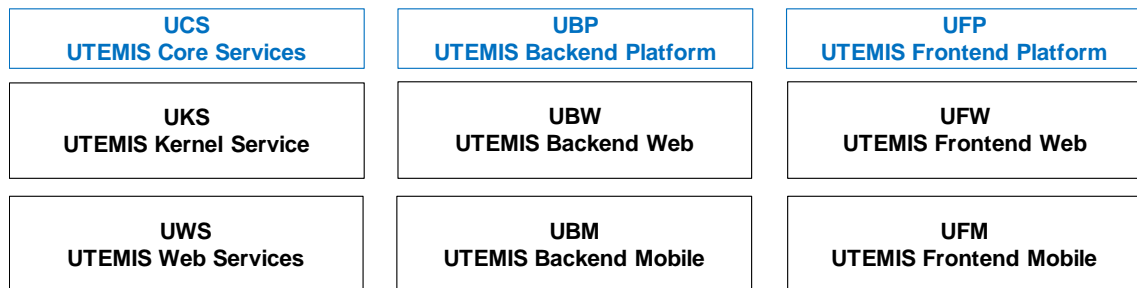
In addition to its use as an exchange currency in the UTEMIS platform, a second blockchain will be created, also on Ethereum, to record the reputation of each of UTEMIS customers.

Every time that a transaction concludes in the UTEMIS platform, both buyers and sellers must rate the experience. The reputation blockchain will record these transaction in a historical for each company that will be available to UTEMIS customers.



UTEMIS Technological Ecosystem

The UTEMIS ecosystem revolves around a web application built in PHP/ JavaScript and a MySQL database. All mounted on a scalable cloud services platform. This is the basic scheme:



UCS – UTEMIS Core Services

UTEMIS Core Services (UCS) is the software that provides the intelligence of the set and manages the smart contracts. It is divided in two blocks:

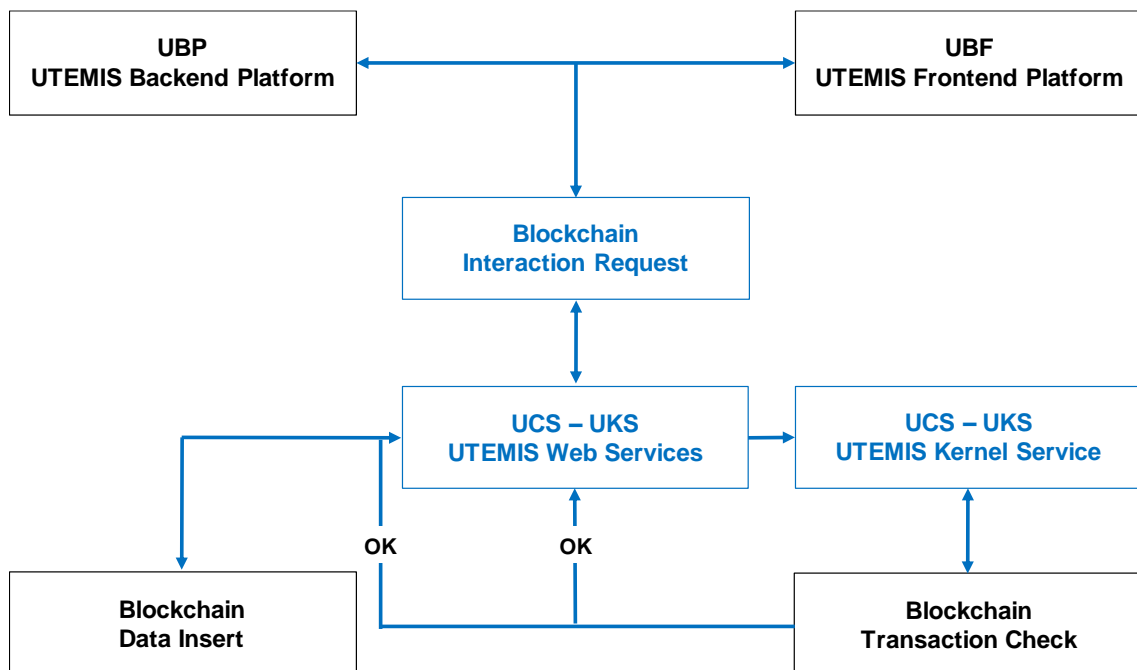


UKS: UTEMIS Kernel Service (UKS) is the core of the system. It works like an application server, and, to maximize security, it's access is restricted for all services but UWS. On top of that UWS can only access UKS through the API that directs the communication protocol. The UKS functionalities are:

- Manage database queries.
- Validate economic transactions.
- Validate reputation transactions.
- User authentication.
- Users permissions.
- Executing scheduled tasks.
- Generate reports.

UWS – UTEMIS Web Services

UTEMIS Web Services (UWS) is the hub that connects the rest of the applications with UKS. All services (internal and external) will go through UWS. Which has to validate the queries and return the answer to the corresponding application. UWS is the trusted intermediary of all services that form UTEMIS. An important function of UWS is to be responsible for writing in the blockchain of the UTEMIS token and in the reputation blockchain the results of each transaction. It will do so as depicted in the following diagram:





### UBP – UTEMIS Backend Platform

UTEMIS Backend Platform (UBP) administers the interface of each UTEMIS customer. UBW will be accessible from a variety of devices that includes desktop computers, UBW web applications, mobile devices (using UBM), or the official UTEMIS app that will be available for both Android and iOS. UTEMIS customers can use UBW to configure and manage the UTEMIS service. Some functionalities that are customizable are:

- Order management.
- Collection / payment management.
- Management and configuration of the product catalog.
- Pricing and discounts.
- Stock control.
- Report generation.
- Store configuration:
  - o Minimum order
  - o Discount policy
  - o Specific discounts
  - o User accounts

### UFW – UTEMIS Frontend Platform

UTEMIS Frontend Platform is the open interface of the UTEMIS system. Where both customers and future customers can access, login and register. UFW will have two types of access. UFW is the web environment and UFM for the mobile environment, that of course will be available through the Android and iOS apps. Same as UBW, UFW will work synchronized with the UBW, UWS, UKS, UWS and UFW loops.

### Database

UTEMIS will use MySQL (a relational database management system) as the primary database for storing information, data and the parameters necessary for the proper functioning of the UTEMIS ecosystem. The structure of the database will emphasize security and flexibility of the entire architecture.

The MySQL database will store the UTEMIS customer's information. It will also execute the clone function of all the transactions carried out in the Ethereum blockchain – both the economic and reputational transactions.

### Blockchain

UTEMIS will use the Ethereum blockchain to store both economic and reputational transactions. The use of this technology offers the transparency and security necessary for the success of the system, since it offers the possibility of using a transaction scanner so that, anyone that wants to, can verify the data related to a specific transaction, both economic and reputational: date and time, origin account, destination account and value, among others.



## Security

### UWS – UTEMIS Web Services

UTEMIS will incorporate all the necessary security mechanisms that guarantee the protection of its users. All connections, both web and mobile, will be encrypted using the HTTPS protocol with a TLS certificate. The architecture of the system will prevent any application, both internal and from third parties, from attacking critical elements, such as the database, or processing critical actions.

UTEMIS hardware infrastructure will be hosted in a European data center with all the physical, logical and continuity of service guarantees (physical failures, server and disk replication, redundancy in the data, power lines, secure location, etc.)

The communication API between UKS and UWS, critical elements in the UTEMIS architecture, will be designed so that all internal calls are secured by secret dynamic keys that limit operations only to verified systems. Additionally; communications between the other components will be similarly secured.

## Ethereum

The UTEMIS crypto currency is built upon the Ethereum Network<sup>1</sup>; which is a programmable block chain. Rather than give users a set of pre-defined operations (e.g. bitcoin transactions), Ethereum allows users to create their own operations, regardless of complexity. In this way, it serves as a platform for many different types of decentralized blockchain applications, including but not limited to crypto currencies.

Ethereum, in the narrow sense, refers to a suite of protocols that define a platform for decentralized applications. The Ethereum Virtual Machine (EVM) can execute code of arbitrary algorithmic complexity. In computer science terms, Ethereum is “Turing complete”. Developers can create applications that run on the EVM using friendly programming languages modeled on existing languages like JavaScript and Python.

Same as other blockchains, Ethereum also includes a peer-to-peer network protocol. The Ethereum blockchain database is maintained and updated by many nodes connected to the network. Each and every node of the network runs the EVM and executes the same instructions. For this reason, Ethereum is sometimes described evocatively as a “world computer”.

This massive parallelization of computing across the entire Ethereum network is not done to make computation more efficient. In fact, this process makes computation on Ethereum far slower and more expensive than on a traditional “computer”. Rather, every Ethereum node runs the EVM in order to maintain consensus across the blockchain. Decentralized consensus gives Ethereum extreme levels of fault tolerance, ensures zero downtime, and makes data stored on the blockchain forever unchangeable and censorship-resistant.

---

<sup>1</sup> <http://www.ethdocs.org/en/latest/introduction/what-is-ethereum.html>



The Ethereum platform itself is featureless or value-agnostic. Similar to programming languages, it is up to entrepreneurs and developers to decide what it should be used for. Still, certain types of application benefit more than others from the Ethereum's capabilities. Specifically, Ethereum is suited for applications that automate direct interaction between peers or facilitate coordinated group action across a network. For instance, applications for coordinating peer-to-peer marketplaces, or the automation of complex financial contracts. Bitcoin allows for individuals to exchange cash without involving any middlemen like financial institutions, banks, or governments. Ethereum's impact may be more far-reaching. In theory, financial interactions or exchanges of any complexity could be carried out automatically and reliably using code running on Ethereum. Beyond financial applications, any environments where trust, security, and permanence are important – for instance, asset-registries, voting, governance, and the internet of things – could be massively impacted by the Ethereum platform.

### How Does Ethereum Work

Ethereum incorporates many features and technologies that will be familiar to users of Bitcoin. It also introduces many modifications and innovations of its own. Whereas the Bitcoin blockchain was purely a list of transactions, Ethereum's basic unit is the account. The Ethereum blockchain tracks the state of every account, and all state transitions on the Ethereum blockchain are transfers of value and information between accounts. There are two types of accounts: Externally Owned Accounts (EOAs), which are controlled by private keys, and Contract Accounts, which are controlled by their contract code and can only be activated by an EOA.

For most users, the basic difference between these accounts is that human users control EOAs - because they can control the private keys which give control over an EOA. Contract accounts, on the other hand, are governed by their internal code. If they are 'controlled' by a human user, it is because they are programmed to be controlled by an EOA with a certain address, which is in turn controlled by whoever holds the private keys that control that EOA. The popular term 'smart contracts' refers to code in a Contract Account – programs that execute when a transaction is sent to that account. Users can create new contracts by deploying code on the blockchain.