Multi-Funder Digital Infrastructure Insights Fund announces 10 new international research grants to advance a sustainable digital landscape

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(December 5,2023) Today, the **Digital Infrastructure Insights Fund (D//F)**, a collaborative effort supported by **Ford Foundation, Alfred P. Sloan Foundation, Omidyar Network, Schmidt Futures, and Open Collective Foundation**, is pleased to announce the investment in 10 new international grants aimed at advancing sustainability and security in the foundational technologies underpinning the world's digital landscape.

These research grants, spanning four continents, are offering timely interventions and insights, delving into the incentives and constraints shaping the maintenance of digital networking technology, developer-facing tooling, and other open digital infrastructures. A substantial portion of the code powering global connectivity, influencing operating systems, and enabling application software today relies on a foundation of free and public code, from banks to hospitals to libraries. Like roads and bridges, this digital infrastructure requires maintenance, which is largely held by volunteers. Without a more just and sustainable means of maintaining digital infrastructure, inequities and injustice will follow, such as market consolidation of essential services.

Established in 2018, D//F serves as a platform for implementers, researchers, and public-private entities to catalyze the development of a robust ecosystem for infrastructural Free and Open Source Software (FOSS) at the foundation of the modern world. The unique funder collaborative focuses on nurturing the social foundations of the digital realm, furthering the understanding of its societal implications, as well as exploring intersections with critical large-scale systems such as data pipelines and the internet.

By fostering collaboration, experiments and sharing of knowledge, the partnership is committed to support the interests of those who create, use, and rely on critical open source projects throughout science and research, administrations or the economy.

The 10 new international research grants aim to tackle the inner workings of software maintenance and cybersecurity, empower maintainer communities, improve governance models, promote decentralization, navigate regulatory landscapes, and cultivate equity. The grantees will contribute to a comprehensive understanding and enhancement of open source and digital infrastructure(s) in the public interest.

D//F's new cohort of research projects include:

Strengthening City Governments - Enhancing Security, Governance, and Public Service Delivery through Open Source Promotion and Vulnerability Mitigation	Addressing vulnerabilities in city governments' open source software (OSS) is critical amid the increasing global cybersecurity threats. Recent incidents, like the ransomware attack on IFX Networks in Colombia and a cyberattack in Kenya, underscore the need for enhanced security measures. This research project aims to assess city governments' susceptibility to OSS vulnerabilities, offering insights into governance and enabling conditions. By identifying strategies and best practices, the study contributes essential knowledge to enhance cybersecurity, advocate for open source as a public good, and safeguard global digital infrastructures.	Santiago Uribe (Edgelands Institute) Beatriz Botero (SciencePo) Lys Sylvan (BKC Harvard University) Laura Garcia (UOttawa, Edgelands Institute)
OSS Transition Calculator- A Calculated Approach to Transitioning from Founder Models to Community-Governed Ecosystems	Housing calculators help people make momentous decisions about whether to buy or to rent. The aim of this project is to build a calculator and underlying model that helps open source contributors make decisions about whether (and how) to independently maintain, transition to community, or abandon an open source project.	Joshua Tan (Metagov / Oxford) Tara Merk (Metagov / CNRS) Seth Frey (Metagov / UC Davis)
Fediverse Governance Successes & Gaps - Analyzing Effective Governance and Infrastructure Gaps in Medium-to-Large Sized Servers for Enhanced Social Networking	The Fediverse's rapid expansion brings both opportunities and multifaceted risks. We'll identify current server administrators' most promising models for mitigating those risks and outline the biggest and most important gaps in risk mitigation, with the aim of helping the broader Fediverse level up governance quickly, safely, and collaboratively.	Darius Kazemi (Independent Researcher) Erin Kissane (Independent Researcher)
Building Thriving African Open Source Software Communities by Translating Collective Intelligence Methods	Pan-African open source software communities need new management techniques for overcoming challenges faced by digital infrastructure communities and the Global South. The research question empirically tests a new collective intelligence technique -- Interactive Management Research interventions -- in hopes of empowering these communities to thrive.	John Meluso (University of Vermont) Samson Goddy (Open Source Community Africa) Ruth Ikegah (Open Source Community Africa) Rob Razzante (Independent Researcher)
Understanding the shift away from free and Open Domain Name Servers Resolvers	More than 50% of Domain Name System (DNS) queries are answered by systems controlled by a few organisations. Understanding this trend of consolidation and its implications are of utmost importance to the privacy, security, and resilience of the global Internet.	Farzaneh Badiei (Digital Medusa) Jonathan Brewer(telco2)
(What Comes) After FOSS?	Free and Open Source Software (FOSS) has been victorious, but the movement from which it stems appears to be a shambles. Many FOSS infrastructure contributors and maintainers are disillusioned, while critical technologists are also finding new ways to bring their work with digital technology into alignment with the political aim of defending the public interest. Understanding how they do so is important if we want to understand how digital infrastructure in the public interest can be made, maintained, and defended in the future.	John D. Boy, and members of the d12n Research Cluster (Leiden University)
Cutting through open washing: To what extent should open source AI systems be exempt from regulation?	Open source AI has the potential to make the digital economy less concentrated, safer and more transparent compared to its proprietary alternatives. Nevertheless, regulators have not yet found the right balance between unlocking its full potential and mitigating the societal risks related to its development and use.	Nicolas Botton (AWO) Mathias Vermeulen (AWO) Eleftherios Chelioudakis (AWO)

Infrastructure in Recession: Economic impacts of tech layoffs on FOSS communities	Recent decades have seen open source software increasingly dependent on private investment, but current economic instability in the Western tech sector may threaten vital digital infrastructures. This research aims to analyze the economic and community impact of these trends to understand the potential risks to our digital infrastructure.	Mike Nolan (Rochester Institute of Technology)
Beyond Openness, Toward the Common? The role of open technologies in environmental research	Governments, international agencies, and funding organizations have renewed hope for the positive effects that "openness" may continue to have in science and technology, unlocking large-scale collaboration with increased efficacy in the application and reuse of public resources. "Openness," however, is often perceived negatively by communities that have been historically excluded from these projects. By asking what role open technologies play in environmental research infrastructures, the project investigates the disconnect with respect to the effectiveness and the limits of openness.	Luis Felipe Rosado Murillo, (University of Notre Dame) Shannon Dosemagen (Open Environmental Data Project) Katie Hoeberling (Open Environmental Data Project)
Unmaintained dependencies: How to design tools that encourage and support their replacement without overwhelming maintainers?	The reliance on FOSS raises concerns about the sustainability and security of its digital infrastructure, often maintained by volunteers. FOSS abandonment poses a risk as maintainers may disengage for various reasons. Current sustainability efforts focus on keeping projects alive, but attention is needed on effective sunsetting strategies. Research shows that abandoned FOSS projects are common, and users often switch to better-maintained alternatives. A proactive approach is proposed, offering warnings for unmaintained dependencies and suggesting alternatives. Existing tools are emerging, but the challenge lies in making them useful without overwhelming users with notifications. Further usability research is needed to understand how developers prioritize updates and design tools that require minimal manual configuration.	Bogdan Vasilescu (Carnegie Mellon U) Christian Kästner (Carnegie Mellon U)

In an era marked by an escalating demand for FOSS software components that can be deployed for innovation and scaling, the consequences of neglecting the foundational layers of the open technology stack become increasingly evident. Events like Log4j, a major security bug tied to an insecure open source project, highlight this vulnerability.

Free and open public code is at the center of our digital world. Addressing programming challenges first, it also provides essential functions for society by i.e. reducing the cost of establishing new businesses, supporting data-driven discovery across research disciplines, and granting access to crucial technical innovations like encryption that would otherwise be expensive. Yet, these components are often overlooked and undersupplied.

United by a shared conviction that safeguarding sustainable, open digital infrastructure is a matter of public interest, the D//F partnership has grown over time: To date, the group of funders has awarded over $3 million in support of 26 (soon 36) projects within the domain. The grant program operates through two iterations of open calls for proposals (RFPs), along with commissioned research. The next open RFP will launch in Q1 2024.

For more information about the Digital Infrastructure Insights Fund and its initiatives, please visit https://infrastructureinsights.fund.

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