Proposal of a virtual collaborative news environment: an interdisciplinary study

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Abstract— *The main objective of this work is to demonstrate the advances made by the CATI research group with regard to the proposal to create a virtual collaborative news environment (AVNC)[1], to be initially implemented at the Northern Fluminense Darcy Ribeiro State University(UENF) through the Postgraduate Program in Cognition and Language. This interdisciplinary environment involves concepts from the area of communication, administration and information technology and seeks to meet the demands of generation, storage, retrieval, processing and transmission of information in this digital age. The AVNC involves three research fronts: rethinking the logic of news production, structuring a platform that is collaborative and defining what a business and management model should be that can give sustainability to this environment. In today's world, it is important to consider the reader's increasingly active participation in journalism, through information and communication technologies, thanks to the social changes that come with them. In times of cyberspace and cyberculture, it is necessary to rethink the dynamics of journalistic production. For this, authors like Pierre Lévy, Lúcia Santaella, Henry Jenkins, Caio Túlio Costa, among others were searched. In an era in which forms of collaborative ownership prevail, the platform being considered in this research follows the 3C collaboration model, according to Michalsky, Mamani, and Gerosa. A global platform where individuals interact, communicate, collaborate and gather information requires a business model and management that assists in managing the collaborative virtual news environment. For this, we used authors such as Alex Osterwalder, Eric Flamholtz, Siqueira and Crispim, Campos, among others. With this, an increasingly intelligent and collaborative environment is expected, with the active participation of all the agents involved. That is, what is proposed is the total interaction of the Internet user-reader.*
Keywords— *news production; collaboration; business and management model; cyberspace.*

I. INTRODUCTION

The rapid advance of technologies has brought about sudden changes in the most diverse sectors, revolutionizing the way of working, of relating, of having fun, of informing oneself. Analyzing more deeply the area of communications, this scenario, propitiated by the internet, with numerous technological resources and digital social networks, has been changing, in a significant way, the routines of journalistic production and dissemination. The processes are more flexible, faster and more dynamic, which results in greater possibilities of counting, processing and publication, in an increasingly shorter period of time.

And just as it facilitates the production of news, technological progress also facilitates consumption, which has been increasingly interactive and participatory by users, now known as prosumers, interactors, users, among other nomenclatures (ROST, 2014). A new kind of collaborative journalism emerges, in which citizens or groups of citizens actively participate in the process of collecting, reporting, analyzing and disseminating news and information (BOWMAN and WILLIS, 2003) at all times through the internet.

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[1] *Ambiente Virtual de Notícias Colaborativo* (AVNC).

All this technological transformation, as well as the revolution in the process of generation, storage, retrieval, processing and transmission of information in this digital age, has impacted the world of business and even more intensely and privately the business of the journalistic industry.

This scenario has required the development of new business models for digital journalism (COSTA, 2014), since the virtual environment leads us to look at the media business in a new way, which requires innovative business that helps to better navigate in this convergent world (OSTERWALDER, 2011; JENKINS, 2009).

This paper aims at demonstrating the advances made by the research center Communication, Administration and Information Technology (CATI)[2], registered at CNPq by the Postgraduate Program in Cognition and Language of the Northern Fluminense Darcy Ribeiro State University (UENF), which has the proposal of creating a collaborative virtual news environment, abbreviated as AVNC (in Portuguese). This environment is being thought in an interdisciplinary way and involves three fronts of research: rethinking the logic of news production, structuring a platform that is collaborative and defining how should be a business and management model that can give sustainability to this environment.

II. SCENARIO ON THE CONSUMPTION AND PRODUCTION OF NEWS IN BRAZIL

The consumption of news on the Internet is motivated by the increasing access of people to this medium. The Domicílios ICT research, published by the Internet Management Committee in Brazil (CGI)[3], has been registering, over the years, a growing trend in the number of Internet users, and in 2016 reached an estimated of 107.9 million individuals. "This number corresponds to 61% of the Brazilian population of 10 years old or more (a proportion that was 34% in 2008)" (CGI, 2017, p. 149).

The same research also reveals that of the total number of internet users in Brazil, 50% say they read newspapers, magazines or online news. That is, almost half of the respondents, out of a total of 67.038.766 households, get informed on the internet.

The reading of newspapers, magazines and news online, consequently, contributes to the decrease of the sales of printed newspapers. Data provided by the Communication Verification Institute (IVC) in the last 10 years reveal that printed newspapers (both single-label

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[3] *Comitê Gestor de Internet no Brasil* (CGI).

and subscription) are being increasingly used less frequently, while digital newspapers are proliferating in the internet, according to Table 1:

Table.1: Circulation of newspapers in Brazil (2007 to 2016) – by thousands

Year	Printed newspapers (single sale)	Printed newspapers (subscription)	digital news
2007	2.032	2.159	1
2008	2.225	2.277	6
2009	2.151	2.083	7
2010	2.181	2.104	28
2011	2.298	2.126	72
2012	2.273	2.146	164
2013	2.119	1.993	232
2014	1.934	1.549	535
2015	1.602	1.362	680
2016	1.288	1.385	740

Source: Rodrigues (2017).

Analyzing the data above, it can be seen that the last five years (2012 to 2016) were a fall in single sales, accompanied also by the fall in sales by subscription (2013 to 2015), with a small growth in 2016; concomitantly, digital newspapers grew exponentially in this period.

The changes in news production and delivery made possible by the virtual environment are clear. Pierre Lévy (1999) explains that "this new medium [cyberspace] has the vocation to put in synergy and interface all the devices of creation of information, recording, communication and simulation" (LÉVY, 1999, p. 95) and bets that "the perspective of the general digitization of information is likely to make cyberspace the main channel of communication and memory support of humanity from the beginning of the next century" (LÉVY, 1999, p. 95).

For bringing profound changes,

> [...] we can not regard it [the Internet] only as a media that has emerged to enable convergence between radio, newspaper and television. The internet is another thing, another truth and consequently another media, very linked to the technology and with unique peculiarities (FERRARI, 2008, p. 45).

The following will address some changes coming from the internet.

III. THE MULTIPLE ROLES OF THE READER IN THIS DIGITAL AGE

The reader/viewer of news has occupied other roles, participating in the agenda (when suggesting a topic

to be approached in a future journalistic edition), the news itself (when sending photo and/or video about what is being reported), edition (when commenting, criticizing or correcting the news) etc., thanks to information and communication technologies, which allow him to record an event, send it to a newsroom, share it, comment on it, etc..

> Digital equipment and the Internet have put into the hands of people with no academic background the necessary tools to carry out this function, while creating the need for collaboration, almost an alchemy, between the crowds who know little and the few who know a lot (CASTILHO e FIALHO, 2009, p. 143).

Barbeiro and Lima (2013) corroborate what Castilho and Fialho affirm, remembering the transformation of the information flow:

> The Internet provides a new paradigm, capillarization of the emission and reception of news through [...] technologies used by private or public people or entities, to disseminate content, provoking the sharing of opinions, ideas, experiences and different perspectives (BARBEIRO e LIMA, 2013, p. 35).

There are several terms to define this reader that consumes and also creates content: prosumer, interactor, cyber-readers, user, communicator, interactive reader, among others. Based on Rost (2014), the concept that the most consensus seems to have is that of "users". Rost explains the proposal of Martínez Rodríguez (2005, apud ROST, 2014), which distinguishes "readers users" and "producing users", which makes it clear that not all those who access the network contribute with content.

It is considered important to clarify that this multifunctional reader is "appropriate" today for three primary reasons:

a)   The growth of Cyberspace

The growth of cyberspace is guided by three fundamental principles: interconnection, the creation of virtual communities and collective intelligence. The interconnection, worldwide or local, is a basic principle of cyberspace, since its dynamics is dialogical. Virtual communities "are built on affinities of interests, knowledge, projects, in a mutual process of cooperation and exchange" (LÉVY, 1999, p. 127). Collective intelligence can be considered the ultimate goal of cyberspace, since it describes a type of shared intelligence that comes from the collaboration of many individuals in their diversity. "It is an intelligence distributed everywhere, in which all knowledge is in humanity, since

nobody knows everything, but everyone knows something" (LÉVY, 2007, p. 212).

b) Breaking the hegemony of the paradigm of the knowledge fragmentation

Edgar Morin's theory of complex thinking reinforces the need to break with the hegemony of a simplifying paradigm formulated by Descartes, of the fragmentation of knowledge. Morin (2015) defines three principles that can help to think complexity: the dialogic ("allows us to maintain duality within unity" - page 74), organizational recursion ("idea breaking with the linear idea of cause/effect, of product/producer, of structure/superstructure, since everything that is produced turns on what produces it in a self-constitutive, self-organizing and self-producing cycle", and the hologramatic ("one can enrich the knowledge of the parts by the whole and the whole by the parts, in the same knowledge-producing movement" - page 75).

b)   People live the Liquid Modernity

The concept of liquid modernity by the sociologist Zygmunt Bauman refers to the set of relations and dynamics that present themselves in our contemporary environment and which differ from those established in what Bauman calls "solid modernity" because of its fluidity and volatility. For Bauman, relationships become, become volatile as the concrete parameters of "classification" dissolve. It is the individualization of the world, in which the subject is now "free" at certain points to be what he can be through his own forces.

In this scenario of cyberculture and breaking of "bins", of watertight positions, it becomes necessary to rethink the dynamics of journalistic production, as proposed by Deuze (2006) with the concept of net journalism:

> We must embrace the uncertainty and complexity of emerging ecology of new media, and harness it for what it is: an endless resource for the generation of content and experiences by a growing number of people around the world. Part of what will happen will reproduce the existing power, relationships and inequalities, for sure. However, we are also witnessing an unparalleled degree of human agency and user control in our lived experience of mediated reality. A journalism that will embrace and engage this ecology, will have to become fluid: a fluid journalism (DEUZE, 2006, p. 7).

As the author himself explains, these are forms of collaborative peer-oriented ownership of newsmaking; rich forms of transmedia narrative.

This rethinking encompasses all areas of the journalistic area, including management, and not only the production, distribution and consumption of news, but it is necessary to reflect on a new business and management model for journalistic organizations.

IV. DISRUPTION IN THE NEWS INDUSTRY AND *THE NEW ECONOMY*

In the last decades, the availability of the personal computer, the popularization of the Internet and the emergence and intensive use of social networks have been decisive disruptive axes for transforming life into society as a whole, for the business world, especially for the journalistic industry.

This same process had already occurred in the past, when the industrial revolution brought with it innovations that completely transformed the business world, such as the use of steel, the invention of the steam locomotive, the use of electric energy and petroleum-derived fuels, invention from engine to explosion, replacement of the intensive use of human labor, development of chemicals, etc.

These disruptive events did not come to optimize the journalistic production activity, but they altered and continue to alter the essence of what to do, transforming this industry completely. Increasingly, it is possible to perceive an acceleration of the occurrence of disruptive events for the journalistic industry, as it can be seen in Figure 1, below:
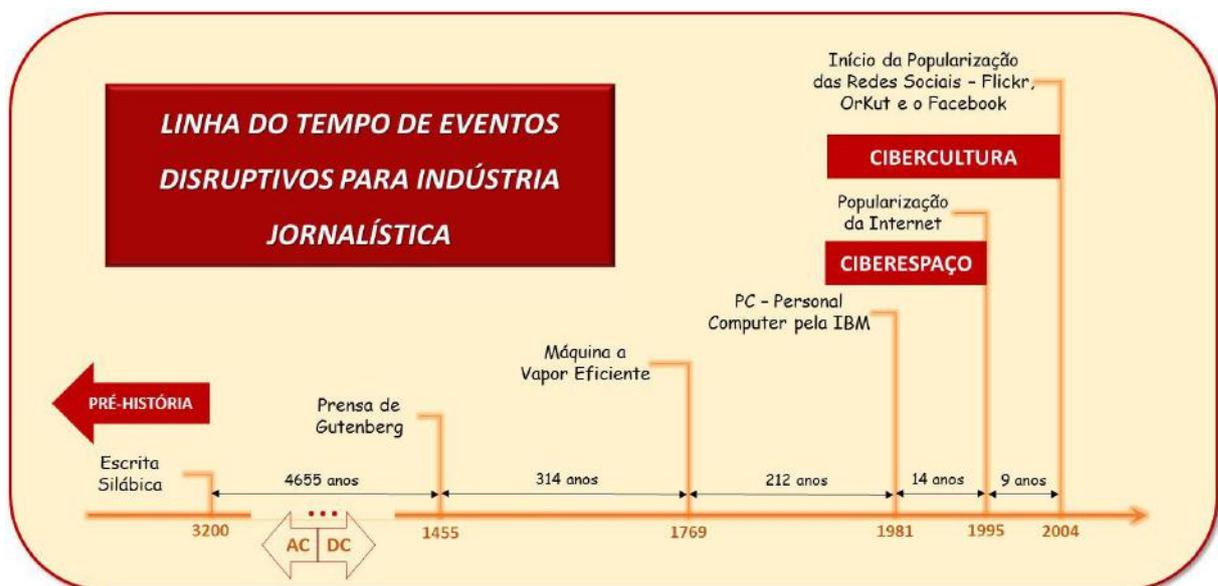

Fig.1: Timeline of disruptive events for the journalistic industry.
Source: Rodrigues (2017).

The newspaper industry took much longer to understand the disruptive momentum it experienced than other industries, such as telecommunications, music or retail, for instance (COSTA, 2014).

The internet and cyberspace have influenced the entire dynamics of the newspaper industry, changing the whole process of printing and distribution of news. The expenses with printing, circulation and distribution of the news practically disappeared and this generated the necessity of a new design of business model in the journalistic industry, as Costa clarifies (2014):

> The old way of producing information has changed, the monopolization of distribution, which belonged to an industry called journalistic, no longer belongs. Anyone can now produce and distribute this information. What is happening is a combination of media and communication,

thus giving birth to the overdistribution (COSTA, 2014, p. 11).

The journalist Caio Túlio Costa, in his postdoctoral research at the Columbia University Graduate School of Journalism, argues that journalistic organizations need to transform themselves into technology companies as well, as the new model breathes in with social networks. For him, the issue is not just being on Facebook or Google, it is knowing how to be in each of these networks, in each of the digital platforms, and for this there is technique, that is, it has to be modular for each network; this is over distribution.

Just as cyberspace represented a strong moment of disruption for the journalistic industry, and it was a strategic milestone in changing cost behavior, this new space also allowed for greater interaction between people, deepening social relations and enabling the formation of communities, to which Lévy (1999, p.17) called

cyberculture, that is, "a set of techniques (material and intellectual), practices, attitudes, modes of thought and values that develop along with the growth of cyberspace".

For Santaella (2013, p. 136), cyberspace is a space with its own existence, of a mobile, fluid and liquid nature, where "information circulates in the blink of an eye" and "everything moves in connection", which has given rise to a new form of culture, called cyberculture.

Based on the real-time concept of the internet, where distances do not exist and almost everything is at a click, *new economy* is the new concept of doing business in the digital age, whose value of exchange is information and the favored with the reward is the client.

Also called digital economy, internet economics, or web economics, the term "new economy" can mean "digital networks and communications infrastructures that provide a global platform from which individuals and organizations interact, communicate, collaborate and thrive information" (SIQUEIRA E CRISPIM, 2012, p. 11).

In this context, the phenomena caused by the insertion of the personal computer and the intensive use of the internet and social networks have altered the relations in the journalistic business, as well as the way of measuring the wealth of the organizations of this industry. Iudícibus et al. (2005) point out that constant changes have generated a dynamic and competitive environment, where wealth is no longer focused on physical benefits, but on intellectual capital and intangible assetsfb.

Previously, wealth in the journalistic industry was based on the large tangible assets of its industrial park (rotating). However, with the changes brought about by technology, especially digital, these companies have been and are being forced to adapt. Following the proposal of the new economy, journalistic organizations adhered to the use of low-value tangible assets (computers in networks), creating a new way of distributing and circulating information through cyberspace and cyberculture. This change has an intangible asset of extreme potential for generating future benefits, called wealth.

Intangible wealth means the value of a company because of the specific knowledge that it has in relation to a product or process. This recognition of the intangible wealth of a company as a representation of its greater patrimony is a new conception of business, as a result of the advent of the digital era (KAYO, 2002).

In this new digital world, there are many examples of companies with this profile to be cited: Instagram, which was acquired by Facebook for a billion dollars in 2012 with only 13 employees (FERNÁNDEZ, 2017); Snapchat, which declined to offer $3 billion; and Facebook, which bought Whatsapp for $19 billion (COSTA, 2014).

Authors such as Kayo (2002), Lev (2001), Stewart (1998) have argued that wealth generation in organizations would be directly related to intangible assets, as these assets would be responsible for higher economic performance and shareholder value generation. In addition, a greater presence of unaccounted intangible assets could explain the gaps between the market value and the equity value of the companies.

Journalistic organizations need to look for new ways to try to survive in the digital environment, because, as Costa (2014) explains: "the old form has been squeezed and the solution begins with the understanding of a new value chain".

For Costa (2014), something was even trying to be done, but based on the old value chain of the news industry:

> Its executors only transposed to the digital media the old Gutenbergian form, the same model of the business. First, they published on their websites the very production of journalistic content. Second, they filled this production with advertising (or what was left of it) and, thirdly, the distribution of the product began to be made through the commercialization of digital signatures (COSTA, 2014, p. 54).

Thus, Costa (2014) points out that "the value chain of the news industry in the new era brought by the Internet is radically different from the value chain of the traditional newspaper business." The truth is that the democratization of creation and access to journalistic content is causing the journalistic business to reinvent itself and thus create new business models.

V. CONCEPTUAL BASIS OF A BUSINESS AND MANAGEMENT MODEL FOR A COLLABORATIVE VIRTUAL NEWS ENVIRONMENT

The way companies seek to generate value, also called business model, has undergone numerous transformations, due to the technological disruptions that have occurred in the last decades. For Osterwalder and Pigneur (2011, p.15), the business model shows "the logic of creation, delivery and capture of value by an organization", that is, how to create value for all its stakeholders, be they stakeholders or shareholders. The authors further explain that the business model "is a scheme for the strategy to be implemented through the organizational structures of processes and systems" (OSTERWALDER, 2011, p. 15).

The management model, on the other hand, defines the logical and rational form of the process of transforming the objective into result, by setting priorities

and setting goals, going beyond the numbers, valuing agents and people and providing convergence to business objectives (KUGELMEIER, 2014).

The management model establishes the strategy to be implemented, defined by the top management and based on the attributes of scenarios and markets. For the implementation of this strategy and the scope of competitive advantage, the model uses the organizational structure, mediated by the actions of planning and control of the controllership, which in their measurement models, defines decision support variables, whose objective is to guide the convergence of the business objective and its transformation into competitive advantage.

To be effective, a management model and its control system, focused on achieving economic results, needs much more to motivate people to achieve organizational goals than simply to ensure what is currently occurring. A control system seeks to promote an identity between the objectives of the members of the organization (individuals and groups) and the objectives of the organization as a whole. Complete congruence is hardly attained; thus, the goal of the control system is to increase the degree of Goal Congruence (FLAMHOLTZ, 1979).

Thus, a business and management model for journalistic organizations in the new economy needs to

use Logical Intelligence of Goal Congruence in defining the roles of all agents involved in the business. Through Flamholtz's (1979) approach to the issue of system influence on stakeholder behavior, the main purpose of Goal Congruence is to maximize the likelihood that people are motivated to achieve organizational goals.

It is also considered important that this business and management model use a method of solving problems, which will be adopted here the PDCA cycle, a management tool that promotes the maintenance and continuous improvement of the processes, through a circuit of four actions: **P**lan, **D**o, **C**heck, and **A**ct (CAMPOS, 1992a).

The PDCA Cycle can be used to maintain and improve the "control guidelines" of a process, from two perspectives: maintenance (viable and sustainable goals) and improvement (the goals are challenging). Through the PDCA cycle it is possible to control whether efforts are actually delivering the expected results.

It is possible to visualize in Figure 2 the main concepts of the business area considered most suitable for the creation of a business and management model that assists in the management of a virtual collaborative news environment.

Fig.2: Concepts used in the business model and management for theAVNC.
Source: Rodrigues (2017).

After enumerating the most appropriate concepts to control this new way of generating value in journalistic organizations of the new economy, in order to make its existence and continuity viable, it is considered important to outline six premises that will be the basis of the business model and management for a virtual collaborative news environment: (a) Logic of creation, delivery and capture of value by the organizational

agents; (b) Increase in tangible and intangible wealth as value; (c) Integration and convergence of agent objectives through Goal Congruence; (d) Management control system through the PDCA cycle; (e) Establishment of a virtuous cycle and (f) Growth through a range improvement cycle.

From the first premise, the agents that form this new journalistic business (reader, publisher, advertiser

and portal) will be defined, as well as the role played by each of them and their relationships, establishing a process of creating, delivering and capture value.

With the second premise, measures will be proposed to measure the performance of all the agents involved, regarding tangible and intangible wealth. Having established the measures of value creation, both tangible and intangible, it is important to dedicate to the respective acknowledgments that will be given to each agent, as a way to provide the movement of convergence of the objectives of all involved, as proposed by the third premise.

The fourth premise provides for a management control system that, through the use of the reasoning method of the PDCA cycle, will establish the necessary adjustments, both through the Maintenance PDCA - maintenance of the operation in the short and medium term - and of the PDCA Improvement - comprehensive growth establishment, perpetuating long-term operation.

In the fifth premise, the central idea is the controlled evolution of the organization, through a virtuous cycle in which, through the efforts of all the agents involved, governed by the logical intelligence of Goal Congruence, we have the intensification of the intangible wealth.

The virtuous cycle would happen as follows: investment in intellectual capital (those intangible benefits that generate value for the company), through an efficient management control system that allows the recognition of agents responsible for this increase in intangible wealth, increased attractiveness of the organization (of the virtual environment of news), bringing in the present not only a greater number of advertisers and clients and growth of scope, but also a greater added value of the offered services, which will materialize in tangible revenue growth that, new investments in intellectual capital, would bring the perpetuity of the cycle.

Finally, through the various cyclical movements of the PDCA in the management of all the activities of the organization, new areas of coverage are being achieved, establishing, therefore, the Cycle of Improvement of scope, with consequent evolution of the organization, being configured the sixth premise.

It is considered important that the model has as its initial focus a locality view for the availability of advertising and ancillary services, serving a specific and qualified target audience. With the valuation of agents that increase the attractiveness of the business, revenues will be increased and this will expand its coverage area.

VI. THE VIRTUAL COLLABORATIVE NEWS ENVIRONMENT

Starting from Costa's (2014) thought - that "newspapers need to shake up their way of relating to people and respect the new ways they consume related information and services" (COSTA, 2014, 55). This article proposes the total interaction of the reader-user of the internet, through a Virtual Collaborative News Environment.

In an interdisciplinary way, the implantation of this environment involves three fronts of research: rethinking the production of news in cyberspace (NUNES, 2018, in press); developing a platform based on the 3C collaboration model (OLIVEIRA, 2018, in press); proposing a business model and management that helps in the management of a virtual collaborative news environment (RODRIGUES, 2017).

The core of the collaborative virtual news environment system follows the Wiki software model, which can be analyzed and framed as a collaborative software (PRIMO, 2004, p. 14). Created by Ward Cunningham in 1995, the first Wiki was made available on the web under the name Portland Pattern Repository. Cunningham's proposal was to develop a site that made it possible for users to generate content. Another peculiarity that determined the success of this social software is its type of free use license, which freely allows its copy, redistribution and adaptation to the needs of users' demands.

This type of participatory journalism, also called citizen journalism, collaborative journalism, democratic journalism or even open source journalism, is defined by Bowman and Willis (2003) as "the act of a citizen, or group of citizens, to play an active role in the process of collecting, reporting, analyzing and disseminating news and information" (p. 9).

It is considered important for this proposal to include the Collaboration Model 3C (Communication, Coordination and Cooperation), which has shown to be an advance in the paradigms of development of collaborative environments. According to Ellis, Gibbs and Rein (1991), 3C Model establishes the need for a joint work of experts, which includes social scientists and computer scientists, in order to promote greater integration of individuals with technologies, establishing three dimensions that guide collaboration, which are consolidated in communication, coordination and cooperation.

Thus, "communication is related to the exchange of messages and information between people; coordination is related to the management of people, their activities and resources; and cooperation is the production that takes place in a shared space" (MICHALSKY, MAMANI, GEROSA, 2010, p.1).

Empirically, the 3C model is presented as a means to classify collaborative systems, as it can be seen in Figure 3:

Fig.3: The diagram of the 3C collaboration model.
Source: Michalsky, Mamani, Gerosa (2010, p. 1).

In contemplating the socio-technical components inherent in cyberculture, the basis for sustaining this environment is revealed in technologies that support the production of static and dynamic content on the Internet, commonly observed in websites, portals, blogs, digital social networks, etc.

The fact that people seek these environments as a source of information presents a change in the media dissemination paradigm, initially monopolized in physical media, which was gradually migrating to the digital medium, being updated according to the infrastructure conditions of hardware and software, constantly evolving technology, merging new electronic devices, their usability, and especially the concept of mobility, affecting behaviors in the producers and consumers of news.

According to Oliveira (2018, in press), the model created to account for a virtual collaborative news environment is based on the essential components of the 3C collaboration model, extending its functionality to two more conceptual elements that segment collaborative work, present in the original model, and converging to a good practice of producing digital content of the news type.

For Oliveira (2018, in press), the model that extends the 3C model and fully meets this proposal is:

> [..] the model 3C2I, starting from the communication, where the collaborator-reader begins the collaborative construction of the news. Then, in the coordination phase, the algorithm defines the ordering actions together within the environment, considering: individuals, resources and permissions. The next step leads to cooperation the demands of sharing the environment, which can start the production cycle again, notifying the collaborating reader who initiated the demand, or advancing to the component that extends the original model, enhancing the interaction between reader-collaborators , with statistical records of his or her ability to produce news (likes, shares, views), his level of participation and blind peer internal evaluation report of submitted news. Concomitantly, this phase guarantees access to the integration of functionalities arranged in the environment, allowing the highest level of readers, assisted by information agents, members of the environment and artificial intelligence, to list the best classified news, being arranged in order of higher precedence, defining whether the object (submitted news) follows for publication or returns to the workflow with a message (communication), detailing each evaluators' opinion, the statistics, the data generated in the artificial intelligence, as well as the deployments of the agents information, which made the final publication of the news impossible (OLIVEIRA, 2018, page 43 [in press]).

The graphical representation of this new model that extends the 3C model, adapting the workflow that contemplates the particularities present in a Virtual Environment of Collaborative News, can be observed in Figure 4 below:
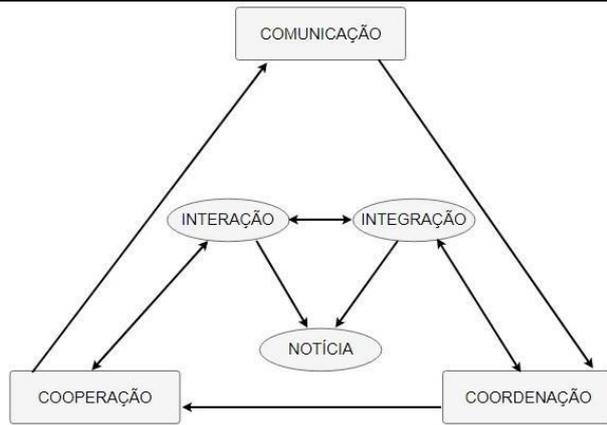
Fig.4: Model 3C2I
Source: Oliveira (2018 [in press]).

The model 3C2I, described above, presents this design to meet the demands of this type of journalistic production. In the proposal of Oliveira (2018, in press):

> [...] in the flowchart of the AVNC editorial process, the collaborator-reader submits a news story about the environment and feeds the indexing metadata. Soon after, the AVNC algorithm places the news in the queue of submissions and appoints two evaluators, who assume their curatorship. During the curatorial process, the submission is verified, the evaluation is carried out following the dimensions recommended in the news evaluation form (FAN), it signals the AVNC neural network to

execute a learning algorithm based on probabilistic methods, of type SVM (Support Vecto Regression), which performs a linear regression and suggests to the evaluators the most relevant news for future publication. The FAN and the data from the neural network processing are important instances that inform the evaluators in the collaborative curation of news production, interacting with each other and with the author, through the exchange of messages through the environment, and through the panel of control that, according to the permission and level of the individuals, are stimulated to collaborate, for diverse motivations, or only by prestige and reach of relevance between the readers / consumers of the environment. Once the evaluation opinion is favorable to the publication, the news changes from status, "evaluation" to "marked to timeline", enabling it to join the "news timeline" instead of less relevant news, a measure taken instead, a submission undergoes a change in its status, favorable to publication (OLIVEIRA, 2018, p.44 [in press]).

Thus, the 3C2I model materializes in the definition of the operation of the process that begins the production of the news until its publication, and can be better understood in the flowchart shown in Figure 5below:
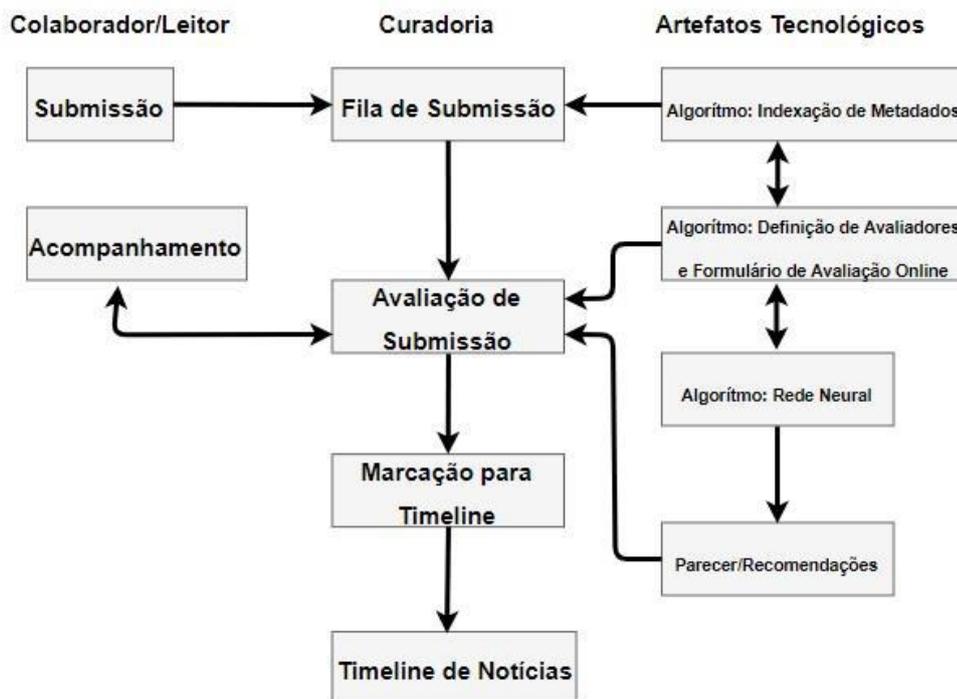

Fig.5: AVNC publishing flowchart.
Source: Oliveira (2018 [in press]).

The graphic representation, through a flowchart, explains in a comprehensive and detailed way the operation of the environment, which aims to be collaborative.

The AVNC will initially cover the academic communities of UENF, UFF and IFF, institutions based in Campos dos Goytacazes, Rio de Janeiro. It should be emphasized that, although initially composed of academic communities, the AVNC will not be limited to academic-scientific news, "for the community", as would be characteristic of community journalism. The restriction will be exclusively for an experimental group in which it is assumed that it already has an openness to innovation and collaboration, since the chosen institutions dedicate themselves to science and research, as well as already have a technical-scientific cooperation relationship between them.

VII. FINAL CONSIDERATIONS

From a brief overview on the production and consumption of news in Brazil, modified in the last years by the internet and the technologies of information and communication, it was verified that people have been informed more and more by the internet and the cultural transformations brought with information and communication technologies allow, in addition to information, readers to contribute with production of content.

In the literature review, concepts that define new social practices, with the advent of technology, were approached, such as the new roles occupied by readers that are no longer mere spectators to become active producers of news and information, which changes the whole dynamics of journalistic production.

Through a timeline of disruptive events for the newspaper industry, it was possible to better understand that technological disruptions have been occurring in an increasingly shorter time span, completely transforming journalistic organizations, which shows the dynamism of this becoming increasingly digital.

Since there is no way to "brake" the dynamics of the production and dissemination of news from the internet and the reader/producer that acts in this environment, it was necessary to think of a business and management model that could help in the management of a virtual environment of collaborative news (AVNC), as the one that intends to create in the State University of the North Fluminense from the researches conducted in the Postgraduation Program of Cognition and Language.

From the selection of concepts of the area of management and business that enabled the control of this new way of generating value in journalistic organizations of the new economy, the business and management model was thought.

At the end, as a possible application of the theories and ideas discussed throughout the article, an idea was presented of the AVNC platform, which will be based on the 3C model of collaboration with the necessary complements necessary to sustain a virtual collaborative news environment in times of cyberspace.

It is believed that because it is a collaborative form of journalistic production in its essence and totality, it tends to have fewer errors; to be more up-to-date and critical, with the monitoring and supervision of the public; and fully interactive. Being able to explore new forms of collaboration, new analysis tools and data sources, and new ways of communicating what is interesting for the public is the most exciting and transformative aspect of the current journalistic scenario (ANDERSON, BELL and SHIRKY, 2013).

REFERENCES

[1] ANDERSON, C. W. BELL, E. SHIRKY, C. (2013). **Jornalismo Pós-Industrial: adaptação aos novos tempos.** Tradução de Ada Félix. Revista de Jornalismo ESPM. [S.I], v.5, pages 30 – 89, abr/mai/jun.

[2] BARBEIRO, Heródoto; LIMA, Paulo Rodolfo de. (2013). **Manual de Jornalismo para Rádio, TV e Novas mídias.** Rio de Janeiro: Elsevier.

[3] BAUMAN, Zygmunt. (2001). **Modernidade Líquida.** Rio de Janeiro: Jorge Zahar.

[4] BOWMAN, Shayne; WILLIS, Chris. (2003). **We Media**. How audiences are shaping the future of news and information. The Media Center at The American Press Institute: Califórnia, 2003. Available at: < http://www.hypergene.net/wemedia/download/we_media.pdf> Accessed on: Mar. 25, 2018.

[5] CAMPOS, V. F. (1992a). **Controle da Qualidade Total (no estilo japonês)**. Belo Horizonte, Bloch.

[6] CASTILHO, Carlos. (2005). Webjornalismo: o que é notícia no mundo on-line. In: RODRIGUES, Ernesto (Org.). (2005). **No próximo bloco...** O jornalismo brasileiro na TV e na internet. Rio de Janeiro: Ed. PUC-Rio; São Paulo: Loyola, pp. 231-256.

[7] CASTILHO, Carlos; FIALHO, Francisco. (2009).**O jornalismo ingressa na era da produção colaborativa de notícias**. Jornalismo on-line: modos de fazer. Rio de Janeiro: Ed. PUC-Rio: Editora Sulina, p. 119-146.

[8] CGI. (2017).**Pesquisa sobre o uso das tecnologias de informação e comunicação nos domicílios brasileiros**: TIC domicílios 2016. São Paulo: Núcleo de Informação e Coordenação do Ponto BR/Comitê Gestor da Internet no Brasil, 2017. Available at:

<https://www.cgi.br/media/docs/publicacoes/2/TIC_DOM_2016_LivroEletronico.pdf> Accessed on: Jan. 10.

[9] COSTA, Caio Túlio.(2014).**Um modelo de negócio para o jornalismo digital.** São Paulo: Revista de Jornalismo da ESPM.

[10] DEUZE, Mark. *2006).**Liquid Journalism**. Working Paper.

[11] ELLIS, C.A., GIBBS, S.J. & REIN, G.L.(1991).**Groupware - Some Issues and Experiences**. Communications of the ACM, Vol. 34, No. 1, pp. 38-58.

[12] FERRARI, Pollyana. (2008).**Jornalismo digital.** São Paulo: Contexto.

[13] IVC.(2017).**Posição, participação e evolução das publicações.** 2007 a 2016 [personal message]. Message received from: <dani.uenf@gmail.com> on Jan. 11.

[14] FERNÁNDEZ, M. (2017). Empresas buscam o funcionário digital. **El País**. Madri. Available at: <https://brasil.elpais.com/brasil/2017/03/10/economia/1489165785_466140.html> Accessed on: Jun. 18.

[15] FLAMHOLTZ, E. (1979). Organizational control systems as a managerial tool. **California Management Review**, v.22, n. 2, p. 50-9.

[16] IUDÍCIBUS, S. M.; CARVALHO, L. N. Con (2005).tabilidade: aspectos relevantes da epopeia de sua evolução. **Ver. Cont. Fin.** USP, São Paulo, n.38, p. 7 -19, maio-ago.

[17] JENKINS, Henry (2009). **Cultura da Convergência**. 2ª. Ed. São Paulo: Aleph.

[18] KAYO, E. K. (2002).**A estrutura de capital e o risco das empresas tangível e intangível-intensivas:** uma contribuição ao estudo da valoração de empresas. Tese de Doutorado em Administração. FEA/USP. São Paulo.

[19] KUGELMEIER, W. (2014)**Você sabe qual a diferença entre Modelo de Negócio e Modelo de Gestão?**. Available at: <http://www.administradores.com.br/artigos/negocios/voce-sabe-qual-a-diferenca-entre-modelo-de-negocio-e-modelo-de-gestao/77605/> Accessed on: May 19.

[20] LEV, B. (2001).**Intangibles:** management and reporting. Washington: Brookings, 2001.

[21] LÉVY, Pierre (1999). **Cibercultura**.São Paulo: Editora 34, 1999.

[22] LÉVY, Pierre (2007). **Inteligência coletiva**: para uma antropologia do ciberespaço. SP: Loyola, 2007.

[23] MICHALSKY, Straus, MAMANI, Edith Zaida Sonco, GEROSA, Marco Aurélio. **A Inteligência Coletiva na Web:** uma análise de domínio para o jornalismo online. Anais do VII Simpósio Brasileiro de Sistemas Colaborativos [SBSC 2010], 2010, Belo Horizonte, Brasil. Disponível em: <http://lapessc.ime.usp.br/public/papers/11065/2010.WebMedia.AD Jornalismo.pdf> Accessed on July 10, 2017.

[24] MORIN, Edgar. **Introdução ao pensamento complexo.** Trad. Eliane Lisboa. 5. ed. Porto Alegre: Sulina, 2015.

[25] NUNES, M. F. H. **Uma proposta de desierarquização da produção de notícia: a total interência do leitor-usuário de internet.** Tese de Doutorado. UENF, 2018 [no prelo].

[26] OLIVEIRA, F. M. **Proposta de um Ambiente Virtual de Notícias Colaborativo.** Tese de Doutorado. UENF, 2018 [in press].

[27] OSTERWALDER, A. PIGNEUR, Y. (2011).**Business Model Generation – Inovação em Modelos de Negócio: um manual para visionários, inovadores e revolucionários.** Rio de Janeiro, RJ: Alta Books.

[28] PRIMO, Alex; BRAMBILLA, Ana Maria. (2017).**Social Software e produção do conhecimento**. 2004. Available at: <http://hdl.handle.net/1904/17782> Accessed on: May 10.

[29] RAMALHO, Leiridiane, TSUNODA, D. F. (2007)**A Construção Colaborativa do Conhecimento a Partir do Uso de Ferramentas Wiki**. VIII ENANCIB – Encontro Nacional de Pesquisa em Ciência da Informação, October 28 to 31, 2007, Salvador, Brasil. Available at: <http://enancib.ibict.br/index.php/enancib/viiienancib/paper/ view/2870/1998> Accessed on Nov. 02.

[30] RODRIGUES, F. D. (2017). **Modelo de negócio e gestão para portais de notícias da nova economia: proposta conceitual.** Tese de Doutorado. UENF.

[31] ROST, Alejandro. (2014). Interatividade: Definições, estudos e tendências. In: CANAVILHAS, João (Org.). **Webjornalismo:** 7 características que marcam a diferença. Covilhã: Livros LabCom, 2014. pp. 53-88. Disponível em: <http://www.labcom-ifp.ubi.pt/ficheiros/20141204-201404_webjornalismo_ jcanavilhas.pdf> Data do acesso: 20 abr.

[32] SERRA, Joaquim Paulo. A transmissão da informação e os novos mediadores. In: FIDALGO, António; SERRA, Joaquim Paulo (Orgs.) (2017). **Informação e Comunicação Online**: Jornalismo Online. vol. 1. pp. 13-48. Covilhã, Portugal: Universidade da Beira Interior, 2003. Available at: <http://www.livroslabcom.ubi.pt/pdfs/20110829-fidalgo_serra_ico1_jornalismo_online. pdf> Accessed on: Dec. 15.

[33] SANTAELLA, L. (2010). **A Ecologia pluralista da comunicação:** conectividade, mobilidade, ubiquidade. São Paulo: Paulus.

[34] SANTAELLA, L. (2013). **Comunicação ubíqua:** repercussões na cultura e na educação. São Paulo: Paulus.

[35] SIQUEIRA, L. D.; CRISPIM, S. F. (2017). Modelos de negócio na era digital. **Revista Espacios**. Vol.33, 2012, pág. 21. Disponível em: <http://www.revistaespacios.com/a12v33n07/ 12330721.html>. Accessed on: Sep. 18.

[36] STEWART, T. A. (1998). **Capital intelectual:** a nova vantagem competitiva das empresas. 2 Ed. Rio de Janeiro: Campus.