RECIIS – R. Eletr. de Com. Inf. Inov. Saúde. Rio de Janeiro, v5, n.1, p.17-26, Mar., 2011
[www.reciis.cict.fiocruz.br] e-ISSN 1981-6278 - AHEAD OF PRINT

*** Original article**

The triad of scientific and technical information in the Health History and Cultural Heritage: virtual library, virtual community and network knowledge

DOI:10.3395/reciis.v5i1.441en

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Abstract
The collective construction of network knowledge is nowadays considered a new paradigm for the development of knowledge. In this sense, virtual libraries, as a space of knowledge convergence, seek, through the establishment of social networks and content, to create facilitative resources of collaborative actions, which support and encourage activities aimed at information management. This article discusses the concepts of Network, Virtual Library and Collective Intelligence to reflect on the Virtual Health Library (VHL) model. It presents the Virtual Health Library - History and Heritage of Health (VHL-HPCS) as an example, which acts as an instrument of technical cooperation, and promotes networked collaborative work aimed at managing information and scientific and technical knowledge in this area. This is an initiative conceived and coordinated by the Latin-American and Caribbean Center on Health Sciences Information (BIREME / PAHO / WHO) for theconstruction and management of scientific and technical health.

Keywords
virtual library; virtual community; health information; collaborative networking; social networking

Currently, it is possible to understand the collective construction of knowledge as a major challenge at both the personal and organizational. For organizations, universities and research institutions, this process is only possible if there are methodological and technological resources adequate for the development and management of information flows and communication in order to promote the construction of organizational knowledge. These should be based on a technological culture that can break with traditional forms of work and power relations, moving to decentralized systems, structured in an open and horizontal, not hierarchical, characteristic of collective work in the network. For this, the field of information technology and communication (ICT) has been considered strategic knowledge development processes for transforming individual and collective.

The understanding of the network concept is much discussed in various knowledge areas, each referring to different contexts. Starting with the biology, where the term is widely used when studying the life cycle, we consider the network as a paradigm of the organization of living systems. Capra (2005) refers to the network concept with the same sense, in his book: 'The Web of Life' by mentioning that, since living systems at all levels are networks, we view the web of life as living systems (network), the manner of interacting with other network systems (network). "The standard of living, we might say, is a standard network capable of self-organization" (Capra 2005).

Mathematicians and physicists also brought contributions to the study of the concept of networks. However, it was in the twentieth century that this term has been absorbed by sociology in the understanding of social networks. Such networks and their relational arrangements emerge as organizational paradigm capable of expressing political ideas, economic and cultural innovative community that seeks the solution and the implementation of actions of common interest, through the construction of knowledge networking. Marteleto and Silva (2004) see networks as "systems composed of 'us' and connections among them that social sciences are represented by social actors (individuals, groups, organizations, etc.) connected by some kind of relationship."

Networking has been extensively studied and applied in contemporary society, because this model favors the devolution of power, multiliderança, connectivity, the constant flow of information, participation and cooperation, key aspects of networking. (Amaral, 2004). The health care industry has adopted this model work in its dynamics, in a move that reinforces and strengthens the importance of such values.

In Latin America and the Caribbean, the guidelines for networking for the management of scientific and technical information on health has been advocated by the Latin American and Caribbean Center on Health Sciences Information (BIREME / PAHO / WHO). Bireme was inspired by the classical concept of social network, which individuals and / or organizations are connected to share common goals and actions to carry out management activities. Victoria (2008) adds that social networks Bireme "stimulate interpersonal relationships and institutions that are democratic and participatory, can decide to share and stimulate initiatives multiliderança.

The Virtual Health Library (VHL) is the model adopted by BIREME for the job of information management and exchange of knowledge on health which will be detailed in this article. For this, we describe the concept of virtual libraries and its history, as well as experience of networking BVSs adopted by members of that model. This initiative is divided into three shares, with different dimensions understood by social networks, content and learning environments. Then, we give special attention to the Virtual Library History and Heritage of Health (VHL HPCS) initiative as an example of a theme that uses this model for the management of cooperative networking. We demonstrated also that such actions are characteristic of and how they enable new forms of relationships between those who adopt it, increasing the capacity of collective creation of knowledge.

Brief history of VHL

Virtual libraries emerged in the early '90s, along with the Internet, to meet the demand for new information services geared to students, researchers and users of specific areas. Unlike search engines like Altavista, Yahoo and Google aimed indiscriminately store the largest possible number of information available on the Internet, virtual libraries designed for quality and integrity of its collections through selected information, classified, cataloged and indexed in databases or information systems.

In the late 90's, several authors have already discussed this subject. Rebel (1996), for example, states that:

> [...] The Internet holds a huge amount of information on S & T of varied natures. Despite the countless tools of information retrieval on the network, such as 'search engines' (search engines), catalogs, guides, among others, that information does not present an organization that allows researchers to refer to it with ease, resulting in timely results that meet their needs (Rebel et al., 1996)

Marchiori (1997) finds that different approaches to managing information resources are being discussed, being able to highlight the concept of 'virtual library', whose design is presented as a possible break in the treatment paradigm and dissemination of information represented by the resources , activities and services of 'traditional library'.

Treatment activities and dissemination of information began well before the advent of the Internet. In the health area in 1967 under the auspices of the Pan American Health Organization / World Health Organization (PAHO / WHO), led by BIREME, was created the first cooperative actions aimed at scientific and technical information in health in Latin America and the Caribbean.

Years later, Bireme assumed the role of indexing and information center, and be responsible for coordinating the bibliographic control of scientific and technical literature published in health journals in Latin America and Caribbean (LAC). Is created, then the database of Latin American and Caribbean Center on Health Sciences (LILACS), which was produced and managed in a decentralized manner with the participation of all countries cooperating network that was established at the time, thus strengthening the national capacities in infrastructure and human resources for health information management, thus conforming to a network of libraries and information centers. (BIREME ..., 2011)

The arrival of the Internet over 90 years, enhances access to and use of information, leading to significant changes in people's lives, creating a new social paradigm clearly. These changes are, above all, technical, cultural, and have been taking place gradually as requiring relearning of the individual in a way to communicate, inform, work, learn, study, relate and put on life through a more interactive and collaborative.

Faced with this reality, Bireme will adopt as a model for information management and exchange of knowledge on health, the new paradigm created by the global Internet. Thus, in 1998, the IV Regional Congress on Health Sciences Information (CRICS 4), San Jose, Costa Rica, is released on the Virtual Health Library (VHL), understood as "a network of information management, exchange knowledge and scientific evidence on health, which aims at cooperation between institutions and professionals in the production, mediation and use of sources of scientific information in health, in open and universal access to the Web "(BIREME ..., 2011).

After 12 years of its launch, several countries in Latin America and the Caribbean contributed directly or indirectly with information, products and services cooperative in their respective countries. From this perspective, the VHL model relates to the concept of collective intelligence advocated by Pierre Lévy. It is a distributed intelligence everywhere, incessantly valued mobilized and coordinated in real time. "The basis and goal of collective intelligence is the recognition of people and the cult of fetishized or hypostatized communities." (Levy, 2000).

Currently, VHL is composed of a network of more than two thousand institutions distributed in 30 countries. Your network is around 180 virtual libraries that are organized in instances geographical, thematic, biographical and institutional areas related to health sciences, among them, Adolescence, Nutrition, Bioethics, Psychology, Nursing, Mental Health, History and Cultural Heritage Health All are based on the same purposes, namely: the attainment of equity in access to health information, strengthening alliances and consortia to maximize the shared use of resources and exchange experiences, to adopt the cooperative work and in its decentralized operation development, respect and promote local conditions and establish and implement integrated mechanisms for assessment and quality control.

For Packer (2005), the main characteristic that governs the formulation of the VHL is the full adoption of the paradigm of information and Internet communication in which the management and operation of sources and flows of information are now held in digital and network online, directly through its various actors. The Internet becomes the means of production and operation of scientific communication, overcoming the limitations caused by physical distance between the actors, the physical transportation of documents between them, as well as restrictions on hours of operation of institutions, particularly the libraries (PACKER, 2005).

This ensures that the collective character VHL operates autonomously, preserving in relation to policy and institutional changes of the different national contexts, constituting themselves as a public good. This management model is based on the premise that access to information and scientific and technical knowledge are crucial to the development of social health (BIREME ..., 2011).

In a more general level, the VHL aligns with the information society and knowledge at the time that suits the movement of open access, digital inclusion, informational, social use of technology resources open.

The VHL model was developed through the contributions of different disciplines, including: information science, communication science, computer science and health sciences, among others, who move in cyberspace in three basic principles that, according to Levy (1999), are: interconnection, the creation of virtual communities and collective intelligence.
The VHL is structured under three distinct dimensions and closely related and complementary: social networking, content and learning environments and informed. They all converge to a single virtual space, resulting in a single network. The social network is constituted by public or private institutions, nongovernmental organizations and government bodies of management, research, education and health services, and professionals working in the VHL as producers (agents of production of information, knowledge and evidence scientific and technical intermediaries); information professionals (working in many different institutions for information and documentation, such as libraries, archives and documentation centers), and users, including managers, professionals, researchers, students and citizens in the exercise of their right to information and health.

The actors who constitute the social network reorient their production activities in organizing information and knowledge to a new way of working, based on a commitment to production and operation of the cooperative network of content (VHL information sources, such as collections of full text of evidence), services (expressed by the different contexts of product presentation, according to the information needs of potential users, for example, option for

language, thematic searches, photocopies, etc.) and events (represented by the flows of information generated in a timely and dynamic in meetings, conferences, forums and other channels of communication and exchange of knowledge).

The VHL enhances and enriches the traditional library collections, consisting mainly of bibliographic documents, and adds new types of materials to these collections, as full texts, evidence, learning objects, news, collaborative workspaces, search engines, guides, and factual information and directories of institutions and events, among others.

The institutions that comprise the social network of VHL share responsibility for production and operation of the network content. The adoption of cooperative networking is crucial to increase the accessibility and visibility of scientific health information.

For those institutions and their content is structured and operated as cooperative networks is necessary to create mechanisms that can augment and strengthen the linkages and the exchange relations between these actors. Environments, both the face and the remote training events, institutions participating in the VHL, collaborative virtual spaces, among others, are fortified with features and practices, examples of which include the publication of news and reports, socializing and sharing calendars organizational information, which increases continuously and increasing their ability to learn. In VHL, these mechanisms are the size of the network learning environments and informed, also known as virtual communities, which aim to gather a group of individuals with common interests to exchange experience and information in virtual environment, mediated through communication networks computers.

Lévy (1999) describes virtual communities as those whose members are united by the same core interests, which are organized on a basis of affinity, relying on telematic communication systems.
Following the same reasoning, Levy, (2000) highlights that:

> participation in virtual communities as a stimulus to the formation of collective intelligence, which individuals can use to exchange information and knowledge [...] the same time is deeply convinced that a virtual community, when properly organized, it represents an important wealth in terms of distributed knowledge, capacity for action potential cooperation. (Levy, 2000)

Thus, institutions and individuals who participate in a VHL are encouraged to share information, experiences and knowledge to solve problems and create innovative processes by fully exploiting its ability to act as informed and learning environments. The learning and social participation help create the necessary connections between knowing and doing, and promote collaborative spaces around the various approaches to knowledge gaps.

This model features two innovations in the production cycle of scientific and technical knowledge. First, it enables the integration of different actors involved in production instances, mediation and use of information flows and knowledge on health in a single network, based on cooperative work. Moreover, brings innovations to expand the sources and nature of information flows in your space, looking beyond the traditional field of scientific and technical information, and also the factual domain knowledge from the specialist.

The collective construction of knowledge in the VHL network HPCS

The Virtual Health Library - History and Heritage of Health (VHL-HPCS) was established in 2005 on the occasion of the 4th Regional Coordination Meeting of Virtual Health Library, in the 7th Regional Congress of Information in Health Sciences, CRICS 7, in Salvador, Bahia, as a proposal of the participating institutions of the working group History and Heritage of Health

The VHL HPCS been widely discussed and unanimously approved by all institutions participating in the working group, and officially validated final plenary session of the event.

Following one of the recommendations made at the end of formation of the network, BIREME / PAHO / WHO and the Cultural Heritage Unit of Health / Ministry of Health of Chile organized the first regional coordination meeting of the VHL HPCS in 2007 with the participation of ten Latin American countries: Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Honduras, Mexico, Paraguay and Uruguay.

The main purpose of the meeting was to establish milestones constitution, management and operation of the VHL HPCS. In addition, as part of the event, held the first meeting of Regional Advisory Committee of the VHL HPCS, aiming to consolidate the conclusions and recommendations agreed during the meeting, as well as to establish lines of cooperative work and the instances of management.

The VHL HPCS can be understood as a model of technical cooperation among institutions for the promotion of information management and scientific and technical knowledge in the field of History and Heritage of Health this perspective, beyond the social networking sense understood as the ability to bring people together in a participatory way, around common interests, adding strategies and mechanisms to ensure its sustainability around the management and operation of cooperative and decentralized sources of networked information.

This initiative of organizing and networking association that brings together actors from the fields of social history and cultural heritage of Health has been developed in partnership with different countries of Latin America and the Caribbean, which may be expanded to other regions such as Latin American countries , and the Portuguese-speaking Africa. Currently, 16 countries participated in the VHL HPCS: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, and Uruguay, under the coordination of the House of Oswaldo Cruz / Fiocruz

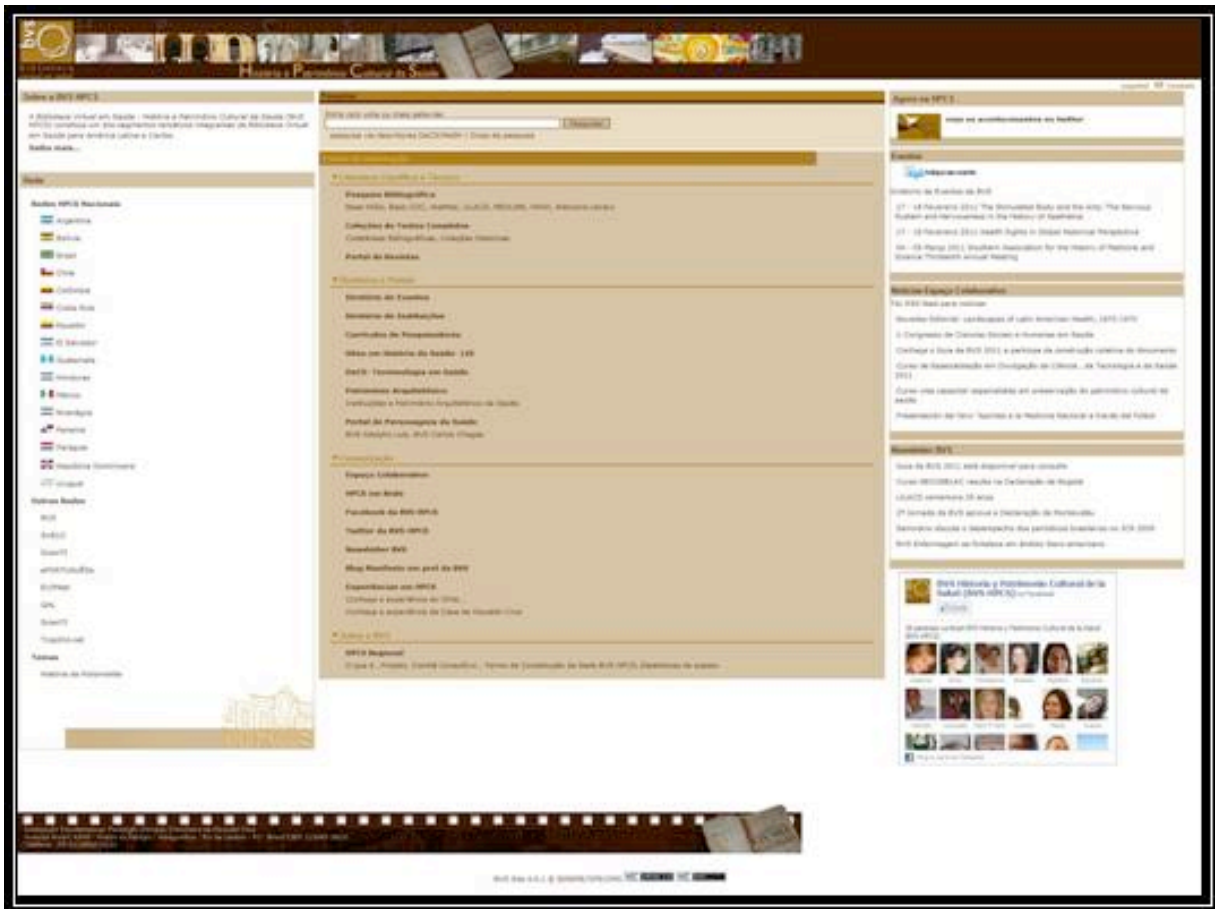

Figure 1: : BVS HPCS - http://hpcs.bvsalud.org/

The richness of its diversity is represented by a set of social actors who make it, be institutions or individuals. Its constitution had as main objective to promote ties of connectivity between these actors, promoting capacity building and knowledge sharing as a mechanism to strengthen its actors at the local or regional. To do so, seeks to promote technical cooperation and scientific ruled on a schedule, collectively built, design, management and development of information sources operated on a network on the Web with open access and universal. All with the intent to promote the visibility and the social uses of scientific, technical and factual history and cultural heritage of health.

Achievements

The VHL HPCS includes all dimensions of the VHL model (social networking, content and learning environments), without giving any of them, since the potential of the network is just at the junction of these three components, that in an isolated existence, they would lose their value.

From these three management, VHL HPCS has been operating since its establishment in power and propose sources of information, as well as in professional training for entering data into the same; the articulation of the network members and attracting new partners, the constant feeding and use of collaborative space (virtual community), and in organizing and attending meetings and virtual joints, and also in personal meetings and events, like meetings of CRICS, regional meetings on related themes , and working meetings of the advisory committee and sub-regional networks of HPCS.

In addition to sources of information proposed by the traditional model VHL were other sources to meet demands for information on HPCS, for example, the source 'Bibliographical Anthologies', 'Historical Collections', 'Institutions and Architectural Heritage of Health,' Virtual Libraries and Biographical Carlos Chagas and Adolpho Lutz, incorporated in the 'Character of Health Portal. " The operation of these sources is always engineered and built in a collaborative, decentralized, and regional solutions, and not just local. This logic supports with the dimension of VHL as a 'learning environment' (as described in VHL methodology) so that the knowledge generated through the articulation of its actors could be incorporated and replicated in their local realities.

The collaborative space of HPCS (virtual community) is also considered a source of information it disseminates relevant news and events in the area of History and Heritage of Health also works as an environment to achieve and record discussions and reports about the network, serving as a repository of photos and documents generated during his meetings and virtual. The constant updating of this environment has enabled the creation of its newsletter, "HPCS en Red.

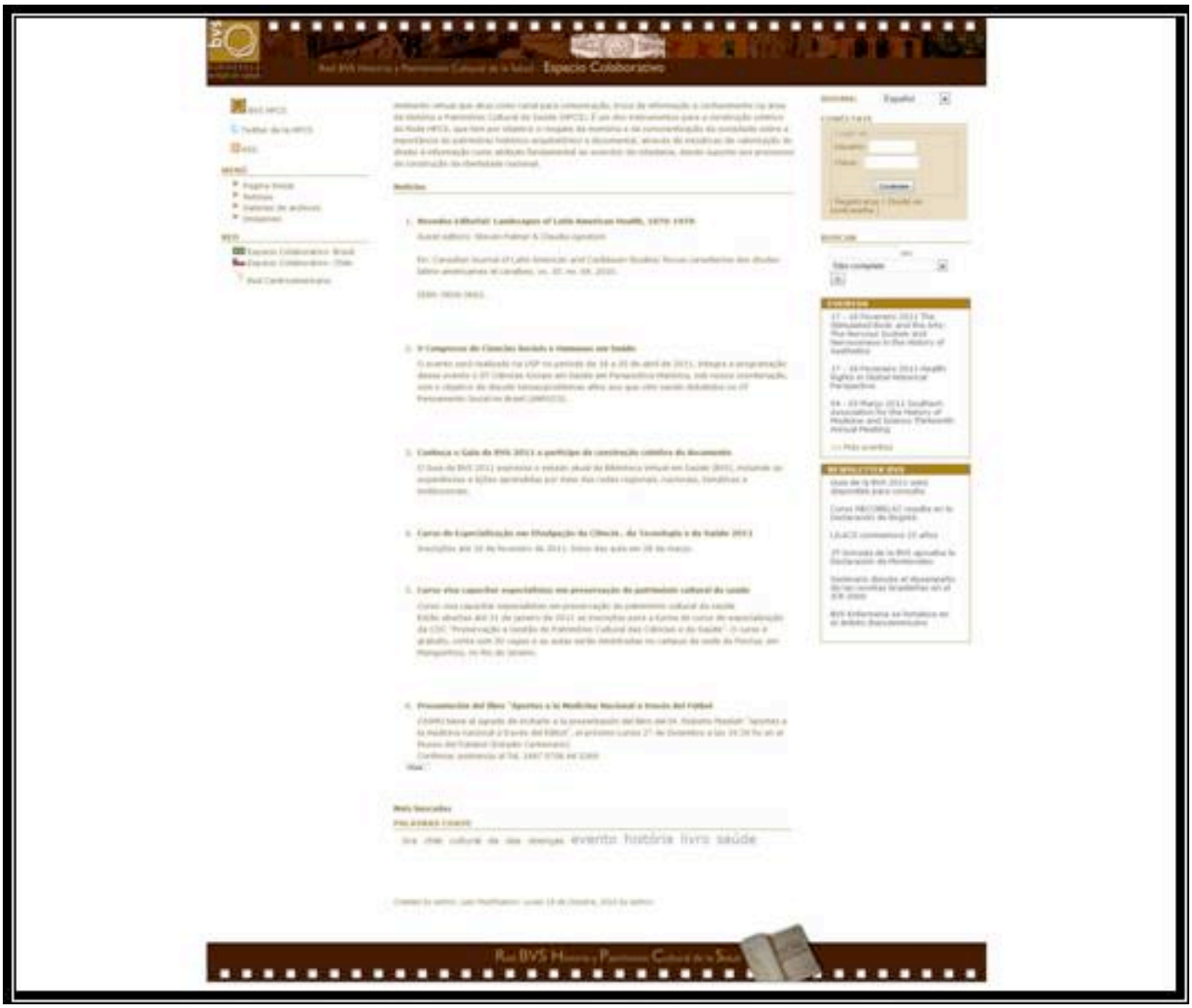

Figure 2: Virtual Community VHL HPCS - http://cv-hpcs.bvs.br/

It is noteworthy that the VHL-HPCS demand strongly articulate their information resources, communication and knowledge, with innovative initiatives related to collaborative technologies, with social Web applications, wikis, RSS, Twitter and tagging, among others, involving librarians and their users in a more participatory and collaborative process, contributing to a greater interaction between them. Thus, walks to the library 2.0, which is already a reality not only in developed countries but also in those who use Web 2.0 resources in their libraries, interacting with their users in a participatory manner. It starts with the premise that communication is based on a two-way street, where collaboration is a powerful aggregator of value. The Virtual Library HPCS walks in that direction, requiring a technological culture of access and use this information as necessary preconditions for survival in the information society

Conclusion

The VHL model described in this paper, we propose innovations for the promotion of information management and scientific and technical knowledge, grounded in collaborative networking. Technical cooperation established between institutions results in the sharing of information needs, developing shared solutions, built upon the exchange of experiences and tacit knowledge accumulated in different paths. From this dynamic is possible convergence of efforts for the production, registration and organization of knowledge explicitly represented by the content network. It reinforces the establishment of trust between network members, reflected in social networking and learning environments that adopt a culture of sharing that enables the generation of new knowledge and solutions for specific areas of health, as was reported in experience the history and cultural heritage of health.

From this perspective, we could say that the dynamics of networking propose collaborative performances that are supported by the will and affinities of its members being characterized as an important organizational resource for collective achievements. The morphology of the network, and the dynamic structure of social relations, is able to comply as a space of convergence for the construction of a common identity shared by heterogeneous actors. This heterogeneity between different actors occupying the network should be preserved and respected for being precisely that which enriches and strengthens.

More generally, in science and technology, particularly in the health field, it becomes increasingly evident that the initiatives and developments designed for the management of information should be directed to the establishment of collaborative networks that promote and strengthen the access, use and exchange of scientific and technical information, such as propulsion mechanism of collective production of knowledge. This model design and operation of services and information products to promote conditions that determine their sustainability that should be highlighted.

For those responsible for the creation and maintenance of services and products information professionals, known as intermediaries in the VHL model, the cooperative networking promotes the sharing of infrastructure, production of services, thus strengthening the local conditions of different national contexts.

In addition to the tangible resources, technical cooperation among actors also promotes the exchange of experiences and tacit knowledge, methodologies and technologies resulting in more effective and inclusive.

For managers, teachers, researchers, health professionals, users of scientific knowledge and technical cooperative work promoted by the VHL extends a determining its ability to access and use of information, establishing itself as a strategic factor in the production of new knowledge and innovation.

This article hopes to contribute to the adoption of cooperative networking model proposed by VHL, as a political health information for Latin American and Caribbean countries and their insertion in global flows of information. In its 12 years of existence, the VHL reinforces the idea that only through sharing resources and activities and collective intelligence can achieve equity in access and efficiency in managing information and knowledge of scientific and technical health.

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