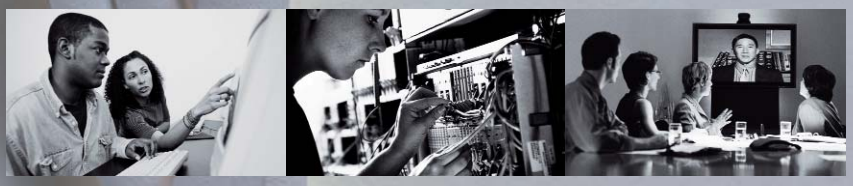
UKERNA

THE JANET REPORT



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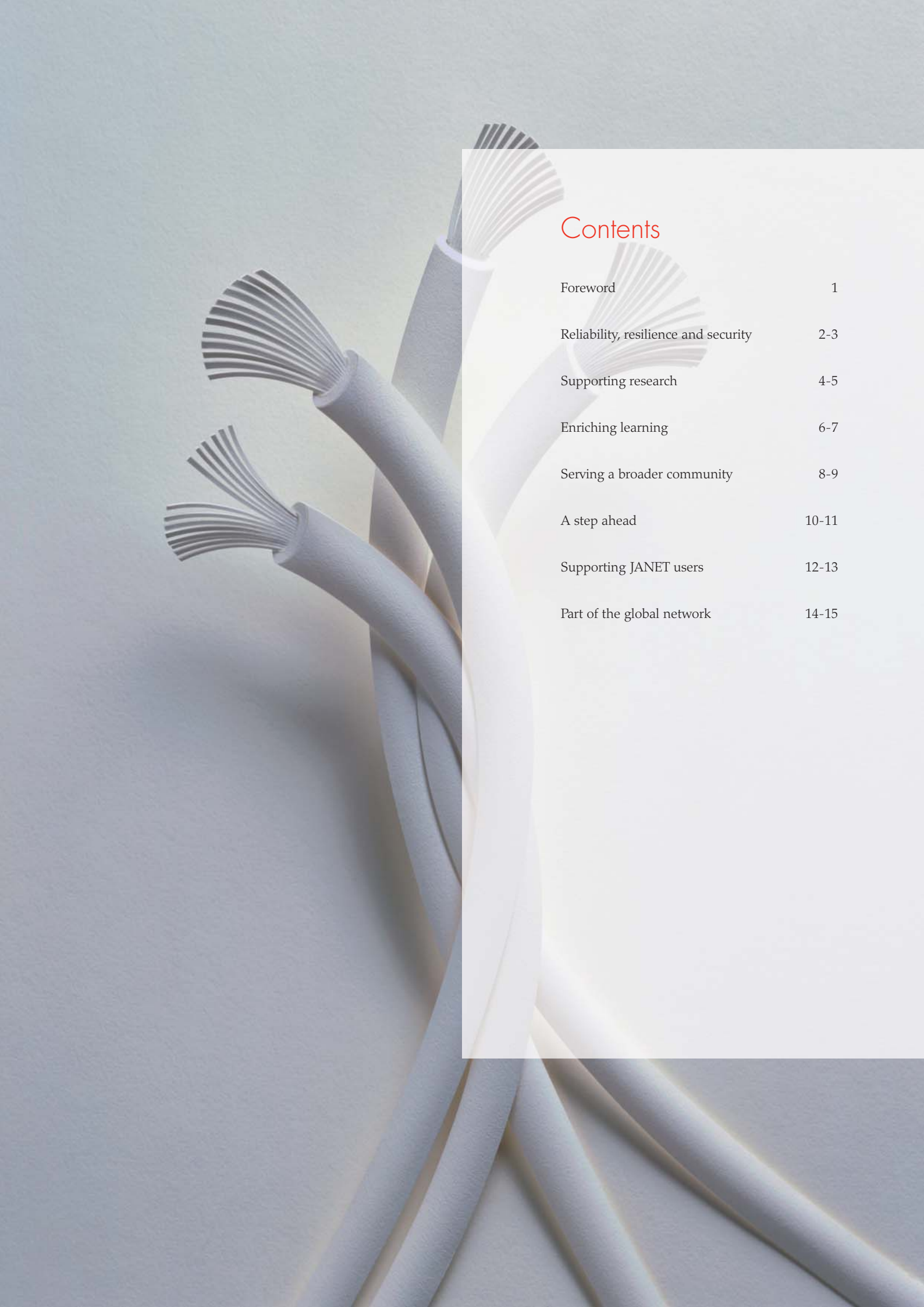


Contents

Foreword

The past year has again seen exciting developments in the UK's research and education landscape with JANET supporting the research and education requirements of Higher and Further Education. UKERNA also plays a key role in the DfES e-strategy as the network provider that enables a strategy to transform teaching and learning. This is not just for children, college and university students, but also for adult learners. The ongoing development of the network and services is vital in harnessing technology to improve the learning experience.

The JANET community has continued to broaden in the past year, providing support for new members while established users such as FE Colleges are benefiting from much needed bandwidth upgrades. Research has always been at the heart of JANET and we continue to play an essential role in the UK programme of e-Science by providing and developing the UK element of the international Grid.

UKERNA is part of the international NREN (National Research and Education Network) community and continues to maintain strong and pro-active links across Europe through TERENA and DANTE. Further afield UKERNA attends Internet2 meetings, maintaining awareness of network technologies for education and research in the USA.

The future of research and education in the UK is very positive but there are challenges which must be met. The changing lifestyle of students and learners requires that coverage is pervasive, with a robust connection wherever and whenever it is required. Content is becoming more sophisticated and needs to be shared around the network, and research requires the transmission of vast amounts of data.

Work has continued on SuperJANET5 – the project responsible for delivering the next evolution of the network – and will benefit all users, bringing increased reliability and resilience. UKERNA's greater operational control of the network infrastructure will enable the provision of a more tailored approach to different sections of the community.

These are just some of the areas where we will be working with partners and users alike to build on the firm foundation that has been established, ensuring that we continue to provide effective network services to an increasing community of users.

Tim Marshall

Chief Executive Officer

Reliability, resilience and security

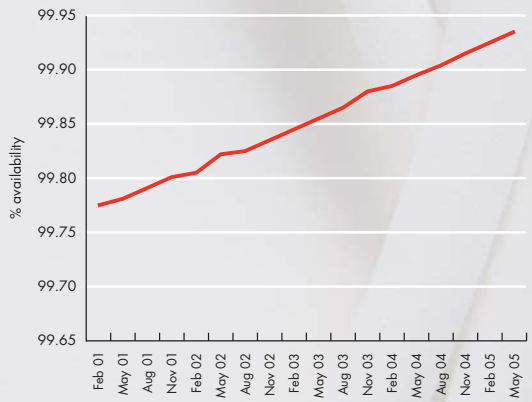
Research within the JANET community has confirmed that reliability, resilience and security remain key networking issues. Over the past 12 months, UKERNA has investigated local reliability concerns, increased resilience for Regional Networks and addressed security issues for a widening audience.

UKERNA has continued to provide a stable and highly reliable network service to the research and education community. The overall percentage availability of the JANET network has grown, year on year, from 99.78% in 2001 to 99.93% in 2005. This year the percentage of connections with more than 99.7% availability has increased to 96%, and 87.4% enjoyed 100% availability. However, JANET connected organisations still face local reliability issues and this year UKERNA undertook an in-depth study of their main reliability concerns. The results will be analysed to provide practical advice to organisations on implementing risk mitigation measures.

UKERNA's work this year has included adding extra links to boost resilience on the network. A 45Mbit/s link from Inverness to the Edinburgh C-PoP (Core Point of Presence) has improved resilience for a number of Scottish Schools Digital Network sites. Regional Networks such as the London Metropolitan Network, ClydeNET, EaStMAN and AbMAN have installed backup connections in the past 12 months. Additional funding was made available to

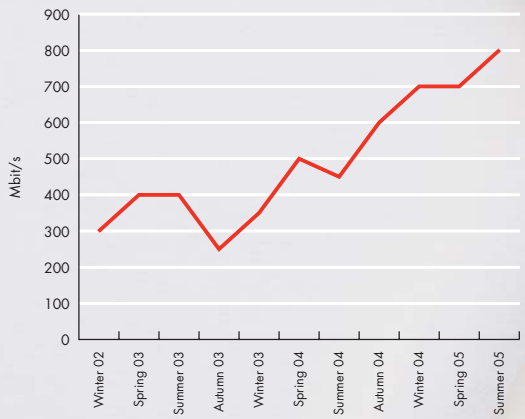
Network Availability

Network availability to JANET Organisations



International Traffic over JANET

Peak traffic across GÉANT



Peak traffic over connections to Telehouse and Telecity

improve the reliability of links to South Wales MAN and Kentish MAN by replacing microwave circuits with fibre technology. Where replacement was not possible, backup circuits were installed.

Extra levels of resilience for Regional Networks are being built into SuperJANET5, the project to replace the current JANET backbone. The operational requirement for SuperJANET5 splits the backbone into two components: a core network and a set of 'collector arc' networks, typically supporting three to five Regional Networks, which connect to the core network. Resilience will be increased on two levels: the collector arc networks will connect to two points on the core network, and each Regional Network will connect to a collector arc at two points.

With the expansion of the JANET community to include Specialist Colleges and Adult and Community Learning organisations, UKERNA initiated a JANET Security Enhancement project to manage the creation of services and policies to help improve the effectiveness of the network. Research by UKERNA into the community's views revealed the need for 'good practice' documents on networking issues. In the area of security, this concern has been addressed through the publication of good practice documents on surveying wireless networks and Grid deployment.

UKERNA, in collaboration with UCISA (Universities and Colleges Information Systems Association) and other stakeholders, has updated the JANET Security Policy to clarify the requirements, responsibilities and authority of JANET sites and users, and also of UKERNA as provider of the network.

Universities and colleges face similar challenges in the arena of security. There is an increased awareness of the need for proper security frameworks, and guidelines for working with sensitive data which involve external bodies. The idea has developed that a more formal, standardised approach to security could help organisations formulate security policies which address these issues. At the UCISA Management Conference in March 2004 a project was established by UCISA and UKERNA, with funding from JISC, to develop an Information Security Policy Toolkit for universities and colleges. The first edition was published in March 2005, and provides step by step guidance and sample policies which can be adapted to suit an organisation's needs. A training course based around the toolkit is also under development.

JANET-CERT (Computer Emergency Response Team) has continued its front line role in helping JANET organisations affected by security incidents. The introduction of Netflow in the past year has allowed the team to become more pro-active in identifying potential problems. Netflow is a means of monitoring the flow of data through a router, which allows suspicious activity to be detected and investigated. For example, questionable activity at a hall of residence was detected which led to a tightening of security at the organisation. Netflow has also helped to locate networks of autonomous software robots which have subsequently been shut down, reducing unwanted activity across the network.

Security, Regulation and Policy

- The JANET Security Policy was revised.
  http://www.ja.net/services/publications/policy/security-policy.pdf
- A UCISA Information and Security Policy toolkit was launched in March 2005.
  http://www.ucisa.ac.uk/acuk/infosecurity/
- A new legal and regulatory area was added to the JANET website.
  http://www.ja.net/development/legislation/
- Security 'good practice' documents were published on surveying wireless networks and deploying Grids.
  http://www.ja.net/services/publications/technical-guides/

Bandwidth

- Two connections to Telehouse® and Telecity R-POP (Regional Point of Presence) were upgraded from 2.5Gbit/s to 10Gbit/s.
- The connection between Kentish MAN and the JANET backbone was upgraded to 622Mbit/s.

JANET-CERT

http://www.ja.net/CERT/cert.html

- Netflow was introduced to monitor suspicious activity on JANET.
- The team was involved in the effort to increase the security of the JANET nameservers. It is now harder for an attacker on JANET to list all the connected organisations. Recursive lookups have been disabled, reducing the load on nameservers and the amount of exposed code.
- The 4th CERT Conference was held in London, with an attendance of 130.
  http://www.ja.net/services/events/archive/2004/cert-dec04/prog.html

e-Science/Grid and Research Liaison

http://www.ja.net/development/e-science/

- Presentations were given to Swiss and Chinese e-Science delegations on plans for SuperJANET5.
- Collaboration continued with the UK High Energy Physics community to support their network requirements for experiments at the Large Hadron Collider at CERN in 2007.

Thames Valley Network Reprocurement

http://www.ja.net/sj5/tvnprocurement.html

- A dark fibre based network was installed to link the key research centres in the Thames Valley area to JANET.
- The optical technology will deliver 10Gbit/s services.
- The upgrade allows the distribution of both Large Hadron Collider and other Grid projects' data across the UK.
- The new network will be fully operational at the end of October 2005.

JANET plays an essential role in the UK e-Science Programme by providing the UK element of the international Grid through its connection to GÉANT (Gigabit European Academic Network). This year work has continued on developing the infrastructure to support e-Science.

An example of current e-Science work is the collaboration of the major radio astronomical institutes in Europe, Asia and South Africa in performing high angular resolution observations of cosmic radio sources. In the UK, telescopes at Cambridge and Jodrell Bank have taken part in experiments and JANET has been used to transfer large data streams via GÉANT to Dwingeloo in The Netherlands. An experiment in May 2005 involved a 64Mbit/s trans-Atlantic collaboration with six telescopes, and a rate of 128Mbit/s was achieved over JANET from the two telescopes in the UK.

Future experiments will demand much higher transfer rates. For example, particle physics experiments planned for the Large Hadron Collider at CERN are expected to use a data flow rate of 10Gbit/s between CERN and other research facilities. A current trend within academic networks globally is to engineer separate capacity into their infrastructures to support demanding applications which have the potential to disrupt research and development work.

UKERNA is actively following this direction and the concept is embodied in both the plans for SuperJANET5 and the existing UKLight programme.

UKLight is a national and international facility to support projects working on optical network development and the applications that will use them. As well as supporting radio astronomers and the particle physics community, UKLight is also engaged in the fields of high performance computing and weather prediction. Work this year has focused on creating the infrastructure which will enable future projects to flourish.

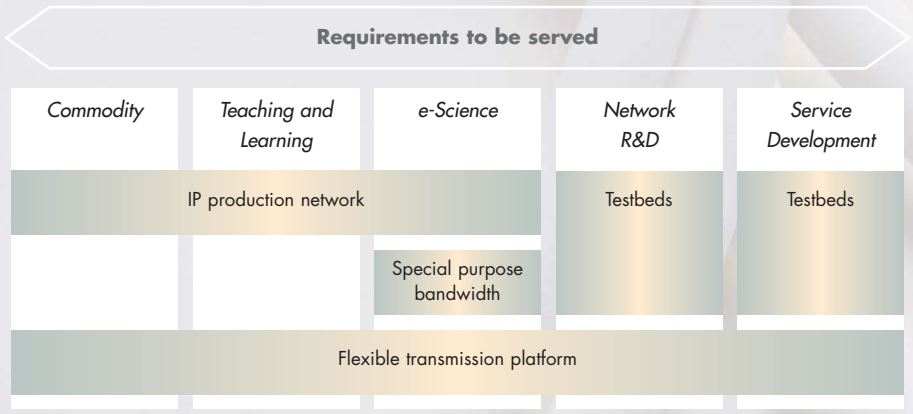
One of the key elements of SuperJANET5 is a flexible transmission platform which allows the separation of network services. In practice this means that parallel, purpose built networks can be configured, allowing research

network traffic to be separated from production network traffic. The research community will also benefit from SuperJANET5's ability to incorporate new optical technologies quickly and efficiently. Once implemented, the flexible transmission platform is expected to become the future of UKLight.

This year a number of research centres funded by the Natural Environment Research Council benefited from a major upgrade to their JANET connections. These upgrades are an important element in enabling the research community to increase its use of high performance computing.

e-Science by its nature requires co-operation across the globe and the community uses Access Grid® for interaction and collaboration. This year saw the launch of the Access Grid® Support Centre, managed by UKERNA and run by the University of Manchester. It offers help and advice on all aspects of the Access Grid®, including virtual venue servers, multicast bridges and a rcBridge, as well as a Quality Assurance test programme. A pocket-sized guide to the Support Centre was published, giving details of the services available.

SuperJANET5 Architecture



UKLight

http://www.uklight.ac.uk/

- The second phase of the UKLight extension to the JANET development network was completed. Links to C&NLMAN (Lancaster University), CCLRC (Rutherford Appleton Laboratory) and YHMAN/White-Rose Grid (Leeds University) were brought into service, providing 10Gbit/s capacity. They follow the phase one connections made in 2004 which linked UKLight, StarLight℠ (Chicago), NetherLight (Amsterdam), Fermilab (Chicago), University College London, the University of Cambridge and the University of Manchester.
- UKLight supported the Rutherford Appleton Laboratory in using two 1Gbit/s links to CERN to take part in Large Hadron Collider Computing Grid service challenges.

Enriching learning

UKERNA plays a key role in supporting teaching and learning, not only for college and university students but also for adult learners and learners with special needs. The development of the network and its applied services is vital for the harnessing of technology to improve the learning experience.

JANET's success is founded on the close relationship UKERNA has with the network community and feedback on services is key to its future success. This year VoIP (Voice over IP) has attracted much interest within the community and UKERNA has set up a Voice Advisory Group to investigate the provision of VoIP over JANET. Documents to inform the community on best practice, including case studies, will be made available later in 2005 and a 'Voice over JANET' event is planned for November 2005.

UKERNA has introduced two new services which offer flexibility and versatility to videoconference users – JVCS-OnDemand and JVCS-Check. JVCS-OnDemand is an intuitive, easy-to-use facility for creating an instant IP videoconference. Users with an H.323 compliant endpoint can create multi-point

Videoconferencing

http://www.ja.net/development/video/

- Two new services – JVCS-OnDemand and JVCS-Check – were launched, offering IP videoconferencing on demand.
- The JVCS Booking Service was improved to let users find and book conferences more easily.
- Content Providers with videoconferencing facilities were added to the list of venues within the JVCS Booking Service.

Welsh Video Network

http://www.wvn.ac.uk/

- Equipment for the Welsh Video Network – Rhwydiaith Service was installed in key studios. From September 2005 the service will provide facilities for the simultaneous interpretation of videoconferences into Welsh and English.
- An Invitation to Tender for the procurement of the WVN Support Centre was published.

VoIP

http://www.ja.net/development/voip/

- A number of successful VoIP calls have been made over JANET.
- The use of SIP (Session Initiation Protocol) to connect IP PBX (Private Branch Exchange) systems together has been demonstrated.
- A JANET Voice Advisory Group was formed and meetings were held in February and July 2005. Work is focusing on producing a survey of requirements, case studies and factsheets, and the creation of a draft Voice Strategy.

videoconferences via a simple web interface. The JVCS-Check facility, integrated within JVCS-OnDemand, offers an instant assessment tool so that the time spent setting up a successful videoconference is minimised. It provides an online audio and video self assessment for IP based videoconferencing endpoints.

There are a number of different technologies through which network access can be provided and one rapidly expanding area is wireless technology. This year UKERNA and the University of Southampton surveyed the wireless technologies used within the academic community. The JANET Wireless Advisory Group has continued to provide guidance and support on fixed and mobile technologies to the JANET community.

One key means of widening access is to allow the sharing of facilities. UKERNA has been trialling LIN (Location Independent Networking), which seeks to simplify the process of gaining network access at other organisations, making it easier for both the user and the network administrator at the visited organisation. As a result of the trial, work is underway to develop a full JANET service.

Another Authentication and Authorisation project is the use of Shibboleth. This is an open source initiative to facilitate the sharing of web resources that are subject to access control. It defines a way of exchanging information between an individual and a provider of digital resources, protecting both the security of the data and the privacy of the individual. The JANET Videoconferencing Service is to be the first JANET service to become Shibboleth enabled in 2006.

Web Services

http://www.ja.net/services/network-services/web-services/

- From October 2004 onwards, Web Filtering, Web Mail and Web Hosting services were piloted among 28 FE and HE organisations.
- The services proved popular and a user survey in January 2005 provided useful feedback on those features of the services regarded as desirable.
- The Web Filtering and Web Mail services are fully operational and available to the JANET community.

Access Technologies

http://www.ja.net/development/network-access/

- A product and service questionnaire for UK satellite suppliers has been circulated.

Wireless Technology

http://www.ja.net/development/wireless/

- New terms of reference for the Wireless Advisory Group, a case study and several factsheets on wireless networks have been published.

LIN

http://www.ja.net/development/aa/lin/

- 36 JANET connected organisations took part in the LIN trial.
- UKERNA organised a LIN workshop in June 2005 which provided an opportunity for trial participants to give feedback.
- A full JANET service is now being developed as a result of the trial.

Serving a broader community

The JANET community has continued to broaden this year, with more ACL (Adult and Community Learning) centres joining the list of connected organisations. Established members of the community such as FE Colleges are benefiting from much needed bandwidth upgrades to their connections. Case studies have been written for members with fewer networking resources to help them benefit from the experience of others.

A project to upgrade the bandwidth of connections for FE Colleges to 4Mbit/s or 10Mbit/s began in 2004 and was scheduled to be completed in July 2005. Uncertainty in the funding from the Learning and Skills Council caused some delay in early 2005 but the upgrades are back on track and are expected to be completed by the end of October 2005.

UKERNA has published the final report of a survey designed to take a snapshot of Internet connectivity and telecommunications networking in FE and Sixth Form Colleges. *Making Connections for Colleges* is a companion to last year's publication *Making Connections for People*, which reported on a similar survey to map Internet provision for ACL sites in England. UKERNA will use the information to ensure that the connectivity needs of FE Colleges continue to be taken into account.

Specialist Colleges do not always have the same level of resources and technical expertise as FE and HE organisations. UKERNA is represented on the Specialist Colleges Advisory Group and is helping its plans for part-funded technicians in such colleges by identifying those which would benefit from on-site technical support.

To help these colleges and ACL centres have a broader understanding of the use and potential of their JANET connection, UKERNA has published a series of case studies. For example, Buckinghamshire Adult Learning describes how the county council pioneered an adult learning system, connected to JANET and based around the needs of the end-learner. The RNIB,

HE Survey

http://www.ja.net/community/he.html

- UKERNA surveyed the IT Directors or Network Service Managers of 18 HE organisations about JANET, their use of network services and their attitudes to emerging technologies.
- The findings will help UKERNA to develop services that are tailored to the community's needs.

FE

http://www.ja.net/community/

- The bandwidth upgrades of FE connections to JANET have continued.
- The review of the FE sector in Scotland has continued with visits to over 40 Scottish FE Colleges out of a total of 46. The purpose of these visits is to identify the requirements of the sector and to promote JANET services.

NHS-FE Connectivity Project

http://www.nhs-he.org.uk/

- The NHS-FE Forum was set up to improve collaboration between the NHS and HE communities. This year UKERNA recruited a NHS-HE Co-ordinator to develop collaboration and help implement standard access solutions to networked information and applications.
- A website for the project was launched in March 2005.
- A NHS-FE Forum meeting was held in May 2005 and a working group has been set up to specify a gateway between JANET and N3 (the next version of the NHS network).

Hereford shows how students with special needs can be integrated into the rest of the learning and skills sector.

In England, the DfES expects all schools to have direct broadband access to the national education network by 2006, and each is encouraged to make full use of ICT for learning and teaching. Videoconferencing is one area where UKERNA is helping schools to understand the potential benefits. The DfES funded UKERNA to manage a Videoconferencing Services Pilot between schools' networks via JANET. This has built on the work already accomplished by the RBCs (Regional Broadband Consortia) and LEAs in establishing videoconferencing services in their areas. The pilot will help to create the interoperability standards and support services required for seamless national and international use of videoconferencing by schools.

During the pilot, schools in England used the JVCS (JANET Videoconferencing Service) and the online JVCS Booking Service which was adapted to their requirements. Experts from the Video Technology Advisory Service continued to provide national advice and support to the RBCs on network infrastructure configuration, and nine out of ten enabled their regional networks for IP videoconferencing. The pilot ended in May 2005 and its success in England has led to planning for a second phase of the project which will involve the whole of the UK.

On the UK-wide front, work has continued to develop parallel strategies for intra-UK networking and compatible technical approaches. The installation of the JANET Interconnect to the Northern Ireland schools network by Classroom 2000 means that all schools' networks in the UK are now inter-connected via JANET. In Scotland equipment for the Scottish Schools Digital Network Content Delivery Infrastructure has been deployed. In Wales the CYDAG videoconferencing project, involving Welsh medium schools, was completed successfully by the end of July 2005.

This year UKERNA signed a contract with the BBC to make the BBC's Digital Curriculum available over JANET. This is a free, curriculum-based, online service for 5-16 year olds, designed to stimulate learning both at home and at school. The aim is to deliver learner-centred content that motivates the learner and makes a real difference, both to their personal development and to their understanding of a topic.

Specialist Colleges

http://www.ja.net/community/specialist-colleges.html

- 45 Specialist Colleges are connected to JANET.
- Colleges which started with a 256 kbit/s connection are being upgraded to 2Mbit/s.

Schools

http://www.ja.net/community/schools/vc/

Videoconferencing Services Pilot

- The JVCS Booking Service has been adapted to accommodate the requirements of schools.
- The Video Technology Advisory Service has helped RBCs to develop their videoconferencing services.

SuperJANET5

- The network requirements of schools were fed into the SuperJANET5 requirements definition.
  http://www.ja.net/sj5/

ACL

http://www.ja.net/community/acl.html

- 20 local authorities have connected to JANET with a further 25 connections on order.

A step ahead

The provision of new services and new connections for resilience represents one strand of the efforts to ensure JANET meets the needs of its users. A second strand is to ensure the network remains at the leading edge. This year work has focused on the development of network protocols and capacity planning for the backbone's internal and external links. This work underpins UKERNA's major development project – SuperJANET5, which will provide the next version of the JANET backbone.

Work on the fundamental network protocols has focused on the development of IP QoS (Quality of Service), IP Multicast and IPv6. QoS is a way of prioritising traffic during periods of network congestion. This will benefit the JANET community by helping to maintain the quality of time sensitive traffic such as videoconferencing and content delivery during busy periods. Phase 1 of the QoS project, which concluded in November 2004, successfully demonstrated a clear benefit of QoS services for time sensitive applications. Effort is now focused in phase 2 on understanding the support requirements of network managers who will be responsible for exploiting QoS on their own organisation's networks. This will

QoS

http://www.ja.net/development/qos/

- Phase 1 demonstrated the benefits of QoS for time sensitive applications. The final project report was published.
- Work areas for phase 2 of the project have been defined and a Call for Expression of Interest in participation in phase 2 has been published.

IP Multicast

http://www.ja.net/development/multicast/

- New software improved the testing of multicast connectivity across the JANET network and will enable potential future developments, such as IPv6 Multicast.
- A JANET Multicast Project was set up to help Regional Networks and sites to deploy multicast on their networks.
- Funding was made available for Regional Networks to investigate time synchronisation issues for network performance measurement.

be a vital part of establishing a production QoS service for deployment on JANET.

This year UKERNA has facilitated the use of IP Multicast on the Regional Networks. IP Multicast is an efficient way to deliver a single stream of live data to several thousand recipients at the same time. Applications that take advantage of it include videoconferencing and news distribution. UKERNA's direct multicasting peering with the BBC meant that major events of community interest could be viewed over JANET this year.

The development of IPv6 across JANET is continuing and this year UKERNA has been involved in defining a number of projects. A JANET IPv6 Hands-on Workshop was held in September 2005 at the University of Southampton and UKERNA has also commissioned the production of a JANET IPv6 Technical Guide and a JANET IPv6 Multicast Technical Document.

Capacity planning has been implemented through the upgrading of internal and external JANET connections to 10Gbit/s. Two connections from JANET to PoPs in the London Docklands were upgraded from 2.5Gbit/s in December 2004. Preparation has also been made for upgrades to JANET's connections to LINX and GÉANT2 which are expected to be completed by the end of 2005.

A procurement for a high speed global Internet transit service resulted in two-year contracts being awarded to TeliaSonera and Sprint® to each provide a 10Gbit/s connection to one of the JANET PoPs in the London Docklands area from 30 August 2005. Resilience and scalability have been built into the procurement. The total global transit traffic is split between the two connections, but in the event of a connection failure the other connection will take the full load. In addition both suppliers can support additional expansion in capacity as required.

SuperJANET5 is the next step in the evolution of JANET which will allow research and education to remain at the leading edge. It will benefit all users within the JANET community, including schools whose requirements have been factored into its development.

The procurement process for SuperJANET5 began in October 2004 and the first stage resulted in the selection of six potential suppliers. The process took a step further with the publication of the Operational Requirement in July 2005 which defined precisely the facilities required for the new backbone. Each supplier has now been asked to respond with an equally precise and priced proposal for its provision of the backbone. The procurement is scheduled to be completed by the end of 2005.

SuperJANET5

http://www.ja.net/sj5/

- SuperJANET5 will provide a unifying national resource for education and research, and a common infrastructure tailored to serve equally the needs of users, from the primary school pupil through to those working at the frontiers of human knowledge.
- Five essential requirements emerged from consultation with the JANET community:

Reliability	Design and engineering to maximise network resilience and therefore reliability.
Scalability	Additional bandwidth can be added to meet demand while controlling costs.
Separability	Additional dedicated networks for research can be configured without impact on production services.
Flexibility	UKERNA can change the configuration of the network quickly to meet demand.
Visibility	Controlled access to network monitoring and measurement information by users.

- A significant change from previous versions of the JANET backbone is that UKERNA will take greater control of the underlying transmission network. This will enable a more responsive and tailored approach to the needs of the community by incorporating at this fundamental level all five of the requirements above.

IPv6

http://www.ja.net/development/ipv6/

- Applications continue to be received from the JANET community to use the JANET IPv6 Experimental Service and to request IPv6 address space.
- A native IPv6 private peering arrangement was established with NTT at their point of presence in London.

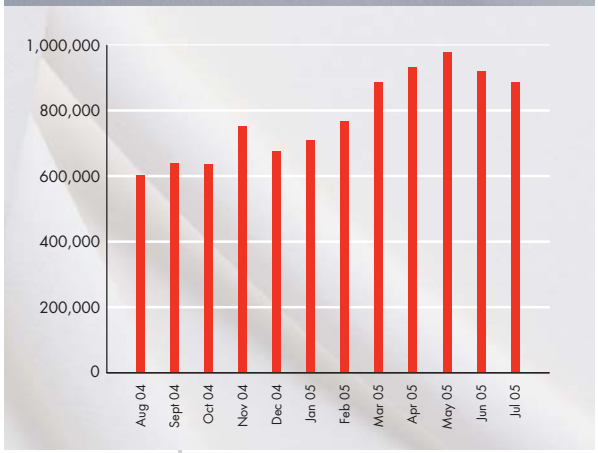
Supporting JANET users

A unique feature of JANET is the range of additional support services available. From connection queries, through domain name registration to workshops, conferences, training and documentation, UKERNA's support for network users has continued and expanded to accommodate new communities. Feedback from users is invested in improving procedures, and pitching events and information at the appropriate level. This year changes have been made to the training portfolio and to the organisation and presentation of courses to better reflect users' needs.

JANET Customer Service has enhanced the quality of its service to users in several areas. This year saw a review of the Sponsored Connection process and the introduction of a simpler tariff system which included the transit bandwidth charge. The automation of the forward and reverse delegations of DNS names was completed, leading to a more efficient and responsive service to users.

With the expansion of the customer base in mind, the JANET website (http://www.ja.net/) was redesigned. It offers a simpler interface and improved navigation for users from different sectors of the JANET community. By July 2005 the site was receiving just under one million hits a month.

Number of requests to JANET website



Efforts have continued to make UKERNA's publications relevant and user friendly. More than 50 documents were published during the past year, among them a Network Services booklet to help raise awareness of these services, particularly for newer members of the JANET community. The JANET Support Manual has been re-engineered and issued as a CD-ROM and its HTML format is providing a flexible support tool.

UKERNA runs, and participates in, a varied conference and workshop programme. This year the annual Networkshop was held at the University of Manchester. The sessions were well received and included current areas of interest such as content delivery, VoIP, optical networking, extending last mile technologies, resilience, emerging wireless technologies, videoconferencing and security issues.

UKERNA's Networking Strategy Workshop took place in November 2004 and was successful in bringing together more people from all sectors of the community. The programme had two main themes – challenges presented by new use of networks and opportunities provided by the widespread availability of broadband networks. Feedback from this conference showed that the attendees found the briefing on key networking issues and the social networking with their peers useful. In response to this, UKERNA has decided to split future strategy workshops into two events – a briefing day on JANET and its future, and a discussion day, focusing on specific topics.

Following a process of redevelopment, UKERNA has launched a new training service. Three courses are now available: Introduction to JANET, DNS on Windows 2003 and Managing IT Security, each including a specifically written course workbook. Other support materials include a course CD containing links to relevant web sites, documentation, and in some cases specially created multimedia materials.

UKERNA has been accepted as a member of the Open College Network and is working on the accreditation of individual courses which will provide both staff and their organisations with a method of recording their achievements.

Training

http://www.ja.net/training/

- New training service launched.
- Three new courses: Introduction to JANET, DNS on Windows 2003 and Managing IT Security.
- New training area on the JANET website which provides a list of scheduled courses, an overview of each course, and details of venues.

Key Publications

http://www.ja.net/services/publications/

Factsheets

- Wireless 802.11 Standards
- Mobile Networking 1G – 4G
- Safe Use of Wireless Networks

Reports

- Making Connections for Colleges

Technical Guides

- Security Matters
- Deploying Grids
- Surveying Wireless Networks

Service Documentation

- A Guide to Reliable Campus H.323 Networks
- Configuring an H.323 Gatekeeper for use with the JANET Videoconferencing Service
- Videoconferencing Services for Schools: A national pilot
- A suite of guides on using popular streaming software
- Access Grid™ Support Centre leaflet
- JANET Network Services booklet

Case Studies

- Voice over IP
- Buckinghamshire Adult Learning
- Specialist College – Arden
- Thurrock Adult Community College
- RNIB, Hereford
- Mainstream Wireless Network Services at the University of Plymouth
- MCAS Case Study – College of North West London
- Wireless Networking Case Study: The Development of a Secure Campus 802.11b Wireless Network

SuperJANET5

- A Service Model
- Operational Requirement

Support Documentation

- JANET Support Manual on CD-ROM

Part of the global network

UKERNA has maintained strong and pro-active links with other NRENs (National Research and Education Networks) in Europe through TERENA and DANTE, which operates the GÉANT network, and with Internet2, which develops network technologies for education and research in the USA. UKERNA has attended meetings throughout the year and contributed to projects such as mobility and next generation networking.

During the year UKERNA has been active across the range of TERENA activities including mobility, TF-PR (Task Force – Public Relations), conferences, security and content delivery.

Work has been carried out this year on eduroam™, which allows users from participating organisations to access the Internet at another participant's organisation using access credentials from their home organisation. UKERNA's LIN project forms part of eduroam™, which now encompasses 18 European countries. Australia has recently joined the eduroam™ Federation and interest in the eduroam™ concept is growing in the USA.

GÉANT and DANTE

http://www.dante.net/

- The Mobility group made progress on formalising the eduroam™ policy.
- In QoS activities UKERNA contributed significantly to the development of the IP Premium service model and is also involved in efforts to establish a Performance Emergency Response Team.

UKERNA participates in TERENA's TF-PR which promotes collaboration between NRENs in public relations and information dissemination. A central news agency (PeaR) has been established, providing a central repository of European NREN news items for journalists and other interested parties.

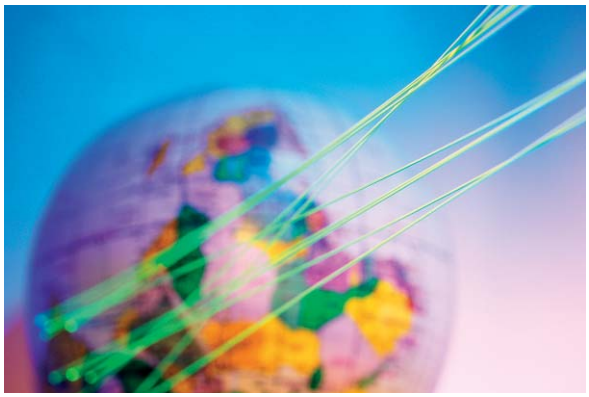
The annual TERENA conference was held at Poznán in Poland in June 2005. UKERNA's presentations on current work included content delivery, voice and video on JANET, and the privacy and legal issues for network performance measurement. The conference also looked ahead at the challenges for global collaborations and the need for standardised toolkits to access complex networking infrastructures.

The new version of the pan-European research and education network – GÉANT2 – was launched in June 2005. This substantial upgrade to the GÉANT network is intended to provide a Europe-wide, high speed network service with very high capacity network paths that can meet the demanding data transfer requirements of international projects.

UKERNA's network engineering projects such as QoS and IPv6 fall within the scope of GÉANT2's Next Generation Networking Task Force activities. This year meetings included discussions on an end to end QoS service across GÉANT2 and the NRENs, developing an inter-domain measurement infrastructure, bandwidth/lightpaths on demand, and mobility.

UKERNA is a partner in the European Commission funded project 6NET (http://www.6net.org/), which aims to establish a pan-European native IPv6 network to gain practical experience of managing and implementing an IPv6 network. UKERNA participated in the project and supported the UK universities involved in the original project and its extension. The project finished in June 2005 and a set of 'cookbooks' is available for sites and organisations looking to deploy IPv6. They include texts on transition, security, router configuration and DNS implementation.

On an international level UKERNA tracks the work of Internet2. UKERNA attended the Internet2 meeting in September 2004 which explored authentication and authorisation issues, including Shibboleth and eduroam™.



UKERNA (the United Kingdom Education and Research Networking Association) manages the networking programme on behalf of the Higher and Further Education and research community in the United Kingdom. JANET, the United Kingdom's education and research network, is funded by JISC (Joint Information Systems Committee).

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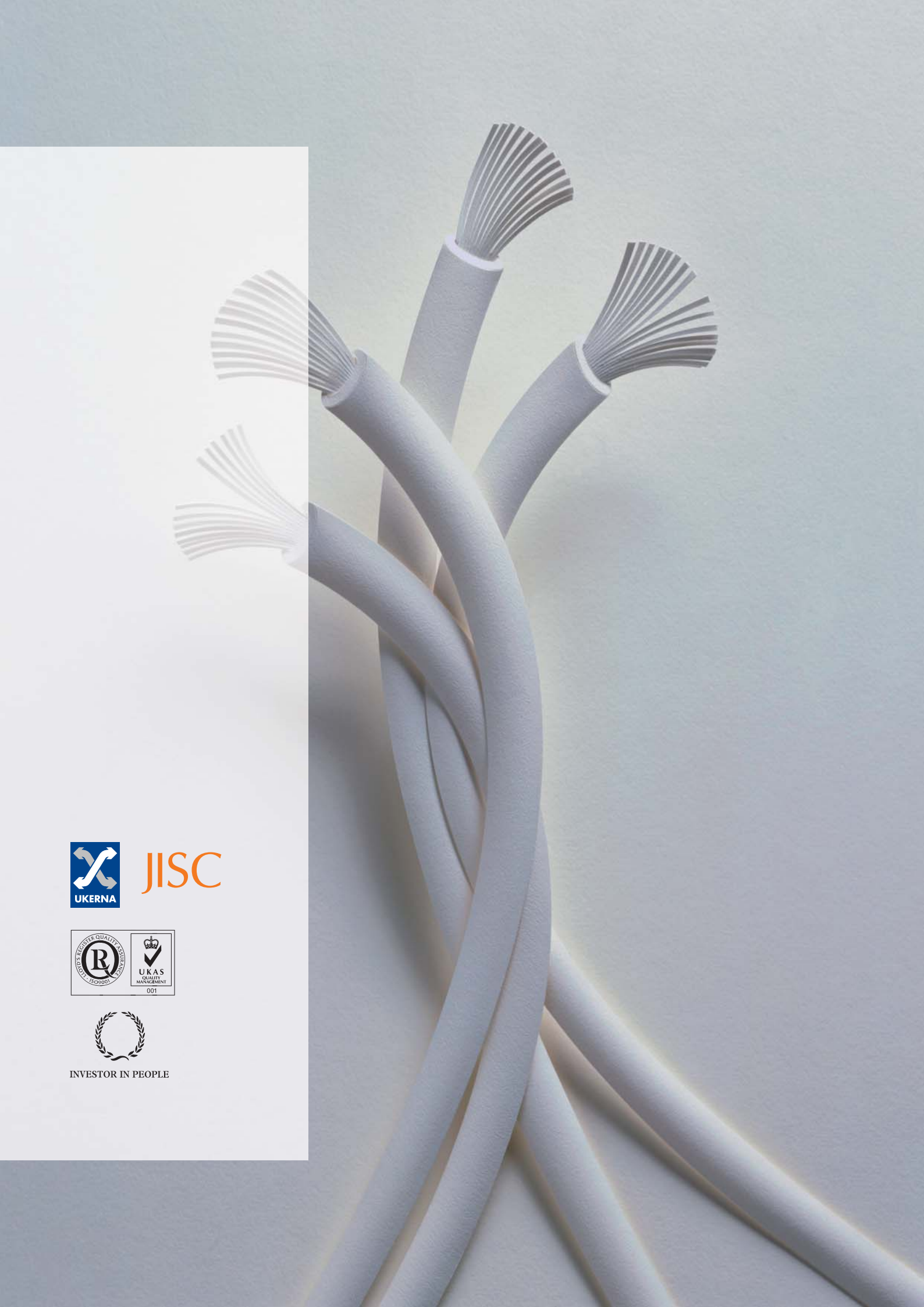
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