

Joint Information Systems Committee (JISC)

Value for Money Report

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Executive Summary

1. A Value for Money exercise was performed for JISC services. The results are described in this document. A companion document will describe Value for Money with respect to the development programme.
2. The estimations in this document are based on conservative figures and err on the side of caution. It is very likely that entire cost benefits will be higher than demonstrated here. In addition to the financial benefits discussed in this document there is also considerable value to the community in terms of improvements in quality to the academic and research arenas that are difficult to quantify.
3. JISC services provide demonstrable value for money both to the JISC community and to the UK. **On average, for every £1 of the JISC budget the community received at least £4.86 of demonstrable value.** In some areas the value is significantly higher (see points 6 and 8 below). This calculation does not include value arising from Research and Development programmes.
4. The JISC is exemplary in the manner in which it has accommodated changes in information and communication technology, in tandem with the development of tertiary education. Much of the high quality of UK research and tertiary education is attributable to the success of JISC's solid strategy combined with the ability to identify, assess and exploit new technology within that strategy.
5. The JISC provides a reliable, customer focussed network, easily accessed, quality e-resources and accessible, focussed support. This has produced a highly efficient, high-quality work environment. The majority of financial benefits identified arise from gains in quality or efficiency in the work environment.
6. UKERNA/JANET provides a high quality, high-speed, highly reliable connection at a low cost per connection. In addition UKERNA provides support services for all connections with no additional cost for use. This integrated provision is tailored to the particular needs of the JISC community.
7. The JANET network provides a lower cost connection per institution than those provided by other similar European National Research and Education Networks (NRENs).
8. The use of JISC supported e-resources saves user time. **Estimation of time saved by the JISC community equals a value of almost £156,000,000 pounds in 2004-05. For every £1 spent on e-resource provision the community saved time to the value of at least £19.**
9. Use of e-resources is growing (35% increase in 2004-05 compared with 2003-04). There is no evidence that this growth is slowing down, so the benefits identified in this report should continue to increase. However the

ability of the sector to pay for further resources may well be the limiting factor to growth in use of e-resources.

10. The collective negotiation for provision of e-resources produces an evident saving for the community. **For every £1 funding to the Collections team, the community received services with a commercial value of over £26.**
11. The RSCs and JISC advisory services have no commercial equivalent or equivalents only available at a high cost at point of use. JISC advisory services provide valuable, focused advice to the community for comparatively little outlay. Survey evidence suggests that users of these services particularly appreciated their insight and advice. However some advisory services could increase their user base and penetration, thereby increasing their value to the community. All the advisory services demonstrated recognisable value for money.
12. Several JISC services show increased value to consumers by growth in use with little or no rise in provision costs. These services include network provision, the major bibliographic services and the Athens Authentication service.

Value for Money highlights 2004-5

JISC core budget 2004-05 £63,546,712

Value of researchers time saved using e-resources

Value of time saved	E-resource budget 2004-05	Difference	Ratio
£147,630,545	£8,620,000	£139,010,545	17.13

Value of time saved by use of JISC supported e-resources compared with paper

Resource accesses = 20,843,741 E-resource budget = £8.62 million

2004-05	Manual	Electronic	Difference
Value of staff time	£187,512,655	£31,252,145	£156,260,509

Return per £1 = £19.06

JISC Services benefits, 2004-05

Service	Minimum benefit to community	Cost of provision 2004-05	Return per £1
Value of Resource agreements	£26,110,000	£982,500	£26.58
JANET CERT vs commercial ¹	£1,789,623	£622,377	£2.88
JANET CERT costs saved ²	£1,327,582	£622,377	£2.13
JISCmail	£520,200	£283,218	£1.84
TASI advice and guidance	£3,079,631	£204,173	£15.07
JISCPAS	£4,520,698	£353,608	£12.79
TechDis	£1,514,338	£537,825	£2.82
JISC infoNet	£1,551,322	£584,000	£2.66

Estimated Commercial cost of services 2004-05

Service	Commercial cost of service	Cost of provision 2004-05	Return per £1
JISC Legal	£279,502	£197,388	£1.42
EDINA Digimap	£13,000,000	£823,584	£15.78

Shelving savings

	Minimum saving	Return per £1
JSTOR	£40,000,000	£9.28
Other periodicals	£40,000,000+	

¹ Commercial CERT rates vs JANET CERT costs

² Calculated value of institutional resources saved

Introduction

Value for Money is a measurement of quality that compares the resources used to procure goods or services with the benefit obtained from those goods or services.

Whilst a Value for Money exercise measures and compares costs, it must also take account of the mix of quality, resource use, fitness for purpose, timeliness and convenience to judge whether or not together, they constitute good value. As such, Value for Money is one measurement of good practice. Some elements under consideration may be subjective, difficult to measure, unavailable, intangible or misunderstood. Judgement is therefore required when considering whether value for money has been achieved.

The remit of the JISC is extensive. The organisation is unique in both national and international arenas as being the only single, national institution responsible for providing strategic guidance, advice and opportunities to use ICT to support teaching, learning, research and administration for national tertiary education. Whilst many countries have centrally provided research and education networks, and some provide supplementary services, no other country has a comparable single body providing an integrated range of network services, content services, advice, support and development programmes. Therefore it is impossible to benchmark the whole of the JISC's activities against those of similar organisations. It is possible, in some areas, such as network or e-resource provision, to compare an activity with other similar national and international activities.

The JISC remit covers diverse activities and it would be a considerable achievement to examine all activities in detail, even if enough information were available. This document has not attempted to evaluate the activities of the JISC executive and administration, other than to comment on the real benefits of a pervasive and unified JISC strategy. In several cases evaluations of individual services have been performed, either commissioned by JISC or by individual service providers. This document has referenced these whenever they have been available, and has not attempted to re-evaluate the services. Effort has been expended in evaluating the overall provision and the benefits, or otherwise, to the community, rather than from considering each individual service. This is particularly the case with e-resource provision, reflecting the value to the community of the availability of an integrated provision rather than the contribution of each resource.

Several aspects of service performance can be quantified and assessed as they occur, such as the amount of use, the evaluation of customer awareness and satisfaction, money spent versus time and money saved. In most cases it is impossible to place an absolute value on use. It must be presumed that if a service were not considered valuable, users would explore it occasionally then use would tail off. Those services that are continually well used must have a high value to the community. The converse is not always true. Low use services may be of low value; or they may be a single point from which data is downloaded for extensive further work; or they may be a vital source of information for a small user base. However, in these latter two cases, user

evaluation of the service should be positive. In some cases the service may not have reached its full potential user base.

Those services that provide open access information, portals such as the RDN and some JISC advisory services with open access web pages, are particularly difficult to evaluate in terms of use. In some cases data are not routinely extracted from log files. When usage data is available the significance of a visit or download can be difficult to assess. However evidence of continued use again indicates a measure of value to the community.

It is particularly difficult to effectively evaluate research and development programmes during their lifetime. Project execution may be measured against project milestones, but this does not indicate the value of the completed project. It is possible to identify a successful project after completion as one that fulfils the original objectives, with a product that serves a demonstrably useful purpose and is cost effective. Value for money may be proven for some projects in terms of time, effort or money saved by implementation or by information used from the project for strategic decision making. Failure of a project to demonstrate these might not indicate poor value for money - projects may have significance in identifying areas where it would not be wise to invest money or effort in future. Others may be of ephemeral value, but are essential avenues of exploration in areas of rapid technological change. All well managed projects presumably provide experienced staff whose skills and knowledge may be useful in other programmes and projects.

Realistically, if current programmes were perceived to be of limited value it would be surprising that the JISC had selected them for support. The majority of developmental calls for participation are oversubscribed which indicates the value of these programmes to the community. Indications are that Phase II of the Digitisation program will be at least six times oversubscribed. The impact of the ELib programme is currently being reviewed.

Methodology

This report aligns the different areas of JISC provision with the strategic aims that they support. Some services support more than one strategic aim. When this occurs the service is considered under the strategic aim that it is most aligned to. JISC Project development is discussed separately as JISC Project development as a whole covers all the strategic aims, and individual projects may be aligned to more than one aim.

The majority of the JISC services serve the first or second strategic aims – provision of services and advice. Consequently the detail of this report is heavily weighted towards those aims. Services supporting the third strategic aim – the provision and support of individual learning environments are still maturing and a Value for Money exercise for these is premature.

The third and fourth strategic aims are concerned with collaboration and strategic advice. These strategic aims are achieved both by the works of dedicated advisory services and by the advice and support given to the community by all service providers. The work of individual services with respect to these aims is examined where possible in this document.

Value for Money can be described in terms of economy, efficiency and effectiveness. The value for money provided by JISC can be determined by a number of approaches. In order of confidence these are:

1. Benchmarking the cost of the whole service against a similar service available on the open market. This is possible where a comparable service exists and the costs on the open market are accessible (e.g. the cost of network provision or e-resource provision).
2. Comparing the cost of the service provided centrally with the cost if each institution had to negotiate provision.
3. Considering time or effort saved by use of the service and putting a value to that time or effort.
4. Calculating the unit cost of parts of the service (e.g. access to a database) and comparing that to the price for similar provision.
5. Assessing the impact made on the target market. This is particularly useful for services with no commercial equivalent.
6. The converse operation to 5. is to consider the implications to the user community if the service was not available.
7. Examining customer comment and customer satisfaction assessments.
8. Exploring trends in use. Services that are well used, used repeatedly or experience continued increase in use must be considered as valuable.

September 2006

Throughout this document staff time generally has been calculated at an average salary of £24,000 and a working day of eight hours for 220 days per annum. 2004-05 refers to the annual year running from August 2004 to July 2005. Where specialist time is involved in calculations the hourly rate recommended by the relevant professional societies is used.

Throughout this document the user community is presumed to be the staff and students at institutions eligible for JANET connections. These include education and research establishments.

This exercise concentrates on work funded by the JISC core budget. Capital grants, which fund network and other development work have not been considered in this report with the exception of some capital funding for the provision of SuperJANET.

Development programmes are difficult to evaluate until after the end of the programme. Often the benefits of a programme are best assessed some years after the completion. A companion document to this details the Value for Money of JISC Development activities. In addition, the JISC has commissioned a study from Jon Duke and Andy Jordan to assess the impact of the E-lib project.

First strategic aim:

to develop solutions that help enable the UK education and research communities to keep their activities world-class through the innovative use of ICT

To be met through: providing a first class sustainable infrastructure (network, middleware, widely available content and an information and communications environment).

Network infrastructure

UKERNA supply JANET - the UK National Research and Education Network (NREN), on behalf of the JISC.

JANET is a reasonably priced, high quality, dedicated network that is specifically designed to meet the current and future needs of the JISC community. The system of tender and procurement allows this network to be modified, adapted or expanded to accommodate the changing requirements of the community and of technology.

It is problematical to compare JANET provision and costs accurately with other networks. Individual aspects of service provision may be compared with that of other providers, but no single provider offers a similar combination:

- Each JANET connection is via a dedicated line and there is no contention with other providers.
- JANET includes a unique package of ancillary services including some that are not usually available from other providers. This package includes extensive customer support, mail, security, videoconferencing and multicasting services, domain name registration, web services, usenet news and training.

A JANET benchmarking exercise commissioned by UKERNA and provided by Teligen (internal document) compared the pricing structure of other main UK service providers with those of UKERNA. Although certain elements of network provision were available at a lower price in the UK, there was no evidence to suggest that the package of network services provided could be obtained at a lower cost with the same quality of service and flexibility.

JANET is a highly reliable network; that reliability has continued to improve. A 0.1% rise in availability to an institution results in increased service of 8 hours 40 minutes per year, with consequential increases in productivity of individuals working at that site. Figures comparing 2002-03 and 2004-05 (corrected to allow for the different numbers of institutions) suggest that some 230 institutions saw a rise in availability of at least 0.1% between those years.

European Benchmarking

JISC commissioned UKERNA to perform a benchmarking study compared JANET against other NRENs in Europe. The subsequent report, produced in October 2005, noted that:

- JANET is a world-class NREN. JANET is seen internationally as a high-class and reliable network with high availability and good performance.
- JANET is a particularly large and pervasive NREN, connecting all research and tertiary education, and reaching increasingly into schools.
- JANET compares well, technically, with other European networks.
- UKERNA is considered to operated and developed JANET in a competent and trustworthy manner.
- JANET is seen to lack current leading-edge technology and is slower to innovate than certain other European research and education network providers.
- Where UKERNA is involved in European activities or task groups, the contribution is welcomed and valued.

The JANET network provides a reliable, high quality, high-speed connection at a low cost per connection, compared with other European NRENs.

The base cost of JANET is high compared with other European NRENs. Only the German network DFN had a higher basic transmission budget in 2005. However JANET connects 730 institutions, more than double the connections provided by the DFN (299 connections).

Using figures compiled by TERENA, JANET's cost per institutional connection is not only lower than that for the major European NRENs but is well below the average. Of the EU-15 and EFTA countries, only two (Denmark and Finland) connect institutions for less. Their networks have a lower core capacity than JANET.

The French NREN RENATER appears to connect institutions at a lower per unit cost but their figure for number of connections is derived differently and is not directly comparable, as they include connections to sites rather than to institutions. This inflates the RENATER figure for number of connections.

UK Benchmarking

No UK network provider offers the same range of network services as those provided by UKERNA. An independent comparison of network prices of eight major suppliers in Autumn 2005 found that:

- UKERNA prices were within the ranges offered by of other major UK network providers for all but the higher speed provision.
- Network costs fell between 2004 and 2005. The relationship between UKERNA and the other providers' prices remained stable over the year.

- No network service provider supplied quality videoconferencing facilities as available from UKERNA.

The Office of Science and Technology (at the Department for Trade and Industry) reports acknowledge that UKERNA provides the sector with a good computer infrastructure.

The average cost of an institutional connection has fallen since 2002-03.

Average network costs

Cost to JISC	2004-05	2003-04	2002-03
Per user – all UKERNA services	£2.75		
Per user – basic transmission	£1.81		
Per connection – all UKERNA services	£34,124.22	£35,759.49	£37,874.66
Per connection - basic transmission	£22,474.63	£26,177.60	£27,783.74

Security

The JANET Computer Emergency Response Team (CERT) has particular responsibility for:

- Raising awareness about and advising the community on prevention of potential threats
- Assisting incident handling and remediation
- Assessing new threats with a view to developing methods of preventing incidents.

The value of the CERT can be measured by community recognition of the importance of the work of the CERT; by resources saved due to the reduction of time taken handling incidents at institutions, and, importantly, by reducing the number of incidents through advice to the community. This latter in particular is difficult to quantify.

Community perception

The JISC Monitoring Unit surveys of network infrastructure services regularly report that the user community perceive the JANET CERT as producing a valuable service, and that, in addition to assistance with incidents, it is very effective in providing literature and training. However there is evidence that suggests that HEIs could do more to benefit from CERT advice thereby increasing the VFM arising from CERT activities.

CERT International Benchmarking

The European benchmarking exercise noted that UKERNA are seen as being amongst the leading NRENs with regard to incident response and pro-active security measures. The work of the JANET CERT is highly respected at an international level.

Security incidents are not contained within national boundaries and international cooperation is imperative for any CERT. UKERNA is recognised as successfully liaising with worldwide organisations and providing valued advice and support.

CERT National Benchmarking

There are few commercial security services comparable to the CERT team and direct comparisons are complicated by the differing services offered. In 2005 a contract with a UK security company who perform twice yearly audits including penetration tests, with an additional pay-per-incident charge was in the order of £3,000 pa for a London organisation of 2,500 users at three sites. The rate for recovery assistance was £1,000 per day. In 2004-05 the JANET CERT JISC budget was £622,377.

Were savings-per-user extrapolated from the above, for the whole JANET customer base, a commercial CERT would cost the community over £11 million. However commercial rates are unlikely to be based on a flat rate for any number of users. It is more useful to compare costs on a per institution basis, which using the rate of £3,000 per annum, suggests that UKERNA CERT provision produces a possible saving of almost £1,800,000. The majority of institutions have more than 2,500 students and more than three sites so the final saving is probably higher.

The comparative costs are as follows:

Average annual costs	JANET CERT	Commercial rate	Saving
Per institution	£1,213	£3,000.00	£1,787.00
Per user (up to 2,500)	£0.06	£1.20	£1.14
Recovery assistance	nil	£1,000.00	£1,000.00
All institutions	£622,377	£2,412,000	£1,789,623

These figures suggest that the commercial cost of JANET CERT is some three times higher than the current centrally provided service.

There were at least 110 known severe incidents during 2004-05 that resulted in institutions contacting the CERT for help. Had each of them required two days of non-CERT recovery assistance to restore services this would have cost the community £220,000 at commercial rates.

CERT Community savings

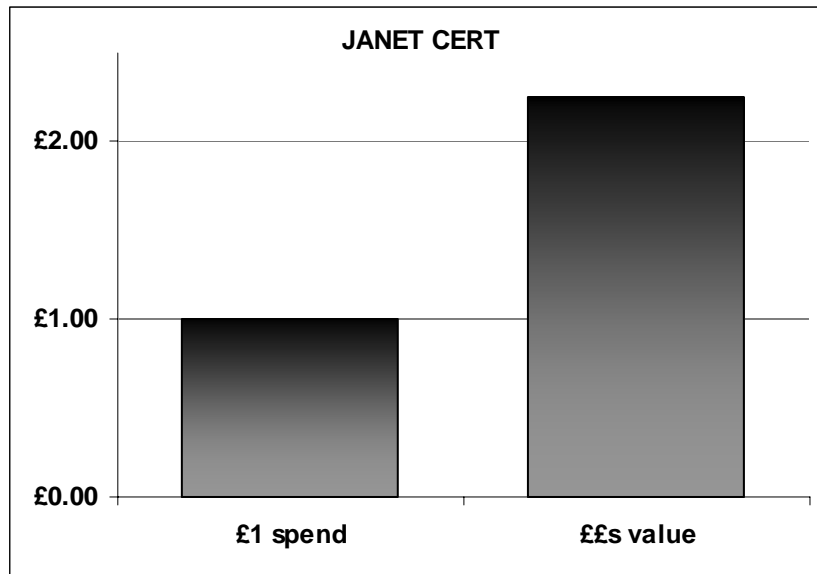
During 2005 the JANET CERT received 4,126 validated reports of incidents – an average of five per institution per year. 65 were denial of service attacks and 2,250 were malicious software (malware³).

A single incident, where an institution's home web page was replaced with one displaying abusive content was estimated to cost the host institution £8,200 (staff time taken to replace and restore the service and value of business lost whilst the main service was unavailable). No sum was estimated to cover loss of reputation and bad publicity.

Using conservative estimates of time, cost and frequency:

³ Malware is any program or file that is harmful to a computer user and includes computer viruses, worms, Trojan horses, and spyware, programs (gathering information about a computer user without permission).

- The JANET CERT receives reports of similar attacks at the rate of one a week. If CERT advice prevents half the possible attacks, then over a year the value of that advice to the community is £426,400.
- If CERT advice prevents half the Denial of Service attacks, (65 reported in 2005) and each denial of service attack costs the community a similar £8,200, then in 2005 the value of that advice to the community was £533,000
- If, in the event of a malware attack, CERT advice saves institutions half a person/day during restoration of service then in 2005 the value of that advice was £122,727. This calculation excludes loss of revenue caused to the institution from unavailability.
- If CERT advice prevented half the malware attacks in 2005, and the average time taken to patch and restore service was one person/day, then, the staff time saved equates to £245,454. This calculation does not include loss of revenue caused to the institution by unavailability of computer services.



These four conservative scenarios amount to a value of £1,327,582. **For every £1 of funding for the JANET CERT in 2004-05 these calculations suggest the JANET CERT saved the community at least £2.13.**

If the JANET CERT did not exist, similar commercial services would cost the community at least three times more than the current cost of the CERT.

JANET Web Hosting Service

The JANET Web Hosting Service provides space on central web servers for JANET organisations to publish their websites. The service can be used for

production websites should institutions not have the resources to serve their own, and as a standby web site in case of institutional problems. The web hosting service is available to all organisations with a primary JANET connection. UKERNA makes a basic charge of £220 p.a. for up to 5Gb storage.

A competitive London based web hosting service (<http://www.telivo.com/web-hosting.html>) currently charges £250 for 1Gb. The JANET service offers five times the capacity for a similar cost.

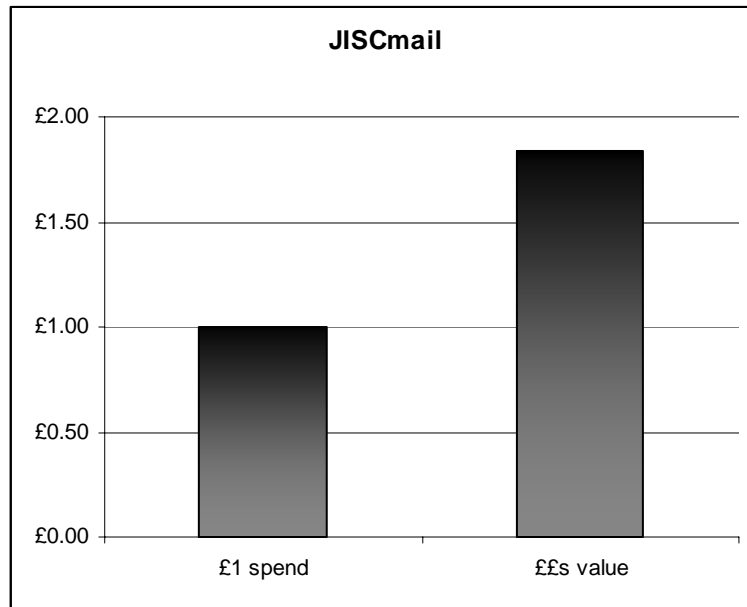
JISCmail

The National Academic Mailing List Service, JISCmail, is provided to facilitate knowledge sharing within the UK academic community, using email and the web, through the provision, support and development of specialist mailing list based services, enabling the delivery of high quality and relevant content. JISCmail supports topical discussion, wide collaboration and rapid communications, providing a means for the community to:

- Share experiences
- Enhance collaboration
- Keep in touch with peers
- Assist research
- Store documents and images
- Run surveys
- Make and develop contacts
- Keep up to date with development
- Announce events
- Access archived discussions
- Hold real time text-based discussions

JISCmail provides a safe environment, support for setting up and maintaining lists, and is free to the academic community. JISCmail hosts over five thousand lists on a huge variety of subjects. Around 12 million messages are distributed to over a third of a million subscribers every month. The value of this service is apparent in the growing number of users, the sustained increase in volume of emails received and distributed, and the number of new lists created.

JISCmail offers a commercial service Mailtalk to non-JISC subscribers. This service charges £100 per annum for each list of 1-100 subscribers. Lists with 501 - 2000 subscribers cost £500 per annum. In July 2005 there were 5,202 active JISCmail lists. If these all had 100 or fewer subscribers the cost to the community at this rate would be £520,200. UKERNA received £283,218 to fund the JISCmail service in 2004-05. The estimated savings would be greater were lists with large numbers of subscribers factored into the calculation. **However the above calculation indicates that for each £1 of JISCmail funding in 2004-05 the savings to the community were at least £1.84.**



Mail abuse (Spam)

UKERNA subscribes to Mail Abuse Prevention Systems on behalf of all JANET customer organisations. The JANET mail relay team operate a Spam-relay tester, which assists institutions in testing their mailer and reports on any vulnerability found. Were JANET assistance and advice to reduce spam and, as a result of this, staff members save 1 minute a day, the annual saving of staff time for HE and FE staff would amount to a £18,895,250 per annum.

Customer service and enquiries

The provision of a customer service is a necessary part of the network provision. The community perception of the JANET customer service helpdesk is positive – in a recent JISC Monitoring Unit survey 99% of the respondents rated its performance as satisfactory or above. The JANET Customer helpdesk generally receives between 400 to 600 requests per month. Presumably (respondents rated the responses as useful), Customer Service replies save some time and effort on behalf of the institutions making the initial queries. This is either time saved looking for an authoritative response to a query, or time saved by not purchasing/implementing inefficient solutions.

Middleware – authentication

The JISC authentication service, Athens is an Access Management system that controls and provides access to web based services. Athens offers access to web-based services, and includes administration facilities for user institutions and resource providers. Athens is the largest system of its kind in the world, and is recognized as world-class for digital library access.

The value to the community of the Athens service can be demonstrated by:

- The cost of the authentication service compared with that of other countries

- The high level of use of the authentication service by the community, including the integration of Athens authentication into cross searching and the take up of the Athens single sign on and Athens DA service.
- The reliable environment provided which publishers recognise as a secure entry to their products
- Use of the Athens system or similar systems by other countries.

The development of an authentication and authorisation system was a necessary part of the strategy for providing commercial e-resources to the HE/FE community. However at the point of development there were few commercial alternatives, none of which were suitable for use for a wide range of products and across a wide community. Athens is still unique in the range of authentication and authorisation it performs for a tertiary education community.

Benchmarking

International Authorisation and Authentication Infrastructures (AAI) for academic and research users are deployed worldwide. These vary from simple password systems, to middleware designed to both authenticate the user and authorise, where appropriate, access to one or several resources. This range of functionality makes direct comparison difficult.

TERENA publish basic information on NREN authentication activities and the 2005 TERENA Compendium notes that for many NRENS AAI is a new area. The UK Academic and research AAI is run by Athens, rather than by the national NREN -UKERNA. As the TERENA Compendium analyses NREN activities, Athens was not included in the TERENA comparison.

Several European NRENS run some form of Authorisation system. Three were described as Shibboleth-based (Finland and Switzerland) or Shibboleth-compliant (Norway). A further 14 countries operated a certification authority. No information was provided on the cost of these systems.

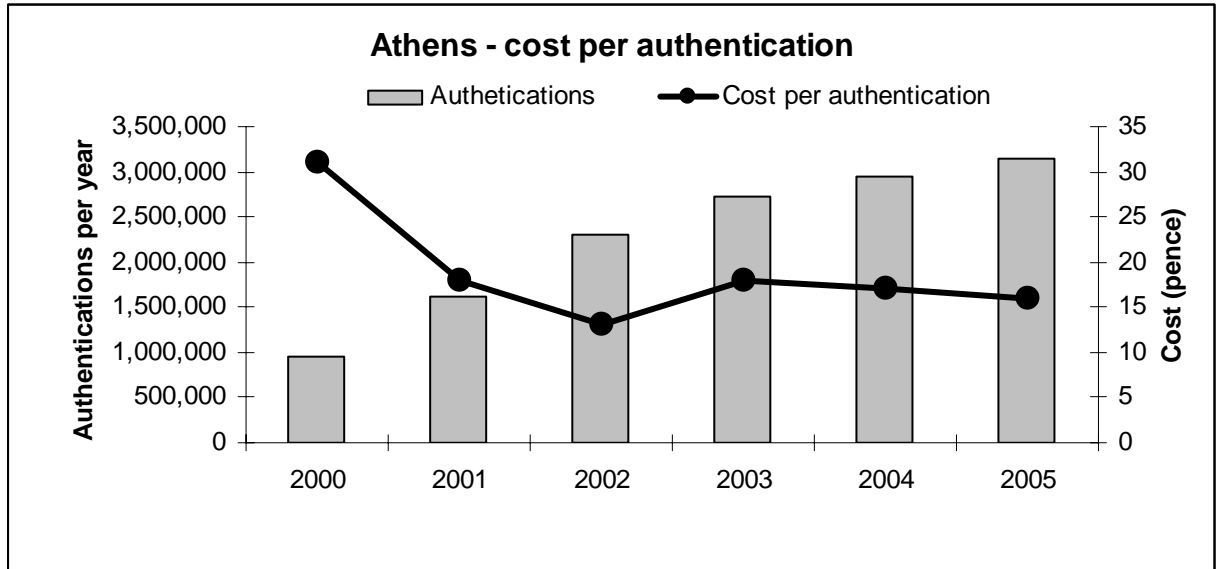
In 2003 the Swiss NREN SWITCH (SWITCH 2003) estimated that to implement an AAI for 300,000 users at 33 institutions would cost:

	SWITCH (Switzerland)			Athens
	2004	2005	2006	2004-05
Total cost	£388,836	£287,209	£220,930	£619,225
Per institution	£11,783	£8,703	£6,695	£1,207
Per (potential) user	£1.30	£0.96	£0.74	£0.06

The Swiss NREN, SWITCH, has implemented a Shibboleth compliant implementation at an estimated cost of £1.20 per user. At the time of writing this is the only live Shibboleth federation.

Athens authentication is used in over fifty countries. This includes use by ten academic organisations in Sweden, seven in Denmark, three in Norway and eleven in Ireland.

Service costs



There are currently an estimated 10,000,000 potential users on the network. Of these 3,145,933 used Athens in 2004-05. Despite increases in funding, the cost per user has fallen steadily from 31p per user in 2000 to 20p per user in 2004-05, mainly due to the economies of scale resulting from increasing number of users.

Athens costs in 2004-05 were

Total grant	£619,225
Per institution	£1,207
Per (potential) user	£0.06
Per actual user	£0.20
Per authentication	£0.10

Content provision

Content provision concentrates on the acquisition of electronic resources and their delivery. Delivery may be via JISC service providers or directly from publishers.

In 2004-05 the JISC Content services budget was £11.8 million, which was split between service provision and content acquisition.

JISC and HEFCE were the world leaders in terms of centralized content procurement strategy. In many countries each HEI or research institution brokers its own deals with publishers. Although a centralized brokering model is becoming more common, the UK model is unique in the scope and size of its user base and in the breadth and scale of the JISC provided content provision.

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In 2004-05 the JISC provided access to some 60+ e-resources. Many of these require an institutional subscription to the service; some require no further financial input from institutions. Some 40 resources are provided to the community at discounted subscription fees, made possible by JISC negotiated agreements. Publishers are reluctant to have the extent of academic discounts revealed but the collections team has supplied figures for the following resources. Not all the datasets in the JISC Collections portfolio are included.

DIGIMAP – Ordnance Survey	E-lawstudent
ISI Web of Science – Current Files	Grove Music Online
Education Image Gallery	Grove Art Online
Creative Club	SCRAN
Literature Online for Higher Education	Art Abstracts
Literature Colleges Edition	Art Full text
Know UK and Know Europe	Ovid Arts Package
Britannica Online	

The agreements for these resources are calculated as saving at least £20,670,000 in 2005. A further estimated £3,570,000 was saved from seven 'heritage collections:

Institute of Physics Backfile	Digimap Historic Map Data
Royal Society of Chemistry Backfile	Web of Science Backfiles
Early English Books Online	OUP Journals Archive
Eighteenth Century Collections Online	

In addition savings on NESLi agreements in 2005 were estimated at £1,870,000. The annual cost of the NESLi2 Journal Negotiations was £255,000. **For every £1 of JISC funding the saving from NESLi agreements was at least £7.33.**

The total savings for all the above resources is £26,110,000. The annual cost of negotiations in 2004 was therefore £982,500. These figures suggest that the value of the E-Resource provision to the community is very high and that **for every £1 the JISC spent on e-resources the saving to the community was at least £26.58.**

The above calculations consider only 22 of the 40+ resources. Savings over the whole portfolio are likely to be greater.

The value of content provision to the community

The fundamental value of E-Resources lies in their use by the community to support learning, teaching and research. The use of e-resources is now embedded in the work process, the resources are well used and there is evidence that e-resources are accessed more frequently than their paper equivalents.

Value to the community is derived from:

- Time saved and made available for other activities e.g. research/teaching
- Increase in quality of research/teaching preparation, particularly from
 - Greater scope of literature searches
 - Increase in use of primary information
- Reduction in production time for writing
- Decreased likelihood of unintentionally repeating research work
- Increased ease of keeping up with current research
- Increased efficiency for courses and students using e-resources. Several people (e.g. class groups) can access a single document simultaneously.
- Increase in quality by using electronic documents –several documents may be accessed for no extra cost – costs increase with each paper document.
- Increased efficiency as e-resources can always be found and accessed – there is no need for interlibrary loans, return of documents from other borrowers and no loss of documents.

Athens and Monitoring Unit data suggests that there were over 15 million accesses to JISC supported E-Resources in 2004-05. When accesses via IP, and other non-Athens authentications, plus accesses to non-authenticated services are included the probability is that there were more than 20 million accesses or similar uses, during that year.

If nationally networked e-resources were not available the following alternatives would be used. :

- Paper based information at a nearby library
- Static electronic resources such as CD ROMS at a nearby library
- CD ROMS networked within an institution
- Interlibrary loans
- Visiting a distant library for casual (short-term) or extensive (long-term) research
- Departmental or individual subscriptions to paper based information.

Each of these has time, cost and efficiency implications not experienced with a networked electronic resource. HESA suggest that staff costs account for 58% of all expenditure in HE. Any development that reduces the time spent on routine staff activities will have a financial benefit. Strouse, (2004) calculates that the increase of access to electronic resources has led to a steady decrease in the average hours researchers spend per week on information gathering and analysis. This has dropped from 9.9 hours per week in 2000 to 7.4 in 2004 – a time saving of 33%. This is a real productivity gain directly resulting from the successful management of information content.

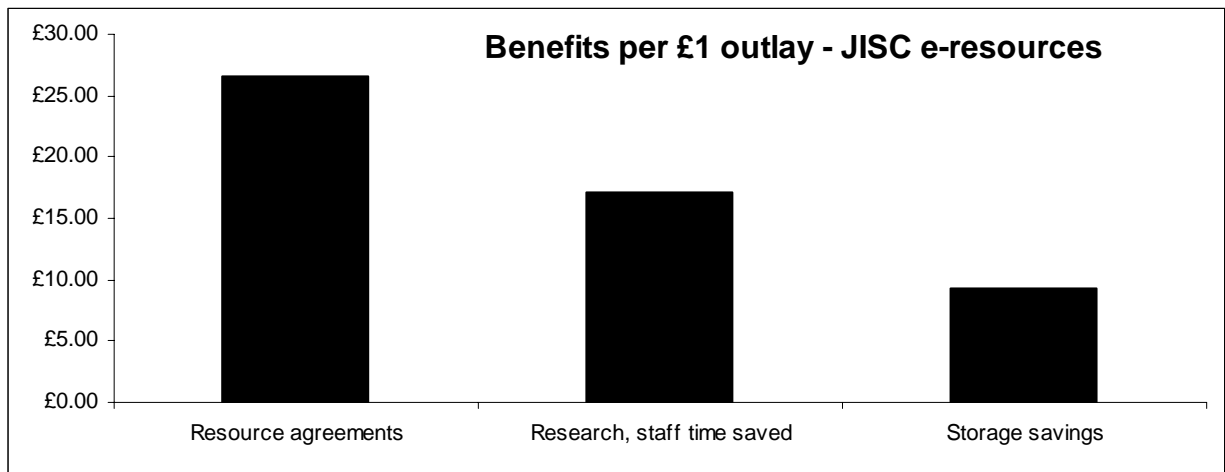
HESA statistics for 2003-04 identify 117,870 university staff active in teaching and research. If each staff member saves 2 hours a week accessing bibliographic and other e-resources for 40 weeks each year, the saved time has a value to the community of over £137 million.

There are an additional 9,000 research staff working directly for Research Councils. Assuming the same timesaving, the gains made by efficient use of E-Resources by these workers amount to a further £10,472,727. This brings the calculated saving to over £147,630 million.

Value of time saved by JISC e-resources	E-resource budget 2004-05	Difference	Ratio
£147,630,545	£8,620,000	£139,010,545	17.13

These estimations concentrate on university research alone and do not include support staff, FE staff and students. The saving is over twice that of the JISC core budget for 2004-05 (£63,546,712).

The JISC Content services budget for re-resource provision was £8.62 million. **The above scenario suggests that for each £1 spent by JISC on e-resource provision, the return to the community in value of time saved in information gathering is at least £17.13.**



An alternative evaluation

In their report exploring efficiency gains through online content use (LISU 2005) it was estimated that the time saving accruing from electronic searching, compared with paper searches when converted to salary costs was valued at some £25.8m per annum in 2002. This figure appears low. However the LISU report did not include some high use resources and use of e-resources is increasing rapidly - in 2004-05 it was 35% higher than the previous year, a similar increase to that between 2002-03 and 2003-04.

There were almost 21 million accesses to e-resources in 2004-05⁴. The LISU study presumed that the average length of use of an electronic resource is 25 minutes. However this equals the time-out value of several well-used resources. If the average user time is instead considered to be 10 minutes per access and if the average time taken for a user to make a manual search for papers is taken to be one hour, the difference is as follows:

⁴ Known accesses reported to the JISC Monitoring Unit plus accesses for other resources reported from Athens with an estimation representing IP authenticated accesses.

Resource accesses = 20,843,741 E-resource budget = £8.62 million

2004-05	Manual	Electronic	Difference
Search time (days)	2,604,343	434,057	2,170,286
Staff search time⁵ (days)	1,718,866	286,478	1,432,389
Value of staff time	£187,512,655	£31,252,145	£156,260,509

The added value, equivalent to more than 156 million pounds per year, suggests the community is gaining 1.4 million person/days, by using e-resources rather than paper based information.

This scenario suggests that **for each £1 spent by JISC on e-resource provision, the return to the community in value of time saved in information gathering is at least in the order of £18.**

No value has been estimated for the time saving for students (some 738,000 days in 2004-05). It is important that the UK continues to offer attractive online resources compared with other countries to maintain the appeal of UK education to overseas students.

To quote one AHDS user “- You saved me hours of work and many trips to different libraries that would probably have been fruitless. So thanks again!”

These calculations examine a twelve-month period, in a climate of increasing use of e-resources. There was an estimated 35% increase in use of JISC provided e-resources between 2003-04 and 2004-05. A similar increase was recorded between 2002-03 and 2003-04 and is likely for the current year compared with 2004-05. All indications suggest that the use of e-resources will continue to increase strongly and that the value of these services to the community will increase within institutional budget constraints.

Further costs of print versus digital access

The true cost of print access is often underestimated. In addition to subscription costs, the costs of shelving, cataloguing, binding, archiving and staff time should be factored into the calculation. Detailed comparisons of cost of providing e-resources suggest e-resources cost less than paper, and that the relative cost of e-resources is falling. In Brown (2003) wrote: "Storing and conserving our physical stock of records (which has now grown to 176 kilometres) cost £14.3 million in 2002". He continued "Retrieving a paper record for use by a reader costs about £6; delivering one over the internet cost 13p".

JSTOR (who provide an increasingly well-used electronic archive of scholarly journals) estimates that the backfiles of the periodicals offered by them (assuming that a library has the full runs) fill approximately 7,000 linear metres. Estimates vary for the cost of shelving in libraries, but figures of capital costs associated with housing these volumes is more than \$725,000 in an American university library. These costs will increase as more content is added.

⁵ Athens data suggests that some two thirds of accesses are from staff.

Were the costs in the UK similar for the 106 subscribing UK HE/FE institutions, this would represent an outlay of over £41,000,000 to house the equivalent paper copies covered by the JSTOR service. A similar outlay would be needed to shelve current periodicals available through NESLI and similar deals, and the volumes of abstracts, which were an important part of every academic and research library. Clearly it would be unlikely that all universities would house these journals and the real value of the JSTOR service is in the instant accessibility of these articles for use across a wide section of the community.

In a survey by JSTOR, in 2003, of librarians in the USA, 33% of respondents reported that because of JSTOR, they had already stopped binding recent issues, and 23% indicated that they had moved bound volumes of titles included in JSTOR to remote storage.

When considering the cost of digital provision the cost of local area networks, computers, computer rooms and technical support must be considered. In "Comparing Library Resource Allocations for the Paper and the Digital Library: An Exploratory Study" Connaway and Lawrence (2003) concluded that a digital library would require fewer resources in terms of space, labour, materials and equipment than in a paper library, but that the skills required to staff a digital library might be in shorter supply and therefore more expensive.

Information and communications environment

- to be met through supporting the use of Virtual Learning Environments (VLEs) and the development of Managed Learning Environments (MLEs), identifying and defining technical standards and, with other organisations, helping to embed eLearning and supporting emerging eLearning pedagogies

This activity is discussed under the third strategic aim – ‘To help the sector provide positive, personalised user learning experiences and aid student progression.’

- to be met through supporting research and in particular eScience, and helping to embed eScience more widely across research

UK Research quality

Research UK reports that the UK produces 9% of the world’s scientific papers, and 13% of those most highly cited. UK research wins 10% of internationally recognised science prizes and has produced 44 Nobel Prize winners in the last 50 years. UK academics produce 16 research papers for every \$1m invested compared with the 10 produced in the US and 4 in Japan. The UK has 1% of the world’s population.

The ‘PSA Metrics Data Report’, commissioned by the Office of Science and Technology a report on the performance of the UK research base, demonstrated that in some areas the impact of UK research has surpassed that of the United States. According to the Research Councils UK this ‘represents a clear indication of the high impact of UK research, who together invest over £2.5 billion a year in research’ (Research Councils UK, 2006).

Chatterji and Seaman (2004) state in ‘RAE Results and Research Funding in the UK: A Regional Analysis’ *‘The economic benefits to British industry of a strong research base are difficult to calculate, but research is a fundamental requirement for the jobs of millions of British workers and supports British export efforts. For a range of industries from defence equipment (e.g. British Aerospace) to pharmaceuticals (e.g. GlaxoSmithKline) Britain has achieved a global presence far in excess of that which one might expect for a middle-ranking country.’*

Hicks and Katz, (1996) estimated that some 60% of papers published in the UK were generated by or including collaboration with the Higher Education sector, and that the amount of collaboration in the production of papers between disciplines, institutions and sectors was increasing.

There is no doubt about the quality of UK research. This excellence has been maintained in an environment of global growth in research, a situation that would not have been possible without substantial investment in e-Resources. The Office of the Deputy Prime Minister’s paper ‘Productivity in the UK: The

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Regional Dimension' (2001) emphasised that the invention and application of new technologies, products and production processes is a key driver of productivity growth - ***accounting for around two thirds of UK economic growth in the past fifty years.***

It is well nigh impossible to place even an approximate monetary value on the impact of the JISC contribution within UK research. Benefits arise from the provision of:

- Network and ancillary facilities
- e-resources
- Communication resources – email, videoconferencing and discussion lists.
- Open access self archiving resources
- Advisory bodies

A discussion of the saving of researchers time by the use of e-resources, and the value of that time is found in the content provision section of this document.

The network infrastructure, content provision, advisory organisations, and discussion groups facilitated by the JISC make an important contribution to the development of a healthy research community. JISC activities underpin and facilitate UK research, which in turn underpins much of the economic growth of the UK.

Second strategic aim:

to provide advice to institutions to enable them to make economic, efficient and legally compliant use of ICT, respecting the individual's and corporate rights and responsibilities

To be met through:

- *Helping institutions plan and manage change to exploit ICT (e.g. risk analysis, cost of ownership, staff development and skills training, rights management)*
- *Providing an observatory role, coherent advisory services and forming a more robust evidence base for the effectiveness of ICT*
- *Improving the effectiveness of scholarly communication in support of research, learning and teaching*
- *Improving communication and feedback mechanisms with the JISC to help institutions with their investments in ICT, to discover and respond to changing needs, and to provide user-led advisory services*

The JISC Organisational Support (JOS) budget for 2004/05 was £6.21 million. Advisory services account for 86% of the JISC JOS budget and include:

- 13 UK-wide Regional Support Centres (RSCs). These directly support further education institutions, on a regional basis, to utilise ICT in support of their overall institutional mission.
- TechDis. Providing support to staff and students and improving the provision of technology for people with disabilities.
- JISC Legal. Helping institutions to meet legal requirements.
- JISC Infonet. Helping institutions to plan for and implement information systems, including support for records management activities (part JOS-funded).
- Netskills. Offering internet-related training materials and associated training workshops.
- TASI Advice and guidance on digitisation issues.
- Plagiarism (not JOS funded).

Internal and external surveys suggest that the community perceives these as generally providing valuable advice to the community. Most JISC advisory services require comparatively little outlay from JISC and have no commercial equivalent or one that is only available commercially at a cost per use. However some of the advisory services could increase their user base thereby increasing their value to the community.

JISC Regional Support centres

JISC Regional Support Centres provide advice on how to integrate ICT and e-learning into educational and business activities, to learning provider organisations throughout the UK. RSCs deliver services via regional offices,

supporting FE colleges and small HE colleges, specialist and sixth-form colleges (in England) and ACL providers (in England). JISC provides UK-level management, coordination and quality framework, ensuring equivalent regional services across the whole UK.

Benchmarking the RSCs is difficult as the RSC range of activities is diverse and there are no appropriate similar bodies with which to compare them. Equally there is little information available which quantifies the work of the RSCs.

The terms of reference of the RSC Board include an undertaking to '*provide guidance to the RSCs on budgetary and Memorandum of Understanding issues and ensure that funding is delivering value for money.*' A number of reviews and user surveys have been commissioned which fulfil this obligation.

A review of the RSC initiative was recently undertaken by Jon Duke and Andy Jordan (2006). This included an assessment of the RSC initiative's success to date, and an evaluation of the appropriateness of the remit and services of the RSCs.

This report acknowledged the value of the RSCs to the community they serve thus: '*The RSCs have developed very considerably since their inception, and they supply valuable services needed by their constituency. Their staff, and the JISC, should receive credit for establishing these units, which have become respected service providers in the post-16 landscape. Importantly, they now have a substantial investment value.*'

Jordan and Duke (2006) state that the RSC stakeholders gave a clear message of the high value of the RSCs to their organisations and were anxious to ensure that this was known.

The results of the LISU survey of RSCs (LISU 2006a) indicated that the majority of respondents who had experience of the RSCs felt their services were useful and effective in a number of areas, and therefore valuable. The comments offered on the work of the RSCs were almost all positive and in many cases highly enthusiastic.

Advisory services

TechDis

TechDis is an information service which aims to enhance provision for disabled students and staff in higher, further and specialist education and adult and community learning, through the use of technology. TechDis is the leading UK and possibly world educational advisory service, in the fields of accessibility and inclusion.

TechDis offers particular advice on support through the use of technology for

- Visual Disabilities
- Auditory Disabilities
- Learning Difficulties
- Mobility and Motor Disabilities
- Language and Communication Issues
- Medical / Other Issues
- Multiple Disabilities
- Mental Health

HESA tables for undergraduate and postgraduate students with disabilities suggest that in 2004-05 there were the following numbers of disabled students in HE:

Disabled HE Students	Number	Percentage
Postgraduate*	15,545	4.45
Undergraduate**	112,725	5.60
Total	128,270	5.37

*calculated from first year students over two years.

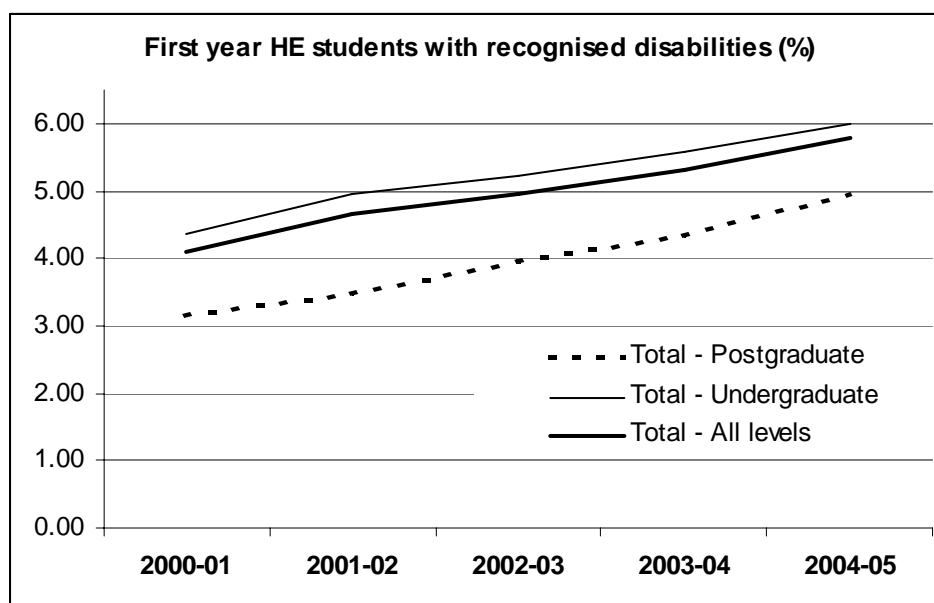
** calculated from first year students over three years.

These figures include HE students. They **do not** include staff in:

- HE or Research organisations,
- staff or students in further and specialist education
- staff or students in adult and community learning.

Hence these figures should be considered the minimum that might be assisted by advice from TechDis.

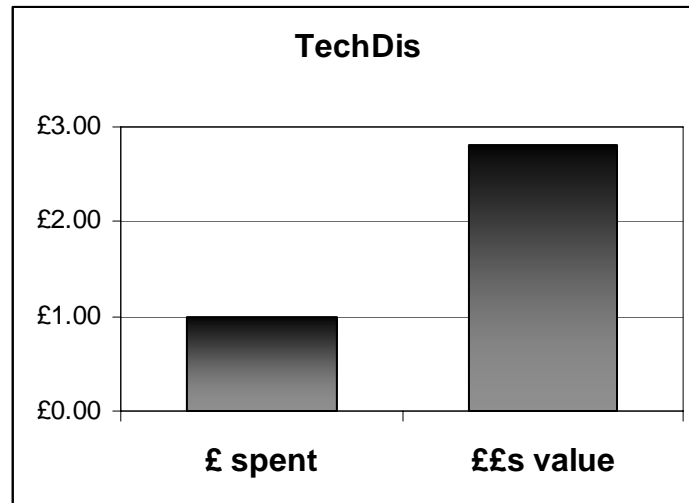
HESA statistics show that the proportion of disabled students in HE is rising steadily. Whilst this rise is, in the main, due to recent legislation, the ability of HE Institutions to accommodate these students effectively has been greatly facilitated by the advice from TechDis.



Although it is impossible to measure the overall value of the inclusion of disabled students in strict financial terms, the value of fees paid by undergraduate disabled students in 2004-05 was at least £112,725,000.

In addition to making possible and enriching the experience of disabled students, TechDis offers advice that assists institutions in complying with disability legislation. All higher and further education institutions have a legal obligation to promote equality of opportunity for disabled people, in particular to ensure that disabled people are able to participate in education and employment. are obliged to comply with these legislations. Lack of compliance could lead to prosecution of institutions, fines and negative publicity.

The results of the user survey - Performance of JISC advisory services', conducted by LISU in early 2006 (LISU 2006b), indicated that over 70% of the respondents from HE and FE had heard of the service. The majority of the respondents who had experienced the work of the service felt that it gave added value. However some of the responses suggested that this service would benefit from a higher profile.



63 of the queries received by TechDis in 2004-05 were on the topic of web accessibility. One third of these were requesting an accessibility audit of either a web site or e-learning resource. Comparable commercial equivalents for this include:

- AbilityNet Web Accessibility Snapshot (WCAG Level 1 summary) £500 + VAT
- Zanet.co.uk Audit £499 + VAT
- Vordweb Accessibility Audit (WCAG Level 3 Summary) £800 + VAT

The mean of these is £705 (including VAT). **This suggests that the commercial equivalent of these audits would cost the sector approximately £14,805.**

The 2-day Higher Education Conference, was an event for 60 delegates offered at no charge to staff from HE institutions and included accommodation. Two comparable events are:

- Neil Stewart Associates 2-day conference “Leadership and Change Management 2006 – Learning From Best Practices”, NOT including overnight accommodation in London, price £1185 + VAT
- Centaur Conferences 2-day conference “Corporate Branding 2006”, including overnight accommodation, price £1798 + VAT

The mean of these is £1,753 (including VAT). **This suggests that this conference, provided by the commercial sector, would cost the community £105,150**

TechDis provided each of the 13 RSCs (a total of 150 staff) with a full day’s training on Assistive Technologies and their application in education. Three comparable commercial sector offerings are:

- CUHTEC 6-hour course “Making telecare and electronic Assistive Technology work” £120 + VAT
- AbilityNet 6-hour course “Effective assessment of problems at computer workstations” £195 + VAT
- AbilityNet half-day technical in-house training for up to 20 participants £700 plus £20 per delegate + VAT

The mean of these is £135 (including VAT). **This suggests that this training for 150 staff, provided by the commercial sector, would have cost £20,250**

TechDis delivered over 60 workshops and presentations to institutions and intermediaries (ranging from a single workshop to a full day) on a variety of topics including web accessibility, using Microsoft and Adobe products, and creating or adapting e-learning resources to be part of an inclusive learning experience.

The mean of 12 commercial equivalents gives a cost per session of £4,247 (including VAT). **This suggest that this training, for 60 sessions, provided by the commercial sector would have cost £254,787.**

All of the Assistive Technology Box Training sessions and a proportion of the Presentations and Workshops were delivered to intermediaries who then re-presented the information to a wider audience. For example one RSC staged 5 formal events with the Assistive Technology box during the year, as well as organising over a dozen informal sessions within other events. There is no direct commercial equivalent for this kind of activity, but if the formal sessions carry the same value as TechDis Presentations and Workshops, and that 20% of the 60 Presentations and Workshops were also taken forward by intermediaries to five further events each, **then this activity from commercial suppliers would have cost the sector £530,800.**

The TechDis website is a no charge information resource bringing together a wealth of information that, otherwise, would take individuals many hours of searching to find. The website is estimated to contain 229 individual useful information resources.

The site is used by an average of 6487 unique users per month. A proportion of these are probably 'browsing' rather than using the information in a meaningful way. However, in any given month 13-26% of the pages used are printed using the site's Print Page function. In addition to this an unknown proportion of readers will print pages using the Windows Print function, and many use material online without printing.

Assuming 40% of unique users engage with the material, the above suggests some 2,595 users are engaging with at least one document per month. The material is readily available and focused to the needs of the community. If accessing these documents from the TechDis website saves each user an average of half an hour searching for material, **then the documents on the TechDis website save user time to the value of at least £226,472 per year.**

The TechDis database is viewed by an average of 119 unique users per month. Because of the nature of this resource it is highly likely that the visitors return regularly, and anecdotal evidence suggests that it saves each user several hours per month in terms of searching for product information. If we assume that each user is saved three hours per month, **this resource saves user time to the value of £62,312.**

The TechDis website includes access to a range of tools for use by the sector. Some have direct equivalents in the commercial sector. The Style Sheet Wizard is downloaded on average 78 times per month and has the following commercial equivalents:

- CoffeeCup Stylesheet Maker \$34 (£18)
- Nemesis Project Style Master 3.0 \$49.99 (£27)
- BlueChillies Style Master Windows 4.5 \$59.99 (£32)

Using the lowest value, this software saves the sector £1650 per annum. If the other TechDis tools are presumed to have a similar commercial value, **the cost to the sector of these downloads would be in the region of £299,762 per annum.**

TechDis received a recurrent budget from JISC of £537,825 in 2004-05. **The above estimates suggests that in 2004-05, for every pound of funding received, TechDis saved the community at least £2.82 pounds.**

In addition TechDis provides added value by:

- Offering services that are created to fit the specific needs of the post-16 education sector. This is not usually the case with comparable commercial services.
- Supplying tailored advice, to users, advisors, suppliers and developers.
- Providing strategic and policy level advice which assists inclusion of students with disabilities and reduces the likelihood of (costly) challenges under disability legislations.
- Providing value in terms of its international reputation as a leader in the use of technology in the fields of accessibility and inclusion.
- Assisting in attracting students into education (particularly HE) from both the UK and abroad, who might not otherwise enter tertiary education and whose skills might never be developed and made available to the wider community.

JISC Legal Information Service

JISC Legal is a free information service offering high quality legal information to further and higher education relating to the use of information and communications technologies. JISC Legal runs training events, provides publications, and operates an enquiry service.

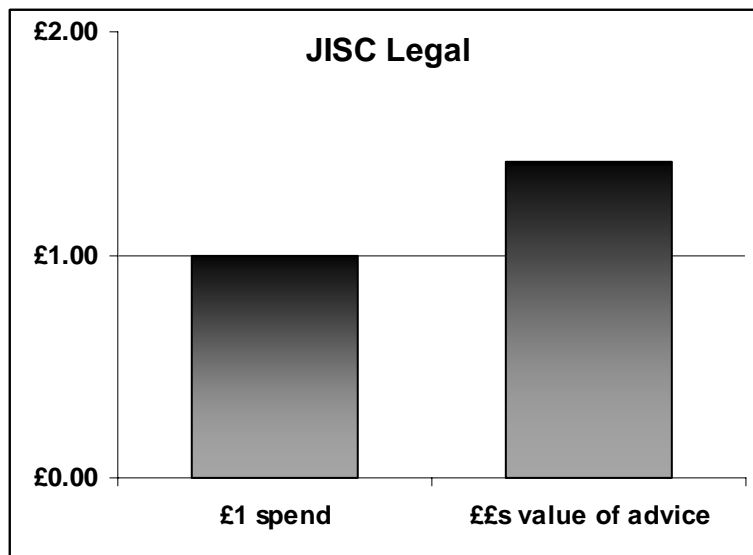
Maynard and White's survey (2004) 'A customer satisfaction survey of JISC Legal users' produced a very positive perception of the service. Of the 69 regular users and intermediary bodies surveyed, all placed a high value on the service and the quality of its information.

The LISU survey (LISU 2006b) 'Performance of JISC advisory services', indicated that over 75% of the respondents from HE and FE had heard of the service. The majority of the respondents who had experienced the work of

the service felt that it gave added value. Several comments from the survey reiterated that users felt this was a valuable service.

In 2003-4 there were over 150,000 web page requests and over 150 legal enquiries from HE institutions. The .ac.uk community made 332,275 distinct page accesses to JISC Legal web pages. If one hit in four hundred saves institutions one hour of lawyers fees, (at a recommended hourly legal rate of £120 for general solicitors), then the community saved £99,900 during 2004-05.

The JISC Legal Services received over 696 enquiries during 2004-05. The average of two hours to respond to each enquiry is the equivalent of £83,520 of legal expertise. In addition JISC Legal ran 40 one-day events for the community. These represents another £96,000 worth of expertise received by the community.



The budget for JISC Legal Information Service for 2004-05 was £197,388. The value of these three aspects of service is at least £279,502. **For each £1 of funding for JISC Legal in 2004-05 the value the community received was equivalent to at least £1.41.**

JISC Legal produces a free monthly JISC Legal Newsletter to around 600 subscribers. A JISC Legal survey showed that 87% of subscribers say they pass newsletter information on to others. 15% of the subscribers describe themselves as 'senior management'. JISC Legal provides JISC itself with legal information and collaborates with JISC infoNet, Netskills, TechDIS, JPAS, and other services and programmes providing legal information.

JISC infoNet

JISC infoNet is an advisory service for managers in the post-compulsory education sector promoting the effective strategic planning, implementation and management of information and learning technology to support learning, teaching, research and business processes. JISC infoNet's resources are

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freely available to institutions and individuals in the UK further and higher education sectors via their website.

InfoNet plays an important part in the JISC's strategic guidance to the post 16 education sector. JISC infoNet is a relatively new service, which commenced in January 2003. Information here is based on activities from August 2004 to July 2005, when the service was in its second year.

The broad remit of the infoNet service makes specific value for money comparisons for the service difficult as there are fewer obvious comparative organisations covering the same breadth.

A customer satisfaction survey indicated that 81% of respondents perceived the infoNet website to be up-to-date and of practical value.

InfoNet provides two types of service

1. web provision – notably via 'infoKits'
2. delivery of training events

A review of core activities states:

"Excellent feedback was obtained from senior staff in two HE institutions where infoNet have provided training associated with specific projects sponsored by the senior management team of the university. In one case, Project Management and Process Review are being used to change the institution's management approach, and the senior officer concerned, who has recent long experience in the private sector, was highly complimentary about the on-site training provided by infoNet and compared the quality of materials favourably with those available from the widely respected Gartner Group.

A second senior manager consulted, made extensive use of Process Review in the institution's Student Access to Services project. In this case, infoNet provided not only training but also mentoring support, in return for which the institution has provided infoNet with useful case study material. In both cases, infoNet seems to have been able to make genuine impact within the institution and in the documentation of one of the projects it is stated that 'mentoring, training and facilitation support from JISC infoNet has been an essential part of achieving real progress and positive outcomes'."

The Records Management review drew the following conclusion:

'Responses indicate that over 90% consider that the activities are high quality, of high value and very or extremely useful and hence represent excellent value for money. Subjectively, therefore the contacts consider the JISC RM activities to be good value for money.'

The following comments are also taken from the Records Management activity review:

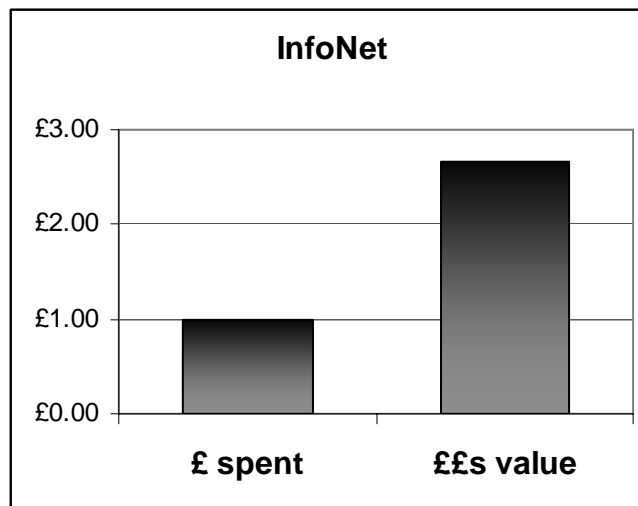
'There is an investment of some £17 million in RM staff across the sector.'

*'The results show all RM contacts are aware of JISC and rely on JISC for professional support. It can reasonably be assumed that JISC publications such as the "Revised study of the records lifecycle" and the toolkits and workshops make staff more productive. **A 10% improvement in productivity represents a benefit of £1.7 million per year across the sector.***

A number of customer comments were also reported in the review:

- *"Indispensable resource for records managers working alone within a large institution"*
- *"Excellent support – helped influence thinking and support developments"*
- *"Hugely helpful in raising awareness of colleagues"*
- *"Very good for spreading awareness at senior level"*
- *"Very much needed"*

The results of the advisory services user survey (LISU 2006b)- Performance of JISC advisory services', indicated that over 75% of the respondents from HE and FE had heard of the service. The majority of those who had experienced the work of the service felt that it gave added value. Several comments appended to the survey emphasised that users felt this was a valuable service.



Some 700 UK HE and FE web pages link directly to the JISC infoNet web page information. These links vary from linkage to either entire Kits or series of Kits, to smaller individual articles. If each linked resource saved an average of £1,000 per institution **this represents a saving of some £600,000 across the sector.** This figure seems reasonable considering that some organisations have adopted whole infoKits that might otherwise cost in excess of £50k to develop from scratch.

Many of the infoKits include accompanying training events which are usually hosted by Regional Support Centres and open to any FEC/HEI. These training events are perceived as high quality, the overall rating from delegates amounts to 83.23% (where the scale runs from 0 - very poor to 100 - excellent).

A total of 60 such events were held during 2004-05, encompassing themes including Project Management, Process Review, MLEs, VLEs and e-Learning, Records Management and Freedom of Information. These events are comparable with providers such as Learning Tree or the AUA, who typically charge around £400 per delegate per day for such provision. JISC infoNet makes no charge. With 824 delegates attending the workshops in 2004/2005, and assuming a day delegate rate of £400 for equivalent provision, **it is reasonable to assume that such training might have cost the sector in the region of £329,600.**

One workshop, the Freedom of Information/Records Management event, was developed into a CD-ROM for staff developers working in this area and was made freely available on request. Since its launch in December 2005, 603 requests were made for the material, from within the UK FE/HE sector. The materials enable local staff developers to train up to 15 participants within their organisation. If half the institutions used this material as a basis for internal training rather than ask infoTech or another body to run the sessions, **then this material saved institutions at least £226,472.**

There have been 1350 requests from the .ac.uk domain for JISC infoNet hardcopy materials. These are distributed free of charge. Assuming a nominal fee of £15 per publication (common across the sector) **this amounts to a further potential saving of £20,250 for the community.** Furthermore these have been used to advertise JISC development publications which has resulted in an additional 450 requests direct to JISC.

Where institutions undertaking large projects have used the infoKit 'suite' and attended workshop events, a number have commented that this has saved on IT/management consultancy. If 50 institutions saved 5 days consultancy, at a rate of £1500 a day **this represents a saving of £375,000.**

In addition JISC infoNet engages in collaborative projects with other sector organisations (notably ALT, the Higher Education Academy and UCISA, and with the JISC Development Group and other JISC services.

JISC services are extensively referenced and linked within the infoKits (in particular the JISC Legal Service, JISC TechDis and CETIS), and some of these have authored relevant materials to fit in with the infoKit model (for example, OSS Watch provided the Open Source Software guide). This approach increases the value of JISC infoNet in terms of raising awareness of the range of services across a wider audience and strengthening the 'JISC brand'.

The core JISC infoNet budget for 2004-05 was £584,000. The above estimates suggest that in **2004-05, for every pound of funding received, JISC infoNet saved the community at least £2.66 pounds.**

TASI

The Technical Advisory Service for Images provides advice and guidance to the UK's Further and Higher Education community on digitisation issues.

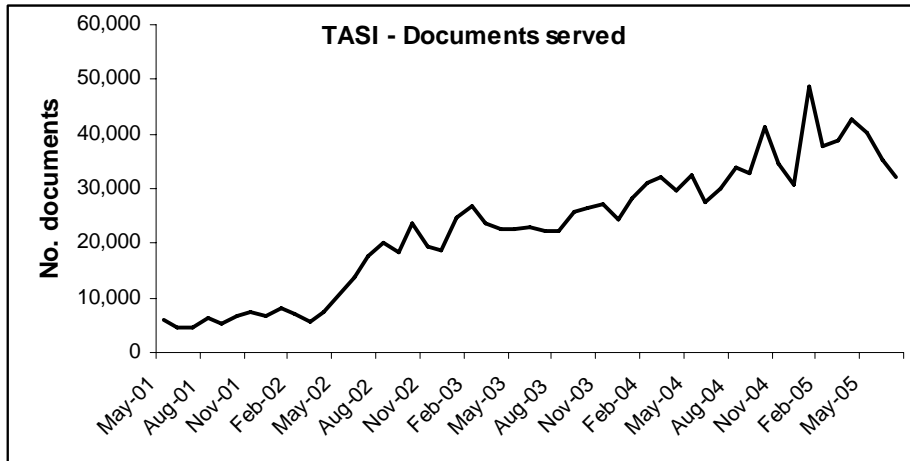
TASI's principle activities are:

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- The production advice documents, distributed from the TASI web-site,
- An enquiry service
- A training service.
- To assist substantial enquiries TASI offers a consultancy service.

Service use

Use of TASI web based services show a sustained increase. This increase results in a fall in cost per unit of use, therefore greater value for money.



TASI costs 2004-05:

Cost per institution	£398.00
Cost per student (HE and FE)	£0.03
Cost per web page access	£0.33
Cost per document served	£0.46

In 2004-05 TASI delivered to UK HE/FE an average, each month, of:

- * 78,680 web pages, including 37,359 reports
- * 27 enquiry responses
- * 18 workshop attendances

A 'Value for Money' exercise performed in 2005 suggested that advice from TASI saved user time and effort and that large savings were being made. These are due to:

- Reduction in time searching elsewhere for relevant information
- Reduction in time spent appraising the quality and relevance of the information. TASI information is appreciated as being of good quality and relevant to the tertiary education sectors
- Reduction in time wasted by avoiding mistakes in project planning or technical work

The following calculation was proposed:

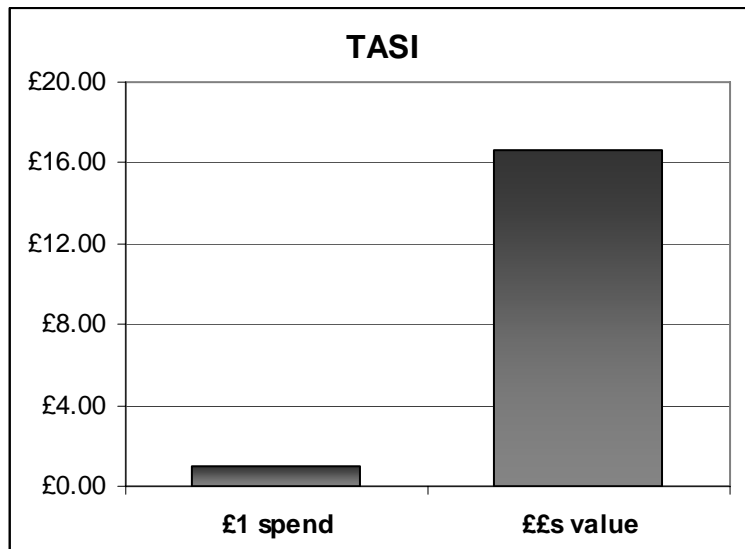
Suppose that each workshop attendance or enquiry leads to a saving of one/person day to the community. Suppose that each report read saves someone half an hour. Value a person/day at £109.

£109 per day equates to an annual salary of £24,000. This calculation does not include time saved by other web accesses or helpdesk use.

Using these figures the savings are:

	2004-05
Documents served	448,303
Hours saved	224,151.5
Days saved	28,019
Saving	£3,054,071
Workshop attendance	213
Days saved	213
Workshop saving	£23,217
Total saving	£3,079,631
Ratio savings/spending	£15.07

A conservative estimate suggests that in 2004-05, for every pound of funding received, TASI saved the community at least £16 pounds.



The results of a TASI questionnaire to users of the Enquiry service in 2003-04 revealed that all the users polled would recommend TASI. Users particularly valued the time taken by TASI staff to understand individual problems and the tailoring of advice. Over 90% of the users rated the advice as excellent or good and no users rated the advice as poor. A digest of comments about the service is available in appendix 2.

JISC Plagiarism Advisory Service (JISCPAS)

JISCPAS both supports the subscription Plagiarism Detection Service supplied by iParadigms and advises the community on plagiarism prevention and the creation of a culture that discourages plagiarism.

JISCPAS has been serving the JISC community since September 2002, and has, during that period, contributed significantly to the work conducted by the community in preventing and detecting plagiarism. The foresightedness of the JISC in establishing the service has been repeatedly commented upon during the regional workshops, presentations and seminars conducted by the service team.

The increase in use of e-resources and networked services has made plagiarism both easier to effect and, to an extent, more difficult to detect and can be regarded as the downside of a pervasive use of e-resources and computing by students. The problems of plagiarism are personal, institutional and national. The value of the reduction of plagiarism in the education community is largely intangible, the principle benefits being maintenance of quality and reputation. In order for UK tertiary education to compete in an international arena it must be acknowledged to provide a quality product.

Benchmarking

Although the JISCPAS is unique in the UK, it can be compared, in some respects, with the Center for Academic Integrity, founded by Don McCabe and based in Duke University, Durham, North Carolina. Although based in the US, the Center attracts global membership. The CAI (<http://www.academicintegrity.org/>) provides advice and guidance to educational establishments on preventative measures to tackle academic misconduct, specifically promoting the use of 'honor codes'. Unlike JISCPAS, institutions wishing to access pertinent information and support provided by the Center are required to become members of the Center at a cost of \$550 (£290 approx). JISCPAS provides similar information on the JISCPAS website at no extra charge to the community. **For 750 institutions, the central provision of JISCPAS represents a saving of £217,500.**

Alternatively the core document - the Academic Integrity Assessment Guide, which is very similar in scope to JISCPAS' Roadmap - is available at a cost of \$1200 (£633 approx) for non-members or \$500 (approx £264) for members. **20 copies of the Roadmap provided to enquirers represent a saving to the community of £12,660.**

Central provision

The licence for the Turnitin software for 2004- 2005 was purchased at a cost of approximately £250,000. If each individual institution purchased the software separately, the total cost for the licence would have been £138,500 with an additional charge of £400,000 (£0.40 per student FTE for 1,000,000 students). **This central provision represents a saving to the community of at least £288,500.**

The Blackboard learning management system for the Plagiarism Detection Software was introduced in the year 2004-2005 as part of the JISC licence at no extra charge to the JISC community. By providing this as part of the licence, £850 per institution was saved for the 17 institutions able to adopt the plug-in. **This amounts to a saving of £14,450 for that part of the community.**

Savings of time and effort

In an article on current approaches to plagiarism, Larkham highlights the average time for identifying and retrieving the original source of plagiarism as 16 hours of staff time. If only 10% (9,000) of the reports produced in minutes by the Turnitin software identify the source of potential plagiarism in a student paper, a notional saving of £2,160,000 would be achieved.

Additional costs are incurred, where any identification of plagiarism leads to the convening of a disciplinary panel. Larkham, for example, identified photocopying costs in excess of £300 for the documentation required for one panel. If 1% (90) of the reports identifying potential plagiarism above result in representation to a disciplinary panel, the availability of the electronic report could notionally save the community in the region of £27,000.

Assessing impact

Evidence suggests that without the plagiarism service many instances of plagiarism go undetected and, therefore, the efforts described in the previous two paragraphs are generally not expended. The value of the plagiarism service in these cases is measured not in terms of money saved, but in an increase in academic quality.

The increase in use of e-resources and networked services has made plagiarism both easier to effect and, to an extent, more difficult to detect. The problems of plagiarism are personal, institutional and national. The value of the reduction of plagiarism in the education community is largely intangible, the principle benefits being maintenance of quality and reputation. For UK tertiary education to compete in an international arena it must be acknowledged to provide a quality product.

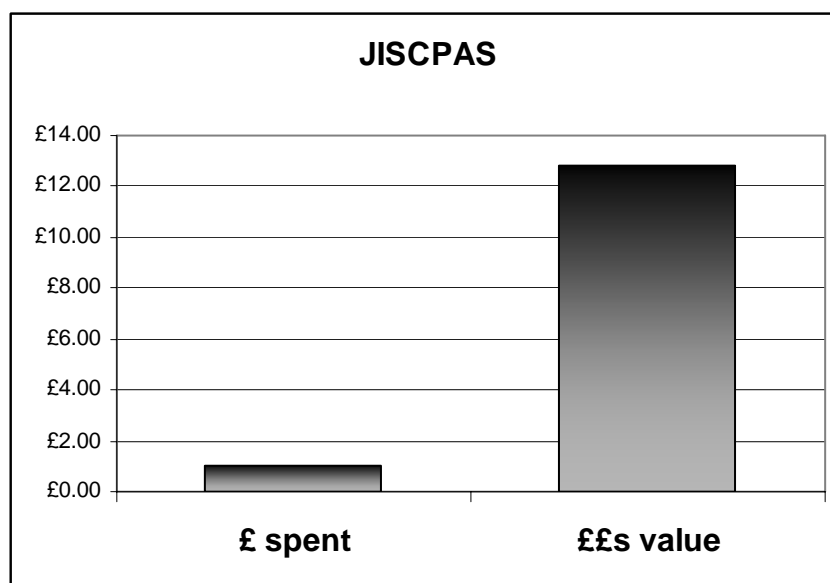
In 2004-05 there were 218,395 international students (non-UK, non-EU) in higher education. These paid at least £1,747,160,000 in fees (c£8,000 each) and at least half as much again to the UK economy in living costs. The JISC paid £174,515 towards running the Plagiarism service in 2004-05 - the equivalent of the fees of 22 international students. These students are here, presumably because of the perceived quality of UK education. If each UK HE establishment lost one international student (or more than two UK students) due to an apparent decline in standards, **the value of the lost fees would be in the order of £1,336,000 per year.**

In 2004-05 the Plagiarism Advisory Service supplied over 31,145 documents, downloaded from its web pages, responded to almost 1,000 queries about plagiarism and had over 52,492 visits made to web pages. If one in two documents saved an hour of administrators or lecturers time searching for appropriate advice on plagiarism, **this would equate to a value of £233,588 in saved staff time.** If each enquiry represented a similar saving of one hour, again **this would equate to a further £15,000 in saved staff time.**

JISCPAS staff conducted 18 workshops over the year with an average attendance of 10 staff at each workshop. Feedback from the events suggest that participants felt more confident about implementing plagiarism prevention strategies as a result of attendance, which would in turn reduce the time and

effort required to deal with cases of plagiarism. **A saving of 1 day of staff time for each attendee represents a value of £21,600 to the community.**

Together these savings come to over £4.5 million. **These estimates suggests that in 2004-05, for every pound of funding received, the JISC Plagiarism Advisory Service saved the community at least £12 pounds.**



The principle value of the Plagiarism Service is in the maintenance and improvement of the UK academic reputation. The figures above demonstrate that the decision to establish the service has also proved to be cost-effective.

Third strategic aim:

to help the sector provide positive, personalised user learning experiences and aid student progression

To be met through: supporting the use of VLEs and MLEs to facilitate student progression and help embed eLearning

To be met through: investigating the development of virtual communities and use of the Internet as a communications tool

This JISC strategic aim is concerned with developing information environments, tailored to serve the needs of students, teachers and researchers in further and higher education now and into the future. JISC is currently undertaking a large programme of work on the development of integrated environments for learners or Managed Learning Environments. The programme covers a range of projects and information services that seek to evaluate and pilot information and communication technologies for learning and teaching and promote the uptake of IT-based application to improve student support systems.

At the present time the need for development in the area is as strong as the need for support of institutions beginning to use these information environments. As such, although the potential benefits to the community are visible, it is not yet possible to comment on the final value of this programme to the community. This value is expected both from gains in efficiency of staff time – being able to service more students without a associated increase in staff, and in the increase in quality of the student experience.

One indication of the potential benefits may be read in the report prepared by Glenaffric Ltd in September 2004 reviewing the JISC funded Managed Learning Environment (MLE) activity. They listed reported benefits to participating institutions as:

- increase capacity,
- institutional awareness
- individual expertise.

This report commented, “since 1999, a huge volume of work in the JISC programme of MLE activities has been managed by the Development Team and overseen by the committees. It is apparent from the review of both documentary evidence and witness testimony that the programme has been substantive, far-reaching and highly significant in taking the HE and FE sectors forward in the use of technology to improve core business activities.”

Fourth strategic aim:

to develop mutually advantageous partnerships with organisations in the UK and abroad.

To be met through: developing strategic partnerships with other organisations particularly in the areas of the development of a common, integrated information and communications environment; VLE and MLE development; embedding eLearning and eResearch; and the management of online resources

To be met through: engaging with suppliers

Uniform standards have long been fundamental to network communications and are becoming increasingly essential to other services. Collaboration, particularly international collaboration, is necessary if UK users are to be able to both exploit developments from outside the UK education and research spheres, and to benefit from the developments made by JISC supported projects. To this end it is essential that the JISC and JISC service providers are aware of, and collaborate with other organisations and that JISC supported developments integrate with developments internationally.

The value of collaboration and participation is difficult to quantify and is most clearly demonstrated in the negative – if there were little or no collaboration the consequences would be:

- Higher development costs as fewer 'off the shelf' solutions would be available
- Reduced services/less functionality.
- Externally developed innovations would be more difficult/expensive to integrate with current services
- Running costs would be higher as functionality and efficiency would be reduced.
- Security (an international issue) would be increasingly difficult to maintain

The JISC community benefits from the use of international standards and from participation in the creation of those standards. The advantages are particularly apparent in networking and communications, authentication, searching and search engines, web publishing and other e-resources.

The European network and communications community sees UKERNA as being very active internationally in two areas in particular: computer and network security and communication with customers. Computer security incidents are not contained within national boundaries and international cooperation is imperative for any CERT. UKERNA is recognised as successfully liaising with worldwide organisations and providing valued advice and support.

However UKERNA are perceived as less visible at the strategic technical level, possibly because they have a limited budget for participation in international development projects. According to the UKERNA international benchmarking study there is a risk that UKERNA might fall behind in their understanding of how best to develop and deploy novel production services on the current production network, or how best to plan future production networks.

UKOLN

UKOLN (UK Office for Library and Information Networking), a JISC service, is a centre of expertise in digital information management, providing advice and services to the library, information, education and cultural heritage communities by:

- Influencing policy and informing practice
- Promoting community-building and consensus-making
- Advancing knowledge through research and development
- Building innovative systems and services based on Web technologies
- Acting as an agent for knowledge transfer

A review of UKOLN commissioned by Resource (now known as MLA) and carried out by Mel Collier, (formerly University of Northumberland at Newcastle) concluded that UKOLN has had a significant impact at a technical and strategic level in the networking, standards, metadata and interoperability communities. Their sphere of influence and activity beyond UK education and research embraces the national and international library, museum and archive communities.

This review recognised UKOLN as enabling important national developments to be rolled out more quickly than would otherwise have been the case, and recognised that their involvement in standards issues has helped ensure that initiatives will be better value for money over time.

The review concludes that: 'Having reviewed the funding proposals for the last three years and the outcomes of the work we consider UKOLN's work to have delivered and to have been good value for money.'

Fifth strategic aim:

to advise, inform and help implement the strategies of government, funding councils and research councils.

To be met through: promoting wider participation in education.

To be met through: improving research outreach activities to benefit education and ensure eResearch is developed across the research environment

To be met through: expanding JISC activities where relevant to meet the needs of the wider post-16 community

The value of JISC activities supporting this aim is difficult to quantify, particularly because groups of national bodies work together, and the proportion of their success deriving from JISC activities is difficult to assess.

Again the principle value of the JISC lies in the application of a uniform strategy across tertiary education and research supporting the provision of resources to support widening participation, the development of e-research, the dissemination of research outreach activities to education and the expansion of JISC activities to the post 16 community. The contribution of the Regional Support Centres is particularly relevant to this aim as are learning and teaching activities involving e-resources and technology, and advisory services such as TechDis in advising on enabling wider access to educational resources.

Without TechDis input and advice accessibility of e-resources for disabled students would be decreased and the inclusion of that segment of the community would be reduced. Wider participation in education by distance learning is enhanced by JISC supported services, as are outreach services.

In all three areas describing and supporting this aim, activities are likely to increase in value and importance as JISC developments and the results of current JISC programmes become available.

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JISC Development Programmes

The JISC manages large-scale development programmes that would not be possible for individual institutions. These large-scale programmes enable more cutting edge research and can include a proportion of projects that are perceived as risky, with outcomes of uncertain value.

The value of these programmes is discussed in a separate document.

Summary

This exercise has examined areas of JISC involvement and has been able to identify benefits to the community that demonstrate almost a fivefold return in value.

The majority of financial benefits identified arise from gains in quality or efficiency. The JISC provides quality e-resources that are immediately accessible, a reliable network and accessible, customer-tailored support. This creates a highly efficient, high quality, easy to use work environment. Use of e-resources has become embedded in HE and Research work models, almost ubiquitously. FE does not appear to have yet achieved this level of penetration.

Some areas show outstanding value, particularly the negotiations for e-resources by the Collections Team and benefits arising from use of JISC supported e-resources. Available figures suggest that use of e-resources by the JISC community increased by approximately 35% in both of the last two years. There is no suggestion of any slowing in the rate of increase. Therefore the measurable benefit from use of e-resources is expected to continue to increase. This increase in value will be apparent in quality and efficiency gains made by the community and in reduction in the unit cost of supply of e-resources.

Several JISC services currently show increased value to consumers by growth in use with little or no rise in provision costs. These are usually high use services and include network provision, the major bibliographic services and the Athens Authentication service.

The JANET network provision underpins the communication and the use of e-resources. JANET is a high quality, high-speed, highly reliable network that connects a large number of organisations a low cost per connection. A large part of the value to the community arises from the wide-ranging, high quality, customer focussed support services provided by UKERNA. This integrated provision is tailored to the particular needs of the JISC community and is not normally part of network provision.

The JISC provides a number of JISC advisory services that have no commercial equivalents or equivalents that are only available at a high cost at point of use. The JISC advisory services provide focused information to the community for comparatively little outlay. Evidence from user surveys indicates that where institutions have experienced these services, their contributions are almost always recognised as very valuable. However evidence also suggests that most of the advisory services could increase their user base and penetration, and thereby increase their value to the community.

The value of JISC activities extend beyond the benefits identified here. Education and research are high value commodities that play an important part in the UK economy and underpin the UK's global economic position. The network infrastructure, content provision, advisory organisations, and discussion groups facilitated by the JISC make an important contribution to

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the development of a healthy research and education community. JISC activities underpin and facilitate UK research and education, which in turn underpins much of the economic growth of the UK.

The sphere of JISC activities is dynamic. Few fields experience such continuous, rapid and extreme changes as those involved in information and communication technology and the applications of these in education and research. These changes must be accommodated in tandem with the developmental principles for tertiary education. ***To achieve success in such an environment, an organisation needs both a solid strategy and the ability to identify, assess and exploit new technology within that strategy. The JISC is exemplary in the manner in which it has achieved this, during a period that history will recognise as crucial in the evolution of information science and IT. Much of the internationally acknowledged high quality of UK research and tertiary education is attributable to the success of this approach.***

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Appendix 1: JISC Services aligned with strategic aims

JISC's five strategic aims reflect and support both government objectives and the needs of the education and research communities. The activities of JISC Services support the strategic aims. Some services support a single aim; others support more than one. In this document, when a service supports more than one aim, it is considered under the aim it principally supports. The work of the JISC Executive understandably embraces all aspects of the Strategy.

Aim one. To develop solutions that help enable the UK education and research communities to keep their activities world-class through the innovative use of ICT

Aim one will be met through:

- Providing a first class sustainable infrastructure (network, middleware, widely available content and an information and communications environment)
- Supporting the use of Virtual Learning Environments (VLEs) and the development of Managed Learning Environments (MLEs), identifying and defining technical standards and, with other organisations, helping to embed eLearning and supporting emerging eLearning pedagogies
- Supporting research and in particular eScience,⁶ and helping to embed eScience more widely across research

Aim Two. To provide advice to institutions to enable them to make economic, efficient and legally compliant use of ICT, respecting the individual's and corporate rights and responsibilities

Aim two will be met through:

- Helping institutions plan and manage change to exploit ICT (e.g. risk analysis, cost of ownership, staff development and skills training, rights management)
- Providing an observatory role, coherent advisory services and forming a more robust evidence base for the effectiveness of ICT
- Improving the effectiveness of scholarly communication in support of research, learning and teaching
- Improving communication and feedback mechanisms with the JISC to help institutions with their investments in ICT, to discover and respond to changing needs, and to provide user-led advisory services

Aim Three. To help the sector provide positive, personalised user learning experiences and aid student progression.

⁶ The terms 'e-science' and 'e-research' are used to represent the collaborations of people and of shared electronic resources needed to solve the new challenges of science, engineering, medicine, arts and humanities. The IT infrastructure that will make such collaboration possible in a secure and transparent manner is often referred to as the 'Grid'.

Aim three will be met through:

- Supporting the use of VLEs and MLEs to facilitate student progression and help embed eLearning
- Investigating the development of virtual communities and use of the Internet as a communications tool

Aim Four. To develop mutually advantageous partnerships with organisations in the UK and abroad.

Aim four will be met through:

- Developing strategic partnerships with other organisations particularly in the areas of the development of a common, integrated information and communications environment; VLE and MLE development; embedding eLearning and eResearch; and the management of online resources
- Engaging with suppliers

<i>Aim Five. To advise, inform and help implement the strategies of government, funding councils and research councils.</i>
--

Aim five will be met through:

- Promoting wider participation in education
- Improving research outreach activities to benefit education and ensure eResearch is developed across the research environment
- Expanding JISC activities where relevant to meet the needs of the wider post-16 community

M = Main S = Secondary	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5
Production Services					
Network Services					
JANET Network	M				
JANET-CERT	M			S	
JISCmail	M				
JANET Customer support		M			
Content Services					
AHDS	M				
Biz/ed	M				S
BUFVC	M				
The UK Data Archive	M				
EDINA	M				
MIMAS	M				
RDN	M				
UK Mirror Service	M				
Middleware					
Athens authentication	M				

Development Services					
CETIS	S	S	M		
OSS Watch		S	S	M	
TechWatch		S	S	M	
UKOLN		S	S	M	
Expert Services					
Advisory Services					
JISC Advice and Guidance		M			
JISCinfoNet		M			
The JISC Legal Information Service		M			
MAAS		M			
Netskills		M			
Plagiarism Advisory Service		M			
TASI		M			
TechDis		M			
Techlearn		M	S		
JANET –Video Technology Advisory Service	S	M			
JANET - Multi-site Connectivity Advisory Service	S	M			
JANET -Bandwidth Management Advisory Service	S	M			
JANET International collaboration				M	
Support Services					
JISC Regional Support Centres		M		S	S

Administration					
JISC Collections Team				M	

Current JISC Development Programmes aligned with strategic aims

Development programme	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5
Information Environment Programmes	S		M	S	
JCALT/JOS Programme					
Support for Wider Sectors					M
Management Development and Institutional Support		M			
Practitioner / Staff Development	M				M
Information, Evaluation and Reporting		M			
Learning Environment Programmes	M				
Middleware Programmes				M	
Network Development Programme				M	
Preservation Programmes	M				
Research Environment Programmes					M

Appendix 2: Quotes about JISC services

We have in this country a truly outstanding research base. However you look at the data on academic impact, you find the UK competing at the very highest level. In a number of areas, our researchers lead the world. The eight UK research councils are proud of their effective funding of a portfolio of work.
Ian Diamond the Guardian

<http://education.guardian.co.uk/higher/research/story/0,,1724927,00.html>

'UK gives excellent value for money from its research budget - we are number one in the G8 on efficiency measures'. Sir David King "The Scientific Impact of Nations" Nature (ref: D A King, Nature **430** (2004) 311-316 (15 July 2004

'JISC has provided the best training events I have attended this year, relevant, professional and up to date'.

EDINA

"The best training course I have been on" [Digimap]

"Exceptionally useful and interesting" [Digimap]

TASI

'They were the first folk who actually really attempted to help me and were genuine in their work to do so. They were honest about their knowledge but used their network very effectively to give me help'.

'The person I talked with was extremely helpful and indeed subsequently sent on a further (alternative) response forwarded from the IPR Helpdesk by JISClegal. I was very satisfied with the help given. It was very useful (in relation to Copyright issues) in helping me to complete the application for funding'.

'The combination of detailed emails, tel. contact where necessary and the comprehensive notes on the site. The advice was clear and treated me like a human rather than a complete prat (Which has been my experience of other computer help services)'.

'TASI team expertise in the digital image library software was invaluable'

Biz/Ed

'I have used Biz/ed for a number of years and have just had a sudden urge to let you know that I think your site is absolutely outstanding - Thanks for what you offer'

'I just wanted to tell u how great the new layout is, and how awesome your website is. It's very easy to navigate through, and the resources you got are sooo helpful! I especially like the Quick Jump Box; it brings me down to the specific topics that I want to look through. I'm an IB student doing Economics at the higher level and I find your site really amazing. It simplifies stuff for me that I never used to understand, and the way the theories and policies are

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explained makes it interesting to read, since its in everyday language (unlike the textbooks that we have to study from)'.

'I am an FE lecturer in Business Administration. ... we make extensive use of the Biz/ed, it really is a very good site and I'd like to thank you for the help it gives me on a weekly basis'.

'Just wanted to say how great I think biz/ed is. It's really useful, well-organised and relevant material in easy-to-understand and well-sized 'chunks'! The search facilities are great and the overall look of the site is pretty good too'.

'I just wanted to thank the responsible team for the very very great material you present on your web pages in the area of economics of development. I did not find anything as helpful as your page on the whole Internet!'.

'I just wanted to congratulate you on setting up possibly the most informative website on economics in the world. The site is just exhilarating. It is concise, yet very explanatory. Keep up the good work ...'.

'I would just like to thank you for maintaining such a great web-site, I recently bought a Microeconomic book which boasted of having a great on-line web site, it fails in comparison to yours, and its use is restricted to a couple of months'.

'May I simply say that you have THE best website on earth regarding economics and business. The information is clear, concise and to the point without flashy language. It is an excellent resource for students like me doing the IB programme in a foreign country, especially the "economics" notes posted on your site'.

'What a WONDERFUL set of lesson plans and resources you have created on the subjects of business studies and AVCE business. Work of this nature being shared with the teaching community is outstanding!'.

'Wow, firstly can I just say what a fantastic resource this is. I teach on a course for people keen to start up their own business, who do not speak English as their first language'.

JISC InfoNet

'Keep them funded! ...A very valuable and appreciated JISC Service. Long may it continue'.

'Good service, and very accessible to the RSCs. We will continue to prioritise infoNet initiatives'.

'I particularly value the fact that InfoNet try out events before running them – and respond to requests to make events more interactive or more relevant to FE'.

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'The workshop I attended was excellent. A colleague attended one on process review and was very impressed – I have never before heard her being so enthusiastic about a one day course!'

RDN

'This is the first time I have ever used the Altis website. The resources and information on this website are fantastic. As a third year BSc Tourism Management student I have never found a tourism website that was so accessible and displayed so many relevant topics and statistics concerning the tourism industry that you do not have to pay for'.

TechDis

'TechDis is a fantastic service which has really helped to give me the information I need to speak with confidence and authority to the colleges I support'.

'TechDis is an invaluable service to the educational community without whom, we would, frankly, struggle to meet some of the demands of our clients'.

'Excellent service provided by dedicated, knowledgeable and professional staff'.