

National Museum Directors' Conference

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A NETFUL OF JEWELS
NEW MUSEUMS IN THE LEARNING AGE
A REPORT FROM THE NATIONAL MUSEUM DIRECTORS' CONFERENCE



FAR AWAY IN THE HEAVENLY ABODE OF THE GREAT GOD INDRA, THERE IS A WONDERFUL NET WHICH HAS BEEN HUNG BY SOME CUNNING ARTIFICER IN SUCH A MANNER THAT IT STRETCHES OUT INDEFINITELY IN ALL DIRECTIONS. IN ACCORDANCE WITH THE EXTRAVAGANT TASTES OF DEITIES, THE ARTIFICER HAS HUNG A SINGLE GLITTERING JEWEL AT THE NET'S EVERY NODE, AND SINCE THE NET ITSELF IS INFINITE IN DIMENSION, THE JEWELS ARE INFINITE IN NUMBER. THERE HANG THE JEWELS, GLITTERING LIKE STARS OF THE FIRST MAGNITUDE, A WONDERFUL SIGHT TO BEHOLD. IF WE NOW ARBITRARILY SELECT ONE OF THESE JEWELS FOR INSPECTION AND LOOK CLOSELY AT IT, WE WILL DISCOVER THAT IN ITS POLISHED SURFACE THERE ARE REFLECTED ALL THE OTHER JEWELS IN THE NET, INFINITE IN NUMBER. NOT ONLY THAT, BUT EACH OF THE JEWELS REFLECTED IN THIS ONE JEWEL IS ALSO REFLECTING ALL THE OTHER JEWELS, SO THAT THE PROCESS OF REFLECTION IS INFINITE.

AVATAMSAKA SUTRA: FRANCIS H. COOK HUA-YEN BUDDHISM: THE JEWEL NET OF INDRA 1977

FOREWORD	2
INTRODUCTION	3
1 NEW MUSEUMS	4
MUSEUMS AND LEARNING	
THE EMERGING CULTURAL NETWORKS	
MUSEUMS' UNIQUE CONTRIBUTION	
NEW AUDIENCES, NEW SERVICES, WIDER ACCESS	
2 MUSEUMS AND THE CREATIVE ECONOMY	8
3 THE WIDER WORLD	10
4 CREATING THE DIGITAL MUSEUM	12
CREATING CONTENT AND PARTICIPATION	
MAINTAINING THE NATIONAL RESOURCE	
CONNECTING WITH USERS	
PROVIDING THE SERVICES	
CREATING THE ORGANISATIONAL INFRASTRUCTURE	
5 TRAINING	16
6 FUNDING THE DIGITAL MUSEUM	18
SOME SOURCES OF FUNDING	
THE NUMBER OF DIGITAL MUSEUMS	
THE FUNDING NEEDS	
THE COST	
7 AGENDA FOR ACTION	22
CONCLUSION	
ACKNOWLEDGEMENTS	24



In recent years museums and galleries have undergone a transformation of image and practice. Visited by nearly a hundred million people each year, museums in the United Kingdom now provide an exceptional diversity of activities, exhibitions and services. As well as being a creative industry in themselves, they are also a vital source of inspiration for the country's creative economy and, through their expanding educational work, increasingly effective seedbeds of creativity for the public.

Three dimensions of national development will have a particularly important role in our future. One is the digital media sector, in which this country is a leading player. A second is the cultural industries, possibly the fastest growing sector of our economy. The third is the world of further and higher education, in which the United Kingdom's expertise is universally respected. These three crucial elements come together in our museums and galleries, whose resources have vast potential for development in the emerging digital cultural universe.

It is vital, for this process to be successful, that the country as a whole takes a long term approach to the fostering of its creative resources. Children, visiting in school or family groups, are the next generation of designers, as well as producers and consumers. For them, museums are open public storehouses of the creativity of the past and a crucial stimulant for the creativity of the future.

This report is timely and urgently needed. It is an enabling report, one that the museum sector hopes will help establish a framework for policy development as well as a renewed sense of priorities.



Lord Puttnam of Queensgate

SCRAN – the Scottish Cultural Resources Access Network

SCRAN is a £15 million Millennium project that uses multimedia and Web technology to create 'Scotland's digital heart'. It makes the treasures in Scotland's museums, galleries, libraries, archives and historic buildings widely available for study and enjoyment. SCRAN gives access to hundreds of thousands of images, sound and movie clips, virtual resource packs and more, for schools and libraries in Scotland, and Web users everywhere.

Over 1000 schools have subscribed to SCRAN. They gain access to the full database, including full sized digitised images, and to CD ROMs of SCRAN resources.

<http://www.scran.ac.uk>

The 24 Hour Museum

The 24 Hour Museum has been created as a popular gateway to museum and gallery websites.

Through the use of new technology the 24 Hour Museum transforms the collections of our museums into an educational resource that is available on-line, around the clock.

As access to the web becomes increasingly available at the school, library, workplace and home the 24 Hour Museum will provide a one stop shop for interaction with our cultural heritage. Users will be able to prepare for their museum visit and do an 'electronic follow up' afterwards from the comfort of their own armchair. Children of all ages will be catered for with specific museum resources.

<http://www.24hourmuseum.org.uk>

INTRODUCTION

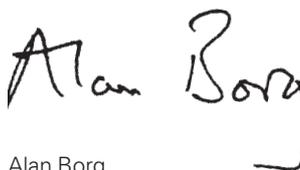
Museums and galleries are essential to a prosperous and civilised society. Our museums hold millions of wonderful things relating to our past and our present, to our world-wide connections and our local communities, to science, natural history, and art. They are some of people's best-loved places for enjoyment and informal learning.

Now, information and communications technology offers entirely new opportunities for galleries and museums to contribute to the most important items on the national agenda: to the creation of a learning society, to social inclusion, and to competitiveness.

We believe that museums and galleries should lie at the core of the new learning networks. In *Connecting the Learning Society (Department for Education and Employment 1997)* the government recognised the vital role of museums in providing content for the National Grid for Learning. Already, innovative uses of the new technologies by museums hint at the extraordinary wealth as yet untapped. Museums can contribute the richness of their great collections, and the knowledge and authority of their expert staff – curators and other professionals – in research, interpretation and presentation.

This report is the first in a series to be commissioned by the National Museums Directors' Conference. It is the result of close cooperation with the Museums and Galleries Commission and the **mda**. Many organisations and individuals within the museums sector and beyond have contributed to it.

The report is a step in a process that will depend on a lively dialogue between museums, their funding bodies, colleagues in libraries, archives and the education sector, commercial partners, and of course the public themselves. In it we describe the contribution that museums can make to a learning society, show what needs to be done to achieve this, discuss funding requirements, and present an agenda for action.



Alan Borg

Chairman, National Museum Directors' Conference



1



NEW MUSEUMS
MUSEUMS AND LEARNING
THE EMERGING CULTURAL NETWORKS
MUSEUMS' UNIQUE CONTRIBUTION
NEW AUDIENCES, NEW SERVICES, WIDER ACCESS

For the first time we have the opportunity to link all our learning institutions and providers – including schools, colleges, universities, libraries, adult learning institutions, museums and galleries – and more, to link them purposefully to an agenda for developing the learning society. To achieve a learning society, these links must extend in an effective way to homes, the workplace, hospitals, the high street and the street corner in the same way that public utilities like the telephone are universally available.

Connecting the Learning Society: Department for Education and Employment 1997



How adults prefer to learn

- Most adults are currently engaged in learning
- More than half do so outside the formal education system
- Over half learn in order to improve the quality of their lives rather than to improve work skills or prospects
- The most popular methods of learning are studying or doing practical things alone and exchanging ideas and information with others
- People felt they learnt most at home (57%) or in libraries and museums (36% and 13% respectively); only 29% felt they learnt most at colleges and universities.

MORI survey on behalf of the Campaign for Learning 1998

Internet use is growing faster than ever

Internet use has increased 29% in six months, to 16% of the adult population in the UK. The fastest increase is in numbers of users under 25 and over 55.

BMRB International's Internet Monitor for May-September 1998 October 1998

- 44% of homes have a personal computer
- 15% of homes have Internet access
- 72 per cent of computers in homes are used for education
- 10% of adults use the Internet from work
- 61% of adults express interest in using an "IT access point."

Is IT for all? Department for Trade and Industry 1999

Dyson vacuum cleaner model DC02: Design Museum exhibition 'Doing a Dyson' 1996-7; the same model is in the collection of the Science Museum

NEW MUSEUMS

Museums and galleries in the UK are extraordinarily popular and diverse. Over ninety million visits are made yearly to our 2,500 museums. These range from small local museums that are the expression of community enthusiasm to great national galleries and museums holding world famous collections. Our 44 national museums receive nearly thirty million visits, and sixty million are made to the network of local authority, independent, university and other institutions. Museums and galleries are among our best loved and most used public institutions, both for people living in the UK and for visitors from abroad.

How adults prefer to learn

Now, digital technologies are transforming our society. In work, in education and in the home people are using the new opportunities. Museums can be a key part of this new future.

The next century will be one of lifelong learning. Ours cannot be just an information society. Information is simply the raw material for the future. We must become a society capable of continual creativity and lifelong learning. In the family and the community, at work, in libraries, archives, schools and colleges people will turn increasingly to museums and galleries as places for learning.

Internet use is growing faster than ever

Learning through digital networks – the National Grid for Learning, the University for Industry, Community Grids for Learning and a host of other initiatives – is central to the Government's vision of the learning society. As individuals take greater responsibility for their own learning, organisations will need to respond by creating new opportunities for this. The Dearing, Kennedy and Fryer reports all recommended that we increase participation in the further and higher education system and put learning within reach of everyone throughout life. (*Report of the National Committee of Enquiry into Higher Education: Department for Education and Employment 1997; Learning Works: Further Education Funding Council 1996; Learning for the 21st Century: Department for Education and Employment 1997*)

MUSEUMS AND LEARNING

The cultural sector is our country's second education sector. For adults, museums, galleries and other cultural institutions are the most important places for learning after their own homes.

THE MUSEUM AS A CENTRE FOR DIGITAL LEARNING

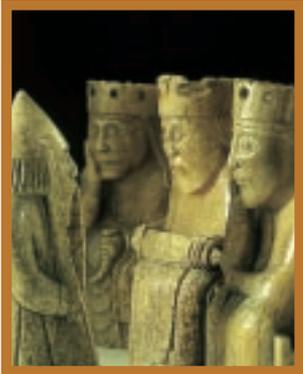
The seeds for future development are already present in today's museums:

- Relevant, participatory galleries and digital exhibits
- Digital cameras, smart cards and other media for use during a visit
- Content created by visitors as well as by museum staff
- Facilities for searching the collections in ways that are relevant to visitors
- Trained staff to help visitors learn
- Interactive web sites and online services
- Online information to help in planning visits
- Connections between the actual and virtual museum, and with other cultural resources locally and world-wide.

Over ten million schoolchildren visit museums, galleries and other public arts venues each year, and museums provide many events and services especially for the formal education sector. Of visitors to museums and galleries, a third are young people in school or family groups. The Science Museum alone welcomes over 300,000 educational group visitors a year; the Tate Gallery, 115,000. One in five visitors to the Victoria & Albert Museum is a student. Museums throughout the country are finding similar trends.

People learn in different ways, and we must provide for this diversity. Most adults prefer to learn socially, informally, at their own pace, in comfortable surroundings, and in ways that encourage practical activity and participation. Many prefer to learn at home, and in public cultural institutions like museums, galleries and libraries, rather than formally. Museum collections and works of art have a special potential to engage people and act as a catalyst for debate and interaction with others and for personal research and enjoyment.





The Lewis Chessmen, 12th century; collection of the National Museums of Scotland



SCRAN users

Collections, archives and libraries

Suffolk County Council is developing internet access to information from independent museums, the local studies library, record offices, and the Sites and Monuments Register. Developing an integrated subject thesaurus to facilitate searching will be key to the project.

The Public Record Office is working to develop further its links with Places of Deposit for Public Records, which include national museums as well as some local authority archives.

Enabling cultural diversity

Houses and Households: from the Museum of Welsh Life, St Fagans- a CD-ROM for schools. Text, video and speech in both English and Welsh allow pupils to explore this popular theme in the National Curriculum for Wales.

http://www.anglia.co.uk/history_HousesAndHouseholds.htm

Celebrating cultural links

The Museum of Science and Industry in Manchester holds a collection of printed textile samples from local companies. In the past the textiles were sold in West Africa. To understand the full story of the textiles and their designs it is necessary to learn how they were cut, worn and used in West Africa. Digital networks can supply the opportunity to share and discuss the museum's collection with people who bought, sewed and wore these textiles.

Virtual visits, real visitors

The Museum of the History of Science in Oxford has a website that reflects its great collections of scientific instruments. It currently receives about 100,000 individual virtual visits a year (about 1.5 million hits), compared with 35,000 actual visitors.

<http://www.mhs.ox.ac.uk/>

Museums work for social inclusion

Tyne & Wear Museums / local adoption and fostering agency: A group of young people in care developed a CD-ROM for the Great City exhibition that reflects their individual views of Newcastle. Through using ICT and digital imaging techniques, they developed motivation, self-esteem, teamwork and communication skills.

Our Transport, Your Transport:

The London Transport Museum will work with schools from Paddington, an ethnically diverse and socially disadvantaged area. Young learners will use digital cameras to produce an on-line and actual exhibition. This will enable participation in the debate about transport in London, extend the curriculum, and increase motivation.

THE EMERGING CULTURAL NETWORKS

The publication of *A Cultural Framework (Department for Culture Media and Sport 1998)* has provided a new impetus for the cultural sector, defining common goals. A cultural network that integrates the complementary resources of museum collections, archives and libraries will help to take this policy forward.

Collections, archives and libraries

The new medium can integrate the cultural and education sectors in a way no other medium in history has done. The Department for Education and Employment's Green Paper, *The Learning Age (Department for Education and Employment 1997)* encourages museums to contribute to provision for lifelong learning. Using the new networks, institutions including museums, galleries, libraries and archives can unite around the government's common goals for education, access, social inclusion, excellence and economic development.

Enabling cultural diversity

Public learning runs throughout this policy. It is fundamental to the work of all public cultural institutions, and it is also a primary means by which many of their other goals are achieved. The new network will be a personal cultural medium for the age of personal learning. Museums are at the cusp of this emerging trend. Given the resources, they can provide much of the varied content and many of the activities that people will demand from the new networks, to a quality and standard that will meet and exceed public expectations.

MUSEUMS' UNIQUE CONTRIBUTION

Museums are open to everyone, whatever their age or background. Museums and galleries are attractive, welcoming, creative, sociable and safe public spaces. They offer continuity, authenticity and inspiration in the new fast-moving world of overwhelming and transitory information.

Celebrating cultural links

People can make sense of their cultural identities through museums. Through them, people are encouraged to find the links and the relationships between different cultures, and can express and celebrate diversity and connections alike. The internet richly enhances this potential.

NEW AUDIENCES, NEW SERVICES, WIDER ACCESS

Museums and other cultural institutions are experiencing a huge and growing public interest in information about their collections, works of art, and their archives. This interest is already being fuelled and facilitated by electronic access.

Museums already deal with very large numbers of public enquiries. The Science Museum, for example, handled 27,000 enquires in 1998/99. Even a smaller museum such as the Potteries Museum and Art Gallery in Stoke-on-Trent now receives around 6,500 enquiries a year – including a high proportion from North America.

Many museums hold archives and libraries as well as collections, and these can generate even higher levels of interest. The Imperial War Museum receives over 80,000 off-line enquiries annually, while since 1995 the number of visits to the Public Record Office's Family Records Centre has doubled and general enquiries trebled.

Websites are equally popular. SCRAM's website recorded 1.75 million hits in the twenty-two months from its launch; the IWM, 3.3 million in its first year. The Natural History Museum website records about 150,000 individual visits monthly and the Tate Gallery double that number, with a staggering 200,000 hits a day.

On-site information centres are outstandingly popular, too. About 34,000 people use the National Gallery's MicroGallery annually; 5% (13,700) of visitors to the new Museum of Scotland visited its on-site multimedia room in its first four months; and the National Maritime Museum's on-site search station receives about 700 visitors a week, double the target number it set.

BROADENING ACCESS

Many more people will be able to use museum and gallery services through the new technologies. Some museums, including those with internationally important collections, are already finding that virtual visitors outnumber physical visitors. There is evidence, too, that electronic access increases the number of actual visitors to the museum.

Virtual visits, real visitors

People, wherever they are, will be able to use the electronic networks to reach out across geographical barriers to national, regional and local museums.

By providing more access points to the Community Grids and the New Library Network, museums will offer many more places where people can use the networks. Museums can take their share of the responsibility for ensuring that no-one is excluded.

PROVIDING NEW SERVICES

The new technologies offer new ways for museums to work for social inclusion. Disabled people and others subject to barriers of distance or other factors will be able to benefit from museums' networked services.

Museums work for social inclusion

The virtual dimension will complement and enhance encounters with real, unique objects by offering a richer context, facilitating interactive services, and adding new learning dimensions.

Electronic networks enable new relationships to develop between the public and their museums. Museums and galleries are social institutions in which people can come together to explore their interests as well as contemporary issues, and share their knowledge of the significance and meaning attached to material artefacts. The new networks offer new ways to achieve this.

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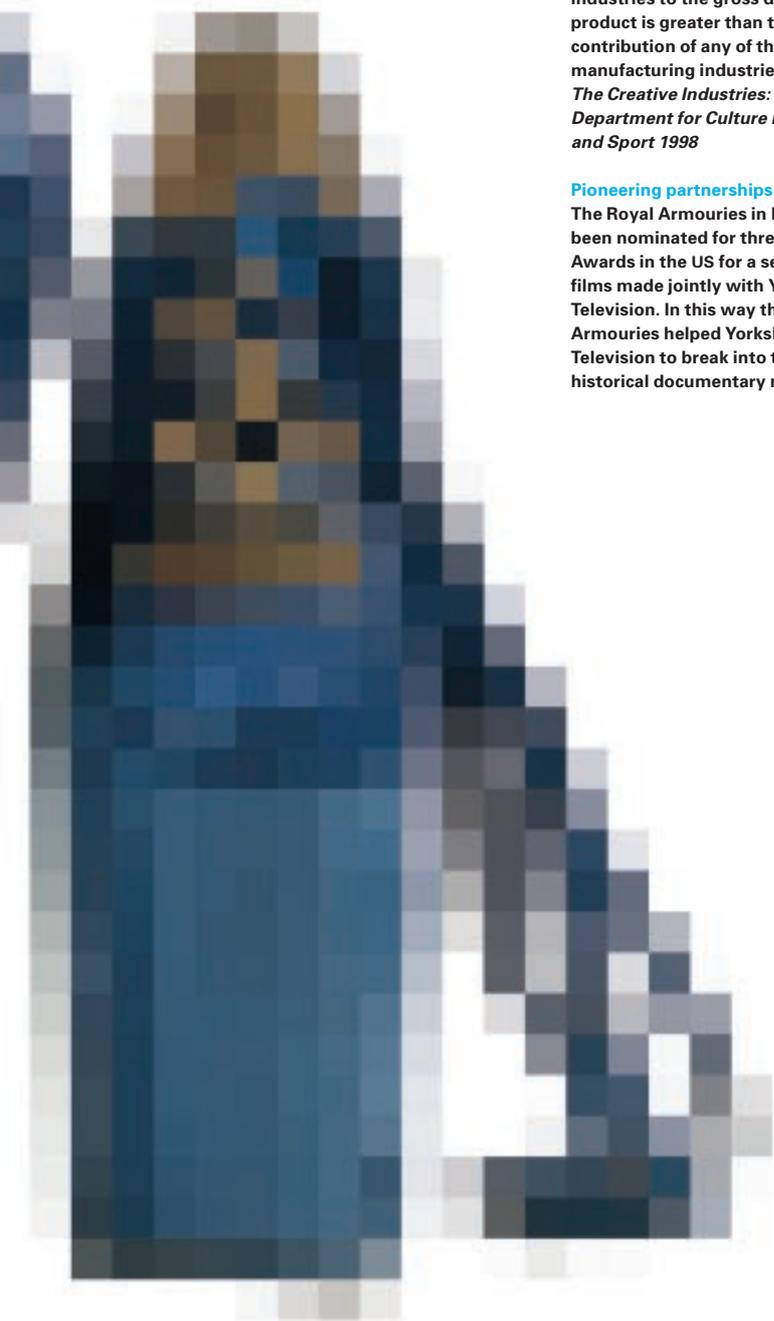


MUSEUMS AND THE CREATIVE ECONOMY

Culture and creativity are vital to our national life. We have long seen the value which creative people bring to our lives, through the employment of their skill and the exercise of their imagination. Their activities enrich us all, bringing us pleasure and broadening our horizons. But there is another reason for creativity, and a reason for cherishing it: the whole creative sector is a growing part of the economy.

Chris Smith: Creative Industries Mapping Document: Department for Culture, Media and Sport 1998





The size of the creative economy

The creative industries generate revenues approaching £60 billion a year. They contribute over 4 per cent to the domestic economy and employ around one and a half million people. The sector is growing faster than, almost twice as fast as, the economy as a whole. The contribution of the creative industries to the gross domestic product is greater than the contribution of any of the UK's manufacturing industries.

***The Creative Industries:
Department for Culture Media
and Sport 1998***

Pioneering partnerships

The Royal Armouries in Leeds has been nominated for three EMMY Awards in the US for a series of films made jointly with Yorkshire Television. In this way the Royal Armouries helped Yorkshire Television to break into the US historical documentary market.

MUSEUMS AND THE CREATIVE ECONOMY

Culture is dynamic and creativity is at its core. Museums and galleries are centres for creativity. Their collections embody the accumulated cultural energy of our own and other times. They can be powerful catalysts for innovation. By making museums more accessible we can help to build a creative society.

The size of the creative economy

Every one of the creative industries is supported directly or indirectly by museums and galleries. Digital access will enable museums to provide them with a much better service. The print and publishing industries, for example, already make extensive use of museum collections and images. The acquisition of digital reproduction rights has become one of most important new art markets in Europe.

Pioneering partnerships

Artists, craftspeople and students place a high value on access to museum collections. And museums are an important market and marketplace alike for high quality products. Designers, makers, manufacturers and customers will all benefit from electronic access to the creative wealth of museums.

This will be particularly significant at local and regional level as the creative industries feature more prominently in regional economic and cultural strategies.

Some of the country's most visionary new public buildings are commissioned by museums and galleries, providing an international showcase for our industries. In the same way, museums and galleries are entering the multimedia design and software marketplace, as both clients and producers.

Museums' new uses of multimedia will stretch the boundaries of the information age. Museums are expert at understanding how to excite and engage their audiences. By working in partnership, museums and software and design companies will develop new ways to deliver information that is relevant to users, in the most appropriate form.



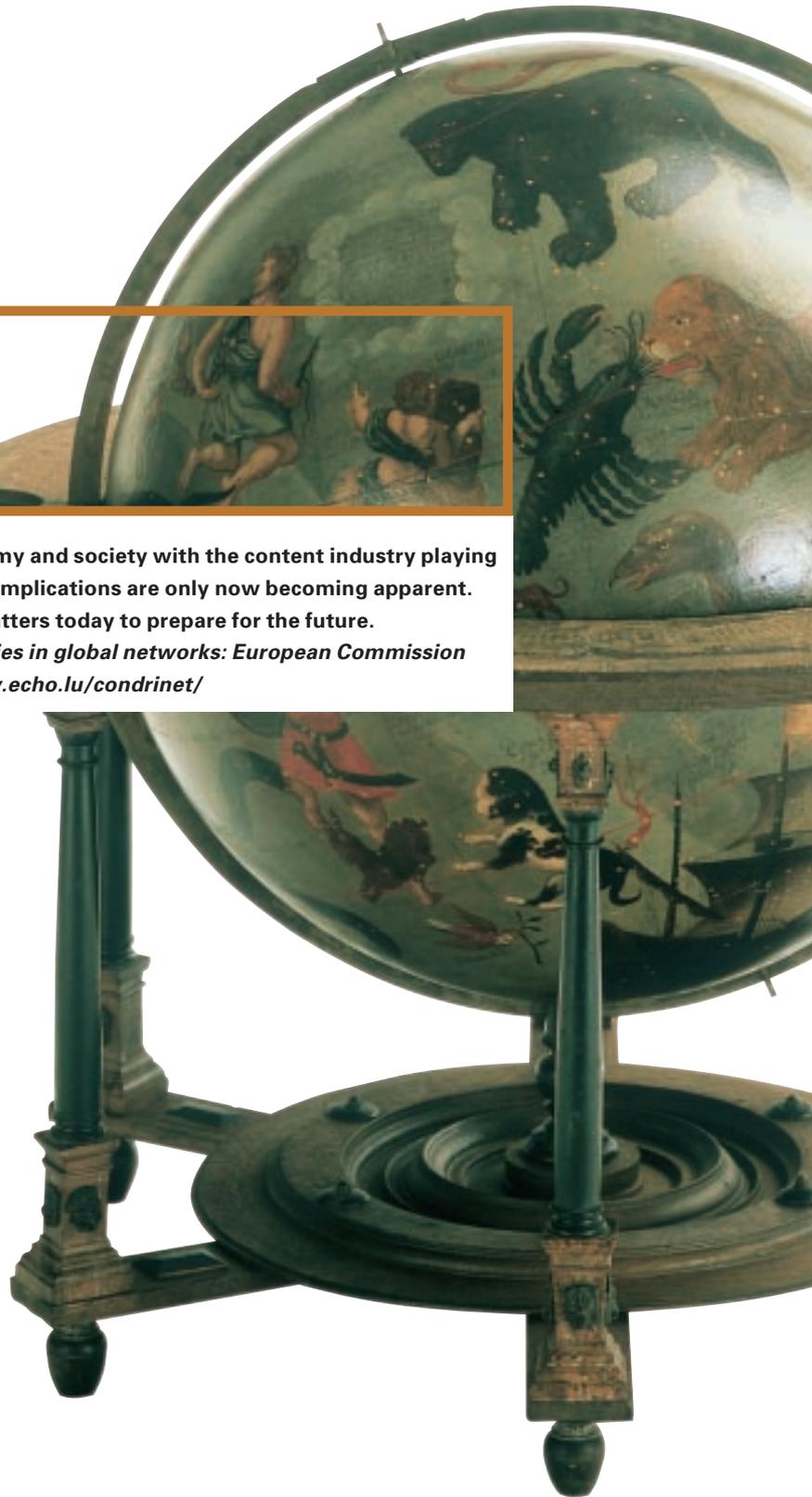
3



THE WIDER WORLD

The network revolution will reach all sectors of the economy and society with the content industry playing a central role. The more far-reaching economic and social implications are only now becoming apparent. Business and government leaders must consider these matters today to prepare for the future.

CONDRINET report, Content and commerce driven strategies in global networks: European Commission DG XIII, European Commission October 1998: <http://www.echo.lu/condrinet/>





President proposes digital library for education

Tucked away in the \$1.7 trillion budget proposal is an item that could help bring digitised versions of photographs, memorabilia, documents and other items from the nation's cultural treasure trove into American classrooms.
New York Times 4 February 1999

European connections

A European Museums' Information Institute is proposed that will create partnership between:

- the member states of the EC;
- museum content providers and the information and communications technology sector;
- and the mediators of European culture and the 'learner' in the widest definition of that word.

EMII will ensure that knowledge and expertise spread throughout Europe, and harmonise existing work. Ultimately, its success will be measured by the impact it has on unlocking museums' information assets for the enjoyment and learning of the widest European citizenship.

Developing Australia's cultural economy

The Australian Cultural Network is a Web gateway that gives public access to Australian cultural organisations, online resources, news and events. ACN is also an exchange centre where cultural workers and organisations can communicate with each other.
<http://www.acn.net.au>

THE WIDER WORLD

Countries around the world are committing public funds to national programmes to speed up the formation of their information societies. The USA leads the way. The internet was born there, and fostered by the Information Superhighway initiative, internet use has reached a larger proportion of citizens there than in any other country.

President proposes digital library for education

The European Union has recognised the importance of the information economy since the early 1990s. There is funding for a range of projects to exploit the potential of digital technologies. This support will increase under the Fifth Framework Programme.

European connections

In Canada there has been a programme to support and promote the development of digitised museum collections information for more than twenty years. This has recently been extended with a public network, Artefacts Canada, providing access for citizens to museum collections across the country.

The UK has benefited from large scale and continuing investment in libraries and digital resources and services for higher education. This was initiated by the Follett Report (*Joint Funding Council's Libraries Review Group Report: Higher Education Funding Councils: 1993*), and has ensured that the UK continues to be among the world leaders in library and research provision.

Underpinning all these developments is the recognition that in a global, multinational world, cultural networks are an important means of expressing and preserving cultural identities. And digital cultural resources are seen as essential to the growing cultural economies.

Developing Australia's cultural economy

These networks provide a source of cultural material and cultural expression that can be accessed from anywhere in the world by people interested in learning about the national culture. They also enable those working in the cultural sector to communicate with each other, exchanging ideas and experience.

Many museums and galleries in the UK already play an important international role. They work as members of world-wide networks, based on the common language of their collections and objects. Information and communication technology will enhance this activity and open up international possibilities for more of them.



4

CREATING THE DIGITAL MUSEUM
CREATING CONTENT AND PARTICIPATION
MAINTAINING THE NATIONAL RESOURCE
CONNECTING WITH USERS
PROVIDING THE SERVICES
CREATING THE ORGANISATIONAL INFRASTRUCTURE

Ordsall Hall, Salford, website visitors' book

This is a very interesting site and helped me very much with a school project.

J Smith, 25.2.1999

I was born next to Ordsall Hall and now live in Texas. It is nice to stay in touch with my heritage.

J Camillieri, 16.11.1998

My daughter is studying at Salford University. If I get over to GB I hope to see your wonderful facility.

T Bohnlein, 26.9.1998

I walked past Ordsall Hall every day to visit my girlfriend. I now live in Cornwall. Your website is great and made me decide to come and visit.

M Manning, 15.9.1998

This is brilliant. We should have one for every museum.

K Lowe, 7.7.1998

<http://www.btinternet.com/~ordsallhall>



The new Museum of Scotland:
architects: Benson + Forsyth



SCRAN: building Scotland's digital heart

More of the collections for more of the people

More art

Collage provides electronic access to the 20,000 images of the Corporation of London's wonderful visual collections. Searchable on various topics, Collage is available both in the gallery and on the internet.

<http://collage.nhil.com>

More collections

Artefacts Canada, the Canadian Heritage Information Network's database provides online public access to over 2.5 million artefacts drawn from over 80 Canadian institutions.

<http://www.chin.gc.ca/>

More information

Royal Electrical and Mechanical Engineers Museum of Technology website, with basic catalogues of parts of the collection not on display, has received 70,000 individual visits since its launch in April 1997.

<http://www.eldred.demon.co.uk/rememuseum/index.htm>

More research

A consortium of European museums is designing an Online Register of Scientific Instruments. Researchers will be able to find, for example, the astrolabes in all the museums. Collections become more accessible, and scholars can pool the results of their research.

<http://www.isin.org/>

Museums put the communication into ICT (information and communications technology)

New links for the community In the Picture is an exhibition specially designed for children and their families to explore the culturally diverse collections of Bradford Art Galleries & Museums. The online exhibit includes images, poems, and other examples from the exhibition.

http://www.bradford.gov.uk/in_the_picture

New links for schools

The Science Museum's STEM project encourages teachers and students to publish and share on the Web their ideas for making effective educational use of the museum.

<http://www.nmsi.ac.uk/education/stem>

New links to exploration

JASON was an international project, in which the Horniman Museum and the National Museums and Galleries on Merseyside were participants. School visitors could use digital communications to pilot remotely controlled vehicles in deep water exploration or inside a live volcano crater, for example.

New links to classrooms

The Ulster Museum has used video conferencing equipment to hold a series of highly popular events that linked schools and museums across the UK.

CREATING THE DIGITAL MUSEUM

The new digital museums must have at their core public access and participation. There is a critical gap between the vision offered by museums in the shape of the many pilot projects that exist, and the resources that are presently available to realise it. This gap needs to be tackled urgently.

In April 1999, about 300 UK museums had websites. A number provide outstanding demonstrations of the use of the new cultural media. But the majority are excellent examples of what can be achieved through enthusiasm despite a shortage of resources.

Digital museums will deliver access and services in a variety of ways:

- Centres in museums, for information access and participative activities
- Interactive gallery exhibits, participatory activities, personal digital guides, etc.
- Online information and services delivered via the internet, some free and some for subscription
- Through multimedia publishing media, CD ROMs, digital television, commercial service providers, etc.

Common to all these will be the digitised content and services which will enable access to collections and information, participative input, and two-way interaction between users, staff, and museums' many different publics.

As for the New Library Network and the National Grid for Learning, what is required is a combination of infrastructure, content, and organisational arrangements. And once created, this new national resource must, like the collections themselves, be sustained and maintained.

CREATING CONTENT AND PARTICIPATION

People want museums to provide collection related information and they want interactive, participative services too. Both are essential to the digital museum. Users want integrated resources from museums, libraries, archives, universities and other arts, humanities and science institutions world-wide.

More of the collections for more of the people

To produce this richly varied content requires, above all, the knowledge and time of museum expert staff – curators and others. It requires the basic multimedia content components to be created and readily available in permanent digital collections. It requires research and development in information science and interface design to ensure that we maintain world class technical and design quality. It will require complex relationships and rights management between the public and private sectors.

Museums put the communication into ICT

The public also has an important role to play. The interactive capability of digital networks makes it possible for many people to tell their own stories through museums. As well as drawing on resources for their own purposes, they interpret them and contribute to them. Teachers, for example, will use the basic resources to create their own productions for other users. Content creation becomes an ongoing process.



'In the Picture' Cartwright Hall, Bradford





'Going Graphic': posters created for the V & A by visitors using digital imaging equipment

Gateways to the networks

The National Maritime Museum has established PORT, a curated online gateway to maritime internet resources. Each has been selected and described by a librarian or subject specialist. Services and material developed by the Museum's Centre for Maritime Research are also available on the site.

<http://www.port.nmm.ac.uk/>

Large scale demand requires large scale services

The Arts and Humanities Data Service is funded by the Higher Education Funding Councils on behalf of the academic community. It collects, catalogues, manages, preserves and promotes the re-use of scholarly digital resources, including those of museums. Current projects are as diverse as Museum of London excavations and the art collections of the Imperial War Museum.

Website: <http://www.ahds.ac.uk>

MAINTAINING THE NATIONAL RESOURCE

The digital assets of museums already represent a valuable and growing national resource that needs to be managed and securely maintained. Museums will need to preserve their basic digital collections. These will be stored in multimedia repositories, related to museum collections management systems. Interactive and participative programmes, too, represent an ongoing requirement for maintenance.

Standards have to be established and implemented to ensure both technical quality and educational and content standards. International standards for resource location and interoperability make a reality of the vision of museums connected world-wide. Standards for terminology ensure that users can always find what they want.

As online services develop, they will of their nature encourage similar museums to work more closely together and to develop links with libraries, archives and educational establishments, and community groups. National or regional museums will join digitally with local museums, and with other institutions that have related or complementary collections such as libraries and archives.

	<i>Creating content and participation</i>	<i>Maintaining the national resource</i>	<i>Connecting with the users</i>	<i>Delivering content and participation</i>	<i>Setting up the organisational infrastructure</i>
Digital Museums	<ul style="list-style-type: none"> • Museum educators and curators • Schools, FE and HE institutions • Communities and volunteers • External contractors 	<ul style="list-style-type: none"> • Applied technical standards • Digital repositories • Museums collection systems • Maintenance staff 	<ul style="list-style-type: none"> • Home access • Public access points • Delivery networks, e.g. the Joint Academic Network (JANET), the National Grid for Learning, Community networks • Gateways and finding aids • Search and navigation tools 	<ul style="list-style-type: none"> • Data delivery services • Managed service providers • Multimedia publishers • Online events and activities 	<ul style="list-style-type: none"> • Project selection • Production quality • Rights management • Managed service providers • Multimedia publishers
Actual Museums	<ul style="list-style-type: none"> • Events and programmes staff • Exhibition designers 	<ul style="list-style-type: none"> • Collection stores • Building maintenance • Managed storage environments 	<ul style="list-style-type: none"> • Visits to the museum • Print publications • Outreach services 	<ul style="list-style-type: none"> • Museum buildings Galleries • Events and programme • Enquiry services • Commercial publishers 	<ul style="list-style-type: none"> • Grant giving bodies • Picture libraries

CONNECTING WITH USERS: THE INFRASTRUCTURE

The networks for museums will be provided by the existing and new public and learning networks such as JANET (*the Joint Academic Network*), the New Library Network, the Community Grids, and the National Grid for Learning. Museums must have connections to these.

Many people will go online to digital museums and galleries from their own homes. Others will use the growing number of Community Grid access points in libraries, learning centres and in museums themselves. Many museums will also need interactive information centres for their own particular services.

The new digital services must have the ability to respond to people's different interests and to their diverse requirements and cultural and learning preferences. To do this, gateways to the networks need to be developed – portals to online resources of all kinds – in combination with search and navigation tools. These gateways are as important as are any of the resources to which they lead. Indeed, gateways will be at the heart of the National Grid for Learning itself, and museums and galleries are already a popular feature of it.

[Gateways to the networks](#)

DELIVERING CONTENT AND PARTICIPATION

Digital museum content and services must be available 24 hours a day, 365 days a year. This represents a major commitment to sophisticated technical data management, online activities and interactive environments on high capacity servers. Some museums may be able to guarantee this level of service, or be capable of offering such facilities on behalf of others. But it is likely that central or regional data delivery services, or kitemarked managed services, will be needed, like those established by the academic sector or planned for the New Library Network.

[Large scale demand requires large scale services](#)

CREATING THE ORGANISATIONAL INFRASTRUCTURE

Networked content provision is underpinned as much by organisational arrangements as by hardware. As academic providers have proved, many important digital services for museums can only be provided cooperatively and sometimes centrally.

PROJECT SELECTION

As in the New Library programme, it is likely that funding for museums and galleries would be bids-based, and every project would need to be evaluated according to the eligibility of the proposer and the degree the project fits with the policy criteria. Quality assurance must be built into every aspect of the development and delivery process to ensure that value for money is achieved.

PRODUCTION QUALITY

Standards and guidelines will be laid down to ensure the products and services developed under this initiative can be viewed as part of a consistent and coherent whole. These will include standards for digitisation and storage, captioning and indexing, usability, educational quality and interoperability.

RIGHTS MANAGEMENT

Establishing a coherent cultural network will depend on the strategic coordination of complex relationships with contractors, publishers and broadcasters. Large museums will have the resources to act for themselves, but many others will need to work within collaborative groups.



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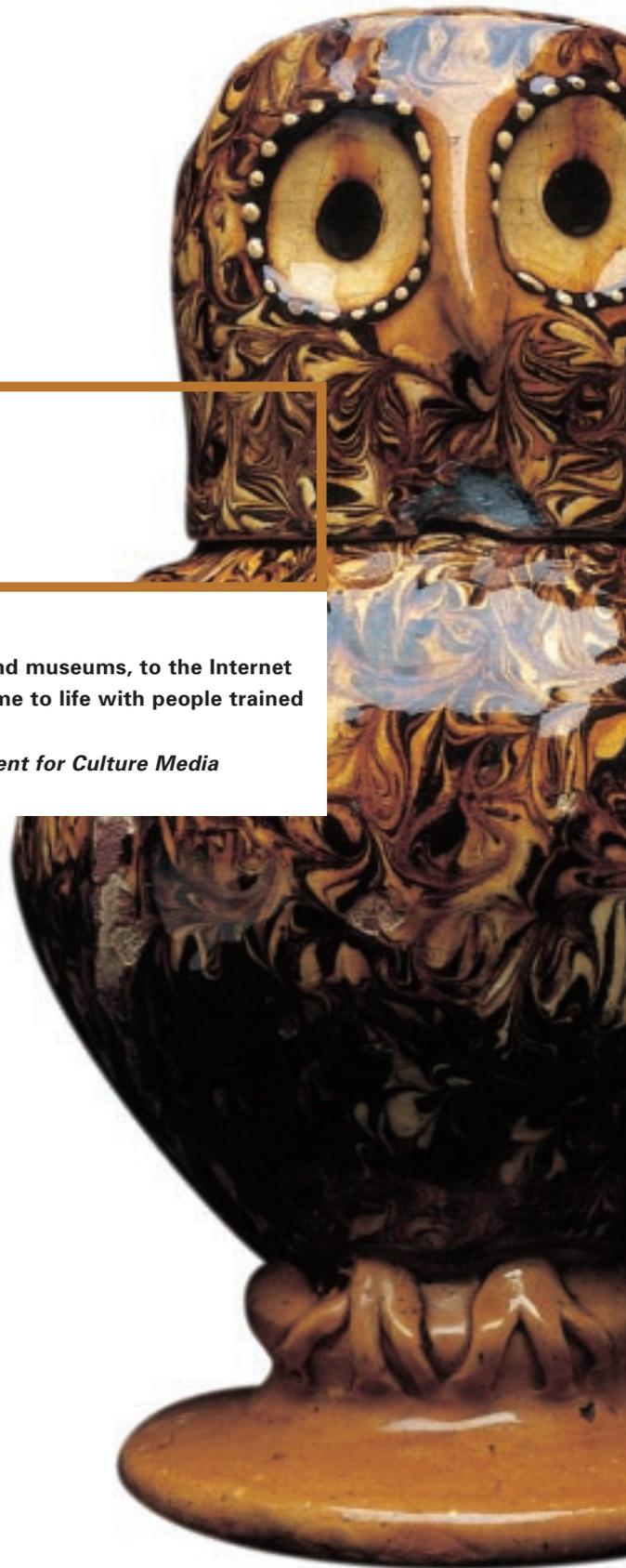


TRAINING

Content and users will make the Grid

The Grid will connect schools and other public institutions, like libraries and museums, to the Internet and therefore to each other and to the home. But these wires will only come to life with people trained to use them, and content to make them useful.

New Library: the People's Network: The Government's response: Department for Culture Media and Sport 1998





Making a start on training
Chipping Norton Museum is entirely volunteer-run. With training and equipment, the archivist, who has mobility problems, would be able to digitise the collection, conduct research, develop internet resources and answer enquiries from his home.

In the National Portrait Gallery, front of house staff have received training so that they can use the Gallery's collections database to answer enquiries from the public.

The National Museums and Galleries of Wales worked with teachers, jointly learning to develop curriculum material on the Romans. This was based around the collections at the Roman Legionary Museum in Caerleon.

New links for the community
My Brighton was made by members of the local community. Brighton Museum provided training, equipment and resources, and the public showplace for the evolving production.

TRAINING

Museum staff, volunteers and a wider public will require new skills to create, manage and maintain participatory and truly interactive digital applications. Museum people will need to understand experiential learning and the techniques of information management and multimedia creation. They will also need to draw on inputs from a wide range of disciplines, in the arts, sciences and humanities.

Making a start on training

Skills are needed:

- To digitise, manipulate, and maintain museum collections information, images and other resources
- To develop new approaches to maximise the learning opportunities offered by digital museums
- To define and manage multimedia projects
- To enable customer care staff to help visitors to use information and communication technology
- To work with others to enable community projects and create cultural resources

Museums have two kinds of training responsibilities. The first is to train their own staff in the skills of using digital technologies and museum resources to enable public learning and participation, and to assist users. The second is training for the museums' public, to enable both adults and children to make creative use of cultural resources in their communities.

Training for volunteers must also not be overlooked. Volunteers play a productive role in museum services. Many small museums are crucially dependent on them. This is another opportunity offered by the new technologies: to engage the enthusiasm, skills and interests of volunteers to help create digital resources.



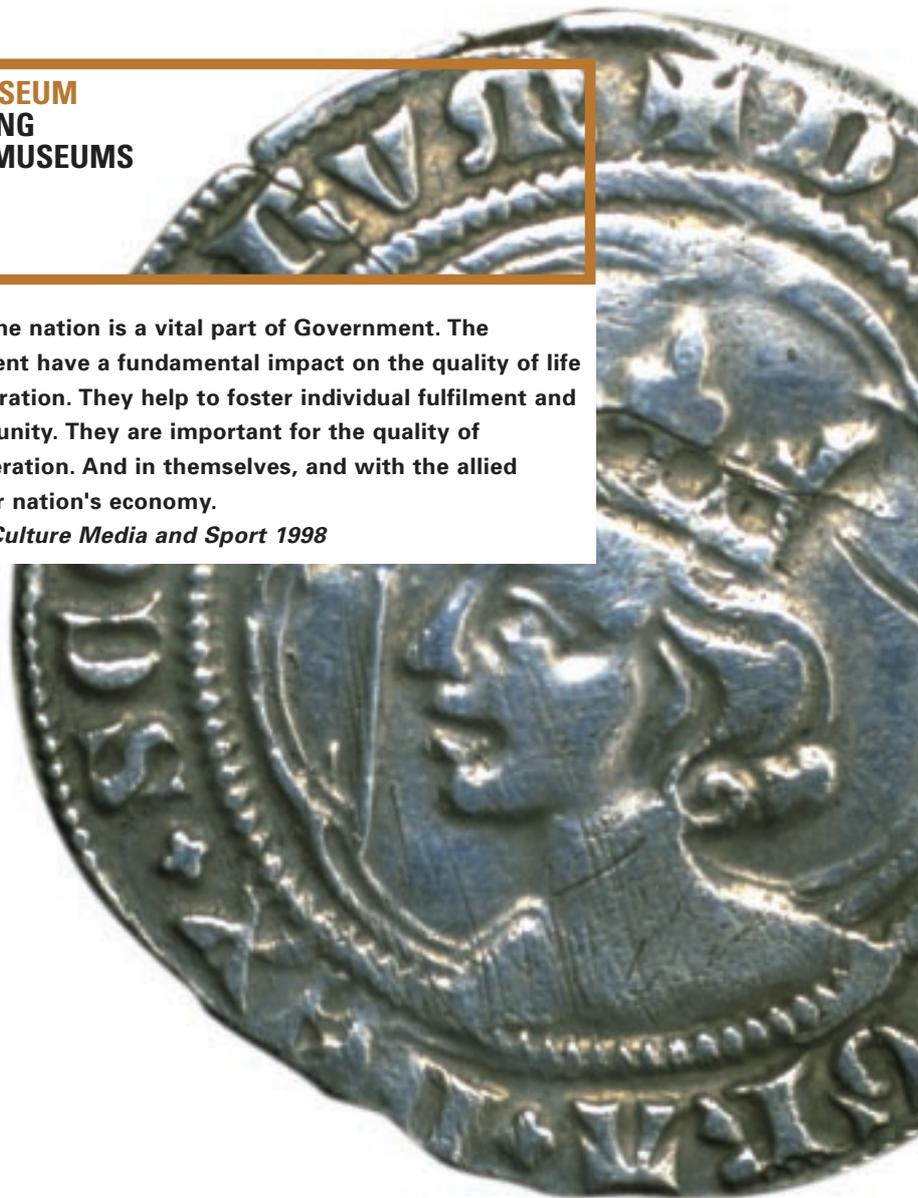
6



FUNDING THE DIGITAL MUSEUM
SOME SOURCES OF FUNDING
THE NUMBER OF DIGITAL MUSEUMS
THE FUNDING NEEDS
THE COSTS

Enhancing the cultural, sporting and creative life of the nation is a vital part of Government. The activities that we sponsor and support as a Department have a fundamental impact on the quality of life for all our citizens. They provide enjoyment and inspiration. They help to foster individual fulfilment and well-being. They help to bind us together as a community. They are important for the quality of education. They assist with the work of social regeneration. And in themselves, and with the allied importance of tourism, they form a crucial part of our nation's economy.

Chris Smith: A Cultural Framework: Department for Culture Media and Sport 1998



Popular attractions

The Museums and Galleries area of the National Grid for Learning is currently the most rewarding to visit. The Museum section seems to be implementing the very essence of the National Grid better than most of its other components.

Computer Shopper: February 1999

FUNDING THE DIGITAL MUSEUM

A number of agencies include in their remits the possibility of funding for museums, and galleries, content on the networks. But it is at best ancillary to their main programmes, and a priority for none. And for some crucial areas there are no specifically designated funds.

Much can be done if these funding agencies adopt policies to make full use of the public national resources of museums. We hope that they will take account of what museums and galleries can contribute, and involve them in the development of their policies. But, if the full vision of museums in the learning age is to be realised, there needs to be significant additional and dedicated funding.

SOME SOURCES OF FUNDING

THE NEW OPPORTUNITIES FUND

The NOF is providing central support for the development of the National Grid for Learning, the New Library Network, the Community Access to Lifelong Learning project, and community services including the Community Grids. Museums are identified in those reports as major providers of content for these networks. Our report sets out the many ways in which museums can contribute to meeting NOF objectives, and identifies the resources that are needed in order to make this contribution. We would welcome a dialogue on how best to move rapidly forward on this.

THE HERITAGE LOTTERY FUND

The focus of the HLF remit for digitisation is preservation and access: basic inventory and catalogue information for whole collections.

Popular attractions

HIGHER EDUCATION FUNDING COUNCILS

The Electronic Libraries (eLib), and the JISC Image Digitisation and Research Libraries Support programmes all fund the digitisation of material for higher education and research use. These programmes could include museum content, and this should be encouraged.

DEPARTMENT FOR EDUCATION AND EMPLOYMENT

Museums can make a major contribution to learning at all levels, and the DfEE supports their contribution to some extent through the National Grid for Learning. There is clear scope for museums to support DfEE policies, and it would be very productive to extend the dialogue between the DfEE and the DCMS to consider how this can be achieved.

THE DEPARTMENT OF TRADE AND INDUSTRY

Museums could provide valuable support for the DTI's Information Society Initiative, and its actions following the recent White Paper on competitiveness. A dialogue needs to be established with the DTI to see how this support can best be gained.

GOVERNMENT SPONSORING BODIES

Government bodies that provide direct funding for museums include the Department for Culture, Media & Sport, the Governments of Scotland, Wales, and Northern Ireland, and the Ministry of Defence. Devolution will bring further opportunities to develop and fund distinctive cultural strategies in the four Home Countries.

LOCAL AUTHORITIES

Museums in Newcastle were recently voted the most popular service offered by that authority. We hope that recognition of the importance of museums to learning and to delivering other community benefits will help local museums to achieve a higher position in Local Authority funding priorities.

REGIONAL DEVELOPMENT AGENCIES

These, too, may come to fund the creation of cultural content as part of their support for regional activities. The subject needs to be high on their agendas.

THE EUROPEAN UNION

The Fifth Framework Programme is potentially a major source of funding for creating cultural multimedia resources. UK museums are already well represented in these discussions. Greater support to assist museums in formulating bids could result in substantial additional funds.



Information centres within museums – a popular resource

The MicroGallery is the National Gallery's multimedia information centre. Opened in 1991, it is a complete multimedia guide for visitors, who can access information about all 2,200 paintings in the Gallery's collection, look up artists, places, and other historical contexts, and print out a selected tour.

COMPASS is the British Museum's public multimedia system for the Millennium. Specially prepared to appeal to a wide public, it will give access to records for 5,000 objects, and related 'Encyclopaedia' information. It will be accessible through 60+ on-site terminals, and the web. COMPASS will demonstrate just what can be done with the latest technologies. It also highlights the effort needed to create suitable content for public use.

Museums innovate

The Smithsonian Institution in the USA is developing ways of visualising the contents of its complex object databases. The relationship between objects and related material in the database is displayed as a dynamic visual web that the user can manipulate to pursue their interests.
<http://www.si.edu/revealingthings/>

Cooperative rights management

Scotland's cultural institutions have jointly set up a company to manage digital intellectual property rights. Digitised assets contributed to SCRAN are governed by a licence agreement protecting the contributors' commercialisation rights. Licensed members can download multimedia assets, copyright-cleared for free educational use. SCRAN collects and distributes the income to the museums.
<http://www.scran.ac.uk>

Collections of information – the new national resource

The Science Museum is developing its collections management system to hold object information; contextual information about people, places and inventions; text, images, sound and movie clips; and other multimedia resources. This digital collection forms the basis for all kinds of multimedia productions, online and offline.

Another example is the Feather Trade and the American Conservation Movement – an online multimedia exhibit created by the Smithsonian Institution. Software was used to draw much of the content directly from the museum collections database.
<http://www.si.edu/nmah/ve/feather/ftintro.htm>

THE NUMBER OF DIGITAL MUSEUMS

By 2002 there should be 400 museums providing digital services on-site and online. This number is realistic. To illustrate this, of museums now, 400 have more than 50,000 visitors each year, and a similar number have education staff.

This number could achieve:

- an effective geographical spread across the whole of the UK
- a variety of interactive services and collections content
- access to significant collections and educational expertise wherever they are found
- effective community involvement.

In further phases, by 2007 all museums should be able to play their full role in the National Grid for Learning, from the very smallest museum, managed by a dedicated team of volunteers, to the largest national museum.

THE FUNDING NEEDS

Significant investment will be required in the first instance if we are to establish a critical mass of digital content that will make sufficient impact to stimulate use and exploitation. Some investment may come through public / private partnership arrangements. But to create the new digital networked museum kick-start funding is needed, just as it is for the New Library Network.

Our cost estimates are informed by the calculations in the recent Library and Information Commission Report: Building the New Library Network (1998).

CONTENT CREATION AND ONLINE ACTIVITIES

Museums are highly inventive places, and with the stimulus of proper resources we can expect a wave of innovation that will deliver experiences that we cannot yet predict. We would expect bids for funding for content to include a wide variety of elements, such as:

- The basic digitisation of collections information, images, sound and moving images to be managed as a permanent resource
- Multimedia productions and on-gallery interactives derived from these
- Interactive and participative services and productions
- On-site information and interactive centres requiring hardware, digital equipment, and internal networking.

Funding must therefore include an element to encourage experimentation. Every project should also provide for evaluation, and many will include training.

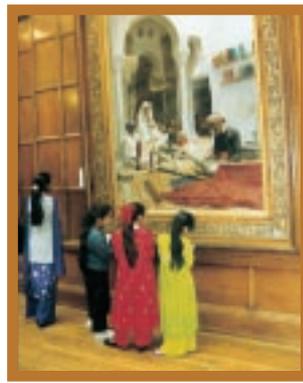
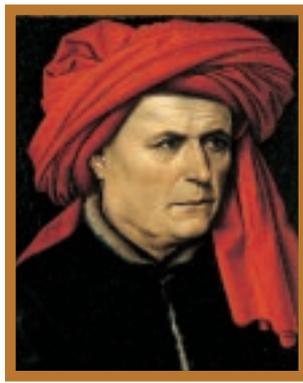
Information centres within museums – a popular resource

Museums will be eligible to bid for projects within the £50 million already allocated for content on the New Library network. Over and above that, we estimate the necessary additional investment to create content and activities to be £35 million.

Museums innovate

CONNECTIONS AND ACCESS: THE INFRASTRUCTURE

Museum hardware and public access points within museums would be provided as part of funded projects. The average cost of providing a broadband connection to an appropriate managed network would be about £25,000 for each of the 400 connected museums – a total infrastructure cost of £10 million.



'In the Picture':
Cartwright Hall, Bradford

Portraits of a man and a woman:
Robert Campin, about 1430:
collection of the National Gallery

DELIVERY AND ORGANISATIONAL INFRASTRUCTURE

The digital museum will deliver large volumes of content, and interactive services, to millions of users. This large scale commitment requires proper organisational arrangements to be put in place to provide the services. These include, for example, selecting projects, maintaining quality, and rights management. To allow a start to be made on establishing these organisational mechanisms we suggest the provision of £2 million.

Cooperative rights management

MAINTENANCE AND SUSTAINABILITY

Just as the maintenance of museum collections themselves is funded as ongoing investment in a permanent national asset, so the ongoing maintenance of digital collections and services, as a permanent national asset for the future, needs to be assured.

This is a new service for museums. Pressures to continue to provide their existing services at ever higher quality will become ever greater, so funding cannot be released by redeploying existing resources.

There are two first sight sources for funding:

Central funding

Fund the services centrally through general museum funding. This could be through increased grant-in-aid or local authority funding, or it could be left to individual museums to set priorities for this from their existing funding level.

Funding through income from digital services

There are sources of income from digitisation that will help to defray costs. The guiding principle is that content created with public

money must be made available for educational purposes free at the point of use. However, organisations such as schools and libraries can be charged licence fees, and museums can charge commercial providers and publishers, both print and digital media, for the use of their digitised assets and services.

Collections of information – the new national resource

Experience in SCRAN and elsewhere shows that it is not possible to generate sufficient income to completely cover the cost of maintaining these resources and services. While a few museums with collections of high commercial reproduction value may enjoy large scale income, the vast majority of museums will not. In our opinion additional permanent funding will be needed, because museums will be providing more services, and maintaining more permanent public assets. We identify this as a serious issue, but we make no estimate of the cost.

TRAINING

There are approximately 40,000 staff, including volunteers, working in museums overall (Museum Focus: MGC 1998). Staff in the 400 connected museums will need training. As well as staff in these, projects are likely to include smaller museums that are not connected, within collaborative groups. Volunteers need training, too, and museums not connected in the first phase will need to be gearing up for the further phase beyond 2002. We estimate some 10,000 museum people, including volunteers, in total, at an average cost for training of £800 per person – a total cost of £8 million.

THE COST

To enable the first phase, in which about 400 museums will be able to deliver services on the cultural network, we estimate that there will be a need for £55 million over and above that currently available from other funding sources. This investment will deliver the benefits that can be derived from using assets – content and skills – that are already held by museums.

The sums involved are not large in relation to the benefits that will flow from them. Indeed, they will enable the museums, galleries and archives sector to add value to the investment that has already been committed to the National Grid for Learning and the New Library Network.

The cost of digital museums: first phase to 2002

	£million
• Infrastructure	10
• Training	8
• Content and activity creation	35
• Maintenance	2
Total:	£55 million

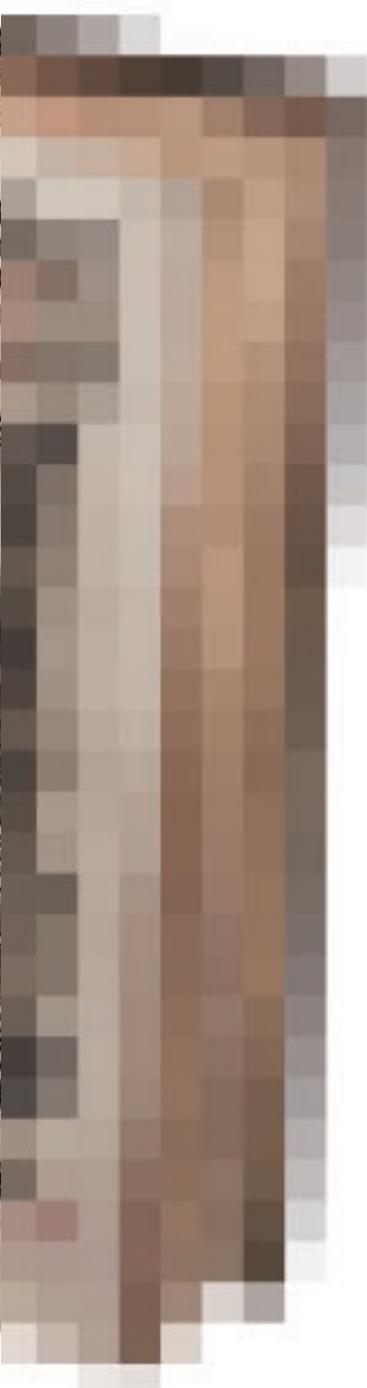


7



**AGENDA FOR ACTION
CONCLUSION**





AGENDA FOR ACTION

FOR GOVERNMENT

- Develop proposals to coordinate existing sources of funding and designate appropriate sources of new funding
- Develop a strategy for a comprehensive national cultural network, including museums, galleries, archives and libraries
- Set a target for 400 digital museums to be online by 2002

FOR THE EDUCATION SECTOR

- Establish policies to use the special contribution that museums can make to support the national curriculum and the wider goals of lifelong learning
- Work with museums to develop their potential to supply lifelong learning materials of all kinds

FOR THE MUSEUM SECTOR

- Develop a deeper understanding and appreciation of museums' role in learning and set appropriate policies and strategies
- Develop coordinated strategies for creating digital content, activities and authored resources, and for training in both creating and using these materials. Seek funding accordingly from appropriate sources
- Develop relationships with each other and with related content providers – libraries, archives, local databases such as sites and monuments records and species distribution databases

FOR LOCAL AUTHORITIES

- Encourage local libraries, education establishments, museums and galleries to work together to develop funding bids for the New Opportunities Fund and the National Grid for Learning
- Build local museums and galleries into development plans for Community Grids for Learning
- Develop local strategies to exploit the potential of digital museums as community and learning services

FOR THE PRIVATE SECTOR

- Work with museums to maximise the contribution that each can make to creating and distributing museums' digital content
- Develop financial agreements that ensure a fair return on both public and private investment without compromising the principle that resources created with public funds should be available free at the point of use

CONCLUSION

This report has shown how, with appropriate investment in information and communications technology, museums and galleries can make a key contribution to:

- Supporting the learning society
- Access and social inclusion
- Excellence and support for the creative industries.

The proposed funding of £55 million over three years is a significant additional investment. It will, we estimate, enable the creation of 400 digital museums by 2002. In the following five years, we envisage every UK museum becoming connected to the Grid. The outcome will be an enormous increase in the number of people who can use the resources of our museums, and in the range and quality of services and information provided for them for learning and for enjoyment.

2002: OUR FUTURE MUSEUMS

- **People make as many virtual visits as real visits to museums and galleries**
- **There has been a measurable increase in the number of visitors to museums and galleries as a result of digital museums**
- **75% of all UK museums have some collections information online, many through cooperation with connected museums**
- **Quality-assured gateways offer a variety of access to all museum and gallery online resources**
- **All Registered museums have websites linked to the National Grid for Learning**
- **One in three homes have accessed digital museums**
- **The majority of school children has used museum resources as an integral part of the curriculum in the last 12 months**
- **Museums and galleries of all sizes are benefiting from additional revenue streams derived from digitised resources**



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The Silver Swan: Workshop of James Cox, London (John Joseph Merlin) c1773: collection of the Bowes Museum



Ice Cream Cooler (Seau 'à glaces'): Sèvres porcelain, part of the dinner and dessert service delivered to Catherine II of Russia in June 1779: Wallace Collection

THE CONFERENCE EXISTS TO:

represent the interests of national museums to government and other stakeholders;

play a key role in the development of policies and a national agenda for UK museums;

increase awareness of the work of its members and their contribution to society and the economy;

discuss and present views on other matters of common interest to its members.

NATIONAL MUSEUM DIRECTORS' CONFERENCE**Member institutions:**

British Library

British Museum

Fleet Air Arm Museum

Imperial War Museum

Museum of London

National Army Museum

National Galleries of Scotland

National Gallery

National Library of Scotland

National Library of Wales

National Maritime Museum

National Museum of Science & Industry

National Museums and Galleries of Northern Ireland

National Museums & Galleries of Wales

National Museums and Galleries on Merseyside

National Museums of Scotland

National Portrait Gallery

Natural History Museum

Public Record Office

Royal Air Force Museum

Royal Armouries

Royal Botanic Garden, Edinburgh

Royal Botanic Gardens, Kew

Royal Marines Museum

Royal Naval Museum

Royal Navy Submarine Museum

Sir John Soane's Museum

Tate Gallery

Victoria & Albert Museum

Wallace Collection