



COMUNICAÇÕES CURTAS / SHORT COMMUNICATIONS

The challenge of Bionet: eight European science centres and museums are building a digital exhibition on life sciences

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Abstract

Bionet is a major digital exhibition on Life Sciences being currently developed by eight science museums and science centres in Europe. The project encompasses some interesting and innovative aspects, namely: i) it is multicultural and Pan-European in scope; ii) explores a digital *vs* a physical environment; and iii) approaches new management issues. This communication presents these three themes as they have evolved during the first 18 months of the exhibition development.

Resumo

O Bionet é um projecto de uma exposição digital sobre ciências da vida que está a ser desenvolvida por oito museus e centros de ciência europeus. O projecto reveste-se de alguns aspectos interessantes e inovadores, nomeadamente: i) é um projecto multicultural; ii) explora conceitos relacionados com o digital *vs.* real; iii) levanta questões inovadoras relacionadas com a gestão. Esta comunicação desenvolve estes três aspectos, à medida que foram sendo debatidos e reflectidos ao longo dos primeiros 18 meses de desenvolvimento do projecto.

Introduction

Bionet is a collaborative exhibition on Life Sciences. Its goal is to create an environment, on line and in European science centres (see box), where citizens can be part of a debate on the major issues that Europe is facing in the field of Life Sciences: the ethical, medical and social aspects of the new genetics, genetically modified food, new medical research etc. In order to create a meaningful debate, clear and complete information must be provided. Usually, science centres do this by means of

exhibitions, which, using a variety of media, present information and suggestions for their visitors. More and more often they use the Internet or references to on-line publications and websites to provide more detailed information. However, it is still difficult to assess the quality of the learning experience that visitors have while and after visiting an exhibition at a science centre. At the moment there is no general agreement on how to measure the effectiveness of exhibitions, nor whether visiting an exhibition produces new knowledge for the visitors and, if so, under which conditions.

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Some authors question that the time spent with an exhibit could be one of the many factors to track but opinions on this topic diverge. However, everybody generally agrees on one aspect: one of the most important experiences for the visitor of a museum or a science centre is the social interaction, be it with other friends or family members, or with the staff of the museum. It is during this interaction that visitors build long-lasting memories of their visit, and during the opportunities of dialogue and conversation questions arise and the visitors have the possibility to acquire new knowledge.

The main goal of Bionet has always been to stimulate an informed debate. Therefore it is necessary to accomplish two goals: 1. to make available meaningful information which the user can rely upon, and 2. to create the setting for the debate to happen. Contrary to a traditional exhibition, where the debate among visitors is certainly auspicated but is usually not part of the exhibition itself, in Bionet this is the main feature. Starting from these premises, the development of Bionet becomes a truly innovative way to investigate the role of science museums, exhibitions, and their social impact.

Multicultural and European in scope

Today, the Life Sciences are one of the 'hottest' items in the news, in policy making, and in the economy. Without going into the scientific details, it is probably enough to mention that as a whole, the Life Sciences raise ethical, political and economic issues which are unprecedented. But the most important aspect is that the consequences of the choices that are taken, at all levels, have a global - or at least a European - effect. The internationalisation of markets allows the

circulation of goods and food that are produced according to different standards in each country; increased mobility allows citizens to get medical and non-medical treatments regardless of the regulations in their native countries; diseases like foot and mouth spread rapidly and the consequences affect not only farmers but also other industries like tourism. Citizens have an enormous power in determining the 'rules' for Life Sciences, both directly (for example through referenda) and indirectly (by way of their political and consumer choices). These choices will not only affect their national situation but also the European one.

What can the role of institutions like museums be in this arena? As S. Macdonald writes, 'Museums which deal with science are not simply putting science on display; they are also creating particular kinds of science for the public, and are lending to the science that is displayed their own legitimising imprimatur' (MACDONALD 1998: 2). What is displayed, presented and discussed in a science museum acquires therefore a status which is often taken for granted as objective, true, and politically unbiased. This was not a problem for the early hands on centres, where basic scientific principles rarely create conflicts of objectivity. Today, however, exhibitions on socially relevant topics, the perceived image of the institution by the visitors, and the museological guidelines it follows can contrast with each other.

Bionet aims at being a neutral window where the different voices can be heard, including those of potentially conflicting sources, such as environmental organizations and the industry. However, keeping the field neutral is the first priority. Looking at some recent cases of controversial exhibitions¹, it can be argued that in all cases it was

¹ Like the much discussed 'Enola Gay' and 'Science in American Life' exhibitions at the Smithsonian Institution in 1995-1996, and others presented in MACDONALD (1998).





the institution's museological choice to be at the centre of the debate. Can Bionet move away from this model, and leave full responsibility to the players, maintaining however an authentic degree of objectivity? According to some authors, the final narrative of an exhibition is 'the product of open and vigorous debate' (MOLELLA, 1994: 13) among curators, advisory board members, and scholarly consultants. The challenge for Bionet is to assure that this debate is not the final narrative, but the founding blocks for an exhibition which is built as the debate progresses. It seems therefore that the model to follow is more a journalistic one rather than a museological one. Collecting evidence of facts, ensuring a wide (and wise) representation of all the parties, and providing tools to the visitors to express their opinion, are therefore the guidelines for Bionet. This applies also to the potential corporate sponsors: the industrial sector is a major stakeholder in the Life Sciences, and will be a player in the exhibition. We can expect this to be asked by the visitors themselves, as happened recently at the Ars Electronica Festival².

A presentation of issues and topics about Life Sciences would not be enough to raise the interest of a European audience if it did not allow the open participation of citizens across countries. Here it becomes fundamental to "localize" the appearance of the Bionet exhibition, maintaining full access to the contributions. It is truly a multicultural exercise, where citizens are invited to discuss and understand why the rules and the laws can be different from one country to the other and what room there is for common action.

Translations play an important role here. It is not only a matter of presenting the content in the local languages, but also to allow a seamless dialogue

² The 1999 edition, entitled 'Life Science', was sponsored by Novartis, among others. During a public debate, none of their representatives was present. Nevertheless, the public explicitly asked for a statement from the company.

The Partners

The BIONET project is being developed within the ECSITE network. Eight science museums and science centres have agreed to take the lead in developing BIONET within the ECSITE network. They represent a wide range of institutional models, and together they receive over 7.5 million visitors annually.

The eight partners are:

- **@Bristol, Bristol**
<http://www.at-bristol.org.uk>
- **The Science Museum, London**
<http://www.sciencemuseum.org.uk>
- **La Cité des Sciences et de l'Industrie, Paris**
<http://www.cite-sciences.fr>
- **Heureka, the Finnish Science Center, Vantaa**
<http://www.heureka.fi>
- **The Experimentarium, Copenhagen**
<http://www.experimentarium.dk>
- **The Deutsches Museum, Munich**
<http://www.deutsches-museum.de>
- **The Museu de la Ciència de la Fundació 'la Caixa', Barcelona**
<http://www.fundacio.lacaixa.es/fundacio/cas/equips/museu.htm>
- **The Museu de Ciència da Universidade de Lisboa, Lisbon**
<http://www.museu-de-ciencia.ul.pt/>





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between users from different countries. Considering the vast amount of information which will be available, the strategy is to translate 'critical content' in various degrees of depth: using a combination of automatic and human translators, we will achieve different levels of responsiveness to the exhibition changes.

Another important aspect, which will be described further on, is the combination of 'live' meetings in science centres with the electronic background. Having the possibility to discuss delicate issues immediately with the stakeholders is something which is impossible at the moment. It is also quite difficult to achieve at the national level (at most, a series of conferences can be organized). The European scale of Bionet will justify the effort of having, at certain times, experts and stakeholders in different European countries meeting the public at the science centres and broadcasting these meetings in an interactive manner on the Internet. So far there have been only isolated experiments in this sense and never from a partnership of institutions³.

Digital versus physical environment

Bionet is a 'digital exhibition'. What we mean by digital is that all the content that runs on Bionet is in digital format, ready to be transferred, processed and accessed on networks and digital devices. Why is this important? Because the main feature of Bionet is to be a place for discussion and debate. It is therefore necessary to have the maximum flexibility and speed in accessing the content of the exhibition, regardless of the place where the user is (museum, school, home etc.). Bionet is not an experiment of a 'virtual

museum'. It needs the physical spaces in order to achieve its goals, but during the implementation of Bionet we will certainly be faced with the question of what makes science centres unique places.

We are witnessing a trend where science centres are relying more and more on the 'emotional value' of real objects (STAVELOZ, 2000). This should not surprise us, when we realize that many leisure and entertainment venues make 'emotions' their strongest asset. Whether these emotions are solid or not, fake or real, is another discussion. Trying to convey just content and information, without being able to trigger any emotion (curiosity, imagination, amazement, pleasure, etc.), may result in a dull exercise and is certainly not a workable strategy for the Internet. In addition, we should not forget that for many museums 'real' visitors passing through the doors are still a fundamental indicator of their effectiveness and an important generator of income.

The role of on-line users for a museum has still to be fully understood in terms of effectiveness of the museum's activities, and certainly we lack a working business model which takes into account the on-line users. On-line activities should not be considered separate from the 'museum experience', and their function and design must be coherent and integrated with the rest of what the museum offers. To this extent, a challenge for Bionet is to integrate the electronic component with the activities taking place in the museums in such a way that they are both 'self standing' but strictly related to each other. In Bionet, each partner will host quite a number of public meetings and debates, where visitors will meet experts and opinion leaders and will have the opportunity to

³ The effort of the Exploratorium has been remarkable, which through its 'Live @ the Exploratorium' series has produced several webcasting events (<http://www.exploratorium.edu/webcasts/>).





talk about recent developments and hot issues. The scale of the project allows these meetings to be held at the same time in different locations, and with the help of simultaneous translations, citizens will have the possibility to experience how similar subjects are discussed in other countries. Up to this point, the digital component allows just an easier technological environment for this to happen (i.e. easier support for translations, possibility to webcast and archive the meetings, etc.). But, as said before, it is important to engage the users in an activity which generates emotions. Most importantly, to offer the possibility of realizing the quality of the experience that science centres can provide.

Contrary to most activities in science centres, the use of the Internet is still largely a solitary experience. It is difficult to change this pattern in the use of a personal computer, which allows only one person at a time to be in control of actions⁴. Therefore it becomes important to build the emotional engagement and the social layer where it is more appropriate and where it can be made evident that the on-line activity can then reinforce the experience. This is the principle which inspires the integration of the physical and the digital components of Bionet.

During the events as well as in some of the exhibitions at the partners' institutions, the content of the digital exhibition will be used to introduce the subject, to provide starting points for the discussion, to present the stakeholders, and in general to provide the background information that is needed for an informed debate. In this way the digital exhibition becomes the reference tool needed for the debate and

our goal is to show how the social interaction can be nurtured and kept 'alive' between the events. But there is another aspect to the digital exhibition. It gives access to the debate to a whole range of players who, for different reasons, cannot take part in the physical events at the museum. Not only individuals, but associations, foundations, students' groups, or any stakeholder which, for example, want to provide comments in depth. One of the aspects we want to monitor in Bionet is the extent of such players and how to bring their contribution back into the debate. The fact that the on-line exhibition relies mostly on a solitary use of the computer should not be considered a drawback. In fact, it allows individuals to express their ideas or to ask questions in a way that would be impossible in a collective setting because, for example, of the private nature of the contributions. From this short overview it becomes clearer that a 'real' place is necessary for the on-line exhibition to achieve its goals. Still, it may be argued why science centres are needed and not any other place where people can meet and discuss together. Some authors (e.g. BRADBURNE, 1998) even question the possibility for science centres to survive when they have to compete with initiatives that can be more easily managed by small, temporary teams in ad-hoc locations.

Bionet was developed with the goal to build a neutral environment for an open and informed discussion on life sciences. Few places are recognized to be as independent and objective as science centres are. Their long standing presence in the field of public understanding of science guarantees a solid network of partners and a methodology which has shown to be effective. Bionet will certainly help to identify

⁴ An alternative, which is beyond the goals of Bionet, would be to use innovative sensorial interfaces, such as sound or embedded technology. These allow more people to share the steering place, thus enabling some sort of social interaction while using a computer.





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the role that a science centre can play in a community. Given the differences among the partners, it will be a challenge to look at critical factors like dimension, institutional form, management structure, and resources.

New management issues

A partnership among eight museums and science centres from seven European countries with the objective of building a shared exhibition is not a trivial task to conceive and manage. Although all partners have solid roots in the ECSITE network and previous collaborative projects have shown the feasibility of such actions, each institution maintains its own culture, style and institutional goals which have to be taken into consideration.

Contrary to a travelling exhibition, which maintains its unique identity at the different locations, Bionet will present itself in a different way in each institution. It may consist just in the program of events, or it can be a set of displays and exhibits. Its contents can be used on the floor together with the other exhibitions or presented on the web alone. Even the timeframe can be slightly different, thus increasing the complexity of the management of the project.

One governing principle in the management of

Bionet is to use as much as possible the same structure and tools that we plan to use in the project itself. Therefore the goal is to have a reliable framework, in which each player can find and share the necessary independence to use that aspect of Bionet which fits best in its institutional strategy. An efficient management method which takes into account the interdependencies between separate tasks or stages in the development, is the design structure matrix⁵ which describes the information flow in a project rather than the work flow. In this way it is possible to see which information has to be provided in order to proceed with the development and also when it is necessary to receive feedback from tasks which have been already completed. This model will be used during the development of Bionet.

Conclusions

Bionet is still under development, although much work has already been done and the foundations have been laid. Certainly, the evaluation of the ideas expressed in this note should better be done once the project is concluded. What is important to point out is that Bionet will not only be an experiment to create the first collaborative digital exhibition in Europe, but also a rich institutional learning opportunity for all the participants and, through the ECSITE network, to the science centre field at large.

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⁵ For details on this method, see <http://web.mit.edu/dsm/>.

