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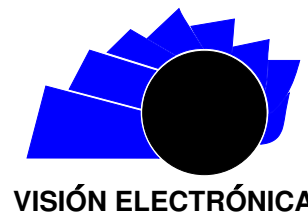
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A CASE-STUDY VISION

Digital networks community experiences: case Buenos Aires libre

Experiencias en redes digitales comunitarias: caso Buenos Aires libre

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INFORMACIÓN DEL ARTÍCULO

ABSTRACT

Community Digital Networks (CDN) are understood as those networks type LAN that allow free wireless (using wireless technology defined by the family of standards for wireless IEEE 802.11) to different types of resources and services (available online or in a local network) those are characterized by being designed and implemented by groups or non-profit organizations, and effectively contribute to improving the quality of life of the communities where they work -whose digital divide, in general, it is meaningful-. This article reviews some experiences of CDN in Europe, Asia and South America, in the period 2008-2016; as a case study and it is specified in the Buenos Aires Libre network, established in the province of Buenos Aires (Argentina). The research has a prospective profile and set out the shortest way to overcome the technological marginalization that afflicts vulnerable communities in Latin America, with Colombia in the head, through free access to the information by electronic media.

RESUMEN

Las Redes Digitales Comunitarias (RDC) se entienden como aquellas redes tipo LAN que permiten el libre acceso inalámbrico (utilizando tecnología Wifi definida por la familia de estándares para inalámbricas 802.11 del IEEE) a diferentes tipos de recursos y servicios (disponibles en internet o en una red local) caracterizadas por ser diseñadas e implementadas por grupos u organizaciones sin ánimo de lucro, y que contribuyen efectivamente al mejoramiento de la calidad de vida de las comunidades donde funcionan -cuya brecha digital, en general, es significativa-. El presente artículo revisa algunas experiencias de RDC en Europa, Asia y Suramérica, en el período 2008-2016; y como caso de estudio se puntualiza en la red Buenos Aires Libre, constituida en la provincia de Buenos Aires (Argentina). La investigación tiene un perfil prospectivo y plantea una vía expedita para superar la marginalidad tecnológica que aqueja comunidades vulnerables latinoamericanas, con Colombia a la cabeza, a través del acceso abierto, libre y gratuito a la información por medios electrónicos.

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1.   Introduction

The networks have become a key element of the so-called Information Society. In this context, it is defined as network to all system interconnected of elements or people; and as a result of the interconnection the skills of those elements and people are enhanced, then to conceive society from the network structure that has become in a new way of thinking about cultural reality. This is how networks and their expansion in all spheres of contemporary society, have proven derive ways of effective organizations that enable flexibility while resistance to changes.

In the above sense, the installation of a computer network (or network information) has as purpose to meet the needs of computer communication of the constituent bodies of the social fabric making the most of technological resources. Aforesaid usage can reduce operating costs (telephone calls, mail, transfer, messaging, etc.). Likewise, the amount of necessary peripherals is also reduced in a network that a variety of computers shares [1]. Therefore, there are several ways that digital networks can be classified, for example by offering services (landline telephone and cell phone, television, information exchange); for its role in the network architecture (access networks, transport networks); as well as the population of users who use it (public networks, private, corporate, household); its logical topology (ring, linear bus, star, mesh); or geographical coverage: PAN[4], LAN[5], CAN[6], MAN[7], WAN[8], GAN[9] [2].

From another social perspective, a free network is a group of individuals, groups, organizations, governments or companies interested in establishing open, free and neutral relations in the presence of technology. That is, a network in which everything is called to participate and to interconnect, where fundamental values are defended such as universal access to information technology, freedom, equality of opportunity, solidarity and fraternity. It is open, because it is offered universally to the participation of all without any kind of exclusion or discrimination, and because it also reports all the time about how the network works and its components, which allows anyone to get it better. Additionally, it is free because everybody can do whatever they want and

to enjoy these freedoms responsibly. All this regardless of their level of participation in the network without imposing terms and conditions that contradict this agreement unilaterally. It is neutral because the network is independent on contents, it does not determine them, so this way, it can circulate freely; users can access and produce contents regardless of their financial possibilities or social conditions, [3].

However, it is clear the existing inequality in access and infrastructure of information and communication technologies between the developed countries and developing countries are considered. For example, the data presented in the report "Global Information Society: a statistical look" UN-published in April 2008 showed that in the LAC[10] countries that for every 100 inhabitants there are 5 subscribers / as fixed connections internet, of which only 3 are connections with a bandwidth greater than 256 kbps band [4]. Consequently, the set of interconnected devices physically-either via wired or via cordless- that share resources and communicate with each other through rules and communication protocols. In these conditions generated community networks, interconnected vulnerable sectors where technology and costs were inaccessible.

That is, these CDN might use wireless technologies (Wi-Fi or Wireless) in 2.4 or 5 GHz frequencies, as these bands do not require licenses for their use, thus they were freely available.

Now, the interconnection between two or more points, nodes or stations, by electromagnetic waves that travel through space carrying information, evolved to reflect amendments to the standards for wireless technologies, which have been used: 802.11a, 802.11b, 802.11g, 802.11e and 802.11n (See Table 1 and Table 2), which has not yet been finally approved but which are already commercial versions, [4–6].

For these reasons, this paper comprehensively describes the experiences of CDN located in the 2008-2016 period, choosing some open and free networks implemented in Europe, Asia, and South America like Buenos Aires; in such a way to provide the reader the current and future outlook, and technological and social viability of such developments are apparent.

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[4]PAN: Personal Area Network
[5]LAN: Local Area Network.
[6]CAN: Campus Area Network.
[7]MAN: Metropolitan Area Network.
[8]WAN: Wireless Area Network.
[9]GAN: Global Area Network.
[10]LAC: Latin America and the Caribbean.

Table 1: Technique characteristic of the standard family 802.11 [6]

	802.11b	802.11g	802.11a	802.11n Preliminary version 2.0
Maximum transfer rate	11Mbps	54Mbps	54Mbps	300Mbps
Operating frequency band	2.4GHz	2.4GHz	5GHz	2.4GHz y 5GHz
Nonoverlapping channels	3	3	23	23
Sources of interference	Bluetooth, baby monitors, microwave ovens, video transmitters	Bluetooth, baby monitors, microwave ovens, video transmitters	cordless phones, video transmitters	The same as 802.11b/g 2.4GHz. The same as 802.11a 5GHz.
Standard approved	yes	yes	yes	

Table 2: Comparison of Wi-Fi standards [6].

Wireless standards	802.11b	802.11a	802.11g
IIEEE approved	July 1999	July 1999	July 1999
Popularity	Widely adopted	New technology, low growth	New technology, fast growth
Cost	Low	Relatively high	Relatively low
Frecuence	2.4-2.4835 GHz	5.15-5.35 GHz 5.245-5.675GHz 5.725-5.875 GHz	2.4-2.4835 GHz
Coverage	Good coverage 300-400 meters with good connectivity with certain obstacles	Low coverage 150 meters, with poor connectivity with some obstacles	Good coverage 300-400 meters with good connectivity with certain obstacles
Modulation	CCK[11]	OFDM[12]	OFDM y CCK

[11]CCK: Complementary Code Keying, modulation for complementary code

[12]OFDM: Orthogonal Frequency Division Multiplexing.

The article is structured as follows: after introducing the topic, establishes the research approach and methodology is set to choose the cases in Europe, Asia, and South America (emphasizing experiences in Colombia); then the experience of Buenos Aires Libre described; right after, they give some perspectives; and finally make conclusions.

2. Materials and methods

First, it must be emphasized that the implementation of projects of access to ICT[13] in vulnerable and marginalized communities means facing several challenges: lack of access to ICT infrastructure; precarious energy sources to operate ICT equipment; lack of capacity and human resources to develop, install and maintain technologies; exclusion in access to financing projects; lack of public awareness of the benefits of access to ICTs; and obstacles of local bureaucracy and political environments and regulatory little enablers, when the idea has been crystallized. In addition, gender

[13]ICT: Information and communications technology.
[14]TMC: Telecommunications Market commission
[15]Lluís Dalmau Junyent: Director Guifi.net project

inequalities, among others, are evident in access to ICTs which requires specific interventions to solve this problem [6]. These first considerations set searching requirements of experiences in the CDN.

Moreover, the classification methodology chosen some experiences. First, it takes into account the global location: on the continent. Secondly, they are included according to their social character; particularly its technology meets the aforementioned concepts free network and at the same time digital, and that in the process of synthesis of the experience indicated how, when and where it was made, considering the geographic, demographic and technical aspects.

It will be used to guide exploration judgment provided by the research group GIDENUTAS; as well as interviews conducted by the authors to officials of similar municipalities, such as Pueblo Bello in the department of Cesar (Colombia). Computer graphics have about non-profit NGOs are also delves.

3. Experiences

3.1. European

First, as Guifi.net. This was established as a foundation in 2008, and emerged as a project in the area of Vic, near Barcelona. This nonprofit organization that was watched since the beginning in a network that was based on common good and was not created for private companies misrepresenting their use. Guifi.net from day one was formed and registered as a telecommunications operator of the TM[14], in order to be on equal footing with other operators. This free, open, neutral and mostly wireless network is based on more than 32,900 nodes, of which more than 28,800 are actively operating (July 2015) [7]. These consist of an antenna that is purchased in a branch specialized, most are wireless. They are also deployed in optical fiber lengths. Guifi.net coverage does not cover the entire country. Where there are more nodes in Catalonia, followed by Valencia (See Figure 1). Therefore, it is easier to find a way to connect in big cities such as Barcelona or Madrid, but it is also possible in smaller towns or villages. Operating nodes rely on the people of each region. Being a collaborative project, anyone can start building the network that does not yet exist. Individuals, companies, public institutions or universities can participate on an equal footing, contributing to the network and using its resources. There are municipalities that did not have access to

internet because of its difficult location, and have set up radio links to get connection to their neighbors, according to Dalmau[15]. Hospitals have also been raided that were paying a very high internet bill, and Guifi.net have started using fiber optics that were not marketed for any of the traditional operators [8].

Figure 1: Free network Guifi.net Project [9].

Moreover, Ninux.org is a community wireless network in Pisa, Italy, set up in June 2012, which allows its users to work in the 2.4GHz, 5GHz and 17GHz, whose objective is the creation and expansion of a free society, open and experimental computer network, [10].

It is a mesh network based on the routing protocol OLSR[16]. The neighbor nodes - covering a total of neighbor neighborhood or city and interact freely with people from all over the city, by using a community network. Furthermore, it is possible to speak for free, sharing photos and movies by using PC via radio waves. 802.11 protocol is used, and for models of access points (or wireless routers) are used: the N300 Linksys E900 [11] linksys E1200 also [12]. Belkin G [13]; Airstation TM WHR-600D, [14]; they also allow to load a Linux firmware on it, to make networks at a reasonable price, [15]. By now counts with 2.247 potential nodes, on which 366 are active, 24 hostpots[17], 155 active links, for example 1,143 Km for this case, [16].

3.2. Asia

Project wireless networks Nepal, Network Free Nepal (See Figure 2), is an example of implementing a community project with few resources, but through a display of local leadership and vision helped destabilize existing policy frameworks to allow the use of innovative technologies and provide ICT access to poor communities, [17]. For the above used multiple

wireless devices- with frequencies of 2.4 GHz and 5.8 GHz- to maintain connectivity between peoples and base stations (see Figure 3). Most of the core infrastructure network is connected with Motorola Canopy TM radios at 5.8 GHz, which are proprietary equipment; while last mile connections with people using radios with wireless Ethernet (802.11b/g) at 2.4 GHz, from various manufacturers. Motorola devices were used for core infrastructure due to its reliability and robustness, and to avoid signal interference. However, 802.11b/g radios were used to establish connections between people because of their low cost and compatibility between manufacturers.

Figure 2: Network free Nepal [18].

Figure 3: Network free Nepal [19].

The project has shown that it can adopt a business model to provide services to the most vulnerable in rural areas. As a result, several organizations and villages have shown interest in building wireless networks and provide services to the population. This led to project wireless networks Nepal to provide technical support to build seven small wireless networks for various organizations located in different parts of the country, and for a telemedicine application and a monitoring system of a glacial lake of rapid growth, Keijo collaboration with the University of Japan [20].

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[16]OLSR: Optimized Link State Routing.
[17]Hotspots: Are points that offer through a wireless network and a router connected to an Internet service provider.
[18]NGO: Non Governmental Organization.

3.3. South American

In 2012 in Argentina, a Cordovan NGO[18] called Altermundi, created the project, QuintanaLibre (See Figure 4), which brings Internet to José de la Quintana and other villages in southwest Cordoba using free software, as RCCN[19] and RAI[20], [21]. And low-cost hardware (Base Station Controller, Base Station Transreceptora, Wifi wireless links [21]), Developed by Rhizomatica[21]; thus creating a decentralized network, [22], made with conventional Wi-Fi routers and a special firmware to modify its operation. They are maintained by the communities themselves that manage, with this, Internet access in areas where no commercial service.

Figure 4: Quintana Libre [23].

The initiative won the 2015 FRIDA[22] award, organized by the Regional Internet Address Registry for Latin America and the Caribbean (LACNIC), in the category that distinguishes the acceleration and expansion of access. This recognition has not been merely symbolic; in fact, it enabled the purchase of equipment that ensures the scalability of the project: in quantifiable terms, capacity data transport backbone network increased from 40 Mbps to over 100 Mbps in the 100 Km from point to point that composed it [24].

QuintanaLibre has become the network with greater presence, better performance and lower cost in the area, [25]. And it is administered at present by: Spiccinini, Nicoechaniz, Gui (creator), Barct, and Matyzurcher [26].

3.4. Colombia

Moreover, in Colombia, Red Free Colombia Mesh, a mesh type network organized in a mesh that interconnects the entire population through free access nodes. Colombia - Mesh is a project promoted by a group of teams around the country that seek to reduce the digital divide through the installation and development of free wireless networks.

The operation of these free networks basically corresponds to the same Internet Wi-Fi, only in these cases, especially for Colombia, the broadband service is used at frequencies between 2.4 GHz and 5.0GHz, which are free to use according to Resolution 689/04 of the Ministry of Communications[23].

In this case, Mesh appeared first in Bogotá but given the interest of free ICT lovers, it began to expand into other regions and today there are six regional teams working together to strengthen Colombia-Mesh: Caribemesh, Get Involved, Fusa Free, Red Espinal Libre, Valledupar and Bogota Mesh Mesh (see Figure 5).

Figure 5: Network free Colombia [29].

Free wireless network in Bogota, besides having achieved interconnect marginal areas such as Ciudad Bolivar, has developed permanent workshops in which it teaches to install the necessary hardware (antennas,

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[19]RCCN: Rhizomatica Community Cellular Network, is a python package with the added code that makes software components work together.

[20]RAI: Rhizomatica Admin Interface. Is the interface used by administrators and to operate the network in the communities.

[21]Rhizomatica: It is a civil association in Oaxaca dedicated to facilitating the digital communication in rural and indigenous communities in Mexico. They are best known for having initiated the first community wireless networks in the Northern Sierra of Oaxaca.

[22]The FRIDA Awards seek to recognize innovative initiatives and practices in Latin America and the Caribbean that from the field of information and communications technology, had made a concrete contribution and with proven impact on the social and economic development of the region.

[23]By which bands of frequencies for free use within the national territory are attributed by wireless access systems and wireless local area networks , using spread spectrum technologies and digital modulation, wide and low-power band, and dictate other provisions.

routers) and configure the software for free software use and development services such as email, chat, community surveillance cameras, servers, IP telephony and multimedia libraries to share information of all kinds, among others, [27].

Other free networks that integrate: Choco-Free, Medellin-Free, Relica - Free Network Cali [28].

Following in the Colombian territory, north of the country, in a municipality of the department of Cesar called Pueblo Bello (See Figure 6), by initiatives of the municipal government in early 2016, is born a project that today can benefit 5,450 inhabitants, [30]; who have a terminal[24], and want to know how to connect and manage to move to a near park to the population.

Figure 6: Network free Colombia [31].

For its design and implementation, it has hired Azteca Communications Company, who provides services and is responsible for the installation. The technology used is wave transmission through radio links LOS[25] about 500 meters; the signal is transmitted from a base tower with antennas coupled, Ubiquiti Rocket M5 5GHz working on 802.11a / n and speed of 150Mbps, [31]. The signal is picked up by radios Nanoloco M5 Ubiquiti 5GHz on 802.11a / n standard, [32]; which is connected to two routers board: one is in the premises of the mayor and the other distributes the bandwidth of 30 Mbps to the community. Service management is done from the base where there is a cache server and an administrator server, which commands via a point and manages each user but does not exceed 1 Mbps for 2 hours/day maximum, [33]. The cost of this project does not exceed $15 million Colombian pesos (US $ 5,000) and includes: the provision of service, installed equipment - that is as bailment for rent, maintenance and network management for a year [34].

4.   Buenos Aires Libre

As a case study, where it focuses its research interest has the CDN Buenos Aires Libre (CDN-BAL).

Consists in developing and maintaining a CDN in Buenos Aires (Argentina) and its surroundings, using Wi-Fi (802.11b/g/n/a) wireless technology. It now has more than 500 nodes that communicate information at high speed, crystallizing the idea - emerged towards the 2001- to implement such networks.

The objective of CDN-BAL moved to organize a data network, free and community in the City of Buenos Aires and surrounding area, including free media to provide content, including community-based applications. Some web content include Wikipedia in Spanish. The network expansion has helped with the outreach and training that is taught to build antennas with household items, [35].

It is open to the use of all technologies available, although so far only uses the wireless (802.11b / g) technology, [36]. In Figure 7, there is an example of interconnection of users on the network is displayed.

Figure 7: Community network Buenos Aires Libre [37].

The initiative located in Buenos Aires, Rosario, Cordoba and Mendoza, was consolidated by the management of local groups Free Software movement (a global initiative that seeks knowledge is to serve the needs of society, outside the restrictions who want to put private interests) arming "free networksçommunity property. The purpose is not to provide Internet, since the main objective is to make the interconnection stop relying solely on companies. It is estimated that in Buenos Aires and the metropolitan area the project already has more than 500 nodes that transmit and share information at a high speed, [38].

The foundation of CDN-BAL considered:

- Those people must be able to have mechanisms that allow them to freely access information and communicate without restrictions.

- Those should be alternatives to commercial networks today are massively used.

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[24]Terminal, refers to any device that you can connect and use the network, such as cellphone, tablet, pc, etc.
[25]LOS: Line of sight.

To this end, different groups of people organize themselves and form free networks (see Figure 8), open and community in order to generate equalities between different social stratus generating improvements that help the welfare and easy access to information.

Figure 8: Representation of a Free Network [39].

From the point of view of the topology of the CDN-BAL, defined as the physical or logical map of a network to exchange data; or, in other words, the way the network is designed, either physical or logical level; the network concept refers to a "set of interconnected nodes..ᴬ node is the point where a curve intersects itself. What a node is, in particular, it depends on the type of network, [40].
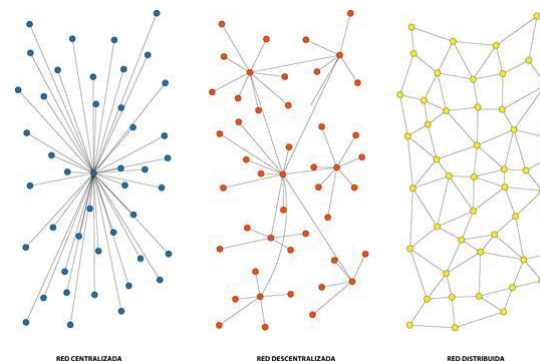
For CDN-BAL, there are three basic topologies (see Figure 9):

1) Centralized Network: All nodes but one are peripheral and can only communicate through the central node. The collapse of the central node deprives flow to all the other nodes.

2) Distributed Network: There is no single central node but a collective center connectors. The fall of one of the centralized nodes involves the disconnection of one or more nodes in the whole network while the fall of the centralizer cluster necessarily produce a rupture and a virtual disappearance of the network.

3) Distributed network: Removing any node not disconnected from the network to any other. All nodes are connected to each other without necessarily having to pass through one or more local centers. In this type of network the center-periphery division disappears and therefore the power to filter the information that flows through it. [41].

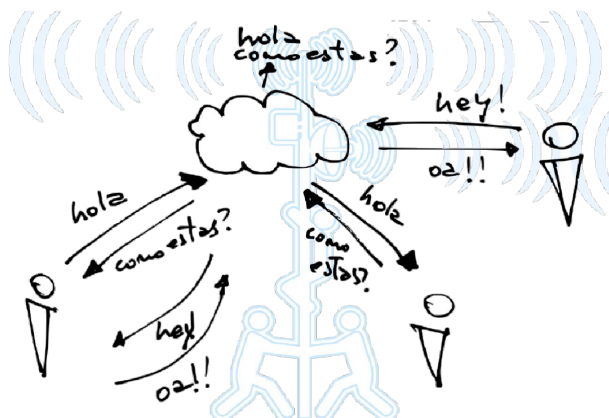**Figure 9**: Basic Topologies Network [42].

CDN-BAL is monitored by groups of people that are self-managing and from the principles of collaborative communities, organize and work with the premise build a data network, built and managed by its own users and open to the community. In some cases, it only provides local services and exchanges data between the connected nodes, while in other cases, it adds to this task extending access to the Internet to make it available to the public for free. CDN-BAL is a metropolitan area and it is limited to the city where it operates, providing a way of alternative, free, self-managed communication, which aims to democratize access to information, bridging the digital divide, promoting the use of technologies and free software to provide the community an alternative physical means, mounted on very economic inputs, to make their communications, [42].

Among the applications used in the CDN-BAL, it has the formation of two means: a free alternative means to provide content and safety means to monitor a disaster area / neighborhood, in addition, it manages to connect the house to the office, or PC with a friend who lives in another neighborhood and provides an infrastructure to apply knowledge and promote individual development, [43].

CDN-BAL has advantages of: providing free public access; be a network of distribution; and, besides using peer networking, that promotes other free networks [44].

Technologically, CDN-BAL uses Free Software Obelisk - the GNU/Linux distribution BuenosAiresLibre which helps to generate the connection, as well as its technical (technological independence, flexibility, transparency, community potential) and characteristics [45]. An example of a chat community free network is evident in Figure 10.
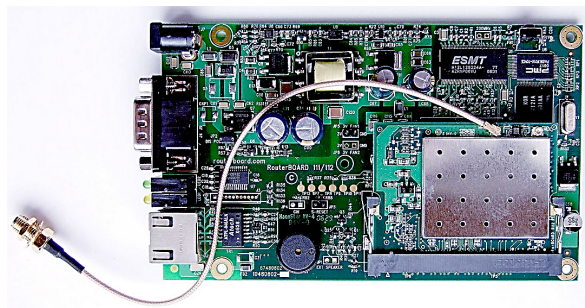
Figure 10: Example of a free network chat community [46].

CDN-BAL uses OpenWRT, which is a GNU/Linux for embedded or X86; it is a firmware based on a Linux distribution built-in devices such as personal routers that allows computers to communicate with antennas and, thus establish communication between the different points [44].

It is important the role of GPL licenses in the initiative CDN-BAL, since users are urged to modify and to enhance the code of applications, to deliver and contribute increasingly to free software project, and thus give meaning to the Community network reducing the digital divide generated by the acquisition of high-cost licenses.

Figure 11: RouterBoard [48].

From the point of view of hardware, CDN-BAL uses Routerboard, equipment that connects nodes community networks and thus consolidate the free network. They usually have several expansion slots for connecting miniPCI wireless cards, ethernet and USB ports (see Figure 11). By default, it comes with a proprietary operating system from the RouterOS Company, but that can be changed by reprogramming the internal flash memory via the serial port, which makes prioritize

projects GPL is given, [47].

To generate a communication connection (Chat) it uses the Freenode which is responsible for real-time communication based on text. This allows that multiple people can talk at the same time in chat rooms called irc channels where you discuss about a specific topic. Similarly, it can open a channel of irc own and exchange messages with the user group or simply decide invited to speak privately with a person, [49].

Thanks to the project free networks for all, CDN-BAL managed to articulate a network of free internet in order to benefit all the inhabitants of the city of Buenos Aires, allowing users to send and receive freely the information passing through this. It allows the incorporation of participants without restriction, and most important, this network is made by and for the community in two ways:

- Generate an alternative means to deliver content, and provide safety means for monitoring a disaster area or public areas (neighborhood).

- Connect the PC with another remote, in order to telecommute from home avoiding the use of mass transit, among other resources.

5. Perspective

Projects of this nature -CDN- will continue to open space in the technological world, and that meets the needs of connecting those regions where commercial providers do not see an opportunity for profit and therefore do not provide the service, [50].

However, in the nearly future, it is expected that technologies such as the 802.11n 802.11 family (see Table 1 and 2), potentiated in two areas that are not yet fully developed: the connecting strips; and the limitation is imposed by the available radio chips [51].

On the other hand, it tends to spread and to look for cheaper alternatives to grow, because it does not have resources, the importation is restricted and therefore it is expensive, in addition to administrative and bureaucratic constraints. Consequently, they must overcome these difficulties and promote the use and implementation of CDNs constant; as well as developments and designs to ensure training made aware and willing to contribute to the expansion of networks for community use people.

6. Conclusions

Through the document presented it can be concluded that:

- Reducing the digital divide must become a priority for all nations. The closing of the digital divide is a challenge and opportunity for the developing world. Understanding digital divide as the difference in opportunities for access to the information technology and telecommunications between different groups in a society (country, region, ethnicity, gender, age, among many).

- Having to develop and promote alternatives for users to create in an independent social content way. Also the media, not only in normal use but, even in disasters which are not dependent on a service provider, in this way it generates a constant social and community communication.

- One of the advantages of the DRC, is that it's open and free, and the information flow without restrictions can be transmitted, allowing different groups of people and sectors to share and even feed databases that provide information records of valuable contribution to communities who do not have access or the power to acquire or find information online.

- The use of wireless antennas technologies such as the 802.11n 802.11 family , whose range can vary between kilometers and its speed 300Mbps, it allows to establish links that generate great coverage ; It is of note that the levels of information security it should maintain and secure for all users, resulting in protection for your data and network efficiency, if it gets that the technology used is wave transmission through radio links 500 meters, it could transmit signals to coupled antennas on the 802.11a/n standard and get a speeds of up to 150Mbps.

- The value of the Internet continues to increase exponentially with increasing number of people who can participate. In today's world, communication can be achieved without the use of telecommunications networks of an old generation. The organizations that control these networks are weakening by prices, dams spending and physical need to use cables to build their relations in networks. Because of this, one cannot be effectively serve users; the alternative is to build wireless networks that allow wireless interconnection and covering wide ranges of signal, in Colombia's Ministry of Information and Communication

Technology is promoting the creation of 800 (community centers for Internet access) that will be in municipal areas and in low- and middle strata ensuring access to networks free headers.

- It has to strengthen the access systems through intensive training, lectures and meetings, encourage community participation. Likewise, the training to beneficiaries' should encourage training philosophy immersed in the principles of free software, so users have a way to cooperate. It is essential that users want to help each other and allow to share the fixes and improvements to other users. It should be noted that, the right to sell copies is part of the definition of Free Software which ensures that it will not always be free, but if it remains clear objective to be developed and make modifications to GLP and can be further developed and implement DRC at very low cost benefiting users who do not have technology and an economic factor to access private networks.

7. Acknowledgements

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