Model of Open Scientific Information Management in Events

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Abstract

In the process of scientific research, communication is essential. The insertion of Information and Communication Technologies have modified the profile of the researchers and the daily life of their researches. In response to these changes, this article proposes the adoption at scientific events of the video poster, replacing the poster on paper or canvas. The objective is to propose a model of Management of Open Scientific Information of Video in Events, as a means of scientific communication. This research was developed based on the literature review of models of this type of management, the information collected in interviews with the managers of the events that used the video poster as a strategy of scientific communication, and the data collected through a survey, sent to event participants. The results, after treatment of the data and confrontation of the ideas of the managers with the opinions of the participants, point out that the video poster has the potential to prolong and even perpetuate the products of scientific communication in events and to promote the scientific divulgations, besides the possibility of reuse, as an educational resource. As result of the research, the proposal of an open scientific information management model for the use of event managers is presented.

Keywords: open access; scientific content; video poster; product information.

1. Introduction

Videos are present in people's daily lives, whether on computers or on smartphones over the internet, for entertainment or learning purposes. According to the Cisco report [5], in 2019, online video will account for 80% of the world's internet traffic, which makes the video become a relevant study object, covering

several topics, among them teaching and scientific research.

In the scientific field, Pinto and Zagalo [8] warn that for science the gains go through the valorization and visibility. There is an urgent need to create the efforts of institutions and researchers to captivate the public, that is, to explore practices and communication models that adapt to the needs of society that facilitate the understanding and appreciation of scientific and technological research.

The scientific community constantly searching for updated information makes use of different channels of scientific communication [9]. In addition, the scientific events are a source of research, knowledge and exchange of new knowledge, promoting the exchange and transmission of information in a group of researchers and students of a area or specialty with common interests.

Valério and Pinheiro [17] affirm that these channels are considered informal because, "they are ephemeral forms of communication, because they are available to a limited audience for a short time." The authors emphasize that "among the oral mass media are conversations, scientific meetings, colloquia and conferences, as well as scientific and technical commissions."

Scientific communication has not incorporated the advances of Information and Communication Technologies (ICT), mainly in terms of events, which have the same presentation formats for decades. The scientific contributions to the congresses, almost entirely, are informal, that is, oral presentations are not recorded, and paper or canvas posters are discarded shortly after their use.

In view of this scenario, we highlight the proposal of Freitas, Schmid and Tavares [7] that indicates the substitution of the poster printed on canvas, paper or fabric by the use of audiovisual resources (videos) in the dissemination of research in scientific events and its later reuse in educational practices.

The management of scientific events has been consolidated and professionalized. The challenge of this research is to offer event managers a model of scientific information management in a differentiated information product that are scientific videos, which have their own characteristics. As an audiovisual product, it involves questions of how to receive, where to store, how to organize and classify, how to use and publish, how to be reused. And undoubtedly involves the concern with the authors participating in the events, as to the acceptance of producing the video.

The purpose of this article is to propose a model of Management of Open Scientific Information of Videos for organizers of scientific events.

1.1 Management of Scientific Information

Le Coadic [10] asserts, "Without information, science cannot develop and live"; and that "information only matters if it circulates and, above all, circulates freely". It is in the development of a research that information is generated and deepened, and the dissemination of its ideas happens through channels of communication, formal, informal or hybrid.

Information management is a structured set of activities that mirrors the way in which an organization captures, distributes and uses information and knowledge [6]. Alvarenga Neto [1] complements that Information Management (IM) is the identification, the correct use and the potentializing to generate new information of the informational resources of an organization, as well as guarantee to the learning organization able to promote the adaptation to the environmental changes.

The proposed theoretical IM models are results of the perception of the need to explain information management in a way that directly influences the development of company strategies. Analyzing the literature, we verified the existence of several models of IM processes. In this research, the models were analyzed: Thomas Davenport [6]; James McGee and Laurence Prusak [13]; Glória Ponjuán Dante [15], Adriana Beal [3] and Fernando César Lima Leite [11].

The selected models are based on the integrative perspective of information, which is the integration of information resources - processes, tools and people. When comparing (Table 1), among the proposed models, there are steps common to all, which permeate the four processes of the information cycle: acquisition, treatment, distribution and use - despite the specificities and individual contributions of each model.

Table 1. Stages that make up the Information Management models

	Stages	Davenport [6]	McGee Prusak [13]	Ponjuán [15]	Beal [3]	Leite [11]
ACQUISITION	Identification of information needs		X	X	X	
	Determination of information requirements (requirements)	X	X		X	
	Acquisition (procurement) and collection of information	X	X		X	X
TREATMENT	Classification of information		X	X		X
	Analysis of information		X		X	
USE	Dissemination and distribution of information	X	X	X	X	X
	Use of information	X	X	X	X	X
	Development of information products and services		X			
REUSE	Information Storage		X	X	X	X
	Information retrieval					X
	Control - Monitoring				X	

The Davenport model [6] emphasizes that Information Management - IM is a process, because once the information process is described and ordered, it is possible to gradually improve or change it radically. Davenport [6] establishes the following steps in his model: determination of the requirements, obtaining, distribution and use.

McGee and Prusak [13] consider identifying needs and information requirements as a key step in the IM process. Note that in these models the entire process is directed, specifically, by transforming data into information products for customers, whether internal or external.

Ponjuàn Dante [15] emphasizes that IM aims to collect, treat and disseminate information that is useful to

the organization and users, using physical, technological and human structures in the organization.

For Beal [3], the stage of identification of information needs and requirements is essential for the elaboration of informational products that meet the demand of the users. The stage of obtaining the information is composed by the activities of creation, reception or capture of information, coming from internal or external source. The information processing phase aims to facilitate its future recovery. For that, the processes of organization, formatting, structuring, classification, analysis, synthesis and presentation are performed.

Leite [11] conceptualizes the management of scientific information as a set of strategies and processes designed to effectively promote the flow of information that feeds and results from research activities, ensuring their use and reuse. It also highlights that the scientific expression refers to that type of information produced by a scientist, researcher or research group, presented in texts and scientific publications, which is discussed, disseminated and disclosed in different media and channels.

The author adds that scientific information is at the same time an entrance and exit from the production system of Science. The flow of information that feeds and results from research activities is promoted by the scientific communication system.

Based on these concepts, the Scientific Information Management comprises the specific processes of generation, collection, organization, preservation, retrieval, dissemination and use of the necessary information and created from the research activities of the research institutes [11].

Leite and Costa [12] adds that the effective promotion of the flow of scientific information requires the consideration of internal and external forces that act on its processes generation, collection, organization, preservation, recovery, dissemination and use of scientific information.

However, what is perceived is that in all models, communication is essential for the process of scientific investigation, because it is the way the scientist conveys the advances and conclusions of his research. Through communication, research gains legitimacy after being analyzed and accepted by peers [14]. Because it is a knowledge that must be widely discussed and tested before a specific community, science presents a communication cycle that involves the researcher in constant dialogue with his peers [2].

2. Methodology

The methodology covered different strategies. Initially, the theoretical reference based on the analysis and extraction of concepts from the literature to constitute the research model - this one that offered us the foundations from which the research problem was observed and discussed. Then, guided by the theoretical reference, the methodological procedures were determined, detailed below.

Because it is still an unexplored topic - the use of video poster as a resource for scientific communication - there is little knowledge about it. In this way, the research effort was directed to the theoretical construction of a base that would substantiate a model of open scientific information management to the use in videos in events, with contribution of the literature in each one of the stages.

In the development of information products and services, it is necessary to consider the opinions of final users, coming from other areas of knowledge, that may present new perspectives on the process [13].

Therefore, the model was delineated from the theoretical construction of interviews with event managers who adopted the video poster strategy and the application of a survey with the participants of the events. The research had as an environment, four scientific events that adopted the video poster as communication strategy, presented in Table 2.

Table 2. Research Environment

Event	Acronym/Year	Place and Date	Number of Videos
V Latin American Meeting of Buildings and Sustainable Communities	ELECS 2013	Curitiba – PR (Brazil) October 21-24, 2013	99
I European and Latin American Meeting of Buildings and Sustainable Communities	EURO ELECS 2015	Guimarães - Portugal July 21-23, 2015	39
International Sustainable Built Environment Conference Series	SBE 16 Brazil & Portugal	Vitória – ES (Brazil) September 7-9, 2016	30
III International ICT Congress for the evaluation of external practices in multidisciplinary contexts	CoRubric 16	Malaga – Spain October 13-15, 2016.	5

Interviews were conducted with managers of each of the events: ELECS 2013; EURO ELECS 2015 and SBE16 BRAZIL & PORTUGAL, totaling nine interviewees. The objective of the interview was to identify critical factors in the management of scientific information in video in all stages of the process: generation, collection, organization, preservation, recovery, dissemination, use and reuse of scientific information.

Participants of the events, previously mentioned, answered a questionnaire that aimed to identify the acceptance of the proposal of the video poster, the difficulties in the elaboration and monitoring and use of the video poster. The rate of return obtained by this research, considering that 506 possible respondents received the questionnaire, was of 21.94% that is classified as efficient, because according to Freitas [7]; Janisek-Muniz and Moscarola (2004), the standard rate of return of an internet mailing is 7 to 13%, and for Comley (2000) the response rates vary between 15% and 29%.

The data collected with the instrument applied with the participants of the events were tabulated and analyzed in Microsoft Excel® software, to generate graphs and scores for each variable searched. In the resulting collection of the research with the participants of the events and / or authors of video poster, the data collected passed first by a quantitative question by question, to classify each item searched from the most selected to the least selected.

Subsequently, some data were crossed to identify the profile of the author and the respondents who had:

• the highest degree of acceptance of insertion of a new scientific communication product;

• the greatest difficulty in the preparation of the video poster;

• degree of interest in following the post-event video; and

• the use of videos as an educational resource or for other purposes.

Table 3 shows the data resulting from the interviews with the managers of scientific events.

Table 3. Treatment of the data raised in the interviews with the managers

Action	Goal	Result
Transcript of interviews with event managers.	Structure the collected data.	Archive with the texts of the interviewees, divided by questions and by interviewees.
Floating reading of transcripts.	Understand the context of each event.	Formulation of the first analyzes on the data collected.
Word cloud development at WoldCloud.com	Identify words with greater occurrence in texts.	Word list most frequently in the answers.

After the transcription of all the interviews were generated clouds of words in the site WoldCloud.com, to visualize the most cited words. Each cloud generated the list of words was placed in a Microsoft Excel® spreadsheet, allowing the treatment of equal words written always in lowercase letters, sometimes with the first letter capitalized. The grouping of words, in turn, has the same meaning within the context.

To generate the first cloud all words were used. Subsequently, words that had frequency less than five were taken out, as well as adverbs, pronouns, prepositions, verbs, and conjunctions. The result is shown in Figure 1.

Fig.1. First cloud generated with the words of the transcriptions.

The data of the interviews with the managers were analyzed qualitatively, question by question, within the context of each event, seeking to identify the positive points, the evolution of the processes and management. WordCloud software assisted in structuring the data and schematizing the analyzes.

Finally, in Table 4, the analysis of the data collected with the managers, authors and participants of the events, the positive aspects of the video poster and the suggestion of improvement for the upcoming events were rescued.

Table 4: Stages of the model for the management of open scientific information in events

<table>
<tr><th colspan="2"></th><th>Stages</th><th>Adequacy to the proposed Model</th></tr>
<tr><td rowspan="3">ACQUISITION</td><td></td><td>Identification of information needs</td><td>Planning/Scientific Project</td></tr>
<tr><td></td><td>Determination of information requirements</td><td>General and Scientific Planning/Project</td></tr>
<tr><td></td><td>Acquisition (getting) and collection of information</td><td>Receipt of videos (Cycle of Video Poster)</td></tr>
<tr><td rowspan="2">TREATMENT</td><td></td><td>Classification of information</td><td>Classification (Video Poster Cycle)</td></tr>
<tr><td></td><td>Analysis of Information</td><td>Evaluation (Video Poster Cycle)</td></tr>
<tr><td rowspan="3">USE</td><td></td><td>Dissemination and distribution of information</td><td>Insert on the platform - Annals - and allow access (Video Poster Cycle)</td></tr>
<tr><td></td><td>Use of Information</td><td>Exhibit the videos in the technical sessions (Poster Video Cycle)</td></tr>
<tr><td></td><td>Development of information products and services</td><td>Video poster and communication channels are considered information products.</td></tr>
<tr><td rowspan="2">REUSE</td><td></td><td>Information Storage</td><td>Create channel on open access video platform.</td></tr>
<tr><td></td><td>Control - Monitoring</td><td>Promote the reuse of videos as OER or for scientific marketing.</td></tr>
</table>

The proposal was submitted to the managers for evaluation of the model. The changes and consolidation of the model were then carried out, as shown below.

3. Model for the management of open scientific information in events

As it is something new, the literature does not present a model that meets all the processes that involve the scientific video in events, it was sought theoretical foundation in the specific literature of the area of Information Management and Scientific Communication.

McGee and Prusak [13] consider the identification of needs and information requirements as a fundamental step in the Information Management process and Beal [3] classifies the stage of identification of information needs and requirements as essential for the elaboration of information products that attend user demand. Another aspect considered in the proposal is the question of the physical, technological and human structures present in the model of Ponjuàn Dante [15].

Therefore, the proposed model has two stages: the acquisition of well-structured information, with scientific planning, and the administrative, financial and technical areas, in a detailed way, in order to meet the requirements of users of scientific information.

The processes of Management of Scientific Information in Video correspond to a cycle (a set of interconnected and interdependent phases that are repeated successively in an established order). And just as in the model of Beal [3], the proposal presents the stage of reuse of information.

The proposal of this research adopts the procedural perspective adapted from the models of Information Management registered in the literature (Davenport [6], McGee and Prusak, [13], Ponjuàn Dante [15] Beal, [3] and Leite [11]).

The elaboration of the Model for the Management of Open Scientific Video Information in Events - MOSVIE - for organizers of scientific events was based on the literature, based on the perception of event managers that used posters videos as a communication strategy, as well as the vision of the authors of videos and of the other participants of the events (Figure 2).
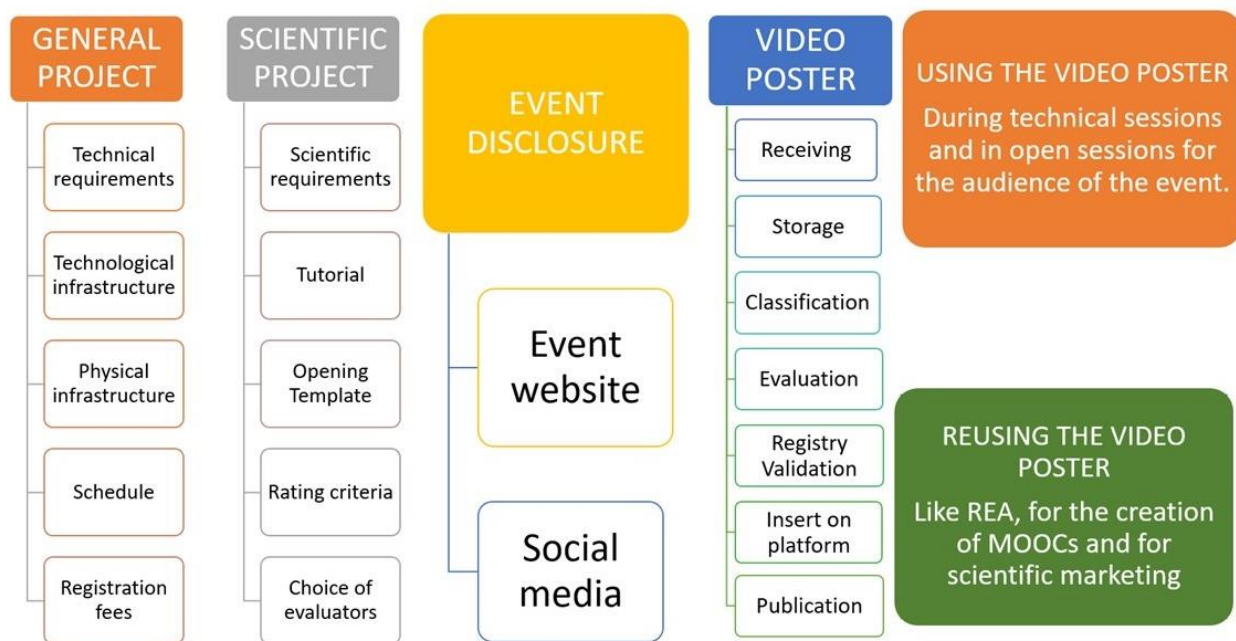

Fig.2. Management model of open scientific information in events – movies.

This proposal is divided into macro stages, that is, in the design and planning of the event both within the scope of administrative, financial and technical management as well as in scientific management. However, everyone on the team must exchange information with each micro process.

3.1 General design

After defining the adoption of the video poster in the event, the manager should initiate the project and planning with the administrative, technical and financial team. Here are the items to be planned:

- **technical requirements:** set maximum size and file format; minimum and maximum screen resolution; minimum and maximum duration; use license - that meets OER's "5Rs" (review, reuse, remix, redistribute and retain); or other limitations according to adopted technology.
  Attribution - technical team.

- **technological infrastructure:** predict the system of uploading the videos by the authors - event site and server for storage - as well as define indexing criteria and recovery system.
  Attribution - technical team.

- **physical infrastructure:** adequate location for acoustics and lighting, for the transmission of videos during the event, as well as the necessary equipment.
  Attribution - administrative and technical team.

- **timeline:** schedule planning is strategic, it is necessary to define the dates for submission of the abstract/script and the poster video, to establish criteria regarding the obligation of sending and the need for the author to adjust in the video after technical and scientific evaluation.
  Attribution – administrative and financial team.

- **enrollment values:** you must define the enrollment values, considering the costs necessary for the technological and physical infrastructure.
  Attribution - financial team.

3.2 Scientific project

In the scientific scope the items to be planned are:

- **scientific requirements:** define a road map with the scientific requirements required for posters - observe open access policy;

- **tutorial:** preparation of the guidelines guides to prepare the video poster will require time and should be detailed enough to meet the author who has the greatest difficulty. The tutorial can be reused in other events;

- **opening template:** for the standardization of the videos, a standard template with logo and theme of the event is necessary;

- **evaluation criteria:** prepare a checklist with the requirements that should be observed by the evaluators;

- **Evaluators:** evaluators should be chosen to analyze the scientific content of the videos as well as the presentation in its entirety.

The definition of the obligation to send video poster, scientific requirements (language, script, etc.) and technical requirements (time, format, etc.) should be discussed in the planning, according to the goals of the adoption of the video poster, as well as the expected results with this scientific communication strategy.

3.3 Event Disclosure

After completing the planning, the event starts - fundamental phase due to the proposal of a new scientific communication product, the video poster.

In contrast, there is resistance to the "new", because it is about creating a product with the use of techniques and technologies that part of the authors/researchers do not use habitually. In some situations, authors may not scale the time required to produce your video and not take the time to produce it, leading to even greater difficulty.

3.4 Video poster lifecycle flow

Attention should be given to the generation of "Video Poster Lifecycle Flow", which includes the specific processes for identifying the information of authorship with video sending, acquisition (input and reception), storage, classification, evaluation, publication (dissemination and use of information) and recovery (reuse). The steps detail the specific suitability of the video process and the involvement of all managers (administrative, financial, technical and scientific).

It is recommended that the lifecycle flow of the poster video be adapted according to the characteristics of each event and the teams involved:

• **Prepare the environment for receiving the videos:** involves the entire project and planning;

• **Receipt:** control the receipt of the videos sent by the authors, verify authorship of the materials received.

Attribution: technical team.

• **Storage:** on own server, or on a video sharing platform; in both options, use the descriptors defined in the planning.

Attribution: technical team.

• **Treatment:** the videos are analyzed according to the technical criteria and then classified into pre-defined categories and sent for evaluation.

Attribution: scientific team.

• **Assessment:** evaluate and, if necessary, ask for adjustments, both technical and academic, or disapprove the video.

Attribution: scientific team.

• **Validation of the registration:** verify that the author has made its registration and release for publication.

Assignment: Financial team.

• **Insert on the platform - Annals:** insert the videos in the platform defined for dissemination of the Annals of the event.

Attribution: technical team.

• **Publication:** allow access to the platform.

Attribution: technical team.

3.5 Use of the video poster at the event

The use of the video poster at the event, in the technical sessions, will be, as defined in the planning, that

is, in sessions open to the public of the event. For this phase, the main aspects to be observed are: necessary equipment (monitors or televisions, speakers or headphones) as well as the acoustics and the lighting of the place. It is recommended to perform some tests before the event.

Attribution: scientific team and technical team.

3.6 Reuse of the poster video

The reuse of the video poster implies taking actions to encourage the reuse of the videos by the participants of the events and the use for the promotion of groups and researchers - scientific marketing.

Attribution: scientific team.

Therefore, it is necessary to elaborate criteria in the definition of metadata for indexing in repositories or video platforms, since this factor is determinant for the retrieval of open scientific information.

The reuse of information is based on the models proposed by Beal [3] and Leite [11], as well as the concept of "Open Access", which aims to provide free access to scientific information. The reuse as an Open Educational Resource (OER) was also considered by the managers interviewed as a motivating factor for the adoption of the video poster as a resource for scientific communication in events. To do so, the video must have the permissions established by the OER Brazil Program (2012): the "5Rs" (grant users accessing these resources the possibility to use, improve, recombine and distribute).

It is therefore recommended that authors use the CC BY Creative Commons Attribution license. This license allows others to distribute, remix, adapt and create from your work, even for commercial purposes, if it's give it due credit for the original creation. Or the CC BY-AS - Creative Commons Attribution-Share Alike license, which allows others to modify, adapt and create from their work, even for commercial purposes, if they also assign the due and credit the new creations under identical terms.

Targino [16] emphasizes that scientific communication favors the product (scientific production) and producers (researchers) the necessary visibility and possible credibility in the social environment in which product and producers are inserted.

In this context, Bomfá [4] warn that research institutions and researchers rely on scientific publications to promote and obtain scientific visibility. And the video poster is a resource that helps in the process, due to the profile of new researchers who make use of these audiovisual resources as a source of information in their daily lives.

4. Final considerations

The present research had as main objective the proposal of a model of management of the scientific information of video in events based on the assumptions of scientific communication and open access to scientific information.

The difficulties in managing the insertion of the new scientific communication product into events, from the design and planning of the event to the monitoring of the dissemination actions and the finalization with reports and closings in the post-event. The managers were motivated to adopt, again, the strategy in upcoming events, being aware of the needs of improvement in the management process.

By analyzing the results of the research with the authors of video poster, it is perceived that there is a culture of "disposable" in the scientific environment. The knowledge produced for presentation is usually not reused by the authors. The results show that 67.74% of video poster authors never visit the YouTube channel of the event, and 77.42% of the authors stated that they never used their videos as an educational resource or for other purposes.

The video poster appears as a proposal to prolong and even perpetuate the products of scientific communication of events and promote scientific disclosures. To do so, it is necessary to change scientific culture, where authors value their works published in events, and use them either for didactic purposes or scientific visualization.

In general, it has been observed that video poster has a significant potential for consolidation as a product of scientific communication. To do so, it is necessary to raise the awareness of managers of scientific events and researchers about the potential of the video poster. The issue of sustainability and the use of the time of the events to exchange knowledge between peers is highlighted.

Another potential of the video poster is to promote the visibility of research, researchers and institutions, as it is a product that meets the new profile of researchers who use audiovisual resources as a source of research. The reuse of the video poster as OER can also be a marketing strategy as they will be viewed by a larger number of people and possibly be instigated to read the source articles.

The video poster is a resource that can easily fit the context of the classroom because it is a product of scientific information, provided that it has the license that meets the five freedoms proposed by Open Education: use, reuse, recombine, distribute and retain

The potential of the video poster as OER should be considered by both event managers and authors themselves. With the authors' awareness about the possibility of reusing their videos and their peers in the classroom, videos are expected to be produced with the same care that the authors demand of their articles, adding more benefits to the scientific community.

The consolidation of the video poster as a means of scientific communication, depends on how the proposal is presented to the researcher, managers must be sure of the strategy for the event and the benefits of this resource, such as: i) the possibility of evaluating presentations before event; ii) to prevent issues of infrastructure failures; iii) increase the time for interaction between peers during the event; iv) promote an event that meets the sustainability criteria; among others; and v) provoke a change of scientific culture with consolidation and use of the materials generated in the promotion of groups or researchers and/or reuse of video as an educational video.

The main contribution of this work is the presentation of a model for the Management of Scientific Information of Video in Events, which allows managers a better understanding of the process, from the proper planning in the insertion of a new product of scientific information.

It is important to highlight the specific perspective of the proposed model. Its design considered general and necessary elements to any model of Management of Scientific Information and predicted in its constitution some flexible elements, that accommodate possible contextual differences that vary from event to event.

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