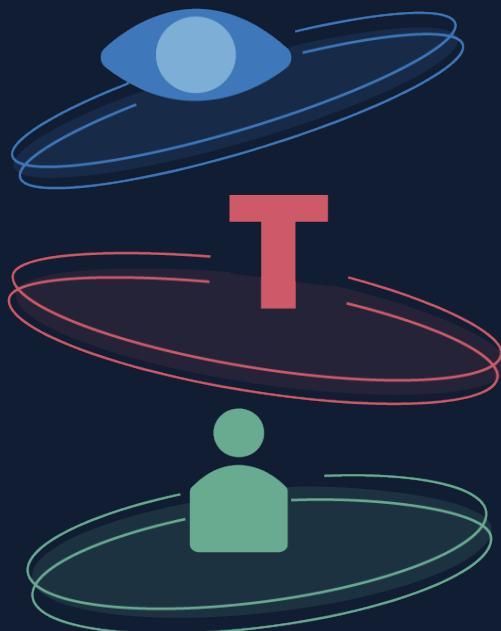


MAPPING THE SUSTAINABLE BLOCKCHAIN ECOSYSTEM

*Analysis of visual and textual
self-representation of sustainable
blockchains*



MEDIATORI ALGORITMICHI
Final Synthesis Design Studio
Sect. C3 — LM in Communication
Design, A.A. 2021/2022

D E N -
S I T Y
G N +



POLITECNICO
MILANO 1863
SCHOOL OF DESIGN

Mapping the sustainable blockchain ecosystem.

Analysis of visual and textual self-representation of sustainable blockchains.

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FINAL SYNTHESIS DESIGN
STUDIO Sect. C3
LM in Communication Design
A.A. 2021/2022

INTRODUCTION

What is a **blockchain**?

A system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system.

Euromoney

The carbon footprint of blockchains is a subject of recent debate in the tech world. Given its growth, the ecological damage due to NFT transactions has been on the rise, triggering the growth of eco-friendly blockchains.

This report focuses on the method in which eco-friendly blockchains present sustainability through text and visuals while analyzing who is involved, how, and why they choose to be sustainable.

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p. 25

WHO IS BEHIND THE BLOCKCHAINS?



STARTING POINT: LIST BUILDING

The goal is to have a list* as big as possible of sustainable blockchain technologies websites.

Algorand Apollo FINTECH ardor AVALANCHE

CARDANO chia Chain Chromia

eosio ERGO ethereum EURUS

Harmony Hedera HIVE HOLOCHAIN

KARDIACHAIN KIRA KUSAMA LUKSO

OMNIFLIX ORACLE particl Pastel

polygon REGEN NETWORK ripple Ronin

Stacks Stellar Terra Tezos

waveS⁺ WAX xDai

BINANCE Bitcoin Green Signum bloq

COSMOS CONSENSYS crea DEVVIO

fantom Flare flow GoChain

IOST IOTA ixo ENJIN

metahash NANO NEAR neblio

peercoin PERSISTENCE PHANTASM CHAIN Polkadot.

secret network seeds. SOLANA SolarCoin

THETA TRON UBIQ UNISWAP

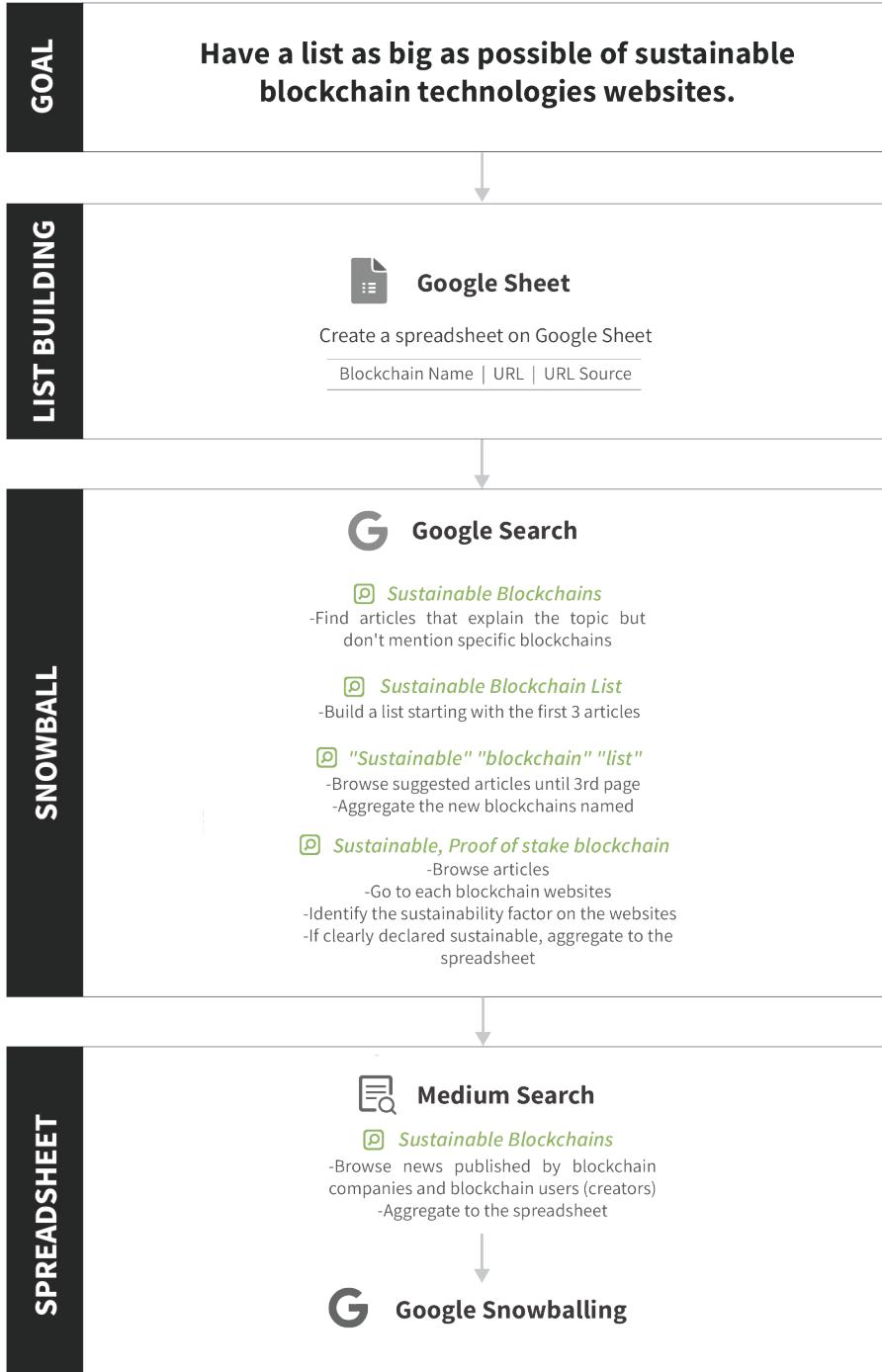
zilliqa

*list compared with “expert lists”
Clean-NFTs Developer Community and The State
of NFT Environmental Impact Reduction: Excel
Report



EXPLORE THE DATASET

PROTOCOL 0



1

WHAT VISUAL STRATEGIES DO BLOCKCHAIN TECHNOLOGIES USE TO PRESENT THEMSELVES AS SUSTAINABLE?

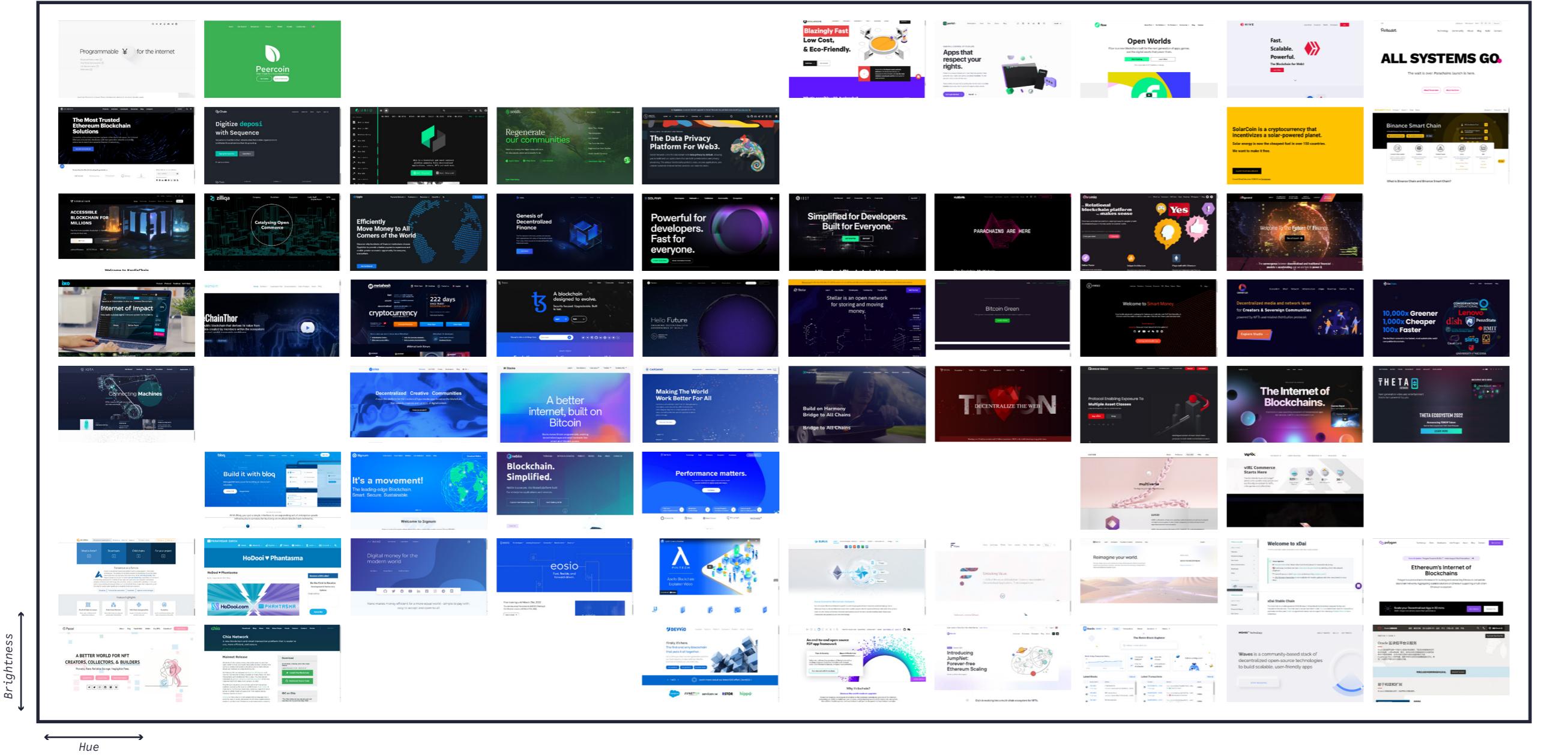
Findings from the first protocol determine whether blockchains present themselves as sustainable with their choice of colors, visual elements, and logos.



EXPLORE THE DATASET

COLOR PALETTE

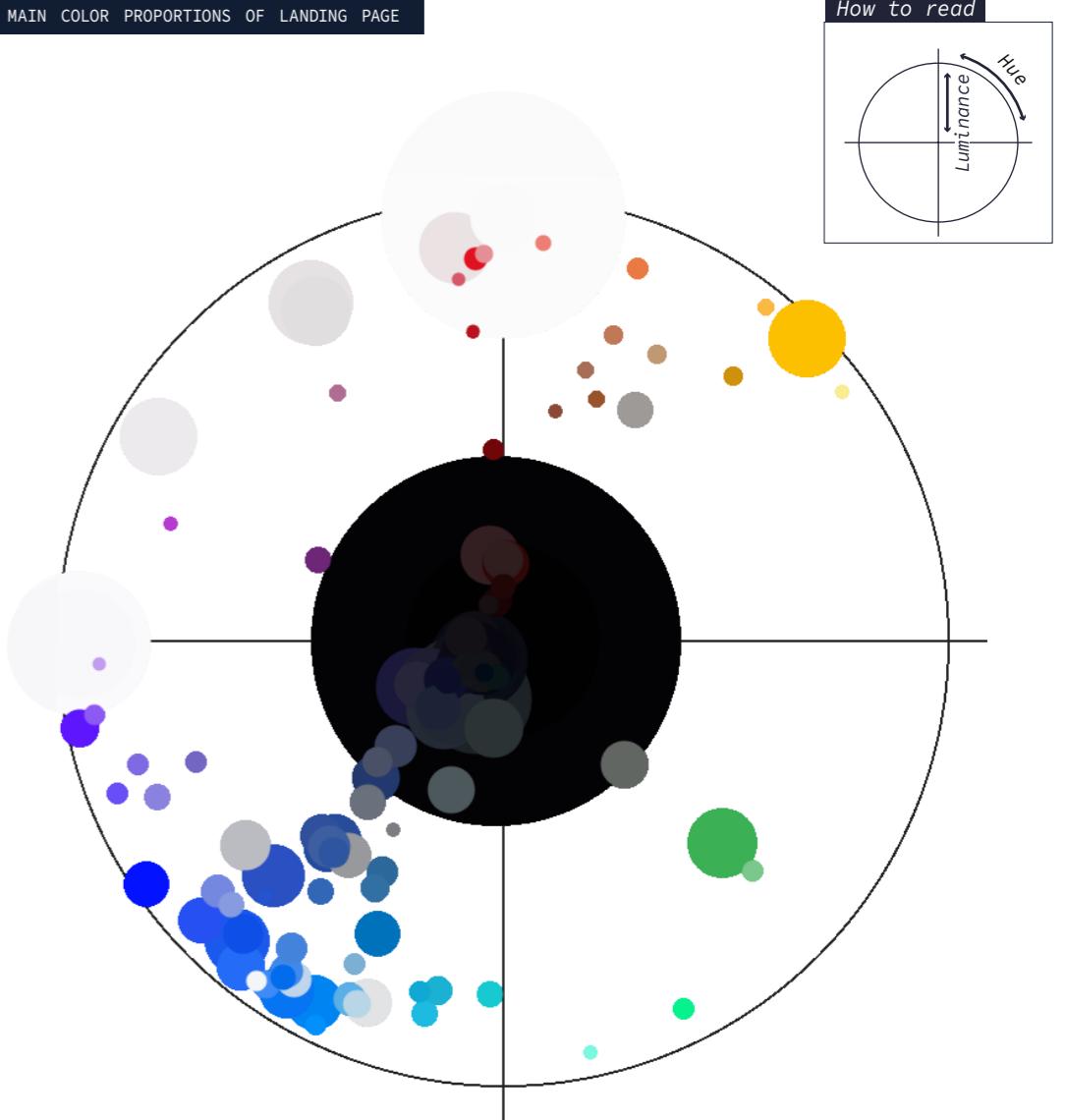
BLOCKCHAIN LANDING PAGE SCREENSHOTS SORTED BY HUE AND BRIGHTNESS



FINDING 1

The color palettes used by the blockchains consist **mostly of blue and black**. This relates more to the concept of **technology** than to the concept of sustainability, which usually uses green as an identifying color.

MAIN COLOR PROPORTIONS OF LANDING PAGE



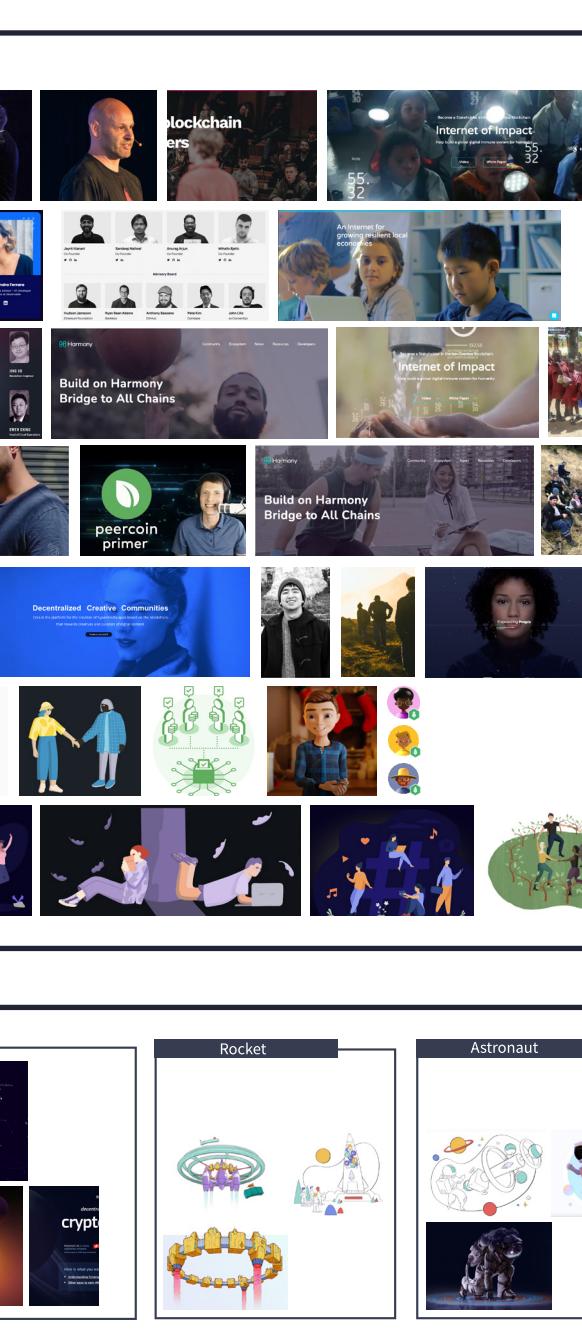
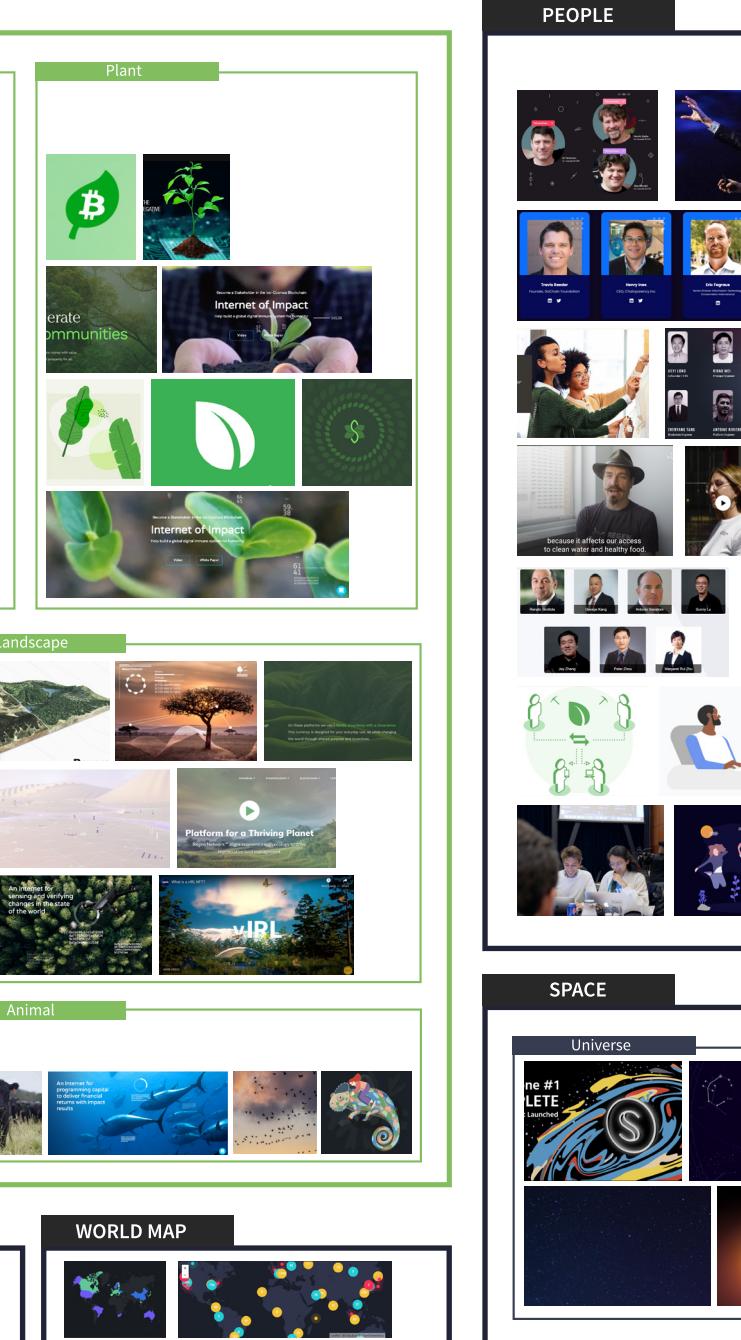
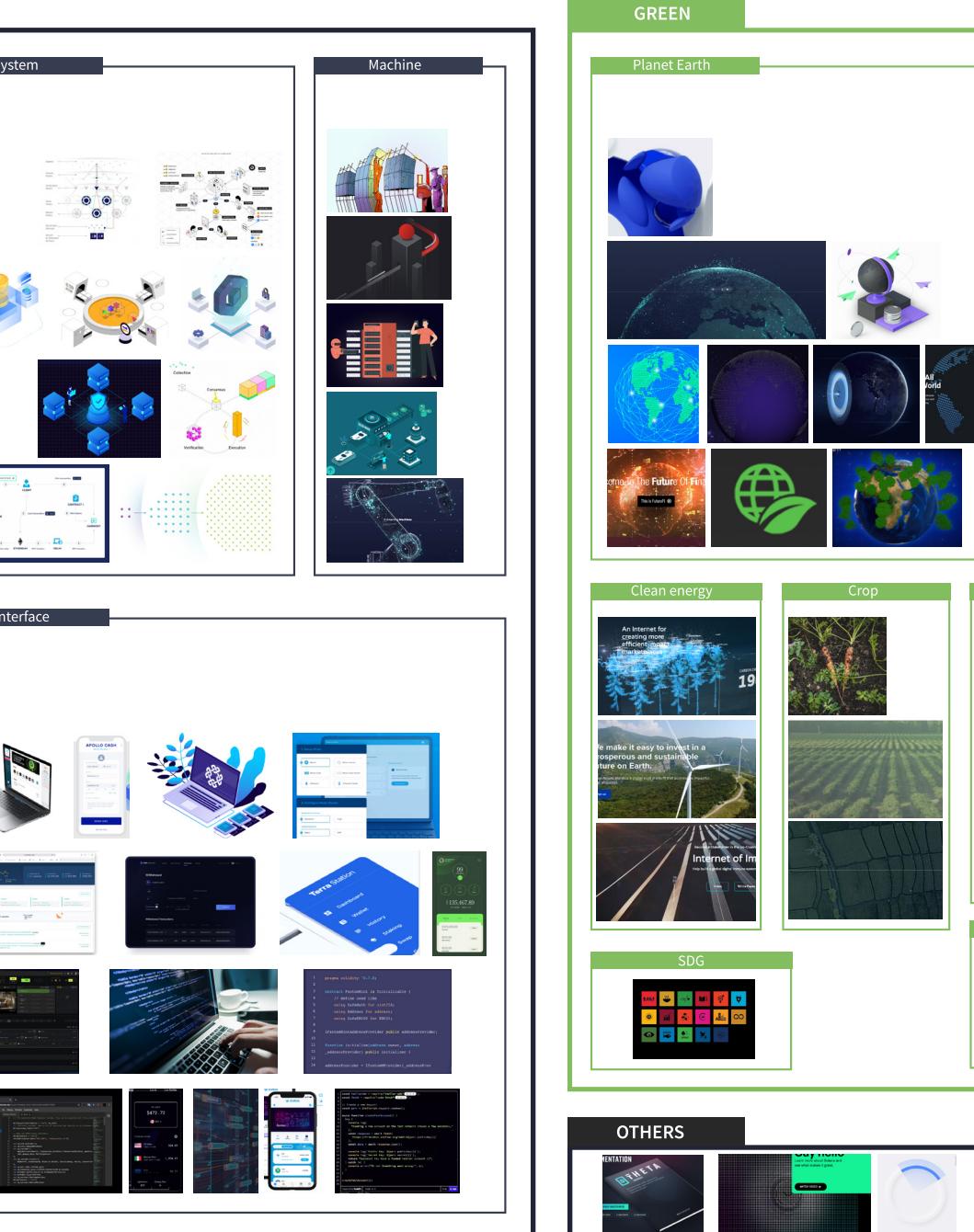
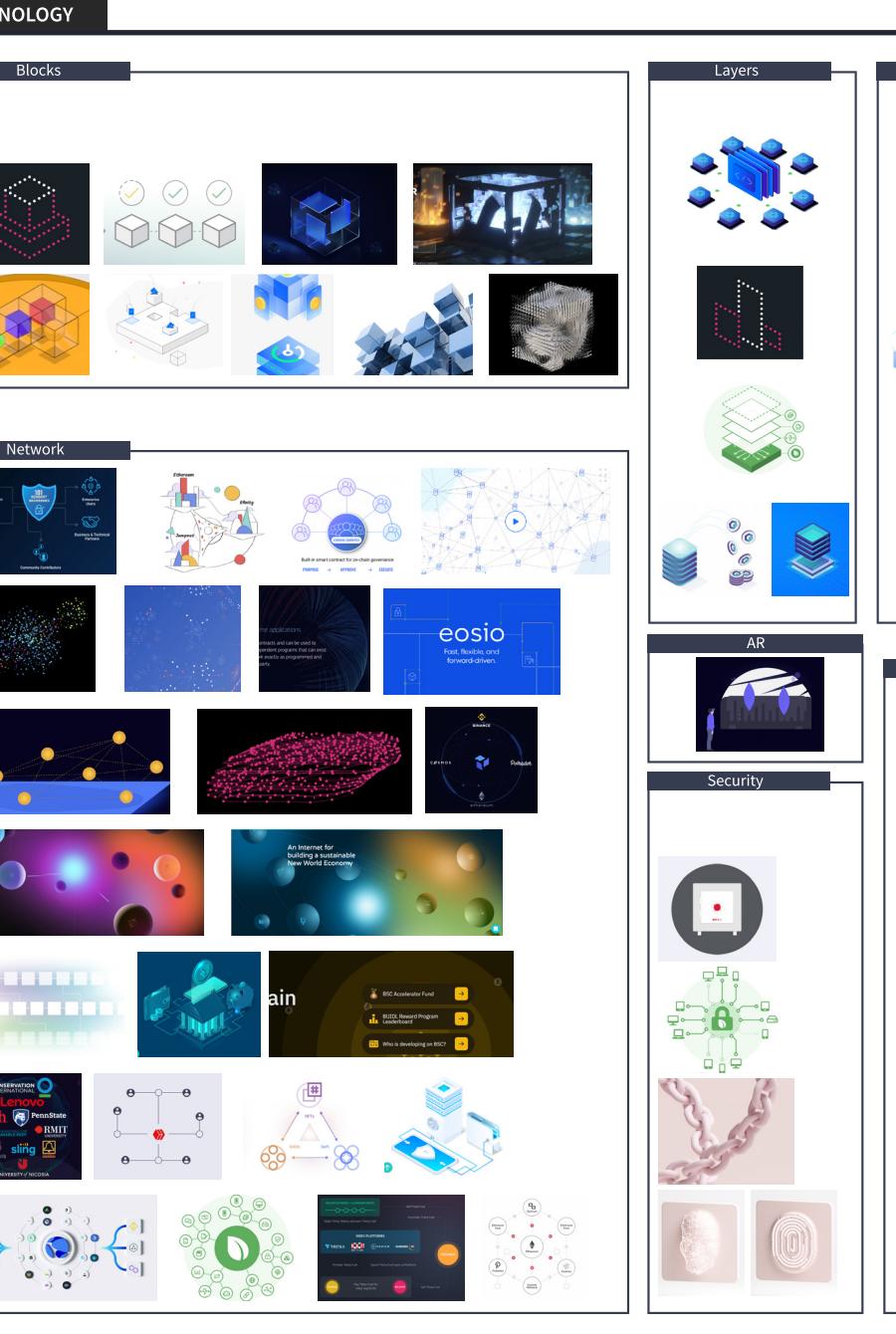
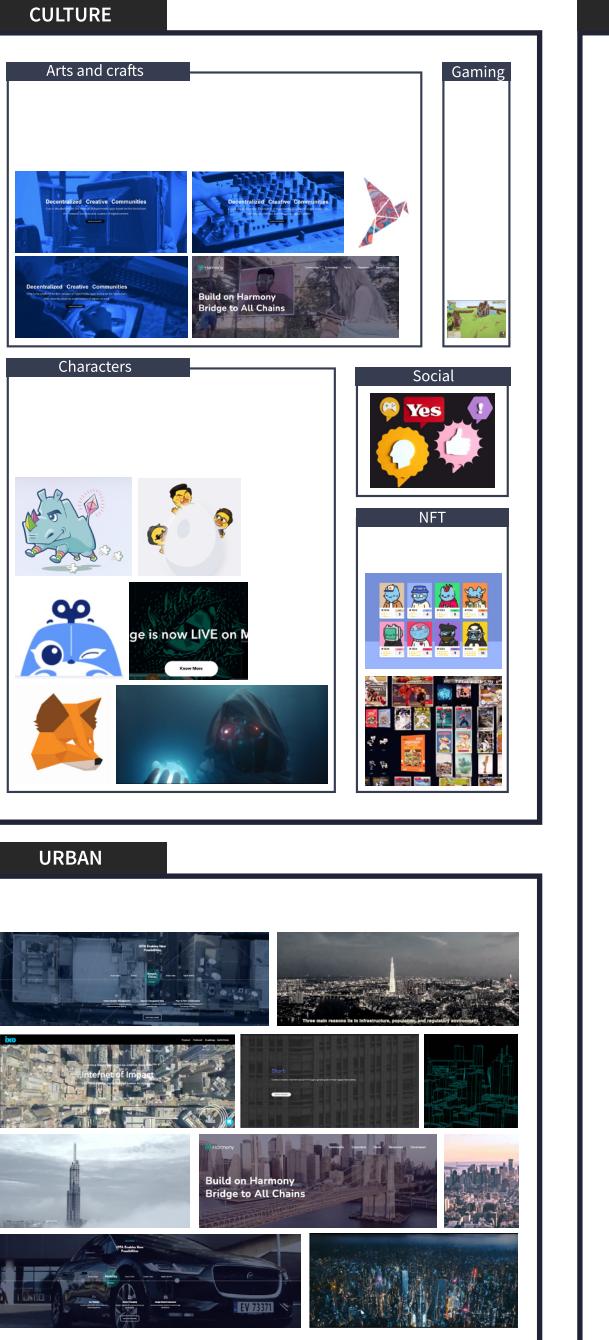
VISUAL ELEMENTS

CATEGORIZED GRAPHIC ITEMS USED ON THE LANDING PAGE OF ALL BLOCKCHAINS

How to read

The size of the box is proportional to the number of items that it appears on the landing pages.

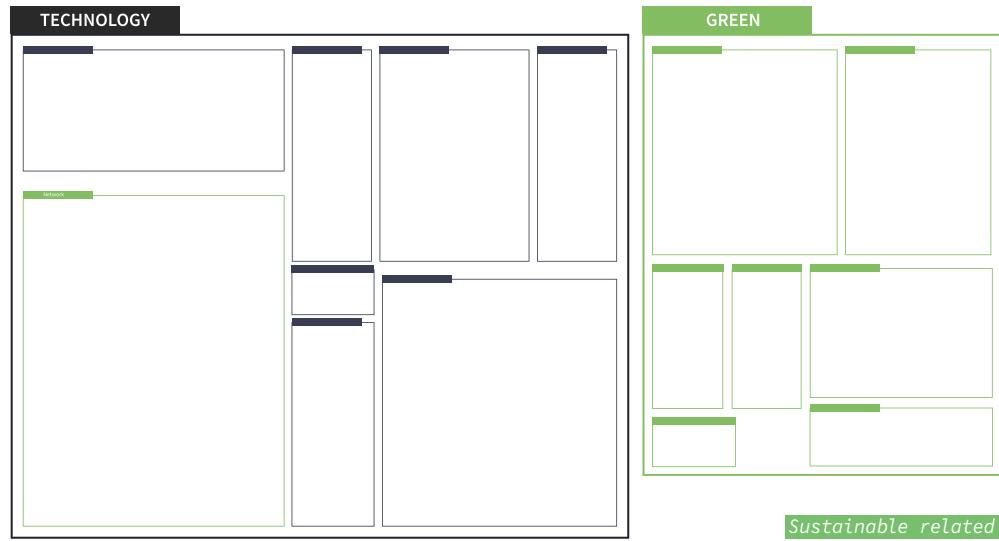
Sustainable related



VISUAL ELEMENTS

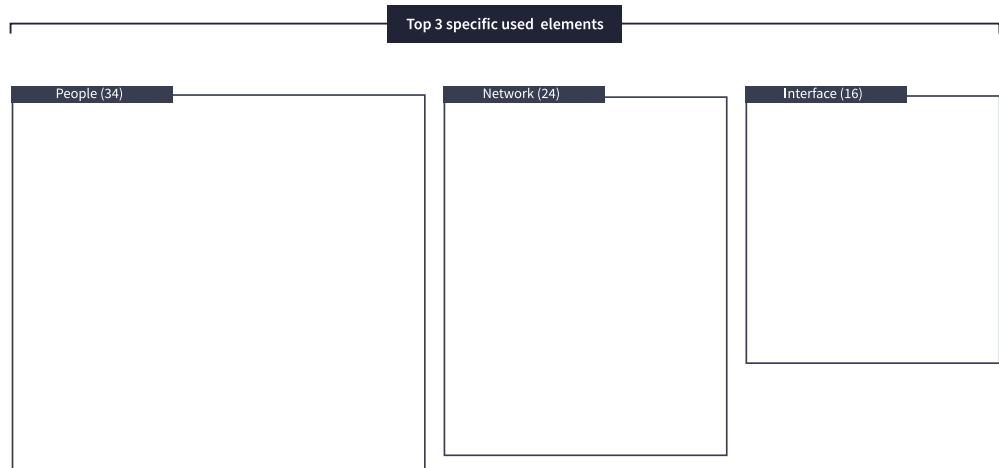
FINDING 2

Technological elements is predominant over “green-related elements. Sustainability is not straightforwardly communicated. However, the most used element inside the Technology category is the **Network**, which is one of the **key concepts of Sustainability**.



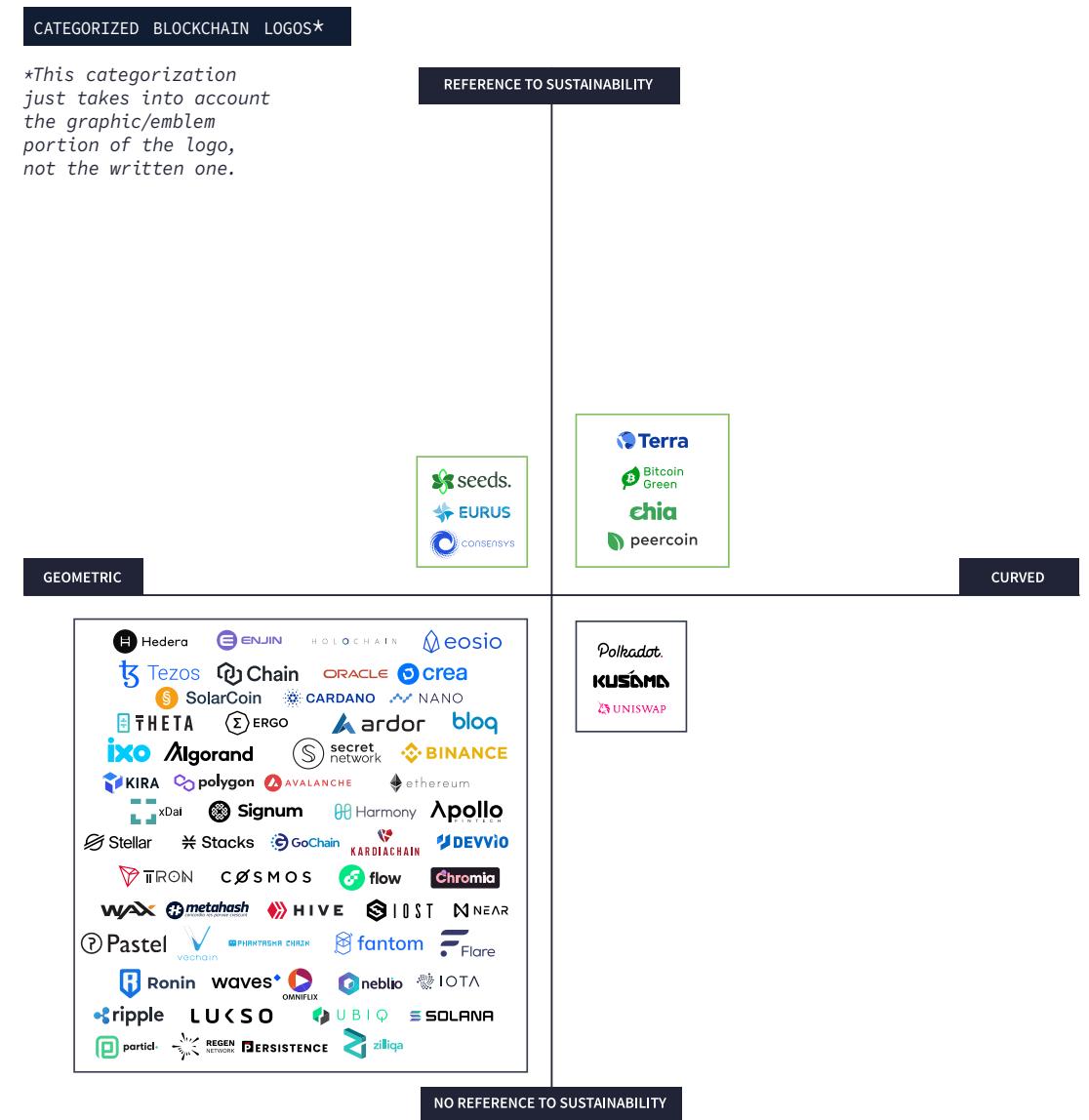
FINDING 3

The **specific element** that blockchains use the most to represent themselves is **People** over Network and Interface. **People** can be found in illustrations, photos, and videos in most of the blockchain website.



FINDING 4

Sustainable blockchains **don't highlight sustainability** as a factor, or as one of the main features of their logos.



PROTOCOL 1



2

WHAT TEXTUAL STRATEGIES DO BLOCKCHAIN TECHNOLOGIES USE TO PRESENT THEMSELVES SUSTAINABLE?

Findings from the second protocol determine whether blockchains present sustainability using text strategies. Text analysis was done manually and automatically to find keywords and concepts that appear “green”.



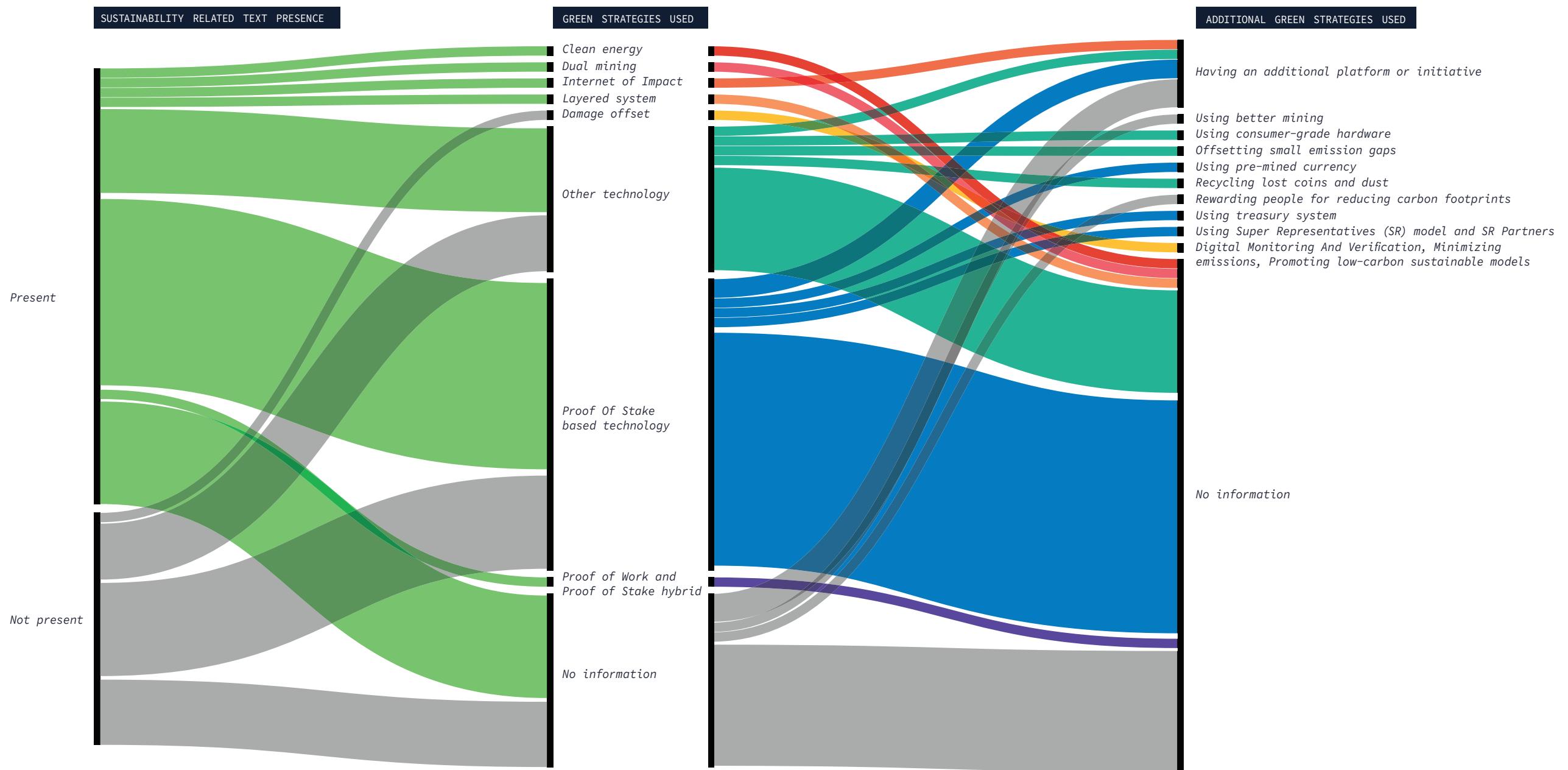
EXPLORE THE DATASET

SUSTAINABILITY RELATED TEXT

FINDING 1

Only 43 of 69 webpages contain information on sustainability on their website. 18 of them do not specify that they use any green strategy. The majority rely on a **more efficient technology** rather than offset, using clean energy or using a layered system.

A third of all the blockchains use additional green strategies. Some of them have their own additional platforms or initiatives. Some blockchains that do not have a major sustainable strategy still make small contributions.



MAIN KEYWORDS

FINDING 2

Keywords **from the landing page** mostly focus on the technological, value proposition and the application of the blockchain. Sustainable word count is relatively low.

MAIN PAGE TEXT

blockchain²⁵⁹
network¹³⁸ chain¹³⁴ build¹⁰⁴
assets¹⁰³ decentralized¹⁰¹ ethereum⁹⁴
ecosystem⁸⁹ transaction⁸⁸ smart⁸⁸
platform⁸⁷ secure⁸³ contract⁸² common⁷⁸
token⁷⁸ digital⁷¹ wallet⁶⁷ protocol⁶⁶ community⁵⁸ nft⁵⁸
open⁵⁷ developers⁵⁷ applications⁵⁶ learn⁵³ easy⁴⁶ data⁴⁵ service⁴⁵
proof⁴⁴ enterprise⁴² technology⁴⁰ scalable⁴⁰ solution³⁹ consensus³⁸ payment³⁸
business³⁷ explore³⁷ user³⁷ infrastructure³⁶ sustainable³⁵ make³⁵ stake³⁴ fee³⁴ dapps³⁴
enable³⁴ start³⁴ bitcoin³³ stack³³ fast³² built³² cross³² global³² economic³¹ launch³¹ read³¹ defi³⁰
marketplace³⁰ green³⁰ apps³⁰ exchange²⁹ security²⁸ staking²⁸ people²⁶ products²⁶ trade²⁶ development²⁵ financial²⁵
based²⁴ multi²⁴ game²⁴ money²³ project²³ source²³ work²³ foundation²³ low²² powerful²² scale²² cryptocurrency²¹ software²⁰ governance²⁰
binance²⁰ energy¹⁹ currency¹⁹ economy¹⁹ crypto¹⁹ generation¹⁹ liquidity¹⁹ native¹⁹ create¹⁹ download¹⁸ validator¹⁸ partners¹⁷ compatible¹⁷ free¹⁷ block¹⁷ space¹⁷
future¹⁷ creator¹⁷ mainnet¹⁷ news¹⁶ time¹⁶ rewards¹⁶ power¹⁶ cost¹⁶ impact¹⁶ cosmos¹⁶ real¹⁶ fully¹⁶ bsc¹⁶ secret¹⁶ whitepaper¹⁶ friendly¹⁶ research¹⁶ gas¹⁶ finance¹⁶ public¹⁶ privacy¹⁶
designed¹⁶ change¹⁶ earn¹⁶ internet¹⁶ node¹⁶ transactional¹⁶ later¹⁶ mining¹⁶ high¹⁶ nano¹⁶ supply¹⁶ planet¹⁶ access¹⁶ features¹⁶ team¹⁶ tools¹⁶ coin¹⁶ instant¹⁶ live¹⁶ media¹⁶ play¹⁶ scalability¹⁶ send¹⁶
efficient¹⁶ algorithm¹⁶ allowing¹⁶ bridge¹⁶ buy¹⁶ swap¹⁶ introducing¹⁶ release¹⁶ supplier¹⁶ top¹⁶ progress¹⁶ loading¹⁶ prime¹⁶ multiple¹⁶ cloud¹⁶ fund¹⁶ mechanism¹⁶ eco¹⁶ trade¹⁶ per¹⁶ climate¹⁶ industry¹⁶ child¹⁶ employee¹⁶ current¹⁶

Keywords **from the sustainability-related text** focus more on the technological words. The sustainable words in those sections have a higher presence, while application-related words have a lower presence. References are mentioned more often.

SUSTAINABILITY-RELATED TEXT

proof¹³⁵ blockchain¹¹⁴ stake⁹⁷
network⁹⁶ consensus⁹⁰ bitcoin⁷⁴
common⁷³ energy⁷² transaction⁷⁰ pos⁶⁸ carbon⁶¹
open⁶⁰ ethereum⁵⁷ chain⁵⁶ mechanism⁵⁵ protocol⁵³
security⁵¹ token⁴⁸ mining⁴⁸ sustainable⁴⁶ economic⁴³ platform⁴² fee⁴²
efficient⁴² source⁴⁰ global³⁸ work³⁸ low³⁸ friendly³⁴ people³² climate³¹ community³⁰
ecosystem³⁰ build³⁰ make³⁰ create²⁹ currency²⁸ reward²⁸ scale²⁷ footprint²⁷ block²⁶ decentralized²⁵
power²⁵ leading²⁵ eco²⁵ effective²⁴ development²⁴ cost²⁴ digital²⁴ technology²⁴ algorithm²⁴ collaborate²⁴ process²⁴ green²⁴
impact²⁴ generate²⁴ stack²⁴ foundation²⁴ designed²⁴ asset²⁴ case²⁴ validators²⁴ staking²⁴ enables²⁴ projects²⁴ regenerators²⁴ challenges²⁴ exchange²⁴
based²⁴ extremely²⁴ million²⁴ applications²⁴ transfer²⁴ run²⁴ research²⁴ high²⁴ peer²⁴ centralization²⁴ distributes²⁴ fast²⁴ nano²⁴ organizations²⁴ addition²⁴ authority²⁴ consumption²⁴ participation²⁴
performance²⁴ poc²⁴ stellar²⁴ talk²⁴ smart²⁴ gas²⁴ verifiable²⁴ achieve²⁴ address²⁴ model²⁴ nodes²⁴ profit²⁴ data²⁴ products²⁴ financial²⁴ space²⁴ common²⁴ finance²⁴ public²⁴ charge²⁴ earn²⁴ supply²⁴ users²⁴ block²⁴
computing²⁴ policy²⁴ storage²⁴ future²⁴ real²⁴ private²⁴ analysis²⁴ composite²⁴ archive²⁴ critical²⁴ borderline²⁴ borders²⁴ commitment²⁴ consensus²⁴ dependent²⁴ determined²⁴ easily²⁴ empower²⁴ equity²⁴ represent²⁴ famous²⁴ freely²⁴ gaming²⁴ stakeholders²⁴
green²⁴ hardware²⁴ holder²⁴ incentive²⁴ paper²⁴ integrity²⁴ intermediate²⁴ issuance²⁴ long²⁴ rfb²⁴ opportunity²⁴ reduce²⁴ regulation²⁴ reliability²⁴ small²⁴ time²⁴ minute²⁴ thrive²⁴ trust²⁴ unconstrained²⁴ upgrade²⁴ user²⁴ connect²⁴ greenback²⁴ plan²⁴
benchmark²⁴ benefit²⁴ codice²⁴ delegation²⁴ efficiently²⁴ fast²⁴ implementation²⁴ moderate²⁴ participant²⁴ responsive²⁴ cost²⁴ shiny²⁴ toxic²⁴ legacy²⁴ offset²⁴ face²⁴ moment²⁴ mouse²⁴ source²⁴ poems²⁴ single²⁴ unsecure²⁴ busines²⁴ mali²⁴ minor²⁴ economy²⁴ allowing²⁴ multiple²⁴ industry²⁴ adopted²⁴ com²⁴

How to read

blockchain²⁵⁹ Size of the word indicates relative frequency
Index indicates how many times the word occurred

- Technology related keywords
- Blockchain advantages
- Sustainability related keywords
- References to other blockchains
- Blockchain applications
- Common words

DIFFERENCE IN KEYWORDS

FINDING 3

The most prevalent category on the landings pages is **technology**, followed by common keywords, blockchain applications and it's advantages. Sustainability related text occupies a small section.

- Technology related keywords
- Blockchain advantages
- Sustainability related keywords
- References to other blockchains
- Blockchain applications
- Common words

MAIN PAGE TEXT



Technology and common words are the biggest categories in the sustainability-related text as well, but there is more text about **advantages, sustainability and, references** than on the landing pages, while the application category is less present.

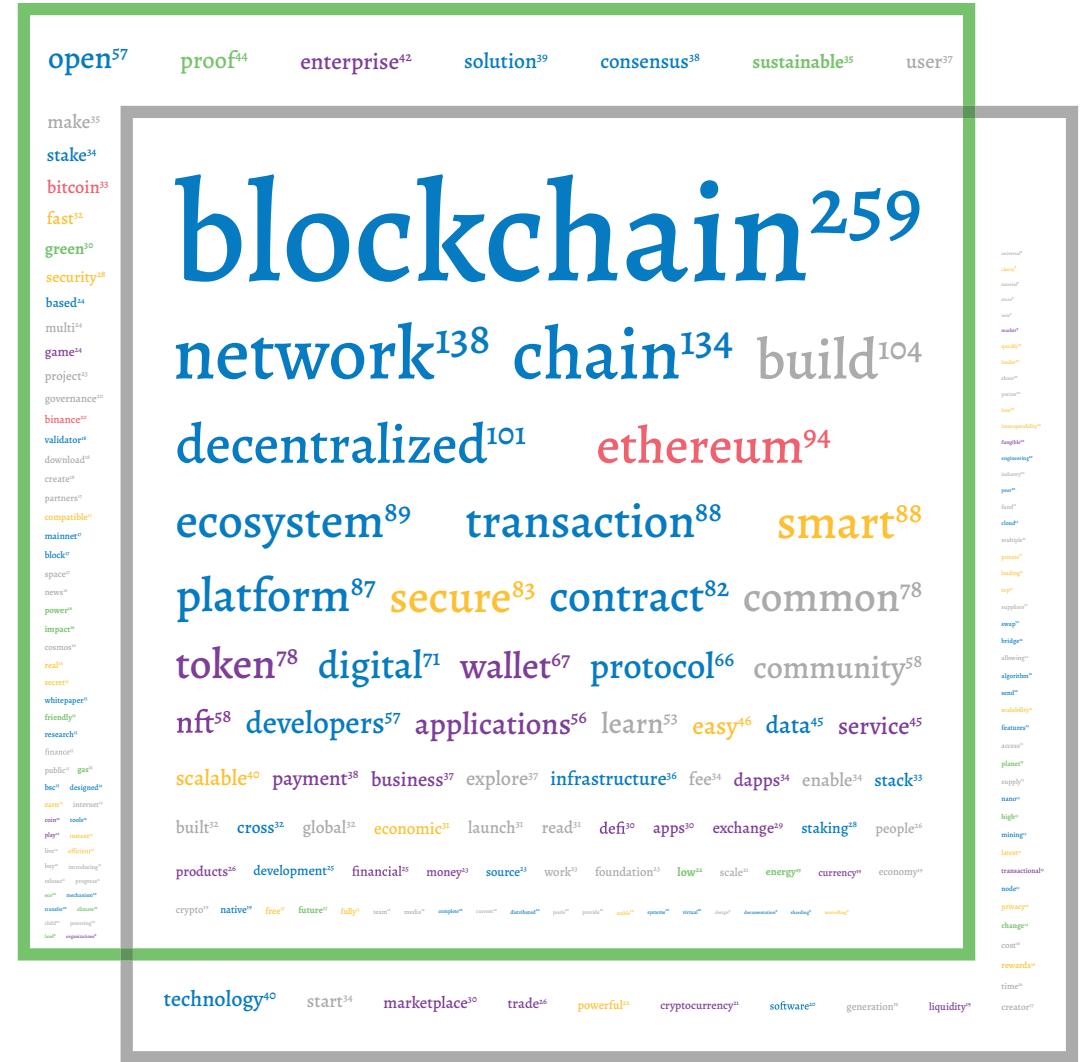
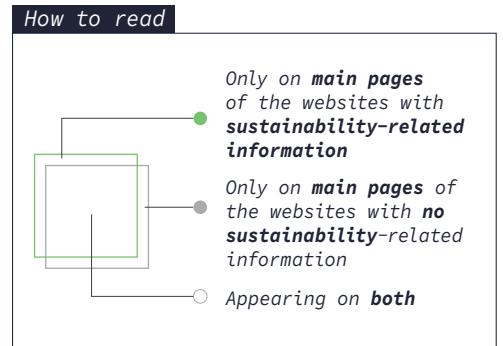
SUSTAINABILITY-RELATED TEXT



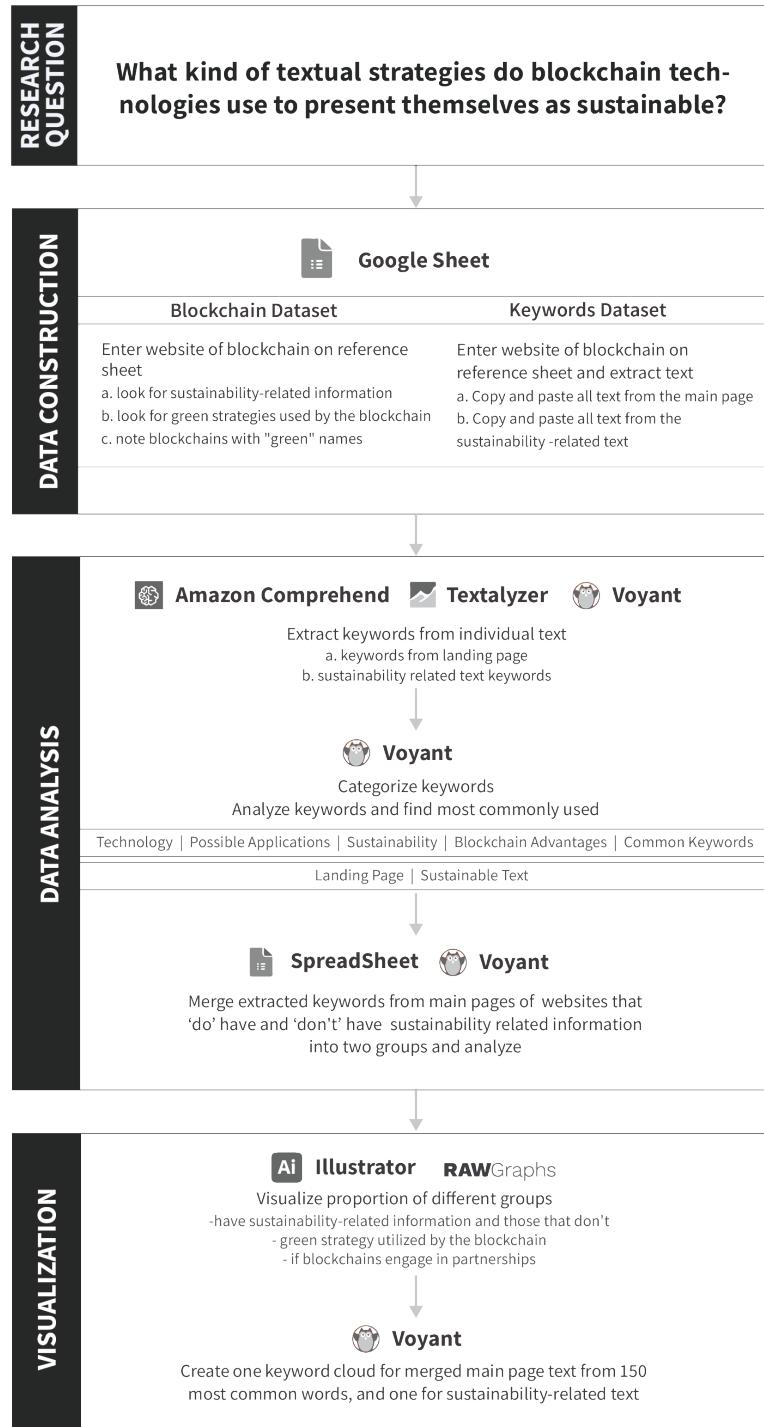
KEYWORDS CATEGORIES

FINDING 4

The **usage of technological and general words** is almost the same across the websites that do have sustainability-related information and on those that don't. The former are more focused on sustainability, blockchain advantages, and references, while the latter are more focused on blockchain applications.



PROTOCOL 2



3 WHO IS BEHIND THE BLOCKCHAINS?

Findings from the third protocol determine who and what type of organizations are involved in the blockchains. Year launched, market cap, headquarter location, and type of organization are considered.



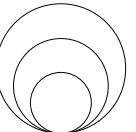
EXPLORE THE DATASET

YEAR LAUNCHED

FINDING 1

The first sustainable blockchain companies began to arise in **2012**. Since then, launches increased and reached their **outstanding peak in 2017**. In the following years, they began to decrease again.

How to read



Circle-sizes are proportional to **number of companies** launched per year

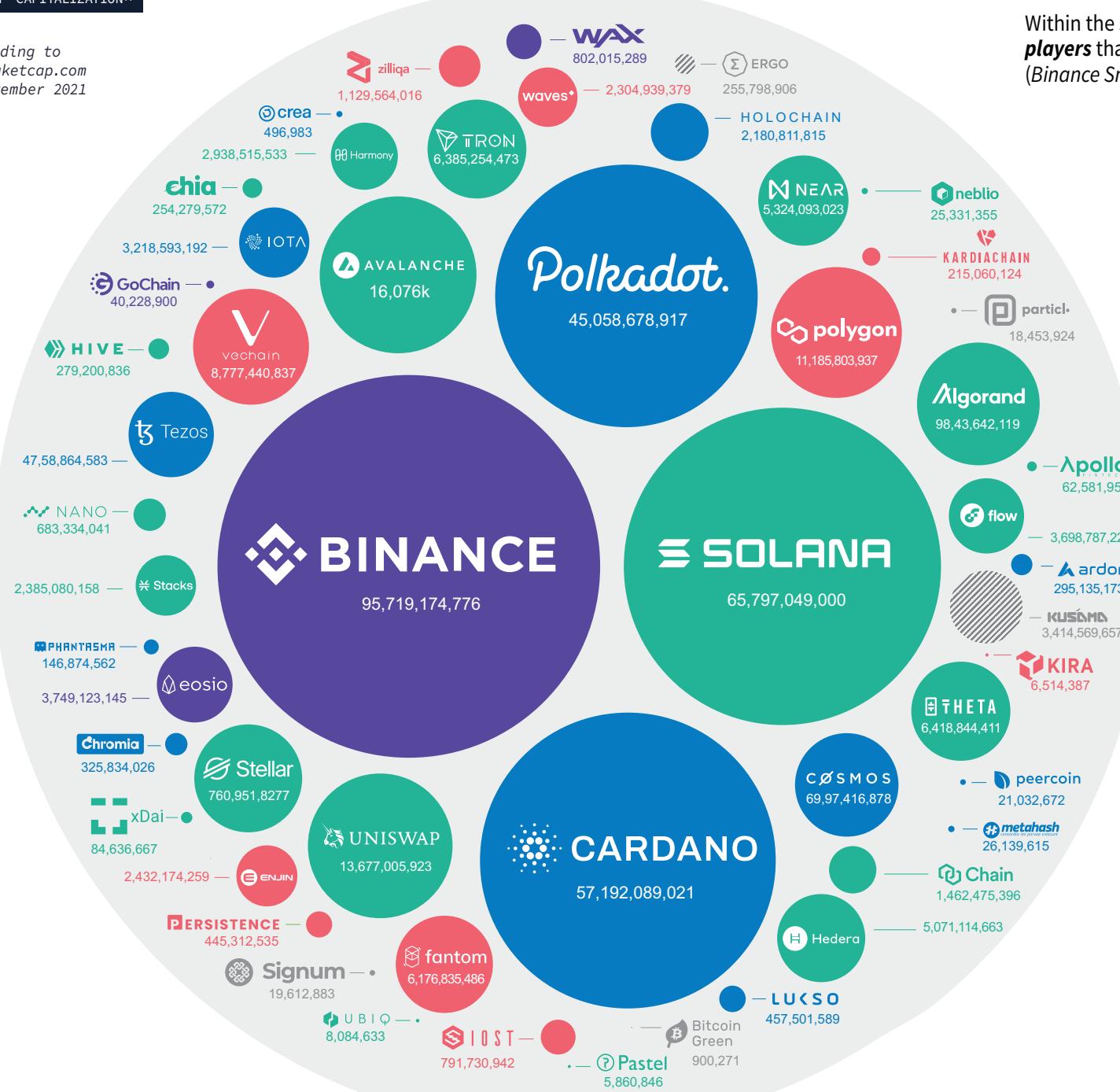
--- No info



MARKET CAP

MARKET CAPITALIZATION*

*according to
coinmarketcap.com
in November 2021

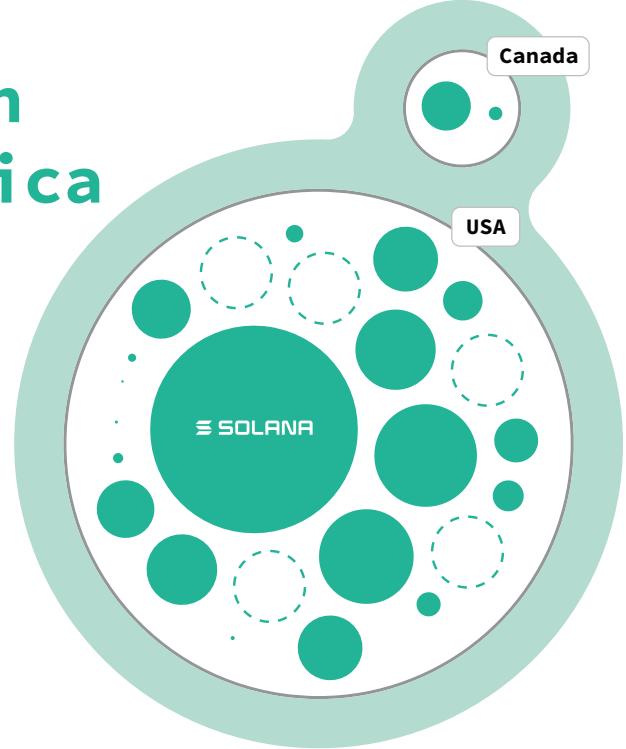


LOCATION & MARKET CAP

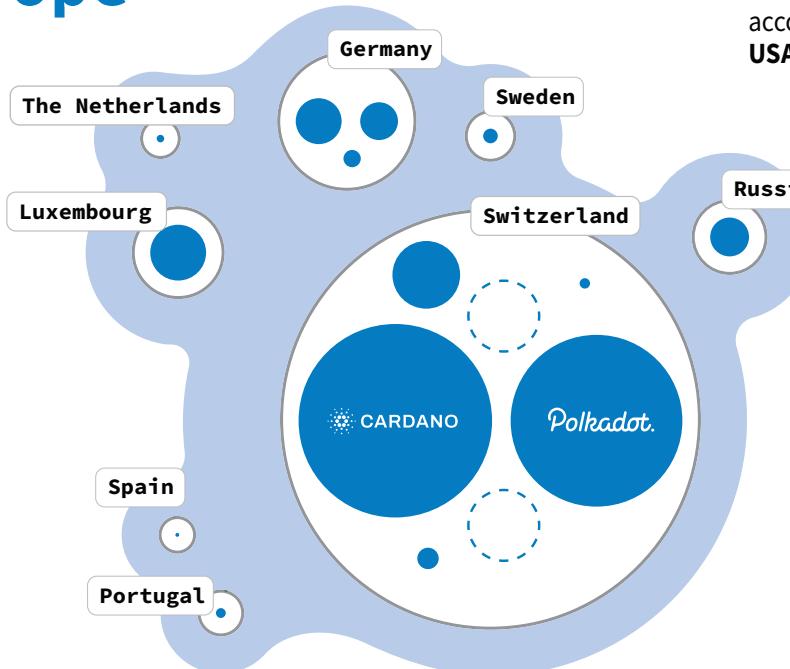
HEADQUARTERS LOCATION* AND MARKET CAP

*according to
crunchbase.com
in November 2021

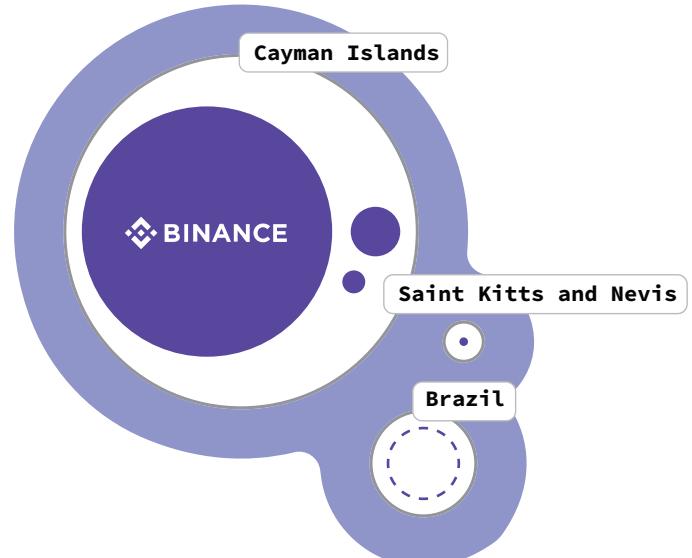
North America



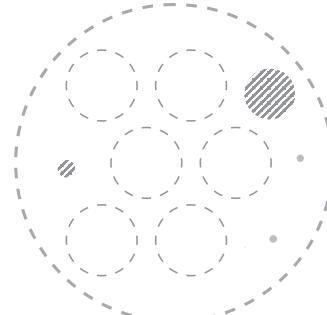
Europe



Central & South America



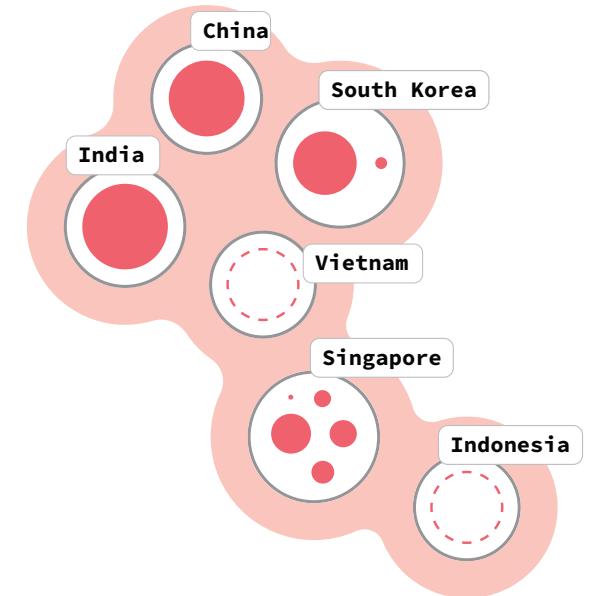
Unknown



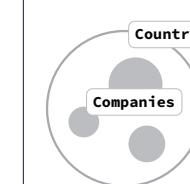
FINDING 3

Headquarter locations of sustainable blockchain companies are spread out over 4 continents (North America, Central & South America, Europe, and Asia). The **most relevant locations** according to the market cap of their resident companies are the **USA**, followed by **Switzerland** and the **Cayman Islands**.

Asia



How to read



CAP of blockchain
Circle-sizes
proportional to
CAP-values

No info
(Circle-size according
to **average CAP-value**
of all other blockchains)

■ TYPE OF ORGANIZATION

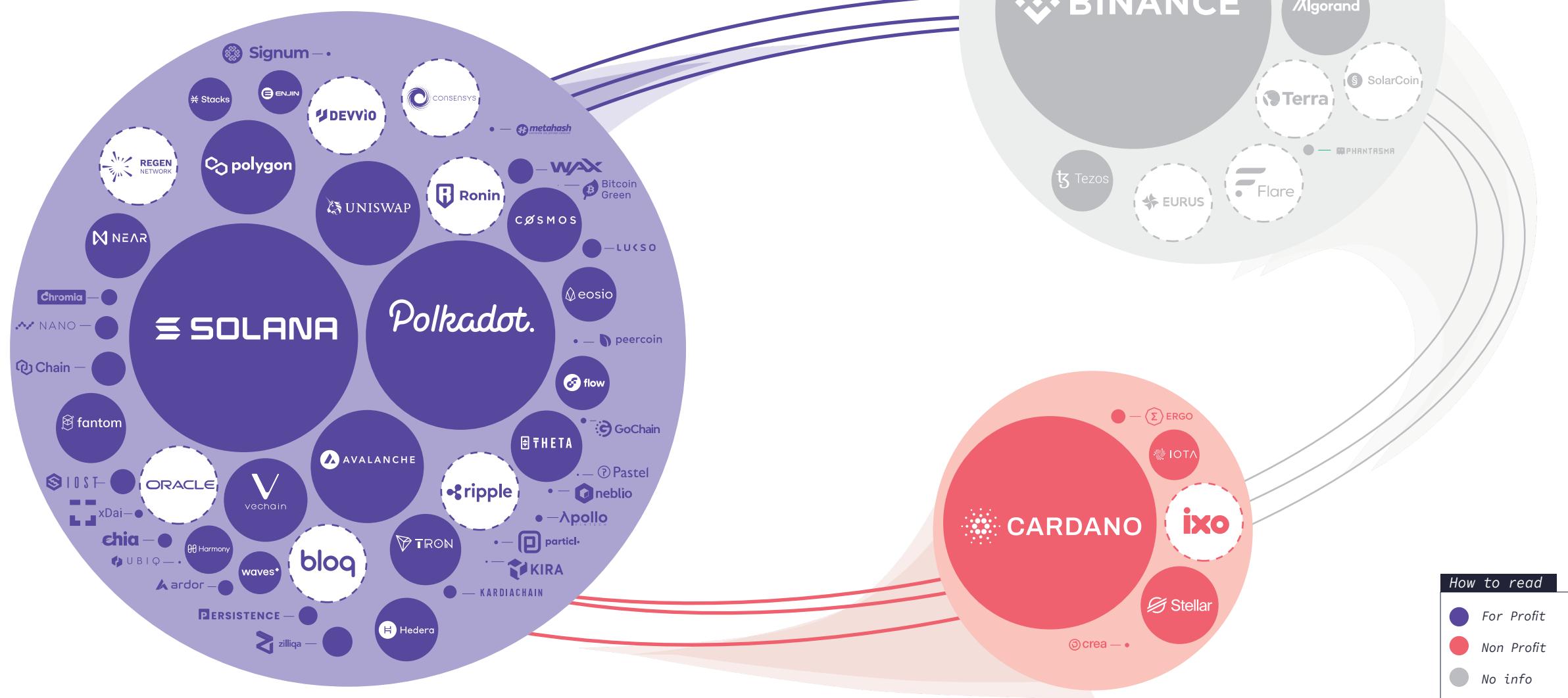
FINDING 4

About **71%** of sustainable blockchains are **for-profit**

Organizations. On the contrary, only about **7%** of these blockchains can be considered **non-profit** organizations, due to a high number of companies not providing information about their type of organization.

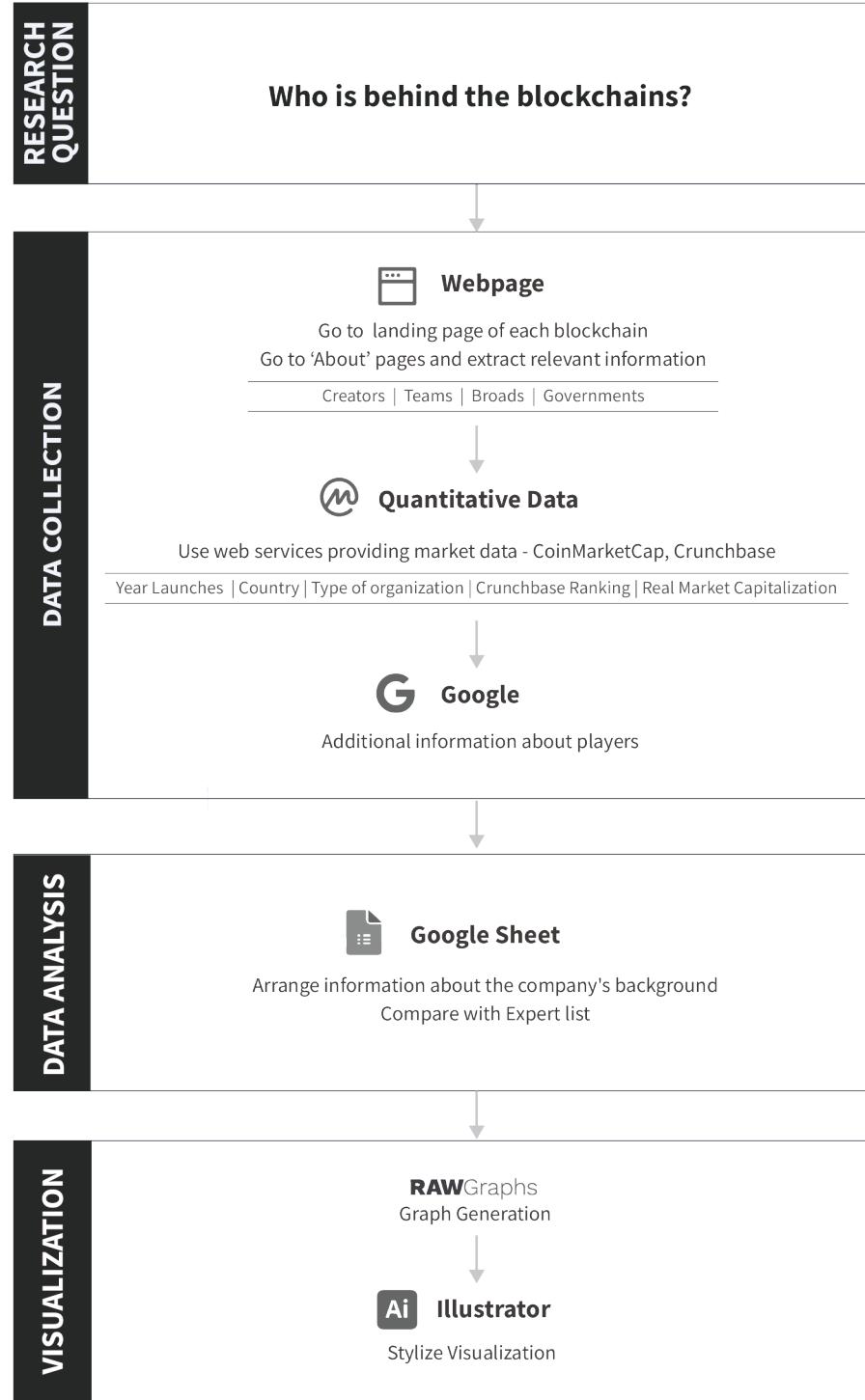
TYPE OF ORGANIZATION*

*according to
crunchbase.com
in November 2021



PROTOCOL 3

CONCLUSIONS



Overall, the majority of the blockchains do not present sustainability as their primary value and instead focus on the technology they are utilizing. This can be concluded from analysis of their visual and textual presentation, where technology-related visuals and words are predominant and sustainability has a much smaller representation. In most cases, the method they choose to be sustainable is the efficient technology they are running on, so oftentimes, sustainability comes as a proxy.

The majority of the blockchains were launched after the boom in 2017 when 20 new companies emerged. Among them, there were 4 big players (*Binance Smart Chain, Cardano, Solana and Polkadot*) that have a combined market capitalization of over 45 billion euros. The blockchains are found around the world, the most popular location being the USA. The majority are for-profit organizations, and a small portion is non-profit. Around 1/5 do not provide information on their organization type.

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PROTOCOL 0

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PROTOCOL 4

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