NEXT GENERATION INTERNET

NGI: EXPERTISE TO SELECT, FUND, MENTOR AND COORDINATE NEXT GENERATION INTERNET PROJECTS

November 2019

Innovators and researchers are the stars of the Next Generation Internet, but their ideas and projects would never become reality without proper financial support and effective business guidance.

At the core of the NGI initiative, groups of dedicated experts evaluate the potential in projects and people - they select who gets funding, they provide technical and business advice and they coordinate within and between projects, so that together we can build a better Internet.

The unsung heroes of NGI are the Horizon 2020 Research and Innovation Actions (RIAs), grouping Internet experts from all over Europe: **LEDGER, NGI Trust** and **NGI Zero**, focusing respectively on **decentralised data governance, privacy,** and **search and discovery**. These projects gather highly knowledgeable individuals who train their efforts in spotting bright ideas and making them shine. This is just the start: more RIAS are in the pipeline and will cover complementary topics.

Andrés Sánchez, coordinator of LEDGER	Alasdair Reid, coordinator of NGI Trust	Michiel Leenaars, coordinator of NGI Zero

LEDGER, NGI Trust and NGI Zero form a locus of knowledge capable of identifying and selecting the most promising research and innovation proposals, in line with EC priorities and in concert with each other. The NGI RIAs issue *calls for proposals* that are broadly promoted to reach the best researchers and innovators across Europe. The selection requires a deep-dive into a wide range of specialist topics, from hardware to protocol proofs. NGI call organisers rely on their network of external experts and Internet veterans in order to select which ideas to fund. As well as harnessing sound knowledge

of technical aspects of the Internet, the groups of experts also operate as grant administrators and business developers.

NGI offers a faster, less bureaucratic and more capillary way of funding researchers and innovators in Europe than traditional EC funding models. 20 percent of the H2020 funding of LEDGER, NGI Trust and NGI Zero is invested in organising the calls, the selection, monitoring, mentoring and training of project participants, as well as building and growing the NGI community. Through an innovative cascade funding model, the remaining 80 percent is allocated to fund projects.

NGI supports diverse efforts from researchers, developers, hi-tech start-ups or individuals from all over Europe in areas including cryptography, social innovation, search technology and secure operating systems. Projects run in parallel so they can learn and share with each other in the ecosystem of the NGI Community. The sub-grantee projects receive typically between €5,000 – 200,000. This financing makes all the difference to ideas that would otherwise not see the light of day.

For better data governance, there is LEDGER

LEDGER focuses on projects featuring decentralised data governance and, as with all Research and Innovation Actions, supports the full project lifecycle, from idea to reality. LEDGER works with SMEs, organisations and researchers that want to shift data management. Their projects leverage decentralised algorithms based on blockchains, distributed ledger technology and/or peer-to-peer technologies. These technologies are harnessed to address privacy-by-design, reliability, trustworthiness and openness.

Innovators develop minimum viable products and services, aiming to preserve citizens' digital sovereignty, where data is a common good, owned by citizens. In addition, projects funded and supported through LEDGER share a common objective, for the wealth created by data-driven platforms to be equally distributed.

The innovative goal of projects supported by LEDGER is matched by an innovative approach in supporting these projects – through the NGI community. *"When we talk about NGI, I like to see us not as individual projects but as a community, a group of people trying to*

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"*People work with the same aspirations and ethical values. We promote this team spirit from the start in the Workshops and Boot Camps we convene,*" says Andrés. "*We hold 'Open Table' sessions, where teams discuss technological issues. On one memorable occasion, a team member raised an interesting point – how to make a business case out of open-source software? It's a hot topic. We're trying to build sustainable businesses, we can all benefit from sharing ideas and insights.*" says Andrés.

One of the most appreciated aspects of support from LEDGER is the mentoring Researcher in Residence. A senior expert in technology works with project teams as they develop their project. Selected projects go through a nine-month customized venture builder programme receiving up to €150,000 in funding.

The most successful projects go on to a second phase and are offered an additional €50,000 together with access to a three-month business-focused programme. This second phase sees projects raise money, develop a business plan and make tests in the market. During this second phase, a Business Mentor holds regular sessions with the teams to support them to establish a business or market-oriented perspective, so the teams can become sustainable. A Demo Day is held at the end of the programme, with LEDGER helping its projects find corporate partners for market testing.

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"*We are opening a box of opportunities for many people working on something that can make an impact, make an Internet for good. These people are working on tech that is a bit underground.*" says Andrés. "*People spend many hours in their room developing tech – then, with NGI, they find they can afford to devote a few years of their professional life to improve the Internet*".

For privacy, there is NGI Trust

NGI Trust supports better privacy in areas where data is more sensitive and is invested in questions such as how to deal with managing large amounts of data in the cloud and how to better support users in understanding the legal issues around consent to use services.

NGI Trust projects look at issues such as how to protect and utilise health data, how to customise settings to give the user more control and how to ensure safety for children online, without blocking access to useful information.

NGI Trust finances projects which move beyond passwords, to identify a better way for users to manage the complexity of shared secrets and technical trust. This includes the sharing of relevant information, without disclosing other more personal information. For example, a digital driving license or digital university record are two areas that could potentially benefit from NGI Trust funded technology.

 "*Our project provides funding to people with novel ideas for solutions to privacy and trust issues that can be rapidly scaled up. We seek to support the process of bringing together and funding an interesting portfolio of projects that can collectively make a difference.*" says

Alasdair Reid, coordinator of NGI Trust. He goes on to explain the criteria for selecting ideas for NGI support:

"*We focus on use cases that could be initially tested in a local (national) environment but that should be able to prove their applicability at European level*".

Given the complexity of the technologies and their potential application by users, the selection of proposal is left to a group of experts. The NGI Trust Advisory Board supports NGI Trust to set the funding agenda and select projects. It consists of respected professionals in the field, chosen for their expertise and for their own networks, two key requirements to pick open call winners. The NGI Trust Advisory Board is made up of people from big business, from research, privacy specialists working on the human-centric Internet, people from the Internet Society perspective as well as people from Internet research labs working on privacy from an ethical perspective.

This broad spectrum of experts ensures the projects selected for funding are those that show the most promise in terms of standalone ideas, as well as the potential to work together in the NGI community. This rigor is essential given the number and quality of applicants, as Alasdair explains:

"*Out of 109 applications to our first call, there were around a quarter that made a long list for possible funding and, after a final review, we decided to fund 18 that we believed really will make a difference. Some proposals had not understood the scope, but I would say the majority were of decent quality. It wasn't easy, but after careful review we have a good selection of collectively interesting, and relatively high-impact projects*", says Alasdair.

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Alasdair Reid, *coordinator of NGI Trust*

"*A few projects were technically innovative, but we said, "Will this idea move fast enough or be scalable enough to take on or provide an alternative to the existing giants in the Internet world, how fast do we need to move?" For instance, NGI Trust and NGI Zero Discovery are funding two distinct but related projects which are building blocks for a novel solution aimed at securing the use of deep learning technologies applied to video/image. For such solutions to challenge or be an alternative to existing technologies of large incumbents in the market and become a trusted environment, we have to move fast, we only have a limited time window*" says Alasdair.

For open source privacy, there is NGI Zero - Privacy & Trust Enhancing Technologies (PET)

NGI Zero runs a Research and Innovation Action on privacy and trust enhancing technologies, pitched at developers. Projects complement privacy projects under NGI Trust (which targets a different audience). Michiel Leenaars coordinator of NGI Zero, says that, despite the issues faced by developers today, they are up for the challenge, thanks to the NGI funding available:

"*We have some of the best people on the planet working for us, they wouldn't work for a company, they are strong minded people who dig deep into the technology. They want the world to benefit from their work, they won't settle for less. We offer researchers and developers independence. They may have job offers from some of the biggest companies on the planet, but we can offer them to work towards a true digital commons.*" says Michiel.

In order to be effective at Internet scale, the results of the projects funded by NGI Zero are, without exception, made available as free,

open-source software and hardware. A significant amount of effort is spent to live up to high standards across the board. For instance, in terms of accessibility, every project that has a user interface is audited by an official certification organisation, so that people with disabilities can equally benefit from the outcomes. NGI Zero also has third party security audits by a highly reputed non-profit security company which looks at localisation, license compliance, software security and other important issues to make every project live up to high standards.

For Search and Discovery – there is NGI Zero

Through the 'NGI Zero Search and Discovery' Research and Innovation Action, the Next Generation Internet initiative supports the best ideas to improve how we find and connect people, devices, services and ideas.

Projects are funded which focus on discovery and identification technologies: to search and access the Web, but also large data sources, inside multi-media content, services, objects and sensors. NGI Zero works with projects to provide an increased quality of experience for the user who is then safe in the knowledge they can search for whatever their heart desires, without revealing personal information unintentionally.

As frequent users of Internet search engines, people are accustomed to having a world of knowledge at their fingertips. Search engines are big business, behind which there are algorithms, invisible ranking preferences and a proprietary infrastructure which shapes our minds and our economies.

Michiel Leenaars, coordinator of NGI Zero puts the scale of impact of search engines in context: "*The current search infrastructure determines who wins the race to human attention. Millions of people depend on a small number of intermediaries to find a hotel, to read the news or to fall in love. Lifestyles can be governed and businesses destroyed by the ranking of the information presented, which actually is kind of a big deal if you realise there are different value systems and different ideas about society behind these rankings.*"

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Michiel Leenaars, coordinator of NGI Zero

"The current system confers business to the largest players, even if they act unethically or mostly extract value from our searches. Recommendations from the most utilised search engines push larger businesses from outside the European Union, while they benefit from EU citizen's data and advertising revenue. Data is logged shared, analysed and monetised. The way we organise search now is severely disrupting our society and our economies – and is not supporting our European values – and we want to change that" says Michiel.

Next Generation Internet for all

NGI has a short, responsive funding cycle which gives researchers and innovators the opportunity to move fast, test and develop ideas, benefit from mentoring, technical coaching and business matching with potential investors to turn their idea into a real project. Researchers and innovators are working on different topics which are interconnected parts of a puzzle, and NGI is bringing the elements together.

NGI offers public funding to finance research and innovation that would otherwise not be possible. NGI finances the open source community, helping to develop software that others can replicate to create an open and interactive Internet. In addition, NGI funds researchers in universities where cutting-edge ideas can be trialled. NGI also funds projects with a commercial approach to stimulate business across the Digital Single Market.

New Research and Innovation actions starting in November 2019 and January 2020 focus on Internet identities, Data Portability, Architecture Renovation, and supporting EU-US Collaboration.

NGI is currently seeking proposals for Research and Innovation actions on Blockchain, Internet of Things and Next Generation Media with a deadline of 16 January 2020.

To find out more, go to www.ngi.eu

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