

GLOBAL INFORMATION SOCIETY WATCH **2018**

Community Networks



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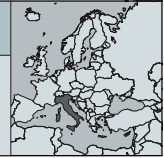
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ITALY

BUILDING COMMUNITY NETWORKS IN ITALY: HACKER-LED EXPERIMENTS TO BRIDGE THE DIGITAL DIVIDE



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Introduction

This report describes community networks on the Italian scene, with particular attention to ninux.org, which has the largest coverage in the country and the longest history. Ninux started as a “geek experiment”, and maintained this approach throughout its evolution.

This gave it a specific ethical and ideological purpose, and allowed it to actively contribute to the spirit and development of the European community network movement. Its approach, although not focused on internet access, was successful, especially in urban areas, in a period in which wireless technologies were expanding, and the Italian hacker scene was very active. Today, however, we are seeing a decrease in interest and energy compared to other European initiatives.

The report describes ninux.org’s trajectory, while also considering other internet-based initiatives in Italy that are expanding their user base. It describes two possible futures for ninux, which may be emblematic of the hard decisions that many involved in the early community network movement worldwide might face.

Policy, economic and political background

Three features of Italy are worth describing to introduce the context:

- Italy is one of the European countries with the largest digital divide (in 2017 only 69.5% of Italian families had access to the internet through fixed broadband, according to the Italian National Statistical Institute).¹ This is probably due to the fact that the Italian population is scattered over a large area: 55% of its people live in cities and towns with fewer than 50,000 inhabitants, and about 18% in towns with fewer than 5,000.² The country also has an extreme-

ly variegated geography, made up of flatlands and many mountainous and hilly zones. While this diversity is culturally astonishing, it is a nightmare from the point of view of developing infrastructures.

- Italy is one of the countries in the European Union that was hit most severely by the economic crisis in the last decade. According to the National Statistical Institute, in 2006 the number of people living in absolute poverty was about 1.9 million, while by 2016 this had grown to 4.7 million.
- The Italian population is ageing, and declining in number. Italy has one of the highest rates of people (especially young people) emigrating to foreign countries and one of the lowest number of people with a university degree.

These statistics are important because ninux.org emerged in the early 2000s as a community where hackers (primarily young and educated males) engaged in the creation of an alternative internet, with internal rules derived from their own ethical and political vision. Today this approach faces the challenges of a society that is more unequal, precarious, uncertain, and less educated, especially when it comes to young people. Can an advanced, progressive hacker experiment thrive in a declining society?

The history of ninux.org

Ninux.org was started in Rome in the early 2000s and was the initiative of a computer science engineering student, Nino Ciurleo. Nino had grown technically in the ham radio community as well as the Italian hacker scene and was influenced by the punk do-it-yourself attitude. One day he read about the Seattle Wireless community network in a magazine, liked the idea, and decided to use his personal web page – ninux.org (a pun on “Nino” and “Linux”) – which was hosted on a server in his room, to search for other enthusiasts to help him build a wireless community network in Rome. To help spread the word, stickers were printed and placed around the city. After a couple of years, the ninux network was bootstrapped, and the core of the network, composed of three nodes, was up and running. Many people with different (but still technical) backgrounds were then joining the ninux mailing

¹ <https://www.istat.it/it/archivio/207825>

² From the document *Strategia italiana per la banda larga*, available at www.sviluppoeconomico.gov.it/images/stories/documenti/ITALIA_Strategia_BUL-Piano_di_investimenti_fin.pdf



The sticker promoting the early ninux community network.

list and meetings. The motivations for joining the community ranged from socio-political reasons, to helping to bridge the digital divide, a desire to learn by doing, down to pure curiosity.

In spring 2006, a handful of ninux members participated in the Wireless Community Weekend in Berlin, getting a grasp of the philosophy of the Freifunk community network³ and acquiring skills in mesh networking and open source firmware operation and development. Back in Rome, these skills were developed by the core members of the community and put into practice. However, some obstacles were in the way: the hilly topography of Rome and the unclear legal framework for outdoor wireless networks.

In 2009 the ninux community organised the first “Ninux Day”, a two-day event to which several community network members were invited: community network members from Freifunk, guifi.net and Athens Wireless Metropolitan Network (AWMN), developers from the OpenWrt community,⁴ and other enthusiasts from all over Europe gathered in Rome to hack together and give and attend talks. The most interesting outcomes from the ninux perspective were the enthusiastic response from other European community networks and the understanding that Europe has a common legal framework, which potentially allowed ninux to circumvent what appeared to be the legal limitations for outdoor wireless in Italy.

Just some weeks before Ninux Day 2009, some ninux members attended the Wireless Battle Mesh v2 in Brussels,⁵ an event to build a wireless mesh network and test the performance of different wireless mesh network routing protocols. This led to ninux organising the Wireless Battle Mesh v3 at a campsite

next to a lake near Rome in 2010, replicating the success of the Ninux Day event and also involving a range of different people with different skills.

Since then, many things have changed. Ninux is now a community with about 350 nodes scattered around Italy. It is an integral part of the European community network movement: it hosts services, it has participated in European research projects, it has its own “autonomous system”, and it is well known among Italian hackers and geeks.

A community of hackers

One of the key characteristics of ninux is its hacker nature. In the period 2013-2015 (when Italian legal limitations were no longer in place⁶ and Snowden’s revelations were under the spotlight), ninux almost doubled the number of its nodes and hit the news in many mainstream newspapers and websites. Mesh networks were depicted as a remedy not only for the digital divide, but also for surveillance. Besides a certain degree of journalistic hype, the truth was that around 2010, both the technical and ethical propositions of community networks were extremely advanced. The idea that a mesh network, being technically distributed, could enable the creation of a communication platform with a governance structure inspired innovation and advancements in many directions. Today, the academic community recognises the value of that “avant-garde” period, and community networks have been invited by national and international institutions to document their activities over that time.

3 The Freifunk community is one of the first of its kind in Europe. They meet every year in a get-together called the Wireless Community Weekend. In 2018 it merged with Wireless Battle Mesh, the most relevant European meeting of community networks. See <https://wireless-meshup.org/doku.php>

4 <https://freifunk.net>, <https://guifi.net>, www.awmn.net and <https://openwrt.org>

5 All the Battle Mesh events are documented at: <https://www.battlemesh.org>

6 Until 2011 the anti-terrorism “Pisanu” Law, named after the former minister of the interior in Silvio Berlusconi’s government, introduced a technical and legal burden on anybody wanting to offer Wi-Fi access to the public in terms of authentication and data retention. The law introduced a legal responsibility for storing privacy-sensitive data. Up until 2012 the “Gasparri” Law, named for the telecommunications minister in the same government, required permission to be granted to operate wireless networks in public places, even using unlicensed frequencies. Today, the Italian system is less severe on Wi-Fi networks, even if issues remain with regards to authentication and data retention. See: <https://netcommons.eu/?q=content/community-wireless-networks-intermediary-liability-and-mcfadden-cjeu-case>

It is fundamental to understand that without both the technical and social passion of the community network activists, this would not be possible. Hackers made it possible to develop and share the tools that once were only available to them. Today these have been made available to communities with very few technical skills. If a rural community with few technical skills can now use LibreMesh⁷ to set up a network, it is thanks to the community network hackers who have worked hard over the last two decades for this to be possible.

Today, the expansion of community networks is remarkable; some of them have reached tens of thousands of nodes, and many new communities have emerged especially in the global South. But what happens when the community network movement starts to lose its appeal to hackers? In the case of ninux, the technical nature of the community has always been a strong driving force. When the community's interest in the emerging technical issues decreased, fewer and fewer people participated in the community.

It may be that the context had a large impact on this evolution. For instance, in the last couple of years, at least five key people, and among the most technically skilled that had participated in the community, simply left Italy as a consequence of the social situation described above. A society that is more unequal and in which it is hard to find economic stability produces isolation and disincentivises participation, and ninux is probably also part of a general decline of Italian community organisations. On the other hand, it is also true what one "ninuxer" said in a meeting in 2017: "Wireless is not cool anymore."

While 10-15 years ago wireless technology was on the rise and attracted the attention of hackers, today, wireless is taken for granted; it is a "commodity", and young hackers are more attracted by other fields (like blockchain, the internet of things, etc.). Similarly, networking, open source and Linux hacking were original and new in the early 2000s, while today students studying information and communications technology (ICT) in universities often acquire those skills while studying. Some people joined ninux as a personal investment in themselves, which later on turned out to be a career in ICTs. It may then be that the specific combination of technical novelty and the status of a "liberation technology" enjoyed by wireless in the early 2000s that made community networks (and ninux) flourish may not be present anymore. It is reasonable to think that ninux, while still being a vivid community

(especially on some of the smaller Italian islands), needs to change its principles in order to continue to exist in the years to come.

A parenthesis: Other community networks in Italy

There are several initiatives that may fit the description of a "community network" on the Italian peninsula. Projects like Progetto Neco (Neco Project),⁸ GalliaNetwork,⁹ Reti Senza Frontiere (literally "Networks Without Borders")¹⁰ and Senza Fili Senza Confini (SFSC, or, literally, "No Wires, No Limits")¹¹ are small to medium initiatives that may be called "community ISPs". Progetto Neco (Neco stands for "network community") is based in Vietri di Potenza, a town with less than 3,000 residents in the south of Italy. The project was started in 2008 by a group of local hackers with the aim of bridging the digital divide and today has 36 nodes serving roughly 230 families. An association was created, and associates pay a monthly fee to access the network services and the internet. GalliaNetwork is another community ISP, located in the town of Canezza in the north of Italy. Similarly to Neco, it was created in 2011 by a group of residents who had no internet access, before expanding into a network serving several surrounding towns. A group of five to six enthusiasts run the network and offer several services, such as website hosting, a local cloud and internet access. Reti Senza Frontiere is a small association born in 2015 in the countryside outside Rome. It connects a few families to the internet in another digitally divided area.

SFSC stands out from the others for its evolution and the media coverage it has received worldwide. It is another association whose primary purpose is to fight the digital divide in an area north of the city of Turin called Verrua Savoia. From there, it expanded to several small villages isolated from the main city by the mountains. SFSC started as a research experiment led by the Polytechnic University of Turin, one of the most important technical universities in Italy, which had already used a customised wireless device to connect an isolated town. After that first experimental phase, the initiative turned into an organisation, and now serves (according to its president and founder Daniele Trincherio) about 5,000 families in the region for a fraction of the market cost of commercial ADSL service.

The organisation is rooted in the territory and organises courses, skills sharing, and digital literacy

8 www.progettoneco.org

9 www.gallianetwork.it

10 retisenzafrentiere.org

11 [https://www.senzafilisenzaconfini.org](http://www.senzafilisenzaconfini.org)

7 <https://libremesh.org>

activities. In 2014 it was featured in *The New York Times*, and later on in Italian newspapers, which gave high visibility to the project. Compared to the other local initiatives, SFSC had the advantage of being born from one of the most important and organised universities in Italy. This offered the necessary technical skills together with network competence and contacts that made it easier to solve the initial challenges to bootstrap the network.

All these experiences tell us that the model of a community network is welcomed in rural areas, in which there is a need for low-cost access to the internet. With their own differences, these networks are growing, or have reached a state in which they could grow more, but are limited by the lack of human resources to make the network scale.

Ninux always tried not to be perceived as an ISP, but as an experimental, hacker network. The reason for this is that ninux was born in an urban area and many people contacted the community hoping to replace their ISP with ninux for free. This utilitarian attitude was discouraged by the community, which clearly stated that while ninux has several gateways to the internet, it was not there just to replace commercial ISPs. Rather, it was a philosophy, a movement that was political, practical and experimental.

Today ninux has expanded into rural areas with poor connectivity. On some islands, its primary purpose is actually utilitarian: to overcome the digital divide. But the original spirit still persists.

Conclusions

The intrinsic innovative value of community networks is their mix of technical and social innovation. Technology (low-cost wireless solutions and open source software to run networks) enabled a new social behaviour, which challenged the status quo in service provision and the monopolies enjoyed by the telecommunications industry. This is true in areas where there was simply no internet access, and community networks showed how this was possible, but also in areas where the big telcos – whose ethical fingerprint is questionable – have a market share. We cannot untangle the technical and the social advances, as the second is enabled by the first, and feeds back into it. Without hackers, there would be no ninux, no Freifunk, no guifi.net, no LibreMesh (just to name a few) and in general, no community networks. If the whole community network movement turns into a “connectivity factory”, its original and innovative push will be strongly reduced.

The question that is still open today is how to couple the technical innovation of community networks

with the social impact that social enterprises are achieving in other fields (e.g. food cooperatives, to name just one movement that is very active in Italy). A hacker network is, by definition, a moving target, an experimental infrastructure that could be subject to tests, changes and failures. A community ISP, instead, tries to offer a service comparable to the service that a commercial ISP offers. When the ninux community faced the chance of moving to an “in production” network it reacted without much interest. Many people in the community were there to experiment, not to run an ISP. And in fact, running an ISP is a tough job; and most of all, it is a job.

Action steps

The ninux community does not have well-defined decision-making bodies or procedures, and its participants come from heterogeneous backgrounds. Until now, ninux has not had the willingness to try to become a community ISP, even if successful models point in this direction. There are two scenarios we can imagine and we describe them below, with some possible next steps.

In one scenario, the ninux community has no interest in transforming into a community ISP; ninux is then seen as a lab for experimenting with new technologies and ideas, having as outputs innovative distributed infrastructures based on open source software and hardware, and serving as inspiration for new community ISP models. The socio-political motivation is then derived from the mix of these outputs and the open attitude of the ninux community. Ninux would have to update the themes it explores to meet the potential of new technologies that need to be hacked (e.g. the internet of things?), but it may shift away from the goal of being a community network.

In another scenario, ninux takes steps towards becoming an ethical community ISP. The community is increasingly composed of non-technical people whose motivations for participating are derived elsewhere. In this scenario, the ninux goals would shift towards solving the problems reported by the users and the broader local communities. This process requires “technological mediation” skills and the willingness to put aside those practices and attitudes (e.g. techno-elitism) which usually ward other people off from the hackers’ domain.

What is not clear is if the scenarios described above are mutually exclusive, or can co-exist to some extent. What we hope is that this discussion takes place in the ninux community, and that the community evolves maintaining its spirit based on socially inspired innovation.

Community Networks

THE 43 COUNTRY REPORTS included in this year's Global Information Society Watch (GISWatch) capture the different experiences and approaches in setting up community networks across the globe. They show that key ideas, such as participatory governance systems, community ownership and skills transfer, as well as the "do-it-yourself" spirit that drives community networks in many different contexts, are characteristics that lend them a shared purpose and approach.

The country reports are framed by eight thematic reports that deal with critical issues such as the regulatory framework necessary to support community networks, sustainability, local content, feminist infrastructure and community networks, and the importance of being aware of "community stories" and the power structures embedded in those stories.

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