NEXT GENERATION INTERNET

Measuring the Leverage Effect of NGI Funding on the Digital Commons

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PARTNERS:

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Agenda

1. Presentation of research design plans & considerations, 40 mins

2. Group discussion, 20 mins

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Let's start with a quick show of hands…

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I am familiar with NGI funding programmes

1 Yes

2 No

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I have been involved in distributing NGI funding

1 Yes

2 No

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I have received NGI funding in the past

1 Yes

2 No

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Measuring the leverage effect of NGI funding sounds...

1 Easy peasy!

2 Complicated but doable!

3 Not sure...

4 Impossible!

5 What does "leverage effect" even mean?

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Background on our task

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Task and purpose

- Measure the leverage effect that the NGI has had on the funding recipients and on the wider digital commons in Europe.

- "Leverage effect" formulated roughly as outputs/outcomes per €1000
  - **Example:** Gartner study estimates that NGI funding generates a 1:50 multiplier effect, where 1 funded developer can support an OSS community of 50 contributors.
  - **Expectation:** Produce similar quantitative claims that can demonstrate the positive value creation faciliated by NGI funding

- 20 case studies on networks of commoners "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."

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Deliverables

- Interim report (M24) & final report (M36 - December 2026), including:

  - Methodology for measuring & empirical measurements of the leverage effect of NGI funding

  - 20 case studies on networks of commoners to learn best practices

  - Framework to inform future research, devising, and planning of NGI funding programmes

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Background on NGI funding

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Key Info about NGI funding

- **WHAT**: NGI provides financial support to grassroots digital commons innovators

- **HOW MUCH**: 140M€→~1,200 projects, 2019-24

- **HOW IT WORKS:** NGI primarily operates through financial support to third parties (FSTPs). The Commission calls for Research and Innovation Actions (RIAs) that distribute ~80% of the budget through open calls to innovators, e.g. open source developers, researchers, startups, etc.

- **NGI RIA BUDGETS**: NGI Assure (€8M), NGI 0 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,

Small-to-medium grants by NGI Zero (5,000€-50,000€)

- NGI Zero, coordinated by NLNet, has granted over 50M€ in small-to-medium grants to hundreds of independent researchers and developers via several programmes.

- They have funded ~800 out of the ~1200 NGI-funded projects

- How it works:
  - **Duration:** Typically 12 months
  - **Incrementality:** Recipient chooses chunks; range 1-150
  - **Payment:** After completion of each chunk (if code works)
  - **Benefits include:**
    - Don't deliver, don't get paid
    - "BS factor evaporates"
    - "If it fail, it faisl fast" (with small amounts)

Current programmes:

- **NGI0 Core** (**8.8M€**) A light-weight grant programme available to both individuals and organisations of any type to advance internet architecture and the openness of technology.
- **NGI0 Commons Fund** (**21.6M€**)Deliver, mature, and scale new internet commons across the stack, from libre silicon & middleware to P2P infrastructure & end user applications
- **NGI0 Entrust** (**9.6M€**) Support privacy and trust-enhancing technologies for trustworthiness and data sovereignty.
- **NGI Fediversity** (**450K€**) 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.
- **NGI Zero Review** (**1.5M€**)Supports the wider NGI community with various services that help to mature the digital commons

Past programmes:

- **NGI0 PET** (**5.6M€**) Privacy and trust-enhancing technologies, such as Cryptpad, Sylk, WireGuard and EteSync.
- **NGI0 Discovery** (**5.6M€**)Search, discovery and discoverability technologies, such as ActivityPub, Searx, Nextcloud, PeerTube, and Mastodon.

Medium-to-small grants (50,000€ to 200,000€)

- Several NGI RIAs provide up to up to 50.000 € for a natural person or 200,000€ in equity-free funding per-project with at least 1 org.

- Typically involve third-party evaluators to evaluate and rank proposals. Selected projects complete a mentoring plan and a delivery plan(including 3 milestones & tranches of payments). The projects are evaluated at the completion of each milestone.

- How it works:
  - **Duration: Typically 12 months**
  - **Incrementality:** 3 milestones
  - **Payment:** Per milestone
  - **Benefits include:**
    - Independent evaluations
    - More documentation for purpose of auditing
    - Sequential payments for milestones

NGI Pointer (€7M)
NGI- POINTER funds internet architects who develop new protocols, open software ,and hardware for internet management in a wide range of cases, such as privacy-by-design, IoT, and network perfection. Each project can receive up to **200K€,** e.g. Ltt.rs, (encrypted email client for Android), AP³ (privacy-preserving protocols for GNU Taler), and WireGuard (a VPN that utilises SOTA cryptography).

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

NGI Sargasso (€6M)
NGI Sargasso has funded 17 projects across two calls and has three more calls until 2025:. To date, it has funded 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.

I am now more familiar with NGI funding...

1 Yes

2 No

3 The same as before

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Now with this knowledge, I'd say measuring the leverage effect of NGI funding sounds...

1 Easy peasy!

2 Complicated but doable!

3 Not sure...

4 Impossible!

5 Still don't know what "leverage effect" means :/

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Research design plans (WIP)

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Part 1: Methodology for measuring the leverage effect

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Key considerations

- Preference for quantitative approach to produce quantitative evidence of leverage effect
  - Leverage effect formulated roughly as outputs/outcomes per €1000
  - Examine leverage effect of two funding formulas separately

- But we know from conversations with NGI project coordinators that:
  - Proposition of 150k equity free for startups is different from a stipend to an independent researcher
  - 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
  - How does one measure the leverage effect of funding decentralised architectures?
  - Qualitative evaluations can tell leverage effect stories much more coherently...

- Data considerations
  - We know: ~1,200 projects via NGI database & NGI RIA budgets via CORDIS database
  - We don't know: € funding per recipient (described as "looking for the hen with the golden eggs")
  - Gartner dataset (n=291): NGI Assure (18%), NGI0-Discovery (18%), NGI0-PET (18%), NGI Trust (7%), eSSIF-lab (6%), DAPSI (6%), Trublo (6%), Ontochain (5%), NGI-POINTER (4%), LEDGER (4%), Atlantic (4%)

Literature review

- We will conduct a thorough review of prior work, which will identify proven methods, relevant indicators, and potential challenges that can inform our research design.

- In addition to literature specific to OSS funding, we will draw upon research from other domains that have examined the multiplier effects of public and private investment, e.g. the impact of R&D funding or the economic effects of infrastructure investment

- 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 NGI context.

"All models are wrong, but some are useful"

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Overview of mixed-methods approach

183 / 291 projects from Gartner dataset that are open source & in public repository

Approach	Objective	Method	Data
Technical Contribution Analysis	Measure how funding influences development activity	Time-series analysis, before-and-after comparison	Gartner data, GitHub, GitLab, new survey?
Community Growth Analysis	Assess impact of funding on size & engagement of the community	Quantitative analysis of community stats	Gartner data, GitHub, GitLab, new survey?
Economic Impact Analysis	Measure economic impact on the OSS project, ecosystem and/or industry.	Input-output analysis, econometric modelling	Gartner data, , financial/economic data, new survey (?)
Interviews and case studies	Deeper understanding of the various leverage effects of funding	Ask NGI project coordinators to nominate 5 projects that can tell different leverage effect stories	Interviews, desk research

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On the search for (proxy) variables

Technical impact	Social impact	Economic Impact	Independent variables
• # PRs, issues, commits, SLOCs • # releases or features • # standards organisation collaborated with (Gartner) • # users across installations • # downloads or installations • # forks and clones • # Quality Impact **121**	• Community size (Gartner) • # contributors (add time range/interval) • # stars, forks, and watchers on GitHub • Metrics for diversity, equity, and inclusion	• Estimated economic value created (e.g. based on # users/installations & estimated user value) • € Revenue generated by the project or company • % market share • € Amount of follow-on funding or investment • Services or products sold by company (Gartner) • # full-time employees in company (Gartner)	**Independent variables** • € Total funding received by the project (missing) • # FTEs funded by grant **Control variables** • NGI RIA (Gartner) • # NGI grants (Gartner) • Project age/maturity • Size of the project team • Popularity & userbase • License (Gartner) • Reuse/impact (Gartner) • Alternative to proprietary solution (Gartner)

Part 2: 20 case studies of networks of commoners

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Task and purpose

- 20 case studies on networks of commoners "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."

- Purpose: Identify best practices that can inform future NGI funding programmes, as well as benchmark NGI versus other funding programmes for the digital commons.

- 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.

Guiding questions

- **Learning from other networks of commoners**
  - What are innovative governance models and funding schemes employed by networks of commoners to ensure their sustainability?
  - How do networks of commoners support diversity, equity, and and inclusion?
  - 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, and what are their key characteristics?
  - How do other funding programmes support diversity, equity, and and inclusion?
  - 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?

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Part 3: Framework for future funding NGI programmes

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Task and purpose

- Based on this research, we will develop a framework that can be a basis for the planning of NGI funding programmes in the future.

- 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.

- Based on the feedback insights from the Gartner study, 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.

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Guiding questions

- **Funding Approach and Processes**
  - How can the NGI funding approach be diversified to cater to projects of different scales and maturity levels?
  - 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 the NGI better support the long-term maintenance & development of OSS infrastructure projects?
  - What strategies can be employed to allocate funding for the development & sustainability of the digital commons?
- **Scaling and User Adoption**
  - How can the NGI contribute to educating the public on privacy, security, and the advantages of alternative solutions?
  - What mentorship/support 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 education programmes on digital skills and open source?
  - How can the NGI facilitate knowledge exchange and collaboration amongst 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 the NGI ensure that funded projects have access to the necessary tools and resources for CI and delivery?

Group discussion

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Scan to send more feedback via email

Discussion Questions

- **Measuring multiplier effects and ROIs in open source innovation:** What are key considerations for measuring ROIs in open source innovation?

Discussion Questions

- **Improving the research design**: Do you have any suggestions for refining our approach to measuring the leverage effect of NGI funding?

  - **Proxy variables:** Other proxy measures that could help capture the impact of NGI funding?

  - **Time window considerations**: What time horizon should we consider when assessing the leverage effect to strike a balance between short-term outcomes and long-term impact?

  - **Leverage effect of funding decentralised architectures**: How should we capture the leverage effect on decentralised technologies?

Discussion Questions

- **Suggestions for 20 case studies:** Are there networks of commoners or funding programmes that we should include in our list of case study, if so why?

Discussion Questions

- **Other questions, comments, or suggestions?**

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After all of this, I am confident that the leverage effect of NGI can be meaningfully measured...

1 Strongly agree

2 Agree

3 Neither agree nor disagree

4 Disagree

5 Strongly disagree

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Thank you!

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