EKNOW 2022, Porto, Portugal, Special Track BCI

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# EDITORIAL OF BCI

# BLOCK CHAIN For INDUSTRY

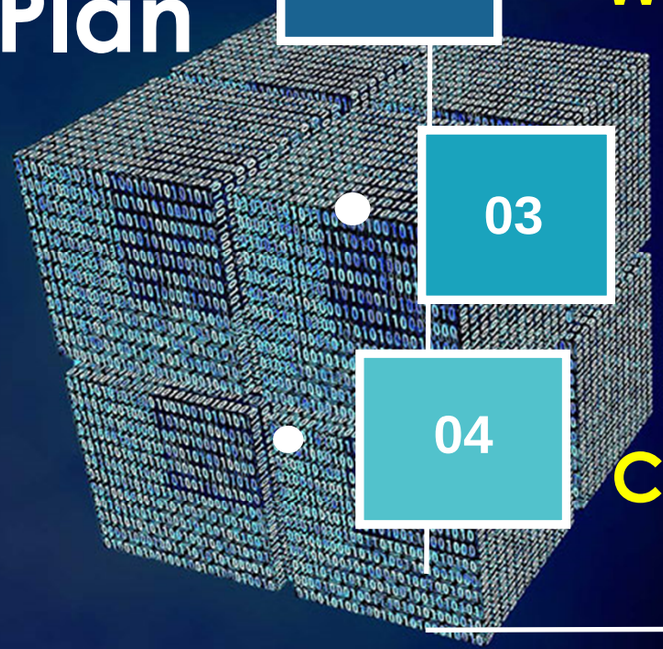
# Plan

01 Introduction

02 What is the blockhain?

03 Contributions of BCI

04 Conclusion



# Introduction [2]

1- Unrecognized blockchain, bitcoin confusion, pseudonym, hacker confusion

[3]


2- The purpose of this special track BCI (BlockChain for Industry) is to demonstrate the contributions of the blockchain in different industries

3- Specifications of some barriers

# What is the

# BLOCKCHAIN

# A History

Stuart Haber and Scott Stometta were working on the 1st Blockchain

1991-2008

Satoshi Nakamotto published his white paper, creation of bitcoin

2009

The first purchase of bitcoin, 10000 bitcoins were created

2010

Bitcoin Transactions

2012

Bitcoin Market Surpasses $1 Billion

2012- 2013

Vitalik Buterin publishes white paper on Ethereum

2013

Smarts contracts

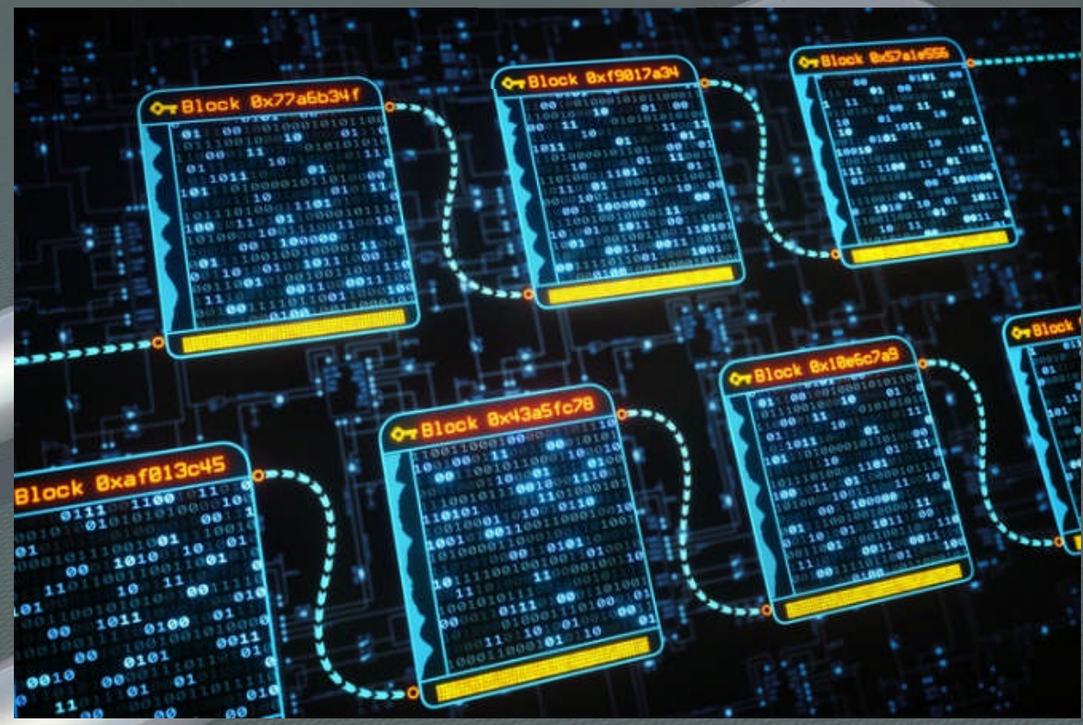
2014

Applications In Industries

2018

# Definition of blockchain

A blockchain, or chain of blocks, is a distributed database (ledger) that keeps a permanent and immutable (tamper-proof) record of transactional data linked together by a chain (by blocks). [7]



# L'émergence de la Blockchain


**13 Years of existence**

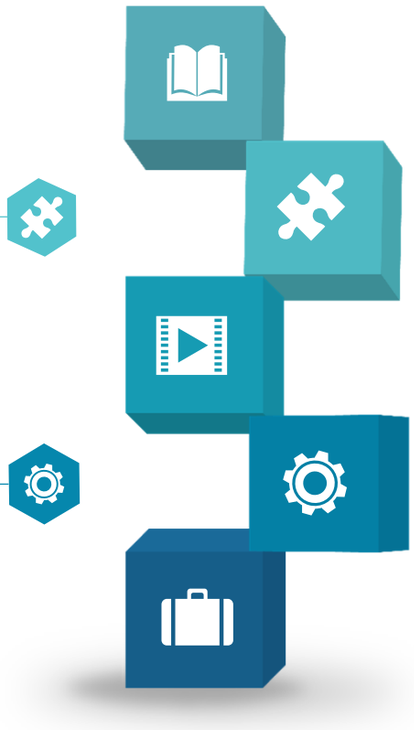
[9]

# Monetary uses versus non-monetary uses blockchain currencies

20% for non monetary uses

80% monetary uses

# Caracteristics od the Blockchain



**Ledger**

sharable

**Multiples Usages**

Decentralized

crypted

# Applications to different industries

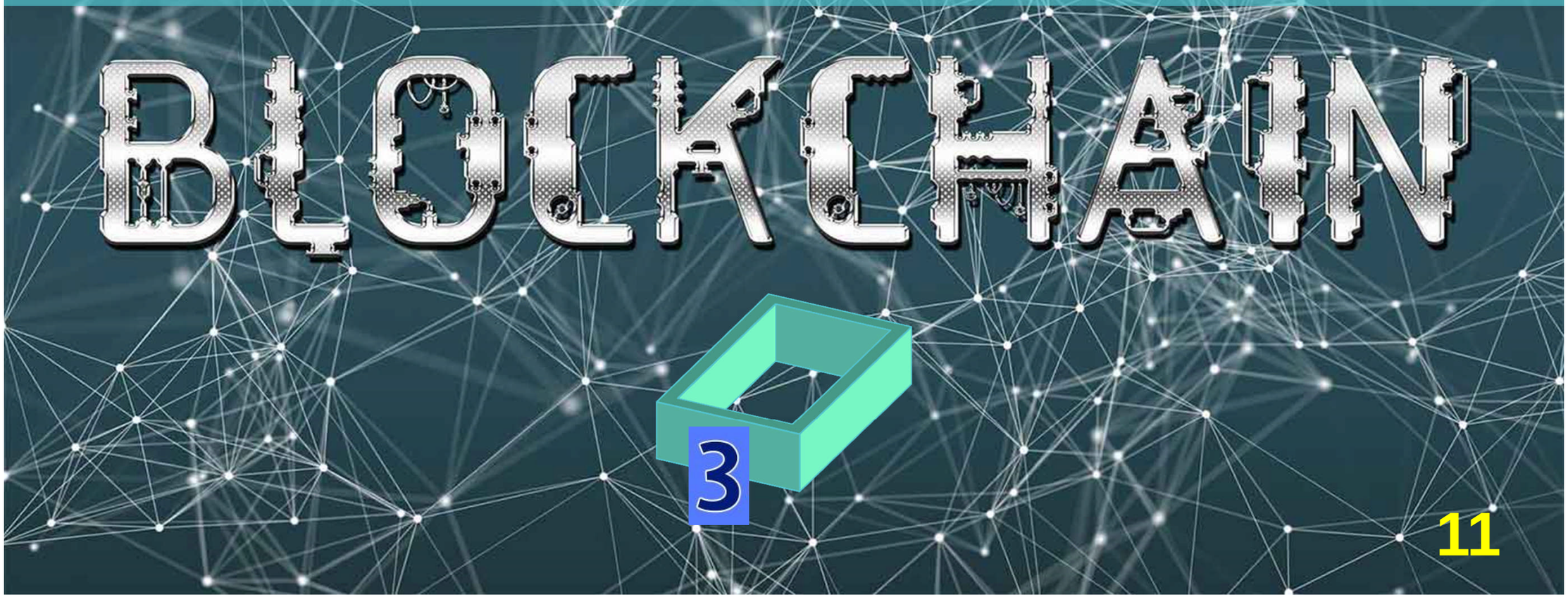



[13]

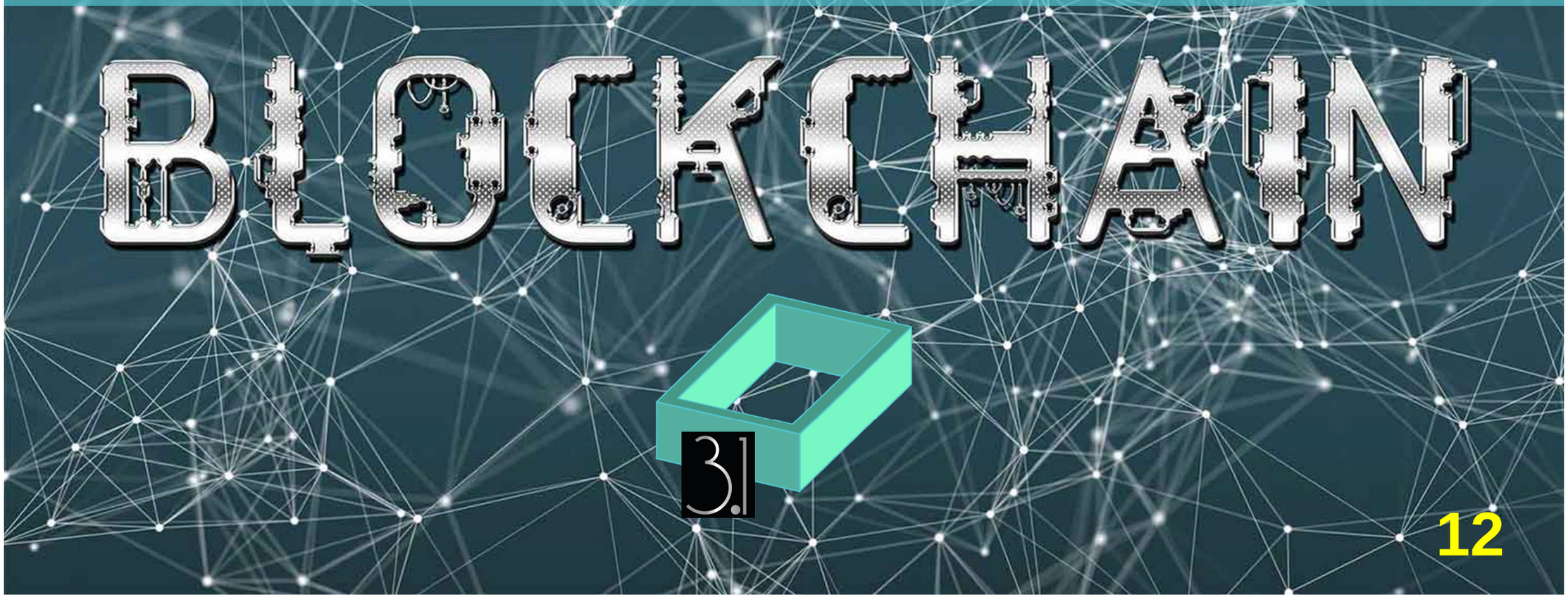

https://ec.europa.eu/info/news/focus-renewable-energy-europe-2020-mar-18_en

[32]

# Contributions of BCI

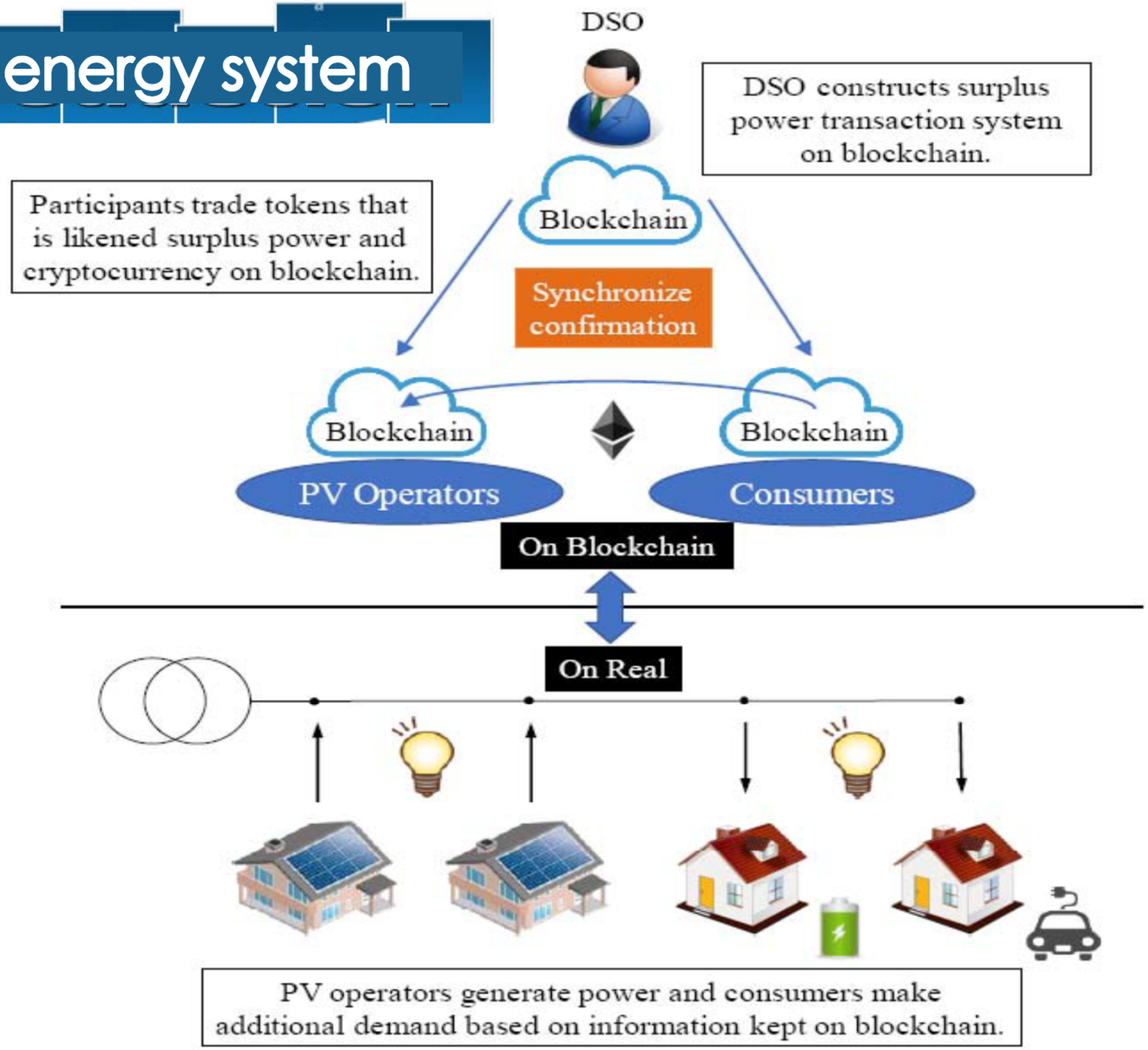


# ANALYSIS OF BLOCKCHAIN IN SOLAR ENERGY SYSTEMS



# Solar energy system

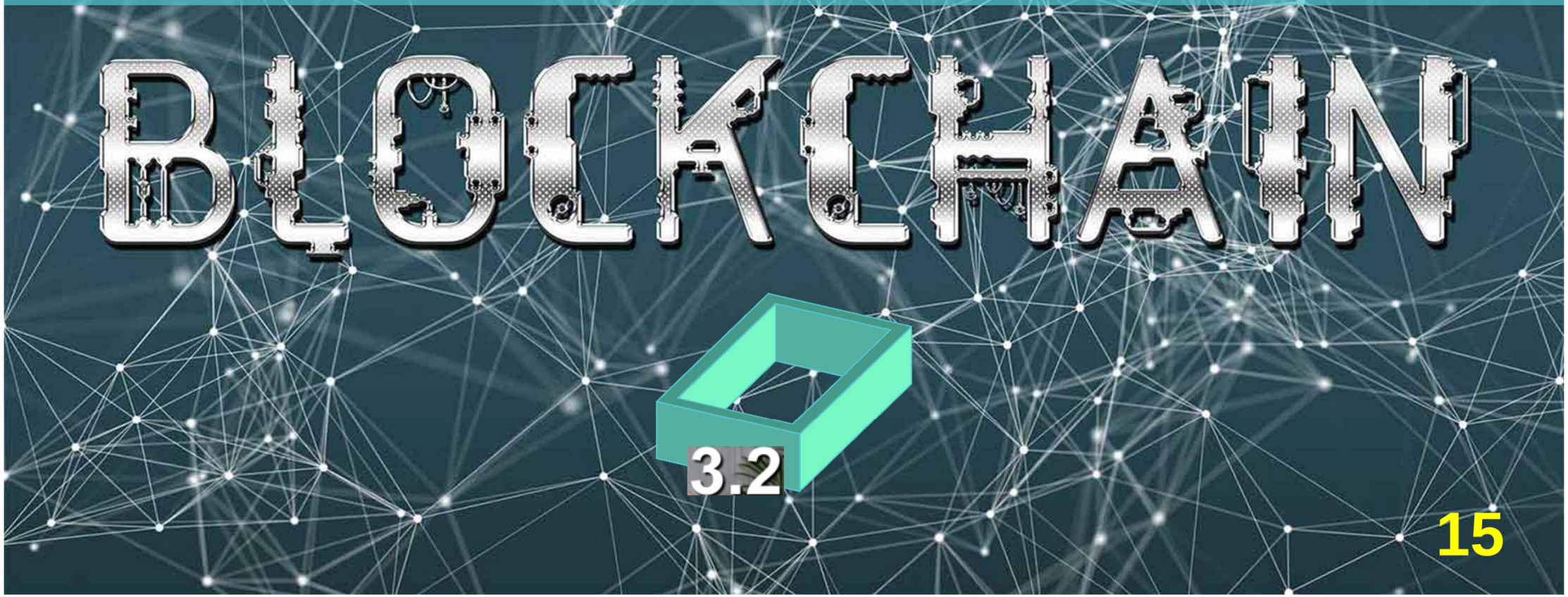
The general principle is self-consuming the solar energy and trading the surplus, this system is called prosumer. Others papers combine PV (Photovoltaic) operators and consumers of energy

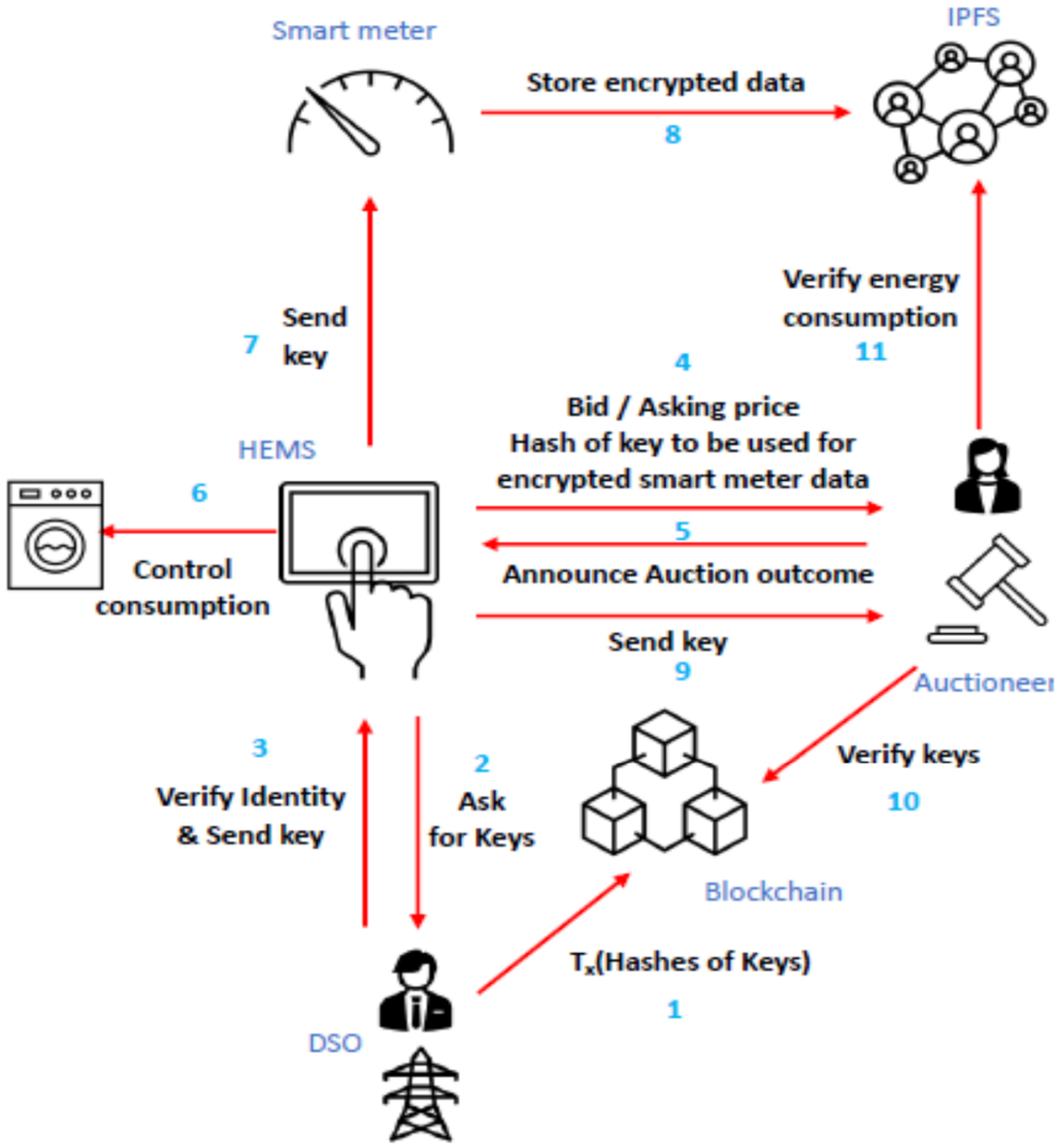


# Analysis of blockchain in solar energy systems

The main problematic treated in the literature is how to transform a simple comsumer to a prosumer by injecting the surplus of production in the grid selling it to neighbors and in his turn buying from their solar system when the batteries are discharged. To facilitate these operations, the blockchain is the best information layer to protect this trading offering a decentralised and secured plateform. A P2P network is the most adequate architecture to support this plateform. A cryptocurrency will make the trading more fluent. The prices of energy generally depend to the rules of offer/demand of the local or metropolitan market of solar energy. Knowing that the blockchain technology itself is a big consumer of energy, it is important to be autonome and a consumer a renewable energy like solar energy.

# Blockchain Based Decentralized Home Energy Management System using Double Auction



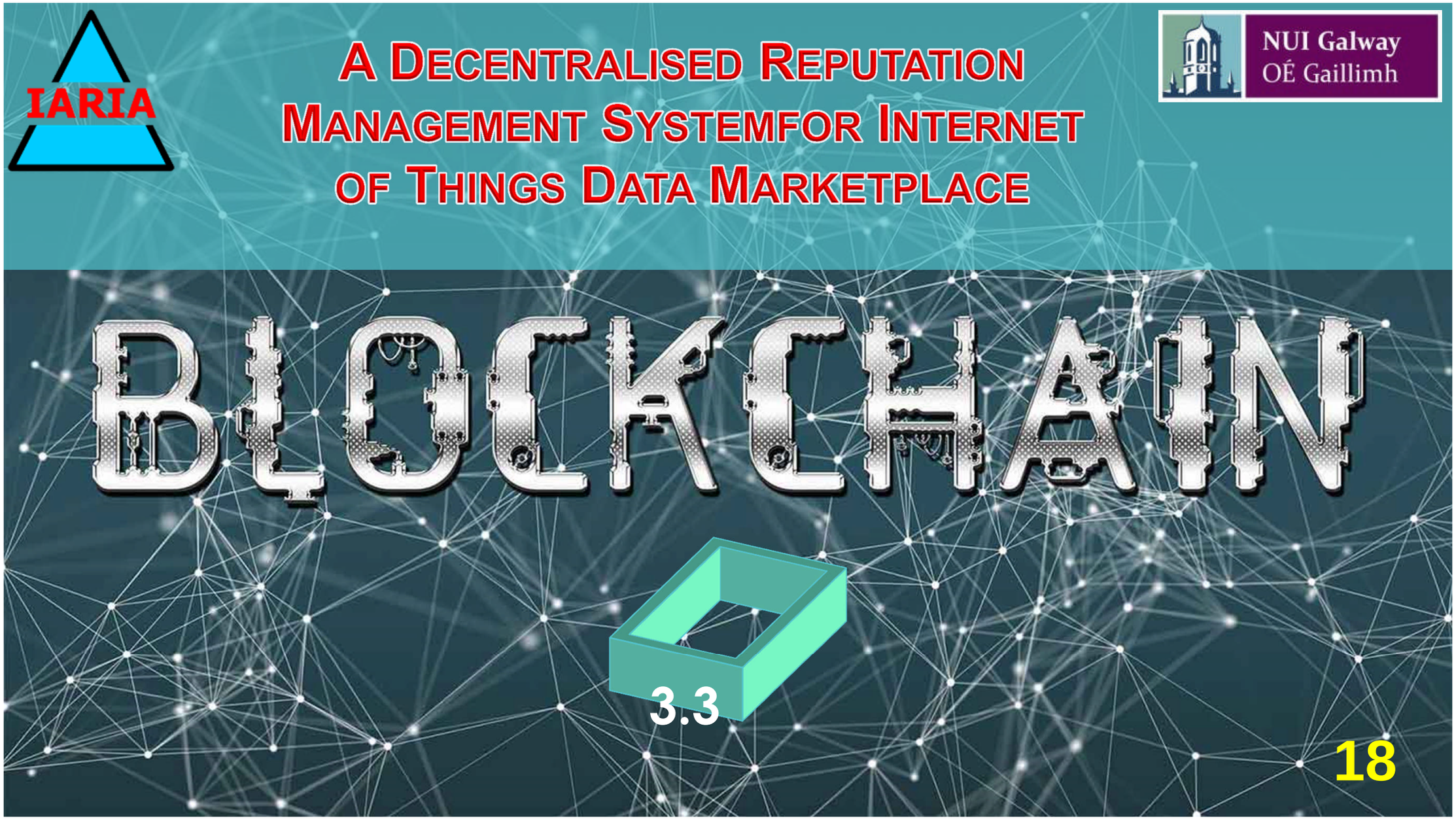



authors develop a blockchain-based smart meter and home energy management system that can collaboratively participate in energy consumption to maximize energy from renewable sources and reduce peak load. A fully decentralized blockchain-based system is used for trading energy using cooperative game theory. Smart meters are enabled with a lightweight blockchain client that provides detailed information about energy consumption and controls the appliances from installed HEMS.


# Principles of the proposed architechture

NUI Galway
OÉ Gaillimh

A trading algorithm is proposed in this work that allows users to trade energy from each other using double auction mechanism. Authors used Blockchains and decentralised data storage to execute the auction-based energy trade. A test-bed is constructed with 100 users, with 25 houses with 3kWp rooftop PV. The simulations are done for two seasons: winter and summer. Different case studies and scenarios are carried out to show the proposed model's effectiveness. The results show that blockchain-based trading algorithms can impact individual users to manage energy consumption with high incentives. In future, we will provide a detailed formal security analysis of the blockchain architecture of the energy trade. Moreover, the proposed work will be compared with other HEMS available to check its effectiveness.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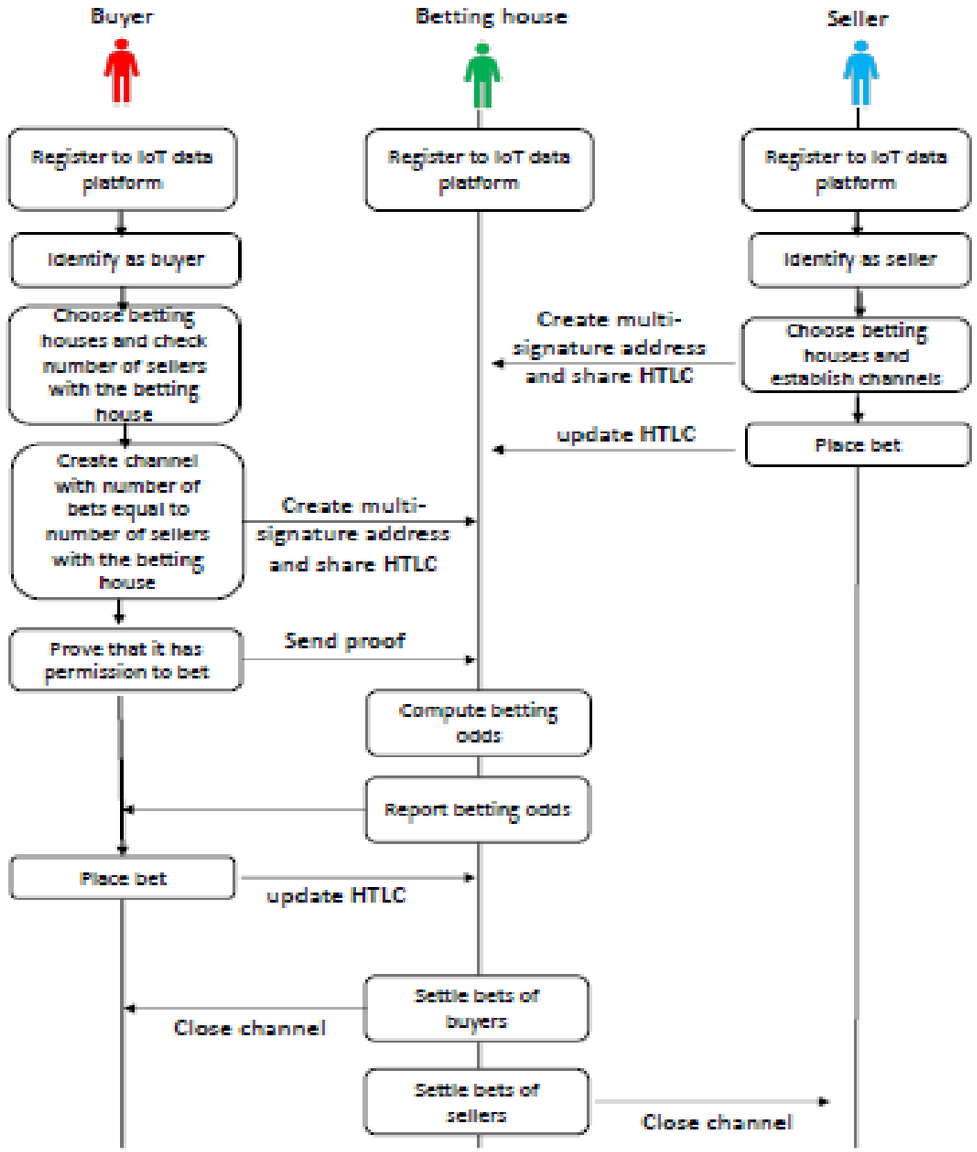
A Decentralised Reputation Management Systemfor Internet of Things Data Marketplace
NUI Galway
OÉ Gaillimh
BLOCKCHAIN
3.3
18

# Sequence events of the solution




Authors develop a decentralised reputation management system for the IoT data marketplace that prevents biased selection and aggregation of reputation feedback. The proposed reputation management system uses blockchain offline channels, which makes the solution secure, unbiased, scalable, and least costly. We prove the security and correctness of the proposed reputation management system and present its experimental evaluation using simulation of data marketplace and blockchains.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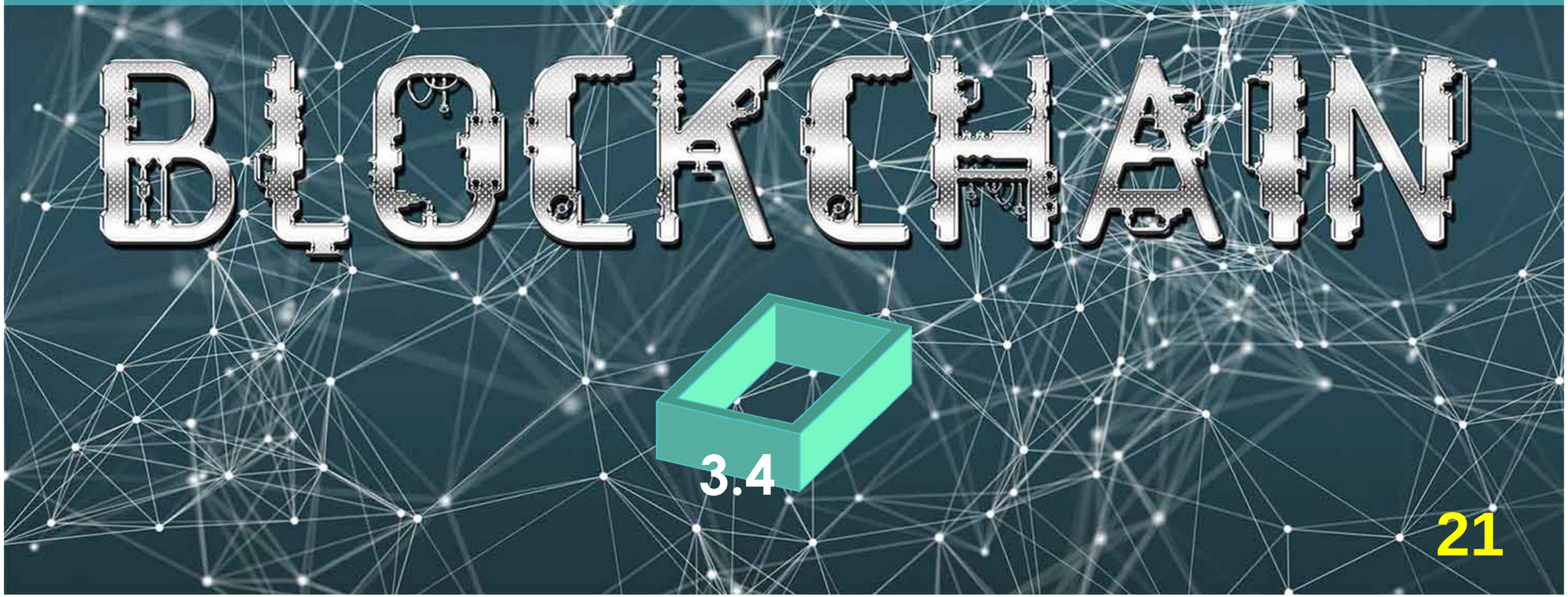
# BLOCKCHAIN IN E-HEALTH: REVIEW



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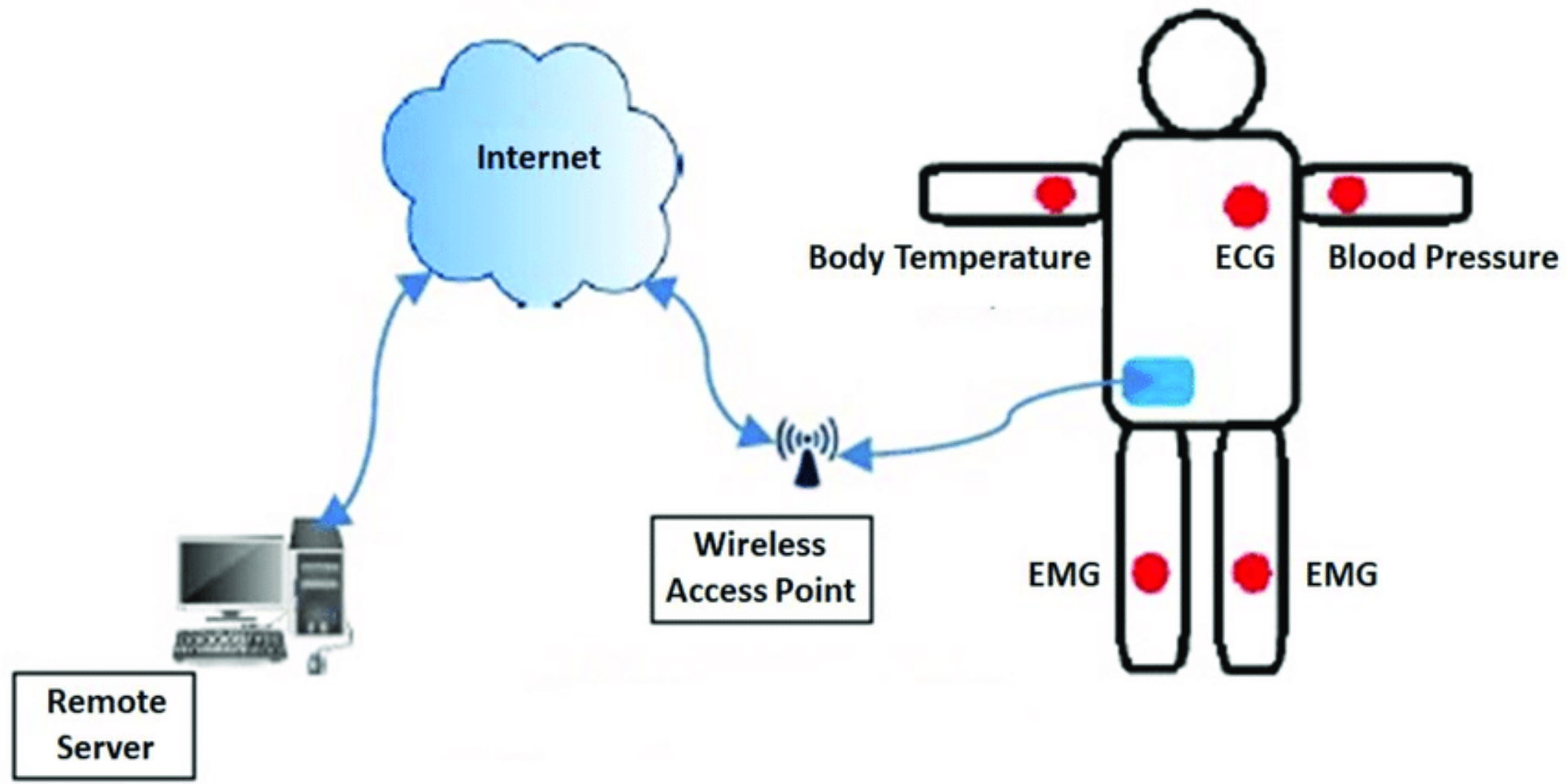
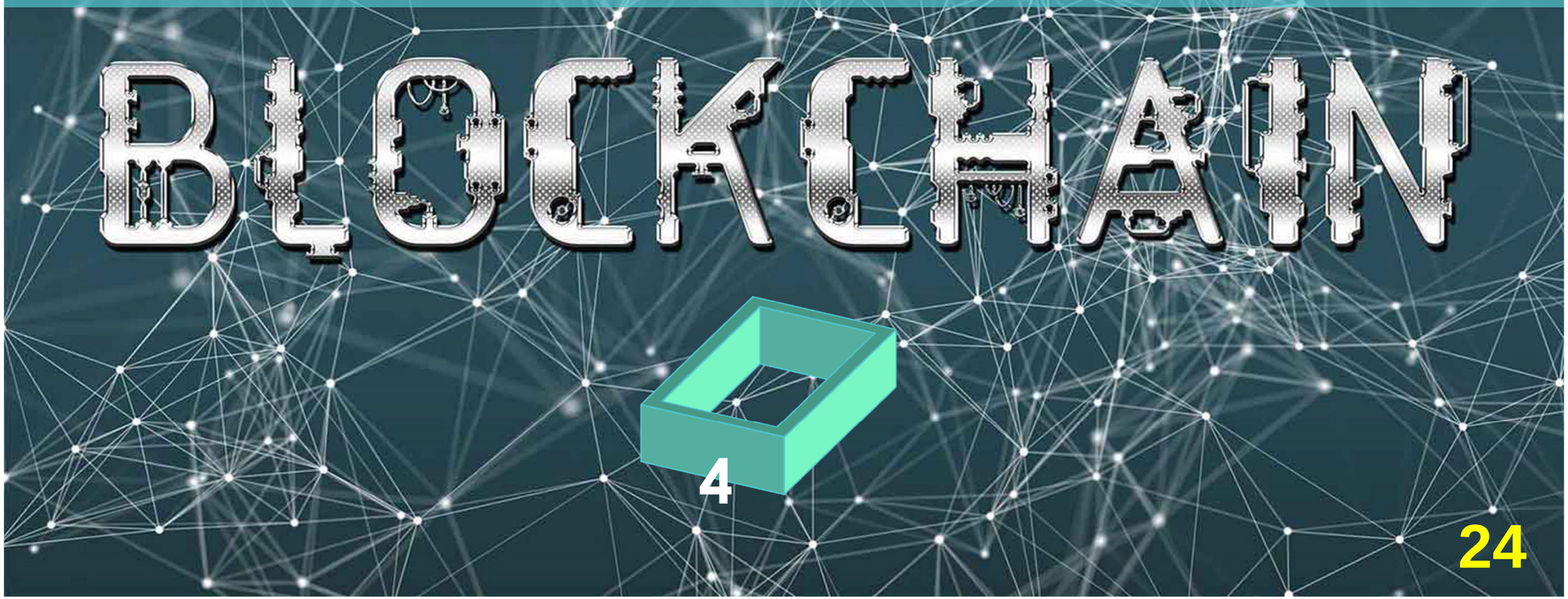
# Using Internet Of Things (IOT) in eHealth



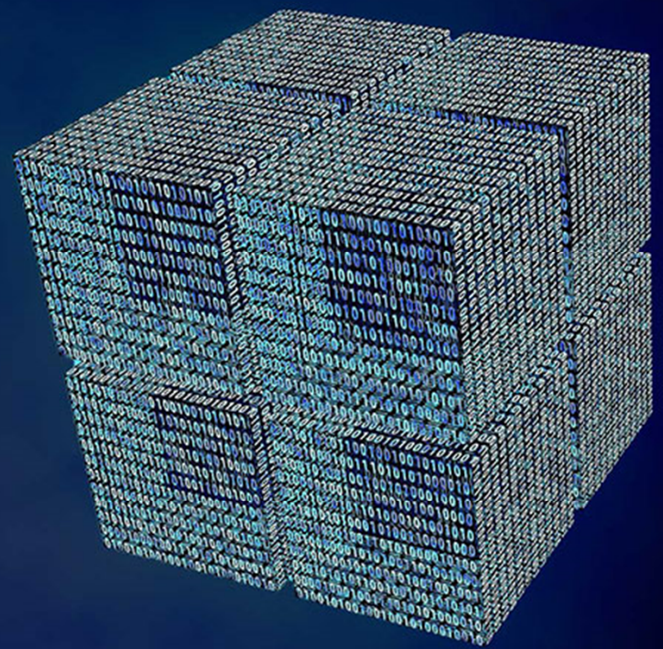
# Principles of the proposed architechture

The review begins by the essence of eHealth and the problems encountered in it. It responds to how blockchain can promote eHealth in terms of management of patient data, its privacy, gains in time and because of how it is a facility without a central authority. The decentralized management of the blockchain does not mean a mess or a loss of data; on the contrary, it means the accountability of all members and partners of the blockchain (patient, doctor, medical institution, etc.). This is guaranteed by the good choice of the consensus algorithms to minimize time, energy consumption and consequently minimize costs. Several algorithms and other issues are discussed in this review paper to help researchers and software developers to discover and use the opportunity of blockchain in eHealth. All the used rules consented by the partners of blockchain system for eHealth are automatically applied in the form of smart contracts. These latter allow the treatment of citizens by the same way, without subjectivity and favoritism.

# CONCLUSION



# Conclusion



The idea of special track **BCI (Blockchain for Industry)** comes from the conviction that the blockchain even not enough recognized by governments and particulars, and not enough known for its qualities in security and integrity of data, could play an important role in facing problems of frauds and falsification of data.


# THANK YOU

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[3] M. Sweta, T. Subhasis, B. John and D. Maeve, Blockchain based Decentralized Home Energy Management System using Double Auction, EKNOW 2022, Porto, Portugal, June 26-30, 2022.

[4] T. Subhasis, B. John , A Decentralised Reputation Management System for Internet of Things Data Marketplace, EKNOW 2022, Porto, Portugal, June 26-30, 2022.
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[6] Frost and Sullivan, “Why Healthcare Industry Should Care About Blockchain?” 2017. [Online]. Available on: https://ww2.frost.com/files/8615/0227/3370/Why_Healthcare Industry_Should_Care_About_Blockchain_Edited_Version. [retrieved : June 2022] Frost and Sullivan, “Why

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