NEXT GENERATION INTERNET


# D2.1 EXPERT REPORT ON NGI EVALUATION - FIRST VERSION

## GOVERNANCE STRUCTURE OF THE DIGITAL COMMONS TASK FORCE

Revision: v.1.0

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| Authors | Karolina Gyurovszka |
| Reviewers | Cailean Osbourne (Linux Foundation), NIcholas Gates (OpenForum Europe) |

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| Abstract | This document outlines the governance structure of the Digital Commons Task Force, as well as the plan for the expert group meetings and work in order to receive their feedback and advice in formulating the evaluation criteria for the NGI funding. |
| Keywords | Digital Commons Task Force, DTCF, Meeting, NGI Evaluation Criteria |



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# EXECUTIVE SUMMARY

This document outlines the governance structure of the Digital Commons Task Force (DCTF), as well as the plan for the expert group meetings and work in order to receive their feedback and advice in formulating the evaluation criteria for the NGI funding. The Digital Commons Task Force will also help with other tasks, such as liaisons building and Digital Commons mapping.

The below described way of working is designed in a way to receive as much feedback as possible, while not over-burdening the expert members with this voluntary activity. It is envisaged to also bring benefits to the members, by giving them the opportunity to be seen and heard, promote their project and achieve their objectives.

The feedback and information received from the DCTF will be used to achieve the objectives of the NGI Commons project, such as the evaluation of the NGI funding; the initial process of designing the criteria for evaluation is also described in this document.

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# TABLE OF CONTENTS

# LIST OF FIGURES & TABLES

# ABBREVIATIONS

| | |
|---|---|
| **DCTF** | Digital Commons Task Force |
| **SAP** | Strategic Advisory Panel |
| **DCPC** | Digital Commons Community Platform |
| **NGI** | Next Generation Internet |
| **DC** | Digital Commons |

# 1 THE DIGITAL COMMONS TASK FORCE

## 1.1 WHAT IS THE NGI COMMONS DIGITAL COMMONS TASK FORCE?

The NGI Commons Digital Commons Task Force (DCTF) is an expert body created by Task 2.1 – with technical expertise and a strategic outlook – that was created to help analyse the NGI projects portfolio and the effect of NGI funding on Digital Commons initiatives. The NGI Commons DCTF includes a hand-picked group of prominent researchers, policy and technology experts, mostly with no ties to the NGI-funded projects.

The DCTF's representatives are expected to provide strategic input on several aspects of the NGI Commons work, mainly the definition of the framework for measuring the leverage effect of NGI funding, fostering collaborations with relevant emerging Digital Commons initiatives at national, European, and international levels and developing a plan to support further development of the digital commons. They are expected to work in collaboration with the Strategic Advisory Panel (SAP) representatives, the NGI Unit representatives, and other prominent personalities that will be involved during the course of the project.

With reference to the creation of the DCTF, it was agreed that the first wave will consist of a cooperation of around 20 experts, with more waves to follow. We expect to engage with up to 70 people throughout the three-year duration of the project given some natural fluctuations, which may arise from the project's requirements and the general availability of experts. The DCTF will support NGI Commons activities, especially to analyse the NGI portfolio (Task 2.1), liaise with projects and initiatives that might have been under the radar or are in the early inception phase (Task 1.2). The DCTF members will also provide insight and feedback into their communities about the NGI resources and funding. Experts will be interviewed and will help to establish liaisons with relevant initiatives.

## 1.2 ROLE AND PLANNED ACTIVITIES

- Help identify DC priorities (Task 1.2)
- Help define the criteria and framework to analyse the NGI portfolio (Task 2.1)
- Help identify DC initiatives and establish liaisons (Task 2.2)
- Help define methodology for measuring the leverage effect of NGI funding (Task 1.3)
- Provide advice on a long-term exploitation and sustainability action plan (Task 4.3)
- Discuss policy mapping activities, highlighting the most important ones for the DC (Task 3.1)
- Identify active communities of DC in Europe, assess their maturity levels, verify their relevance to the NGI (Task 1.1)

## 1.3 OPPORTUNITIES AND BENEFITS FOR THE DCTF MEMBERS

- Influencing digital policy initiatives contributing to the digital autonomy of Europe

- Advocating for open access, fair use, and the digital public goods and OS technology
- Understanding and promoting the potential of NGI funding for digital commons
- Engaging with other key experts in both the private and public domains
- Joining as invited speakers at NGI Commons events (online or in person)
- Being featured across the NGI Commons communication and media channels

## 1.4 MEMBERSHIP

The DCTF should amount to at least 70 members during the course of the project, bearing in mind that it is a voluntary activity, and the expert´s level of involvement will differ. Even the inactive members will be kept on board to ensure information flow.

All partners in the NGI Commons consortium have one vote (one vote per organisation) to either accept or reject the potential DCTF members - this process is led by Task 2.1.

The diversity and balance of DCTF members is ensured through:

- technology sector,
- type of expertise - we expect a variety of experts,
- type of organisation,
- gender, and,
- geographical distribution.

By the end of June 2024, the DCTF consists of 25 members from various backgrounds.

| NAME | ORGANISATION |
|---|---|
| Angela Daly | University of Dundee |
| Enric Senabre | University of Barcelona + Goteo founder |
| Stefano Zacchiroli | Télécom Paris |
| Dirk-Willem van Gulik | Apache Software Foundation |
| Johan Linaker | RISE (Research Institute of Sweden) |
| Simon Phipps | Open Source Initiative |
| Matti Schneider | Open Terms Archive, OpenFisca |
| Emrys Schoemaker | Caribou Digital |
| Katja Mayer | U of Vienna |
| Claudia Garad | Wikimedia AT |
| Renata Avila | Open Knowledge Foundation |
| Katharina Meyer | Digital Infrastructure Insights Fund |
| Sophie Bloemen | Commons Network |
| Natalia Ćwik | Wikimedia Poland |
| Fiona Krankenburger | Sovereign Tech Fund |
| Clare Dillon | Open Ireland Network |
| Jiří Marek | Open Content |
| Wouter Tebbens | PublicSpaces |
| Daniel Goldscheider | OpenWallet Foundation |
| Christopher Wilson | My Data Global |
| Liv Marte Nordhaug | Digital Public Goods Alliance |
| Frederike Kaltheuner | New Policy |
| Olivier Delteil | DINUM, French Government |
| Karin Lammers | Perspective 2 - FOSS Community Consultancy |
| Serkan Holat | Freelance OS Developer and Researcher |

FIGURE 1: DCTF - LIST OF CURRENT DTCF MEMBERS

## 1.5 NEW MEMBERS

New experts will be engaged on a regular basis, depending on the needs of the project. Regular updates and revision are planned for every three months. For future admission to the DCTF, the consortium has decided to cast a wide net, when selecting new members, in order to reach as diverse backgrounds as possible.

There are two options to involve new members. The first is the interest expressed from the experts themselves based on their interest in NGI Commons work, and the second is the project consortium selecting and approaching new members. The next selection wave is planned to take place in autumn 2024.

This list will be expanded by:

- Asking suggestions from the NGI community,
- Asking the NGI Unit representatives,
- Opening an expression of interest, and
- Asking the current members.

The list of DCTF members will be regularly updated and shared with the project´s Programme Officer. An invitation email has been created to invite new members to the DCTF, the email is to be sent out by the relevant consortium partner, who has the most established relationship with the expert in question (see appendix D).

## 1.6 OTHER REMARKS

- The DCTF members are invited to let us know if they are no longer able or willing to participate in the DCTF for any reason whatsoever.
- Close collaboration with representatives of the EC and ongoing NGI projects is expected.
- NGI actions representatives will also be invited to provide their feedback and join the discussions,

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# 2 DTCF WAYS OF WORKING

## 2.1 MAILING LIST

A dedicated mailing list has been created at dctf@ngicommons.eu, gathering all confirmed DCTF experts to share information from the project, ask for feedback on particular research questions, sharing invites, notes, and relevant documents. It represents the main communication channel. Experts can also use the mailing list to promote their own initiatives and events relevant to the project, and also to ask for the promotion of their project and organised events by the NGI Commons team on the NGI Commons social media channels.

## 2.2 MEETINGS

Bi-monthly (every other month) meetings of the DCTF have been planned – some in person, some online (it is planned to organise at least 15 meetings by the end of the project). The first, set up meeting was held online and took place on May 14th.

A description of the agenda for the first meeting can be found in Table 1 below.

TABLE 1: AGENDA OF THE FIRST DCTF MEETING

| Start time | Planned duration | Item description | Presenter |
|---|---|---|---|
| **14th May, 2024** | | | |
| 10:00 | 05 min | Welcome word, project objectives | Monique Calisti |
| 10:05 | 15 min | Introduction of the participants | DCTF Members |
| 10:20 | 5 min | Way of working, expected inputs, and benefits | Karolina Gyurovszka |
| 10:25 | 5 min | Community engagement and platform | Nick Gates |
| 10:30 | 10 min | NGI funding evaluation | Esther Garcia |
| 10:40 | 10 min | Digital Commons mapping | Valerian Guillier |
| 10:50 | 10 min | Key questions, next steps, Q&A, discussion | All |
| **11:00** | **End of meeting** | | |

The second meeting was co-located with the first NGI Commons workshop that we organised on June 5th, 2024 in Tolhuistuin, Amsterdam. Four members of the DCTF joined in person, and eight joined online, making for 12 DTCF participants in total.

A Framadate poll has been created to find the most suitable date for the regular bi monthly meeting, and it has been conducted that it will take place every second Monday of every second month at 1 p.m. CET, with a possibility to change. The meetings are recorded for internal purposes, and are not shared publicly. The recordings as well as the notes are shared online in a shared folder on the NGI Drive. **The next meeting is planned for July 8th at 1 p.m. CET.**

A DCTF room has been created on BigBlueButton, where the regular bi monthly meetings will be held. The guest link is: https://app.bbbserver.eu/de/quick-connect/6a904aac-d735-447b-a62c-8d7b18a61ba6.

The link for moderators is: https://app.bbbserver.eu/de/quick-connect/bf229452-e00d-4b31-b692-e2372bc4164c.

Additionally, as the project goes on, we will organise another edition of the NGI Commons Workshop as well as two NGI Policy Summits, to which the DCFT members will be highly encouraged to join, if at all possible.

## 2.3 TIME OBLIGATIONS

DCTF members are expected to spend around 1-2 hours each month on average attending DCTF meetings and / or providing feedback to NGI deliverables, with a level of flexibility therein. This is a voluntary effort, and their participation in bi-monthly meetings and occasional in-person meetings is highly encouraged but not enforced, and flexible to their other obligations. Ultimately, we hope for the initiative to be complementary to their own work and to open up two-way channels for sharing and collaboration.

## 2.4 NGI DRIVE

A shared folder has been created to share material with the DTCF for their live feedback and comments: NGI Commons - DCTF[1]. It is saved on the NGI Drive (https://drive.ngi.eu), which is powered by NextCloud, an open-source platform of European origin.

Apart from the research documents, it also stores meeting minutes and the recordings of online meetings, which are designed for internal purposes only. It is accessible only to the project consortium and to the DCTF members.

## 2.5 ONLINE COMMUNITY

The willing and more engaged DCTF members are also invited to join the Digital Commons Community Platform (DCCP)[2] set up by Task 2.2 of the project, which aims to build relationships and synergies between EU initiatives and the technology industry, while simultaneously engaging policymakers and promoting dialogue between those two communities.

More specifically, the Community Platform will aim to:

[1] https://drive.ngi.eu/apps/files/files/20071?dir=/NGI%20Commons/%E2%80%A2%20NGI%20Commons%20-%20DCTF

[2] https://matrix.to/#/%23ngi-commons:matrix.org

1. **Promote** interaction and knowledge sharing between different initiatives;
2. **Facilitate** discussion between different parties interested in digital commons and related EU digital policies;
3. **Create** a space for organic community-building and collaboration related to the goals of the NGI Commons initiative; and,
4. **Reinforce** knowledge sharing and learning on digital commons and related topics like open source, digital services, interoperability, digital government, public digital infrastructure, etc.

The DCCP is hosted via Element.io, based on an account network provided by Matrix.org[3].

## 2.6 WORKFLOW

Work on specific issues will be organised and led by the NGI Commons partners which will seek interaction with the DCTF members and their feedback as relevant either by email or by dedicating an edition of the bi-monthly meeting to the particular topic in question. This will always be done in coordination with the Partner responsible for engaging the DCTF.

Based on a mutual agreement at the kick-off meeting, an indicative sheet[4] has been created for the DCTF members to express the topic of their interest (NGI Funding evaluation, DC Mapping and Governance models, Digital Policies Landscaping, etc). This way, they can indicate what topic they are most interested in, so that we are not over burdening them, and they focus only on the topic of their interest and expertise, but so far, they have not taken the advantage to do so.

The DCTF members feedback will be solicited regularly at the bi-monthly meetings. Should there be a need for a more timely response and discussion, material for feedback will be shared via the mailing list.

## 2.7 NEXT STEPS

1. Help identify the most relevant policies for Digital Commons.
2. Provide ongoing advice on research design and data collection strategies for study on leverage effect of NGI funding.
3. Invite new DCTF members to join, in Autumn 2024.

[3] http://matrix.org/
[4] https://drive.ngi.eu/apps/files/files/20385?dir=/NGI%20Commons/%E2%80%A2%20NGI%20Commons%20-%20DCTF&openfile=true

# 3 DESIGNING THE FRAMEWORK FOR NGI FUNDING EVALUATION

## 3.1 AN OVERVIEW OF THE PROPOSED METHODOLOGY

A key deliverable of the NGI Commons is a research study that measures the leverage effect that the NGI has had on the funding recipients and on the wider digital commons in Europe. It will inform a framework that can be a basis for future research, devising, and planning of NGI and other funding programmes to support the Digital Commons.

The study will focus on measuring the leverage effect of NGI funding on recipients, formulated generally as: € input -> outputs/outcomes. For example, the Gartner study estimates that NGI funding generates a 1:50 multiplier effect, where 1 funded developer can support an OSS community of 50 contributors. The leverage effect study is expected to produce similar quantitative claims that can demonstrate the positive value creation of NGI funding to senior decision-makers, as well as describe examples through case studies. It should also investigate the leverage effect of funding decentralised architectures.

In addition, 20 additional cases of networks of commoners will be analysed “to better understand dynamics and trends in their life cycle and map possible unidentified trends in their constituency and sustainability (e.g. innovative governance models; funding schema; etc.), as well as commons they address today and what their plans are for mid-to-long term.” The purpose is to identify best practices that can inform future NGI funding programmes.

Measuring the leverage (or multiplier) effect of NGI funding for recipients and the wider digital commons in Europe involves assessing how funding inputs translate into broader economic, social, or technical outputs. We have been advised to build on the data & findings of the Gartner report, and to include data from other sources (e.g. GitHub).

Our analysis of the leverage effect will be guided by questions, such as:

- What are the social benefits of funding, e.g. for project’s community development?
- How does funding affect the technical progress and adoption of OSS projects?
- What is the economic impact on the OSS ecosystem and related industries?
- What is the impact of the amount of funding relative to the size of the project?
- How effective are key properties of the NGI funding approach (e.g. funding through intermediaries within existing communities, piloting funding through "verticals", etc)?
- What is the leverage effect of funding decentralised architectures?
- What is the systemic impact of NGI funding beyond individual projects?

To inform our approach, we will conduct a thorough review of relevant prior literature, which will help identify proven methods, relevant indicators, and potential challenges that can inform our research design. This will include studies that have examined the impact of funding on open source software projects and digital commons initiatives. In addition to literature specific to open source, we will draw upon research from other domains that have examined the multiplier effects of public and private investment, such as studies on the impact of research and development funding and the economic effects of infrastructure investment.

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## 3.2 REQUEST FOR FEEDBACK AT THE FIRST DCTF MEETING

Initially, the work agreement specified that the leverage effect should be studied on 50 case studies of NGI funded projects. In line with this specification, we developed two questionnaires (see appendix A): the first to recruit cases based on recommendations from NGI project coordinators; and the second to collect data from the recommended projects. In the DCTF meeting on 14 May 2024, we asked the DCTF members to provide feedback on the questionnaires. In addition, we explained the purpose and scope of the 20 additional cases of networks of commoners, and asked the DCTF members for their suggestions.

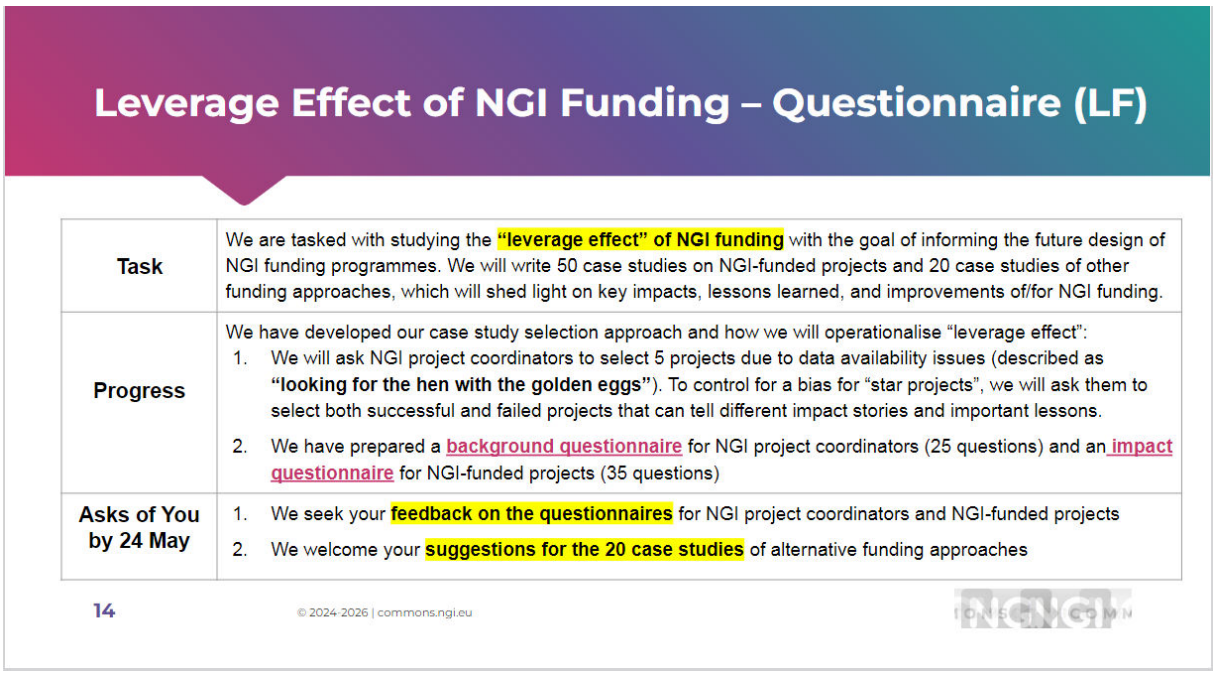


FIGURE 2: A SLIDE FROM NGI COMMONS WORKSHOP

Following a discussion with the Programme Officer about the EC's expectations for the study, a revised Memo on NGI Leverage effect study[5] was shared with the DCTF for their feedback (see appendix B). The key changes concern: no longer limiting ourselves to 50 case studies, as specified in the work agreement; building on the survey dataset provided by the Gartner study; focusing the research design on the generation of quantitative claims about the leverage effect; and measuring the leverage effect of funding decentralised architectures. N.B.: The aforementioned questionnaires were not shared with the DCTF.

## 3.3 FEEDBACK FROM THE WORKSHOP

Plans to research the "leverage effect" of NGI funding presented and discussed at the NGI Commons workshop in Amsterdam on June 5th, by providing a background on NGI funding, discussing the methodology currently being deployed, and presenting the selection criteria for choosing NGI funded projects. The session gathered inputs on refining the criteria, brainstormed and refined potential impact metrics, and highlighted emerging use cases from

[5] https://drive.ngi.eu/apps/files/files/20071?dir=/NGI%20Commons/%E2%80%A2%20NGI%20Commons%20-%20DCTF

the Digital Commons ecosystem. It facilitated discussion with the audience, gathering ideas for additional elements to include and determining next steps for the research study.

Cailean Osborne, the moderator of the session, shared early insights on the possibilities of capturing how and to what extent projects are influenced by the funding they receive. “All models are wrong, but some are useful”, as his presentation noted. He invited participants to share their feedback on the methodology for how this might be accomplished. Participants reacted strongly during discussions on whether and how the ‘leverage effect’ of funding, particularly that provided by the NGI, can be quantified and operationalized.

In particular, participants highlighted the challenges in quantitatively measuring the variability of funding’s effect on project stewardship, maintenance and governance. They shared their reflections on particular variables that were more or less difficult to evaluate, as well as their opinions on how feasible it would be to calculate leverage effect using the intended methodology.

One of the attendees summarised the difficulty in measuring leverage effect by asking an important question: Whom is the innovation actually for? Moreover, how can we use open source and open data to create a competitive edge and not just allow private companies to benefit from these resources? Who do we want to benefit from this?

Through these discussions, it was broadly concluded that it is important to not just focus on metrics for understanding impact, but to let people come up with their own metrics and speak to them about their own experiences. Many participants shared experiences which spoke to the importance of understanding individual project experiences and not generalising too much. Participants shared anecdotes about how hard it can be to quantify impact due to differences between projects (e.g. project maturity, different funding approaches, etc), as well as cautioned the conveners about the importance of impact metrics and considering over what timeframe they are being used.

One example was ‘lines of code’, or the idea that you can extrapolate insights around impact from how much more, or how much less, code is being written. But ‘lines of code’ as a metric is tricky because removal of code can be something that is part of maintenance work (that the attendee mentioned they support, for instance). It is one thing to measure lines of code, but you need to differentiate this from a statement as such and the learnings derived from it, as it is highly contextual to individual projects and maintainability is often overlooked. It was also discussed that instead of continuously funding research and innovation, perhaps more focus should be placed on what the needs are, ie. define what people are dependent on, what they like and what they need, and fund these projects, be it that they already exist or need to be developed to address these needs.

Their insights proved critical in reframing some of the key components of the discussion to focus on, and no doubt will help the project in operationalising its understanding of Digital Commons to increase investment in the space.

At the end of the workshop, most of the participants voted for the fourth option agreeing that it is almost impossible to measure.

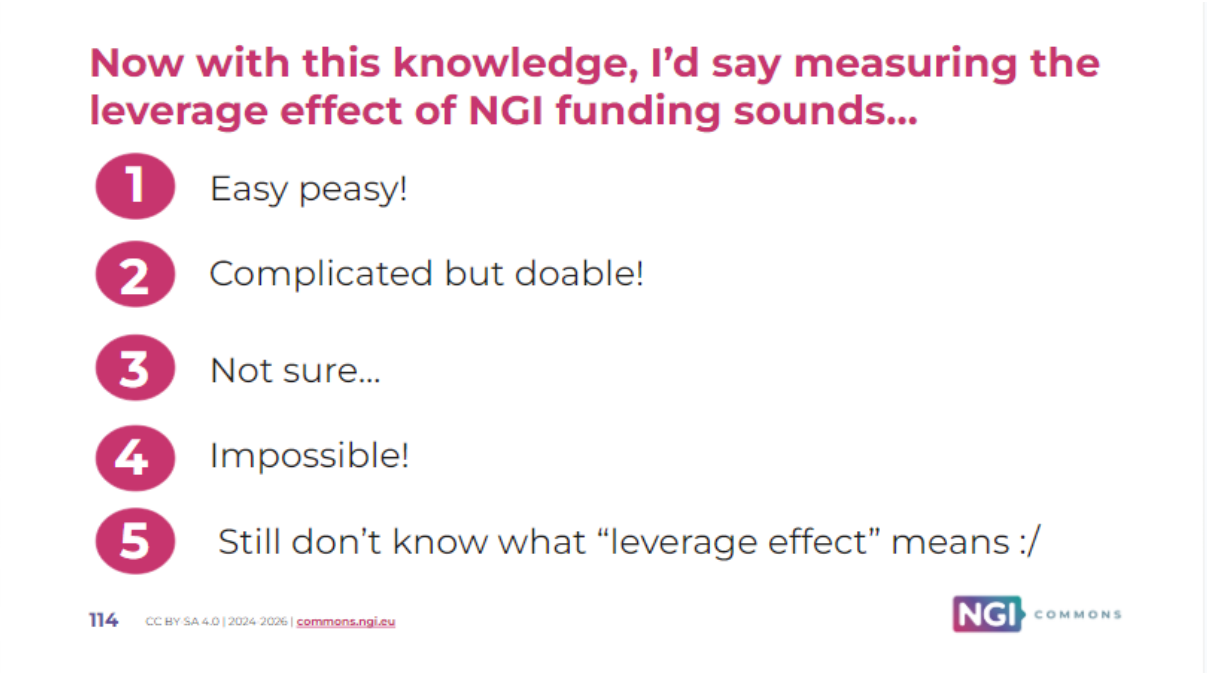


FIGURE 3: A SLIDE FROM NGI COMMONS WORKSHOP

## 3.4 SUMMARY

The research methodology will be further developed by incorporating the feedback from the Programme Officer, DCTF members, and the workshop attendees. There is a tension that must be managed: on the one hand, the Programme Officer explained they expect the study to take a quantitative approach to measuring the leverage effect of NGI funding and to produce quantitative claims about said leverage effect. On the other hand, the attendees at the NGI Commons workshop advised considerable caution and pessimism about taking a quantitative approach, instead proposing mixed-methods or qualitative approaches. We will review the recommendations from the various stakeholders and refine the methodology accordingly. The updated approach will be shared with the DCTF after it has been approved by the Programme Officer.

# 4 CONCLUSIONS

The NGI Commons Digital Commons Task Force (DCTF) has been established to provide strategic input and technical expertise to analyse the NGI projects portfolio and the impact of NGI funding on Digital Commons initiatives. Comprised of researchers and experts, the DCTF is tasked with defining evaluation frameworks, fostering collaborations, and supporting the development of Digital Commons. Initial efforts include regular bi-monthly meetings, an online shared folder, and a mailing list for effective communication and collaboration.

The DCTF's role is critical in identifying priorities, establishing evaluation criteria, selecting use cases, and providing long-term sustainability plans. Their insights and feedback are key to the success of the NGI Commons project, especially in measuring the leverage effect of NGI funding and mapping digital commons. The governance structure ensures a diverse and balanced membership, with plans for regular updates and the inclusion of new experts.

As the project progresses, the DCTF will continue to refine its approach based on the feedback from its members and the needs of the European Commission, focusing on both quantitative and qualitative measures. The next steps involve further discussion on evaluation criteria and policy mapping, aiming to strengthen the digital autonomy of Europe and promote open access and digital public goods.

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# APPENDIX A

# TASK 1.3. QUESTIONNAIRES FOR NGI PROJECT COORDINATORS

## TABLE OF CONTENTS

## OVERVIEW

We are tasked with studying the “leverage effect” of NGI funding via 50 case studies on NGI-funded projects as well as 20 additional case studies of alternative funding models that can inform the design of future funding programmes by the NGI and others.

Following the advice of NGI project coordinators in light of data access problems about NGI-funded projects (described by one coordinator as “looking for the hen with the golden eggs”), our case study selection approach involves asking NGI project coordinators to select 5 projects based on selection criteria (see page 2). To control for biases for “star projects”, we will ask NGI project coordinators to select both successful and failed projects that can tell different impact stories and inform key lessons for improving NGI funding programmes in the future.

We will ask the NGI project coordinators to answer a questionnaire for their 5 selected projects, providing key background information about each project. Then, we will ask project leaders to answer the impact questionnaire and to volunteer for interviews. The impact questionnaire comprises questions that will facilitate the analysis of € input -> output -> outcome. The aim is to be able to estimate and make claims about the “leverage effect” of every € for activity in funded projects. If we receive over 50 responses, we will need to apply a selection criteria to select our 50 case studies.

In the following document, you will find the V1 questionnaire for NGI project coordinators and the V1 impact questionnaire for the funded projects.

## EMAIL TO NGI COORDINATORS

Dear [Insert name of NGI Project Coordinator],

As part of our research study on the impact of NGI funding on the growth and evolution of digital commons in Europe, we kindly request your assistance in selecting 5 projects from your NGI programme that best represent the diversity and impact of NGI-funded initiatives.

To control for a bias for star projects, we ask you to refrain from only selecting the star projects and to focus on successful projects that can tell different impact stories as well as failed projects that can tell important lessons about how to design effective funding programmes in the future.

Please consider the following criteria when making your selections:

- **Relevance to EU Policy Objectives**: Projects that align with and contribute to the EU's digital decade goals, such as digital sovereignty, sustainability, and digital democracy.
- **Diversity of Technical Domains**: A mix of projects spanning various technical areas, such as software, data, content, and standards.
- **Geographical Distribution**: Projects with networks and impact across different European regions.
- **Governance and Openness**: Projects demonstrating diverse governance models and degrees of openness in licensing and contribution.
- **Impact and Sustainability**: Projects with strong potential for long-term impact and sustainability, as evidenced by both quantitative and qualitative metrics.

Once you have selected your list of top projects, please fill out the following questionnaire with key information about each project.

If you have any questions or require further clarification, please do not hesitate to contact us.

Thank you for your valuable contribution to this research.

Sincerely,

[Name]

## CASE STUDY SELECTION QUESTIONNAIRE FOR NGI PROJECT COORDINATORS

*We will invite NGI project coordinators to propose 5 NGI-funded projects to be included in the research study on the leverage effect of NGI funding. We will ask them to provide relevant information about these 5 projects, considering the following questions.*

### Background Information

- Please state the name of your NGI project (Options: NGI Transoceanic, NGI Fediversity, NGI Mobifree, NGI Local for Local, NGI Taler, NGI Zero Commons Fund, NGI Sargasso, NGI TrustChain, NGI Zero Core, NGI Search, NGI OpenWebSearch.eu, NGI Enrichers, NGI Zero Review, NGI Zero Entrust, NGI4ALL.E, NGI ASSURE, TRUBLO, ONTOCHAIN, NGI eSSIF-Lab, NGI TRUST, LEDGER, NGI Atlantic.eu, NGI Pointer, NGI DAPSI, NGI Zero, TETRA PROJECT, NGI FORWARD, NGI EXPLORERS, THINK NEXUS, NGI4ALL, Fed4FIRE+, Prêt-a-llod, GOURMET, EMBEDDIA, ELITR, COMPRISE, Bergamot, European Language Grid, Other (please specify))
- Which of the following best describes the funding approach used by your NGI project? (Options: One-time grant, Cascade funding, Other (please specify))
- Please state the name of the project that received funding (Free text response)
- Please provide a link to the project's website (Free text response)

### Funding Information

- When did the project receive funding? (Options: 2019, 2020, 2021, 2022, 2023, 2024)
- How much funding did the project receive? If it received funding multiple times, please list them under Other. (Options: Less than €10,000, €10,001 - €25,000, €25,001 - €50,000, €50,001 - €100,000, €100,000 - €250,000, Other (please specify))
- What was the project's stage at the time of funding? (Options: Ideation, Proof of concept, Early development, Growth, Maturity)
- What did the project receive funding for (Options: Concept/experimentation, Ongoing development, New feature, Other (please specify))
- Did the project receive funding more than once from the NGI? (Options: Yes, No, Don't know)
    - If yes, please specify (Free text)

### Technical Domains

- What type of commons does the project support? (Options: Software, Data, Other (please specify))
- What is its technical area or domain of the project? (Options: Search, Blockchain, AI/ML, IoT, Privacy-enhancing technologies, Decentralized systems, Cloud computing, Cybersecurity, Networking, Open hardware, Robotics, Virtual/Augmented Reality, Other (please specify))

### Governance and Openness

*Governance encompasses who makes decisions for the project, who validates features, and who can accept pull requests.*

- What is the project's governance structure? (Options: Centralised, Decentralised, Federated, Other (please specify))
- What hosting model(s) does the project use? (Options: Foundation, Company, Individual, Educational Institution, Government, Other (please specify))
- How would you describe the level of community involvement in project governance? (Options: High involvement, Moderate involvement, Low involvement, No involvement, Don't know)
- How would you describe the level of community involvement in the project? (Options: High involvement, Moderate involvement, Low involvement, No involvement, Don't know)
- What licence is used by the project? (Select all that apply) (Options: MIT, Apache 2.0, GPL, LGPL, BSD, Creative Commons, Other (please specify))

### Geography

- In which country/countries is the project based in?
- Where is the project's target market or audience? (Options: Local, Regional, National, European, Global)

### Project Size

- What was the size of the project when it applied for funding?
  - Number of users: 0-100, 101-1,000, 1,001-10,000, 10,001-100,000, 100,001+, Don't know
  - Number of contributors: 1-5, 6-10, 11-25, 26-50, 51+, Don't know
  - Commits per month: 0-10, 11-50, 51-100, 101-500, 501+, Don't know
  - Revenue generation: None, €1-€1,000, €1,001-€10,000, €10,001-€100,000, €100,001+, Don't know
- How did the project grow after it was funded by the NGI?
  - Number of users: Decreased significantly, Decreased slightly, Remained the same, Increased slightly, Increased significantly, Don't know
  - Number of contributors: Decreased significantly, Decreased slightly, Remained the same, Increased slightly, Increased significantly, Don't know
  - Commits per month: Decreased significantly, Decreased slightly, Remained the same, Increased slightly, Increased significantly, Don't know
  - Revenue generation: Decreased significantly, Decreased slightly, Remained the same, Increased slightly, Increased significantly, Don't know
- Did the project have key dependencies on other digital commons initiatives?

### Impact and Sustainability

- Overall, would you say NGI funding made a positive or negative impact on the project? (Positive, Negative, Don't know, Prefer not to say)
- Did you receive any feedback or testimonials from projects regarding the impact of NGI funding? (Yes, No, If yes, please describe)
- Would you be happy to help us distribute an impact questionnaire to the relevant stakeholders from the project? (Yes, No)

### Closing comment

Thank you for completing our questionnaire. Your insights are invaluable in understanding the impact of NGI funding. Subsequently, we would like to request your support to distribute our impact questionnaire with the respective projects. A member of our team will reach out to you with more information. Your participation is greatly appreciated.

## IMPACT QUESTIONNAIRE FOR NGI-FUNDED PROJECTS

*We will ask project leaders to complete this questionnaire. Since we will obtain background information from the project coordinators, this questionnaire will begin with impact questions.*

### Project information

- What is the name of your project? (Free text response)

### Funding information

- How much funding did the project receive? If it received funding multiple times, please list them under Other. (Options: Less than €10,000, €10,001 - €25,000, €25,001 - €50,000, €50,001 - €100,000, €100,000 - €250,000, Other (please specify))
- How many full-time equivalent (FTE) positions were funded by the grant during the funding period? (Options: 0, 0.5-1 FTE, 1-2 FTE, 2-4 FTE, More than 4 FTE, Don't know)
- What was the average number of hours per week contributed by each funded individual during the funding period? (Options: Less than 10 hours/week, 10 to 20 hours/week, 20 to 30 hours/week, More than 30 hours/week, Don't know)
- What were the primary responsibilities or activities of the funded individuals during the funding period? (Options: Software development, Research and innovation, Project management, Community engagement and outreach, Marketing and communication, Business development and strategy, Legal and compliance, Other (please specify))
- On average, what percentage of the funded individuals' time was allocated to the following activities during the funding period?
  a. Software development (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)
  b. Research and innovation (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)
  c. Project management (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)

d. Community engagement and outreach (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)
e. Business development, marketing and strategy (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)
f. Legal and compliance (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)
g. Other (Options: 0%, 1-25%, 26-50%, 51-75%, 76-100%, Not applicable)

- What percentage of the NGI grant was allocated to personnel costs (e.g., salaries, travel)? (Options: Less than 25%, 25% to 50%, 50% to 75%, More than 75%, Don't know)
- What percentage of the NGI grant was allocated to infrastructure costs (e.g., servers, software licences, tools)? (Options: Less than 25%, 25% to 50%, 50% to 75%, More than 75%, Don't know)

### Overall impact

- Overall, would you say that overall NGI funding had a positive or negative impact on your project? (Options: Positive, Negative, Don’t know, Prefer not to say)
- For how much of your budget did the NGI funding account for? (Options: Less than 25%, 25-50%, 51-75%, More than 75%)
- Would you have been able to start working on your idea without NGI funding? (Options: Yes, No, Don't know)
- Would you have been able to continue the project without NGI funding? (Options: Yes, No, Don't know)
- Did NGI fill a funding gap in your country? (Options: Yes, it was the only available funding source; Yes, it complemented other funding sources; No, there were sufficient alternative funding sources; Don't know)
- Did you receive additional funding for your project after the NGI funding?(Options: Yes, No, Not applicable, Don't know)

### Impact on pain points

- What were the project's main challenges that you sought to address with NGI funding? (Tick all that apply: Lack of financial resources for development and growth, Limited access to expertise or skilled personnel, Insufficient infrastructure or technical resources, Difficulty in achieving product-market fit or user adoption, Challenges in scaling or ensuring the project's sustainability, Inadequate visibility or exposure to potential users and stakeholders, Insufficient community engagement or contributor participation, Difficulty in establishing partnerships or collaborations, Challenges in ensuring the project's interoperability or compatibility with other systems, Lack of long-term strategic planning or roadmapping, Difficulty in attracting or retaining talent, Insufficient testing, quality assurance, or documentation, Challenges in managing intellectual property rights or licensing, Inadequate marketing, branding, or communication efforts, Challenges in measuring or demonstrating the project's impact, Other (please specify), Not applicable)
- How strongly do you agree that the NGI funding was effective for your needs? (Options: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree, Not applicable)

### Impact on project size

- Did the project’s number of funded contributors increase as a result of the funding? (Options: Yes, No,  Don’t know, Not applicable)

  - If yes, by how much did the number of funded contributors increase as a result of the funding? (Options: Yes, increased by less than 25%; Yes, increased by 25% to 50%; Yes, increased by 50% to 100%; Yes, increased by more than 100%; No, the number of contributors did not increase)
- Did the project's number of non-funded contributors increase as a result of the funding? (Options: Yes, No, Don't know, Not applicable)
  - If yes, by how much did the number of non-funded contributors increase as a result of the funding? (Options: Yes, increased by less than 25%; Yes, increased by 25% to 50%; Yes, increased by 50% to 100%; Yes, increased by more than 100%; No, the number of contributors did not increase)
- Did the project's number of users increase as a result of the funding? (Options: Yes, No, Don't know, Not applicable)
  - If yes, by how much did the number of users increase as a result of the funding? (Options: Yes, increased by less than 25%; Yes, increased by 25% to 50%; Yes, increased by 50% to 100%; Yes, increased by more than 100%; No, the number of users did not increase)

### Impact on sustainability

- To what extent did the NGI funding enable the project to start or continue? (Options: The project would not have started or continued without the funding, The project would have started or continued but with significant limitations, The project would have started or continued with minimal limitations, The project would have started or continued regardless of the funding, Don't know)
- To what extent did the NGI funding enable the project to continue after the funding period? (Options: The project continued with significant growth, The project continued with moderate growth, The project continued but struggled to maintain its activities, The project discontinued after the funding period, The project continued with no significant change, Don't know)

### Impact on reach and adoption

- Did the project experience an increase in adoption (e.g., downloads, forks, stars, dataset downloads, views, shares, citations, adopters, implementations) following the funding? (Options: Yes, No, Don't know)
  - If yes, did NGI funding have an impact on this increase or decrease? (Options: Direct impact, Indirect impact, No Impact, Don't know)
- To the best of your knowledge, please provide ranges for the respective adoption metric before and after the funding period:
  - Contributors (for OSS projects):
    - Before funding (Options: 0, 1-5, 6-10, 11-25, 26-50, 51-100, More than 100, Not applicable)
    - After funding (Options: 0, 1-5, 6-10, 11-25, 26-50, 51-100, More than 100, Not applicable)
  - Downloads (for OSS projects):
    - Before funding (Options: 0, 1-100, 101-1,000, 1,001-10,000, 10,001-100,000, 100,001-1,000,000, More than 1,000,000, Not applicable)
    - After funding (Options: 0, 1-100, 101-1,000, 1,001-10,000, 10,001-100,000, 100,001-1,000,000, More than 1,000,000, Not applicable)
  - Forks (for OSS projects):

    - Before funding (Options: 0, 1-10, 11-50, 51-100, 101-500, 501-1,000, More than 1,000, Not applicable)
    - After funding (Options: 0, 1-10, 11-50, 51-100, 101-500, 501-1,000, More than 1,000, Not applicable)
  - Stars (for OSS projects):
    - Before funding (Options: 0, 1-50, 51-100, 101-500, 501-1,000, 1,001-5,000, More than 5,000, Not applicable)
    - After funding (Options: 0, 1-50, 51-100, 101-500, 501-1,000, 1,001-5,000, More than 5,000, Not applicable)
  - Dataset downloads (for open data projects):
    - Before funding (Options: 0, 1-100, 101-1,000, 1,001-10,000, 10,001-100,000, 100,001-1,000,000, More than 1,000,000, Not applicable)
    - After funding (Options: 0, 1-100, 101-1,000, 1,001-10,000, 10,001-100,000, 100,001-1,000,000, More than 1,000,000, Not applicable)
- Did the project establish any partnerships or collaborations as a result of the funded activity?
  - Digital commons initiatives or organisations (Options: Yes, No, Don't know)
  - Non-digital commons initiatives or organisations (Options: Yes, No, Don't know)
- Did the project impact other initiatives in the broader digital commons ecosystem as a result of funded activity? (Options: Yes, No, If yes, please give examples)

### Impact on research and technology

- What was the impact of the funded activity on research and innovation? (Options: Contributed to the development of new research methods or tools, Led to the creation of new products, services, or technologies, Improved existing research processes or outcomes, Fostered interdisciplinary collaboration or knowledge sharing, Attracted new funding or investment for research and innovation, Increased the visibility or recognition of the research field, Addressed important societal or environmental challenges through research, No significant impact on research and innovation, Other, Not applicable, Don't know)
- What was the impact of the funded activity on education, training, or skill development? (Options: Developed new educational content, curricula, or learning resources, Improved access to education or training opportunities, Enhanced the quality or effectiveness of teaching and learning, Provided hands-on experience or practical skills development, Facilitated knowledge transfer between academia and industry, Supported the professional development of educators or trainers, Contributed to the development of new educational technologies or platforms, Increased the employability or career prospects of learners, No significant impact on education, training, or skill development, Other, Not applicable, Don't know)
- Did the quality, performance, or security of the software improve as a result of the funded activity? (Options: Yes, No, Not applicable, Don't know)
- Did the funded activity contribute to any publications, patents, or other research outputs? (Options: Yes, No; If yes, how many publications, patents, or other research outputs were produced? (Options: 1-5, 6-10, 11-20, More than 20)

### Impact on market

- Does the project provide an alternative to a proprietary solution? (Options: Yes, No, Don't know)

- Was a new entity (e.g., a company or foundation) created to support the project during or after the funding period? (Options: Yes, No, Don't know)
  - If yes, how many employees does it have? (Options: 1-10, 11-25, 26-50, More than 50, Not applicable)
  - If yes, did NGI funding have an impact on this change? (Options: Direct impact, Indirect impact, No Impact, Not sure, Don't know)
- Did the project's market share increase as a result of the funded activity? (Options: Yes, No, Don't know, Not applicable)
  - If yes, did NGI funding have an impact on this change? (Options: Direct impact, Indirect impact, No Impact, Don't know)
- Did the project generate any revenue or attract investment as a result of the funded activity? (Options: During the funding period, After the funding period, Neither, Don't know)

### Additional value-adds of NGI funding

- Beyond funding, what were the main value-adds of being funded by the NGI? (Options: Being part of the NGI community, Facilitating connections to other NGI beneficiaries, Mentorship and guidance from NGI experts, Access to NGI events and networking opportunities, Increased visibility and exposure for the project, Assistance with project management and reporting, Support for intellectual property management and licensing, No additional value-adds, Other (please specify), Don't know)
- Beyond your individual project, do you think NGI makes a net-positive, systemic impact on the digital commons in Europe? (Options: Yes, No, Don't know)
- What are the key systemic impacts of NGI funding for the digital commons in Europe? (Options: Increased awareness and adoption of digital commons solutions, Improved sustainability and resilience of digital commons initiatives, Enhanced collaboration and knowledge sharing among digital commons projects, Strengthened the overall digital commons ecosystem in Europe, Attracted new talent and expertise to the digital commons field, Influenced policy and regulatory frameworks in favour of digital commons, Other (please specify))
- Do you think NGI funding has a systemic impact on the development and maintenance of digital commons infrastructure in Europe? (Options: Yes, it significantly contributes to the development and maintenance of digital commons infrastructure; Yes, it somewhat contributes to the development and maintenance of digital commons infrastructure; No, it has little to no impact on the development and maintenance of digital commons infrastructure; Don't know)
  - If yes, how does NGI funding support the development and maintenance of digital commons infrastructure in Europe? (Options: Provides financial resources for infrastructure development and maintenance, Encourages the adoption of open and interoperable infrastructure solutions, Supports the development of decentralized and resilient infrastructure, Facilitates knowledge sharing and collaboration on infrastructure best practices, Attracts infrastructure-focused talent and expertise to the digital commons field, Other (please specify))
- Do you think the NGI's value proposition is widely understood by digital commons initiatives or communities in Europe? (Options: Yes, No, Don't know)
- What could the NGI do to improve the understanding of its value proposition amongst digital commons initiatives or communities in Europe? (Options: Increase outreach and communication efforts, Provide clearer information about NGI's mission and objectives, Showcase success stories and impact of NGI-funded projects, Engage more actively with

digital commons communities and networks, Organise events and workshops to promote NGI's value proposition, Collaborate with other organisations and initiatives in the digital commons space, Other (please specify))

### Problems and feedback

- Did you face any challenges during the NGI funding process? (Options: Administrative burdens e.g., reporting requirements, Funding delays, Unclear or changing requirements, Insufficient support or guidance from NGI, Difficulty in meeting project milestones or deliverables, Challenges in collaborating with partners or stakeholders, Insufficient funding to achieve project goals, Intellectual property or licensing issues, Regulatory or legal obstacles, Difficulties in measuring or demonstrating impact, Limited visibility or recognition of project outcomes, Other (please specify))
    - If yes, what were the main consequences for your project? (Options: Future of project was threatened, Project timelines were significantly delayed, Additional financial strain on the project, Loss of team members or partners, Reduced scope or quality of project deliverables, Other (please specify))
- If you have given feedback, do you feel like your feedback was taken into account by the NGI? (Options: Yes, No, Don't know, Not applicable)
    - If yes, were you satisfied with the feedback mechanisms that were available? (Options: Yes, No, Don't know)

### Closing comment

- Would you like to make any final comments?

Thank you for completing our questionnaire. Your insights are invaluable in understanding the impact of NGI funding. We would like to invite you to a follow-up interview to discuss your experience in more detail. A member of our team will reach out to you with more information. Your participation is greatly appreciated.

# APPENDIX B

# TASK 1.3. MEMO ON NGI LEVERAGE EFFECT STUDY

Date: 03.06.2024

Author: CO

Dissemination: [] Consortium only [ ] Consortium + EU [x ] Consortium + EU + DCTF [ ] Public

## TABLE OF CONTENTS

# 1. OVERVIEW

A key deliverable of the NGI Commons is **a research study that measures the leverage effect that the NGI has had on the funding recipients and on the wider digital commons in Europe.** It will inform a framework that can be a basis for future research, devising, and planning of NGI and other funding programmes to support the Digital Commons.

The study will focus on **measuring the leverage effect of NGI funding on recipients**, formulated generally as € input -> outputs/outcomes. For example, the Gartner study estimates that NGI funding generates a 1:50 multiplier effect, where 1 funded developer can support an OSS community of 50 contributors (p.8). **The leverage effect study should produce similar quantitative claims that can demonstrate the positive value creation of NGI funding to senior decision-makers**, as well as describe examples through case studies. It should also investigate the **leverage effect of funding decentralised architectures.**

In addition, **20 additional cases of networks of commoners will be analysed** "to better understand dynamics and trends in their life cycle and map possible unidentified trends in their constituency and sustainability (e.g. innovative governance models; funding schema; etc.), as well as commons they address today and what their plans are for mid-to-long term." The **purpose is to identify best practices** that can inform future NGI funding programmes.

KEY INFO:

- **WHAT:** NGI provides financial support to grassroots open source projects
- **HOW MUCH:** 140M€ ->1,100+ projects, 2019-2024
- **HOW IT WORKS:** The NGI primarily operates through the use of financial support to third parties (FSTPs). The Commission calls for Research and Innovation Actions (RIA) that distribute typically 80% of the allocated budget through Open Calls to innovators, such as open source developers, researchers, startups, and others.

WHAT WE KNOW:

- NGI RIAs: https://www.ngi.eu/ngi-projects/
- Budgets of NGI RIA via CORDIS database, e.g. NGI Assure (€8M), NGI0-Discovery (€7M), NGI0-PET (€7M), NGI Trust (€7M), eSSIF-lab (€7M), DAPSI (€7M), Trublo (€6M), Ontochain (€6M), NGI- POINTER (€7M), LEDGER (€7M), NGI Atlantic (€3.5M), etc.
- NGI-funded projects: https://www.ngi.eu/discover-ngi-innovations/?

WHAT WE DON'T KNOW:

- Funding per recipient (described as "looking for the hen with the golden eggs")

## 1.1 NOT EVERY NGI RIA IS THE SAME

### 1.1.1 Small and medium-sized grants by NGI Zero (5,000€-50,000€)

NGI Zero supports strategic technology R&D, in particular the development of free/libre/open source software and hardware, and the establishment of open standards and open data technologies. It is coordinated by NLNet, and has funded ~800 out of the ~1200 NGI-funded projects to date. Through several programmes, a total of over 50M€ is being granted to hundreds of independent researchers and open source developers working on a better internet. In addition, the NGI Zero Review which supports the wider NGI community with various services that help to mature these technology commons.

- NGI0 Core: Moving the architecture of the Internet and openness of technology forward. A light-weight grant programme available to both individuals and organisations of any type. Check out the programme description.
  - **8.8M€** in small to medium-size R&D grants (**5,000€ to 50,000€)**
- NGI0 Commons Fund: Reclaim the public nature of the internet. Fund to deliver, mature and scale new internet commons across the whole technology spectrum, from libre silicon to middleware, from P2P infrastructure to convenient end user applications. We have a holistic, full-stack approach, simply because there is no other way. If we want to reclaim the public nature of the internet and yield the benefits from technology as a society, we need to have full coverage — period.
  - **21.6M€** in small and medium-sized R&D grants (**5,000€ to 50,000€)**
- NGI0 Entrust: Trustworthiness and Data Sovereignty. A light-weight grant programme available to both individuals and organisations of any type to support privacy and trust enhancing technologies.Check out the ongoing projects funded by NGI0 Entrust.
  - **9.6M€** in small to medium-size R&D grants (**5,000€ to 50,000€)**
- NGI Fediversity**:** The Fediversity Project is an effort to bring easy-to-use, hosted cloud services that have service portability and personal freedom at their core to everyone.
  - **450K€** in small to medium-size R&D grants (**5,000€ to 50,000€)**

Previous grant programmes run by NGI Zero:

- NGI0 PET: Privacy and Trust Enhancing Technologies Check out the overview of projects, such as Cryptpad, Sylk, WireGuard and EteSync.
  - **5.6M€** in small to medium-size R&D grants (**5,000€ to 50,000€)**
- NGI0 Discovery: Search, discovery and discoverability. Check out the overview of projects, such as ActivityPub, Searx, Pixelfed, Nextcloud, PeerTube, and Mastodon.
  - **5.6M€** in small to medium-size R&D grants(**5,000€ to 50,000€)**

### 1.1.2 Medium- and large-sized grants (50,000€ to 200,000€)

Several NGI RIAs provide up to 200,000€ in equity-free funding. Once they get grant proposals, they usually get third-party evaluators to evaluate and rank the proposals. Selected projects complete a mentoring plan and a delivery plan for 3 milestones (including three tranches of payments). Usually the first milestone is short (e.g. 1 month) to get the project started, followed by a longer milestone (e.g. technical delivery), followed by the final milestone (e.g. wrap up). The projects are evaluated at the completion of each milestone.

### NGI Sargasso

NGI Sargasso has funded 17 projects across two calls and has three more calls until 2025: 15 projects of 9M duration at 100K€, 1 project of 6M duration at 75K€, and 1 project of 9M duration at 50K€.. It funds projects that include EU-Canada or EU-US cooperation (the EU teams are funded). All areas encompassed by the NGI can be funded.

### NGI Pointer

NGI- POINTER (€7M) funds internet architects who develop new protocols, open software and hardware intended for internet management in a wide range of cases such as privacy-by-design, IoT, and network perfection. It has a total budget of 7M€ with 5,6M€ dedicated to cascade funding where each project can receive up to 200K€. Projects include Ltt.rs, is a user-friendly, encrypted by default E-Mail client for Android based on modern standards like JMAP (RFC 8621) and Autocrypt; AP³, advanced privacy-preserving protocols for GNU Taler; and WireGuard, a modern VPN that utilizes state-of-the-art cryptography

### NGI Assure

NGI Assure (€8M)funds 112 promising bottom-up projects that are building blockchain and distributed ledger technologies on top of state-of-the-art research, with the goal of strengthening the European blockchain ecosystem and research excellence.

# 2. APPROACH TO NGI LEVERAGE EFFECT ESTIMATION

*N.B. initial ideas so far, please share feedback and ideas for alternative approaches.*

## 2.1 SUMMARY

Measuring the leverage (or multiplier) effect of NGI funding for recipients and the wider digital commons in Europe involves assessing how funding inputs translate into broader economic, social, or technical outputs. We have been advised to build on the data & findings of the Gartner report, and to include data from other sources (e.g. GitHub Innovation Graph).

### Summary of Gartner study

- Gartner Consulting conducted a mixed-methods analysis of the impact of NGI funding (140M€ ->1000+ projects, 2019-2024) on alignment with EU Digital rights, enabling EU legislation, impact on standards, provision of alternative solutions, and sustainability.
- "The methodology consists of two steps. The first step focuses on the whole portfolio of NGI third party projects (called NGI 1000 for simplicity) which delivers a quantitative analysis. The second step focuses on a subset of projects (NGI 50) which are identified as most impactful and aims to develop a qualitative analysis [via interviews & desk research] based on their impact in relation to Web 4.0 technology" (pp.77-84)
- Survey: 291 projects (28.7% out of 1014 projects), variables (see Appendix A)
  - 18%: NGI Assure (€8M), NGI0-Discovery (€7M), NGI0-PET (€7M)
  - 7%: NGI Trust (€7M)
  - 6%: eSSIF-lab (€7M), DAPSI (€7M), Trublo (€6M)
  - 5%: Ontochain (€6M)
  - 4%: NGI- POINTER (€7M), LEDGER (€7M), NGI Atlantic (€3.5M)
- Findings:
  - See presentation at FOSDEM: "The impact of the NGI Open Source projects on EU policy and values"
  - 76% of surveyed NGI-funded projects (n=221) had an active community, with an estimated 80,000-strong ecosystem of contributors in total, and from this it estimates that NGI funding generates a 1:50 multiplier effect, where 1 funded OSS contributor can support a community of 50 contributors.

## 2.2 GUIDING QUESTIONS

Our analysis of the leverage effect will be guided by questions, such as:

- What are the social benefits of funding, e.g. for project's community development?
- How does funding affect the technical progress and adoption of OSS projects?
- What is the economic impact on the OSS ecosystem and related industries?
- What is the impact of the amount of funding relative to the size of the project?
- How effective are key properties of the NGI funding approach (e.g. funding through intermediaries within existing communities, piloting funding through "verticals", etc)?

- What is the leverage effect of funding decentralised architectures?
- What is the systemic impact of NGI funding beyond individual projects?

## 2.3 LITERATURE REVIEW

*N.B. Please feel free to recommend prior work that can be included in this literature review.*

To inform our approach to estimating the leverage effect of NGI funding, we will conduct a thorough review of relevant prior literature, which will help identify proven methods, relevant indicators, and potential challenges that can inform our research design.

This will include studies that have examined the impact of funding on open source software projects and digital commons initiatives. In addition to literature specific to open source, we will draw upon research from other domains that have examined the multiplier effects of public and private investment, such as studies on the impact of research and development funding and the economic effects of infrastructure investment.

By integrating insights from these diverse lines of prior work, we aim to develop a robust methodological approach to measure the leverage effect of NGI funding that is grounded in existing knowledge while tailored to the unique context of digital commons in Europe.

## 2.4 KEY CONSIDERATIONS

- Not easy at all to measure impact of funding in a standardised way
  - Quantitative measures don't tell the full story of the leverage effect of funding for a project, for example some projects would simply deprecate without funding, some projects use funding to address technical debt, etc.
  - How does one measure the leverage effect of funding decentralised architectures?
  - Qualitative evaluations can tell leverage effect stories much more coherently.
- Two funding formulas should be compared (e.g. small grants,
- The proposition of 150k equity free for startups is different from a stipend to an independent researcher.
- Many data access problems about NGI-funded projects (described by one coordinator as "looking for the hen with the golden eggs")

## 2.5 MIXED-METHODS APPROACH

We will employ a mixed method approach, combining statistical modelling, interviews, and case studies, to measure the leverage effect(s) of funding on projects that reported in the Gartner survey that their solution is open source and available in a public repository (n=183).[6]

Possible approaches include:

*N.B. Some combination of the following three quantitative approaches would be good but we must be careful about scope creep and the availability of data for each analysis. The goal is to produce clear, meaningful, and robust results about the leverage effect of NGI funding.*

[6] The Gartner study reports that 63% of solutions (n=183 projects) are shared in a public repository, such as GitHub. In addition, 34% of solutions (n=99) are shared via a distribution platform, such as package managers or app stores, and some 29% of solutions (n=84) are shared on a public repository and via a distribution platform. We will limit our analysis to the 183 solutions that are shared in a public repository due to considerations for data collection.

- Technical Contribution Analysis
  - Objective: Measure how funding influences development activity
  - Method: Time-series analysis, before-and-after comparison
  - Data: Gartner survey, new survey(?), GitHub, GitLab

- Community Growth Analysis
  - Objective: Assess impact of funding on size & engagement of the community
  - Method: Quantitative analysis of community metrics
  - Data: Gartner data, GitHub, GitLab, new survey?

- Economic Impact Analysis
  - Objective: Measure the economic impact of funding on the OSS project, ecosystem and related industries.
  - Method: Input-output analysis, econometric modelling
  - Data: Gartner survey, new survey (?), financial reports, economic data

- Interviews and case studies
  - Objective: Deeper understanding of the leverage effect of funding in practice
    - Through desk research and in-depth interviews with funding recipients, the case studies will provide examples of the leverage effect in practice.
    - The case studies will focus on the nature of the leverage effect, with qualitative descriptions of the effect on the individual project as well as systemic effects of NGI funding for the digital commons in Europe. The number of case studies and interviews remains to be confirmed and will be coordinated with other Tasks, e.g. discussions organised for 2.2.
  - Method: Interviews, desk research, case studies
    - It remains to be decided how many case studies we will conduct after the quantitative analysis (N.B. we are no longer expected to write 50 case studies). As a rough estimate, we can aim for 10-20 case studies.
    - Following the advice of several NGI project coordinators, we will ask all NGI project coordinators to select 5 projects, including both successful and failed projects to control for biases for “star projects”, that can tell different impact stories about the leverage effect of funding.

## 2.6 VARIABLES FOR QUANTITATIVE ANALYSIS

*N.B. For many of the impacts, we will need to identify appropriate proxy variables.*

### Dependent variables (Outputs/Outcomes)

- Technical Impact
  - # PRs, issues, commits, SloCs (add time range/interval)**(missing)**
    - [Matti Schneider:] I suggest to add a method for prioritising these metrics, as their relative relevance depends a lot on the developer practices. If such a method was added, one could include SloC as a potentially relevant metric in case developers do not follow atomic commits good practices (with my suggestion being, in order: PRs, issues, commits, SloCs).
  - # releases or features (add time range/interval)**(missing)**
  - # standards organisation collaborated with (Gartner data)
  - # users across installations (esp relevant for decentralised software, e.g. Mastodon instance or an Open Terms Archive collection) **(missing)**
  - # downloads or installations (i.e. reusers) **(missing)**
  - # forks and clones indicating adoption **(missing)**
  - # quality Impact should be counted **(missing)**
    - [Matti Schneider:] NGI funding might still be relevant even if it does not increase the # users nor # FTEs, e.g. NGI funding that enables paying back significant technical debt and improving security and documentation for an already prevalent system, such as a crypto or network base layer. The user base cannot grow out of this work, because it is already installed everywhere; and that work would actually likely *decrease* the FTEs as less developers are needed to maintain and deploy a high-quality codebase. Yet, the impact would have been net positive, as it would increase the reliability and perenniality of a critical component. These quality metrics are some of the easiest to automatically gather and track the evolution of over a codebase.
- Social Impact
  - Community size before/after funding (partially via Gartner data)
  - # contributors (add time range/interval) **(missing)**
  - # stars, forks, and watchers on GitHub **(missing)**
  - DEI metrics, e.g. CHAOSS **(missing)**
- Economic Impact
  - Services or products sold by the created company (Gartner data)
  - # full-time employees in the company (Gartner data)
  - Estimated economic value created by the project (e.g. based on number of users/installations and estimated value per user)
  - Revenue generated by the project or companies built on top of the open source solution
  - Market share captured by open source solution in its target market
  - Amount of follow-on funding or investment raised by the project
  - Estimated runway of project based on current funding and burn rate
- Political Impact

- Legislations and/or policies the project relates to (Gartner data)
- Impact on European digital rights and values (Gartner data)

### Independent variables

- Total funding received by the project **(missing)**
- Number of FTEs funded by grant **(missing)**

### Control variables

- Funding type
  - Funding NGI RIA (Gartner data)
  - How many times NGI grants received (Gartner data)
- Project Characteristics
  - Project age/maturity before funding **(missing)**
  - Size of the project team before/after funding **(missing)**
  - Popularity and existing user base before funding **(missing)**
  - Licence of the open source solution (Gartner data)
  - Reuse/impact of the project (Gartner data)
  - Solution provide an  alternative to a proprietary solution? (Gartner data)

# 3. APPROACH TO 20 ADDITIONAL CASE STUDIES

*N.B. initial ideas so far, please share feedback and ideas for alternative approaches.*

## 3.1 SUMMARY

In addition, 20 additional cases of networks of commoners will be analysed "to better understand dynamics and trends in their life cycle and map possible unidentified trends in their constituency and sustainability (e.g. innovative governance models; funding schema; etc.), as well as commons they address today and what their plans are for mid-to-long term." The purpose of this task is to identify best practices that can inform future NGI funding programmes. We will identify and analyse the 20 case studies via desk research, interviews, and soliciting feedback from the experts in the NGI Commons DCTF and at workshops.

## 3.2 GUIDING QUESTIONS

### Learning from networks of commoners

1. What are the common stages in the life cycle of networks of commoners, and what are the key challenges and opportunities at each stage?
2. What are innovative governance models and funding schemes employed by networks of commoners to ensure their sustainability?
3. What are the emerging trends and priorities in the commons being addressed by networks of commoners?
4. How do networks of commoners plan for the mid-to-long term, and what are their strategies for adapting to changing contexts and needs?

### Learning from other funding programmes

- What are some examples of successful funding programmes for OSS and digital commons globally?
  - What are the key characteristics of these successful funding programmes? (e.g., funding model, duration, target beneficiaries, focus areas, impact measurement)
  - How do these funding programmes adapt to the changing needs and priorities of the OSS and digital commons communities?
- What are the best practices for ensuring transparency and accountability in the funding process and the use of funds without burdening OSS developers?
- What can the NGI initiative learn from the best practices identified in these global examples to design more impactful funding approaches for OSS and digital commons?
- How can funding programmes ensure long-term sustainability and continuity of support for projects beyond the initial funding period?

# 4. APPROACH TO FRAMEWORK FOR FUTURE NGI FUNDING PROGRAMMES

*N.B. initial ideas so far, please share feedback and ideas for alternative approaches.*

## 4.1 SUMMARY

Both the leverage effect analysis and the 20 case studies will inform the development of a framework that can be a basis for the planning of NGI funding programmes in the future. It will be important to benchmark NGI versus other funding programmes for the digital commons.

It is important to note the timing of the publication of this framework in December 2026 (M36), which will be in-time for the programmation for the Work Programme 28.

## 4.2 GUIDING QUESTIONS

Based on the feedback insights from the Gartner Report (see Appendix B), we will explore questions that can help identify areas where past NGI funding programmes have excelled and where there is room for improvement, ultimately informing future funding initiatives.

### Funding Approach and Processes

- How can the NGI funding approach be diversified to cater to projects of different scales and maturity levels?
- What can be done to streamline the process of obtaining follow-up funding for existing projects?
- How can the monitoring process be simplified while still ensuring accountability and focus on project value?
- What measures can be taken to provide clearer guidelines on impact and standardisation for funded projects?

### Support for Open Source and Digital Commons

- How can NGI funding programmes better support the long-term maintenance and development of key FOSS infrastructure projects?
- What strategies can be employed to allocate funding for nurturing, development, and management of digital commons?
- How can NGI funding programmes ensure representation and influence in key decision-making bodies such as IETF leadership?

### Scaling and User Adoption

- What non-coder roles can be funded to enhance user adoption, marketing, and public relations for NGI-funded projects?
- How can NGI funding programmes contribute to educating the public on privacy, security, and the advantages of alternative solutions?
- What mentorship and support mechanisms can be provided to help projects become self-sufficient and achieve market readiness?

### Capacity Building and Knowledge Sharing

- How can NGI funding be utilised to invest in larger education programmes on digital skills and open source?
- What strategies can be implemented to connect complementary open source areas and foster growth?
- How can NGI funding programmes facilitate knowledge exchange and collaboration among funded projects and the wider community?

### Infrastructure and Resource Support

- What infrastructure and resources, such as hosting services or high-performance computing, could be provided to support the development and testing of projects?
- How can NGI funding programmes ensure that funded projects have access to the necessary tools and resources for continuous integration and delivery?

# APPENDIX A - GARTNER CONSULTING SURVEY DATASET VARIABLES

### Survey dataset information:

- 291 projects (28.7% out of 1014 projects)

### Project Identification:

- Project name (open-ended, text)

### Funding and Contracting:

- Contracting channel for the first grant received (categorical, text)
  - E.g. NLnet/NGI0-Discovery; NGI Assure; NLnet/NGI0-PET
- New funding received (categorical, multiple choice, text)
  - E.g. New NGI funding; Funding from a foundation; Crowdfunding
- Contracting party for new NGI funding (categorical, text)
  - E.g. NLnet/NGI0-Entrust; NLnet/NGI0-Corel; NLnet/NGI0-PET

### Solution Sharing and Reuse:

- Whether solution is open source (binary, text)
- Licence of the open source solution (categorical, text)
- How solution is shared (categorical, multiple choice, text)
  - E.g. The solution is finalised and shared on a public repository.; The solution is shared via a distribution platform (distro, app store…).
- Reuse/impact of the project (categorical, text)
  - E.g. There is an active external community (other than the core developers and maintainers) contributing bug reports/ code which indicates some level of reuse; There is other evidence of reuse which indicates a high level of reuse, “high” meaning that almost all the target audience has been reached and is using it.
- Potential users of the solution (categorical, multiple choice, text)
  - E.g. IT services providers (hosting, cloud, telecom); Consumer/End-user application; “Corporate” IT (productivity, office tools, security...); Public sector / government / academia; Developers; Other

### Project Outcomes:

- Outcome of the project (categorical, multiple choice, text)
  - E.g. The project received a new funding; The project was part of a larger open source community effort, and the new software is integrated to it; The project was part of an open source business effort, and the new software is integrated to it

### Impact on European digital rights and legislation:

- EU legislations and/or policies the project relates to (categorical, multiple choice, text)
  - E.g. EU digital identity; Alternative choices to existing platforms (Ensure freedom of choice on line)
- Impact in relation to European digital rights and values (categorical, multiple choice, text)
  - E.g. Putting people and their rights at the centre of the digital transformation; Ensuring freedom of choice online; Increasing safety, security and empowerment of individuals

### Impact on standards:

- Standards organisation collaborated with (categorical, multiple choice, text)
  - E.g. IETF; W3C; IEEE; ISO; Other
- URL to contribution to standards (open-ended, text, URL)

### Alternative to proprietary solution:

- Does the solution provide a viable alternative to a proprietary solution? (binary, text)
- Name of the proprietary solution (open-ended, text)

### Company Creation and Services/Products:

- Services or products sold by the created company (categorical, multiple choice, text)
  - E.g. Products: hardware or software; Other; SaaS/hosted solution/managed hosting; Freemium/Premium services including subscription contract
- Number of full-time employees in the created company (open-ended, text)
  - E.g. 3; The new company will have between 1-5 full time employees

### Community Size:

- Size of the community contributing to the solution (open-ended, text)
  - E.g. 2; 1000000; Difficult to answer; I estimate globally 50-100 persons developing on FOSS TETRA, either directly with our FOSS software contributions or due to renewed interest in TETRA due to our publications.

# APPENDIX B - FEEDBACK INSIGHTS FROM GARTNER REPORT

## FEEDBACK

### Positive Aspects of Current Approach

- Appreciation for funding opportunities and their impact on projects
- Streamlined application process without excessive administrative burdens
- RIAs' effective interface between communities and the European Commission
- Support for community open source projects and digital sovereignty

### Adaptations to Current Procurement, Funding, and Monitoring Processes

- Diversify funding approach with small, medium, and large-scale funding options
  - The NGI funding approach could be diversified to include small-scale funding (€10k up to €100k) for new ideas and projects, medium and large-scale funding (€100k-€5M) for scaling up existing projects in the EU NGI space that have proven sustainability, and strategic funding for areas of priority to European digital sovereignty.
  - Recommendations
    - a) increasing the number of open calls for additional funding to encourage innovation and expand existing projects,
    - b) streamlining the process of obtaining follow-up funding,
    - c) providing funding for coaches who can assist previous NGI grantees in applying for other funding programmes, and
    - d) designing improved support programmes that offer better visibility and guidance towards second-stage and further funding opportunities.
- Improve follow-up funding processes and support programmes for existing projects
  - Recommendations
    - a) increasing the number of open calls for additional funding to encourage innovation and expand existing projects,
    - b) streamlining the process of obtaining follow-up funding,
    - c) providing funding for coaches who can assist previous NGI grantees in applying for other funding programmes, and
    - d) designing improved support programmes that offer better visibility and guidance towards second-stage and further funding opportunities.
- Enhance translation between technical projects and the European Commission through increased RIA funding
- Consider specific requirements of non-profit organisations and alternative governance structures
- Provide upfront payments and reduce micromanagement for FOSS developers
- Simplify monitoring process and focus on assessing project value rather than deliverables
- Provide clearer guidelines on impact and standardisation

Funded by the European Union

### Technology Topics and Knowledge Sharing

- Continue focus on open, inclusive, decentralised, and user-centric projects
- Enhance service portability, basic internet technologies, and network infrastructure
- Fund user-centred design, accessibility, and localization efforts
- Invest in zero-knowledge proofs, bug fixing, and cybersecurity measures
- Support maintenance of key FOSS infrastructure projects and seamless integrations
- Ensure representation in IETF leadership
- Organise dissemination events and "citizen assemblies" for knowledge exchange

### Maintenance and Maturing of NGI Projects

- Provide long-term sustainable funding for maintenance and ongoing development
- Support bug fixing, documentation, and maturing of existing projects
- Fund lead developers to continue work within universities
- Allocate funding for nurturing, development, and management of digital commons

### Scaling and User Uptake

- Fund non-coder roles for user adoption, marketing, and public relations
- Educate the public on privacy, security, and advantages of alternative solutions
- Emphasise creating high-quality software and technological transfer
- Mentor projects to become self-sufficient

### Scope

- Cover short-term operational and growth costs for market readiness
- Invest in larger education programmes on digital skills and open source
- Connect complementary open source areas to foster growth
- Launch larger software initiatives for teams to build complex, competitive software

### NGI Project Infrastructure

- Offer free hosting services for demos and early adopters
- Provide high-performance continuous integration and computing resources for development and testing

# APPENDIX C - TASK DESCRIPTION IN NGI COMMONS WORK AGREEMENT

*N.B. Following advice from the EC, we are no longer sticking to the requirement to write 50 case studies on NGI-funded projects.*

This Task will focus on **measuring the leverage effect** (e.g. in funding and resources) resulting from the NGI funding and **identifying which efforts, technology blocks, projects and results of NGI projects feed into DC/IC initiatives**.

Starting from the list of relevant commons and communities co-defined in Tasks 1.1 and 1.2, **50 case studies** will be selected which combine relevant commons, their history and the communities that have contributed and/or are contributing to their development and maintenance, half of which will be presented in the first version of the report (M24). **20 additional cases** of the most interesting networks of commoners will be selected to better understand dynamics and trends in their life cycle and map possible unidentified trends in their constituency and sustainability (e.g. innovative governance models; funding schema; etc.), as well as commons they address today and their mid-long term plans.

The **selection of cases will be made considering several criteria**, e.g., current and prospective relevance; target beneficiaries of the commons; geographical distribution of their network; etc. agreed with the Digital Commons Task Force (see Task 2.1), priorities indicated by Task 1.2 and the overall community input.

The case studies will be consolidated with Task 1.3 input in a **final report (M36) aimed at identifying trends, needs, gaps, barriers for sustainability and potential drivers to be useful for co-designing policy and practice measures as well as EC, National and Local strategies for funds allocation**. Existing research on measuring impact of OS projects funding is scarce thus several renowned researchers will be invited to join the effort.

The goal is to inform up a **framework that will be resilient and can be a basis for future research, devising, and planning of NGI as well as other funding programmes**.

# APPENDIX C

# FEEDBACK ON LEVERAGE EFFECT STUDY

## POLL

- Familiar with NGI programmes: Most people
- Involved in distributing NGI funding: 2
- Received NGI funding in the past: ~8

## KEY TAKEAWAYS:

- Hard to quantify impact due to differences between projects (e.g. project maturity, different funding approaches, etc) and caution about impact metrics & time frame
- Importance of mixed-methods approaches to deal with data scarcity and difficulty of measuring the leverage effect of funding

## LITERATURE REVIEW

- The Prototype Fund in Germany has done research on application process and project life, funding rounds, impact measurement and different maturity of projects and the most adapted metrics. The key finding: project maturity is a key contextual factor.
  - **Follow up with Fiona**
- Review models of public funding in cities to support projects at different stages, e.g. the funding only continues if first objectives are achieved. It has the advantage of not stopping funding once initial phases (e.g. prototyping) are completed.
  - **Follow up with Samtag**
- Software ecosystem health is a relevant approach but it has an implicit or explicit unified strategy, whereas NGI appears to lack a unified strategy. The best article for that is: Measuring the health of open source software ecosystems: Beyond the scope of project health - ScienceDirect. For the financial assessment, it becomes a bit more complicated, but I do see some literature that tries to take up this challenge:
  - Leveraging the Software Ecosystem Towards a Business Model Framework for Marketplaces
  - LEVERAGE ONCE, EARN REPEATEDLY – CAPABILITIES FOR CREATING AND APPROPRIATING VALUE IN CLOUD PLATFORM ECOSYSTEMS - CORE Reader
  - Exploring the Effect of Software Ecosystem Health on the Financial Performance of the Open Source Companies (acm.org)

## RESEARCH DESIGN CONSIDERATIONS

- Maturity models are an approach that allows you to easily combine mixed methods into a single (rather quantitative) metric. Out of different categories you can build indicators based

on scoring, this can be generalized in an ultimate score. This allows us to combine qualitative research with quantitative metrics. Since there is not already a maturity model available for what you are trying to achieve exactly, you first have to make one yourself. You could base yourself on existing maturity models, merge them to create a new one, and use that to assess all projects. There are many maturity models around that are somewhat relevant, so I think you can make it work pretty well:

  - An open source usability maturity model (OS-UMM) - ScienceDirect
  - A focus area maturity model for software ecosystem governance - ScienceDirect
    - Maturity models are a proven tool in the creation of collections of knowledge of practices and processes about a particular domain, which define maturity levels in stages with the objective of qualitatively illustrating the maturity of the software engineering process. Examples are the project management maturity model [20], the capability maturity model for software development [21], the Industry Open Source Model [22], and the service integration maturity model [23].

- If you decide to not use maturity models but a mixed methods design, this article can help you. We faced the same lack of data problem but found a solution with interviews.
  - "Using both qualitative and quantitative data sources for ecosystem health measurement provides the best of both worlds. Interviews give in-depth data and insights that may not be easily retrievable from quantitative sources."
- Public funding should be used to support diversity, equity and inclusion. Peer-review grant-making is used to support diversity. Evidence that when we ask for gender in grant proposals, we see an increased number of women involved in projects.
  - **For quantitative analysis, check out CHAOSS DEI metrics** https://chaoss.community/unveiling-the-impact-dei-metrics-overcoming-social-barriers-in-open-source/
- Lines of code (LOC) as a metric is tricky because LOC is highly contextual & removal of code can be something that is part of maintenance work. Recommendation to examine "LOC touched" (net of LOC added & deleted): https://chaoss.community/kb/metric-code-changes-lines/ We should differentiate between different stages of projects because the metrics will be quite different based on this. Maintainability of code is also often overlooked.
- Sometimes metrics can create negative incentives for projects. If you support a project with a massive amount of money, open source projects can implement hundreds of features, which can make it hard for a community to keep up with the pace of people full-time paid during a year. In the long run it can harm the sustainability of the project since it discourages volunteer contributors.
- It is important to consider if there is a driving team with a shared mission and a sustainability model (e.g. a business plan and maybe diverse revenue mixes, plans on how to share knowledge, governance, etc.). The more there is a shared plan between founders and key users, the better. Data on the impact of funding on governance could come from extensive questionnaires. For example, P2P value research projects were based on 150 variables: https://www.p2plab.gr/en/archives/1075
  - **Follow up with Wouter Tebens**
- It is important to consider innovation for whom? How can we use open source and open data to create a competitive edge and not just allow AI companies to benefit from these resources? Who do we want to benefit from this? The idea is not to focus on metrics but let people come up with their own metrics.
- Sometimes you miss out on the things that were built on top of open resources. How things multiply outside of the initial team is difficult to capture but important.

- Based on the experience of Blender who applied for funding and has to report on some metrics: we should value and encourage the creation of quality communication of a project. It is easy to feel when communication is good - things can be easily understood. Projects should have the responsibility to communicate about the value a project generates - it is an effort that pays off a lot.
- Other angle: If we want to focus on adopters, we should probably also talk to users and not only maintainers. We should have their perspective on the value of funding a project: if users say they are interested in getting a new feature, it is an interesting metric on top of the conversation between maintainers and funders.

## DATA

- Do not even the distributors of the funding have knowledge of how much was given to which project?
- You do know the number of projects per funding batch, and the total funding of that batch. These numbers can be combined to a single number if no more information surfaces, e.g. if NGI [ABC] has 5M funding in 100 projects, then the average of NGI [ABC] projects received €50,000. This is a number you can work with.
- You stated 2 types of funding; small and big. There is actually a third one, the NGI pilots. This recent generation is also what our project belongs to. We give 15% of our budget in tranches of max 60k.
- You have told us that of the 1200 NGI projects, 20% can be accessed and 10% has an open-source repository. Those numbers align with our own observations. However, It must be said that just that a project has a github account does not say much about their code quality. Our second observation is that many projects do have an open-source repository, but that it is so bad that it is not usable to assess the project's quality.

## QUANTITATIVE RESEARCH DESIGN FOR OSS PROJECTS:

### Research Design: Separate Analyses for Different Funding Approaches

- Conduct separate analyses for each funding approach to examine the multiplier effect within each specific context and identify variations or unique patterns, given their distinct characteristics (selection criteria, funding durations, project types).

### Data Collection

- Identify the funding start date for each project as the reference point for collecting pre-funding data
- Define data collection time points: "pre-funding" (3, 6, or 12 months before funding start, based on project maturity) and "post-funding" (12 months after funding end).
- Collect relevant OSS project metrics (contributors, net LOC, commits, pull requests, issues resolved, forks, downloads, users, DEI metrics) for each project at pre-funding and post-funding time points.
- Ensure data consistency and comparability across time points. Normalize data to account for project scale, activity levels, and data availability differences.

### Paired Sample Analysis

- Calculate metric differences between pre-funding and post-funding time points for each project.
- Use paired sample t-tests or Wilcoxon signed-rank tests to determine statistically significant changes in metrics after funding.
- Compute effect sizes (Cohen's d) to quantify the magnitude of changes.

### Regression Analysis

- Use regression models to estimate funding's effect on OSS project metric changes, controlling for relevant covariates.
- Two approaches for the funding variable:
  - Include a binary variable (0 for pre-funding, 1 for post-funding) to compare periods and represent the difference in metrics. The coefficient indicates the average change associated with funding presence.
  - Include the actual funding amount as a continuous variable to estimate the effect of each additional funding unit on metrics, providing a granular understanding of the multiplier effect. The coefficient represents the change in metrics per one-unit funding increase.

# APPENDIX D

Subject: **Invitation to join the NGI Commons Digital Commons Task Force**

Dear [Expert's Name],

[personal preamble, if you know the person]

It is our pleasure to contact you on behalf of the **Horizon Europe project NGI Commons** to invite you to join the **Digital Commons Task Force (DCTF)** experts' group.

NGI Commons, launched within the European Commission Next Generation Internet initiative, aims to elaborate on a long-term strategy for the digital and internet commons, which are critical for Europe's sovereignty and trust, by creating a more coherent European funding landscape across both public and private sectors.

In order to achieve this ambitious goal, we are gathering top experts across several relevant initiatives and domains. Given your profile and experience, **we would be honoured to have you with us, as we believe your contribution would be of utmost relevance to help guide NGI Commons strategic efforts**. We expect the DCTF to meet online (for a couple of hours, 3-4 times per year) and occasionally in person at relevant events.

As participants in this initiative, the DCTF experts will be given the opportunity to:

- Influence digital policy initiatives contributing to the digital autonomy of Europe.
- Advocate for open access, fair use, and the promotion of digital public goods.
- Understand and promote the potential of NGI funding for digital commons.
- Engage with other key experts in both the private and public domains.
- Join as invited speakers at NGI Commons events (online or in person).
- Be featured across the NGI Commons communication and media channels

If you are interested in joining the DCTF or would like more information about NGI Commons, please do not hesitate to contact us.

We are looking forward to the possibility of collaborating with you.

Kind regards,

[Your Name]

NGI Commons

https://commons.ngi.eu/