



Open Digital Resources for Local Value Creation

Whitepaper

The [Network of Open Resource Initiatives \(NORI\)](#) promotes open access to key digital resources as a foundation of a fair and equal global society. NORI aims to empower local communities by distributing innovation capacities. It was developed with the support of the [GIZ Innovation Fund](#) by Daniel Brummund, Lea Gimpel, Jan Krewer and Arlett Stojanovic.

This white paper aims to demonstrate that the support of open digital resources can become a concrete alternative to traditional support for innovation and technology transfer, by offering a way out of the structural centralization of power and resources that continue to reign supreme, in particular in the tech industry. It presents the theoretical assumptions behind the methodological approach developed within NORI.

Development cannot be hacked - tech entrepreneurs alone will not save our world

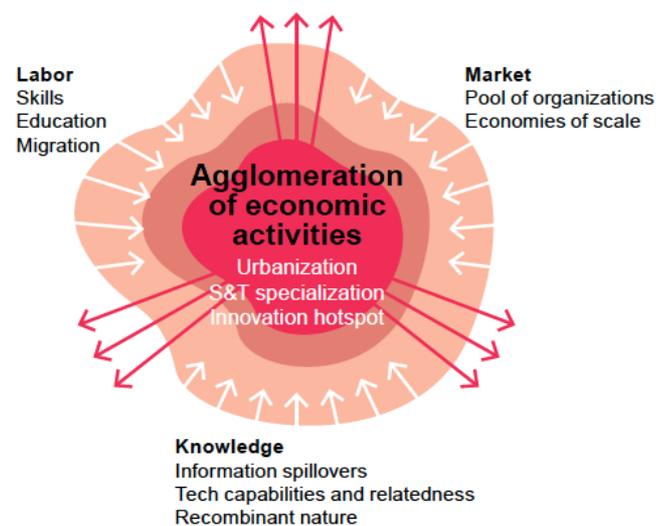
Unequal access to capital and technology represents one of the major challenges for development policies across the globe. The creation of large national industries requires important initial public investments and access to both scientific knowledge and technical know-how. Even if run predominantly with private finance since the 1970s, the Silicon Valley for instance benefited from the aftermath of the 1950s Sputnik crisis, as the US Defence Department decided to largely invest in new technologies in the context of a fierce competition with the Soviet Union. In this early era, Government funding accounted for roughly three-quarters of the total computer field.¹ These investments were largely put into research and development led by frontrunning universities such as Stanford and Berkeley, which are still today attracting the best engineers and computer scientists of the world (almost a third of Silicon Valley engineers are immigrants).

The capacities of states or regions to replicate this model¹ are very limited. Only a few states can make enough funds available for subsidies, tax credits or public investments for R&D to become new competitors in the global economy. Patent applications worldwide are thus highly concentrated in a few regions, both internationally and within countries. **In Germany for instance, 3 out of 16 states concentrate two-thirds of the patents and half the scientific publication.** If networks of innovation have become globalized, innovation is highly concentrated within a few “innovation hotspots”, mostly located in already industrialized economies.² From this perspective, it seems like concentrations of wealth and knowledge can only be eternally perpetuated.

The spread of digital technologies however was announced to break this dynamic. The theory of **leapfrogging, meaning “quick jumps in economic development by harnessing technological innovation”**³ has led to great enthusiasm - way beyond international organizations or national policy makers. In 2013, *The Guardian* wrote an article asking if the next Google couldn’t come from Africa, considering that “tech start-ups are using the challenges and opportunities as a springboard and achieving way beyond expectation”.⁴ Such headlines are largely influenced by the stories of young genius entrepreneurs working in their garage to develop new revolutionary products, which have largely overshadowed the vision of laboratories or departments based in large companies, specially dedicated to innovation, requiring heavy investments. This shift is deeply rooted and forged by the socio-cultural context of the 1960s and 1970s, characterized by a strong belief in the **emancipatory potential of the new information technologies, which would naturally lead to a more horizontal distribution of power.**⁵

People, companies and ideas cluster together

Figure 1.1 Main economic forces driving geographical concentration of innovation



While digital technologies have indeed favoured large access to information and services, reduced transaction and production costs, **structural centralization of power and resources continue to reign supreme, in particular in the tech industry.** This situation has been progressively acknowledged by most regulators around the world, from Europe, to the US and

¹ The paradigms of the innovation-based economy have largely been adopted by national and international public agencies in their strategies to support economic development. Most industrial policies try to follow the Silicon Valley recipe of building innovation ecosystems based on the availability of human capital (university campus), specialized investors (venture capitalist), and ambitious entrepreneurs ready to turn ideas into fast growing businesses (start-ups).

² World Intellectual Property Report 2019 - The Geography of Innovation: Local Hotspots, Global Networks. WIPO, 2019, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_944_2019.pdf.

³ “African economy: the limits of leapfrogging”, Financial Times, 2018, <https://www.ft.com/content/052b0a34-9b1b-11e8-9702-5946bae86e6d>

⁴ “Could the next Google Come from Africa?”, The Guardian, 2013, <http://www.theguardian.com/world/2013/nov/07/ghana-accra-technology-startup-robot>.

⁵ From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism. Fred Turner, University of Chicago Press, 2008.

China.⁶ It can be partially explained by factors specific to information and communication technologies: lock-in of users within a product environment or an ecosystem of services, as well as network effects have led to “winner-takes-it-all” situations. By creating “developer platforms”, successful tech companies manage to remain at the centre of a user’s ecosystems while externalizing the generation of innovative services: small companies develop the games available on Facebook for instance. But more importantly, the most famous digital platforms have been able to reach dominant positions through the huge amounts of capital available to aggressively conquer markets - companies like Amazon or Uber could afford not being profitable for several years.

As a result, entrepreneurs around the globe have become very dependent on key resources held by big private corporations. Apple and Google for instance impose a 30 % transaction fee for all purchases in their mobile applications stores (both for apps and in-app purchases). Considering their market position, this applies to almost every smartphone user in the world. This creates (1) a huge bottleneck for innovation and (2) a mechanism of value capture for innovations happening outside of traditional innovation hotspots. It leads to a non-competitive environment that is particularly detrimental to nascent digital industries and generates economic rents for a happy few only. A recent example of this power has been demonstrated by Apple’s decision to remove the game *Fortnite* from its Store, after the developer tried to implement its own in-app payment system, bypassing the App Store’s transaction fee.⁷

Because capital and intellectual property rights are very unequally distributed, entrepreneurs alone will not be able to “hack” the structural inequalities of the global economy. Yet it is hard to find any country or region in the world that has not embraced the dream of creating its own Silicon Valley. But in situations unlike the one of the San Francisco Bay of the 1950s and 1960s, capital - when available - will mostly come from foreign investors.⁸ This will only reproduce the existing concentration of profits and intellectual property rights. The start-up Jumia, often referred to as the “African Amazon”, for instance was “incorporated in Germany, has its headquarters in Dubai with its central tech team based in Portugal, and as its Initial Public Offering (IPO) filing shows, will be listed in New York. (...) “A growing number of mainstays in Africa’s tech ecosystems fit this bill. Zola Electric, the solar power company with operations in five African countries is headquartered in the Netherlands with a technical lab in San Francisco. Andela, the software developer training and outsourcing company with campuses in four African countries, is incorporated and headquartered in New York”.⁹ Even more alarming is that because of the shortage of funding available in the public sector, services usually provided by the State are increasingly digitized and outsourced - creating new global dependencies and fragilizing digital sovereignty. A recent example of this has been the complex development of tracing apps to fight the COVID-19 pandemic: governments around the globe had no choice but using Google and Apple building blocks and accepting the companies’ conditions on how to do so.¹⁰

⁶ Géants du numérique: la fin du laisser-faire, Mediapart, 2021, <https://www.mediapart.fr/journal/economie/030121/geants-du-numerique-la-fin-du-laisser-faire>.

⁷ Apple Just Kicked Fortnite off the App Store, The Verge, 2020, <https://www.theverge.com/2020/8/13/21366438/apple-fortnite-ios-app-store-violations-epic-payments>.

⁸ Are tech companies Africa’s new colonialists? Financial Times, 2019, <https://www.ft.com/content/4625d9b8-9c16-11e9-b8ce-8b459ed04726>.

⁹ What Makes Africa’s Largest e-Commerce Platform African?, Quartz Africa, 2019, <https://qz.com/africa/1572318/what-makes-jumia-an-african-startup/>.

¹⁰ How Google and Apple Outflanked Governments in the Race to Build Coronavirus Apps, POLITICO, 2020, <https://www.politico.eu/article/google-apple-coronavirus-app-privacy-uk-france-germany/>.

Open digital resources represent a concrete alternative to traditional transfers of technology

Digitalization dynamics do have a massive impact on all Sustainable Development Goals (SDGs) and on the 2030 Agenda,¹¹ but aiming to reduce inequalities and achieve a fair and sustainable future for all requires thinking beyond the enabling potential of digital technologies. **For too long, we have been focusing solely on the implementation of the SDGs by making use of digital means and have neglected the need to shape the digital transformation as a whole.** This requires acknowledging economic and political power shifts in the wake of this transformation and developing the means to give everyone the opportunity to share in the potential of the digital age.

Taking such an objective seriously would require us to think way beyond the support to “build the next Google”, and to invent forms of technical and financial cooperation that will allow genuine transfers of technology, with a real impact on global wealth and power distribution. Most international technology transfers are indeed specifically designed to maintain and perpetuate the international division of labour. Even when production is transferred to locations outside of economic centres, intellectual property rights will mostly remain in the same hands. Only a few countries like China managed to hold enough negotiation power to break this trend. Algeria for instance, a country that tried to impose similar restrictions on foreign direct investments, making joint ventures with local companies mandatory under the 51/49 rule (with 51 percent of new investments being owned by Algerians) had to abandon its measure under the pressure of foreign investors.¹²

Alternatives do exist, however. The digital revolution has given many examples of highly centralized international companies, using intellectual property rights to generate an economic rent - but it also allowed non-proprietary models to reach unprecedented scales. **The fact that most of the software powering the servers used to host data and cloud services today is free¹³ shows that it is possible to build transnational mutualized infrastructures based on large collaborative efforts.** The best-known example remains Wikipedia, the world’s largest encyclopaedia, developed by people from around the world, at a rate of 1.8 edits per second.

The economic impact of free software, open databases or open educational resources is difficult to track and measure. How could it indeed be possible to demonstrate the impact of a freely accessible article on Wikipedia? How could you measure who reads it and what kind of opportunities it can lead to for each reader? Even though it is almost impossible to clearly estimate the value of an open resource such as Wikipedia, some researchers have found that if it was a private company, it would generate 500 million dollars a year in revenue. Because of all the articles it owns, it would be worth tens of billions of dollars. It was also calculated that **the consumer benefit produced by Wikipedia is worth hundreds of billions of dollars.** Researchers from the Intellectual Property Office estimated that SMEs from the creative industry alone make 232 million dollars of savings every year thanks to the openly accessible pictures on Wikimedia.¹⁴

¹¹ Towards Our Common Digital Future, German Advisory Council on Global Change (WBGU), 2019.

¹² Algeria to End 51/49 Rule: Doors Open to Foreign Investment?, *The Africa Report.Com*, 2020, <https://www.theafricareport.com/29214/algeria-to-end-51-49-rule-doors-open-to-foreign-investment/>.

¹³ Free refers to the freedom to run the software, to study and change the software, and to redistribute copies with or without changes.

¹⁴ Copyright and the Value of the Public Domain An empirical assessment. Intellectual Property Office, 2015.

The economic power of vast open enterprises such as Wikipedia however does not explain itself only through their existence as a resource, but through the mode of production they rely on. American researcher Yochai Benkler has largely participated in our understanding of this process, which he called “commons-based peer production”. He considers this mode of production as an alternative to production through the market (with price signals) and organizations (with hierarchy). Commons-based peer production is done through self-organized communities and voluntary contributions. The thesis Yochai Benkler defended in his 2002 article called “Coase’s Penguin, or, Linux and The Nature of the Firm”, is that in today’s world, where human capital becomes the most important asset in production, this mode of production has a relative advantage. Why is that so? Let’s imagine you are a company and want to produce the perfect software. You will have to hire a lot of people, and you will have to be sure that they are exactly the people with right skills and ideas. If, however you produce this software with the support of an open community, you’ll probably have many more people involved. The chance that among them there is someone with the right impact at the right time is much higher than if you would have to pre-identify them.¹⁵

In the long run, **open digital resources can become a catalyst for sustainable development, as they lay the ground for a more equal distribution of innovation capacities.** They can promote a level-playing field by enabling all people access to information, services and the means for local value creation instead of concentrating economic power in a few private hands. This could affect international divisions of labour and distribution of global value-chains, liberating producers from their dependency to intellectual property owners - in particular from royalties or fees that apply to local production. The “Open-Source Seed Initiative” for instance aims to provide an alternative to patent-protected seeds. It is an attempt to give producers control over the food supply.¹⁶

Open digital resources represent tangible cooperation projects between citizens from various countries and origins. As such, they have managed something that traditional international cooperation has promised but is still struggling to deliver – partnerships of equals, truly empowering for all parties engaged. In fact, they do not rely on vertical knowledge transfer, but rather on mutual learning based on co-creation.¹⁷

This white paper is part of a series that will explore approaches to mobilize the power of open digital resources to support local value creation and achieve Sustainable Development Goals (SDGs). Building on concrete use-cases, future articles will present the methodological approach chosen by NORI. They will show that open resources can enable capacity development - but that resources alone are not enough, that building communities is possible and that it lays the ground for local value creation, and finally that shared infrastructures can help modernize public services while preserving sovereignty.

Learn more at <http://n-ori.org/>

¹⁵ Coase's Penguin, or Linux and "The Nature of the Firm", Yochai Benkler, The Yale Law Journal, 2002.

¹⁶ Fighting the Seed Monopoly: “We Want to Make Free Seed a Sort of Meme”, The Guardian, 2014, <http://www.theguardian.com/sustainable-business/seed-monopoly-free-seeds-farm-monsanto-dupont>.

¹⁷ Master Thesis: Peer-to-Peer Networks for Knowledge Sharing in International Development Cooperation, Jan Krewer, 2014.

