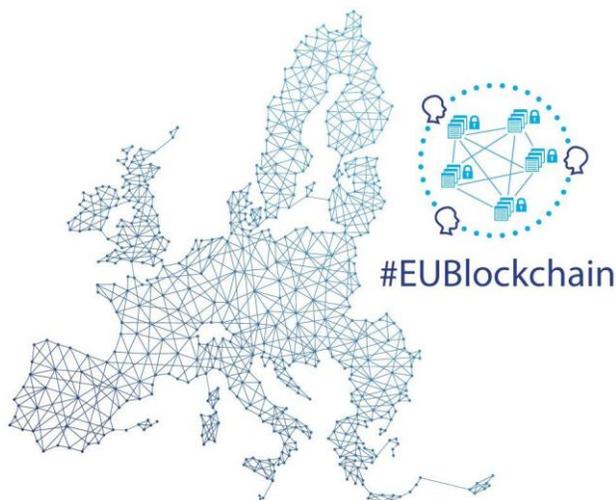


# EU BLOCKCHAIN OBSERVATORY & FORUM

EUBOF Workshops -  
Democracy4All Conference  
Casa Llotja de Mar, Barcelona, Spain,  
11-12 November 2021



*By the European Commission, Directorate-General of Communications Networks, Content & Technology.*

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## INTRODUCTION

The EU Blockchain Observatory and Forum (EUBOF) organized three workshops during the Democracy4All Conference which took place in Barcelona, Spain, on 11-12 November 2021. The workshops aimed in presenting the recent work of EUBOF:

- a) Lambis Dionysopoulos presented the [State of the European Blockchain Ecosystem](#) report
- b) Dr Ioannis Vlachos presented the [Energy Efficiency of Blockchain technologies](#) report and
- c) Nikos Kostopoulos, presented the [Demystifying Non Fungible Tokens \(NFTs\)](#) report.

In addition, EUBOF's manager Ms Tonia Damvakeraki, moderated a panel discussion on the practical use-cases of blockchain supporting sustainable development & SDG agenda.



## WORKSHOP 1: THE STATE OF THE EUROPEAN BLOCKCHAIN ECOSYSTEM

**Lambis Dionysopoulos**, Researcher at the Institute for the Future at the University of Nicosia presented on behalf of the EUBOF consortium, the main findings of the EU blockchain ecosystem report, published in November 2020.

The report analyses 27 EU member states plus Switzerland and the United Kingdom, in two levels:

- a) Country-level overviews, a synopsis of the state of blockchain in each of these 29 countries
- b) An evaluation, a comparative evaluation between these countries in terms of their ecosystems or regulatory maturity.

It's a detailed report of more than 200 pages and has already proven to be a reference point for the development of policy regarding blockchain in Europe.

The most interesting part of the report is the cross-country analysis, the comparative evaluation of what's happening in Europe, across three dimensions: a) the entrepreneurial ecosystem, b) the academic initiatives and c) regulation. Things like the size of the blockchain industry in each country and in Europe as a whole, were researched, as well as academic initiatives, focusing both on education and training professional training programs but also on identifying research groups.

On a first level analysis, almost 3000 companies that are focused on blockchain and crypto have been identified. EU member states host around half of these companies while the rest of them are based in Switzerland and United Kingdom. Within the EU, Germany, France, Netherlands, Spain, and Estonia host the majority of the companies but this is a first level analysis that does not take into account the fact that these are countries of different sizes. On the second level analysis, the report looks at the per capita distribution of blockchain companies around Europe. Malta, Estonia Luxembourg, and Cyprus take the lead, as they have a larger number of companies compared to their population.

The report includes a three-stage maturity model to measure the regulatory majority of different countries when it comes to blockchain:

- Stage I includes 11 countries that either do not have any specific legislation, or the authorities have only issued warnings for investment protection or have some small-scale national initiatives.
- Stage II includes 11 countries that have voted frameworks for KYC, AML or taxation, or the governments have set up specific task forces related to crypto and blockchain, or have launched blockchain related pilots in the public sector, or have a science of strong support of research by the government.
- Stage III includes 7 more mature countries that have either voted comprehensive legislation through their parliaments, have announced national blockchain strategies or have implemented the regulatory sandboxes.

Mr Dionysopoulos presented a chart with synthesizes the findings of the report, as it groups countries by a combination of their maturity in the regulatory and ecosystem growth to produce a map of the current state of blockchain in the EU.

Additionally, four factors were identified that favor the development of blockchain at the national level: a) regulatory certainty, b) state support, c) innovation-friendly climate and d) skilled workforce.

Mr Dionysopoulos concluded that the European blockchain ecosystem is growing fast and that's why the EU Blockchain Observatory and Forum and the European Commission is already preparing a second version of the report which will be published in the first quarter of 2022.

## **WORKSHOP 2: ENERGY EFFICIENCY OF BLOCKCHAIN TECHNOLOGIES**

Dr Ioannis Vlachos, Senior Consultant at INTRASOFT International, presented on behalf of the EUBOF consortium, the Energy Efficiency of Blockchain technologies report which was written relying on the expertise of the members of the EUBOF expert panel, academics and C-level executives from reputable companies worldwide and on interviews with industry experts.

During the workshop, he explained in detail each part of the report:

- Chapter 1 focuses on demystifying consensus protocols (general presentation of the Byzantine Fault-Tolerant systems, consensus mechanisms and blockchain types) and on the issue of comparing some of across the several consensus protocols or mechanisms, like proof of work, proof of stake, a delegated proof of stake, proof, authority, and other types of consensus protocols or mechanisms.
- Chapter 2 offers an overview of the on cryptocurrency and mining industry (overview of geographies, issues related to limitations on local or regional regular frameworks related to cryptocurrency mining industry) and on the energy resources that are used for mining operations, as well as an analysis on the profitability of these mining operations.
- Chapter 3 discusses the Bitcoin Energy Consumption Index, and specifically two approaches:
  - the Cambridge Bitcoin Electricity Consumption Index
  - the Digiconomist Bitcoin Energy Consumption Index
- Chapter 4 tackles the issue of blockchain performance and if blockchain based solutions, can actually scale and perform in a commercial setting. The chapter includes a comparison of the various blockchains, and a comparison of the infrastructure that is used for cryptocurrency mining.
- Chapter 5 focuses on scalability and performance considerations, specifically on the challenges faced by various sectors such as fintech and energy, and on the approaches to overcome these scalability and performance barriers.
- Chapter 6 is focused on decarbonization initiatives for the blockchain sector and provides an overview of the Crypto Climate Accord initiative.

## WORKSHOP 3: DEMYSTIFYING NFTs

**Mr. Nikos Kostopoulos**, Blockchain Strategist at INTRASOFT International, presented on behalf of the EUBOF consortium, the thematic report on Non Fungible Token (NFTs).

During the workshop, he explained that NFTs are getting traction and this traction is monitored by the available data. What has really contributed to the NFTs adoption at such a large scale, is the unique monetization avenue with the transparent proof of ownership, the ease conversion of asset from virtual to fiat currency, the improvements in UI and UX, the adoption of NFTs by the gaming industry (one of the industries that has contributed to real users), the possibility of monetizing virtual rewards, the accessibility, the decentralization, and that anyone can buy and sell in secondary marketplaces. The creators are not bound in a specific platform or protocol schemes, they can use multiple front-end or smart contracts to engage. Another reason why NFTs have really scaled, is the empowerment of collectors in emerging technologies.

The report provides a basic theoretical framework to facilitate the introduction of more advanced concepts and follow up sections. In the definition of NFTs, it provides a concrete and platform agnostic definition for the terminology, discusses the basic characteristics of NFTs, especially those that are universal across platforms, introduces a framework for taxonomizing NFTs and addresses the question on why are NFTs interesting, and if the industry has potential in real substance.

The report also includes the history of NFTs which starts with the colored coins on the Bitcoin network, (the forefront of the NFTs movement) and continues with the establishment of the ERC20 token standard and how visioners have identified the challenges of the ERC20 token and they have worked towards the ERC721 token. Additionally, the report monitors the growth of the NFT ecosystem.

Mr Kostopoulos presented the core value proposition of the report which has been to identify as many

use cases as possible. It has been hectic to identify every single use case, that's why the report only includes those that got some traction, that they are somehow validated and reputable. NFT use cases would include anything requiring verifiable provenance, ownership, authenticity, and custodial on/off chain representation. Some of the most characteristic use cases are: identity/reputation, tickets, access/permission control, property deeds, in-game assets, supply chain provenance/logistics, historical records, certificates, loyalty/point systems, real-work asset NFTs, blockchain domains, collectibles and digital content.

A major part of the report was to identify all NFT token standards, starting with a briefing of the Ethereum ecosystem, ERC721, which is the most frequently used token standard, then with the ERC998, which is an extension of the previous and finally the ERC1155 token which was developed for games and allows users to register non-fungible tokens.

The workshop was concluded with a very lively discussion on the challenges on the road to adoption of NFTs.

## Appendix

### Conference Videos

- Videos from the conference can be found [here](#).
- Video specific to EUBOF's participation: [Practical use-cases of blockchain supporting sustainable development & SDG agenda](#)

### Workshops photos



Workshop 1 – State of the European Blockchain Ecosystem report by *Lambis Dionysopoulos*



Workshop 2 – Energy Efficiency of Blockchain Technologies report by *Dr Ioannis Vlachos*



Workshop 3 – Demystifying NFTs report by *Nikos Kostopoulos*.



Panel Moderation by *Tonia Damvakeraki*

Additional photos from the conference can be found [here](#).

## Official agenda

Date / Time	Activity
<b>11 November</b> 11:00-12:00	<b>Workshop 1 – State of the European Blockchain Ecosystem report</b> by <i>Lambis Dionysopoulos, EUBOF, University of Nicosia</i>
<b>12 November</b> 11:00-12:00	<b>Workshop 2 – Energy Efficiency of Blockchain technologies report</b> by <i>Dr Ioannis Vlachos, EUBOF, INTRASOFT International</i>
<b>12 November</b> 11:55-12:55	<b>Panel Discussion: Practical use-cases of blockchain supporting sustainable development &amp; SDG agenda</b> , moderated by <i>Tonia Damvakeraki, EUBOF, INTRASOFT International</i>
<b>12 November</b> 16:00-17:00	<b>Workshop 3 – Demystifying Non Fungible Tokens (NFTs) report</b> by <i>Nikos Kostopoulos, EUBOF, INTRASOFT International</i>

The complete Democracy4All conference agenda can be found [here](#).