

**Turning information into knowledge**  
*the Actua project at the newMetropolis*

paper prepared for the conference

**Here & Now**

improving the presentation of contemporary science and technology in  
museums and science centres

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## Introduction

One of newMetropolis's goals is to transform our visitors into users - and to help prepare users for the challenges of the next century. A fundamental skill is familiarity with global, real-time communications - the Internet. Moreover newMetropolis aims to garner a reputation for being a source of information about the science and technology that lies behind the news, and a reputation for responding to events in the news quickly and effectively - by updating exhibits, programmes, and information resources. We are meeting this challenge in part by developing a computer-based information structure for use by both visitors and staff.

There is by now a widespread consensus on the value of the Internet for science centres, by which we mean, not only the Internet itself, but all the communication networks that link us to the world, and allow us to bring news and information into the science centre at any time. Electronic delivery of information is clearly establishing itself as the way young people prefer to keep updated and to look for information, as witnessed by the constant increase in the number of Internet subscriptions, Internet cafés, and Internet information providers.

It was logical therefore that science centres and museums could not remain aloof from this new means of communication for too long. If it is true that the strength of many science museums is in the value of their collections and artefacts, to be fully enjoyed only at first hand, it is equally true that these collections must represent something "live" and relevant for the young audiences raised in a world where electronic communication is becoming a

commonplace. Moreover, many science centres do not or cannot rely on artefacts or original collections, but rather on 'experiences' and hands-on exhibits to help their visitors engage with science and technology. In both cases, successful communication can greatly enhance a visit to the museum, not communication in the limited 'marketing' sense of a one-way message sent to a potential buyer, but as one of the tools a museum can give to its audience - in this case, the possibility to communicate interactively inside and outside of the museum itself.

One of the central goals of newMetropolis is to 'transform visitors into users.' This means giving visitors a reason to return to the institution more frequently than they would normally to a museum whose collections change infrequently, if at all. To achieve this goal, the institution has to commit itself to continuous renewal, and to remaining in touch with the issues that matter to its visitors. Many, if not most, of the issues surrounding science and technology that concern our visitors - our potential users - can be found in the news. Gas attacks in the Tokyo underground, outbreaks of Mad Cow disease in Britain, bacterial life on Mars, these are issues that spark and catalyse visitor concerns about science and technology in their own lives - and if it is to become a part of people's lives in a meaningful way, the science centre must visibly demonstrate that it is able to respond to issues in the news.

From the outset, we have considered electronic communication not as an end in itself, but rather as the main tool to provide this updated face to our institution. Whether the communication is done over the Internet with a Web site or with a system of automatic e-mail addresses is primarily a technical question, not a conceptual one. Our real goal is not only to give information

about our activities, but to build a new tool for the visitors and for the institution itself - a communication infrastructure that could easily become part of an exhibition area, or an educational project, or become a research facility for our staff. This broad goal to create an interactive information resource can be further divided into two related goals, first, to update the institution in order to be a centre which is always changing, and second, to create a platform for extension programs outside the physical site of newMetropolis.

To meet the first of these goals we need to create a resource within newMetropolis to deal with events in the news - from the latest developments in energy conversion to the global issues of environment - in order to provide updated exhibits and programs for the public, and up to date research material for staff. Meeting the second goal speaks to our idea of creating a 'virtual museum' - a resource available to those who for different reasons cannot come to the physical building. Distant schools and disadvantaged communities are only two examples of large groups that can benefit from the extension programs made possible by means of electronic networks.

After considering different models of how to use these media in the public and social environment of the museum, we have developed a strategy for electronic communication. Without being exhaustive, our approach groups opportunities into the following four categories:

1. on floor terminals - public access stations
2. collaborative education projects with schools
3. Web sites and remote learning programmes
4. the Cybercafé

### **1. on floor terminals - public access stations**

For the science centre to become a centre for communication - both internal and external - its visitors should have access to the technologies and tools necessary to be in touch with the museum itself, its staff, and the world at large. However, such an ambition poses a series of questions: for instance, which kind of technologies should be available? Who takes care of the cost of communication? Should the science centre make available the 'knowledge' to communicate, or the actual means of communication? Even more elementary, what do we mean by 'communication'?

According to the director of newMetropolis, Joost Douma, science centres should become a 'meeting place' for discussion - a place for visitors, politicians, industrialists, and scientists, to constantly review and discuss the 'state' of our society. Our exhibitions and programmes all seek to support this goal, and the communication infrastructure we are creating shares the same vision<sup>1</sup>.

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<sup>1</sup> Douma, J, *Prototyping for the 21st century - a discourse* (Amsterdam, newMetropolis science and technology center, 1994)

Communication thus represents the opportunity for our visitors to have access both to the facts as they are presented, and to as many as possible points of view on those facts. To these the visitor can add his or her own ideas and opinions, add new perspectives, and eventually build up deeper personal understanding of the subject.

With this in mind, rather than a public, unlimited access to open networks like the Internet, which risks being confusing and chaotic, we believe it is more worthwhile to give 'glimpses' of what is happening in the world through news broadcasts, and to create the possibility to 'export' experiences and information learned inside to others. Therefore we consider the Internet terminals with an open connection to the Internet, which are now beginning to appear in new science centres, to be like providing free telephones for the visitors - even if these terminals do partly fulfil the mission of the institution in general, the information they present is completely decontextualised. The alternative is to create an internal information - a network linked to the exhibitions in the science centre, in order to provide a context in which new information makes sense, and place open access to the Internet where it more properly belongs - in the Cybercafé (see point 4)

## **2. Collaborative educational projects with schools**

The science centre has a privileged relationship with the school system. It is an informal learning environment, and 'extension' to the existing curriculum. But the once-a-year (in the best case) experience of visiting the museum can be further extended if the science centre can create opportunities to engage the students in longer term learning activities. Electronic networks provide a convenient tool to link schools, even if they are far away from one another,

and to create collaborative educational projects. The science centre then becomes a co-ordinator of activities that the students perform, a resource to help them 'navigate' in the network of people, institutions, and contacts in which the science centre is an important node<sup>2</sup>. The physical collection, the '*museum*', may lose some of its importance, but another goal is reached - a science centre made by people, a science centre which represents a living resource for the formal education community. The successful experiments with education projects developed using telematics<sup>3</sup> (for example, those developed in Italy by Laboratorio dell'Immaginario Scientifico) are a clear sign that electronic communication is becoming an important tool for the partnership between science centres and schools.

### **3. Web sites and remote learning**

Distance education is becoming a first-priority issue for many 'education providers', and the possibility to reach remote users through electronic networks gives the science centres a much broader potential public. In so doing, however, it raises a new series of issues about competences, target publics, new technologies etc. The World Wide Web (WWW or W3) has considerably lowered the threshold to multimedia information from all over the world by means of its user-friendly interface and powerful search engines. Museums and science centres are naturally among the most important players in this emerging field, due to the large amount of information they potentially store. Still, it is only now becoming clear who are the most important users of

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<sup>2</sup> Bandelli, A, 'Linking schools through the network' paper submitted at the *1994 ECSITE annual general meeting* (Amsterdam: IMPULS Science & Technology Center,1994)

<sup>3</sup> Bandelli, A, 'AriaNet - La telematica al servizio dell'ecologia' *LIS Notizie*, 22 (April 1995), p. 2 and Smaje, H, 'Science goes to school via the Super-Highway' paper submitted at the *1994 ECSITE annual general meeting* (Amsterdam: IMPULS Science & Technology Center,1994)

the WWW in science museums and science centres. Simply putting information and content developed for a completely different kind of function (for example the physical building) on the Internet is not enough.

Apart from marketing purposes, which of course play a very important role in the WWW, the potential for remote learning, distance education and outreach programs is immense. The effort of developing new content and new models of interaction between visitors and the science centre, together with the definition of new activities and targets, contributes to continuing experimentation, and shapes the concept of 'virtual museum', which for too long has been identified only with a computer-generated three dimensional graphic recreations of the museum space.

#### **4. Cybercafés**

Internet cafés, places where people can drink a cappuccino while sending e-mail messages, are not only trendy places to spend some time in the evening. The concept of the Cybercafé has re-vitalised the entire idea of early 20th century cafés. At that time, people went to the café to meet other people, read their mail, telegrams, and newspapers, discuss the news, publish artistic, literary or political magazines and declaim manifestos. Businessmen found in the cafés the right atmosphere to meet other associates, and artists often saw the café as their interface with society at large. In many cities (London, Amsterdam, Vienna, Trieste for instance) we still can breathe the atmosphere and the vitality once found in cafés across pre-war Europe.

Cybercafés serve the same need, presented in a new, innovative, up-to-date way. For a science centre the Cybercafé can be the direct 'arm' into society: a

place apparently independent from the science centre, where the strong emphasis on communication as a tool to turn information into knowledge is always present<sup>4</sup>.

## **Actua at newMetropolis**

From these background considerations we have developed the 'Actua', or news concept, which is our expression of the concept of the virtual science centre, and the use of the Internet within the institution.

### **1. Access to information**

The Internet is constantly referred to as an endless repository of information. Even without considering the problems involved with the indexing of such information, and, as a consequence, its retrieval, the main problem if we look at the learning process while using the WWW is represented by the act of browsing itself. We go from one page to another following a thread given by free association of thoughts, and underlined links. But we completely miss the context to which the single pages belong. We can go from a PhD dissertation to a press release and from a technical manual to somebody's hobby page in a couple of seconds. The information we get in this way very often 'oscillates' between valuable content and useless garbage, even if it concerns the same topic.

Unless we are only looking for pure data, building a context for the information available on the Internet is very difficult. A big help can come from the science centre as an institution - the science centre becomes the place where

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<sup>4</sup> Pope, I, 'Just what is the future for cybercafés?' *.net*, 2 (1995)

all the information is put once more into the context of the exhibits, the programmes, and the public activities. Both visitors and staff should be able to access not only the Internet, but specific, tailored, subsets of relevant news and information.

## **2. Actua Hoeken - the News Corners**

The 'News Corners' are styled on a common feature of Amsterdam cafés - the reading table. In newMetropolis, these tables host networked computer stations which show daily updated face of newMetropolis, presenting what's happening now in the field of science, technology, industry, and society. At the same time the terminals serve as orientation tools, not narrowly focused on the contents of newMetropolis, but on the context of the learning experience itself - they will provide sample 'tours' through the exhibitions and the programmed events, linked to news and current developments in research and science as they are presented by the news.

Moreover, using the Internet, it will be possible to call up references in the news, or mark that news to be put in an electronic 'knowledge basket' personalised for each visitor - information they can send to their own e-mail address. The Internet serves thus as a 'bridge' to export experience (in terms of information, comments, ideas, contacts) developed at newMetropolis to the outside world.

## **3. The workflow**

The 'interface' between the institution and the outside world is managed by a special team whose task is to balance the information needs from the 'inside' with the offer of information available 'outside'.

The team will be responsible for retrieving the latest news and the relevant information to display in the Actua Hoeken. The sources can be news wires, Internet sites, TV stations, etc. The team is also responsible for bringing the 'pulse' of the real debates and discussions in science into newMetropolis. But in this respect the Actua Hoeken are only one end use of this information - the entire staff can equally profit from this constant 'open window' to information in order to better shape the development of new programmes and exhibitions.

From the responses of the users of the Actua Hoeken (both as direct comments and as usage statistics) the team can determine the most accessed information and the most important links to the exhibition. From staff the team receives direction on how to conduct further research to develop specific background documentation for newMetropolis.

Finally, the team is responsible for managing the communication flow between visitors and staff, in terms of requests for special programs, comments on exhibit development, etc.

#### **4. Networked exhibits**

The evolution of the collaborative projects discussed above is implemented in the form of network exhibits - structured communication projects in which students and visitors are able to exchange ideas, comments, and opinions. In these exhibits, students from different locations in the world create 'reports' or scenarios on certain topics, which are then made available to visitors on the floor of participating science centres. These exhibits have two main goals, first, to illustrate issues in the current society or environment (like sustainable development, recycling etc.) and foster discussion about them, second, to use this discussion (in the form of comments, messages, suggestions or debates) as

a learning opportunity for the students who can immediately 'test' their ideas with visitors to the institution. In addition, such exhibits have the advantage that they can be shared among different science centres, whereby every centre has a 'localised' version of the exhibit to serve the practical needs of its own local school community. Thus they represent not only a collaboration between different schools and cultures, but different institutions.

## **5. Remote access to the science centre**

In the short-to-medium term we can foresee a considerable increase in remote users of science centres. As described above, new contents will be developed to suit this new category of users. A field which we are particularly interested in is using the network to prototype new projects undertaken by the science centre. New exhibits and new strategies for programmes and text labelling, for instance, can be increasingly developed 'virtually' on the Internet. Educational activities can also be supported by remote access to newMetropolis - a customisation of the offer can be easily provided, together with an easy access to the 'knowledge basket' used on the Actua hoeken.

## **Conclusions**

To conclude, it is important to emphasise the fact that the key to the survival of our institutions of informal learning - both as institutions, and as places - is in meeting the needs of a wide variety of users. We know from the extensive research done by Marilyn Hood<sup>5</sup> into the motivations of users of our institutions

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<sup>5</sup> Hood, M, 'Leisure preferences are the key to science centre audience research' paper submitted at the *First Science Centre World Congress* (Vantaa, Finland: Heureka, 1996)

that most of our occasional visitors do not come for high intensity, challenging learning experiences - they come for social interaction in a public setting. However, our frequent users do come for such experiences, and often leave disappointed. The new media allow us to provide high-quality learning experiences for our frequent visitors - our real users. As a consequence, our institutions should take the initiative in developing new products and programmes with new media. Our plans put an important emphasis on electronic media as a key means of achieving one of our key institutional missions - to transform visitors into users. The Actua project does this both internally, by bringing in information to fuel new exhibits and programmes, and on the exhibition floor in the form of Actua Hoeken which provide the visitor with up to date background information on events in the news. Most importantly, this is not a one way, top-down process. By using the electronic media fully, we also create a means for visitors to the institution to create information for others to use, making the science centre both a platform and a forum for public opinion.

As specialists in informal learning we are well positioned to take a leading role in creating new approaches to informal learning. We may not be alone in the field, nor should we be, but the institution's future is guaranteed as long as we continue to take the initiative in creating rich informal learning opportunities - inside and outside the institution, in the science centre and on the Internet.