

JISC

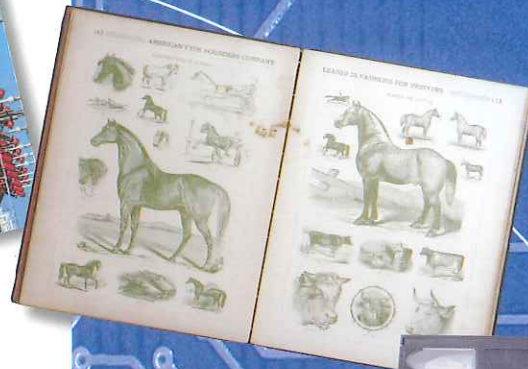
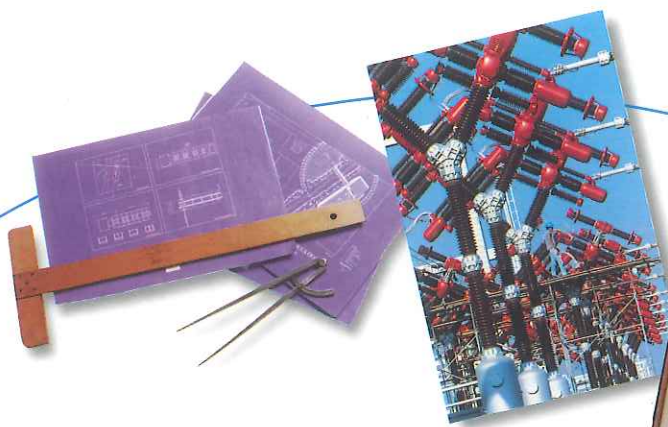
The Joint Information Systems Committee

Adding value to the
UK's learning, teaching
and research resources:

the Distributed National Electronic Resource (DNER)

The Distributed National Electronic Resource (DNER)

is a managed environment for accessing quality assured information resources on the Internet which are available from many sources. These resources include scholarly journals, monographs, textbooks, abstracts, manuscripts, maps, music scores, still images, geospatial images and other kinds of vector and numeric data, as well as moving picture and sound collections.



1. INTRODUCTION

Four complementary developments enable digital networked resources to have a major impact on learning, teaching and research.

1.1 Network technology

Network technology has developed to the point where it is possible to gain rapid and reliable access to digital resources wherever they are held in the world. The investment in the Joint Academic Network (JANET and Super JANET) by the Joint Information Systems Committee (JISC) has created a powerful network for use by the United Kingdom's higher and further education and research community. Similar networks are being built for schools and libraries. More generally, the Internet and World Wide Web technology have opened up access on a global scale.

1.2 Digital resources

The parallel development of digital resources has established a body of information resources that can be accessed via the networks. We are fast approaching the point of critical mass at which people automatically turn to networked digital resources as their first choice when seeking information. Again, the JISC has made a real impact through its investment in the development of quality assured digital content for the academic community. Elsewhere, other public and private sector bodies are also investing heavily in the creation of digital content.

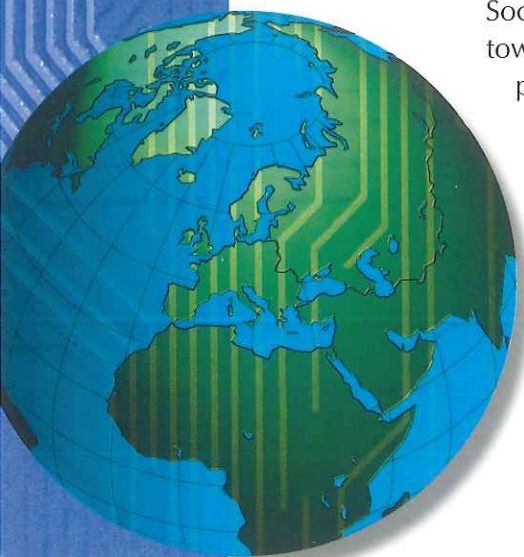
1.3 Complementary networks

While it is true that JANET led the way, it is being complemented by other proposed networks designed to link institutions and to facilitate learning. The National Grid for Learning will serve the schools community, the New Library Network will support lifelong learning through public libraries, the National Electronic Library for Health and NHS Net will improve access to health-related information and similar developments are in prospect for the museums, galleries and archives sector. The challenge will be to provide co-ordinated access across all these networks for the greater benefit of all.

1.4 A learning society

Social and economic pressures are moving Western societies further towards a new model of social development – one that places the highest priority on learning throughout life.

The UK now has a real opportunity to develop access to a wide range of resources that have the potential to enrich learning, teaching and research within the higher and further education sector.

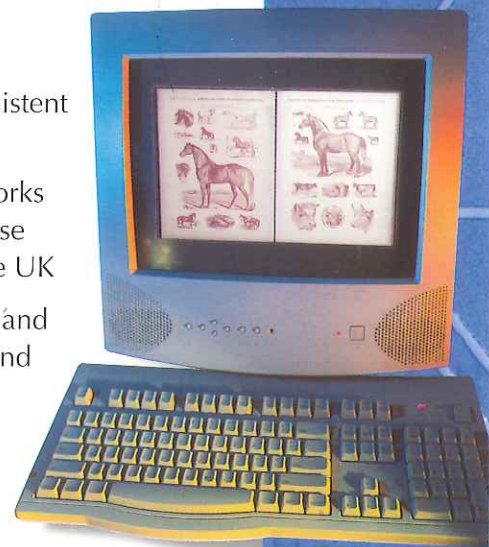


2. OBJECTIVES OF THE DNER

The DNER will continue to provide an easily accessible, comprehensive information resource for use by learners, teachers and researchers within the UK higher and further education community.

The main objective of the DNER is to stimulate the use of a collection of high quality digital resources within all areas of the higher and further education community, by:

- Developing services, based on standards, that will enable users to identify the information they need and to access it easily in a consistent manner
- Facilitating access and contributing to other public resource networks and, through them, to enable the creation of a unified resource base that will support the operation of a learning society throughout the UK
- Facilitating access to resources at national level through purchase and leasing arrangements and so to achieve best value for the higher and further education community
- Playing a leading role in the creation of an environment within which development is stimulated at local, regional, and national levels throughout the UK and beyond



3. PRINCIPLES UNDERLYING THE DNER

A number of principles have shaped the DNER:

3.1 Empowerment

The DNER will empower users so that they can access and use digital information effectively and efficiently. Similarly, it will empower local creators of digital resources and enable them to create resources that will be of value throughout the system.

The development of the DNER will continue to be informed by users and creators. In order to ensure participation and quality assured resources, appropriate communication and consultation processes will be established.

3.2 Equity

There should be equity of provision and use across all disciplines. This means that gaps will be filled and minority interests will be catered for.

3.3 Integration

Integration is the key to ensuring that the system operates effectively and efficiently and that it is easy to use. There should be seamless access to existing services through a variety of entry points. Users should be able to search across databases and datasets, moving easily between different domains and disciplines. There should be seamless links between data resources and value-added services such as document delivery.

3.4 Economy and efficiency

The strategic management of the DNER will ensure that the system is efficient and that it works effectively to meet the needs of users. Opportunities will be taken to exploit economies of scale and, where appropriate, the electronic commerce potential of the system.

3.5 Leading towards collaboration

The JISC has taken the lead in the development of digital resources for the academic community, but it makes conscious efforts to work through collaboration within the UK higher and further education sector and beyond. The JISC's aim for the continuing development of the DNER is to create a framework that will stimulate collaborative developments at all levels in the UK educational system and internationally.

3.6 Based on standards

The DNER will use established international standards for interoperability.

3.7 Research-based development

Largely through the activities supported by the JISC, the UK has developed an international reputation for leading research activity in this area. The DNER has been developed on the foundation of sound research and development and this will continue to be the case. The ongoing enhancement of the DNER will also actively stimulate the further development of the UK's research base in the creation, management and exploitation of digital resources for the support of learning, teaching and research.

3.8 Distributed development

Network technology has made it possible for electronic resources to be provided and accessed throughout the UK. It enables exploitation of the rich diversity in the higher and further education community and development of a variety of delivery modes, interfaces and accompanying support services. This distributed development will be a key element of the continuing enhancement of the DNER.

3.9 Avoiding duplication

There is always a potential risk of unnecessary duplication in a distributed system. The JISC will seek to avoid duplication by fostering co-operation and co-ordination.



4. THE COMPONENTS

The DNER consists of a number of components. Some are well established, while others need further research and development before they function effectively. Together they comprise a resource that has the potential to make a major impact on learning, teaching and research in the UK higher and further education community.

4.1 The communications network

JANET and Super JANET provide the means by which institutions of higher and further education can gain access to digital resources. As the resources become more complex and begin to include richer forms such as still images, maps, moving images and sound, the network is being continually up-graded.

Within other organisations, work is proceeding on the creation of complementary networks to link schools, colleges, libraries, museums; archives and the constituent parts of the health service. These networks must work together, providing their users with access to a steadily widening range of interlinked resources.

At a more general level, the Internet continues to grow, both in sophistication and in the range and depth of content available. The development of electronic commerce, for example, could have a profound impact on the willingness of users to pay for the information they need.

4.2 The content

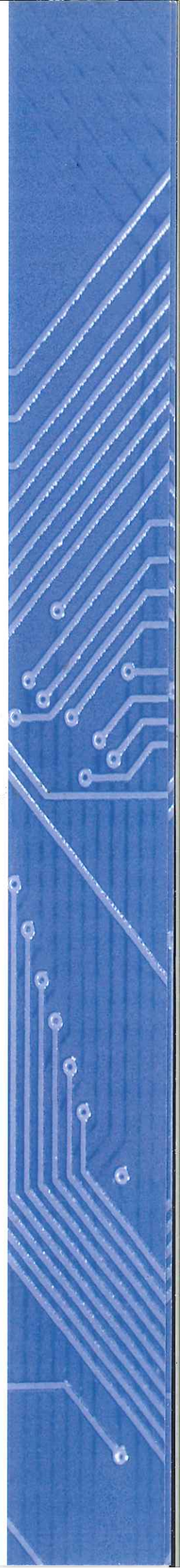
Within the framework of its Collections Policy, the JISC has done much to stimulate the development of quality assured digital resources for the benefit of the academic community. The JISC data services enable users to gain access to a wide range of datasets and databases containing information that has been created by the UK academic community as well as data that has been created elsewhere and purchased, or licensed, nationally for the benefit of all.

These data sources vary widely. Some deliver a small range of specialised data formats, others are more akin to warehouses, offering access to a wide range of sources on different topics. Some are discipline-based, others are multi- or inter-disciplinary. This variety is desirable – a standard solution would impair creativity. It does, however, create a need to clarify relationships and to improve integration in order to make things easier for the user.

4.3 Interfaces, navigation and delivery mechanisms

Another consequence of the variety implicit in the present system is the proliferation of interfaces between users and the data they need. Part of the work of creating a unified national digital resource involves the development of interfaces that enable users, whether expert or novice, to move seamlessly from one database or service to another.

As the volume of digital information grows, so does the need for mechanisms that enable users to navigate their way around the system and





to find the information they require. Implicit in the continuing development of the DNER is the need for common standards that will make the distributed network operate efficiently. Considerable progress has been made with the development of metadata for describing digital resources.

Gateways and portals are important aspects of the navigation system. The JISC will provide multiple gateways, some based on subjects or disciplines, some based on services, and others developed locally or regionally. Each gateway should provide access to the full range of resources but will offer a range of "views" for different ways of presenting them to the user.

Currently, delivery mechanisms are structured around the data services. While this is useful for many, it should also be possible to structure the delivery of content around tasks or user needs.

4.4 System management

A range of services and mechanisms are needed to manage the system effectively. The ATHENS system provides a means of authenticating users and so controlling access to national services. As the overall system grows, it will need to become more sophisticated. This will be particularly true if access to the networked information is broadened as a result of interoperability between the emerging learning networks.

There is a growing need for payment mechanisms. The principle of services being free at the point of use is well established and readily applicable to many types of information. The DNER could, however, be significantly enhanced if users outside the higher and further education community were able to gain access, paying for services where appropriate. This would provide a source of income for reinvestment in the resource. A payment facility would also widen the range of services that could be included in the DNER.

4.5 Support services

Support services are an integral part of the system. They provide expert advice in the use of complex data sets and can do much to add value to the basic data. The support services also play a key role in the provision of training in the use of digital information.

Another important aspect of the DNER is the availability and promotion of guides to good practice in the creation, dissemination, preservation and re-use of digital datasets.

5. THE STAKEHOLDERS

A number of groups have a stake in the development of the DNER.

5.1 The UK higher and further education community

Clearly, this is the most significant group for the JISC. Increasingly, students turn to the Internet and digital resources as a first port of call when seeking material to support their studies and research. Networked access to digital resources can greatly extend the range of material open to them and can do much to reduce inequalities in resource provision between institutions.

Teaching and research staff are heavy users of digital resources. They are also significant creators of material. The DNER will empower and enable them to create resources that are accessible not just within their own institutions but by the wider community. It will also allow them to manipulate electronic resources to enhance learning, teaching and research.

Academic administrators are another important group of data users. The value of the DNER to them will be greatly enhanced when it becomes possible to integrate local management information systems into the overall national system.

Finally, the funding bodies and the Research Councils are important stakeholders. The funding bodies have invested heavily in the development of the DNER and the resulting benefits can be enhanced further through public-private partnerships and through the increasing integration of elements within the system. The Research Councils have an important role to play in identifying and helping to fill gaps in the pattern of provision.

5.2 Users of other UK networks

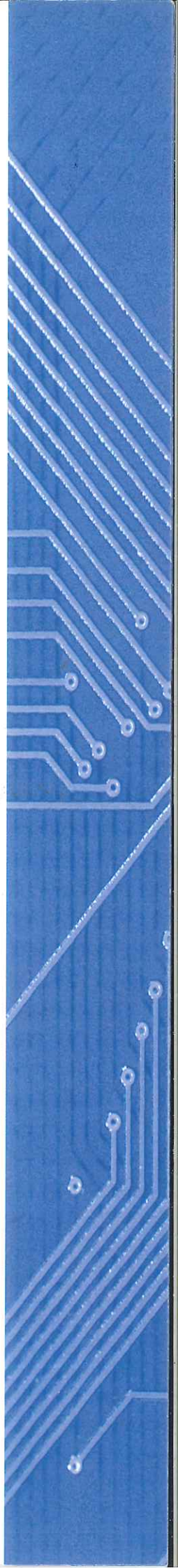
The developing National Grid for Learning, the New Library Network, the National Electronic Library for Health, and the emerging network linking museums, archives and galleries each has its own community of stakeholders. As these networks come closer together so it will become necessary for each to take account of the interests of the others through mechanisms for enabling interoperability.

5.3 The international academic and learning community

The global reach of the Internet now means that few developments can be conceived in strictly national terms. The UK is one of the countries leading the development of digital resources to support learning, teaching and research and we can expect there to be considerable interest from abroad. This interest will open up opportunities to develop co-operation at an international level. Also, as electronic commerce systems become more robust and widespread, the international learning community will represent an important source of potential income.

5.4 Data creators and publishers

Finally, the creators and publishers of the resources are key groups with a stake in the development of the DNER. Their active support and collaboration will, to a great extent, determine the success of the venture and its future development must take their needs and aspirations into account.





FURTHER INFORMATION ABOUT THE DNER

For further information on the latest developments, please see the following part of the JISC web site:

www.jisc.ac.uk/pub/index.html

FURTHER INFORMATION ABOUT THE JISC

JISC ASSIST was set up by the JISC to raise awareness in the community of the opportunities presented by the use of information technology.

JISC ASSIST provides a first point of contact for help and guidance on issues relating to the JISC and the use of information systems and information technology. For further information and advice, contact JISC ASSIST by email at:

assist@jisc.ac.uk

Or telephone JISC ASSIST on:

0117 954 6850

Information about new developments and major strategic issues is provided to the community through a mailing list to which anyone can subscribe. Send the message:

"join JISC-ANNOUNCE Your Name"

to:

mailbase@mailbase.ac.uk

Information about the JISC, its services and programmes can be found on the World Wide Web at:

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

**Joint Information
Systems Committee**
