Delivering the
National Digital Infrastructure

Enabling improvement through ICT

An essential guide

Becta

Through the national
digital infrastructure
you can benefit from:

Appropriateness – through using Becta's functional specifications to ensure that the ICT equipment and services you choose deliver to recognised standards

Reliability – through high-quality technical design, technical support and service provision

Affordability – through using Becta's procurement frameworks to achieve best value purchasing

Sustainability – through effective financial and service planning to ensure long-term continuity

Coherence – through adopting Becta specifications throughout to ensure consistency of ICT delivery

Driving the transformation of learning

The effective use of information and communications technology (ICT) offers schools a unique opportunity to transform learning and teaching – to the benefit of learners, teachers, managers and institutions, as well as the UK economy as a whole.

As the Government's key partner in the strategic development, co-ordination and delivery of its ICT and e-learning strategy, Becta is working to ensure that ICT is systematically embedded across the education sector, both in policy and in practice.

Our primary aim is to help you achieve an affordable and reliable infrastructure that will maximise your return on ICT investment, and help you to enhance the quality and effectiveness of learning and teaching in your school.

To help unify the provision of ICT support and guidance across the education sector, we are developing the national digital infrastructure through which you can obtain the support and services you need to develop and maintain robust, reliable and sustainable e-systems.

Our integrated approach to ICT investment offers significant benefits in terms of sustainability,

interoperability, productivity, cost efficiencies and enhanced service levels.

The national digital infrastructure will offer a straightforward route for you to minimise the risks associated with specifying your ICT, and move forward in the confidence that it will meet your needs for reliability and performance, both now and in the future.

Our standards-based approach and recommended technical specifications ensure a coherent solution that enables rapid and secure access to both data and content.

To help you make the most of your ICT budget, we have negotiated a series of framework agreements with suppliers through which you can readily purchase at best value prices. The provision of comprehensive and cost-effective technical and support services is an essential element of any successful ICT implementation plan, and you can source these services from quality-assured suppliers most cost effectively through us.

Becta also supports the creation of individual personalised learning spaces that will deliver the vision of anywhere, anytime learning for all.

Robust and reliable networks

Identifying how to maintain current ICT provision, to accommodate new technologies, and to develop the infrastructure that supports the needs of teaching and learners, presents institutions with a challenge.

A coherent strategy is needed across all aspects of network design, ICT resources and security for a school's ICT infrastructure to be sustainable, flexible and adaptive. The standards-based approach promoted by Becta will help to ensure that infrastructures designed today provide an ICT resource that is useful, both now and in the future.

Becta has defined a national digital infrastructure which encompasses four key areas:

- A secure, efficient, flexible infrastructure providing a wide range of choice and access

- Connectivity between the institution and the rest of the world, with broadband connections to the National Education Network (NEN)

- A set of data services covering school management information systems, improved reporting and analysis and the possibility of centrally hosted personal e-portfolios

- A set of learning services – providing access to, and management of digital learning and teaching resources, including out-of-school access and online learning.

To help schools develop and maintain a dependable ICT infrastructure that is coherent and sustainable, Becta recommends adoption of both the functional and technical specifications for institutional infrastructure.

To maximise return on investment, the infrastructure must be designed to meet the long-term expectations of learners, educators and administrators. To help schools achieve this, Becta has set out a detailed view of the functions that need to be in place. The starting point must be a realistic assessment of the current situation.

So that schools can take full advantage of this area of the national digital infrastructure, Becta is advising the use of the institutional infrastructure matrix, an online tool that can be used to assess the maturity of their network resources.

The development of an effective national digital infrastructure requires a collaborative approach and the adoption of common standards and protocols across the sector.

Secure access to data and content

The National Education Network (NEN) is a private network connecting all schools, colleges, universities and other educational bodies across the UK.

Its purpose is to provide every learner and educator with access to a set of resources, services and applications, and to help improve the availability and use of high-quality educational content.

The NEN offers schools the opportunity to link up securely using video conferencing, either with each other, with higher education institutions or museums and galleries.

The need for secure authentication, safe access, consistent hosting and content delivery services is central to the success of this integrated approach. Becta is recommending Shibboleth as the mechanism for secure authentication to online content across the schools sector. Schools should develop a framework of internet safety, or acceptable use policies to help ensure safe and appropriate use. Becta is also working with the 10 regional broadband consortia (RBCs) to develop network-wide policies and specifications for internet access.

The successful provision and use of management information directly supports the drive to raise standards in schools. Management information systems (MIS) provide leadership teams in schools with essential tools to support personalised learning strategies and to improve the efficiency and effectiveness of their institutions, a critical role set out by the DfES in its five-year strategy to help every learner to fulfil their potential.

A series of framework agreements with suppliers is being negotiated by Becta to ensure that MIS systems on the market are functionally capable, interoperable and affordable and designed specifically to deliver effective support to the education sector.

MIS systems will play a critical role in providing leadership teams with essential tools to support personalised learning strategies.

Best value purchasing

A wide range of ICT products and related services that comply with the protocols and standards set out in the national digital infrastructure and that deliver value for money, are now available to schools.

Becta is currently working with its partners and with educational institutions to combine demand, to achieve significant economies of scale. This is supported by Becta's commitment to ensuring local choice based on local need.

By negotiating nationally on behalf of the education sector and delivering centrally available tools and services, Becta is also improving price transparency for all. Schools can achieve further cost savings as a result of a series of framework agreements that Becta has negotiated with suppliers.

A range of procurement frameworks and online tools, all compliant with the EU Procurement Directive, are already in place to help schools wishing to purchase equipment and services. Currently frameworks exist for laptops, interactive whiteboards, non-curricular software and for quality assured consultancy to help schools and local authorities achieve the vision of the national digital infrastructure.

Purchasing through these frameworks offers schools several distinct advantages – approved suppliers are required to conform to standards set out by Becta, and they are continuously monitored and audited by Becta to ensure compliance.

Becta is also encouraging schools and local authorities to work together at a regional level to aggregate their ICT purchases. As well as helping to maximise value for money, this approach will have the added benefit that the combination of services will be seamlessly integrated and supported by specialist external providers.

Framework agreements have led to greater price visibility and competition. Schools and local authorities saved £14 million in 2004 – 05 on laptops and interactive whiteboards alone. Schools can also save up to 35 per cent on the purchase of Microsoft software, based on a preferential rate negotiated by Becta on their behalf.

Cost savings can be made as a result of a series of procurement framework agreements negotiated by Becta with suppliers.

Technical support and services

Evidence shows that over half of the total cost of ownership (TCO) for schools using ICT relates to technical support.

The provision of technical support on an *ad hoc* or reactive basis can lead to unreliability in ICT systems and dissatisfaction among users, yet an issue for many schools is the quality of ICT support services on offer, and whether or not such services represent value for money.

Becta is actively promoting the importance of ICT support, whether provided in-house or by an external provider, and is recommending a structured approach to ICT support, without which schools will not be in a position to maximise organisational efficiencies.

To help schools ensure that they have in place a technical support function that is both structured and proactive, Becta has developed the Framework for ICT Technical Support (FITS) which it recommends all schools to adopt.

A toolkit of advice, checklists and downloads, FITS comprises ten key processes that support the day-to-day management of technical support activities in a controlled and consistent manner.

It enables those responsible for technical support to take control of the reactive workload, and to improve communication with ICT users across the network.

The focus is to ensure that faults are fixed as quickly as possible, and proactive processes enable problems to be identified before they affect users. FITS also assists with the implementation of change processes, including the planning and control of major ICT upgrades and installation of new hardware and software.

Effective support for ICT requires personnel with specific competences relevant to the school environment. These competences have been identified and formalised by Becta, resulting in a competency framework, against which individuals and schools can readily assess their capabilities using an online tool.

FITS is designed to enable schools to implement their ICT technical support processes successfully from the start.

Finding, choosing and using resources

Through Becta, schools can access a range of practical advice and up-to-date information to help them procure of ICT systems and software.

A key focus is to ensure that investment is in line with the strategic context of the school's overall development. Whether you are a head teacher, a practitioner or an ICT co-ordinator, the starting point is to identify how ICT can best be harnessed to support the achievement of organisational goals.

A 'whole school' approach to software planning and purchasing will help to deliver breadth of experience for pupils, as well as ensure quality and reliability for teachers.

There are currently many approaches and views on what constitutes a 'quality' e-learning resource; with different terms used to describe similar concepts and attributes associated with the idea of 'quality'. Likewise the range of e-learning resources available to educational institutions varies significantly, as does the capacity of institutions and teachers to research, review and select those most appropriate for their needs.

To help overcome these issues, Becta is establishing a quality framework for e-learning resources which will bring together the various terms used and ensure that practitioners, learners and content developers have a shared understanding of what makes a 'quality' resource and enable informed selection decisions.

Becta is also working on opportunities to rationalise resource discovery services to enable intuitive search and ease access to a wide range of learning resources.

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Personalised learning spaces

The national digital infrastructure will play a key role in the delivery of a personalised online learning space for every pupil.

The potential to enhance the learning experience is immense. A learning platform will enable learners to access a host of resources and support around the clock, both in the classroom and beyond.

For this vision to be achievable, schools need to embrace a broad range of ICT-based systems that will not only benefit learners but also assist teachers and managers and engage parents.

Institutions will benefit from improvements to the processes used for planning, delivering subject material, assessment and communication. Teachers can continue working and planning to suit their workload, and real time progress tracking means they can quickly pick up on problems and stretch more able children.

Through Becta, schools can access the information and guidance they need to select the most suitable learning platform product for their environment.

Becta is developing functional specifications for learning platforms to provide specific details of the level of services they should offer to schools. These will be published in Spring 2006.

New technologies are constantly emerging and Becta is working with industry specialists to ensure that new features and capabilities are continually integrated into development plans.

A procurement framework will be negotiated with suppliers who can provide assured products, and best value will be achieved through aggregated purchasing through this framework by groups of schools, local authorities and by regional broadband consortia.

A personal learning platform will enable pupils to access a host of resources and support around the clock, both in the classroom and beyond.

Further information

Robust and reliable networks

What is the national digital infrastructure?
http://www.becta.org.uk/schools

Functional specification: Institutional infrastructure
Technical specification: Institutional infrastructure
http://www.becta.org.uk/schools/techstandards

Institutional infrastructure matrix
http://matrix.becta.org.uk

KS3 ICT onscreen test support
www.becta.org.uk/schools/ks3support

Becta's view: Emerging technologies
http://www.becta.org.uk/publications

Secure access to data and content

'Shibboleth – a strategic approach to school web content authentication
and authorisation'
'Towards a content hosting and delivery strategy for the National Education Network'
www.becta.org.uk/schools/techstandards

Becta's view: Interoperability of content and data services
http://www.becta.org.uk/publications

Becta's view: Authentication
School Management Information Systems and Value for Money
http://www.becta.org.uk/publications

Internet Safety
www.becta.org.uk/schools/esafety

Best value purchasing

Procurement advice including purchasing tools
http://www.becta.org.uk/schools/procurement

Using open source software in schools
http://www.becta.org.uk/publications

Technical support and services

FITS materials, Self assessment tool, Expert workshops
Technical competencies framework
http://www.becta.org.uk/schools/technicalsupport

Technical support online community
http://www.becta.org.uk/technicalsupportcommunity

FITS pocket guide
http://www.becta.org.uk/publications

Finding, choosing and using resources

Content Advisory Board (CAB) (reports and papers)
http://www.becta.org.uk/corporate/display.cfm?section=15&id=3249

Teacher Resource Exchange
http://tre.ngfl.gov.uk

Curriculum Online
http://www.curriculumonline.gov.uk

National Learning Network Materials
http://www.nln.ac.uk/materials

BETT Awards
http://www.bettawards.co.uk

Curriculum Online – Supporting learning and teaching in primary schools
Curriculum Online – Supporting learning and teaching in secondary schools
http://www.becta.org.uk/publications

Personalised learning spaces

Funding to support the provision of learning platforms in schools 2006-7
(DfES publication)
http://www.teachernet.gov.uk/learningplatforms

Becta's view: E-assessment and e-portfolios
Planning for personalised online learning
http://www.becta.org.uk/publications

www.becta.org.uk

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British Educational Communications
and Technology Agency