

TRUSTCHAIN OC5: GREEN SCALABLE AND SUSTAINABLE DLTS

First webinar for Applicants

TRUSTCHAIN Consortium
25/11/2024

TRUSTCHAIN

TRUSTCHAIN IN BRIEF

TRUSTCHAIN - Fostering a Human-Centred, Trustworthy and Sustainable Internet

- European project - Horizon Europe Research and Innovation Programme (call topic CL4-2022-HUMAN-01-03).
- Member of the European Commission's Next Generation Internet initiative (NGI)
- Cascade funding project launched in January 2023

Up to 8,775 M€ funding and mentoring program with best international experts in their field as well as access to divers' support services (e.g., business development training, legal and regulatory training, communication support) **and infrastructure** (e.g., Alastria Blockchain)



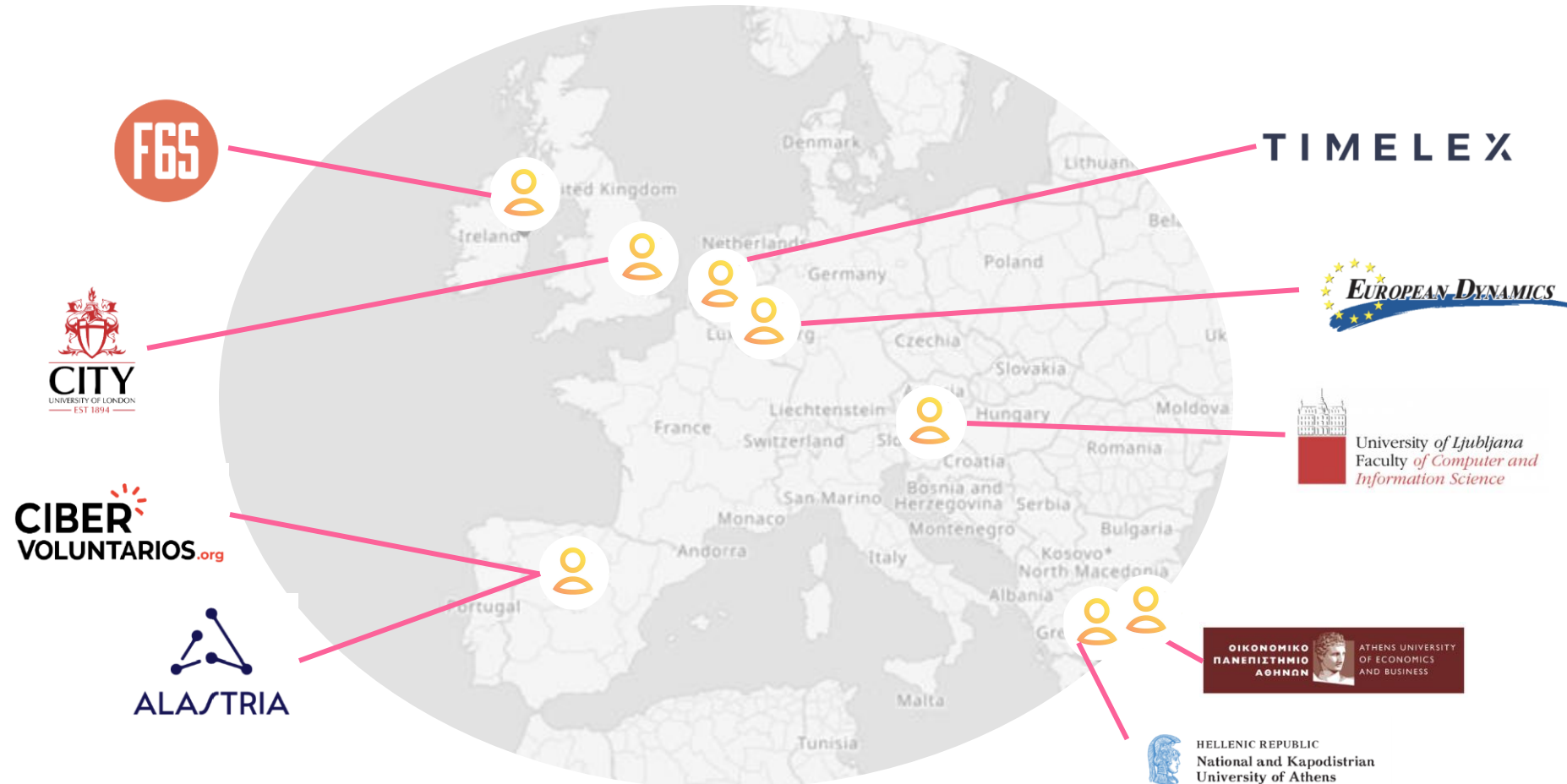
Overall objective:

To achieve a human centered, trustworthy and sustainable decentralised internet

To empower innovators and end users through 5 Open Calls to create a portfolio of Next Generation Internet protocols and an ecosystem of decentralised identity management software solutions that are transparent to the user, interoperable, privacy aware, regulatory compliant and that can seamlessly integrate and interoperate with any of existing decentralised applications.

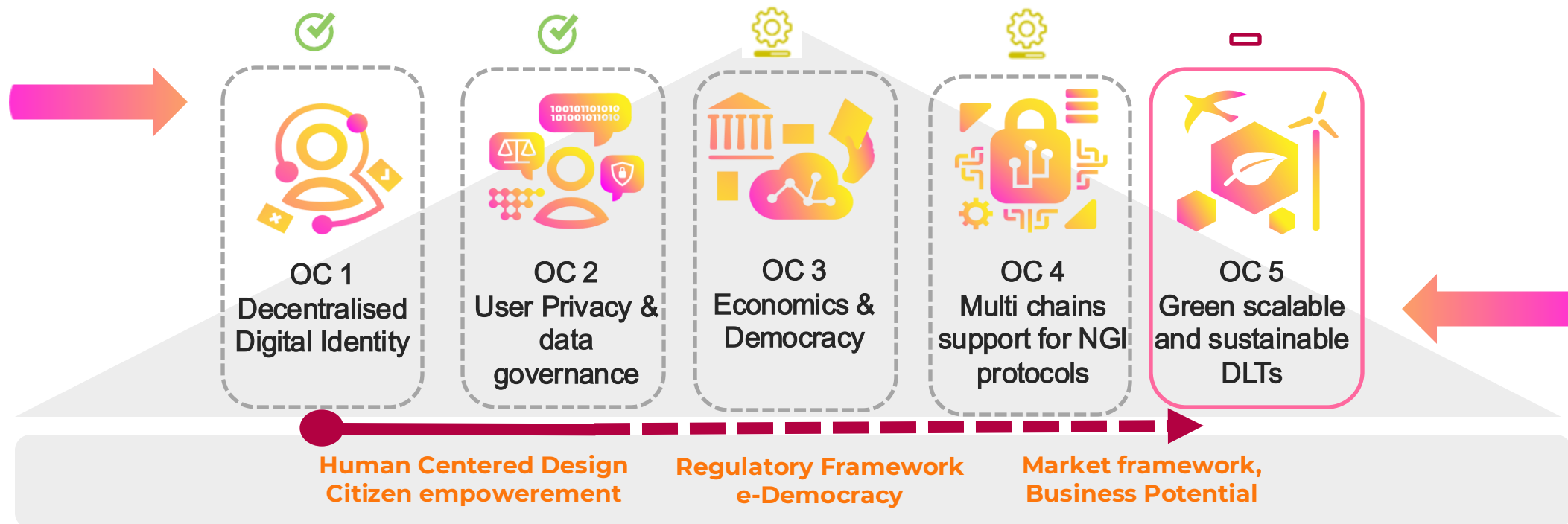
TRUSTCHAIN CONSORTIUM

Nine organisations from 7 different European countries (Luxembourg, Republic of Ireland, Slovakia, Greece, Spain, Belgium and United Kingdom), **strategically selected for their expertise.**



TRUSTCHAIN IMPLEMENTATION: 5 OPEN CALLS

TRUSTCHAIN : Human centered, trustworthy & sustainable decentralised internet



Each Open Call provides key technologies that can be used as basis for development in the subsequent calls, while also the opposite interaction can be employed by later calls.

TRUSTCHAIN OVERALL APPROACH

Whatever the call:

- Co-creation with engagement of end users since the requirement/specification phase till the validation of the proposed solution
- **Provide democratic, transparent, traceable, and regulatory compliant mechanisms** that can support any ecosystem of entities and actors participating with their **digital identities**.
- Use **decentralised digital identity architectures** together with **IoT, AI, Cloud-to-Edge, DLT and DT** and **embed in such solution's important societal goals** in accordance with objective **truth** and therefore, **trustworthiness**.



TRUSTCHAIN OC5

Green scalable and sustainable DLTs

AGENDA



- **OC5 – Green scalable and sustainable DLTs**
- **Focus on some specific aspects to be covered in your proposal**
 - What do you need to explain in your proposal ?
 - The human centered approach In TRUSTCHAIN
 - Taking care of ethics aspects in TRUSTCHAIN
- **Eligibility criteria and selection process**
- **How to apply and why?**
- **FAQs**
- **Q&As**

OC5 GREEN SCALABLE AND SUSTAINABLE DLTS



11th November 2024 until 15th January 2025 (17:00 CET)



- **€1 989 000** distributed among up to 17 selected projects for 9 months
- Up to **K€ 117** per project



The goal is to employ digital identities, trustworthy data, and already designed novel mechanisms for the ecosystems' economy, in order to achieve high energy efficiency and optimisation of particular DLTS. We are looking for the most appropriate, relevant and pertinent tradeoffs between the use of technologies, the security of consensus protocols on one side, and the sustainability requirements on the other.

You are invited to submit your proposals on any topic that serves the OC4 vision and objectives with as minimal requirement :

- **Adopt a co-creation process with end users from requirements elicitation till validation**
- **Use standard technology for full stack development,**
- **Be open source and desirably reach TRL 7,**
- **Extend the state-of-the-art in the domain of green scalable and sustainable DLTS**

WHAT ARE WE LOOKING FOR? (INDICATIVE/ NOT LIMITED TO)

 Solutions, protocols, services or applications that clearly define, upgrade/extend the state-of-the-art and address one or several of the following issues /aspects/topics:

- **Develop Energy-Efficient Consensus Mechanisms:** Design and implement consensus mechanisms that reduce energy consumption, potentially moving away from Proof of Work (PoW), while ensuring the security and trustworthiness of DLT systems
- **Introduce Sharding for Scalable Decentralization:** Implement sharding techniques to divide the network into smaller, energy-efficient groups of maintainers, drastically lowering energy usage while maintaining the security and integrity of the entire DLT network. These techniques could be related or employ DePIN incentive mechanisms and approaches.
- **Optimize Data Management for Energy Reduction:** Explore methods for secure data removal to reduce the storage demands of DLTs, allowing for the safe deletion of obsolete data while maintaining the integrity and reliability of the ledger.
- **Enable Consensus-less DLT Functionality:** Investigate and implement systems that perform DLT functionalities without requiring communication between miners, eliminating the need for costly consensus protocols and drastically reducing energy consumption.

WHAT ARE WE LOOKING FOR? (INDICATIVE/ NOT LIMITED TO)

- **Ensure Interoperability and Scalability:** Develop solutions that maintain openness and ensure that the optimized DLT systems can seamlessly interact with existing infrastructures, while ensuring scalability to accommodate future growth without increased environmental impact. Moreover, innovative DePIN solutions that enable scalability and sustainability are envisioned.
- **Energy-efficient and interoperable smart oracle solutions:** Develop scalable, decentralized oracle solutions that exploit the capabilities of AI/ML, while being energy-efficient, and ensuring the reliability and integrity of real-world data. Interoperability with legacy systems, including legacy identity systems, is important. Also important is investigating the trade-offs between energy efficiency and other performance metrics such as latency and number of oracle nodes.
- **Energy-efficient Trusted Enclaves:** Develop solutions and mechanisms towards energy-efficient trusted enclaves, potentially involving secure decentralized processing, secure multiparty computation, ZKP-based analytics, etc.
- **Energy-efficient Cross-chain bridges:** Develop resilient and highly available bridging solutions that support interoperability and the seamless integration of multiple DLT-based ecosystems. These bridges should facilitate state/data/asset exchange, privacy-enabling mechanisms, and digital identities across multiple chains. The solutions can utilize mechanisms such as TEE, reputation, and data aggregation to ensure trust while increasing energy efficiency.

WHAT ARE WE LOOKING FOR? (INDICATIVE/ NOT LIMITED TO)

- **Energy-efficiency applications:** Develop applications that make use of decentralized technologies and significantly impact energy efficiency, circular economy and sustainability, token strategies for sustainability, e.g., green certificates, digital product passports, etc.
- **Embedding and embodying philosophical concepts** of indigenous populations that can be used to achieve sustainability and trustworthiness in the context of climate change are also possible, also related to 5Cs1 for sustainability, i.e., Consciousness, Conservation, Community, Commerce, Culture. Examples of applications may include, for example, but not limited to the DestinE (Destination Earth) programme.

WHAT ARE THE CHALLENGES YOU SHOULD CONSIDER & TACKLE? (INDICATIVE/ NOT LIMITED TO)

- Energy-Intensive Consensus Mechanisms
- Trustworthiness vs. Efficiency Trade-off
- Onchain/offchain Data Management and Transmission:
- Integration of Digital Identities:
- Compatibility with Existing DLT Infrastructure
- Oracles and Cross-chain Bridges:
- Oracles for green certificates
- Energy-efficient Trusted Enclaves
- Energy-efficient DePINs
- Token strategies for sustainable goals:
- Balance between privacy and sustainability:
- Adaptation to the Circular Economy and waste reduction
- Efficient use of underutilized resources:

**FOCUS ON SOME SPECIFIC ASPECTS
TO BE COVERED IN YOUR PROPOSAL**

WHAT DO YOU NEED TO EXPLAIN?

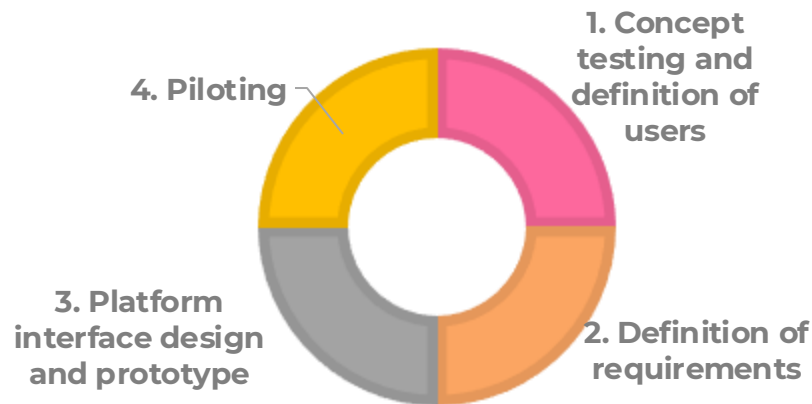


Use the mandatory
TRUSTCHAIN proposal
template

- The **specific Open Call #5 challenges** your solution will address,
- The **specific technological innovation** you propose to develop and how it is clearly different from alternative solutions that are already available in the market, or developed by previous EU research and innovation actions (i.e., the EU ONTOCHAIN Project and any other projects),
- The **specific User Centric Approach and co-creation process** you are going to implement,
- The specific **user privacy and data governance needs or challenge** you propose to address and **who would benefit from it** immediately and in the longer term,
- The specific **legal and regulatory framework** you are going to follow/contribute to,
- Whether the innovation will focus on the **development of new solutions** for existing areas, **or a totally disruptive approach or idea**,
- **Any work you have already done** to respond to this need, for example if the project focuses on developing an existing capability or building a new one,
- Any challenges or opportunities relating to **equality, diversity, ethics, and inclusion** arising from your project,
- Explain how your **proposed solution will align with the building blocks developed as part of the Open Call #1, #2, #3 and #4 on digital identity, user privacy and data governance, economics and democracy, Multi Chains support for NGI protocol** (more details are available on the [TrustChain webpage](#)) as well as **identify and justify how the proposed solution, or specific services and/or modules provided by it, can be used by other service and application developers of the TRUSTCHAIN ecosystem.**

USER CENTRIC APPROACH FLOW AND REQUIREMENTS

USER-CENTRED APPROACH



Requierements	Challenges	Expected Outcomes
sample needs to be representative	Identify the variables relevant for a representative sample	Adequent sample and user personas defined
The different methods should be qualitative	The sample size should fit qualitative methods (not too big)	Methodological roadmap
Onboarding of users during the co-creation phase	Access to the end-users	Realistic plan for reaching participants
All the tools are validated by the end- users	Conveying developing and testing	Description of the pilot execution process and analysis
Iteration (if possible)	Empathic design	Users' final report is satisfactory

REQUIREMENTS

- **Show your solution responds to user real needs.** A good way is to show this is through preliminary concept testing.
- **Define your methodology.** Say what methods you will employ and why
 - Frame and **justify the sample selection** of participants
 - Prepare an **implementation roadmap describing all the phases**
 - Define and **describe all the recruitment process and plan.** How and when will you recruit your users? How will you ensure access and engagement with them?
- Show how you will analyse the data and **how the results from the pilots will have an impact in your tool.**
- **Show you have the expertise in the team to carry out these activities.** This adds a lot of credibility to your user centric approach. **UX Research profiles are highly recommended.**

TAKING CARE OF ETHICS ASPECTS IN TRUSTCHAIN

- Assess the ethical aspects of your project using the **ethics questionnaire** in the guide for applicants (Administrative Form)! It is the applicant's responsibility!



Any potential infringement of ethics principles and/or any potential harm, can result in the rejection of your proposal.

- (Arguably) most relevant topic to be addressed → Data protection (GDPR):
 - Whenever you process **personal data** as part of your project
 - Main obligations are:
 - Inform data subjects
 - Ensure having a legal basis for processing (e.g. consent when required)
 - Consult your DPO if you have one
- Seek, when required, approval from an **external, independent advisor** on the measures you propose to mitigate any ethical risks (e.g. an independent, experienced data protection expert) or, if mandatory, from an external ethics/data protection body!

ELIGIBILITY CRITERIA & SELECTION PROCESS

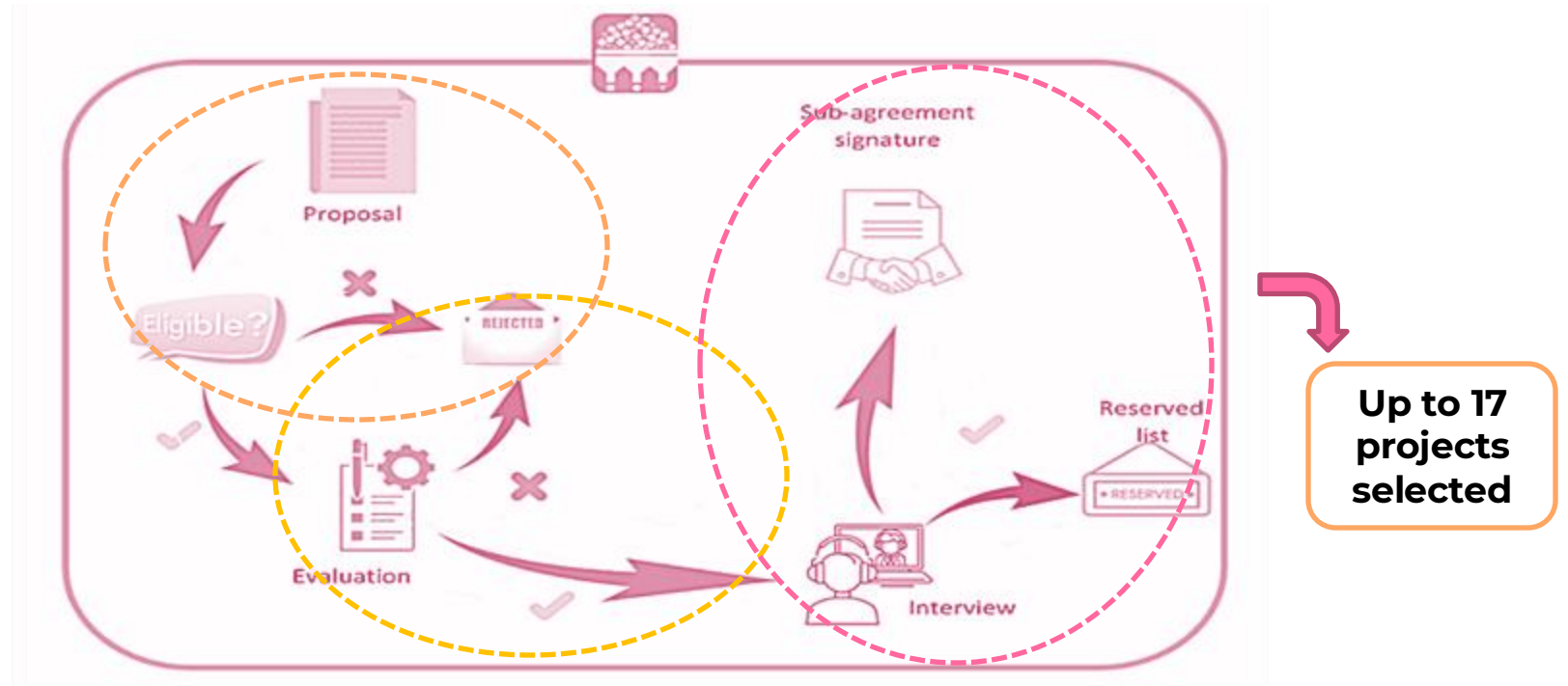
SELECTION PROCESS

Who ?

- Developers, innovators, researchers, academics, SMEs and entrepreneurs working on different NGI relevant topics and application domains at the intersection between the technical field , the Social sciences and Humanities as well as any others including economics, environment, art, design, which can contribute to NGI TRUSTCHAIN relevant vision
- Eligible countries
- Eligible type of applicants

Selection process

1. Eligibility check
2. Proposal evaluation
3. Online interview



HOW AND WHY TO APPLY?

HOW TO APPLY ?

- **Entry point for all proposals**

<https://www.f6s.com/trustchain-open-call-4/apply>

Submission received by any other channel will be automatically discarded

- **Provide a comprehensive research proposal according to the TRUSTCHAIN template and instruction set in the guidelines for Applicant**
- **Fill in the administrative part including any obligatory supporting documents specified in the guide for Applicant**



Tips and tricks for a good proposal

- 1 Read carefully the TRUSTCHAIN Open Call 4 document and Guide for Applicant
- 2 Check carefully the eligibility criteria
- 3 Take a look at the FAQs on our website
- 4 Use the official OC4 TRUSTCHAIN template for your proposal



<https://trustchain.ngi.eu>

<https://www.f6s.com/trustchain-open-call-4>

WHY TO APPLY?

TRUSTCHAIN will offer you **equity free funding**, **coaching on technical and business aspects**, **access to top infrastructure** as well as **visibility, promotion support & networking**.



SOME FAQs



What are OC5 TRUSTCHAIN timelines?

- Call announcement: 11 November 2024
- Call closure and submission deadline: 15 January 2025 at 17:00 CET
- Evaluation period: Up to three months after call closure
- Signature of sub-grant agreement: Up to one month after the announcement of the final list of selected projects
- Projects: From March 2025 to November 2025 (9 months indicative)

What is cascade funding?

Also known as Financial Support to Third Parties (FSTP), it is a mechanism of the European Commission to distribute public funds in order to create new companies, increase their scalability, SMEs and / or mid-cap companies, in the adoption or development of digital innovation. The main objective of this financing method is to simplify administrative procedures with SMEs, thus allowing some projects financed by the EU to issue, in turn, open calls to obtain more funding.



Where does the funding come from?

Funding is given by the TrustChain project under a Sub-Grant Agreement signed by selected applicants and the TrustChain consortium. Funds are from the European Commission (Horizon Europe Framework Programme), which uses TrustChain as intermediary.

How does the funding mechanism work?

The funding mechanism relies on a cascade-funding scheme involving Horizon Europe funds. The scheme is based on a Grant Agreement signed by the European Commission and the TrustChain consortium partners. The Consortium partners receive the HE funds which are then transferred to the winners of the TrustChain Open Calls based on the rules and regulations explained in the Guide for Applicants (Open Call #2). It means that funds received by call winners are Horizon Europe funds.

Who is eligible for TrustChain Open Calls?

Applicants can apply as individuals or linked to a legal entity. Hence, the participation is possible in several ways:

- **Team of natural person(s):** Team of individuals, all established in any eligible country. This does not consider the country of origin but the residence permit.
- **Legal entity(ies):** One or more entities (consortium) established in an eligible country. It can be universities, research centres, NGOs, foundations, micro, small and medium sized enterprises (see definition of SME according to the Commission Recommendation 2003/361/EC), large enterprises working on Internet or/and other related technologies are eligible.
- **Any combination of the above.**

What are the countries eligible for funding under TrustChain Open Calls?

Only applicants legally established/resident in any of the following countries (hereafter collectively identified as the “Eligible Countries”) are eligible:

- The **Member States** (MS) of the European Union (EU), including their outermost regions.
- The **Overseas Countries and Territories** (OCT) linked to the Member States;
- **Horizon Europe associated countries**, as described in the Reference Documents and the List of Participating Countries in Horizon Europe according to the latest list published by the European Commission.



Can I submit several projects to one specific call?

Open Calls are competitive and applicants should focus on one specific topic, so TrustChain consortium recommends you to submit one application per call, whether you are a legal entity and/ or a team of natural persons. In the event of multiple submissions, only the last one received (timestamp of the F6S system) will be considered for the evaluation process. Any other submitted proposals involving the same applicant will be declared non-eligible and will not be evaluated in any case.

Can I apply to TrustChain five Open Calls?

Yes, you can. However, note that the maximum funding eligible per third party within the TrustChain project is limited to €200,000.

STAY UPDATED AND GET INVOLVED!



trustchain.ngi.eu



[@NGI_TRUSTCHAIN](https://twitter.com/NGI_TRUSTCHAIN)



https://www.youtube.com/@trustchain_ngi

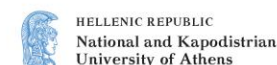


<https://www.linkedin.com/showcase/ngi-trustchain>



<https://www.f6s.com/ngi-trustchain/connect>

Thank you!



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JOIN OUR NEXT WEBINAR

December 9th – 12:00CET

SIGN UP NOW



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